



Global Product Certification
EMC-EMF Safety Approvals

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Electromagnetic Compatibility Test Report

Report No.: S2508008-3 v2

TESTED FOR:

SATO Vicinity Pty Ltd
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ISSUED BY:

EMC Technologies Pty Ltd
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Australia

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Product Name: Helmer Fridge PJM Kit

Model: SFK-125 & SFK-113

Part Number: 094-30-5007 & 094-30-5008 respectively

FCC ID: 2ACXQ-SFK

Test Date(s): 27 February 2026

Issue Date: 2 June 2026

Specification(s): **447498 D01 General RF Exposure Guidance v06**
RF exposure procedures and equipment authorization policies for mobile and portable devices.
47 CFR § 2.1091
Radiofrequency radiation exposure evaluation: mobile devices (Transmitter is more than 20 cm from human body).

Based on an assessment of the documentation provided, performed measurements and the declared separation distance from the human body under normal use, the Helmer Fridge PJM Kit, model: SFK-125 & SFK-113, complies with the RF exposure requirements of the standard/s listed above.

**Assessment
Engineer(s):**

Michael Kent

**Authorized
Signatory:**

Michael Kent
Test Engineer

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Revision History

Version	Issue Date	Reason / Comments
1	28 April 2026	Initial issue
2	2 June 2026	Device photo removed (page 9)

General Remarks

EMC Technologies Pty Ltd hereby certify that the device(s) described herein were tested as described in this report and that the data included is that which was obtained during such testing.

EMC Technologies Pty Ltd reports apply only to the specific samples tested under stated test conditions. It is the manufacturer's responsibility to assure that additional production units of this model are manufactured with identical electrical and mechanical components. EMC Technologies Pty Ltd shall have no liability for any deductions, inferences or generalisations drawn by the customer or others from EMC Technologies Pty Ltd issued reports. This report shall not be used to claim, constitute, or imply product endorsement by EMC Technologies Pty Ltd.

Content

1	Project Overview.....	4
1.1	Test Facility.....	4
1.2	Standards Applied	5
1.3	Measurement Uncertainty	5
2	Device Details	6
2.1	Device Host Details	6
2.2	Device Transmitters Details.....	6
2.3	Reference Document.....	6
3	Evaluation of Radio Exposure Assessment	7
3.1	FCC Requirement.....	7
3.2	Measurement Method.....	8
	Appendix A.....	11

1 Project Overview

1.1 Test Facility

Measurements were performed at the following location:

- ☐ Melbourne Laboratory 176 Harrick Road, Keilor Park, VIC 3042, Australia
- ☒ Sydney Laboratory Unit 3, 87 Station Road, Seven Hills, NSW 2147, Australia

EMC Technologies Pty Ltd is NATA accredited to ISO 17025 for both testing and calibration. – **Accreditation Number 5292.**

Country	Assessment Body	Accreditation/Designation Numbers
Australia	NATA	Site Number: 10854 (Sydney)
		Site Number: 5285 (Melbourne)
USA	FCC	Designation Number: AU0002 (Sydney)
		Designation Number: AU0001 (Melbourne)

1.2 Standards Applied

Unless otherwise noted, only the cited edition applies.

KDB 447498 D01 General RF Exposure Guidance v06

RF exposure procedures and equipment authorization policies for mobile and portable devices

47 CFR § 2.1091

Radiofrequency radiation exposure evaluation: mobile devices (Transmitter is more than 20 cm from human body)

1.3 Measurement Uncertainty

EMC Technologies has evaluated the tools and methods used to perform Radiated Electromagnetic Field predictions. The estimated measurement uncertainties shown within this report are as follows:

EMC Testing	Range	Value
Broadband Radiated Electromagnetic Fields	9 kHz to 45.5 GHz	±3.0 dB
Electromagnetic Modelling	30 MHz to 100 GHz	±2.8 dB

The above expanded uncertainties are based on standard uncertainties multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95%.

2 Device Details

2.1 Device Host Details

(Information supplied by the customer)

EUT Host Details	
Product Name:	Helmer Fridges
Model:	iLR125-GX
Serial No.:	2108925
Power Rating:	115 Vac, 60 Hz, 2.8 A, 0.33 kW
Manufacturer:	Helmer Inc
Operating Ambient Temperature:	20°C to 25°C
Description:	These are commercial fridges designed for high-performance storage of medical products. Note: EUT is an industrial use device and is declared as a "Class A" device under FCC Part 15 B.

2.2 Device Transmitters Details

(EUT details are supplied by customer)

EUT Transmitter Details		
Radio Module/Chip Manufacturer:	Sato Vicinity Pty Ltd	
Radio Module/Chip Model:	MARS-4AT Reader	
Type:	Discrete transmitter	
Operating Band/Frequency:	13.56 MHz	
Number of Channels:	Single Channel	
Modulation:	Phase Jitter Modulation	
Antenna:	Antenna 1 (Access Door)	Antenna 2 (Shelves)
Antenna Manufacturer:	Sato Vicinity Pty Ltd	Sato Vicinity Pty Ltd
Antenna Model / Type:	66x95 mm PCB Antenna (p/n: 094-10-1009)	532x702 mm PCB Antenna (p/n: 034-10-1035)
Antenna Maximum Gain:	-73 dBi	-60 dBi
Antenna Maximum Directivity:	2.15 dBi	2.15 dBi

2.3 Reference Document

No.	Document Title	Issue No.
1	Fridge PJM Kit FCC and IEC Test Plan	1.0
2	Form 005 Customer and EUT Information	---

3 Evaluation of Radio Exposure Assessment

This assessment does not include accumulated RF fields from nearby sites/antennas or possible radio signal reflections or attenuation due to buildings or the general environment.

Only model SFK-125 PJM Kit (part number 094-30-5007) was tested. As per manufacturer's declaration, the tested model can represent model SFK-113 (part number 094-30-5008).

Antenna Parameters and power settings were supplied by the customer.

The following assumptions applied:

- A 100% duty cycle is assumed.
- The aperture of the radiating element assumed to be a point source in free space and far field conditions.

3.1 FCC Requirement

3.1.1 Applicable Limit

Limits for maximum permissible exposure (MPE), §1.1310				
Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	* 100	6
3.0-30	1842/f	4.89/f	* 900/f ²	6
30-300	61.4	0.163	1.0	6
300-1,500			f/300	6
1,500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	* 100	30
1.34-30	824/f	2.19/f	* 180/f ²	30
30-300	27.5	0.073	0.2	30
300-1,500			f/1500	30
1,500-100,000			1.0	30

f = frequency in MHz * = Plane-wave equivalent power density

3.2 Measurement Method

3.2.1 Test Equipment List

Equipment Type	Make, Model and Serial Number	Calibration due	Calibrated by
EM Field Meter*	Asset Number: P-179 Manufacturer: Narda Model Number: NBM550 S/N: E-0743	21/07/2027	EMC Technologies
H-Field Probe**	Asset Number: P-179-2 Manufacturer: Narda Model Number: HF-3061 Freq: 10kHz to 30MHz Measurement Type: Broadband S/N: D-0229	21/07/2027	EMC Technologies
EM Field Meter*	Asset Number: P-084 Manufacturer: Narda Model Number: EMR-20C S/N: C-0073	09/12/2027	EMC Technologies
E-Field Probe***	Asset Number: P-084 Manufacturer: Narda Model Number: EMR-20 Freq: 100kHz to 3GHz Measurement Type: Broadband S/N: C-0073	09/12/2027	EMC Technologies

Notes:

* *Probe Correction Factors (CF) from the probe calibration (tabled in the probe's Calibration Report) must be included to derive the actual field from the field measured. As the probe is a wideband device, suitable CF is selected if the dominant emitter is known, or if there are multiple emitters present in the ambient, then the worst-case CF is used.*

** *HF-3061 3061 probe is a Realtime isotropic, 3-axis probe.*

*** *EMR-20 probe is a Realtime isotropic, 3-axis probe.*

Probe specification sheets attached in Appendix A.

3.2.2 Measurement Procedures

The measurements were performed using the NBM550 Narda meter with magnetic field probe and EMR20 Narda meter with electric field probe (mounted on a non-magnetic wooden tripod) in units of Ampere per meter (A/m) and Volts per metre (V/m) respectively. The field meter was set to max hold. Measurements were performed at the distance of 20 cm in front, back, left, right, top and bottom. The levels recorded were then compared against the limits in Section 3.1.1. Please refer to section 3.2.4 for the results at 20cm distance from human body in normal use.

RFID Antenna 1 and RFID Antenna 2 were activated one at a time during the test, transmitting at 13.56 MHz.

3.2.3 Measurement Location

Electric and Magnetic Field measurements were taken at the distance of 20 cm (front, left, right, top, and bottom) from the RFID – 1 and RFID – 2 readers.

3.2.4 Measurement Results

RFID reader operates at 13.56 MHz, H-field and E-field measurements were performed at 0.2m.

For measured H-Field and E-Field values, conservative probe calibration factors were applied to reduce the uncertainty due to systematic errors. H-Field Probe Cal Factor: 1.311 and E-Field Probe Cal Factor: 1.09.

3.2.4.1 RFID Antenna 1

Table 3-1: Magnetic Field HF-3061 Probe (10kHz- 30MHz)

Survey Point		Measured Magnetic Field (A/m)	CF	Calculated Field (A/m)	Limit (A/m)	% of General Public Limit
Front of the RFID	20 cm	0.0321	1.311	0.0421	0.1615	26.06%
Right Side	20 cm	0.0180	1.311	0.0236	0.1615	14.61%
Left Side	20 cm	0.0175	1.311	0.0229	0.1615	14.18%
Top	20 cm	0.0250	1.311	0.0328	0.1615	20.30%
Bottom	20 cm	0.0293	1.311	0.0384	0.1615	23.78%
Back	20 cm	0.0162	1.311	0.0212	0.1615	13.13%

Table 3-2: Electric Field EF0392 (100kHz – 3GHz)

Survey Point		Measured Electric Field (V/m)	CF	Calculated Field (V/m)	Limit (V/m)	% of General Public Limit
Front of the RFID	20 cm	15.90	1.09	17.33	60.77	28.52%
Right Side	20 cm	10.53	1.09	11.48	60.77	18.89%
Left Side	20 cm	3.18	1.09	3.47	60.77	5.71%
Top	20 cm	3.46	1.09	3.77	60.77	6.20%
Bottom	20 cm	3.20	1.09	3.49	60.77	5.74%
Back	20 cm	0.17	1.09	0.19	60.77	0.31%

3.2.4.2 RFID Antenna 2

Table 3-3: Magnetic Field HF-3061 Probe (10kHz- 30MHz)

Survey Point		Measured Magnetic Field (A/m)	CF	Calculated Field (A/m)	Limit (A/m)	% of General Public Limit
Front of the RFID	20 cm	0.0435	1.311	0.0570	0.1615	35.29%
Right Side	20 cm	0.0159	1.311	0.0208	0.1615	12.88%
Left Side	20 cm	0.0150	1.311	0.0197	0.1615	12.20%
Top	20 cm	0.0157	1.311	0.0206	0.1615	12.76%
Bottom	20 cm	0.0163	1.311	0.0214	0.1615	13.25%
Back	20 cm	0.0167	1.311	0.0219	0.1615	13.56%

Table 3-4: Electric Field EF0392 (100kHz – 3GHz)

Survey Point		Measured Electric Field (V/m)	CF	Calculated Field (V/m)	Limit (V/m)	% of General Public Limit
Front of the RFID	20 cm	0.47	1.09	0.51	60.77	0.84%
Right Side	20 cm	0.31	1.09	0.34	60.77	0.56%
Left Side	20 cm	0.24	1.09	0.26	60.77	0.43%
Top	20 cm	0.34	1.09	0.37	60.77	0.61%
Bottom	20 cm	0.26	1.09	0.28	60.77	0.46%
Back	20 cm	0.38	1.09	0.41	60.77	0.67%

Appendix A

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H-FIELD PROBE

HF3061

Measuring magnetic fields from 300 kHz to 30 MHz

using instruments in the NBM-500 family

- ▲ **Public and occupational field exposure from broadcasting, telecoms, and industrial equipment**
- ▲ **Isotropic (non-directional) measurement**
- ▲ **62 dB dynamic range without changing measurement range**

The probe contains three orthogonally arranged coils with detector diodes. The three voltages, corresponding to the spatial components, are available individually at the probe output. The NBM basic unit calculates the resulting isotropic field strength.

APPLICATIONS

The probe detects magnetic fields from 300 kHz to 30 MHz, such as those caused by short and medium wave transmitters, many RF communications services, and industrial equipment. The dynamic range from 0.012 A/m to 16 A/m (62 dB) makes it ideal for measuring field exposure in both the public and the occupational environment.

PROPERTIES

The probe has mechanical and electrical properties that are ideal for field use. The sensors are effectively protected by impact resistant plastic. The electric destruction limit is above 35 A/m for continuous wave signals, which is several times more than any of the human safety limit values.

CALIBRATION

The probe is calibrated at several frequencies. The correction values are stored in an EPROM in the probe and are automatically taken into account by the NBM instrument. Calibrated accuracy is thus obtained regardless of the combination of probe and instrument.



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Safety Test Solutions

SPECIFICATIONS *

Probe HF3061	Magnetic (H-)Field
Frequency range ^(a)	300 kHz to 30 MHz
Type of frequency response	Flat
Measurement range	0.012 to 16 A/m (CW) 0.012 to 0.7 A/m (True RMS)
Dynamic range	62 dB
CW damage level	35 A/m
Peak damage level ^(b)	350 A/m
Sensor type	Diode based system
Directivity	Isotropic (17-axis)
Readout mode / spatial assessment	3 separate axes

UNCERTAINTY

Flatness of frequency response ^(a)	0/-1 dB (500 to 800 kHz) +0.1/-0.5 dB (800 kHz to 30 MHz)
Linearity	+3 dB (0.017 to 0.033 A/m) ±1 dB (0.033 to 0.068 A/m) +0.5 dB (0.068 to 3 A/m) ±1 dB (3 to 16 A/m)
Isotropic response ^(a)	±1 dB
Temperature response	+0.2/-0.8 dB (±0.025 dB/K @ 10 to 50 °C)

GENERAL SPECIFICATIONS

Factory calibration frequencies	0.1/ 0.15/ 0.2/ 0.3/ 0.4/ 0.5/ 0.6/ 0.7/ 0.8/ 0.9 MHz 1/ 1.2/ 1.5/ 2/ 3/ 4/ 5/ 10/ 15/ 20/ 25/ 27.12/ 30 MHz
Recommended calibration interval	24 months
Temperature range	Operating Non-operating (transport)
Humidity	5 to 95 % RH @ ≤28 °C ≤26 g/m ³ absolute humidity
Size	300 mm x 120 mm Ø
Weight	190 g
Compatibility	NBM-500 series meters
Country of origin	Germany

(a) Unless otherwise noted specifications apply at reference conditions: device in far-field of source, ambient temperature 23±3 °C, relative air humidity 25% to 75%, sinusoidal signal
(b) Cutoff frequency at approx. -3 dB
(c) Pulse length: 100 ns, duty cycle 1:100
(d) Frequency response can be compensated for by the use of correction factors stored in the probe memory
(e) Results are calculated from the maximum and minimum response obtained during the full revolution about the stem of the probe, oriented 54.7° to the electric field vector.

ORDERING INFORMATION

	Part number
Probe HF3061, H-field for NBM, 300 kHz - 30 MHz, isotropic	2402/058
Probe HF3061, H-field, ACC - with accredited (DAKKS) calibration, basic unit required	2402/058/ACC

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NSTS 1221-E0237E 1 / 2 Subject to change



EMR-20C and EMR-21C E-Field Measurement Systems

- ◆ 100 kHz to 3 GHz
- ◆ 0.6 to 800 V/m (-20C)
- ◆ 0.2 to 320 V/m (-21C)
- ◆ Completely Automatic Zeroing
- ◆ Easy-to-Use Design
- ◆ Lightweight and Rugged
- ◆ Cost Effective
- ◆ Isotropic Detection
- ◆ 24 Month Calibration Interval

Description

The EMR-20C and -21C are complete systems that consist of a meter and probe, along with a charging system for the NiCad batteries.

The EMR-20C and EMR-21C are supplied with a calibrated Type 8 probe that provides coverage for many industrial systems operating at 915 and 2450 MHz, as well as measuring extremely low field levels. Users appreciate the wide measurement range and extreme ruggedness of this multi-purpose survey system. The EMR-20C and -21C have even been designed to withstand drops from two meters directly on the sensor head!

Operation of this series of survey systems could not be any easier. All you need to do is connect the probe and turn on the meter. The system automatically detects the probe and auto-zero's the system – even while immersed in an RF field environment. Electric field readings are displayed in units of V/m, W/m² and mW/cm², with over 62 dB of measurement range, without touching a button!

Both the EMR-20C and -21C feature a bi-directional fiber-optic link. With the optional software and cables, real-time readings can be displayed on a personal computer.

Specifications

	EMR-20C	EMR-21C
Frequency Range	100 kHz to 3 GHz	
Field Measured	E-Field Only, Isotropic Detection, Diode Sensor	
Measurement Range	0.6 to 800 V/m (CW signals > 300 kHz) 0.6 to 20 V/m (True RMS)	0.2 to 320 V/m (CW signals > 300 kHz) 0.2 to 10 V/m (True RMS)
Measurement Resolution	0.01 V/m	
Overload Levels	700 mW/cm ² (CW) 70 W/cm ² (Peak)	175 mW/cm ² (CW) 17.5 W/cm ² (Peak)
Absolute Error	±1 dB (27.5 V/m and 27.12 MHz)	
Linearity Error ^a	0.6 to 1.25 V/m = ±3dB 1.25 to 2.5 V/m = ±1 dB 2.5 to 400 V/m = ±0.5 dB 400 to 800 V/m = ±0.7 dB	0.6 to 1.2 V/m = ±1dB 1.2 to 200 V/m = ±0.5 dB 200 to 320 V/m = ±0.7 dB
Frequency Response Error ^b	100 kHz to 100 MHz = ±0.45 dB 100 MHz to 3 GHz = ±1.4 dB	
Isotropic Deviation (Typical)	Field probe only = ±0.5 dB for Freq. > 1 MHz Complete system = ±1.0 dB for Freq. > 1 MHz	
Temperature Error	+ 0.2 / - 1.0 dB (0 to +50°C)	
H-field Immunity	100 kHz to 5 MHz = >35 dB – 20 dB x log f (f in MHz) Above 5 MHz = > 20 dB (Typical)	>20 dB Typical
Settling Time	1 second (0 to 90% of measured value) Typical	
Display Refresh Rate	400 msec. Typical	
Units Displayed	V/m, A/m, mW/cm ² , W/m ² and "% of limit value"	
Levels Displayed	Current reading, maximum reading or average reading	
Audible Alarm	Variable setting, piezoelectric	
Interfaces	Fiber Optic, serial interface for results transfer, remote operation and calibration	
Power Supply	Rechargeable AA batteries (supplied)	
Operating Temperature	0 to +50°C	
Size (H x W x D, approx.)	18.3" x 3.78" x 2.52" (465 x 96 x 64 mm)	
Weight (approx.)	450 grams	

Notes:

^a Referenced to 27.5 V/m and 27.12 MHz

^b Error after using supplied correction factors, includes calibration accuracy

-- END OF REPORT --