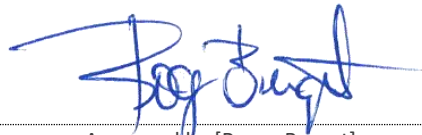


Test Report

Electromagnetic Compatibility

Product	Electronic touchless liquid dispenser		
Name and address of the applicant	Essity Hygiene and Health AB Mölnåls Bro 9, Mölnåls, SE 405 03 Gothenburg, Sweden		
Name and address of the manufacturer	Essity Hygiene and Health AB Mölnåls Bro 9, Mölnåls, SE 405 03 Gothenburg, Sweden		
Model	652929		
Rating	6.0V DC (Internal batteries)		
Trademark	/		
Additional information	/		
Tested according to	FCC CFR 47 Subpart 15B ISED Canada ICES-003, Issue 7		
Project number	PRJ0070407		
Tested in period	2025-02-10		
Issue date	2025-04-27		
Name and address of the testing laboratory	Nemko Scandinavia AS ☐ Location 1: Philip Pedersens vei 11, 1366 Lysaker, Norway ☒ Location 2: Instituttveien 6, 2007 Kjeller, Norway  		
An accredited technical test executed under the Norwegian accreditation scheme			
 Prepared by [Jørn Gustavsen]		 Approved by [Roger Berget]	

Nemko Group

Nemko Scandinavia AS, Philip Pedersens vei 11, P.O. Box 91, 1366 Lysaker, Norway
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REPORT REVISIONS

Report Edition	Date	Project	Description
A	2025-04-07	PRJ0070407	First issued



THIS REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATION(S) TESTED.

It is the manufacturer's responsibility to assure the additional production units of this product are manufactured with identical electrical and mechanical components. The manufacturer is responsible to the authorities for any modifications made to the product, which result in non-compliance to the relevant regulations.

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Opinions expressed within this report regarding general assessments and qualifications for PASS or FAIL to the standards limits and requirements, are not part of the current accreditation. Neither is opinions expressed regarding model variants covered by the testing performed in this report.

Deviations from, additions to, or exclusions from the test specifications are described in "Test Report Summary".

This report was originally distributed electronically with digital signatures. For more information contact Nemko.

DESCRIPTION OF TESTED ITEM(S)

Product description	The tested item is an electronic touchless liquid dispenser with BLE and NFC connectivity
Model/type	652929
Serial number	/
Operating voltage	6V (internal batteies, 4x C-size cells)
Maximum power/current	/
Insulation class	III
Highest clock frequency	64MHz
Hardware version	AP07
Software version	/
Mounting position	☐ Tabletop equipment ☒ Wall/ceiling mounted equipment ☐ Floor standing equipment ☐ Handheld equipment ☐ Rack mounted equipment ☐ Console equipment ☐ Other:

RF CHARACTERISTICS OF THE TRANSMITTER

Type	BLE	NFC
Frequency range	2402-2480MHz	13.56MHz
Number of channels	40	/
Operating modes	1Mb	/
Types of modulation	GFSK	FSK
User frequency adjustment	/	None
Antenna type	/	Inernal
Antenna connection	None	/
Number of antennas	1	/
Antenna diversity/MIMO	No	/

CRITICAL MODULES/PARTS

Description	Manufacturer	Type
BLE MCU SoC	Nordic Semiconductor	nRF52840
NFC transceiver	STMicroelectronics	st25r95

TEST PERIPHERALS

The following is a listing of support equipment utilized during the measurements: No peripherals or cabels attached.

INPUT/OUTPUT PORTS

The specimen has no connecting ports.

OPERATING MODES

OP no.	Description	Applied for testing
OP1	Motor continues Operating	☒

POWER SUPPLY CONDITIONS

The following nominal power supply conditions have been tested:

PC no.	Voltage	Frequency	Type	Ground terminal
PC1	6V (batteries)	☐ AC 50Hz / ☐ AC 60Hz / ☒ DC	☐ 3AC / ☐ 3ACN / ☐ PoE	☐ PE / ☐ GND / ☒ None

- ☐ The power supply voltage has been selected after a maximum disturbance investigation over the product's rated voltage range.
- ☐ Additional chassis grounding was applied.

PHOTOS AND DRAWINGS

Photographs identifying the item(s) tested is located in a separate addendum to this report file.

OTHER INFORMATION

Modifications	None
Additional information	None

TEST ENVIRONMENT

Test laboratory	☒ KJELLER (Instituttveien 6, N-2007 Kjeller, Norway) ☐ LYSAKER (Philip Pedersens vei 11, N-1366 Lysaker, Norway)						
Laboratory accreditation	 Norsk Akkreditering – TEST 033 P06 – Electromagnetic Compatibility						
Environmental conditions	The climatic conditions during the tests are within limits specified by the manufacturer for the operation of the product and the test equipment. The climatic conditions during tests are within the following limits: <table> <tr> <td>Ambient temperature:</td> <td>15 – 35 °C</td> </tr> <tr> <td>Relative humidity:</td> <td>25 – 75 %RH</td> </tr> <tr> <td>Atmospheric pressure:</td> <td>86 – 106 kPa</td> </tr> </table> If explicitly required by the test standard, or the requirements are tighter than the above; the climatic conditions are recorded and documented separately in this test report.	Ambient temperature:	15 – 35 °C	Relative humidity:	25 – 75 %RH	Atmospheric pressure:	86 – 106 kPa
Ambient temperature:	15 – 35 °C						
Relative humidity:	25 – 75 %RH						
Atmospheric pressure:	86 – 106 kPa						
Calibration	All instruments used in the tests of this test report are calibrated and traceable to national or international standards. Between calibrations test set-ups are controlled and verified on a regular basis by intermediate checks to ensure, with 95% confidence that the instruments remain within their calibrated levels. The instrumentation accuracy is within limits agreed by the IECEE/CTL and defined by Nemko.						
Measurement uncertainties	Uncertainty in EMC emission measurements stated in this report are calculated from the standard measurement uncertainties multiplied by the coverage factor k=2. It was determined in accordance with ANSI C63.4. The true value is in the corresponding interval with a probability of 95%. If some emission measurements have a margin to the required limit which is less than the instrumentation measurement uncertainty provided by the laboratory, occurrences are marked with an asterisk (*) in the “Margin” columns. <i>Further information about measurement uncertainties is provided on request.</i>						

TEST REPORT SUMMARY

APPLIED STANDARDS

Standards	Titles
FCC CFR 47 Subpart 15B	<i>Digital devices - Unintentional radiators, Class B Digital Device</i>
ISED Canada ICES-003, Issue 7	<i>Spectrum Management and Telecommunications Policy. Interference-Causing Equipment Standard. Information Technology Equipment (Including Digital Apparatus - Limits and Methods of Measurement (Issue 7, June 2020)</i>

* : An asterisk (*) placed after the standard name indicates standards that are not within the laboratory scope of accreditation.

TEST SUMMARY

Requirements – Tests	Reference standards	Verdict
Conducted Emissions (Method: FCC Part 12.107 per ANSI C63.4-2014)	FCC CFR 47 Subpart 15B ISED Canada ICES-003, Issue 7	N/A
Radiated Emissions (Below 1GHz) (Method: FCC Part 12.109 per ANSI C63.4-2014)	FCC CFR 47 Subpart 15B ISED Canada ICES-003, Issue 7	PASS
Radiated Emissions (Above 1GHz) (Method: FCC Part 12.109 per ANSI C63.4-2014)	FCC CFR 47 Subpart 15B ISED Canada ICES-003, Issue 7	PASS

PASS : Tested and complied with the requirements
 FAIL : Tested and failed the requirements
 N/A : Test not relevant to this specimen (evaluated by the test laboratory)
 – : Test not performed (instructed by the applicant)
 * : An asterisk (*) placed after the verdict in the Result column indicates a test item that are not within Nemko's scope of accreditation
 # : A grid (#) placed after the verdict in the Result column indicates a test item that are only partly covered by Nemko's scope of accreditation. Further information or details may be provided within the test chapter

NOTES

None

Test Results

RADIATED EMISSIONS (BELOW 1GHZ)

TEST DESCRIPTION

Method

These measurements have been performed according to ANSI C63.4-2014.

Set-up

The measurements were performed in a semi-anechoic chamber (SAC). Nominal supply voltage was provided. The specimen was energized and in normal operating mode during the measurement.

- ☐ The specimen and its cables were elevated 10 cm above the site ground plane and placed in the centre of the turntable.
☒ The specimen and its cables were placed on a table 80 cm above the site ground plane and placed in the centre of the turntable.

Antenna type = Hybrid bilog antenna

Antenna elevation = 100-400 cm above the ground reference plane with bore-sight movement.

Specimen rotation = 0-360°.

- ☐ Band-stop filter(s) was used to suppress the wanted RF transmission band to protect the measurement equipment.

Frequency range:

☒ 30-1000MHz

Measurement distance:

☒ 3m

Conditions

The measuring bandwidth is 120 kHz in the frequency range 30 MHz – 960 MHz. Frequency sweeps with RBW = 120 kHz and VBW = 1 MHz was applied with a sweep time of 20 ms (step size resolution < 60 kHz).

Measurement uncertainty: ± 5.2 dB (3m distance in SAC10); ± 5.1 dB (3m distance in SAC3)

Instruments used during measurement

Instrument list: [Antenna, Hybrid: Sunol / JB3 \(N-4525\) \(04/2025\)](#)
 [EMI Receiver: R&S / ESU40 \(LR-1639\) \(01/2026\)](#)
 [Preamplifier: Sonoma / 310N \(LR-1686\) \(08/2025\)](#)

Conformity

Verdict:

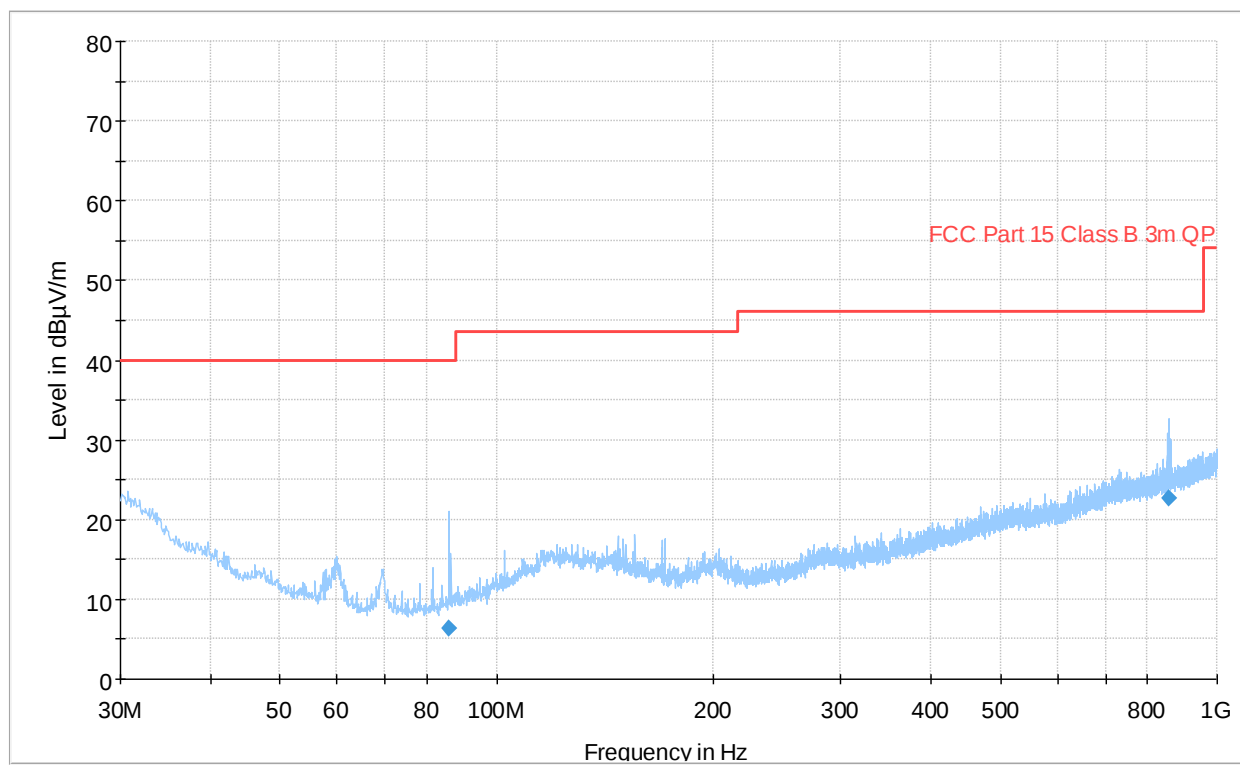
Pass

Test engineer:

Jørn Gustavsen

EMISSION SPECTRUM

Full Spectrum



MEASUREMENTS DATA

Frequency (MHz)	QuasiPeak (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Meas. Time (ms)	Bandwidth (kHz)	Height (cm)	Pol	Azimuth (deg)	Corr. (dB/m)
85.618276	6.34	40.00	33.66	15000.0	120.000	142.0	V	147.0	-16.8
856.393598	22.69	46.00	23.31	15000.0	120.000	110.0	V	57.0	0.2

RADIATED EMISSIONS (ABOVE 1GHZ)

TEST DESCRIPTION

Method

These measurements have been performed according to ANSI C63.4-2014.

Set-up

Nominal supply voltage was provided. The specimen was energized and in normal operating mode during the measurement.

- ☐ The specimen and its cables were elevated 10 cm above the floor and placed in the centre of the turntable.
☒ The specimen and its cables were placed on a table 80 cm above the floor and placed in the centre of the turntable.

Facility:

- ☐ 3m semi-anechoic chamber (SAC3) with extra floor absorbers* (calibrated volume: D=2.0m / H=2.0m).
☒ 10m semi-anechoic chamber (SAC10) with extra floor absorbers* (calibrated volume: D=1.5m / H=2.0m).

* The reference ground plane was covered with ferrite absorbers in the reflecting area between the specimen and the measuring antenna.

Measurement distance = ☒ 3m.

Specimen rotation = 0-360°.

Measurements were performed with a double-ridged guide horn antenna.

- ☐ Band-stop filter(s) was used to suppress the wanted RF transmission band to protect the measurement equipment.

Frequency range:

- ☐ 1-2GHz
☐ 1-5GHz
☒ 1-6GHz
☐ 1-12GHz
☐ 1-18GHz

Highest internal frequency of specimen:

- ☒ Below 108MHz
☐ Between 108MHz and 500MHz
☐ Between 500MHz and 1000MHz
☐ Above 1000MHz

The measuring bandwidth is 1 MHz in the above frequency range. Frequency sweeps with RBW = 1 MHz and VBW = 1 MHz was applied with a sweep time of 100 ms (proper segmentation of the frequency range was applied to obtain step size resolution < 500 kHz).

Measurement uncertainty: ± 5.1 dB (1-6GHz); ± 5.2 dB (6-18GHz)

Instruments used during measurement

Instrument list: Antenna, Horn: ETS / 3117 (LR-1717) (01/2030)
 EMI Receiver: R&S / ESU40 (LR-1639) (01/2026)
 Preamplifier: ETS / 3117-PA (LR-1757) (08/2026)

Conformity

Verdict:

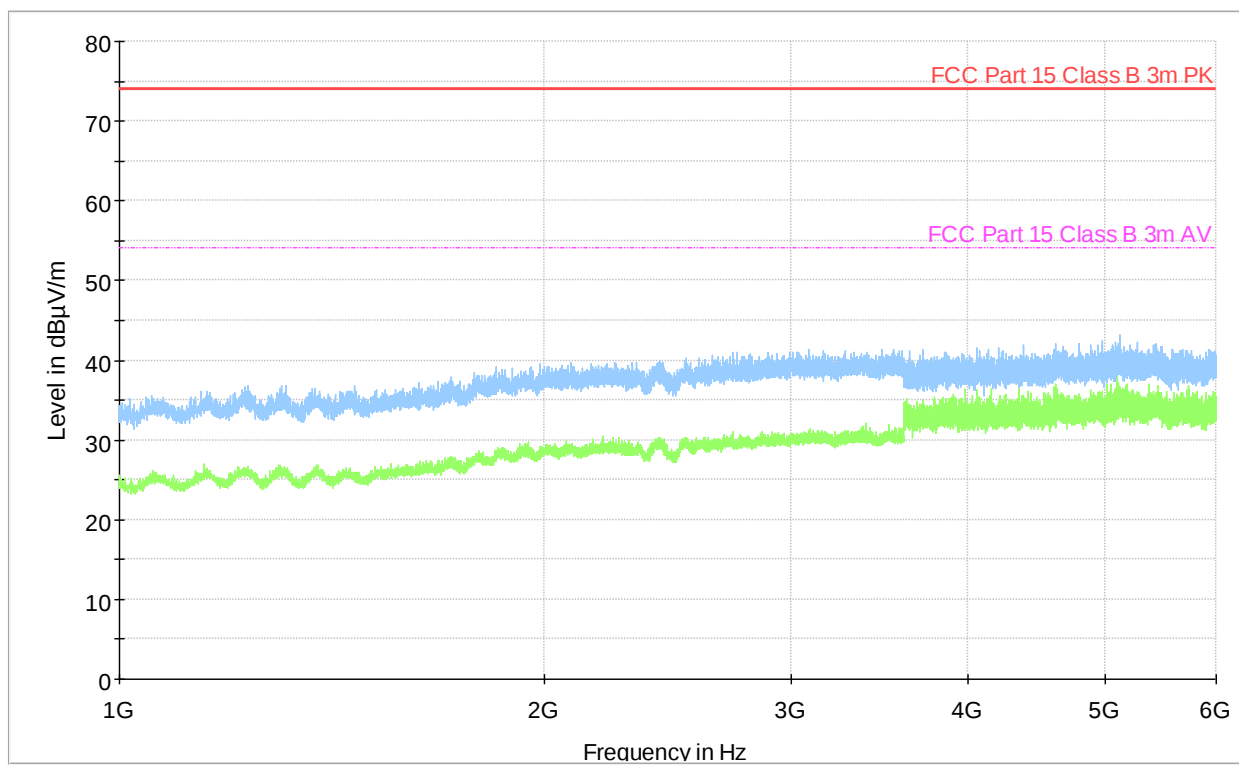
Pass

Test engineer:

Jørn Gustavsen

EMISSION SPECTRUM (HORIZONTAL POLARIZATION)

Full Spectrum

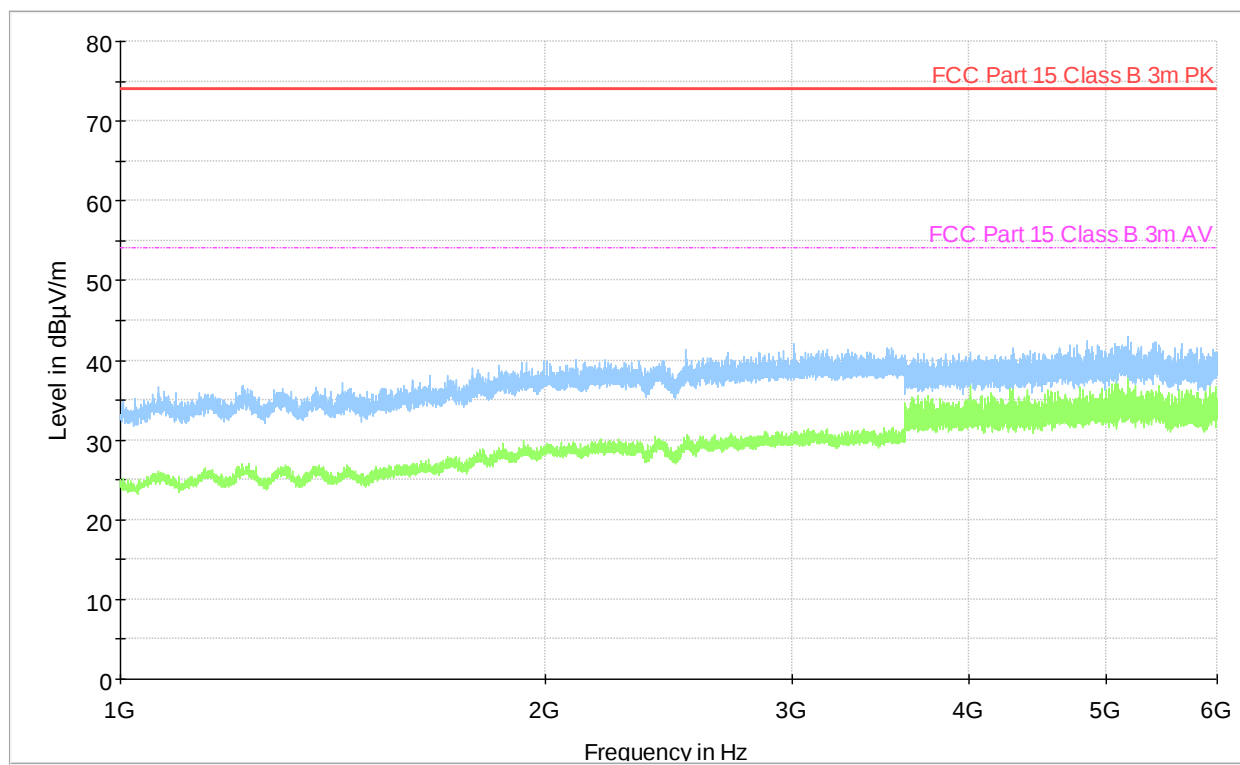


MEASUREMENTS DATA

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)
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EMISSION SPECTRUM (VERTICAL POLARIZATION)

Full Spectrum



MEASUREMENTS DATA

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)
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Annexes

PHOTOS

Photographs of the test item(s) and the test setups are placed in an addendum to this report. The addendum is a separate file only linked to this report by its common report number.