

# Test report

**337762-2TRFWL**

Date of issue: April 9, 2018

Applicant:

**Phonak Communications AG**

Product:

**434MHz Receiver in Wireless Microphone (ALD)**

Model:

**Roger Table Mic II**

FCC ID:

**KWC-TX29V1**

IC Reg. Number:

**2262A-TX29V1**


Specifications:

- ◆ **FCC 47 CFR Part 15, Subpart B**  
Frequency Hopping Transmitters / Digital Transmission Systems
- ◆ **RSS-310, Issue 4, July 2015**  
Licence-Exempt Radio Apparatus: Category II Equipment

Test location

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Company name	Nemko Canada Inc.
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City	Ottawa
Province	Ontario
Postal code	K1V 1H2
Country	Canada
Telephone	+1 613 737 9680
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Toll free	+1 800 563 6336
Website	www.nemko.com
Site number	FCC: CA2040; IC: 2040A-4 (3 m semi anechoic chamber)

Tested by	Frode Sveinsen, Senior Wireless Engineer
Reviewed by	Andrey Adelberg, Senior Wireless/EMC Specialist
Date	April 9, 2018
Signature of reviewer	

Limits of responsibility

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Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contain in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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## 1 INFORMATION

### 1.1 Applicant information

<b>Name :</b>	Phonak Communications AG
<b>Address:</b>	Laenggasse 17 CH-3280 Murten Switzerland

### 1.2 Tested Item

<b>Name:</b>	Phonak
<b>Additional information:</b>	434MHz Receiver for Remote Control
<b>Model name:</b>	Roger Table Mic II
<b>FCC ID:</b>	KWC-TX29V1
<b>Industry Canada Registration Number:</b>	2262A-TX29V1
<b>Serial number:</b>	/
<b>Trademark:</b>	PHONAK
<b>Hardware identity and/or version:</b>	V2
<b>Software identity and/or version:</b>	V1801
<b>Tested to ISED Radio Standard (RSS):</b>	RSS-310 Issue 4; RSS-Gen Issue 4
<b>Frequency Range:</b>	434.050 MHz
<b>Operating Modes :</b>	RX
<b>Conducted Output Power:</b>	RX Only
<b>Antenna Connector:</b>	None
<b>Number of Antennas:</b>	1
<b>Antenna Diversity Supported:</b>	No
<b>Power Supply:</b>	Internal Battery and External Power Adaptor for Charging and Operation Secondary Battery (3.7V Li-Ion) and USB Adaptor (5.0V <sub>DC</sub> )
<b>Interface:</b>	USB for Charging and SW updates

### 1.3 Testing dates

<b>Tested in period:</b>	January 22, 2018 to January 26, 2018 and February 12, 2018 to February 16, 2018
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### 1.4 Description of Tested Device

The tested equipment is a 434 MHz Receiver for the wireless remote control of a 2.4 GHz Table Mic (ALD). This test report covers only the 434 MHz Receiver, the 2.4 GHz Transceiver is covered by Nemko test report no. 337762-1TRFWL.

## 1.5 Test Conditions

Temperature:	15–30 °C
Relative humidity	20–75 %
Air pressure	860–1060 mbar
Normal test voltage	3.7 V <sub>DC</sub> (Nominal Voltage)

All tests were performed with the EUT powered from a fully charged battery. For radiated emissions tests the EUT was also powered from a USB charger supplied by the manufacturer. Power Line Conducted emissions Tests were performed with the supplied power adaptor.

Values above are the limit registered during the test period.

## 1.6 Test Engineer(s)

Frode Sveinsen

## 1.7 Other Comments

Radiated measurements were performed with a fully charged battery. Measurements below 1 GHz was performed with the EUT charging from a USB power adaptor.

## 2 TEST REPORT SUMMARY

### 2.1 General

All measurements are traceable to national standards.

The tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with FCC Part 15 Subpart B and Industry Canada RSS-310 Issue 4 / RSS-Gen Issue 4 / RSP-100 Issue 11.

All tests were conducted in accordance with ANSI C63.4-2014.

A description of the test facility is on file with the FCC and Industry Canada.

- |   |   |
|---|---|
| <input checked="" type="checkbox"/> New Submission  | <input checked="" type="checkbox"/> Production Unit |
| <input type="checkbox"/> Class II Permissive Change | <input type="checkbox"/> Pre-production Unit        |
| <b>CYY</b> Equipment Code                           | <input type="checkbox"/> Family Listing             |



#### **THIS TEST REPORT APPLIES ONLY TO THE ITEM(S) AND CONFIGURATIONS TESTED.**

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

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## 2.2 Test Summary

Name of test	FCC Part 15 Subpart B reference	Industry Canada RSS-310, Issue 4 RSS-GEN, Issue 4 Paragraph #	Result
Power Line Conducted Emission	15.107(a)	3.1 8.8 (RSS-GEN)	Complies
Spurious Emissions (Radiated)	15.109(a)	3.1 7.1 (RSS-GEN)	Complies



### 3 TEST RESULTS

#### 3.1 Power Line Conducted Emissions

FCC Part 15.207(a)

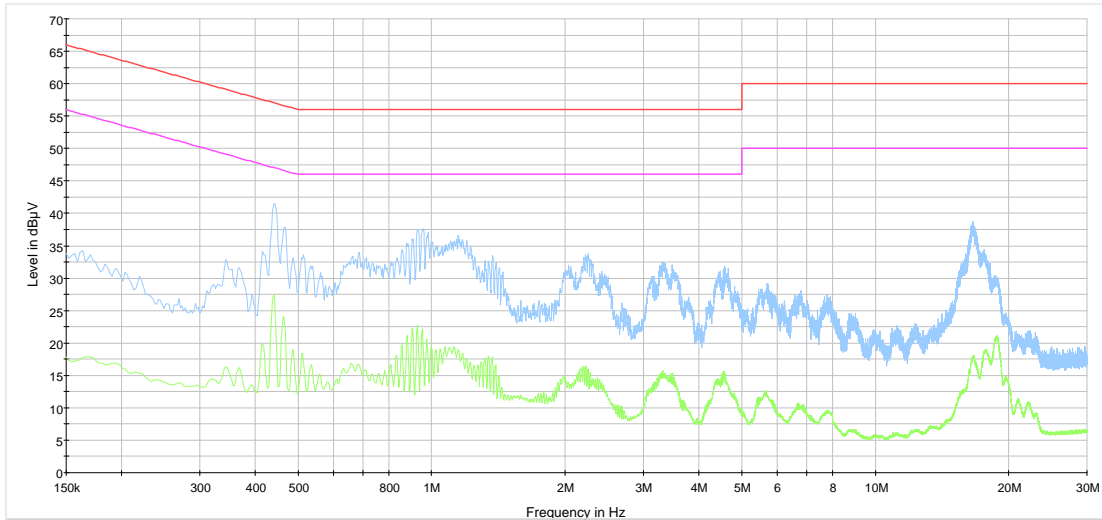
RSS-GEN Clause 8.8

Measurement procedure: ANSI C63.4-2014 using 50  $\mu$ H/50 ohms LISN.

Test Results: Complies

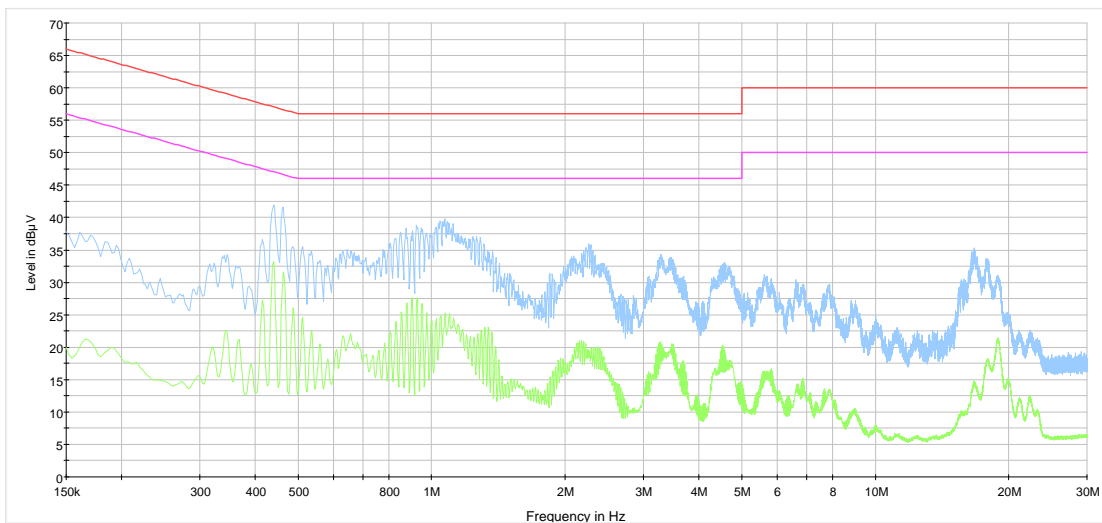
Measurement Data: See attached plots





Phonak Ingvar v2 \_ 120V 60Hz Neutral  
 — CISPR 32 Mains Q-Peak Class B Limit  
 — CISPR 32 Mains Average Class B Limit  
 — Preview Result 1-PK+  
 — Preview Result 2-AVG

**USB Adaptor (120V 60 Hz), Phase N**



Phonak Ingvar v2 \_ 120V 60Hz Phase  
 — CISPR 32 Mains Q-Peak Class B Limit  
 — CISPR 32 Mains Average Class B Limit  
 — Preview Result 1-PK+  
 — Preview Result 2-AVG

**USB Adaptor (120V 60 Hz), Phase L1**

### 3.2 Radiated Emissions, below 1GHz

FCC 15.109

ISED RSS-GEN, Issue 4, Clause 8.9

Test Results: Complies

#### Radiated emission 30–1000 MHz

Measuring distance 3 m.

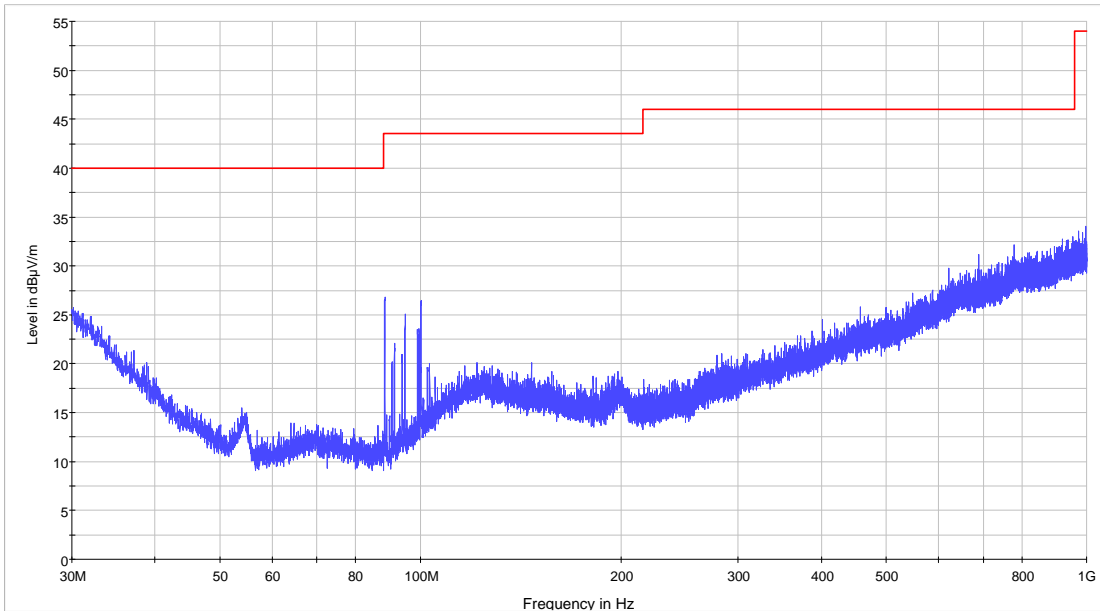
#### Measured values:

No spurious emissions were detected.

See attached plots.

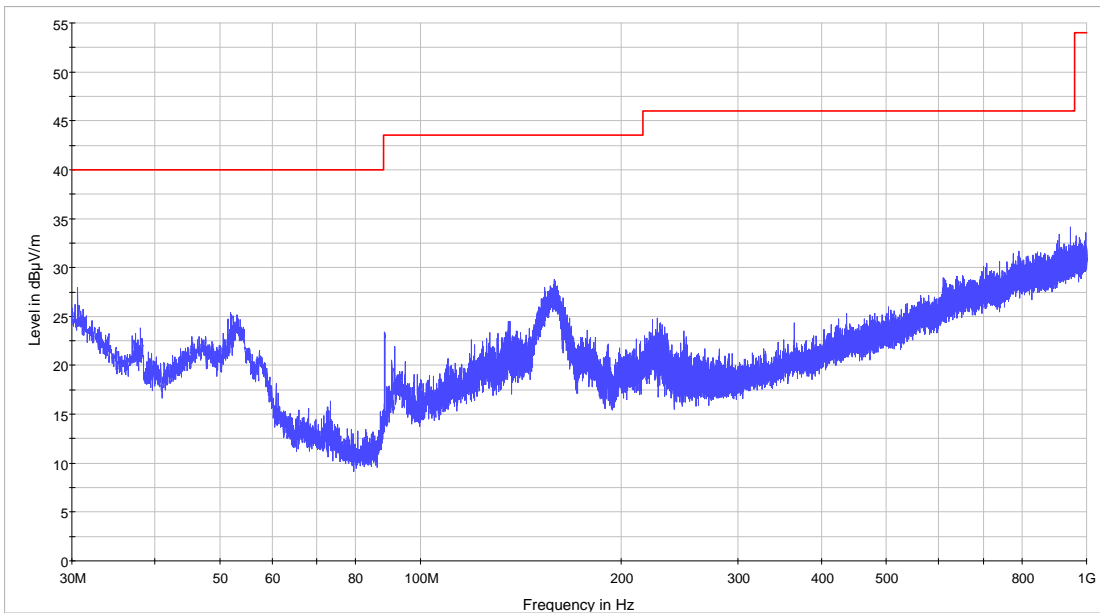
#### Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 4, clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency (MHz)	Quasi Peak ( $\mu\text{V}/\text{m}$ )	Quasi Peak ( $\text{dB}\mu\text{V}/\text{m}$ )
30–88	100	40.0
88–216	150	43.5
216–960	200	46.0
Above 960	500	54.0



Phonak Ingvar v2  
 — FCC Part 15 and ICES - Class B 3m Q-Peak Limit  
 — Preview Result 1-PK+

### Radiated Emissions, 30–1000 MHz, Powered from Battery



Phonak Ingvar v2  
 — FCC Part 15 and ICES - Class B 3m Q-Peak Limit  
 — Preview Result 1-PK+

### Radiated Emissions, 30–1000 MHz, Connected to USB Adaptor



### 3.3 Radiated Emissions, above 1GHz

FCC 15.205, 15.209

ISED RSS-GEN, Issue 4, Clause 8.9

Test Results: Complies

Measurement Data:

Radiated Emissions, 1000–2300 MHz

Measuring distance 3 m.

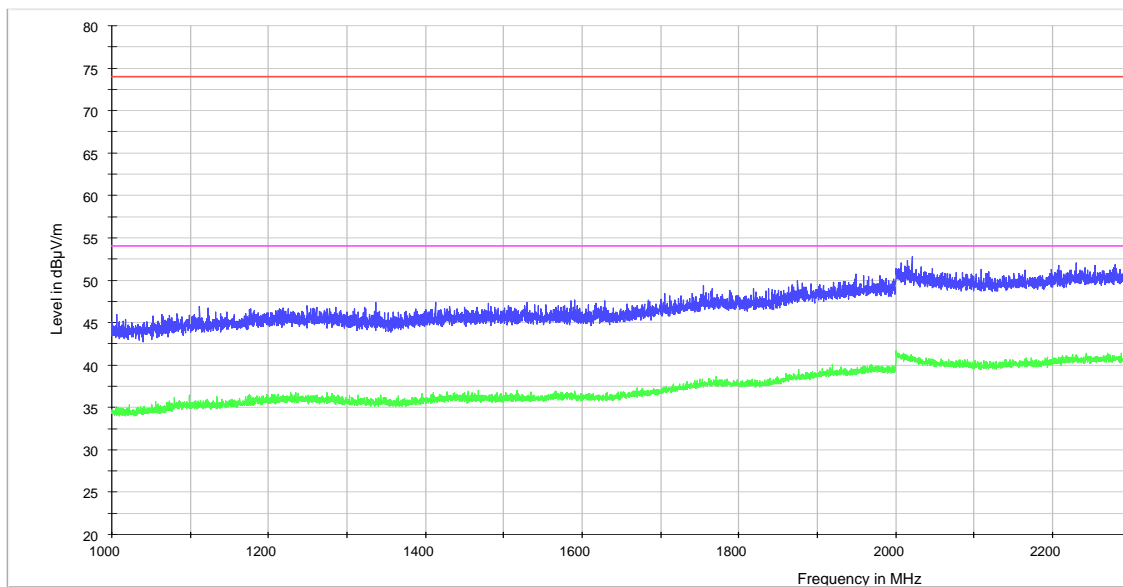
Measured values:

No spurious emissions were detected.

See attached plots.

#### Requirements/Limit

FCC	Part 15.209 @ frequencies defined in §15.205	
ISED	RSS-GEN Issue 4, clause 8.9 @ frequencies defined in clause 8.10	
	Radiated emission limit @3 meters	
Frequency (MHz)	AV (dBµV/m)	Peak (dBµV/m)
Above 1 GHz	54.0	74.0



Phonak Ingvar v2  
 — FCC Part 15 and ICES- Class B 3m Peak Limit  
 — FCC Part 15 and ICES - Class B 3m Average Limit  
 — Preview Result 1-PK+  
 — Preview Result 2-AVG

### Radiated Emissions, 1–3 GHz

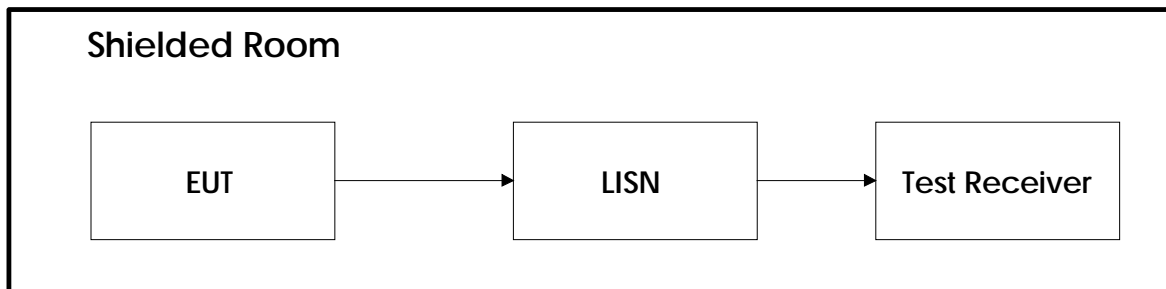
## 4 Measurement Uncertainty

Measurement Uncertainty Values		
Test Item		Uncertainty
Spurious Emissions, Radiated	< 1 GHz	±2.5 dB
	> 1 GHz	±2.2 dB
Power Line Conducted Emissions		+2.9 / -4.1 dB
Temperature Uncertainty		±1 °C

All uncertainty values are expanded standard uncertainty to give a confidence level of 95%, based on coverage factor k=2

## 5 Test Setups

### 5.1 Power Line Conducted Emissions Test



Test Set-Up 5



## 6 Test Equipment Used

To facilitate inclusion on each page of the test equipment used for related tests, each item of test equipment and ancillaries are identified (numbered) by the Testhouse.

No.	Model number	Description	Manufacturer	Ref. no.	Cal. date	Cal. Due
1	ESU 26	Receiver/spectrum analyzer	Rohde & Schwarz	FA002043	2018.01	2019.01
2	JB3	Hybrid Antenna	Sunol	FA002108		
3	Model 3117	Horn Antenna with Preamplifier	EMCO	FA002840		
4	ENV216	LISN	Rohde & Schwarz	FA002023	2017.05	2018.05

Note: COU – calibrate on use; N/A – Not Applicable

The software listed below has been used for one or more tests.

No.	Manufacturer	Name	Version	Comment
1	Rohde & Schwarz	EMC 32	9.26.01	Software for EMC Measurements of Power-Line Conducted Tests





### Revision history

Version	Date	Comment	Sign
1.0	2018.04.05	First edition	FS