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Test report No:
NIE: 66679RAN.002

Assessment report
RF EXPOSURE REPORT ACCORDING TO
FCC 47 CFR Part 2.1093

(*) Identification of item under evaluation	Hearing aid
(*) Trademark	Phonak
(*) Model and /or type reference	Phonak Audéo P90-RL
(*) Derived model not tested	Phonak Audéo P70-RL, Phonak Audéo P50-RL, Phonak Audéo P30-RL, Phonak Audéo P-RL Trial
(*) Other identification of the product	HW version: 050-0773 SW version: 067-1460 FCC ID: KWC- PRL IC: 2262A- PRL
(*) Features	BT Classic, BLE, DM and Flora, Wireless charge
(*) Applicant	SONOVA USA INC. 4520 Weaver Parkway, 60555 Warrenville, IL, USA.
Test method requested, standard	FCC 47 CFR Part 2.1093. Radiofrequency radiation exposure evaluation: portable devices
Summary	IN COMPLIANCE
Approved by (name / position & signature)	Rafael López EMC Consumer & RF Lab. Manager 2021.08.11 13:56:18 +02'00'
Date of issue	2021-08-06
Report template No	FAN24_02 (*) "Data provided by the client"

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Competences and guarantees

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Data provided by the client

The following data has been provided by the client:

1. Information relating to the description of the sample ("Identification of the item tested", "Trademark", "Model and/or type reference tested", “Derived model not tested”, “Other identification of the product”, “Features”, “Manufacturer” and “General description of the device”).
2. Maximum output power, maximum antenna gain and use distance.
3. Derived model not tested. These models have been declared by the supplier of the sample as being the same as the model under test.

To whom it may concern

Stäfa (Switzerland), 30th of April 2021

Product Equality Declaration

We, Sonova AG, hereby declare under our own responsibility that the products listed below as "Hardware Equivalent Products" are in all relevant parts and hardware construction identical to the corresponding product identified as "Products with basis Hardware". The following standards and/or technical regulations and corresponding test reports fully apply accordingly:

Standards
Hearing Aid standards: ACOUSTIC: IEC 60118-0-1-2-6 and NSH 7.0 (including Annex A); EMC: IEC 6011 8-13; EMC immunity: ANSI C63.19 Degrees of protection provided by enclosures (IP code): IEC 60529:1989-11+A1:1999; EN 60529:1991-10 (incl. Corrigendum: 1993-05)+A1:2000-02 Europe: HEALTH & SAFETY: IEC/EN 60601-1, IEC/EN 60601-2-66, IEC/EN 62368-1; IEC/EN 62133; IEC/EN 62479; EMC: IEC/EN 60601-1-2; EN 301489-1,-3,-17; SPECTRUM: EN 300328; EN ETSI 303417; REACH; RoHS-II USA: 47 CFR Part 15(B), Part 15(C): 15.249, Part 2: 2.1091, 2.1093; Canada: RSS-Gen, ICES-003, RSS-210, RSS-102; RSS-247 ; RSS-216 Japan: ARIB 166, Ordinance regulating Radio Equipment (2005-08) Ar12 item 19

The only difference between the listed equivalent and corresponding basis models is the model name and a different set of audiological features per performance level. The hardware is identical.

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Products with basis Hardware (tested representative model)	Hardware Equivalent Products
Phonak Audéo P90-RL (with S/M/P/UP/MAV) HW version: 050-0773-xx SW version: Target 7.2 FW version: 067-1460	Phonak Audéo P70-RL (with S/M/P/UP/MAV) HW version: 050-0800-xx SW version: Target 7.2 FW version: 067-1461
	Phonak Audéo P50-RL (with S/M/P/UP/MAV) HW version: 050-0799-xx SW version: Target 7.2 FW version: 067-1468
	Phonak Audéo P30-RL (with S/M/P/UP/MAV) HW version: 050-0798-xx SW version: Target 7.2 FW version: 067-1469
	Phonak Audéo P-RL Trial (with S/M/P/UP/MAV) HW version: 050-0852-P6 SW version: Target 7.2 FW version: 067-1460

where xx – means color identification

Staefa, 30th of April 2021

Laurent Vicari

Director
Quality Management & Regulatory Affairs

Staefa, 30th of April 2021

Glenn Borrett

Senior Manager
Regulatory Affairs

DEKRA Testing and Certification, S.A.U. declines any responsibility with respect to the information provided by the client and that may affect the validity of results.

Identification of the client

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Document history

Report number	Date	Description
66679RAN.002	2021-08-06	First release

Appendix A: FCC RF Exposure assessment result

General description of the device under evaluation

The device under evaluation consists of a hearing aid with wireless connectivity.

According to the manufacturer, during its normal use, the separation distance between the radiating structures of the device and nearby users will be 0cm.

The equipment specifications declared by the manufacturer on document "Operational and Technical Description AudeoP" for each supported technology and band are:

Technology / Mode	Band	Frequency (MHz)	Maximum Conducted Output Power (dBm)	Antenna peak gain (dBi)	Maximum E.I.R.P. (dBm)	Maximum E.I.R.P. (mW)
BT Classic	2.4 GHz	2400 - 2483.5	2.00	-8.50	-6.50	0.22
BTLE	2.4 GHz	2400 - 2483.5	1.34	-8.50	-7.16	0.19
Proprietary DM	2.4 GHz	2400 - 2483.5	0.00	-8.50	-8.50	0.14
Proprietary Flora	2.4 GHz	2400 - 2483.5	0.00	-8.50	-8.50	0.14

Table 1: Equipment specifications

Assessment summary

The assessment summary according to the radiofrequency radiation exposure limits defined in FCC 47 CFR § 2.1093, § 1.1307(b)(3)(i)(c) and KDB 447498 D01 General RF Exposure Guidance DR04-44307 is the following:

Technology / Mode	Band	Frequency (MHz)	Verdict
BT Classic	2.4 GHz	2400 - 2483.5	**Pass**
BTLE	2.4 GHz	2400 - 2483.5	**Pass**
Proprietary DM	2.4 GHz	2400 - 2483.5	**Pass**
Proprietary Flora	2.4 GHz	2400 - 2483.5	**Pass**

Table 2: Assessment summary

Evaluation Results

The evaluation according to the minimum intended use distance of 0 mm (5mm applied for the evaluation) according to KDB 447498 D01 General RF Exposure Guidance DR04-44307, section 2.1.2, will be as follow:

Technology / Mode	Band	Frequency (MHz)	Distance (cm)	Maximum E.I.R.P. (mW)	RF Exposure Test Exemption limit (mW)	Verdict
BT Classic	2.4 GHz	2400 - 2483.5	0.50	0.22	0.48	**Pass**
BTLE	2.4 GHz	2400 - 2483.5	0.50	0.19	0.48	**Pass**
Proprietary DM	2.4 GHz	2400 - 2483.5	0.50	0.14	0.48	**Pass**
Proprietary Flora	2.4 GHz	2400 - 2483.5	0.50	0.14	0.48	**Pass**

Table 3: FCC Evaluation Result

The computed value(s) are below the limit(s), so according to KDB 447498 D01 General RF Exposure Guidance DR04-44307, these modes qualify for FCC 47 CFR § 1.1307(b)(3)(i)(c) limits Exemption

Appendix B: FCC RF Exposure information

FCC SAR test exclusion considerations for portable devices

For transmission frequencies below 6GHz, as stated by the FCC (47 CFR §2.1093), human exposure to RF emissions from portable devices, which are defined as transmitting devices to be used so that the radiating structure(s) of the device is/are within 20 centimeters of the body of the user, must be evaluated with respect to the FCC-adopted limits for SAR.

According to FCC OET KDB 447498 D01 General RF Exposure Guidance:

Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition is satisfied.

- For distances ≤ 50 mm

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:

[(*max. power of channel, including tune-up tolerance, mW*)/(*min. test separation distance, mm*)] · [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR

Where

- f(GHz) is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table:

MHz	5	10	15	20	25	30	35	40	45	50	mm
150	39	77	116	155	194	232	271	310	349	387	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	164	192	219	246	274	
450	22	45	67	89	112	134	157	179	201	224	
835	16	33	49	66	82	98	115	131	148	164	
900	16	32	47	63	79	95	111	126	142	158	
1500	12	24	37	49	61	73	86	98	110	122	
1900	11	22	33	44	54	65	76	87	98	109	
2450	10	19	29	38	48	57	67	77	86	96	
3600	8	16	24	32	40	47	55	63	71	79	
5200	7	13	20	26	33	39	46	53	59	66	
5400	6	13	19	26	32	39	45	52	58	65	
5800	6	12	19	25	31	37	44	50	56	62	

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and ≤ 50 mm

- **For distances > 50 mm**

For 100 MHz to 6 GHz frequencies and for test separation distances > 50 mm, the SAR test exclusion threshold is determined according to the following:

1) [Power allowed at numeric threshold for 50 mm in table 1) + (test separation distance - 50 mm)·(f(MHz)/150)] mW, at 100 MHz to 1500 MHz

2) [Power allowed at numeric threshold for 50 mm in table 1) + (test separation distance - 50 mm)·10] mW, at > 1500 MHz and ≤ 6 GHz

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table

MHz	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	SAR Test Exclusion Threshold (mW)
150	387	397	407	417	427	437	447	457	467	477	487	497	507	517	527	
300	274	294	314	334	354	374	394	414	434	454	474	494	514	534	554	
450	224	254	284	314	344	374	404	434	464	494	524	554	584	614	644	
835	164	220	275	331	387	442	498	554	609	665	721	776	832	888	943	
900	158	218	278	338	398	458	518	578	638	698	758	818	878	938	998	
1500	122	222	322	422	522	622	722	822	922	1022	1122	1222	1322	1422	1522	
1900	109	209	309	409	509	609	709	809	909	1009	1109	1209	1309	1409	1509	
2450	96	196	296	396	496	596	696	796	896	996	1096	1196	1296	1396	1496	
3600	79	179	279	379	479	579	679	779	879	979	1079	1179	1279	1379	1479	
5200	66	166	266	366	466	566	666	766	866	966	1066	1166	1266	1366	1466	
5400	65	165	265	365	465	565	665	765	865	965	1065	1165	1265	1365	1465	
5800	62	162	262	362	462	562	662	762	862	962	1062	1162	1262	1362	1462	

SAR Test Exclusion Thresholds for 100 MHz – 6 GHz and > 50 mm

- For frequencies below 100 MHz

The following may be considered for SAR test exclusion:

1) For test separation distances > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in step b) is multiplied by [1 + log(100/f(MHz))]

2) For test separation distances ≤ 50 mm, the power threshold determined by the equation in c) 1) for 50 mm and 100 MHz is multiplied by ½

Approximate SAR test exclusion power thresholds at selected frequencies and test separation distances are illustrated in the following table

MHz	< 50	50	60	70	80	90	100	110	120	130	140	150	160	170	180	190	mm
100	237	474	481	487	494	501	507	514	521	527	534	541	547	554	561	567	mW
50	308	617	625	634	643	651	660	669	677	686	695	703	712	721	729	738	
10	474	948	961	975	988	1001	1015	1028	1041	1055	1068	1081	1095	1108	1121	1135	
1	711	1422	1442	1462	1482	1502	1522	1542	1562	1582	1602	1622	1642	1662	1682	1702	
0.1	948	1896	1923	1949	1976	2003	2029	2056	2083	2109	2136	2163	2189	2216	2243	2269	
0.05	1019	2039	2067	2096	2125	2153	2182	2211	2239	2268	2297	2325	2354	2383	2411	2440	
0.01	1185	2370	2403	2437	2470	2503	2537	2570	2603	2637	2670	2703	2737	2770	2803	2837	

SAR Test Exclusion Thresholds for frequencies < 100 MHz

Generally, the sequence to apply for single portable RF sources includes the following steps:

1) determination of 1 mW blanket exemption under §1.1307(b)(3)(i)(A);

2) determination of exemption under the MPE-based §1.1307(b)(3)(i)(C) if 1) is not met;

3) determination of exemption under the SAR-based §1.1307(b)(3)(i)(B) if both 1) and 2) are not met;

4) streamlined test reduction procedures for evaluation by the FCC Laboratory which may reference current research based on bandwidth, etc. if 1), 2), and 3) are not met;

5) evaluation by SAR measurement or computation if 1), 2), 3), and 4) are not met; then

6) Environmental Assessment (EA) if none of the previous are met (i.e., exposure limits would be exceeded).

Blanket 1 mW Blanket Exemption §1.1307(b)(3)(i)(A)

The 1 mW Blanket Exemption of §1.1307(b)(3)(i)(A) applies for single fixed, mobile, and portable RF sources with available maximum time-averaged power of no more than 1 mW, regardless of separation distance.

The 1-mW blanket exemption applies at separation distances less than 0.5 cm, including where there is no separation. This exemption shall not be used in conjunction with other exemption criteria other than those for multiple RF sources in paragraph §1.1307(b)(3)(ii)(A).

The 1-mW exemption is independent of service type and covers the full range of 100 kHz to 100 GHz, but it shall not be used in conjunction with other exemption criteria or in devices with higher-power transmitters operating in the same time-averaging period. Exposure from such higher-power transmitters would invalidate the underlying assumption that exposure from the lower-power transmitter is the only contributor to SAR in the relevant volume of tissue.

SAR-based §1.1307(b)(3)(i)(B)

Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW). This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive).

MPE-based §1.1307(b)(3)(i)(C)

Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

RF Source frequency (MHz)	**Threshold ERP (watts)**
0.3-1.34	1.920 R 2.
1.34-30	3.450 R 2/f 2.
30-300	3.83 R 2.
300-1.500	0.0128 R 2f.
1.500-100.000	19.2R 2.

Single RF Sources Subject to Routine Environmental Evaluation

Simultaneous transmission assessment:

When multiple sources are introduced into an environment, it becomes necessary to address the sources interdependently, since each source will contribute some percentage of the maximum exposure towards the total exposure at a fixed location. The sum of the ratios of the exposure from each source to the corresponding maximum exposure for the frequency of each source must be evaluated.

The exposure complies with the maximum permissible exposure if the sum of the ratios is less than unity:

$$\sum_{i=1}^{n} \frac{S_i}{P\max_i} < 1$$

Where
S_i is the calculated SAR tests exclusion value of each source.
$Pmax_i$ is the SAR test exclusion threshold.

1-mW Test Exemption for Multiple Sources

As discussed in § 1.1307(b)(3)(ii)(A), the 1-mW exemption intended for single transmitters may be also applied to simultaneous transmission conditions, within the same host device, according one of the following criteria:

a) When maximum available power each individual transmitting antenna within the same time averaging period is ≤ 1 mW, and the nearest parts of the antenna structures of the simultaneously operating transmitters are separated by at least 2 cm.
b) When the aggregate maximum available power of all transmitting antennas is ≤ 1 mW in the same time averaging period.

This exemption may not be combined with any other exemption.