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NeoCoil, LLC SAR EXCLUSION REPORT

SCOPE OF WORK

SAR EXCLUSION CALCULATION
EUT: NEOCOIL PUREPATH MODULE

REPORT NUMBER

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SAR EXCLUSION TEST REPORT

Report Number: 104862485MIN-006E

Project Number: G104862485

Report Issue Date: 1/19/2022

Product Name: NeoCoil PurePath Module

Standards: FCC Part 1.1310 Limits for Maximum
Permissible Exposure (MPE)

RSS-102 Issue 5 RF Field Strength Limits for
Devices Used by the General Public

Tested by:
Intertek Testing Services NA, Inc.
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Fridley MN 55421, USA

Client:
NeoCoil, LLC
N27 W23910A Paul Rd
Pewaukee, WI 53072, USA

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1 Introduction and Conclusion

SAR exclusion calculations were performed on the product constructed as described in section 4. Information provided by the client including maximum output power, antenna gain(s), and minimum separation distance(s) was used to determine if the product under evaluation was exempt from SAR. Any change in these stated values may invalidate these results. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product under evaluation is **exempt** from SAR requirements for each of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) evaluated. Intertek does not make any claims of compliance for samples or variants which were not evaluated.

2 Test Summary

Section	Test Full Name	Result
5	FCC SAR Exclusion Calculation	Exempt from SAR
6	RSS-102 Issue 5 SAR Exclusion Calculation	Exempt from SAR



3 Client Information

This product was tested at the request of the following:

Client Information	
Client Name:	NeoCoil, LLC
Address:	N27 W23910A Paul Rd Pewaukee, WI 53072, USA
Contact:	Jon Herkowski
Telephone:	(262) 347-1250
Email:	Jon.herkowski@neocoil.com
Manufacturer Information	
Manufacturer Name:	NeoCoil, LLC
Manufacturer Address:	N27 W23910A Paul Rd Pewaukee, WI 53072, USA



4 Description of Equipment under Test and Variant Models

Equipment Under Test	
Product Name	Wireless BLE RF Module
Model Number	NeoCoil PurePath Module, part number NC00E262
Serial Number	001
Supported Transmit Bands	Bluetooth: 2406 – 2474MHz
Output Power (from Module Grant)	Bluetooth: 4.79mW
Antenna (provided by client)	Molex Part number 1461530050 Gain: 3.2dBi at 2.4GHz
Minimum Separation Distance (provided by client)	2.5 cm (25 mm)
Receive Date	12/9/2021
Test Start Date	12/13/2021
Test End Date	12/29/2021
Device Received Condition	Good
Test Sample Type	Production
Rated Voltage	12VDC battery

4.1 Variant Models:

There were no variant models covered by this evaluation.



5 FCC SAR Exclusion Criteria

Per KDB 447498 D01 General RF Exposure Guidance v06 § 4.3.1(a), the 10-g extremity SAR exclusion threshold is:

$$\left[\frac{(\text{max. power of channel, including tune - up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \cdot \left[\sqrt{f_{\text{(GHz)}}} \right] \leq 7.5$$

Bluetooth:

$$(4.79\text{mW} / 25\text{mm}) * \text{sq rt } (2.480 \text{ GHz}) = 0.302 \leq 7.5 \text{ exempt from SAR}$$

There are no simultaneous exposure conditions to evaluate.



6 RSS-102 Issue 5 SAR Exclusion Criteria

Per RSS-102 Issue 5 § 2.5.1, a device is exempt from routine SAR evaluation if the output power is below the applicable limit as specified in Table 1. For limb-worn and extremity devices, these values are multiplied by a factor of 2.5.

Table 1: SAR evaluation — Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Table 1: SAR evaluation – Exemption limits for routine evaluation based on frequency and separation distance^{4,5}

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of ≤5 mm	At separation distance of 10 mm	At separation distance of 15 mm	At separation distance of 20 mm	At separation distance of 25 mm
≤300	71 mW	101 mW	132 mW	162 mW	193 mW
450	52 mW	70 mW	88 mW	106 mW	123 mW
835	17 mW	30 mW	42 mW	55 mW	67 mW
1900	7 mW	10 mW	18 mW	34 mW	60 mW
2450	4 mW	7 mW	15 mW	30 mW	52 mW
3500	2 mW	6 mW	16 mW	32 mW	55 mW
5800	1 mW	6 mW	15 mW	27 mW	41 mW

Frequency (MHz)	Exemption Limits (mW)				
	At separation distance of 30 mm	At separation distance of 35 mm	At separation distance of 40 mm	At separation distance of 45 mm	At separation distance of ≥50 mm
≤300	223 mW	254 mW	284 mW	315 mW	345 mW
450	141 mW	159 mW	177 mW	195 mW	213 mW
835	80 mW	92 mW	105 mW	117 mW	130 mW
1900	99 mW	153 mW	225 mW	316 mW	431 mW
2450	83 mW	123 mW	173 mW	235 mW	309 mW
3500	86 mW	124 mW	170 mW	225 mW	290 mW
5800	56 mW	71 mW	85 mW	97 mW	106 mW

Limit at 2450MHz and 25mm separation distance is 52 mW

Bluetooth EIRP (is calculated assuming 4.79 mW conducted power; 3.2dBi antenna gain which = 2.09 linear antenna gain) :

$$\text{EIRP} = 4.79\text{mW} \times 2.09 = 10.01 \text{ mW, which is less 52 mW, exempt from SAR}$$

There are no simultaneous exposure conditions to evaluate.



7 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	1/19/2021	104862485MIN-006E	RB	US	Original Issue