

RAPPORTO DI PROVA

TEST REPORT

Rif. / Ref. n.	MPETR_179298-2_NovoNordisk	Data Emissione / Issue Date:	05/11/2021	Pagine / Pages:	9
Scopo delle prove Test object	Prove di tipo in accordo alla Norma <i>Type test according to standard</i> FCC Cfr 47 part 2 - §2.1093 RSS 102:2015 issue 5				
Richiedente Applicant	Novo Nordisk A/S Novo Allé 1 Bagsværd 2880 - Denmark				
Marchio commerciale Trade mark					
Fabbricante Manufacturer	Novo Nordisk A/S				
Prodotto Product	Add-on for Insulin Pen-Injector				
Modello testato Testing model	DV samples (project Revival)				
FCC ID IC ID	2AYMR-DD01 26991-DD01				
Data ricevimento campioni Date of test samples receipt	15/02/2021				
Campioni verificati No. of tested samples	1 – Sampled by the manufacturer				
Data verifiche Testing date	15/02/2021				
Sito di prova Testing site	PRSLAB S.r.l. Unipersonale – Via Campagna 92 – 22020 Faloppio – Como – Italy				
Esito delle valutazioni Assessment results	CONFORME / COMPLIANT				
Verifiche effettuate da Verifications carried out by	Daniele AOSANI Tecnico laboratorio Test Engineer				
Approvato Approved by	Riccardo PFEIFFER Responsabile laboratori Laboratory manager				

I risultati delle prove riportati nel presente rapporto di prova si riferiscono solo ai campioni esaminati.

The test results reported in this test report shall refer only to the samples tested.

Il campione è stato fornito dal cliente ed i risultati si riferiscono al campione così come ricevuto

The sample has been provided by the customer and the results apply to the sample as received

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CONTENUTO

TABLE OF CONTENTS

0. RELEASE CONTROL RECORD	3
1. DECISION RULE	3
2. INFORMATION PROVIDED BY CUSTOMER.....	3
3. GENERAL REMARKS	3
4. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT).....	4
EUT Identification	4
Bluetooth module technical data.....	5
4.1.1 Channel List Bluetooth Low Energy	5
Ports identification	6
Modifications incorporated in E.U.T.	6
Auxiliary equipment	6
5. REFERENCE STANDARDS	6
6. MEASUREMENTS AND CALCULATION RESULTS	7
Customer Test ID: DDVT43, DDVT68.....	7
SAR exemption	7
Operational Description	7
RF Exposure Conditions:.....	7
RF Output Power:	7
FCC Calculation method and limits	7
FCC Calculation results	8
ISED Calculation method and limits	9
ISED Calculation results.....	9

0. RELEASE CONTROL RECORD

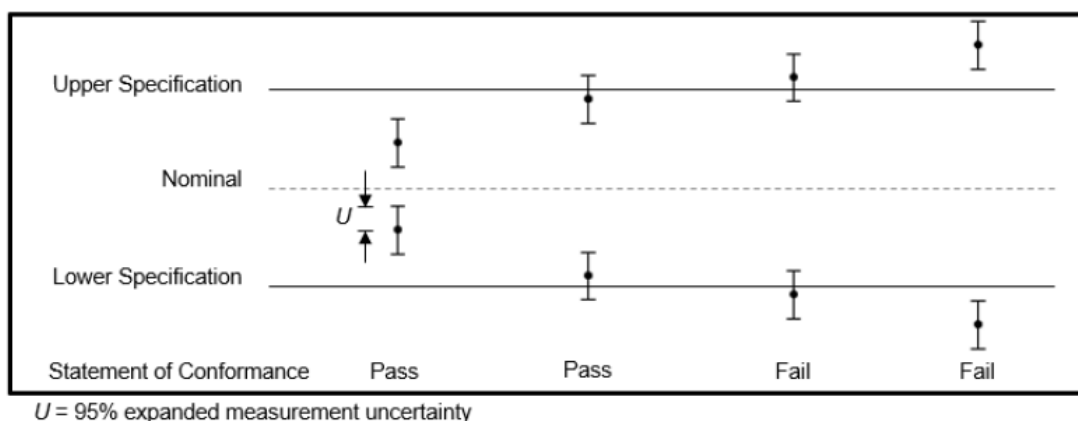
TEST REPORT NUMBER	REASON OF CHANGE	DATE OF ISSUE
MPETR_179298_0_NovoNordisk	Original release	14/05/2021
MPETR_179298_1_NovoNordisk	Added RSS 102:2015 evaluation Removed Photos	30/08/2021
MPETR_179298_2_NovoNordisk	Added RSS 102:2015 evaluation at pag.8	05/11/2021

This document is valid in last revision that deletes and replaces the previous one

1. DECISION RULE

PRS LAB specifies that, if the decision rules of conformity of the test results are not indicated in detail in the standard/s object of tests, it takes as a decision rule for the declaration of conformity the simple binary system ($w = 0$) stated in the ILAC-G8-09:2019 document.

The decision rule is applicable for all parts of standard



Statements of conformity are reported as:

- Pass: the measured value is below the acceptance limit, $AL=TL$.
- Fail: the measured value is above the acceptance limit, $AL=TL$.

Definitions

- Guard Band (w): interval between a tolerance limit and a corresponding acceptance limit where length $w=|TL-AL|$.
- Tolerance Limit (TL) (Specification Limit): specified upper or lower bound of permissible values of a property.
- Acceptance Limit (AL): specified upper or lower bound of permissible measured quantity values.

2. INFORMATION PROVIDED BY CUSTOMER

- Customer own protocol:
NND020428-801 Revival Design Verification ESD EMC RF and Airborne Equipment Tests Protocol, Rev. A

3. GENERAL REMARKS

- None

4. TECHNICAL INFORMATION OF EQUIPMENT UNDER TEST (EUT)

EUT Identification

DESCRIPTION	Add-on for Insulin Pen-Injector
MODEL NAME	DV samples (project Revival)
FCC ID	2AYMR-DD01
IC ID	26991-DD01
SERIAL NO.	0769
PRS LAB INTERNAL REFERENCE	BC 44/2021 1/20
TRADEMARK	
MANUFACTURER	Novo Nordisk A/S
COUNTRY OF MANUFACTURER	Denmark
SINGLE UNIT OR SYSTEM	Single
POWER SOURCE	Internal lithium battery, Coincell CR1632
SUPPLY VOLTAGE	3V 
MAX POWER or MAX ABSORBED CURRENT	11mA
SW VERSION (MAIN and BLE)	FW: CSS_FCC_TEST_00.09.14
OPERATING TEMPERATURE	+5°C ~ +40°C
EUT STANDING	On insulin pen

Bluetooth module technical data

CHIP MANUFACTURER	
CHIP TYPE	QN9083
FREQUENCY BAND	2400 – 2483.5MHz
NUMBER OF CHANNELS	40
CHANNEL BANDWIDTH	2MHz
CHANNEL SEPARATION	2MHz
TRANSFER RATE	1Mbps
SENSITIVITY	-94dBm
TYPE OF MODULATION	GFSK
ANTENNA	Chip antenna
ANTENNA GAIN	1dBi
ANTENNA TYPE	2450AT07A0100
ANTENNA MANUFACTURER	

4.1.1 Channel List Bluetooth Low Energy

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
0	2402	10	2422	20	2442	30	2462
1	2404	11	2424	21	2444	31	2464
2	2406	12	2426	22	2446	32	2466
3	2408	13	2428	23	2448	33	2468
4	2410	14	2430	24	2450	34	2470
5	2412	15	2432	25	2452	35	2472
6	2414	16	2434	26	2454	36	2474
7	2416	17	2436	27	2456	37	2476
8	2418	18	2438	28	2458	38	2478
9	2420	19	2440	29	2460	39	2480

Ports identification

	PORT	DESCRIPTION	CONNECTION	NOTES
☒	Enclosure	Plastic	Snaps	---
☐	AC Power input	Port not present	---	---
☐	DC Power input	Internal battery	---	---
☐	Signal/Control port	Port not present	---	---
☐	Telecomm. port	Port not present	---	---
☐	Antenna Port	Internal	---	---

Note:

During the tests all cables must be what provided the manufacturer or the same that used in the real employment of the EUT.

Modifications incorporated in E.U.T.

The following items are the modifications introduced in the equipment under test:

- None

Auxiliary equipment

- Laboratory laptop to set BLE channels.
- Auxiliary injection pen with SN U100-41554.

5. REFERENCE STANDARDS

REFERENCE STANDARD	DESCRIPTION
Title 47 Part 1 Subpart I § 1.1310	Procedures Implementing the National Environmental Policy Act of 1969. Radiofrequency radiation exposure limits.
Title 47 Part 2 Subpart J § 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.
ANSI C63.4	American National Standard for Methods of Measuring of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz – 40 GHz
RSS 102:2015 Issue 5	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)

6. MEASUREMENTS AND CALCULATION RESULTS

Customer Test ID: DDVT43, DDVT68

SAR exemption

This device has been excluded from SAR testing based on source-based time-averaged conducted output power and KDB 447498 D01 section 4.3.1 1). This document serves as the RF exposure exhibit in the FCC Form 731 application in lieu of a SAR report.

Operational Description

The **Revival DV** is a communication device based on BLE technology intended to be housed on an insulin injection pen. It is necessary a calculation for portable use demonstrating that the transmitter can be excluded from SAR testing.

RF Exposure Conditions:

The device is intended for use in the portable exposure condition and the General Population / Uncontrolled RF exposure environment.

RF Output Power:

Tx frequency range: 2402 – 2480 MHz
Maximum Output Power Channel 0: -3.2dBm (0.48mW)
Maximum Output Power Channel 19: -2.3dBm (0.59mW)
Maximum Output Power Channel 39: -2.7dBm (0.54mW)
Tolerance: ±1dB

FCC Calculation method and limits

SAR Test Exclusion Thresholds:

$$\left[\frac{(\text{max. power of channel, including tune-up tolerance, mW})}{(\text{min. test separation distance, mm})} \right] \cdot [f(\text{GHz})] \leq 3.0 \text{ (for 1-g body SAR) or } 7.5 \text{ (for 10-g extremity SAR)}$$

where respectively

- $f(\text{GHz})$ 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

FCC Calculation results

Measured Output Power included any tune up tolerance **-2.3dB+1dB=-1.3dB**: 0.74mW round up to 1mW

Min Test separation distance: 5mm

f: 2.440GHz (as worst case)

Exclusion Threshold Limb: 7.5 (10-g extremity SAR)

$$\frac{1mW}{5mm} * \sqrt{2.440} = 0.315 \leq 7.5$$

Exclusion Threshold body: 3 (10-g extremity SAR)

$$\frac{1mW}{5mm} * \sqrt{2.440} = 0.315 \leq 3$$

RESULT: The device is excluded from SAR testing.

ISED Calculation method and limits

RSS-102 SAR Exemption Limits and Requirement: Output power level (adjusted for any tune-up tolerances) shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power:

RSS-102 SAR Exemption Limit @5mm for 2402 MHz = 4.26 mW

RSS-102 SAR Exemption Limit @5mm for 2440 MHz = 4.05 mW

RSS-102 SAR Exemption Limit @5mm for 2480 MHz = 3.94 mW

For limb-worn devices where the 10 gram value applies, the exemption limits for routine evaluation in Table 1 are multiplied by a factor of 2.5:/

RSS-102 SAR Exemption Limit @5mm for 2402 MHz = 10.65 mW

RSS-102 SAR Exemption Limit @5mm for 2440 MHz = 10.12 mW

RSS-102 SAR Exemption Limit @5mm for 2480 MHz = 9.85 mW

ISED Calculation results

Measured Output Power included any tune up tolerance **-2.3dB+1dB=-1.3dB**: 0.74mW round up to 1mW
f: 2.440GHz (as worst case)

EIRP 1 mW < 10.12 mW Limb-worn SAR exclusion limit @ 5mm

RESULT: The device is excluded from SAR testing.

END OF TEST REPORT