



TEST REPORT

Test report no.: 1-8026-24-01-10_TR2-R02

RF Exposure consideration according to FCC447498D04 V1



Deutsche
Akkreditierungsstelle
D-PL-12047-01-00

Testing laboratory

cetecom advanced GmbH

Untertuerkheimer Strasse 6 – 10

66117 Saarbruecken / Germany

Phone: + 49 681 5 98 - 0

Fax: + 49 681 5 98 - 9075

Internet: <https://cetecomadvanced.com>

e-mail: mail@cetecomadvanced.com

Accredited Testing Laboratory:

The testing laboratory (area of testing) is accredited according to DIN EN ISO/IEC 17025 (2018-03) by the Deutsche Akkreditierungsstelle GmbH (DAkkS).

The accreditation is valid for the scope of testing procedures as stated in the accreditation certificate with the registration number: D-PL-12047-01-00.

ISED Testing Laboratory Recognized Listing Number: DE0001

FCC designation number: DE0002

Applicant

Panasonic Industrial Devices Europe GmbH

Zeppelinstrasse 19

21337 Lüneburg / GERMANY

Phone: +49-4131-899-0

Contact: Marcus Nottorf

e-mail: marcus.nottorf@eu.panasonic.com

Manufacturer

Panasonic Industrial Devices Slovakia s.r.o

Tovarenska 13

06401 Stara Lubovna / SLOVAK REPUBLIC

Test Item

Kind of test item: Bluetooth® Low Energy / IEEE 802.15.4 Module

Model name: PAN B611-1C

FCC ID: T7V-B611

Frequency: 2.4 GHz

Technology: Bluetooth® LE, Zigbee

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

Test report authorized:

On behalf of

Alexander Hnatovskiy
Lab Manager
Radio Labs

cn=Michael Dorongovski,
o=cetecom advanced GmbH,
ou=DOR-230601,
email=michael.dorongovski@cetecomadvanced.com, c=DE
2025.12.19 10:16:41 +01'00'

Test performed:

Eric Tuettmann
Testing Manager
Radio Labs

cn=Eric Tuettmann, o=cetecom advanced GmbH, ou=TUT-230601,
email=Eric.Tuettmann@cetecomadvanced.com, c=DE
2025.12.19 10:22:43 +01'00'

1 Table of contents

1	Table of contents	2
2	General Information	3
2.1	Notes and Disclaimer	3
2.2	References	3
3	SAR test exclusion (KDB 447498 D01 General RF Exposure Guidance v06)	4
3.1	EUT technologies	6
3.2	Conclusion	6

2 General Information

2.1 Notes and Disclaimer

The test results of this test report relate exclusively to the test item specified in this test report. cetecom advanced GmbH does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item.

The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of cetecom advanced GmbH.

The testing service provided by cetecom advanced GmbH has been rendered under the current "General Terms and Conditions for cetecom advanced GmbH".

cetecom advanced GmbH will not be liable for any loss or damage resulting from false, inaccurate, inappropriate or incomplete product information provided by the customer.

Under no circumstances does the cetecom advanced GmbH test report include any endorsement or warranty regarding the functionality, quality or performance of any other product or service provided.

Under no circumstances does the cetecom advanced GmbH test report include or imply any product or service warranties from cetecom advanced GmbH, including, without limitation, any implied warranties of merchantability, fitness for purpose, or non-infringement, all of which are expressly disclaimed by cetecom advanced GmbH.

All rights and remedies regarding vendor's products and services for which cetecom advanced GmbH has prepared this test report shall be provided by the party offering such products or services and not by cetecom advanced GmbH.

In no case this test report can be considered as a Letter of Approval.

This test report is electronically signed and valid without handwritten signature. For verification of the electronic signatures, the public keys can be requested at the testing laboratory.

This test report replaces the test report with the number 1-8026-24-01-10_TR2-R01 and dated 2025-10-22.

2.2 References

Guidance	Version	Description
47 CFR 1.1307		Actions that may have a significant environmental effect, for which Environmental Assessments (EAs) must be prepared.
47 CFR 2.1091		Radiofrequency radiation exposure evaluation: mobile devices.
47 CFR 2.1093		Radiofrequency radiation exposure evaluation: portable devices.
KDB 447498 D01	v06	General RF Exposure Guidance

3 SAR test exclusion (KDB 447498 D01 General RF Exposure Guidance v06)

4.3.1. Standalone SAR test exclusion considerations

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(s), listed below, is (are) satisfied. These test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum *test separation distance* required for the exposure conditions. The minimum *test separation distance* defined in 4.1 f) is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander. To qualify for SAR test exclusion, the *test separation distances* applied must be fully explained and justified, typically in the SAR measurement or SAR analysis report, by the operating configurations and exposure conditions of the transmitter and applicable host platform requirements, according to the required *published RF exposure KDB procedures*. When no other RF exposure testing or reporting are required, a statement of justification and compliance must be included in the equipment approval, in lieu of the SAR report, to qualify for SAR test exclusion. When required, the device specific conditions described in the other *published RF exposure KDB procedures* must be satisfied before applying these SAR test exclusion provisions; for example, handheld PTT two-way radios, handsets, laptops and tablets, etc.

- a) For 100 MHz to 6 GHz and *test separation distances* ≤ 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

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

- $f_{\text{(GHz)}}$ 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
- The values 3.0 and 7.5 are referred to as *numeric thresholds* in step b) below

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 according to 4.1 f) is applied to determine SAR test exclusion.

- b) For 100 MHz to 6 GHz and *test separation distances* > 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following (also illustrated in Appendix B):

- 1) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot (f_{\text{(MHz)}}/150)]\}$ mW, for 100 MHz to 1500 MHz
- 2) $\{[\text{Power allowed at numeric threshold for 50 mm in step a)}] + [(\text{test separation distance} - 50 \text{ mm}) \cdot 10]\}$ mW, for > 1500 MHz and ≤ 6 GHz

- c) For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C):

- 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 $[1 + \log(100/f_{\text{(MHz)}})]$
- 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 $\frac{1}{2}$
- 3) SAR measurement procedures are not established below 100 MHz.

The following table from KDB 447498 D01 gives an fast overview of the applicable limits:

Appendix A

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

Approximate SAR Test Exclusion Power Thresholds at Selected Frequencies and Test Separation Distances are illustrated in the following Table. The equation and threshold in 4.3.1 must be applied to determine SAR test exclusion.

MHz	5	10	15	20	25	mm
150	39	77	116	155	194	SAR Test Exclusion Threshold (mW)
300	27	55	82	110	137	
450	22	45	67	89	112	
835	16	33	49	66	82	
900	16	32	47	63	79	
1500	12	24	37	49	61	
1900	11	22	33	44	54	
2450	10	19	29	38	48	
3600	8	16	24	32	40	
5200	7	13	20	26	33	
5400	6	13	19	26	32	
5800	6	12	19	25	31	

3.1 EUT technologies

Technologies:	Max. power		Max EIRP for RF Exposure	#
	conducted	EIRP		
BT LE 2450 MHz	7.9 dBm	9.5 dBm	9.5 dBm	B
IEEE 802.15.4 2450 MHz	8.0 dBm	9.6 dBm	9.6 dBm	A

Declared minimum safety distance: **5 mm**

SRD Technology	Frequency [MHz]		Reference #	Output Power [dBm]			Power [mW]		Share of Limit %
	f _{Min}	f _{Max}		P _{cond}	P _{EIRP}	P _{RF Exp}	P _{Result}	P _{Limit}	
Bluetooth LE	2402	2480	B	7.9	9.5	9.5	8.91	9.53	93.57%
WPAN IEEE 802.15.4	2405	2480	A	8.0	9.6	9.6	9.12	9.53	95.75%

Referenced Documents:

#	Document	Document Type	Additional Information
A	1-8026-24-01-09_TR1-R01	<i>cetecom advanced report</i>	<i>Pg. 21, 25, EIRP 9.6 dBm</i>
B	1-8026-24-01-08_TR1-R01	<i>cetecom advanced report</i>	<i>Pg. 21, 25, EIRP 9.5 dBm</i>

NOTE: Simultaneous transmission is not supported.

3.2 Conclusion

This prediction demonstrates the following:

The power levels for FCC at a distance of 5 mm are below the maximum levels allowed by regulations.

Conclusion: RF exposure evaluation is not required.