



RF Exposure Evaluation

For

EFENTO SP. Z O.O.

HC7 NB-IoT Sensor

Test Model: HC7-EP

Prepared for : EFENTO SP. Z O.O.
Address : ul. Przemysłowa 12 30-701 Kraków Poland

Prepared by : Shenzhen LCS Compliance Testing Laboratory Ltd.
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Date of receipt of test sample : January 20, 2026
Number of tested samples : 2
Sample No. : A260119217-1, A260119217-2
Serial number : Prototype
Date of Test : January 20, 2026 ~ March 12, 2026
Date of Report : April 10, 2026



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RF Exposure Evaluation	
Report Reference No.	LCSA01206013EC
Date of Issue.....	April 10, 2026
Testing Laboratory Name	Shenzhen LCS Compliance Testing Laboratory Ltd.
Address.....	101, 201 Bldg A & 301 Bldg C, Juji Industrial Park Yabianxueziwei, Shajing Street, Baoan District, Shenzhen, 518000, China
Testing Location/ Procedure.....	Full application of Harmonised standards ■ Partial application of Harmonised standards □ Other standard testing method □
Applicant's Name.....	EFENTO SP. Z O.O.
Address.....	ul. Przemysłowa 12 30-701 Kraków Poland
Test Specification	
Standard	FCC KDB publication 447498 D01 General 1 RF Exposure Guidance v06 FCC CFR 47 part1 1.1310 FCC CFR 47 part2 2.1091
Test Report Form No.....	TRF-4-E-214 A/0
TRF Originator	Shenzhen LCS Compliance Testing Laboratory Ltd.
Master TRF	Dated 2011-03
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EUT Description.....	HC7 NB-IoT Sensor
Trade Mark.....	Efento
Test Model	HC7-EP
Ratings.....	Please Refer to Page 6
Result	PASS

Compiled by:

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**FCC -- TEST REPORT**

Test Report No. :	LCSA01206013EC	<u>April 10, 2026</u> Date of issue
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EUT.....	: HC7 NB-IoT Sensor
Test Model.....	: HC7-EP
Applicant.....	: EFENTO SP. Z O.O.
Address.....	: ul. Przemysłowa 12 30-701 Kraków Poland
Telephone.....	: /
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Manufacturer.....	: EFENTO SP. Z O.O.
Address.....	: ul. Przemysłowa 12 30-701 Kraków Poland
Telephone.....	: /
Fax.....	: /
Factory.....	: EFENTO SP. Z O.O.
Address.....	: ul. Przemysłowa 12 30-701 Kraków Poland
Telephone.....	: /
Fax.....	: /

Test Result:	Pass
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The test report merely corresponds to the test sample.

It is not permitted to copy extracts of these test result without the written permission of the test laboratory.





Revision History

Report Version	Issue Date	Revision Content	Revised By
000	April 10, 2026	Initial Issue	---

Note: At the customer's request, the revised report was submitted to LCSA01206013EC applicant by quoting the test data of LCSA01206014EC original report.





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1. Product Information

EUT	: HC7 NB-IoT Sensor
Test Model	: HC7-EP
Ratings	: USB Input: 5V===1.0A Screw terminal input: 9-26V===1.0A Battery: 3.7V, 2000mAh, 7.4Wh
Hardware Version	: HC7
Software Version	: 7.x.x
Bluetooth	:
Frequency Range	: 2402MHz~2480MHz
Channel Number	: 40 channels for Bluetooth V5.0 (DTS)
Channel Spacing	: 2MHz for Bluetooth V5.0 (DTS)
Modulation Type	: GFSK for Bluetooth V5.0 (DTS)
Bluetooth Version	: V5.0
Antenna Description	: Internal Antenna, 2.15dBi(Max.)
NB-IoT	:
Support Band	: ☒ NB-IoT Band 2(U.S.-Band) ☒ NB-IoT Band 4(U.S.-Band) ☒ NB-IoT Band 5(U.S.-Band) ☒ NB-IoT Band 12(U.S.-Band) ☒ NB-IoT Band 13(U.S.-Band) ☒ NB-IoT Band 17(U.S.-Band) ☒ NB-IoT Band 25(U.S.-Band) ☒ NB-IoT Band 66(U.S.-Band)
Release Version	: R13
Type Of Modulation	: UL: BPSK, QPSK DL: QPSK
Antenna Description	: Internal Antenna 2.21dBi (max.) For NB-IoT Band 2 2.21dBi (max.) For NB-IoT Band 4 2.35dBi (max.) For NB-IoT Band 5 2.35dBi (max.) For NB-IoT Band 12 2.35dBi (max.) For NB-IoT Band 13 2.35dBi (max.) For NB-IoT Band 17 2.21dBi (max.) For NB-IoT Band 25 2.21dBi (max.) For NB-IoT Band 66
Power Class	: Class 3
Extreme temp. Tolerance	: -30°C to +50°C
Extreme vol. Limits	: 3.1VDC to 4.1VDC (nominal: 3.8VDC)
Exposure category	: General population/uncontrolled environment
EUT Type	: Production Unit
Device Type	: Mobile Devices
Note: For a more detailed antenna description, please refer to the antenna specifications or the	





antenna report provided by the customer.





2. Evaluation Method

Systems operating under the provisions of FCC 47 CFR section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

In accordance with KDB447498D01 for Simultaneous transmission MPE test exclusion applies when the sum of the MPE ratios for all simultaneous transmitting antennas incorporated in a host device, based on the calculated/estimated, numerically modelled or measured field strengths or power density, is ≤ 1.0 . The MPE ratio of each antenna is determined at the minimum test separation distance required by the operating configurations and exposure conditions of the host device, according to the ratio of field strengths or power density to MPE limit, at the test frequency. Either the maximum peak or spatially averaged results from measurements or numerical simulations may be used to determine the MPE ratios. Spatial averaging does not apply when MPE is estimated using simple calculations based on far-field plane-wave equivalent conditions. The antenna installation and operating requirements for the host device must meet the minimum test separation distances required by all antennas, in both standalone and simultaneous transmission operations, to satisfy compliance.

3. Limit

3.1 Refer Evaluation Method

[ANSI C95.1-2019](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Electric, Magnetic, and Electromagnetic Fields, 0 Hz to 300 GHz

[FCC KDB publication 447498 D01 General 1 RF Exposure Guidance v06](#): Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies.

[FCC CFR 47 part1 1.1310](#): Radiofrequency radiation exposure limits.

[FCC CFR 47 part2 2.1091](#): Radiofrequency radiation exposure evaluation: mobile devices.

3.2 Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	(900/f ²)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for Occupational/Uncontrolled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	(180/f ²)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density



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4. MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$$S = PG / 4\pi R^2$$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

5. Conducted Power

[BT LE 1M]

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)	ANT Max. Tune Up Power (dBm)
GFSK	0	2402	-2.56	-2.0±1.0
	19	2440	-0.14	0±1.0
	39	2480	-1.18	-1.0±1.0

[BT LE 2M]

Mode	Channel	Frequency (MHz)	Peak Conducted Output Power (dBm)	ANT Max. Tune Up Power (dBm)
GFSK	0	2402	-2.72	-2.0±1.0
	19	2440	-0.39	0±1.0
	39	2480	-1.38	-1.0±1.0



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[LTE Max Average Power]

Test Mode		Channel	Max Average Power (dBm)	ANT Max. Tune Up Power (dBm)
NB-IoT	Band 2	LCH	23.38	23.0±1.0
		MCH	23.38	23.0±1.0
		HCH	23.53	23.0±1.0
	Band 4	LCH	23.44	23.0±1.0
		MCH	23.32	23.0±1.0
		HCH	23.17	23.0±1.0
	Band 5	LCH	22.88	22.0±1.0
		MCH	23.03	23.0±1.0
		HCH	23.42	23.0±1.0
	Band 12	LCH	23.62	23.0±1.0
		MCH	23.70	23.0±1.0
		HCH	23.80	23.0±1.0
	Band 13	LCH	23.32	23.0±1.0
		MCH	23.26	23.0±1.0
		HCH	23.32	23.0±1.0
	Band 17	LCH	23.62	23.0±1.0
		MCH	23.69	23.0±1.0
		HCH	23.70	23.0±1.0
	Band 25	LCH	22.76	22.0±1.0
		MCH	23.38	23.0±1.0
		HCH	23.46	23.0±1.0
	Band 66	LCH	23.46	23.0±1.0
		MCH	23.37	23.0±1.0
		HCH	22.95	22.0±1.0





6. Measurement Results

6.1 Standalone MPE Evaluation

As declared by the Applicant, the EUT is a wireless device used in a fix application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, $r=20\text{cm}$, as well as the gain of the used antenna refer to antenna information, the RF power density can be obtained.

Modulation Type	Output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm ²)	MPE Limits (mW/cm ²)
	dBm	mW				
BT LE	1.0	1.2589	2.15	1.6406	0.0004	1.0000
NB-IoT Band 2	24	251.1886	2.21	1.6634	0.0832	1.0000
NB-IoT Band 4	24	251.1886	2.21	1.6634	0.0832	1.0000
NB-IoT Band 5	24	251.1886	2.35	1.7179	0.0859	0.5493
NB-IoT Band 12	24	251.1886	2.35	1.7179	0.0859	0.4660
NB-IoT Band 13	24	251.1886	2.35	1.7179	0.0859	0.4973
NB-IoT Band 17	24	251.1886	2.35	1.7179	0.0859	0.4693
NB-IoT Band 25	24	251.1886	2.21	1.6634	0.0832	1.0000
NB-IoT Band 66	24	251.1886	2.21	1.6634	0.0832	0.5427

Remark:

1. Output power including tune-up tolerance;
2. Output power was adjust to duty cycle at 100% if measured duty cycle less than 98%;
3. MPE evaluate distance is 20cm from user manual provide by manufacturer.

6.2 Simultaneous Transmission MPE Evaluation

The sample support one BLE Antenna and another one NB-IoT transmit antenna, so need consider simultaneous transmission;

Simultaneous transmission MPE

According to KDB447498 for Transmitters used in mobile exposure conditions for simultaneous transmission operations;

$\sum$ of MPE ratios ≤ 1.0

Mode	$\sum$ MPE max ratios	Limit	Results
CatM1 Band 13+BT	$0.0859+0.0004=0.0836$	1.0	Pass

7. Conclusion

The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

8. Description of Test Facility

NVLAP Accreditation Code is 600167-0.

FCC Designation Number is CN5024.

CAB identifier is CN0071.

CNAS Registration Number is L4595.

Test Firm Registration Number: 254912.

9. Measurement Uncertainty



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BLE/NB-IoT:

Test Item		Frequency Range	Uncertainty	Note
Output power	:	1GHz-40GHz	$\pm 0.57\text{dB}$	(1)

(1). This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k=2$.

-----THE END OF REPORT-----

