



Maximum Permissible Exposure Evaluation

FCC ID: 2BPX82025SILOHWCELL

IC: 34100-25SILOHWCEL

Report No.	:	TBR-C-202312-0122-12
Applicant	:	NANOLIKE
Equipment Under Test (EUT)		
EUT Name	:	SILO-HW-CELL
Model No.	:	SILO-FILL-CELL
Series Model No.	:	----
Brand Name	:	Nanolike
Sample ID	:	HC-C-202312-0122-01-01-1#&HC-C-202312-0122-01-01-2#
Receipt Date	:	2025-04-11
Test Date	:	2025-04-11 to 2025-07-31
Issue Date	:	2025-07-31
Standards	:	FCC Part 2.1091 RSS-102 Issue 6 December 2023
Test Method	:	KDB 447498 D01 General RF Exposure Guidance v06
Conclusions	:	PASS
In the configuration tested, the EUT complied with the standards specified above.		
Test By	:	<i>Rick Chen</i> Rick Chen
Reviewed By	:	<i>Wade Lv</i> Wade Lv
Approved By	:	<i>IVAN SU</i> Ivan Su
This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in the report.		

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Revision History

Report No.	Version	Description	Issued Date
TBR-C-202312-0122-12	Rev.01	Initial issue of report	2025-07-31



1. General Information about EUT

1.1 Client Information

Applicant	:	NANOLIKE
Address	:	2 av. aerodrome de Montaudran, 31400 Toulouse, France
Manufacturer	:	EDA
Address	:	No. 6, Ma'an 2nd Road Chashan Town, Dongguan, Guangdong, China

1.2 General Description of EUT (Equipment Under Test)

EUT Name	:	SILO-HW-CELL
Model	:	SILO-FILL-CELL
HVIN	:	SILO-HW-CELL
Model Different	:	----
Product Description	:	<div>Operation Frequency:</div> <div>GSM 850: 824.20MHz-848.80MHz PCS1900: 1850.20MHz-1909.80MHz LTE Band 2: TX: 1850MHz-1910MHz LTE Band 4: TX: 1710MHz-1755MHz LTE Band 5: TX: 824MHz-849MHz LTE Band 12: TX: 699MHz-716MHz</div>
	:	<div>Modulation Type:</div> <div>GPRS: GMSK QPSK, 16QAM for Cat M1 BPSK, QPSK for NB-IOT</div>
	:	<div>Antenna Gain:</div> <div>3.91dBi FPC Antenna for GSM 4.54dBi FPC Antenna for LTE</div>
Power Rating	:	Input: DC 4.5V
Software Version	:	N/A
Hardware Version	:	N/A
Remark: The above antenna information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications, the laboratory shall not be held responsible.		



2. Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %.

Test Item	Parameters	Expanded Uncertainty (U_{Lab})
Conducted Emission	Level Accuracy: 9kHz~150kHz 150kHz to 30MHz	± 3.50 dB ± 3.10 dB
Radiated Emission	Level Accuracy: 9kHz to 30 MHz	± 4.60 dB
Radiated Emission	Level Accuracy: 30MHz to 1000 MHz	± 4.50 dB
Radiated Emission	Level Accuracy: Above 1000MHz	± 4.20 dB
RF Power-Conducted	Level Accuracy: Above 1000MHz	± 0.95 dB
Power Spectral Density-Conducted	Level Accuracy: Above 1000MHz	± 3 dB
Occupied Bandwidth	Level Accuracy: 30MHz to 1000 MHz Above 1000MHz	$\pm 3.8\%$
Unwanted Emission-Conducted	Level Accuracy: 30MHz to 1000 MHz Above 1000MHz	± 2.72 dB
Temperature	/	$\pm 0.6^{\circ}\text{C}$
Humidity	/	$\pm 4\%$
Supply voltages	/	$\pm 2\%$
Time	/	$\pm 4\%$



3. Test Facility

The testing report were performed by the Shenzhen Toby Technology Co., Ltd., in their facilities located at 1/F., Building 6, Rundongsheng Industrial Zone, Longzhu, Xixiang, Bao'an District, Shenzhen, Guangdong, China. At the time of testing, the following bodies accredited the Laboratory:

CNAS (L5813)

The Laboratory has been accredited by CNAS to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the competence in the field of testing. And the Registration No.: CNAS L5813.

A2LA Certificate No.: 4750.01

The laboratory has been accredited by American Association for Laboratory Accreditation(A2LA) to ISO/IEC 17025: 2017 General Requirements for the Competence of Testing and Calibration Laboratories for the technical competence in the field of Electrical Testing. And the A2LA Certificate No.: 4750.01.FCC Accredited Test Site Number: 854351. Designation Number: CN1223.

IC Registration No.: (11950A)

The Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing. The site registration: Site# 11950A. CAB identifier: CN0056.



4. Method of Measurement for FCC

4.1 EUT Operation Condition:

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

4.2 Exposure Evaluation:

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 the 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

4.3 Simultaneous transmission MPE Considerations

According to KDB447498 D01 v06: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. 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 modeled or measured field strengths or power density, is ≤ 1.0 .

This means that:

$$\sum \text{ of MPE ratios } \leq 1.0$$



4.4 Test Result

Worst MPE Result								
Test Mode	Antenna	Conducted Power(max) (dBm)	Tune-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (cm) [R]	Power Density (mW/ cm ²) [S]	Power Density Limit (mW/cm ²) [S]
GPRS850	Ant1	33.85	33±1	34	3.91	50	0.19673	0.5495
GPRS1900	Ant1	30.41	30±1	31	3.91	50	0.09860	1.0
LTE Band2	Ant1	20.72	20±1	21	4.54	50	0.01140	1.0
LTE Band4	Ant1	21.01	21±1	22	4.54	50	0.01435	1.0
LTE Band5	Ant1	20.78	20±1	21	4.54	50	0.01140	0.5493
LTE Band12	Ant1	20.18	20±1	21	4.54	50	0.01140	0.4660

Note: The antenna gain used max. antenna gain

Conclusion:

As specified in Table 1B of 47 CFR 1.1310- Limits for Maximum Permissible Exposure (MPE),

Limits for General Population/ Uncontrolled Exposure

Frequency Range (MHz)	Power density (mW/ cm ²)
300-1,500	F/1500
1,500-100,000	1.0

For GSM<E:

The worst MPE is calculated as **0.19673mW/cm² < limit 0.5495mW/cm²**. So, RF exposure limit warning or SAR test are not required. The EUT will only be used with a separation of 50cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per 47 CFR2.1091 (b).

The RF Exposure Information page from the manual is included here for reference.

For a more detailed features description, please refer to the RF Test Report.

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

The RF Exposure Information page from the manual is included here for reference.

For a more detailed features description, please refer to the RF Test Report.



5. Method of Measurement for IC

5.1. Applicable Standard

[Radio Standards Specification 102](#), issue 6, Radio Frequency (RF) Exposure Compliance of Radio communication Apparatus (All Frequency Bands), sets out the requirements and measurement techniques for evaluating radio frequency exposure compliance of radio communication apparatus designed to be used within the vicinity of the human body.

[ANSI C95.1–1999](#): IEEE Standard for Safety Levels with Respect to Human Exposure to Radio Frequency Electromagnetic Fields, 3 kHz to 300 GHz.

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

5.2. Evaluation Method and Limit

According to RSS-102 Issue 6 5.3.2. Table 7, RF field strength and power density limits for devices used by the general public (uncontrolled environment)

Frequency range (MHz)	Electric field (V_{RMS}/m)	Magnetic field (A_{RMS}/m)	Power density (W/m^2)	Reference period (minutes)
10-20	27.46	0.0728	2	6
20-48	$58.07 / f^{0.25}$	$0.1540 / f^{0.25}$	$8.944 / f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	$0.02619 f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$

Note: f is frequency in MHz.

Frequency Band	f (MHz)	Limit of Power Density (W/m^2)
GPRS850	824.20	2.58
GPRS1900	1850.20	4.48
LTE Band2	1850	4.48
LTE Band4	1710	4.24
LTE Band5	824	2.58
LTE Band12	699	2.30
Note: Limit= $0.02619 f^{0.6834}$ (where f is in MHz). The f in the limit is the frequency of the lowest Channel.		



5.3. Calculation Formula

Prediction of power density at the distance of the applicable MPE limit:

$S = PG/4\pi R^2$ = Power density (in appropriate units, e.g W/m²)

P = power input to antenna (in appropriate units, e.g W)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g m)

Simultaneous transmission MPE Considerations

According to KDB447498: All transmitters and antennas in the host must be either evaluated for MPE compliance, by measurement or computational modeling, or qualify for the standalone MPE test exclusion in section 7.1. 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 modeled or measured field strengths or power density, is ≤ 1.0 .

This means that:

\sum of MPE ratios ≤ 1.0



5.4 Standalone MPE Evaluation:

Worst MPE Result								
Test Mode	Antenna	Conducted Power(max) (dBm)	Tune-up Power (dB)	Max tune up power (dBm) [P]	Max. ANT Gain (dBi) [G]	Distance (m) [R]	Power Density (W/m ²) [S]	Limit of Power Density (W/m ²) [S]
GPRS850	Ant1	33.85	33±1	34	3.91	0.5	1.9673	2.58
GPRS1900	Ant1	30.41	30±1	31	3.91	0.5	0.9860	4.48
LTE Band2	Ant1	20.72	20±1	21	4.54	0.5	0.1140	4.48
LTE Band4	Ant1	21.01	21±1	22	4.54	0.5	0.1435	4.24
LTE Band5	Ant1	20.78	20±1	21	4.54	0.5	0.1140	2.58
LTE Band12	Ant1	20.18	20±1	21	4.54	0.5	0.1140	2.30

Note: The antenna gain used max. antenna gain

For GSM<E:

The worst MPE is calculated as **1.9673W/m²**. So, RF exposure limit warning or SAR test are not required. The EUT will only be used with a separation of 50cm or greater between the antenna and nearby persons and can therefore be considered a mobile transmitter per RSS-102 issue 6.

The RF Exposure Information page from the manual is included here for reference.
For a more detailed features description, please refer to the RF Test Report.

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

