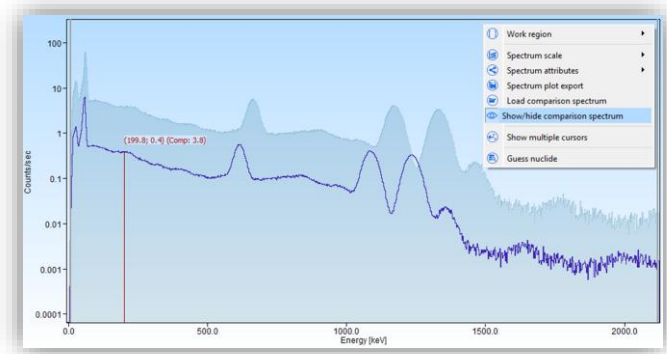


Main highlights

- New comparison spectrum functionality
- New MDL calculation option into quantification
- Updated/improved the model quantification section
- Updates to some editors: Efficiency, Pt, NuclidesLib
- Preferences dialog tabs updated
 - New MDL default unit, new comparison spectrum plot settings
- Integration of the new FLINT device
- Further GUI and internal improves
- Revised and updated User's Manual
 - Version 1.7.2, revision 1, April 2026



| Nuclide/Point label | Energy [keV] | Area [counts] | Cal. Eff. | Efficiency | Fit. Eff. | Deviation | TCS |
|--|--------------|---------------|-----------|------------|-----------|-----------|------------|
| DETECTOR: b20030; SAMPLE: 0.801 gNaOH; SAMPLE DIST: 0.1 cm | | | | | | | |
| B-82 (171.06, 1.0-20%) | 171.06 | 8180 | 1.138E-01 | 8.448E-01 | 1.143E-01 | 1.274E-01 | -4.461E-01 |
| B-82 (173.06, 1.0-20%) | 173.06 | 8221 | 7.523E-01 | 2.273E-01 | 0.000E-00 | 0.000E-00 | 0.000E-00 |
| B-82 (273.48, 1.0-20%) | 273.48 | 6330 | 3.758E-02 | 1.653E-01 | 4.778E-02 | 7.788E-01 | -1.847E-02 |
| B-82 (276.12, 1.0-20%) | 276.12 | 5643 | 3.829E-02 | 1.376E-01 | 5.164E-02 | 7.398E-01 | 1.366E-01 |
| B-82 (278.11, 1.0-20%) | 278.11 | 6190 | 1.875E-02 | 2.640E-04 | 1.826E-02 | 0.000E-00 | 1.451E-01 |
| B-82 (288.32, 1.0-20%) | 288.32 | 4982 | 6.075E-02 | 1.206E-01 | 1.728E-02 | 0.000E-00 | 0.000E-00 |
| B-82 (276.52, 1.0-20%) | 276.52 | 7763 | 2.842E-02 | 2.488E-04 | 1.678E-02 | 0.000E-00 | 1.847E-01 |
| B-82 (278.02, 1.0-20%) | 278.02 | 6178 | 6.151E-02 | 1.643E-01 | 6.847E-01 | 0.000E-00 | 0.000E-00 |

Calculate limits
 Include MDL Include MDA
 Method: Currie KTA ISO 11929
 Decision error 1st kind: 5.0 %
 2nd kind: 5.0 % same as 1st
 Include all library lines
 Include external library:

Do you also want to apply imported data from bGammaEff?
Setup: 10ml bottle at 3.3cm no cap
 sample-detector distance: 3.29385 cm
Detector: Lab Detector
 type: High resolution HPGe
 model: GX1518
 manufacturer: BS
 serial number: b20030
Sample: Glass bottle
 type: Bottle
 mass: 10 g
 volume: 10 cm³
 material: Water
 composition: H2O 100%
 *To apply sample data too, use the button <Yes to All> (if any data is missing, you will need to set it later)

Report

General Uncertainty Table columns

Include uncertainties
 in absolute values in relative %

Report

General Uncertainty Table columns

Peaks / Radiations ISO peaks / radiations
 Position [chn] ISO reference energy
 Position [keV] ISO reference intensity
 Reference energy ISO decision threshold
 Reference intensity ISO confidence interval

- Implementation into bGamma of visual comparison of two spectra into the spectrum plot widget.
- The comparison can be established on the X-axis by both: channels or energy units and on the Y-axis by intensity (counts) or count rate (cps, counts per seconds).
- While on comparison mode the spectrum plot cursor provides current data for both the target and the comparison spectra across the X-axis.
- The comparison mode can be conveniently shown/hidden instantly by the spectrum plot context menu command.
- The parameters of the comparison mode visuals can be set via the corresponding entry in the programs' Preferences.
- All in all, the comparison mode provides a powerful tool for achieving excellent quality data acquisition as well as spectrum analysis.

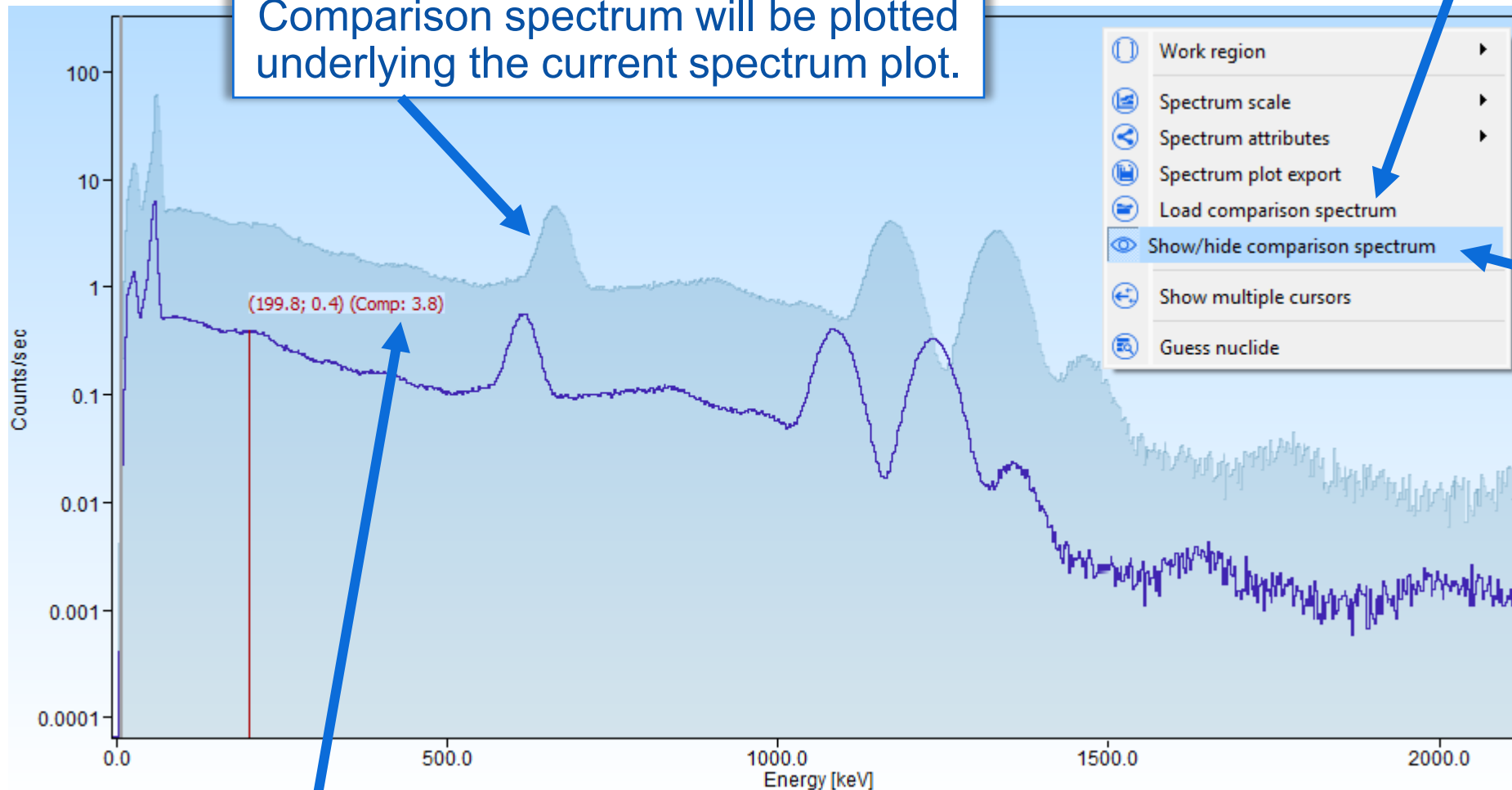
NEW

Comparison spectrum



Comparison spectrum can be loaded from the spectrum context menu.

Comparison spectrum will be plotted underlying the current spectrum plot.

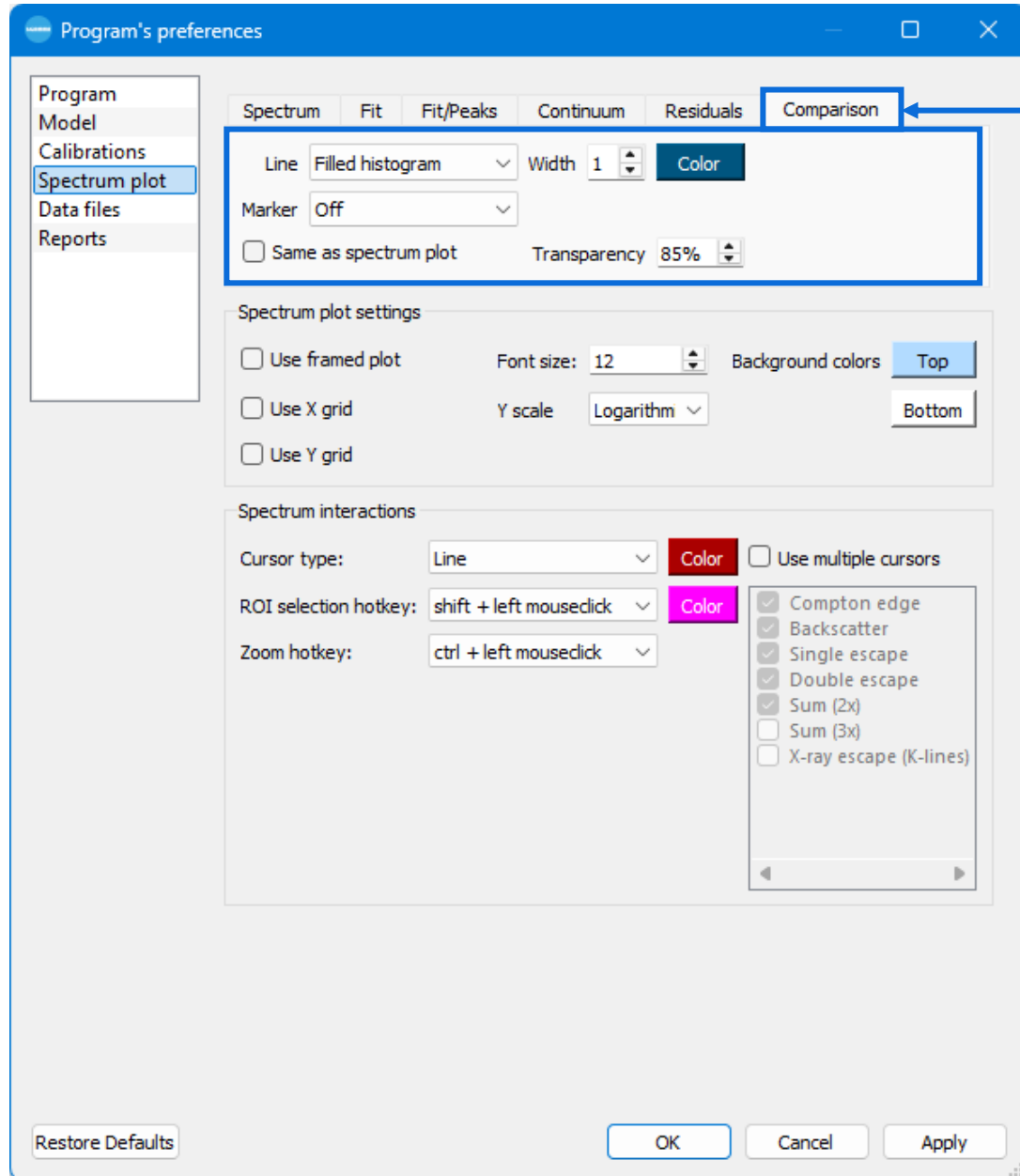


Comparison spectrum can be shown/hidden at any moment.

The Y-scale value information from the comparison spectrum is added to the cursor tracer.

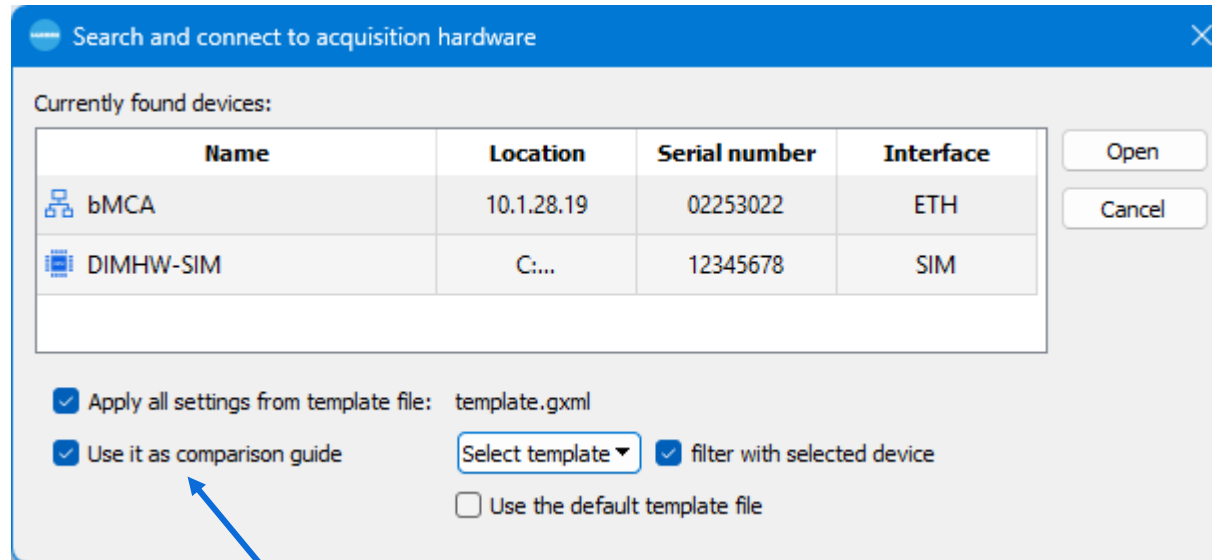
Comparison spectrum visuals can be setup through Preferences (see next slide).

Preferences: Spectrum plot tab updated



Included the comparison spectrum plot settings.

Comparison spectrum when connecting to a device



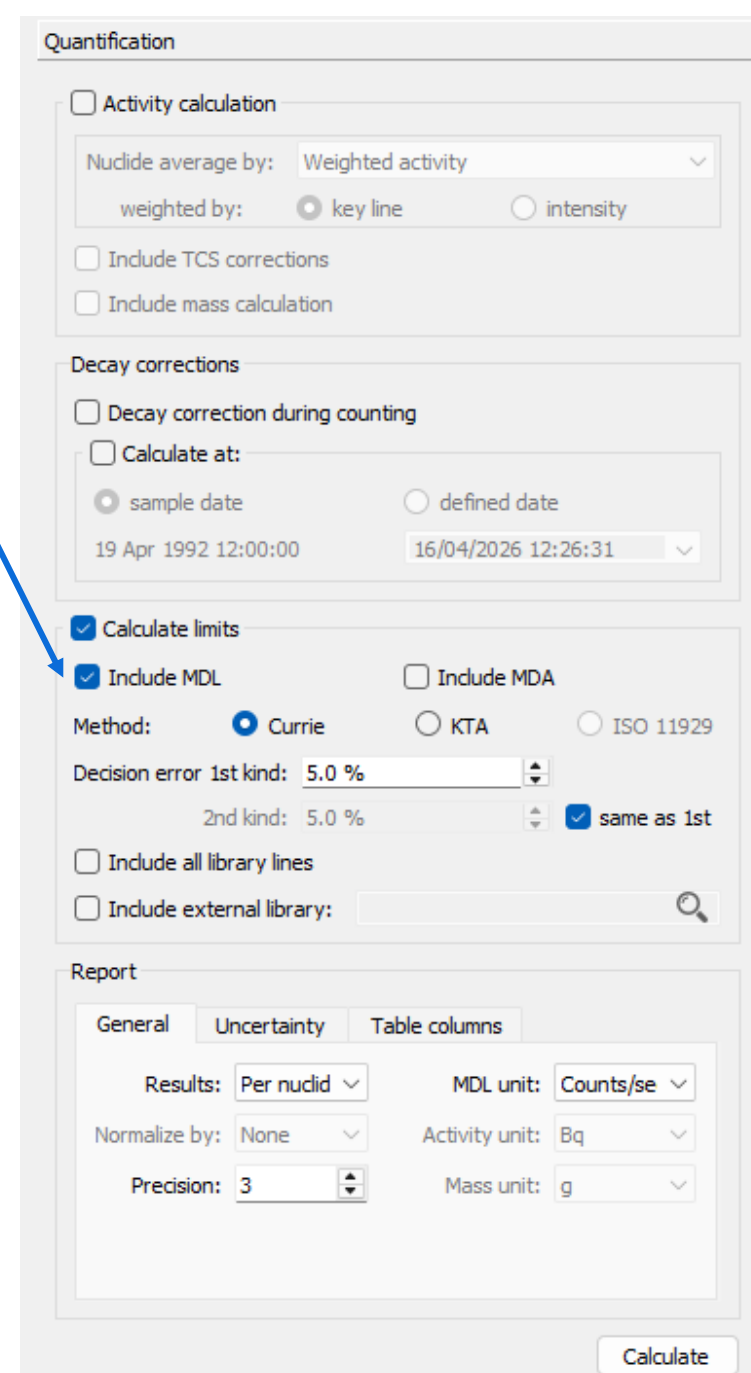
When connecting to a device, you can select the template file (if included) as comparison spectrum.

MDL calculation included

NEW

The option for calculation of minimum detection limit (MDL) is now included as addition to the minimum detectable activity (MDA). Similar options/setup apply.

Note that MDL will mainly depend on the peak's continuum and some statistics from the selected method. No efficiency is involved in this case, in difference to the MDA calculations.



The screenshot shows the 'Quantification' settings window. The 'Calculate limits' section is expanded, showing the following options:

- Calculate limits
- Include MDL
- Include MDA
- Method: Currie, KTA, ISO 11929
- Decision error 1st kind: 5.0 %
- 2nd kind: 5.0 %
- same as 1st
- Include all library lines
- Include external library: [Search]

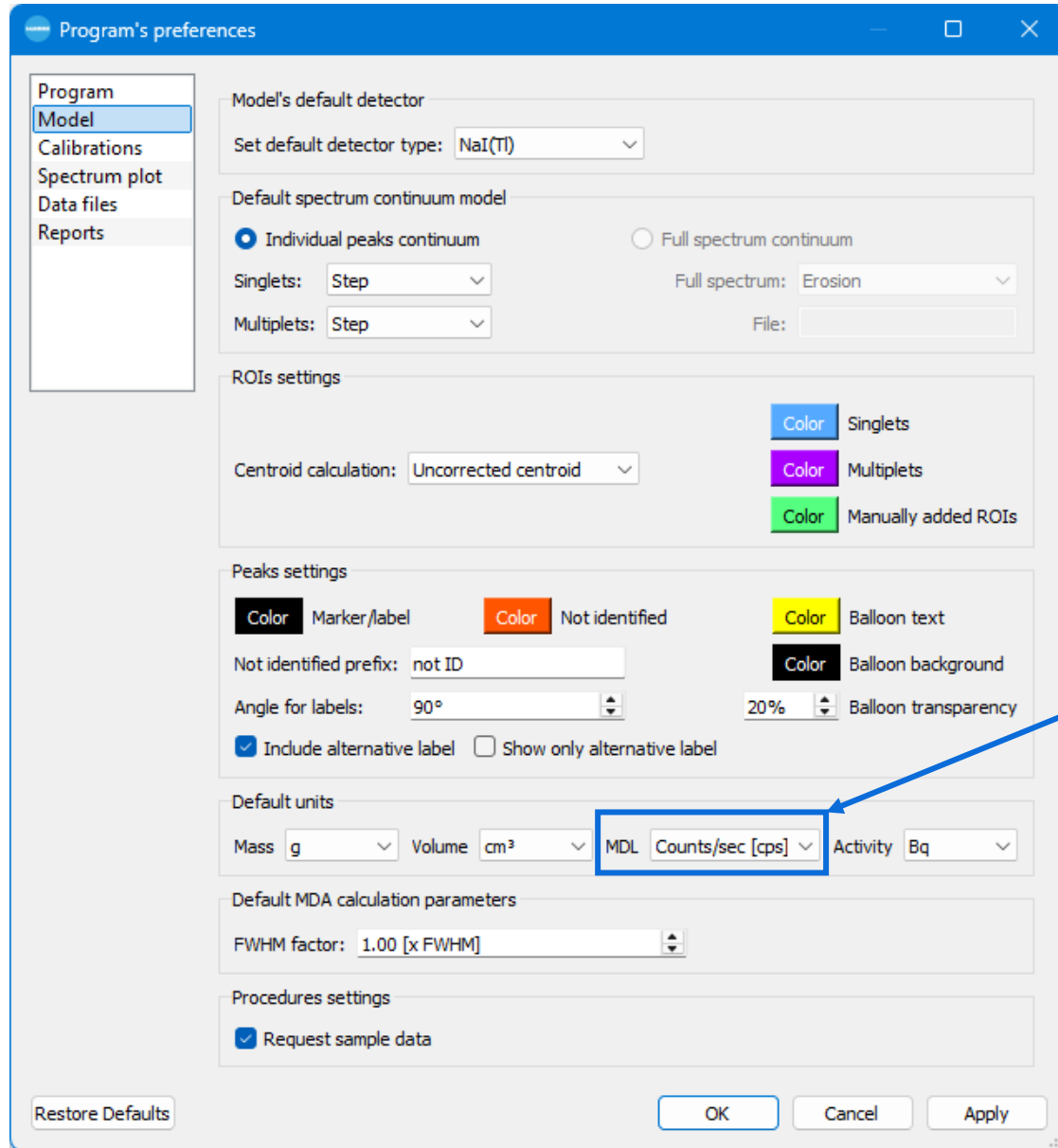
The 'Report' section is also visible, with the following settings:

- General: Results: Per nuclid, MDL unit: Counts/se
- Normalize by: None, Activity unit: Bq
- Precision: 3, Mass unit: g

A 'Calculate' button is located at the bottom right of the window.



Preferences: Model tab updated



Included the option for MDL default reporting unit.

New MDL dedicated report



MDL quantification report

Settings for calculations:
 Reporting method: per nuclide
 Values calculated at: measurement start date/time (16 Apr 2026 12:26:29)
 MDL units: Counts/sec [cps]
 Calculation method for MDL: Currie [Ref: Lloyd A. Currie, DOI: 10.1021/ac60259a007]
 Decision errors for MDL: $\alpha = 5.000\%$ (1st kind, deciding that the signal is present when it is not)
 $\beta = 5.000\%$ (2nd kind, failing to decide that the signal is present when it is)

All uncertainties are reported at **1.0 sigma**.

| Nuclide | Line labels | Reference energy [keV] | Reference intensity [%] | Line MDL [cps] | Nuclide MDL [cps] |
|---------|-------------|------------------------|-------------------------|---------------------|---------------------|
| Am-241 | γ | 59.541 ± 0.000 | 35.900 ± 0.400 | (1.764 ± 0.002)E+00 | (1.764 ± 0.002)E+00 |
| Co-60 | γ | 1173.228 ± 0.003 | 99.850 ± 0.030 | (1.483 ± 0.002)E+00 | (1.253 ± 0.002)E+00 |
| | γ | 1332.492 ± 0.004 | 99.983 ± 0.001 | (1.253 ± 0.002)E+00 | |
| Cs-137 | γ | 661.657 ± 0.003 | 85.100 ± 0.200 | | |
| K-40 | γ | 1460.822 ± 0.006 | 10.660 ± 0.180 | | |

MDL quantification report

Settings for calculations:
 Reporting method: per peak
 Values calculated at: measurement start date/time (16 Apr 2026 12:26:29)
 MDL units: Counts/sec [cps]
 Calculation method for MDL: Currie [Ref: Lloyd A. Currie, DOI: 10.1021/ac60259a007]
 Decision errors for MDL: $\alpha = 5.000\%$ (1st kind, deciding that the signal is present when it is not)
 $\beta = 5.000\%$ (2nd kind, failing to decide that the signal is present when it is)

All uncertainties are reported at **1.0 sigma**.

| Line label | Position [chn] | Position [keV] | Nuclide | Reference energy [keV] | Reference intensity [%] | Line MDL [cps] |
|---|-----------------|------------------|----------------|------------------------|-------------------------|---------------------|
| Identified peaks associated with library radiations | | | | | | |
| γ | 30.491 ± 0.089 | 60.187 ± 0.194 | Am-241 | 59.541 ± 0.000 | 35.900 ± 0.400 | (1.764 ± 0.002)E+00 |
| γ | 534.609 ± 0.057 | 1172.929 ± 0.129 | Co-60 | 1173.228 ± 0.003 | 99.850 ± 0.030 | (1.483 ± 0.002)E+00 |
| γ | 605.570 ± 0.063 | 1332.826 ± 0.142 | Co-60 | 1332.492 ± 0.004 | 99.983 ± 0.001 | (1.253 ± 0.002)E+00 |
| γ | 306.090 ± 0.040 | 663.481 ± 0.088 | Cs-137 | 661.657 ± 0.003 | 85.100 ± 0.200 | (1.921 ± 0.002)E+00 |
| γ | 661.795 ± 0.441 | 1460.091 ± 1.000 | K-40 | 1460.822 ± 0.006 | 10.660 ± 0.180 | (1.256 ± 0.002)E+00 |
| Peaks not associated with any library radiation | | | | | | |
| PA [16.58] | 10.354 ± 0.000 | 16.584 ± 0.001 | Not identified | | | (8.928 ± 0.011)E-01 |
| PA [234.78] | 110.820 ± 0.455 | 234.776 ± 0.992 | Not identified | | | (1.897 ± 0.002)E+00 |
| PA [353.36] | 165.113 ± 0.564 | 353.361 ± 1.235 | Not identified | | | (1.766 ± 0.002)E+00 |
| PA [444.37] | 206.637 ± 0.594 | 444.374 ± 1.304 | Not identified | | | (1.694 ± 0.002)E+00 |
| PA [907.16] | 415.862 ± 0.502 | 907.158 ± 1.120 | Not identified | | | (2.113 ± 0.002)E+00 |
| PM [1768.36] | 797.071 ± 1.400 | 1768.360 ± 3.206 | Not identified | | | (3.241 ± 0.014)E-01 |

Report template definitions

Report Type: Short Full User-defined

Page Setup: Font type and size: Arial 8, Page Orientation: Portrait, Page Size: A4, Show preview before printing

User Defined Report Template: **_TABMDL**

- HEAD Add header 1
- Head Add header 2
- Header Add header 3
- Add line
- Op Add report tag
 - _TABALL
 - GENERAL
 - SETUPS
 - CALIBRATION
 - PEAKS/ROIS
 - NID
 - FITTING
 - QUANTIFY**
 - _TABMDL**
 - _TABQUANTIFY
 - _TABQUANTIFYSIMPLIFIED
 - _TABEXTLIBMDA
 - _TABISO11929
 - _TABPURITY
 - MCA
 - TCS

Report Windows Help

Report template...
 Dedicated reports
 Clear report
 Append contents
 Export current report
 Print current report

Full report
 User-defined report
 Logo
 Detector
 Sample
 Experimental setup
 Measurement
 Certificate
 Background model
 Spectrum plot
 Calibration
 Peaks/ROIs
 Nuclide identification (NID)
 Fitting
Quantification results
 Data acquisition
 MCA
 User currently signed
 Procedure settings
 Signatures

MDL for peaks
 MDL/MDA/Activity
 Simplified for nuclides
 MDL/MDA for external library
 ISO-11929:2010 standard
 True Coincidence Summing results
 True Coincidence Summing (extended)

Reports the minimum detection limits for all peaks within the spectrum. The used settings for calculation are listed first within this report. This report is available if the option has been selected. The report table will show: "Peak label", "Peak type", "Related ROI", "Peak position" (in channels), "Peak position" (in keV), "MDL" (calculated peak's MDL, in selected MDL units), "Identified nuclide" (from NID).

Quantification model improved

Settings have been better grouped into sections.

They are dynamically enabled/disabled depending on the current document analysis status and on the other selected settings.

Quantification

Activity calculation

Nuclide average by:

weighted by: key line intensity

Include TCS corrections

Include mass calculation

Decay corrections

Decay correction during counting

Calculate at:

sample date defined date

19 Apr 1992 12:00:00

Calculate limits

Include MDL Include MDA

Method: Currie KTA ISO 11929

Decision error 1st kind:

2nd kind: same as 1st

Include all library lines

Include external library:

Report

General **Uncertainty** Table columns

Results: MDL unit:

Normalize by: Activity unit:

Precision: Mass unit:



Included the MDL calculation option and its unit selection.

Included new Report tabs for:

Uncertainty settings
User can manage now if include them or not in reports, and their value format

Table columns settings
User can select the parameter to include or not in report tables

Report

General **Uncertainty** Table columns

Include uncertainties

in absolute values in relative %

Report

General **Uncertainty** **Table columns**

| | |
|---|---|
| <input checked="" type="checkbox"/> Peaks / Radiations | <input checked="" type="checkbox"/> ISO peaks / radiations |
| <input type="checkbox"/> Position [chn] | <input checked="" type="checkbox"/> ISO reference energy |
| <input type="checkbox"/> Position [keV] | <input checked="" type="checkbox"/> ISO reference intensity |
| <input checked="" type="checkbox"/> Reference energy | <input checked="" type="checkbox"/> ISO decision threshold |
| <input checked="" type="checkbox"/> Reference intensity | <input checked="" type="checkbox"/> ISO confidence interval |



Efficiency editor: updates and improvements

Load buttons have been unified into one. Functionality is similar as before.

The screenshot shows the 'bGamma Efficiency Calibration' software interface. The main window is divided into several sections:

- Efficiency groups:** A table listing various nuclides and their calibration parameters. The selected entry is 'Br-82 [221.48, I=2.26%]' with a TCS of 1.309.
- Fitting settings:** Includes the fitting function $\epsilon = \prod \exp(a_i \cdot \ln(E))$, fitting method (Non-linear), fitting curve model (Single curve), and number of parameters (5). It also has checkboxes for 'Weight fitting with uncertainties' and 'TCS correction'.
- Fit results:** Shows 14 points selected, with parameters a_0 through a_4 and their uncertainties. It also displays $R^2 = 0.926746$, $R^2_{red} = 0.900108$, and $\chi^2 = 7.164098$.
- Compute efficiency:** A section for calculating efficiency at a specific energy. For $E_n[keV] = 221.480 \pm 0.002$, the computed efficiency is 6.828 ± 1.143 %, and the TCS corrected efficiency is 5.414 ± 0.212 %.
- Plot settings:** Includes checkboxes for 'Log scale', 'Show efficiency', 'Show TCS', 'Show residuals', and 'Show TCS scores'.
- Legend:** A legend is present in the plot area, and a context menu is shown for the legend position, with options: 'Top left' (selected), 'Top right', 'Bottom left', and 'Bottom right'.

Zoom/panning actions added for the plot. They follow the same as for the spectrum plot.

Efficiency graph energy scale is not limited to the points range (better to fine-tune the calibration curves).

Legend has been included for the calibration curves.

Possibility to set plot legend position within the graph (right-click on it)

Better integration of bGamEff results into bGamma

When efficiency is imported from bGamEff and accepted, the editor will prompt a dialog like this one:

This dialog shows the setup/sample/detector data imported from bGamEff file and asks if you want to import them into your current bGamma document.

“Yes” will apply setup and detector data

“Yes to all” will also apply the sample data

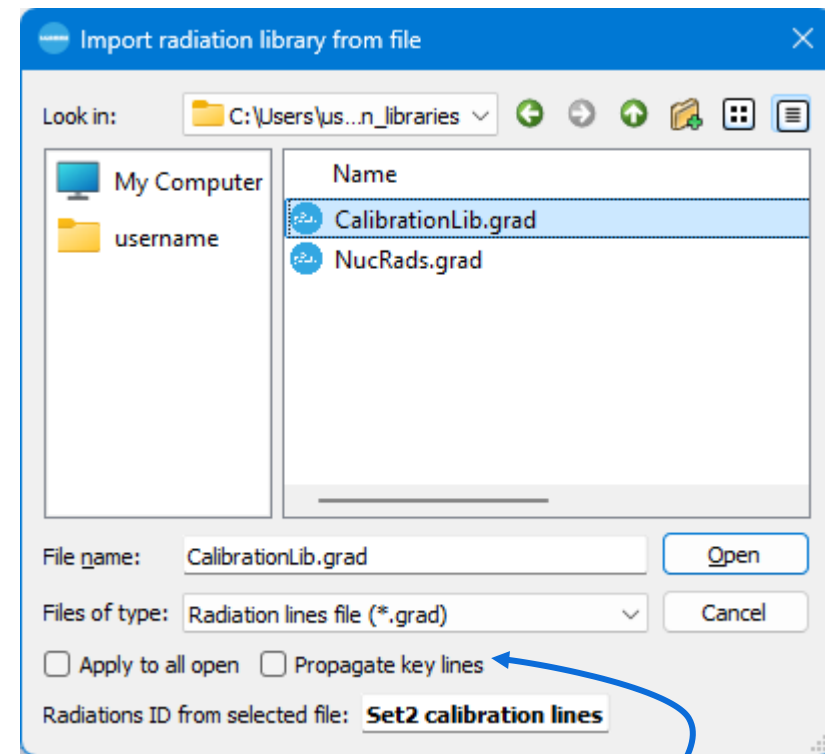
“No” will not apply any data

Nuclide editor: key-lines save/load

Key lines flag are also included when saving the selected nuclide radiations into a library file (.grad).

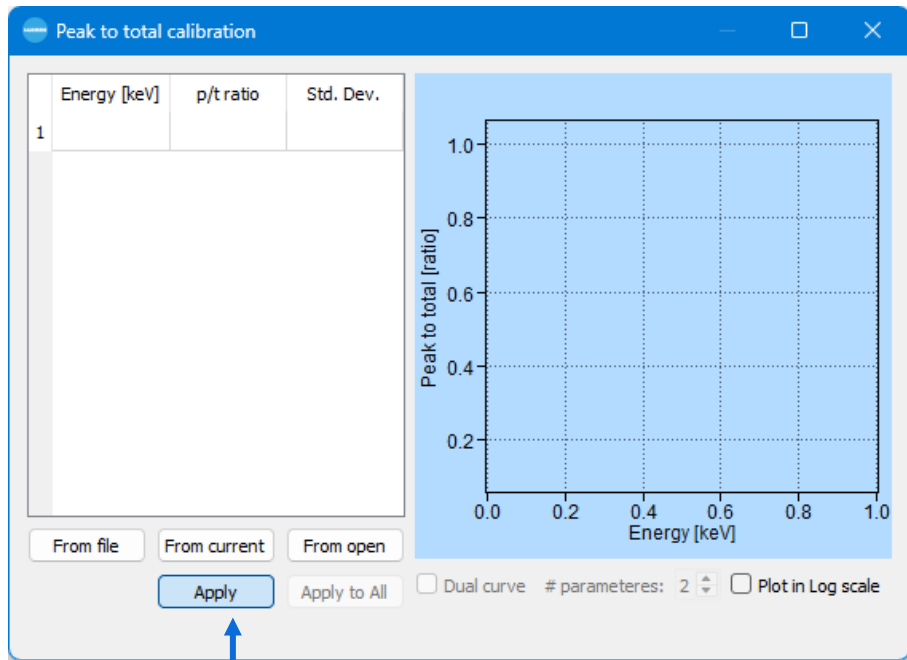
This allows the possibility to import them when loading a library file and propagate them to the local nuclear library.

This way, nuclide library files are fully exchangeable.

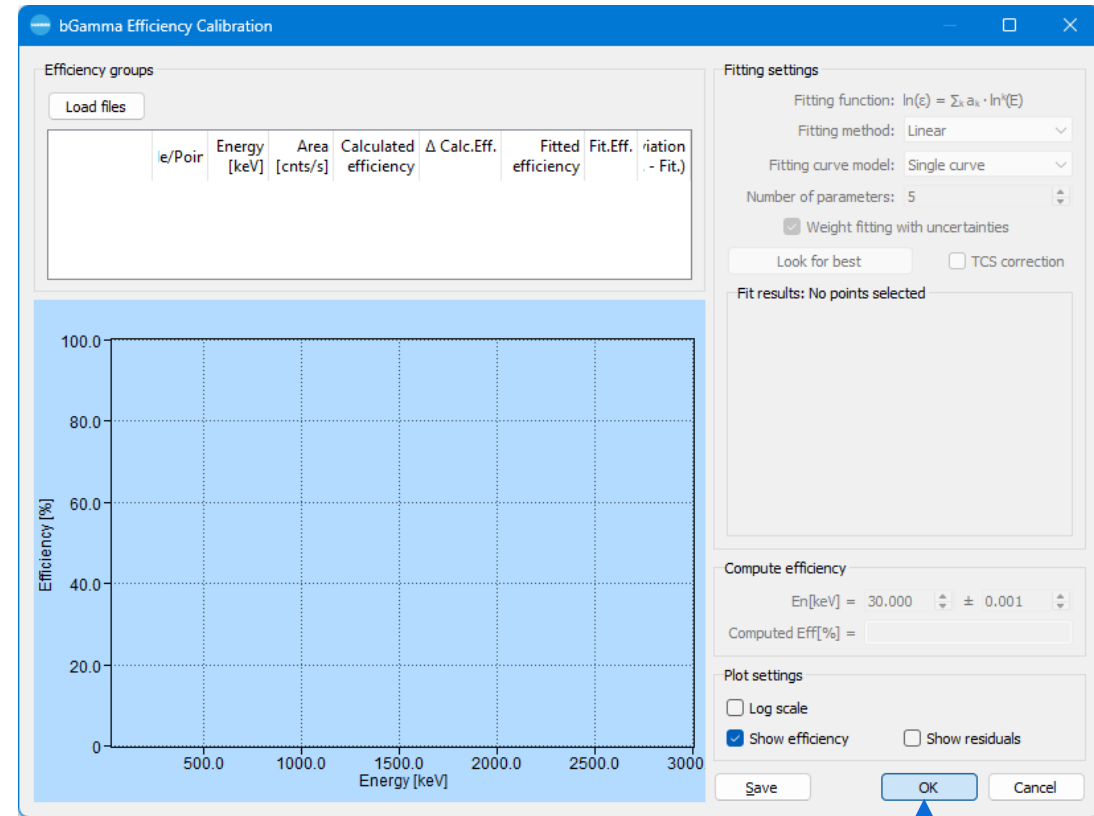


When loading a library file, you will find a new option to ask for importing and propagating the key lines from the file to the local nuclear library.

Remove functionality for Pt and Efficiency



To remove Peak-to-total calibration from the current document, clear the data table, click the Apply button, and confirm when prompted.



To remove Efficiency calibration from the current document, clear all the data from table, click the OK button, and confirm when prompted.

Integration of the new FLINT device

The information from the FLINT integrated detector is read when connected and propagated through the corresponding document.



bGamma

Device info:

Name: bMCA
Serial Number: 19254001
Firmware: V2.3.003
Firmware date: 10 Dec 2025
Production date: 19 Jan 2026

Integrated detector:

Manufacturer: Scionix Holland
Crystal: NaI(Tl)
Serial number: S3AB1690
Model: 51B51/SIP-E3-X11
Geometry: Cylindrical

OK

Detector editor

General data

Name/ID:

Model:

Serial number:

Type:

Manufacturer:

Recommended bias voltage [Vdc]:

Certification date:

Comments

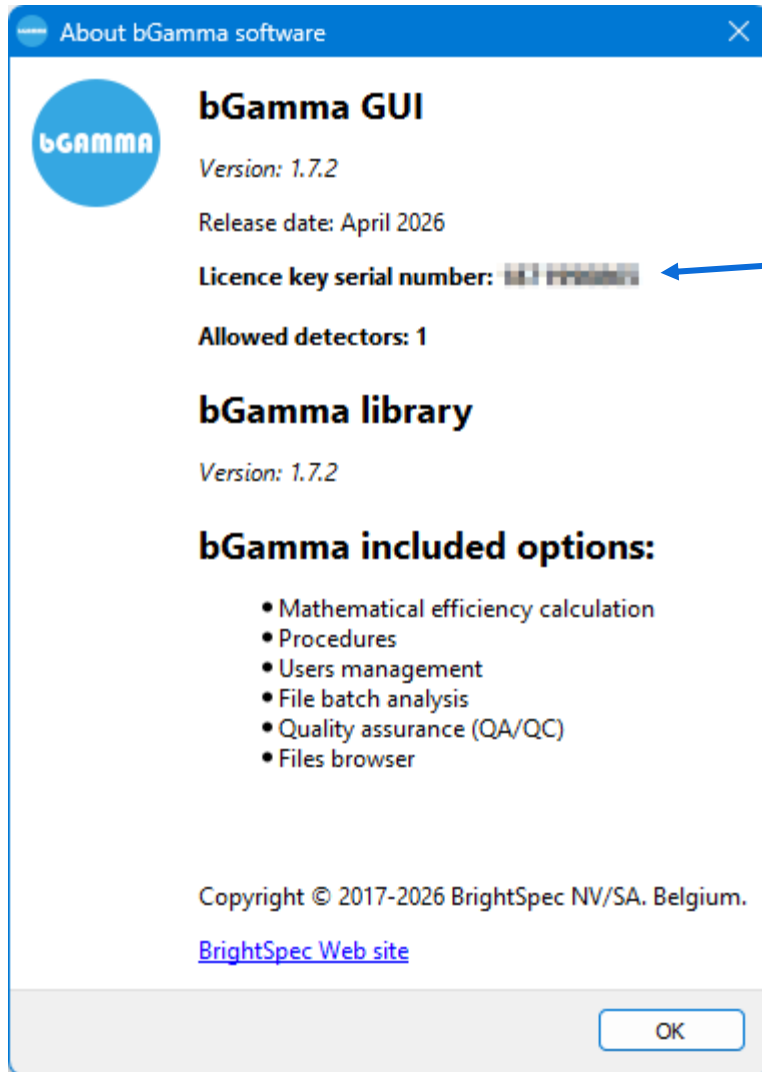
Resolution

FWHM@ = keV

Reference document:

Save Cancel

About info updated



The software licence key serial number is now displayed here for better reference.

BRIGHTSPEC

Smart devices, professional solutions

Contact us

The  DevTeam

✉ support@brightspec.be



BRIGHTSPEC N.V.

Sciencepark
Galileilaan 15
B-2845, Niel
BELGIUM

Phone: +32-(0)3-844 95 86



BRIGHTSPEC
BRIGHTSPEC