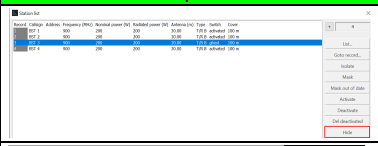
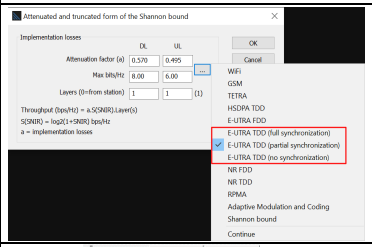
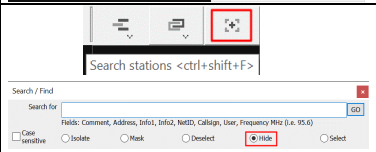
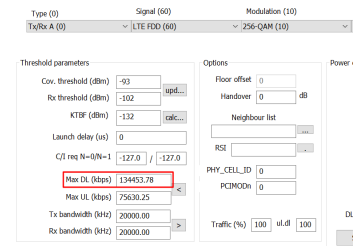
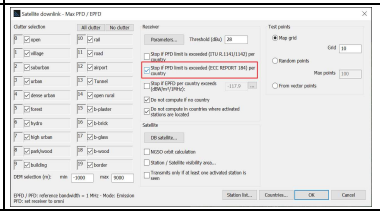
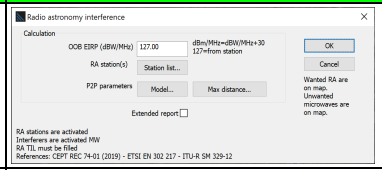
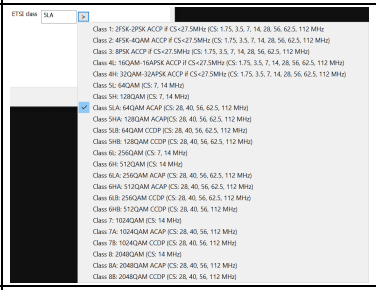
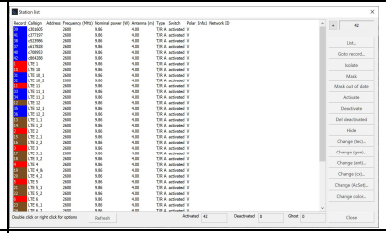
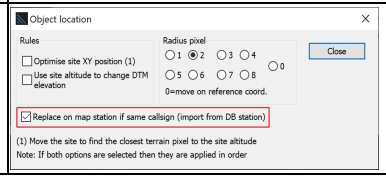
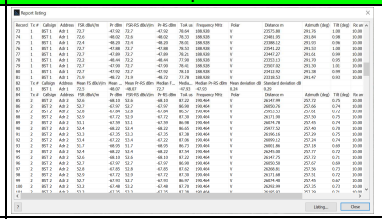
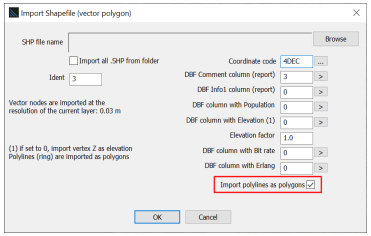
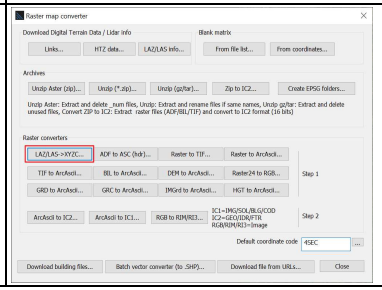
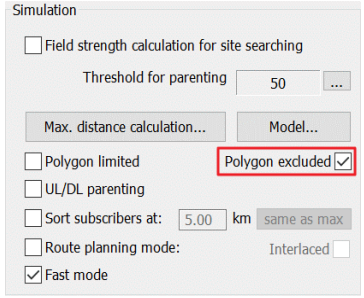
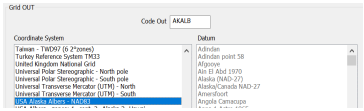
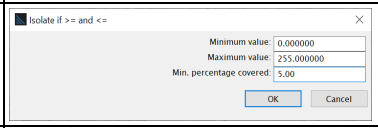
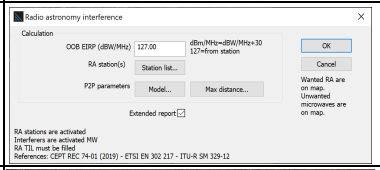
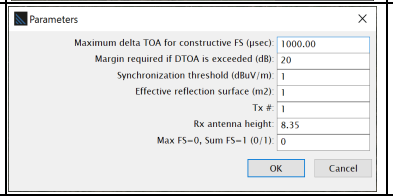
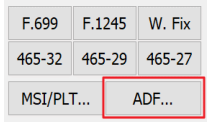
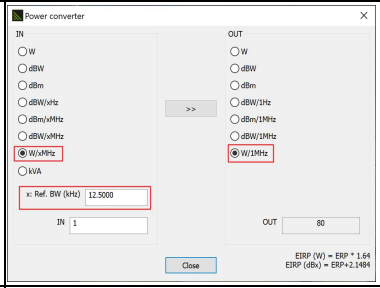
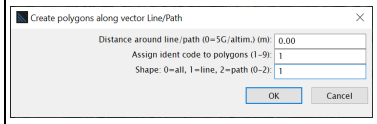
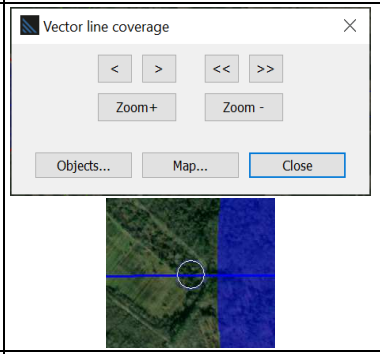
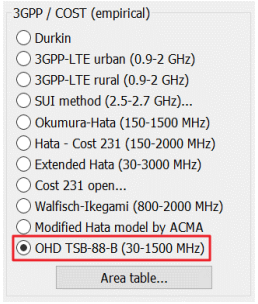
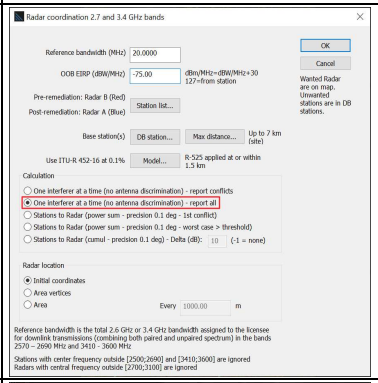
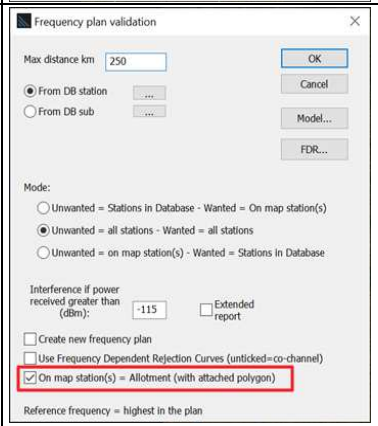
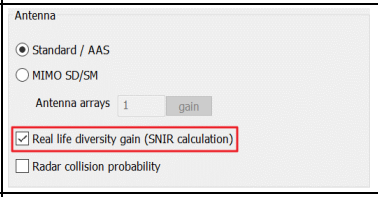
Date	Version	*Type*	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
02/11/2020	V23.0.0	*NEW*		**Ghost stations**	**Interface**	The management of "Ghost" stations (outside map) has been modified. Now the "Ghost" mode is related to "hidden" stations ("Hide" from the Microwave link list, the Station list and the Tree view). Ghost stations/MW links are removed from the display on the map and will also be ignored in all calculations or analysis.
02/11/2020	V23.0.0	*MODIF*		**Shannon law**	**Radiocom. mobiles / Mobile radiocom.**	The "E-UTRA TDD (full synchronization)", "E-UTRA TDD (partial synchronization)" and "E-UTRA TDD (no synchronization)" presets have been added. The DL and UL Attenuation factors will be updated accordingly: the standard attenuation factors will be lowered in case of partial or no synchronization.
03/11/2020	V23.0.0	*NEW*		**Search tool (<ctrl+shift+f>)**	**Interface**	The "Hide" option has been added.
03/11/2020	V23.0.0	*MODIF*		**LTE STATION PARAMETERS/eNB tab**	**Radiocom. mobiles / Mobile radiocom.**	The maximum DL bit rate of the LTE stations can now be defined for modulations up to 256QAM. Note: The maximum UL bit rate in that case is limited to 64 QAM.
03/11/2020	V23.0.0	*MODIF*		**Rx antenna discrimination (coverage mode)**	**Calculs / Calculations**	The "Global XPD" value or XPD value defined from station parameters is now ignored if the receiving antenna discrimination is set with a RPE antenna.
05/11/2020	V23.0.0	*MODIF*		**Drag and Drop on map**	**Interface**	Multi geometry of vector files is now supported (for example: KMZ with lines, polygons and points).
06/11/2020	V23.0.0	*MODIF*		**SATELLITE/Satellite PFD/EPFD map..**	**Satellite**	The EEC Report 184 PFD limits have been added.

Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
06/11/2020	V23.0.0	***NEW***		**SPECTRUM/** **MW links vs Radio Astronomy interference...**	**Contrôle du spectre / Spectrum management**	The CEPT recommendation 74-01 has been updated (version from May 2019). And the spectrum masks from ETSI EN 302 217-2 V3.2.2 (2020-2) for all classes have been added (classes: 1-2-3-4L-4H-5L-5H-6L-6H-7-8-5LA-5HA-6LA-6HA-7A-8A-5LB-5HB-6LB-6HB-7B-8B). This feature uses specific spectrum masks for spurious domain emission limits with reference bandwidth. Note: Victims are activated Radio Astronomy stations and Interferers are activated MW links. The TIL of the victim stations must be correctly set.
06/11/2020	V23.0.0	***NEW***		**MW LINK PARAMETERS/Equipment tab**	**Radiocom. fixes (FH et PMP) /** **Fixed radiocom. (MW and PMP)**	An ETSI class selector has been added.
10/11/2020	V23.0.0	***NEW***		**LIST/Station list**	**Interface**	The station color (user defined or default color) has been added to the first column of the list view.
10/11/2020	V23.0.0	***NEW***		**Click on map on a station location**	**Interface**	The "Activate site" and "De-activate site" options have been added. The stations located inside the "Min co-site distance" radius (set in the Preference dialog box) from the clicked station will be activated or deactivated.
11/11/2020	V23.0.0	***MODIF***		**SUBSCRIBER DATABASE/List...**	**Interface**	The clutter height has been added to the listing.
11/11/2020	V23.0.0	***NEW***		**STATION DATABASE/On map** **STATION DATABASE/On map+cover**	**Interface**	The "Replace on map station if same callsign" option has been added. The stations on the map having the same callsign as the records of the database will be replaced. In case duplicated callsigns are present on the map, only the first station will be replaced. This option is saved in in the parameter file (PRM).

Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
15/11/2020	V23.0.0	***NEW***		**RIGHT CLICK ON MAP/POINT TO POINT/ Tx received (variable location)...**	**Calculs / Calculations**	This feature will compute 81 profiles between activated station(s) and selected point by changing transmitter and receiver locations by +/- 1 pixel around their current position (3x3 matrix). It will then compute Mean and Median field strength and power received, Mean absolute deviation (method n) and Standard deviation (method n-1). This feature is useful to get field strength and power received distribution based on DTM matrix resolution since the location accuracy of a given point on a matrix is always greater than +/- 1 pixel.
17/11/2020	V23.0.0	***MODIF***		**FILE/SHARE/EXPORT GOOGLE EARTH/ GE coverage and stations… FILE/SHARE/EXPORT GOOGLE EARTH/ GE site by site coverage…**	**Interface**	Tilt and antenna name of the stations have been added.
17/11/2020	V23.0.0	***NEW***		**FILE/IMPORT/VECTOR LAYER/From SHP Polygon...**	**Interface**	The "Import polylines as polygons" option has been added. It converts a polyline geometry to polygon geometry even if the start / end coordinates are not identical. Note: By default, this function converts polylines to polygons if start / end coordinates of the polyline are the same. Only shapefile types: 3,5,13,15,23,25 are treated. Shapefile types: 0: Null 1: Point 3: Polyline 5: Polygon 8: Multipoint 11: PointZ 13: PolylineZ 15: PolygonZ 18: MultipointZ 21: PointM 23: PolylineM 25: PolygonM 28: MultipointM 31: Multipatch
17/11/2020	V23.0.0	***MODIF***		**MAP/CONVERT/Map data converter…**	**Interface**	In the "LAZ/LAS -> XYZC…" feature the resolution now 0.01m.

Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
17/11/2020	V23.0.0	MODIF		**SUBSCRIBER/Prospective planning…**	**Calculs / Calculations**	The "Polygon excluded" option has been added. If checked, stations are deployed outside polygon areas of the current vector file.
18/11/2020	V23.0.0	NEW		**TOOLS/EXTENSIONS/Antios…**	**Interface**	A new version of Antios has been implemented (v3.0.23).
20/11/2020	V23.0.0	NEW		**TOOLS/Cartographic conversion…**	**Interface**	The following projections have been added: NAD83/Alaska Albers (code AKALB) and NAD83/Yukon Albers (code YKALB).
21/11/2020	V23.0.0	MODIF		**MAP/VECTOR LAYER/ Isolate vectors from result layer…**	**Interface**	A listing has been added giving for each vector object the percentage covered.
25/11/2020	V23.0.0	MODIF		**SPECTRUM/NATIONAL / REGIONAL/ FR: MW vs Radio Astronmy interference…**	**Contrôle du spectre / Spectrum management**	In cochannel cases (MW links vs. RA stations), the bandwidth ratio is applied and no ETSI filter is considered.
26/11/2020	V23.0.0	NEW		**RIGHT-CLICK ON MAP/POINT TO POINT/ Multipath...**	**Calculs / Calculations**	The Multipath functions have been merged and moved to the Point to point menu.
28/11/2020	V23.0.0	NEW		**DATABASE/LIBRARY/ANTENNA DATABASE/ List…**	**Interface**	When a record is added ("Add…" button), the import of 2D ADF format has been added.

Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
28/11/2020	V23.0.0	MODIF		**TOOLS/RF CALCULATORS/Power converter…**	**Interface**	The W/MHz unit has been added.
29/11/2020	V23.0.0	MODIF		**SQL tables** **EWX files**	**Interface**	The "Ident" field of the MW links has been extended to 15 characters in the SQL tables and EWX files.
30/11/2020	V23.0.0	MODIF		**GDAL library**	**Interface**	The GDAL library has been updated but for 64-bit releases only.
30/11/2020	V23.0.0	NEW		**RECTANGLE SELECTION/VECTORS/** **Create vector polygons around Line/Path…**	**Interface**	This feature will create a vector polygon (rectangle) around each selected vector line or path. By default, the length of each rectangle is corresponding to the selection and the width is the "Distance around line/path" set in meters. If the "5G/altim." option is selected, safeguard areas around selected vector line(s) or path (s) segments will be built as follows: Area 1 (rectangle): Length =Segment length +/-6100 m and Width = 800 m. Area 2 (rectangle): Length =Segment length +/-2100 m and Width = 1820 m.
30/11/2020	V23.0.0	MODIF		**RECTANGLE SELECTION/VECTORS/** **Vector line not covered…**	**Interface**	This feature will move the cursor on non-covered points of the selected vector line(s).
02/12/2020	V23.0.1	NEW		**TOOLS/Propagation model…**	**Calculs / Calculations**	The Okumura-Hata-Davidson propagation model has been added according to TSB-88-B specifications: https://fasma.org/wp-content/uploads/TSB-88-B-Wireless-Communications-Systems-Performance-in-Noise-and-Interference-Limited-Situations-Recommended-Methods-for-Technology-Independent-Modeling-Simulation-and-Verifications.pdf.

Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
03/12/2020	V23.0.1	MODIF		**MULTIPOINT/ASSIGNMENT/ Frequency plan validation…**	**Contrôle du spectre / Spectrum management**	A new report (simplified) has been implemented.
03/12/2020	V23.0.1	MODIF		**PATH/PATH POINT TO POINT/RECEIVING/ Max-hold…**	**Radiocom. mobiles / Mobile radiocom.**	Distance, azimuth and tilt between the Best server and each Way-Point have been added to the report.
06/12/2020	V23.0.1	MODIF		**SPECTRUM/NATIONAL / REGIONAL/ UK: Radar coordination in 2.7 and 3.4 GHz bands…**	**Contrôle du spectre / Spectrum management**	The "One interferer at a time (no antenna discrimination) - report all" option has been added. In this mode, only 1 interferer at a time is considered (no power sum) with no receiving antenna discrimination applied on the radar. Margins and OK/NOK status have been added to the report.
06/12/2020	V23.0.1	NEW		**MULTIPOINT/ASSIGNMENT/ Frequency plan validation…**	**Contrôle du spectre / Spectrum management**	The "On map station(s) = Allotment (with attached polygon)" option has been added. For each activated station on the map with an attached polygon, the station is relocated on each vertex of the polygon to compute the power received from / to this station (in addition to the original location). With "Create new frequency plan" option, the name of the new plans is now: FP_xx with xx = number of the plan created during the calculations.
07/12/2020	V23.0.1	NEW		**TOOLS/Interference restriction…**	**Radiocom. mobiles / Mobile radiocom.**	The "Real life diversity gain (SNIR calculation)" option has been added. If checked, it will modify the MIMO gain by a factor between 0 and 1 (0 excluded) computed from the flat SNIR value.
10/12/2020	V23.0.1	NEW		**Map thumbnails**	**Interface**	The mouse wheel support to zoom in/out has been added in the map the thumbnails displayed in the dialog boxes (Station parameters/ Site tab, Project properties, …).
11/12/2020	V23.0.1	MODIF		**Export .PLT 2D**	**Interface**	The unit of the antenna gain has been added. The unit is set according to the current settings.

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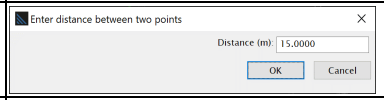
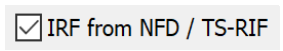
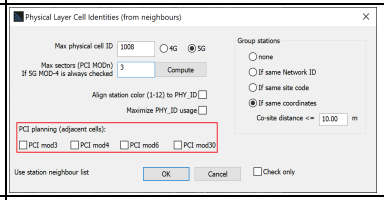
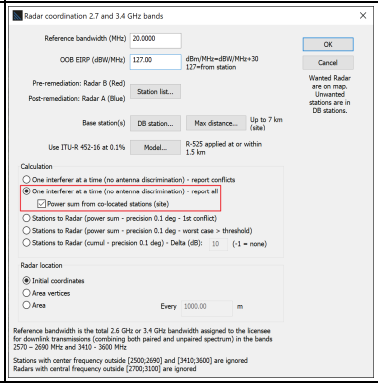
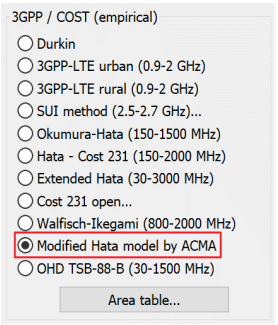
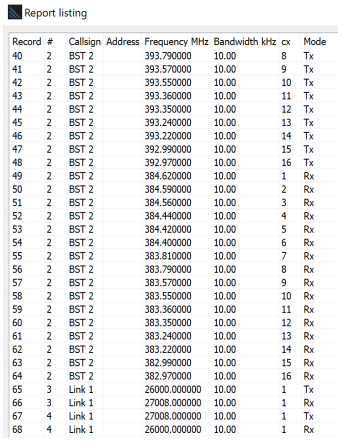
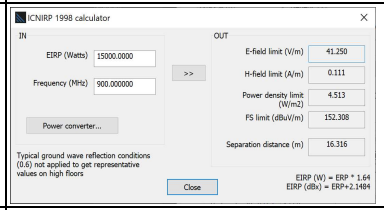
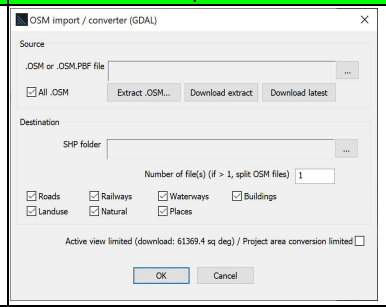
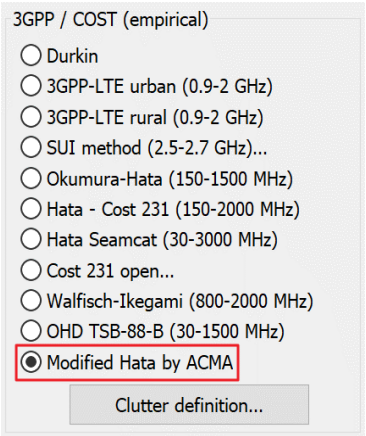
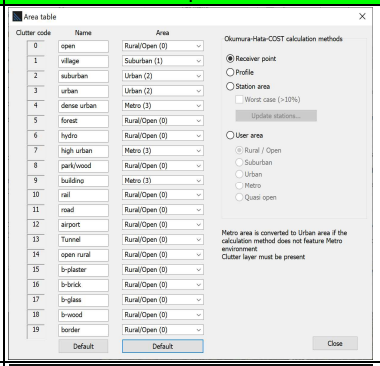
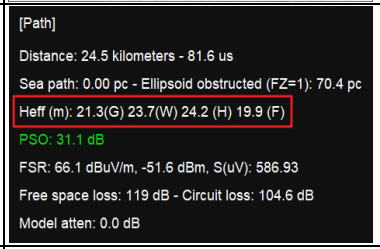
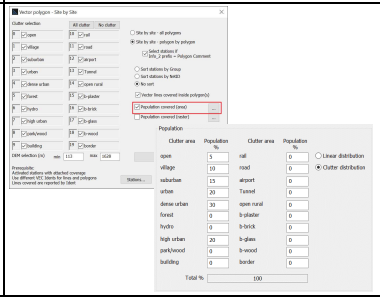
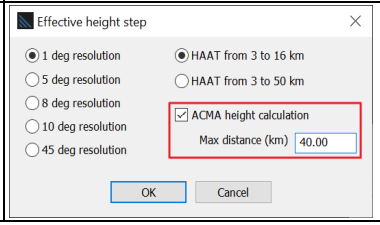
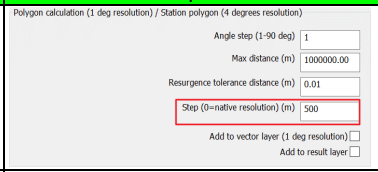
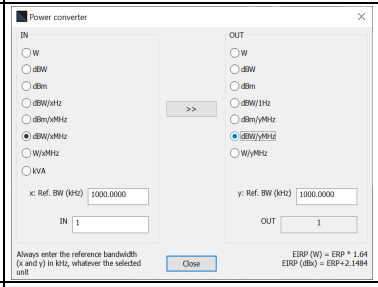
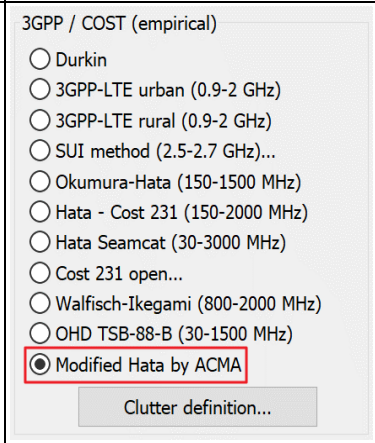
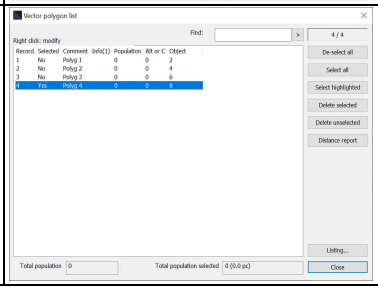
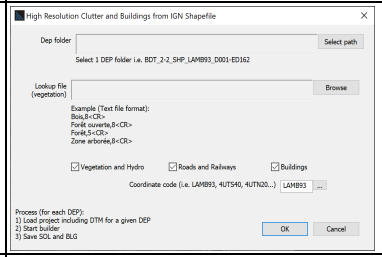
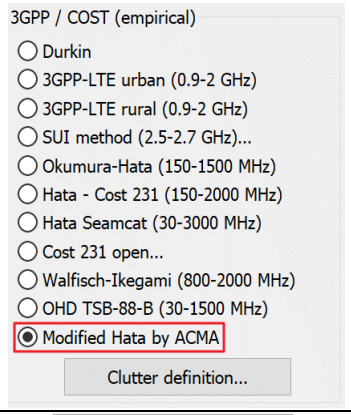
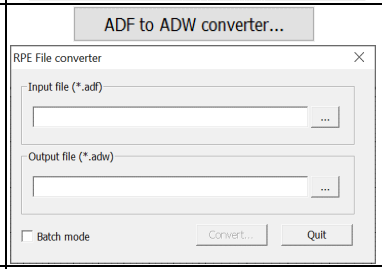
13/12/2020	V23.0.1	*MODIF*	Don't add location variation in wanted threshold Synchronization threshold = threshold - margin Signal levels < KTBF are skipped	**COVERAGE/NETWORK INTERFERENCE/ COFDM LP map… POLYGON TOOL/COFDM probability map…**	**Radiocom. mobiles / Mobile radiocom.**	Tips have been added to the settings of the Location probability map window. And signals lower than the KTBF value are no longer considered.
14/12/2020	V23.0.1	*NEW*		**Polyline tool/Draw DEM/Indoor line…**	**Interface**	This feature works as follows: Draw a line segment (2 points), then right-click on the second point and enter the distance corresponding to the line drawn. This function will then update the step of the DTM/Indoor, Clutter, Building and Image (IMG/RIM) layers and reload the project. It is mainly useful for indoor projects.
14/12/2020	V23.0.1	*NEW*		**FILE/INDOOR PROJECT/Indoor from IC1 file…**	**Interface**	The color palette (.PAL) file has been added to the dataset generated.
15/12/2020	V23.0.1	*NEW*		**IRF masks**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	The ETSI Spectrum masks 2020 have been added. The masks are coming from ETSI EN 302 217-2 V3.2.2 (2020-02) document, for 3A to 3M classes. Reference: https://www.etsi.org/deliver/etsi_en/302200_302299/30221702/03.02.02_60/en_30221702v030202p.pdf.
15/12/2020	V23.0.1	*NEW*		**COVERAGE/NETWORK PLANNING/ Physical layer cell identities...**	**Radiocom. mobiles / Mobile radiocom.**	The Modn (n=3, 4, 6 and 30) rules have been added for neighboring cells. For each option checked, the same PCI Modn value won't be assigned to neighboring cells. Note: The sectors of a same site won't be assigned with the PCI Modn value (with n="Max sectors"). And for 5G stations, PCI Mod4 rule will also be applied.
15/12/2020	V23.0.1	*NEW*		**SPECTRUM/NATIONAL / REGIONAL/ UK: Radar coordination in 2.7 and 3.4 GHz bands…**	**Contrôle du spectre / Spectrum management**	The "One interferer at a time (no antenna discrimination) - report all" feature has been added. If the "Power sum from co-located stations (site)" option is not checked, delta azimuths between unwanted station and wanted radar has been added to the report. The "Power sum from co-located stations (site)" option has been added. If checked, it computes power sum (OOB and In-band) from co-located stations and reports only the first station of a given site.
16/12/2020	V23.0.1	*MODIF*		**TOOLS/Propagation model…**	**Calculs / Calculations**	The "Modified Hata model by ACMA" has been added. The reference is given in: https://www.legislation.gov.au/Details/F2017C00968.

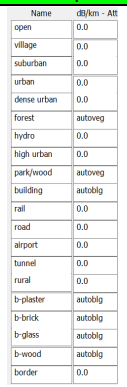
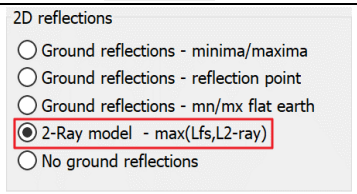
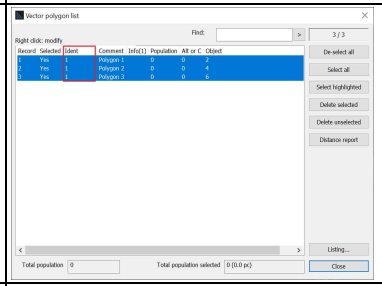
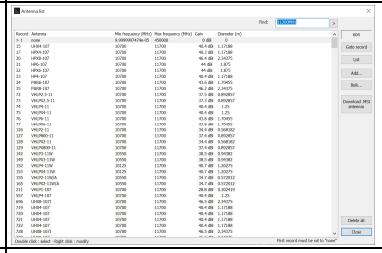
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
16/12/2020	V23.0.1	***NEW***		**POLYGON TOOL/Spectrum…**	**Contrôle du spectre / Spectrum management**	This feature creates a CSV report with containing transmitted and received frequencies with associated bandwidth for all activated stations inside the polygon selection. Only the transmitting and receiving channels are listed and at least 2 stations must be present on the map with at least 1 activated station.
17/12/2020	V23.0.1	***NEW***		**RECTANGLE TOOL/Bound box…**	**Interface**	This feature will create a CSV report with the bound boxes coordinates in 4DEC projection system for each activated polygon.
17/12/2020	V23.0.1	***NEW***		**TX/RX PARAMETERS/OPTIONS/ EMF-ICNIRP calculator…**	**Calculs / Calculations**	This feature will compute separation distance according to the limit levels given by the ICNIRP standard. E-field given in V/m, H-field in A/m, Power density in W/m² and Field strength in dBµV/m are displayed and the corresponding minimum separation distance is computed in m. Reference: ITU T-REC-K.52 (01/2018).
17/12/2020	V23.0.1	***NEW***		**OBJECT PROPERTIES/Display azimuth**	**Interface**	This option now draws an arc from [Current azimuth - BSR H] to [Current azimuth + BSR H], if BSR H > 0 (with BSR H= Beam Steering Range in the Horizontal plane).
20/12/2020	V23.0.1	***NEW***		**MAP/PALETTE/Palette manager…**	**Interface**	This feature will allow loading and saving .PAL files. It is also possible to apply a grey palette to the current image.
21/12/2020	V23.0.2	***MODIF***		**Command line**	**Interface**	In the Unicode releases, commands have been translated from UTF-16 to UTF-8 (action codes, converters, ...).

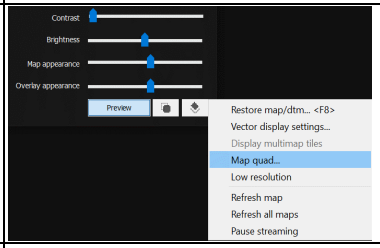
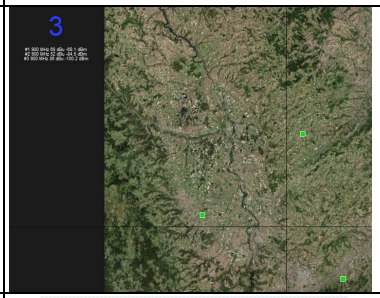
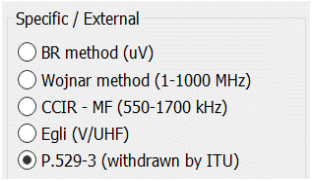
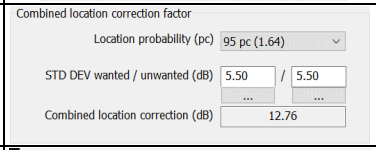
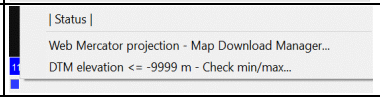
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
22/12/2020	V23.0.2	***MODIF***		**OSM to SHP converter…**	**Interface**	A new OSM tag selector has been implemented.
23/12/2020	V23.0.2	***NEW***		**TS / RIF files**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	TS and RIF files from ETSI EN 302 217-2 V3.2.2 (2020-02) standard have been added to the library (in the \\Base\TSR folder).
24/12/2020	V23.0.2	***MODIF***		**TOOLS/Propagation model…**	**Calculs / Calculations**	The "Modified Hata model by ACMA" has been removed.
29/12/2020	V23.0.2	***NEW***		**TOOLS/Propagation model…**	**Calculs / Calculations**	The "Modified Hata by ACMA" propagation model has been added.
30/12/2020	V23.0.2	***MODIF***		**SPECTRUM/NATIONAL / REGIONAL/ IT: Digital broadcast international coordination… SPECTRUM/NATIONAL / REGIONAL/ IT: Digital broadcast national coordination...**	**Contrôle du spectre / Spectrum management**	The length of the path (in km) from each transmitter to each test point and the percentage of this path over sea have been added to the report of these features. They are listed only with the "Extended report" option.

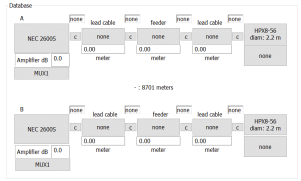
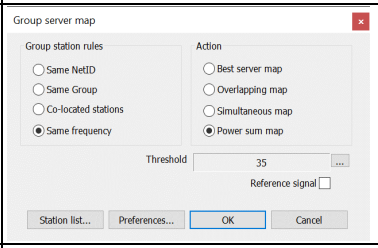
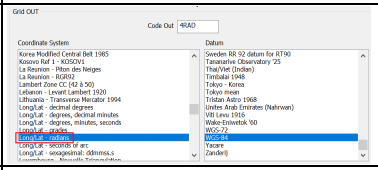
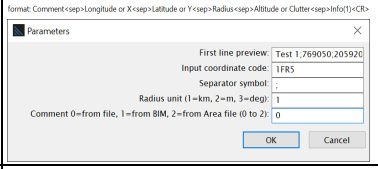
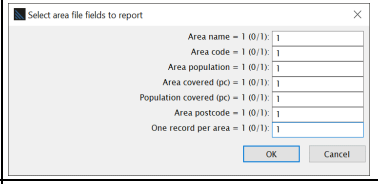
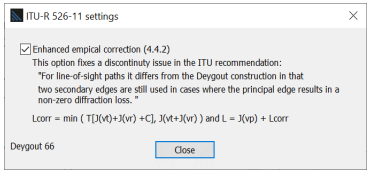
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
30/12/2020	V23.0.2	***MODIF***		**TOOLS/Propagation model…**	**Calculs / Calculations**	The "Clutter definition" parameters can now be considered even without any Clutter layer loaded in the project.
31/12/2020	V23.0.2	***NEW***		**Path profile window**	**Contrôle du spectre / Spectrum management**	In the profile window, the effective heights computed according to the Geneva agreement ("G", from 3 to 15 km), the Vienna agreement ("W", from 1 to 15 km), the Okumura-Hata model ("H", from 0.01 to 15 km) and the FCC rules ("F", from 3 to 16 km) are now displayed.
05/01/2021	V23.0.4	***MODIF***		**REPORT/VECTOR FILE/ VEC polygons - site by site coverage...**	**Calculs / Calculations**	The distribution of the population by clutter code has been added to the "area" mode.
05/01/2021	V23.0.4	***NEW***		**SPECTRUM/Effective heights… STATION POPUP MENU/COORDINATION/ Effective height…**	**Contrôle du spectre / Spectrum management**	The effective height calculation according to ACMA method has been added. Note that the effective heights are stored every 10° in the station parameters.

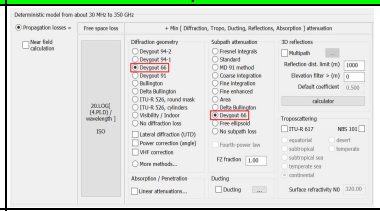
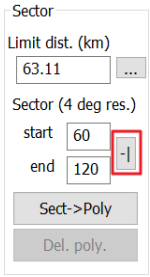
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
05/01/2021	V23.0.4	***MODIF***		**SPECTRUM/Threshold limited polygon calculation…** **STATION POPUP MENU/COORDINATION/ Threshold limited polygon calculation…**	**Contrôle du spectre / Spectrum management**	A step has been added for the calculation of the vertices. If the step is set to 0, the DTM resolution will be used to locate each vertex. Otherwise, the vertices will be located along each radial with a distance from the station as an integer multiple of the step.
06/01/2021	V23.0.4	***MODIF***		**TOOLS/RF CALCULATORS/Power converter…**	**Calculs / Calculations**	Input ("x: Ref. BW (kHz)") and Output ("y: Ref. BW (kHz)") bandwidths have been added. This will allow power conversion from/to units using reference bandwidths. Please note that reference bandwidths (x and y) must be populated in kHz, whatever the selected unit (Hz or MHz).
06/01/2021	V23.0.4	***MODIF***		**TOOLS/Propagation model…**	**Calculs / Calculations**	In the "Modified Hata by ACMA" model, an automatic formula switching has been introduced for the following frequency bands (applied to loss formula, reference frequency and area class (urban/suburban)): - F >= 1920 and F <= 1980 MHz; - F >= 2110 and F <= 2170 MHz; - F >= 1710 and F <= 1880 MHz; - F >= 2500 and F <= 2690 MHz; - F >= 703 and F <= 803 MHz. In all other cases, the formulas from ERC Report 068 and area class selection according to the clutter code or clutter definition tables are applied.
08/01/2021	V23.0.4	***NEW***		**Polygon list view**	**Interface**	The "Delete selected" and "Delete unselected" options have been added. To select/deselect polygons, use the selection buttons ("De-select-all", "Select all" or "Select highlighted").

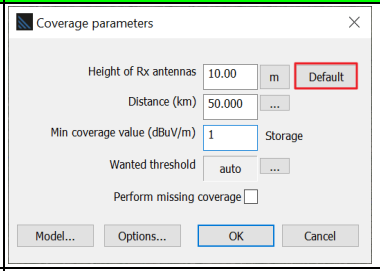
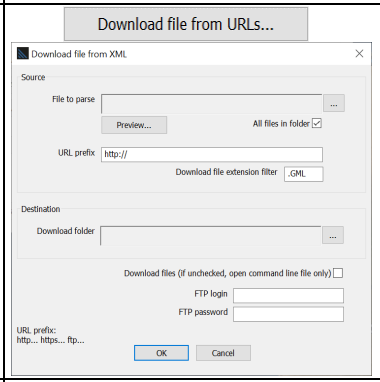
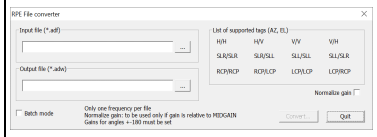
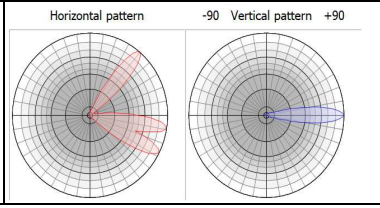
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
11/01/2021	V23.0.4	***MODIF***		**Reliability calculations**	**Radiocom. fixes (FH et PMP)** / **Fixed radiocom. (MW and PMP)**	The reliability for the worst month, with selective fading and without diversity is now computed from the summation of outage times (non-selective and selective). This is derived from equation 177 of the ITU-R P.530-17, but without directly summing the outage probabilities.
12/01/2021	V23.0.5	***NEW***		**MAP/RASTER OPERATION/MODIFY CLUTTER/ IGN Clutter and Buildings builder…**	**Interface**	The new IGN format is now supported.
12/01/2021	V23.0.5	***MODIF***		**TOOLS/Propagation model…**	**Calculs** / **Calculations**	In the "Modified Hata by ACMA" model, the average ground height calculations have been added (3x3 matrix). Notes about ACMA effective height calculations: In the profile view, if "Modified Hata by ACMA" model is selected, the effective antenna height displayed Heff (H) is Transmitter antenna height above sea level (DTM elevation + antenna height) – Hm, with Hm = DTM point elevation at receiver location averaged by a 3x3 matrix. If Heff < Transmitter antenna height above ground level, then Heff = Transmitter antenna height above ground level. If Heff < 1.5m, then Heff=1.5m. If Heff > 500m, then Heff = 500m. For all other models, effective heights are Transmitter antenna height (above sea level) - averaged heights along the profile from 1m to 16 km. All effective heights are computed according to the layers in memory (DTM + Clutter + Buildings). Clutter and building elevations are therefore considered.
14/01/2021	V23.0.5	***NEW***		**DATABASE/LIBRARY/ANTENNA DATABASE/RPE 2D…** **DATABASE/LIBRARY/ANTENNA DATABASE/RPE 3D…**	**Calculs** / **Calculations**	A new ADF to ADW converter has been implemented.
14/01/2021	V23.0.5	***MODIF***		**SPECTRUM/Threshold limited polygon calculation…** **STATION POPUP MENU/COORDINATION/ Threshold limited polygon calculation…**	**Contrôle du spectre** / **Spectrum management**	If the "Modified Hata by ACMA" propagation model is selected, the field strength calculations are now limited to the user defined step.

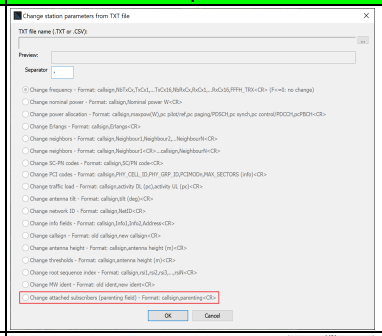
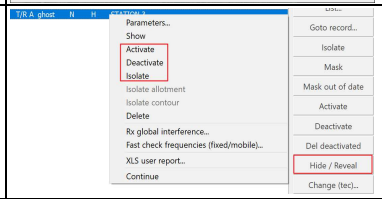
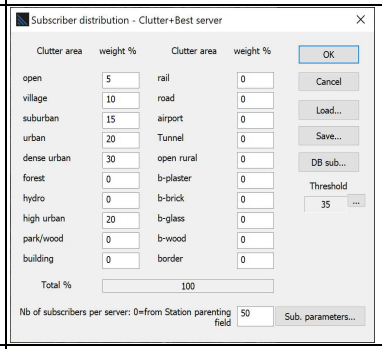
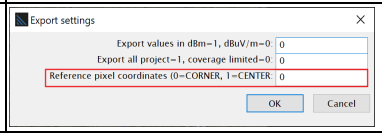
Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
14/01/2021	V23.0.5	***MODIF***		**TOOLS/Clutter settings…**	**Calculs / Calculations**	The linear attenuation in dB/km can be computed in two different modes: - If the value is set to "-1", the 3GPP formulas for building penetration losses are applied. And the field is updated with "autoblg". - If the value is set to "-2", the Deygout formulas (valid from 30MHz to 300GHz) for vegetation penetration losses formulas are applied. And the field is updated with "autoveg". Notes related to the dB/km mode: - For clutter codes 9 and from 15 to 18, no diffraction computed. Only penetration losses are applied. - For clutter codes 5 and 8, attenuation by diffraction is compared to linear attenuation (penetration) and the minimum attenuation is kept.
15/01/2021	V23.0.7	***NEW***		**TOOLS/Propagation model…**	**Calculs / Calculations**	The 2-Ray reflection model has been added. The maximum attenuation between free space losses and the 2-Ray losses is kept.
20/01/2021	V23.0.7	***MODIF***		**Vectior polygon list**	**Interface**	The "Ident" column has been added.
20/01/2021	V23.0.7	***NEW***		**DATABASE/LIBRARY/ANTENNA DATABASE/List…**	**Interface**	The "Find" option has been added. It will filter records by antenna name (for example "UHX4-107") or by frequency (for example 11200MHz). For frequency filter, the records will be selected if the Min/Max frequencies are containing the selected value. Use the following syntax: xxxx MHz (MHz is case sensitive).
20/01/2021	V23.0.7	***MODIF***		**3G, 4G and 5G station parameters**	**Radiocom. mobiles / Mobile radiocom.**	Notes on 3G, 4G and 5G stations: -1 transmitting channel is corresponding to 1 port. -The minimum value for the "Activity DL %" and "Activity UL %" is now 0 instead of 1. -To compute RSRQ values with only RS signal transmitted, set the activity factor to 0 and the of power allocation to RS channel to 1/6 (16.666%).

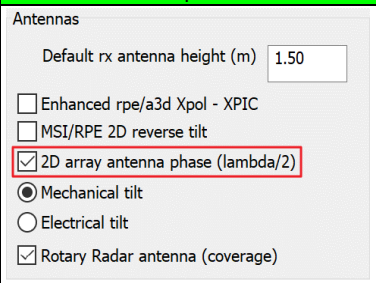
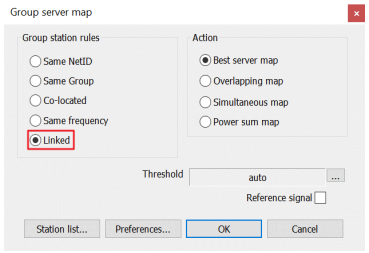
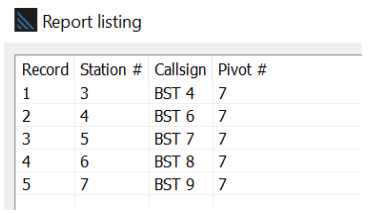
Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
21/01/2021	V23.0.7	NEW		**Windiws 32-bit**	**Interface**	WINDOWS 32-bit versions are no longer supported.
21/01/2021	V23.0.7	NEW		**Map quad**	**Interface**	The "Map quad" feature is now accessible in HTZ viewer (an internet connection and a valid maintenance contract are required). But not in HTZ communications (only in HTZ warfare).
21/01/2021	V23.0.7	MODIF		**SQL connections**	**Interface**	A new SQLlite driver (db3 files) has been implemented.
21/01/2021	V23.0.7	MODIF		**COVERAGE/Coverage to ASCIIGRID - Site by site…**	**Interface**	The "Coverage to ASCIIGRID - Site by site…" feature has been moved to the Coverage menu.
21/01/2021	V23.0.7	MODIF		**Hidden objects**	**Interface**	Only the list views (Station list, Microwave list, Link list) allows to change the status (hidden, activated or deactivated).
21/01/2021	V23.0.7	MODIF		**<1> and <6> short keys**	**Interface**	Once the legend bar is displayed, the values are dynamically updated on mouse move.
21/01/2021	V23.0.8	NEW		**TOOLS/Propagation model…**	**Calculs / Calculations**	The ITU-R P.529-3 (Okumura-Hata equations) propagation model has been added. The validity domain is VHF/UHF and up to 2GHz, with a receiving antenna height from 1 m to 10 m, and a maximum distance of 100km. Notes: This model has been withdrawn by ITU in 2001. Do not use any clutter file.
25/01/2021	V23.1.0	NEW		**TOOLS/Interference restriction…**	**Calculs / Calculations**	The "Combined location correction factor" option has been added. If the location probability is greater than 50%, this option will modify the C/I required and the IRF values by this factor computed as follows: u*Sqrt(STD DEV wanted²+ STD DEV unwanted²), with u=distribution factor (0 for 50%, 0.52 for 70%, 1.64 for 95% and 2.33 for 99%).
26/01/2021	V23.1.0	NEW		**Main window**	**Interface**	An indicator has been added in the status bar (at the bottom left corner of the main window). If the color is red, some DTM elevations contain NODATA values (-9999 or less). If dark grey, a dataset with a WMAS projection is loaded (cannot be used for calculation). Clicking on the button gives more information and options.

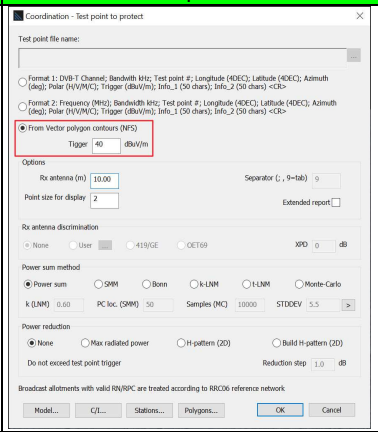
Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
26/01/2021	V23.1.0	MODIF		**MW link parameters/Equipment tab**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	The "Both transmitter and antennas" option bas been added. If checked, the equipment and antenna selected for transmitter A (or B) will update transmitter B (or A) with the same record. Note: The option must be checked before selecting the equipment or the antenna.
27/01/2021	V23.1.0	MODIF		**COVERAGE/NETWORK ANALYSIS/ Group server maps...**	**Calculs / Calculations**	The "Same frequency" and "Power sum" options have been added.
28/01/2021	V23.1.0	MODIF		**Command line**	**Calculs / Calculations**	The project is now duplicated in the same folder as the original project to avoid conflicts. A new format for remote calculations configuration has been introduced: REMOTEx.CFG.
29/01/2021	V23.1.0	MODIF		**TOOLS/Cartographic conversion…**	**Interface**	Longitudes and Latitudes in radians have been added (RAD).
29/01/2021	V23.1.0	MODIF		**MAP/VECTOR LAYER/ Create vector polygons from center+radius (TXT file)...**	**Interface**	New options have been added and the import format has been extended. The vector(s) created is (are) squares now.
29/01/2021	V23.1.0	MODIF		**REPORT/AREA FILE/ Areas intersected by vector polygons...**	**Calculs / Calculations**	This function will create for each activated vector polygon a report containing the information and the coverage results of each area that is intersected by the polygon under analysis. It is possible to select the fields of the areas that will be reported.
29/01/2021	V23.1.0	MODIF		**TOOLS/Propagation model…**	**Calculs / Calculations**	The Diffraction and Subpath enhanced empirical correction option has been added to the ITU-R P.526-11 propagation model. This option fixes an error in the ITU recommendation (that can be too pessimistic): "For line-of-sight paths it differs from the Deygout construction in that two secondary edges are still used in cases where the principal edge results in a non-zero diffraction loss. " Lcorr = min (T[J(vt)+J(vr) +C], J(vt+J(vr)) and L = J(vp) + Lcorr, with: J(vp) = attenuation due to the main obstacle (p); J(vt) = attenuation due to the main obstacle from p to Tx; J(vr) = attenuation due to the main obstacle from p to Rx; C = 10.0 + 0.04D; T = 1.0 – exp [–J(vp)/6.0]; D = Tx->Rx distance in km.

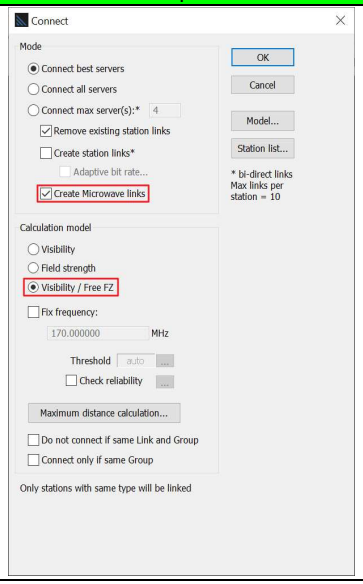
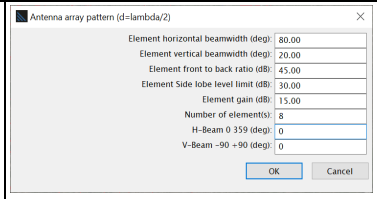
Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
29/01/2021	V23.1.0	MODIF		**TOOLS/Propagation model…**	**Calculs / Calculations**	If the Deygout 66 model is used outside the ITU-R P.526-11 propagation model, the ITU correction is not applied anymore.
30/01/2021	V23.1.0	NEW		**STATION PARAMETERS/Site tab**	**Interface**	The "-|" button has been added. It will update the sector start / end values to be centered around the current station azimuth. The range is defined by the original values of sector start / end.
30/01/2021	V23.1.0	NEW		**Command line**	**Interface**	Action code 1023 has been added. Tasks performed are the following: - Import stations on the map from the SQL database linked to the project; - Perform coverage calculations for each station; - Build a propagation map in dB (with reference power = ERP/EIRP); - Export results to KMZ and GEOTIFF files. File name convention: - KMZ: projectfilename-yyyymmddhhmm-LOSSzzzcm.KMZ, with zzz = Receiving antenna height in cm. Example: c:\ATDI\ExchangeFolder\Test-201910032025-LOSS150cm.KMZ. - GEOTIFF: projectfilename-yyyymmddhhmm- LOSSzzzcm.TIF, with zzz = Receiving antenna height in cm. Example: c:\ATDI\ExchangeFolder\Test-201910032025-LOSS150cm.TIF. Example: c:\ATDI\HTZx.exe TEST.PRO -ADMIN 1023 1.5 c:\ATDI\ExchangeFolder with: 1.5 = Receiving antenna height in m. Notes: - The folder where the results will be exported must already exist. - The SQL link must be set.
30/01/2021	V23.1.0	NEW		**Command line**	**Interface**	Action code 1024 has been added. Tasks performed are the following: - Import stations on the map from the SQL database linked to the project; - Perform point to point calculations between the different stations; - Export the report in CSV format. File name convention: projectfilename-yyyymmddhhmm-P2P.CSV. Example: c:\ATDI\ExchangeFolder\Test-201910032025-P2P.CSV. Example: c:\ATDI\htzx.exe TEST.PRO -ADMIN 1024 1000 c:\ATDI\ExchangeFolder with: 1000 = Import all stations. And from 0 to 114 (or more in future versions), select stations having signal type sent in command line (i.e. 2=Generic, 0=FM mono...). Notes: - The folder where the results will be exported must already exist. - The SQL link must be set.
01/02/2021	V23.1.0	MODIF		**MULTIPOINT/Linked station parameters...**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	The Network ID is no longer modified for linked stations.

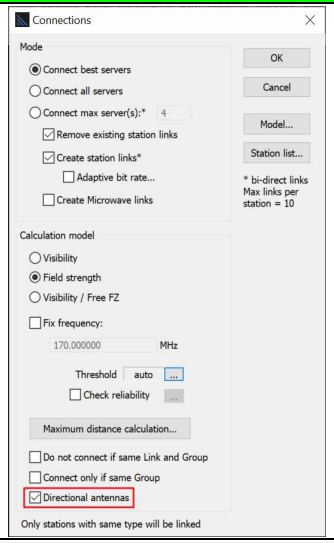
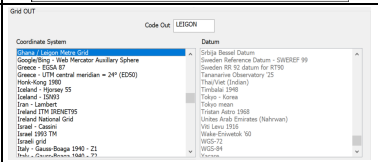
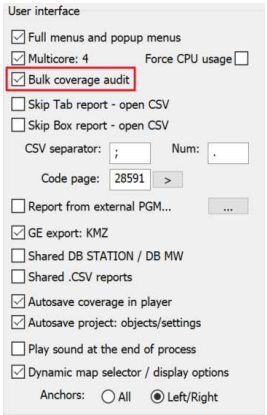
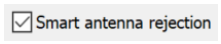
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
02/02/2021	V23.1.0	***NEW***		**Coverage calculations**	**Calculs / Calculations**	The "Default" button has been added. If clicked, the "Default rx antenna height (m)" parameter in the Preferences will be updated with the specified value.
04/02/2021	V23.1.1	***NEW***		**SPECTRUM/ICAO / EUROCONTROL/ SM 1009 / ICAO Annex 10…**	**Calculs / Calculations**	Issues with rounded values in the delta frequency due to the compiler and the fast-floating point approximation have been fixed.
07/02/2021	V23.1.2	***NEW***		**MAP/CONVERT/Map data converter…**	**Interface**	In the "Download file from URLs" feature, it is now possible to use FTP connections with login and password.
08/02/2021	V23.1.2	***MODIF***		**DATABASE/LIBRARY/ANTENNA DATABASE/RPE 2D… DATABASE/LIBRARY/ANTENNA DATABASE/RPE 3D…**	**Calculs / Calculations**	A new release of the ADF to ADW converter has been implemented with: -More tags supported; -"Normalize gain" option: If checked, the patterns will be modified by the gain defined in "MIDGAIN". To be used only if the gain is relative. Notes: -ADF file must be gi□en for 1 frequency only; -Gains must be provided between -180° and +180°. The number of intermediate values can be user defined.
09/02/2021	V23.1.2	***NEW***		**STATION POPUP MENU/OPTIONS/ Multiport antenna H/V**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	In "2D antenna H+V (1 polarization)" mode, the "Multiport/Multibeam antenna from links (H/V)..." option has been added. This feature will create a multiport antenna from the initial pattern if the selected station is linked to at least 1 other station. The beams will be oriented towards each receiving antennas in H and V planes.

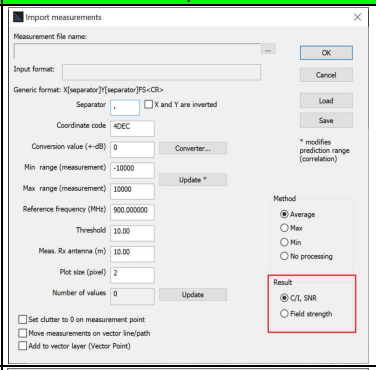
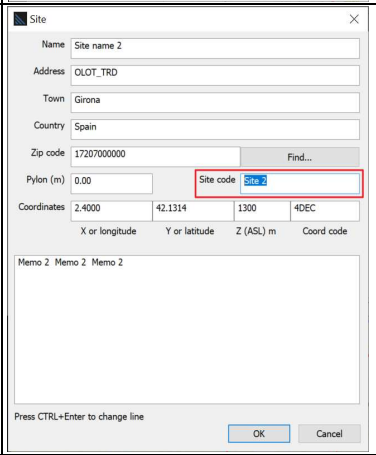
Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
11/02/2021	V23.1.2	NEW		**OBJECT/Change from TXT file…**	**Interface**	The "Change attached subscribers (parenting field)" option has been added. The expected format is: Callsign [Sep] Number of parented subscribers <CR>
11/02/2021	V23.1.2	MODIF		**LIST/Station list...** **LIST/Microwave list…**	**Interface**	Right-clicking on a given record (isolate, activate, deactivate) will reveal the station or the MW link. The "Hide" button becomes "Hide/Reveal".
11/02/2021	V23.1.2	NEW		**SUBSCRIBER/GENERATE SUBSCRIBERS/** **Generate subscribers on best server map…**	**Interface**	This function will generate subscribers on the current best server map according to the clutter distribution defined. If the number of subscribers is equal to 0, the number of subscribers to deploy will be coming from the station parameters ("Parenting" field). A 16 bits best server map must be displayed first on the map. The generated subscribers are parented to the corresponding server.
11/02/2021	V23.1.2	MODIF		**FILE/LOAD/Load network file (.EWFx/.EWF/.EWX)**	**Interface**	Hidden stations are no longer revealed when a network file is reloaded.
11/02/2021	V23.1.2	MODIF		**FILE/EXPORT/Coverage to GEOTIFF…** **FILE/EXPORT/Coverage to ASCIIGRID…**	**Interface**	The "Reference pixel coordinates (CORNER or CENTER)" option has been added. xllcorner and yllcorner are the western (left) x-coordinate and southern (bottom) y-coordinates, such as Easting and Northing. When the points are cell-centered xllcenter and yllcenter are used to define such a registration.

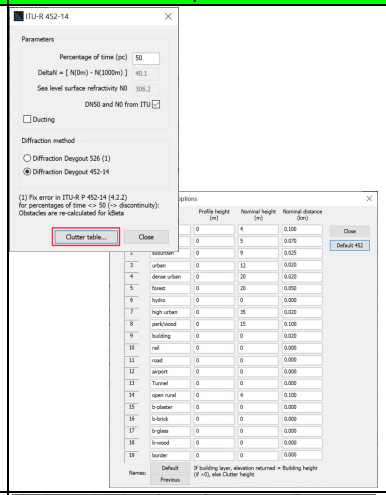
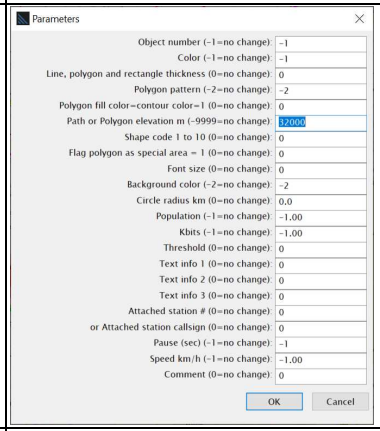
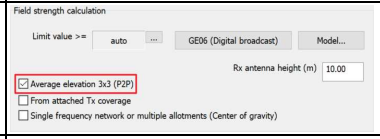
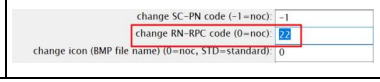
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
12/02/2021	V23.1.2	***NEW***		**FILE/Preferences**	**Radiocom. mobiles** / **Mobile radiocom.**	The "2D array antenna phase (lambda/2)" option has been added. If checked, the beamforming antenna pattern will be modified according to the array factor. Note: The spacing between array elements is one half of the signal wavelength.
15/02/2021	V23.1.3	***MODIF***		**STATION POPUP MENU/SEARCH SITE/ Best location (visibility)...** **STATION POPUP MENU/SEARCH SITE/ Best location (Field strength)...**	**Calculs** / **Calculations**	A new behavior has been introduced I these features. The search distance is now equal to the maximum distance inter sites (or from station parameters). The receiving antenna is the minimum antenna height of the surrounding stations.
16/02/2021	V23.1.3	***NEW***		**COVERAGE/NETWORK ANALYSIS/ Group server maps...**	**Calculs** / **Calculations**	The "Linked" option has been added. It will merge the coverage of all stations directly or indirectly linked to each station.
16/02/2021	V23.1.3	***NEW***		**STATION POPUP MENU/OPTIONS/ Report linked station network**	**Radiocom. fixes (FH et PMP)** / **Fixed radiocom. (MW and PMP)**	This feature will list all stations directly or indirectly linked to the selected station (pivot).
16/02/2021	V23.1.3	***MODIF***		**Command line**	**Interface**	Regarding the 1024 Action code, the longitude and the latitude (in 4DEC reference system) of the transmitters and the receivers have been added to the report.
17/02/2021	V23.1.3	***MODIF***		**REPORT/VECTOR FILE/ VEC polygons - count stations...**	**Interface**	The "Raster" (In/Out), "Shape" (In/Out) and "Overlap" (number) columns have ben added to the report. "Raster" and "Shape" information allows to control the accuracy of the station locations especially if they are located on the edge of a given polygon. The Overlap information counts the number of polygons within which a given station is located.

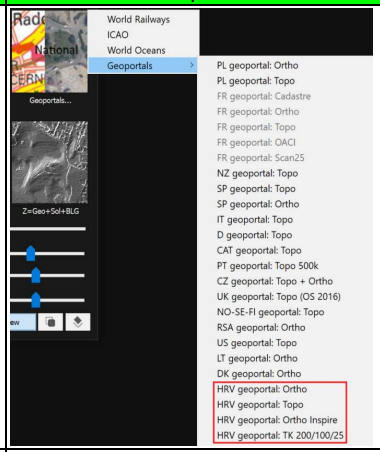
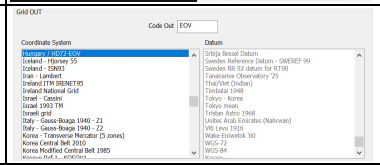
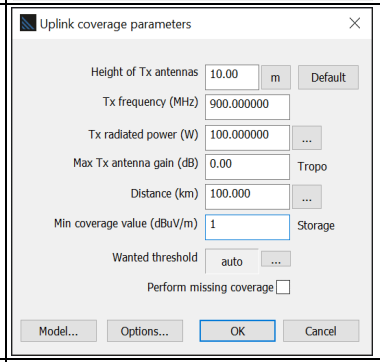
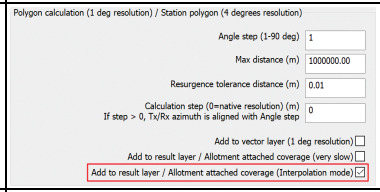
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
17/02/2021	V23.1.3	***MODIF***		**SPECTRUM/Coordination triggers…**	**Contrôle du spectre** / **Spectrum management**	The "Spectrum/Broadcast trigger" feature becomes "Spectrum/Coordination trigger". The "From Vector polygon contours (NFS)" option has been added. In that case, the test points to protect are located along the vector polygon contour(s) for the user defined "Trigger" value. More info in: http://data.atdi-group.com/doc/749.pdf.
17/02/2021	V23.1.3	***MODIF***		**REPORT/VECTOR FILE/ VEC polygons - coverage analysis... REPORT/VECTOR FILE/ VEC polygons - [min,max] current layer... REPORT/VECTOR FILE/ VEC polygons - [min to max] current layer... REPORT/VECTOR FILE/ VEC polygons - site by site coverage... REPORT/VECTOR FILE/ VEC polygons - global filter/power tuning... REPORT/VECTOR FILE/ VEC polygons - station filter/power tuning... REPORT/VECTOR FILE/ VEC polygons - count stations...**	**Calculs** / **Calculations**	In these features the vector "Info(1)" field has been added to the report.

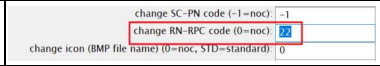
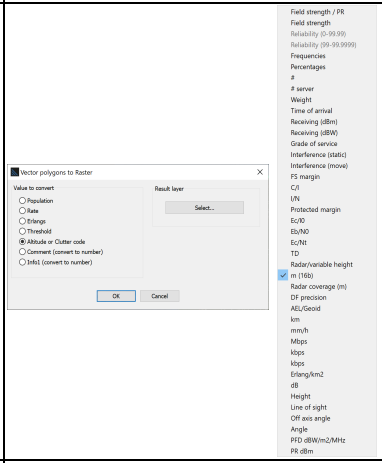
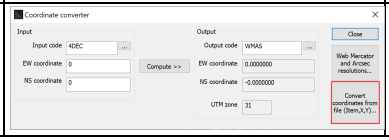
Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
18/02/2021	V23.1.3	NEW		**MULTIPOINT/Servers…**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	Two new options have been added: - Visibility / Free FZ: If checked, connections are established only if the profile between the two stations considered is in visibility and with free Fresnel ellipsoid. In that case, antenna patterns are considered as omnidirectional. - Create Microwave links: This option will create Microwave links between connectable stations with the parameters of the original stations. Notes: - If a microwave link already exists between stations, it is not created again. - The added MW links are bi-directional.
21/02/2021	V23.1.3	NEW		**STATION PARAMETERS/Patterns tab**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	Regarding the "Multiport/Multibeam antenna from links (H/V)..." option, if the antenna of the selected station is a Beamforming antenna (BSR H or V are not null) and if the Beam step H or V is not null, the Multiport antenna is built according to the step(s) and the maximum ranges (H and V). With a standard antenna, the beams are aligned in the exact direction of each link (no restriction).
21/02/2021	V23.1.3	NEW		**STATION PARAMETERS/Patterns tab**	**Radiocom. mobiles / Mobile radiocom.**	In "2D antenna H+V (1 polarization)" mode, the "Array element pattern (array model)..." option has been added. This option builds an antenna pattern from: - the horizontal and vertical beamwidths of the element array; - the front to back ration of the element array; - the side lobe level limit of the element array; - the number of arrays; - the direction of the beam in the horizontal and vertical planes. The resulting gain of the pattern is computed as follows: G(theta) = GE(theta) + GA(theta), with G= Pattern gain (dB), GE=Element gain (dB), GA=Array factor (dB).
23/02/2021	V23.1.3	MODIF		**STATION PARAMETERS/Patterns tab**	**Radiocom. mobiles / Mobile radiocom.**	A new MIMO approach has been implemented. From now on, the antenna gain must be corresponding to the nominal gain + MIMO gain in the station parameters for RSRP, RSRQ and SNIR calculations.

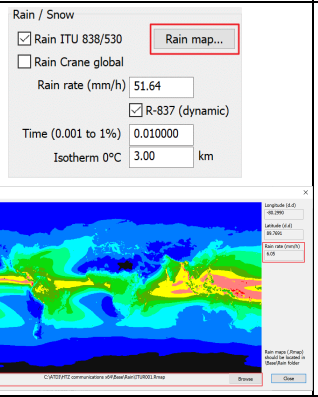
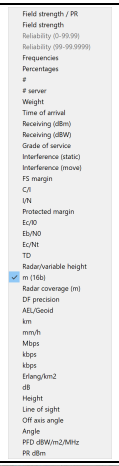
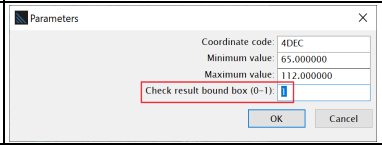
Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
23/02/2021	V23.1.3	MODIF		**MULTIPOINT/Servers…**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	The "Directional antennas" option has been added. If checked, the receiving antenna discrimination will be considered when the connections are checked in field strength mode.
23/02/2021	V23.1.3	NEW		**TOOLS/Cartographic conversion…**	**Interface**	The "Ghana / Leigon Metre Grid" projection system has been added (LEIGON grid code).
24/02/2021	V23.1.3	MODIF		**Command line**	**Interface**	The generation of the KMZ file has been removed from action code 1023.
24/02/2021	V23.1.3	MODIF		**FILE/Preferences…**	**Interface**	The "T/R over clutter/ground" information has been added to the "Bulk" coverage report. Coverage must be performed again to retrieve that information and the "Bulk coverage audit" option must be checked in the Preferences.
25/02/2021	V23.1.4	MODIF		**C/I protection ratios** **IRF settings** **…**	**Calculs / Calculations**	The "Smart antenna discrimination" option bas been renamed "Smart antenna rejection".

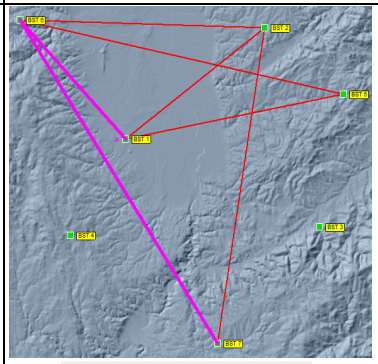
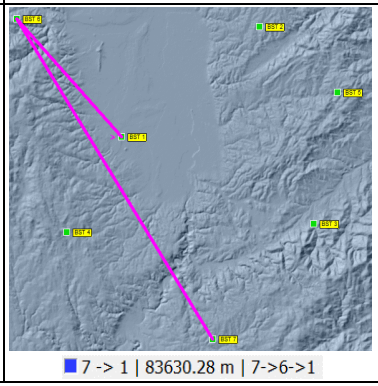
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
01/03/2021	V23.1.5	***NEW***		**MEASURE/IMPORT DRIVE TESTS/ DT generic format (X Y E)...**	**Interface**	In this feature, it is now possible to choose the kind of values to be imported: - C/I or SNR values in dB; - Field strength in dBµV/m or power received in dBm.
01/03/2021	V23.1.5	***MODIF***		**DATABASE/LIBRARY/SITE DATABASE/List...**	**Interface**	The "Site code" field is now editable in the Site database.

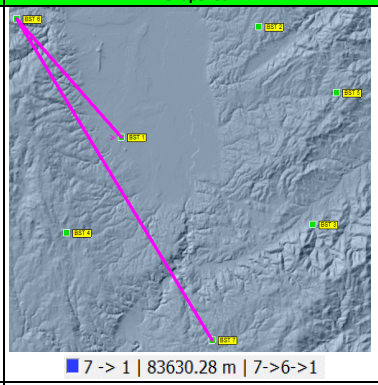
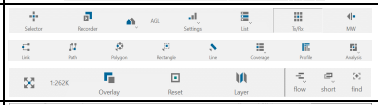
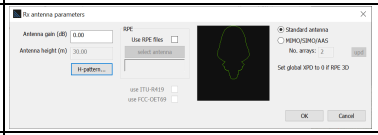
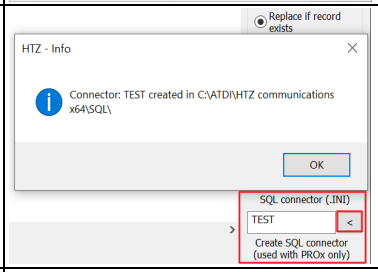
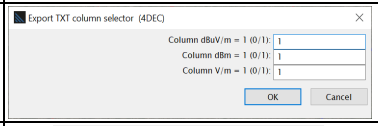
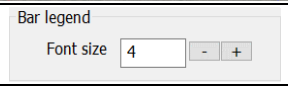
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
01/03/2021	V23.1.5	***MODIF***		**TOOLS/Propagation model…**	**Calculs / Calculations**	A clutter mapping table has been added to the ITU-R P.452-14 propagation model (the same kind of the one already in use in the 452-16 and 1812-5 models).
01/03/2021	V23.1.5	***MODIF***		**MAP/VECTOR LAYER/Modify activated vectors…** **RECTANGLE TOOL/VECTORS/Modify vector(s)…**	**Interface**	The elevation of the vectors can now be modified up to 32 000 m.
01/03/2021	V23.1.5	***MODIF***		**SPECTRUM/Threshold limited polygon calculation…** **STATION POPUP MENU/COORDINATION/ Threshold limited polygon calculation…**	**Contrôle du spectre / Spectrum management**	The "Average elevation 3x3 (P2P)" option has been added. If checked, each profile is built by considering an average elevation of the DTM on each point computed from the 3x3 matrix located around.
02/03/2021	V23.1.5	***NEW***		**OBJECT/Change general parameters…**	**Interface**	The "change RN-RPC code" option has been added. It will change the "RN-RPC" parameter of each activated station (Site tab). This code is made of 2 digits: the first one is corresponding to the RN configuration and the second one to the RPC configuration (GE06 agreement).

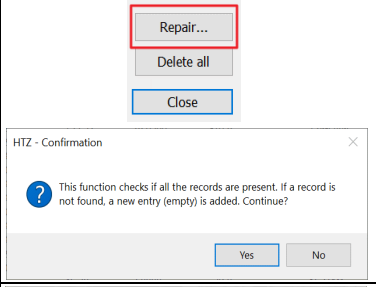
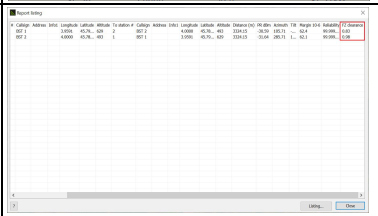
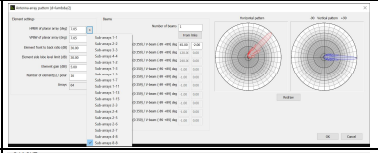
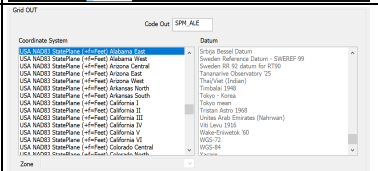
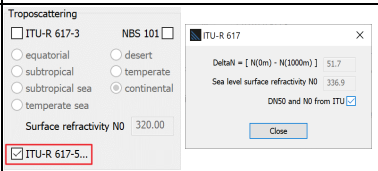
Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
02/03/2021	V23.1.5	NEW		**Map layer (<F4>)**	**Interface**	The following Croatian geoportals have been added: Ortho Inspire and TK 200/100/25. TK200 is considered from zoom levels 1 to 11, TK100 from zoom levels 12 to 15 and TK25 from zoom levels 16 to 21.
02/03/2021	V23.1.5	NEW		**TOOLS/Cartographic conversion…**	**Interface**	The "Hungary / HD72-EOV" projection system and datum (Hungarian Datum 1972) have been added (EOV grid code).
05/03/2021	V23.1.5	MODIF		**COVERAGE/NETWORK CALCULATION/ Tx/Rx uplink FS coverage…**	**Calculs / Calculations**	The "Max Tx antenna gain" parameter has been added. It corresponds to the maximum transmitting antenna gain of the mobile. It is used only for troposcatering calculations.
09/03/2021	V23.1.5	NEW		**SPECTRUM/Threshold limited polygon calculation… STATION POPUP MENU/COORDINATION/ Threshold limited polygon calculation…**	**Contrôle du spectre / Spectrum management**	The "Add to result layer / Allotment attached coverage (Interpolation mode)" option bas been added. If checked, the coverage attached to the allotment will be interpolated between the rays already computed. It is less accurate than the "Add to result layer / Allotment attached coverage (very slow)" option but that requires more computing time.
09/03/2021	V23.1.5	NEW		**SPECTRUM/Threshold limited polygon calculation… STATION POPUP MENU/COORDINATION/ Threshold limited polygon calculation…**	**Broadcast**	The discontinuities in the RN-RPC allotments coordination contours and coverage calculation have been removed and the accuracy has been improved.

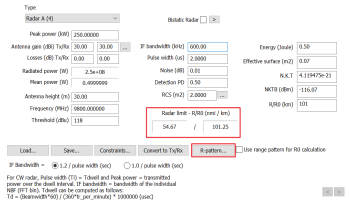
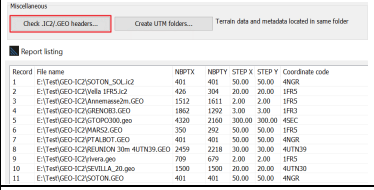
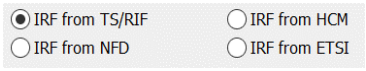
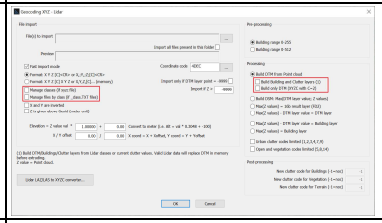
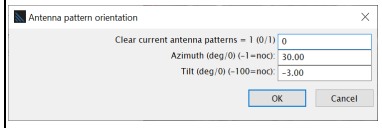
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
09/03/2021	V23.1.5	***NEW***		**COVERAGE/NETWORK CALCULATION/ Tx/Rx FS coverage…**	**Broadcast**	Stations of "Allotment" type are now supported, including the associated RN-RPC configuration.
09/03/2021	V23.1.5	***NEW***		**OBJECT/Change general parameters…**	**Broadcast**	The "change RN-RPC code" option will now update all the allotment parameters according to the associated RN-RPC configuration.
14/03/2021	V23.1.6	***MODIF***		**Command line**	**Interface**	In the command lines (for any action code), the project name can now be replaced by a ZIP file. A project will then be created using the different layers available in the ZIP. The ZIP file must include at least a DTM layer (.GEO, .RGE, .IC2, .IDR or .MGE file).
14/03/2021	V23.1.6	***NEW***		**TOP BAR/COVERAGE BUTTON/ Composite coverage distance limited**	**Interface**	This feature will display the composite coverage map of the activated stations on the map but limited to the current limit distance.
14/03/2021	V23.1.6	***NEW***		**Top bar**	**Interface**	Labels (text) have been added below each icon.
14/03/2021	V23.1.6	***MODIF***		**Resolution**	**Interface**	The minimum screen resolution supported is now 1440*900, the recommended minimum resolution is 1920*1080.
14/03/2021	V23.1.6	***MODIF***		**Simultaneous server map**	**Interface**	The simultaneous server maps are no longer dependent on the user defined color mode.
17/03/2021	V23.2.0	***MODIF***		**Command line**	**Interface**	Notes about Action code 1022. Tasks performed are the following: - Import stations on map from SQL database linked to the project (activated and deactivated stations); - Perform coverage of each station; - Export stations to the SQL database. Example: c:\ATDI\ HTZx64.exe TEST.PRO -ADMIN 1022 2 10 With: - 2 = Resampling factor; - 10 = Receiving antenna height in meter. The SQL link must be set.
18/03/2021	V23.2.0	***NEW***		**MAP/RASTER OPERATION/RASTER LAYER/ Vector polygons to Raster…**	**Interface**	This function converts vector polygons to raster format and displays the result on the map. The input value is selected among "Value to convert" list (user defined) and the output unit displayed is also defined by the end user, so that the result type depends on the selected unit.
18/03/2021	V23.2.0	***MODIF***		**TOOLS/MAP CALCULATORS/Coordinates converter…**	**Interface**	The "Tools/Map converter/Convert coordinate list..." function has been moved to "Tools/Map calculators/Coordinates converter…".

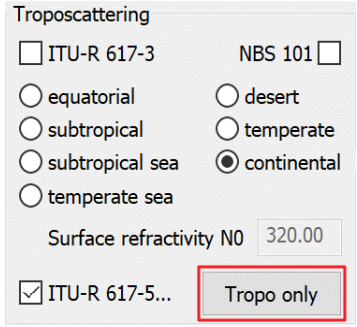
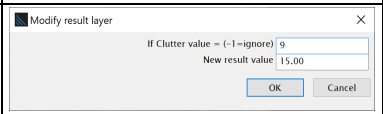
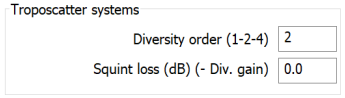
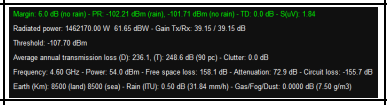
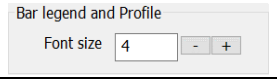
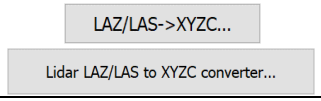
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
19/03/2021	V23.2.0	***NEW***		**MAP/CONVERT/Convert rain layer to .Rmap…**	**Interface**	This feature converts the current result layer in mm/h in memory to a .Rmap file. A .Rmap file has to be always defined from [-180°,90°] to [+180°,90°], so if the layer in memory does not cover the whole globe, or if a given value in mm/h is equal to 0, then the "ITUR001.Rmap" map (located in "Base\Rain" subfolder) is used to fill the missing values.
19/03/2021	V23.2.0	***NEW***		**Rain maps**	**Interface**	A new subfolder"\Base\Rain" has been added and that contains rain maps (.Rmap format). Rain maps provided with the installation package are: United Kingdom, Colombia and ITU (world). More maps can be added by the end user.
19/03/2021	V23.2.0	***NEW***		**TOOLS/Propagation model…**	**Calculs / Calculations**	A selector of rain maps (.Rmap format) has been added. The default rain map is "ITUR001.Rmap" provided with the installation package and located in "Base\Rain" subfolder. The rain rate can be selected by clicking on the rain map. If the "R-837 (dynamic)" option is checked, the rain rate will automatically be updated according to the receiver location. Note: Rain maps can be created from vector polygons or raster maps.
19/03/2021	V23.2.0	***NEW***		**MAP/RASTER OPERATION/On result layer…**	**Interface**	It is now possible to select the unit of the output layer. For example: If the result layer is "weight", and after modification, unit must be in meter, use the popup menu to select the "m (16b)" unit.
20/03/2021	V23.2.0	***MODIF***		**REPORT/VECTOR FILE/SHP polygons covered…**	**Interface**	The "Check result bound box" option has been added. If checked and if the bound boxes of the SHP vector polygons are correctly defined, the report will be generated faster.

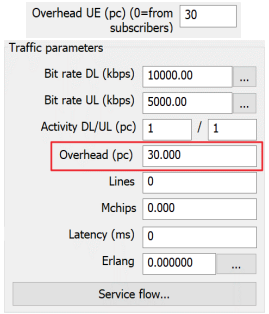
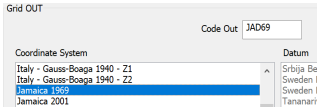
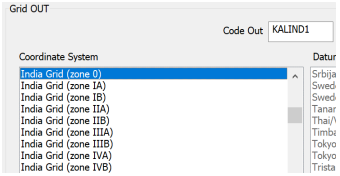
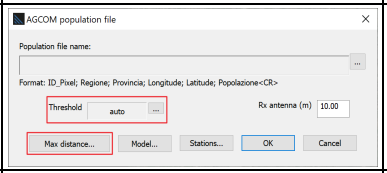
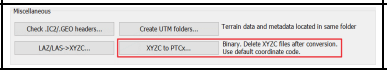
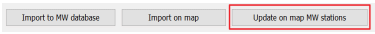
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
21/03/2021	V23.2.0	***NEW***		**PROx project files**	**Interface**	A new project format has been introduced: .PROx (text format). Example My_project.PROx: Terrain: c:\ATDI\Maps\My_DTM.RGE Result: c:\ATDI\Results\My_coverage.fld Each file used in the PROx must exist. The terrain layer is mandatory, the other layers are optional. Expected format: Terrain: ... path to/terrain.rge (possible extensions: .GEO, .IC2, .MGE, .RGE, .IDR) Clutter: ... path to/clutter.rso (possible extensions: .SOL, .IC1, .MSO, .RSO) Image: ... path to/image.rim (possible extensions: .IMG, .IC1, .MIM, .RIM, .BIM) Palette: ... path to/palette.pal (possible extension: .PAL) Building: …path to /building.blg (possible extensions: .BLG, .IC1, .MBL, .RBL) Parameter: ... path to/parameter.prm (extension: .PRM) Network: ... path to/network.ewfx (possible extensions: .EWF, .EWFx, .EWX) Result: ... path to/result.fld (extension: .FLD) Legend: ... path to/legend.p11 (extension: .P11) Vector: ... path to/vector.vec (extension: .VEC) MapServer: ... path to/vector.map (extension: .MAP) .PROx files can be loaded by drag and drop on the current map or used as project definition in Action code command lines. Note: A .PROx file creates a temporary project .PRO.
22/03/2021	V23.2.0	***NEW***		**STATION POPUP MENU/SELECT/** **Shortest path links from reference station**	**Radiocom. fixes (FH et PMP)** / **Fixed radiocom. (MW and PMP)**	This feature will display the shortest path from the current reference station to the selected station. The path is created only among existing links between stations. A reference station must be set prior to use that feature. The path and its length are also displayed in the lower left corner of the main window.
22/03/2021	V23.2.0	***NEW***		**STATION POPUP MENU/SELECT/** **Shortest path visibility from reference station**	**Radiocom. fixes (FH et PMP)** / **Fixed radiocom. (MW and PMP)**	This feature will display the shortest path from the current reference station to the selected station. The path is created only between stations in visibility. A reference station must be set prior to use that feature. The path and its length are also displayed in the lower left corner of the main window.

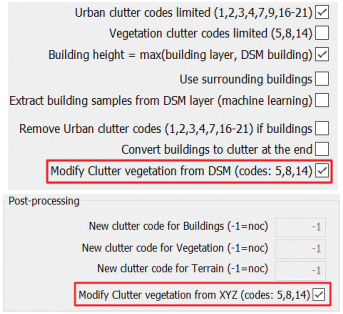
Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
22/03/2021	V23.2.0	***NEW***		**STATION POPUP MENU/SELECT/ Shortest path FS >= threshold from reference station**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	This feature will display the shortest path from the current reference station to the selected station. The path is created only if the field strength received is greater than the receiving threshold (global or from station parameters). A reference station must be set prior to use that feature. The path and its length are also displayed in the lower left corner of the main window.
22/03/2021	V23.2.0	***MODIF***		**Top bar**	**Interface**	A new gray color has been introduced: (85,85,85) becomes (116,116,116) and some icons have been moved.
23/03/2021	V23.2.0	***MODIF***		**Receiving antenna discrimination**	**Calculs / Calculations**	In coverage mode and in case of 2D receiving antenna, the maximum attenuation is now max[Pattern Attenuation(angle),XPD], with XPD = user defined value.
23/03/2021	V23.2.0	***NEW***		**SQL connections**	**Interface**	An SQL connector name has been added in the import process. It allows to create different connector file names (.INI) located in \SQL subfolder for later use in .PROx files. Example: TEST64STATION_D.INI, with TEST = connector name (user defined). "ODBC" is the default name. "64": Can be 64 or 32. 64 for connections created with the 64 bits release or 32 for connections created with the 32 bits release (automatic naming). "STATION": Main SQL table (can be "MW", "EQUIPMENT or "STATION". Automatic naming).
23/03/2021	V23.2.0	***NEW***		**PROx project files**	**Interface**	The "SQLconnector" option has been added. It allows to define the SQL connection to be associated to the project (previously saved in \SQL subfolder). Example: Terrain: c:\ATDI\Maps\My_DTM.RGE Result: c:\ATDI\Results\My_coverage.fld SQLconnector: TEST The SQL connection previously created and saved in the "\SQL\TEST64STATION_D.INI" file will be reused. This file must exist!
23/03/2021	V23.2.0	***NEW***		**FILE/EXPORT/ Coverage to X,Y,dBu,dBm,V/m - Site by site...**	**Interface**	This feature will export the coverage of each activated station to text files (1 file per station) with up to 5 columns: East-West coordinate ; North-South coordinate ; dBµV/m ; dBm ; V/m. The coordinates are defined in the current output grid code. Values that can be exported are in dBµV/m and/or dBm and/or V/m.
24/03/2021	V23.2.0	***NEW***		**OBJECT/Object properties (<F5>)…**	**Interface**	The font size of the legend bar can now be modified (from 2 to 6, default size being 4).

Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
25/03/2021	V23.2.1	***NEW***		**DATABASE/LIBRARY/EQUIPMENT DATABASE/List...** **DATABASE/LIBRARY/ANTENNA DATABASE/List...** **DATABASE/LIBRARY/SITE DATABASE/List...** **DATABASE/LIBRARY/Feeder database...** **Multiplexor list** **Connector list**	**Interface**	The "Repair..." button has been added. This feature will check if all records are present in the database. If a record is missing, a new record called "empty" will be added.
31/03/2021	V23.2.2	***MODIF***		**MULTIPOINT/Link status...**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	This feature now reports the Fresnel zone clearance distance in meter.
01/04/2021	V23.2.2	***NEW***		**STATION PARAMETERS/Patterns tab**	**Radiocom. mobiles / Mobile radiocom.**	In "2D antenna H+V (1 polarization)" mode, a new dialog box has been implemented for the "Array element pattern (array model)..." option. Please refer to http://data.atdi-group.com/doc/767.pdf document for more information.
03/04/2021	V23.2.3	***NEW***		**TOOLS/Cartographic conversion...**	**Interface**	The USA projections "NAD83 StatePlane" have been added. Some examples: NAD_1983_HARN_StatePlane_Alabama_East_FIPS_0101 (code SPM_ALE) NAD_1983_HARN_StatePlane_Alabama_West_FIPS_0102 (code SPM_ALW) NAD_1983_HARN_StatePlane_Arkansas_North_FIPS_0301 (code SPL_ARN) ... Note: These projections are available in meters and feet. Add "F" to specify unit in Feet, example: SPM_ALEF.
04/04/2021	V23.2.3	***NEW***		**TOOLS/Propagation model...**	**Calculs / Calculations**	The ITU-R P.617-5 troposcattering model has been added: Propagation prediction techniques and data required for the design of trans-horizon radio-relay systems.

Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
06/04/2021	V23.2.3	***NEW***		**Radar parameters**	**Radar**	The radar tab has been modified. The radar limit is now given in nautical miles and kilometers. Access to the elevation pattern is now made from the "R-pattern…" button.
09/04/2021	V23.2.4	***NEW***		**MAP/CONVERT/Map data converter…**	**Interface**	The "Check .IC2/.GEO headers…" feature has been added. It will create a report containing for each GEO or IC2 file: - the number of points in X and Y axis; - the step in X and Y axis; - the coordinate code.
09/04/2021	V23.2.4	***NEW***		**FILE/Preferences…**	**Calculs / Calculations**	The TS/RIF files used to compute the IRF values are now split in 3 different folders: - TSR; - TSR/HCM; - TSR/ETSI. In the Preferences, it is possible to select the files that will be used: - "IRF from TS/RIF": The TS/RIF files used will be those located at the root of the \Base\TSR folder; - "IRF from HCM": The TS/RIF files used will be those located in the \Base\TSR\HCM folder; - "IRF from ETSI": The TS/RIF files used will be those located in the \Base\TSR\ETSI folder. ETSI and HCM TS/RIF files are provided with the installation package.
09/04/2021	V23.2.4	***NEW***		**MAP/RASTER OPERATION/GEOCODING/ XYZ - Lidar…**	**Interface**	New options to create DTM from Lidar data (XYZC format) and a new dialog box have been implemented.
12/04/2021	V23.2.5	***NEW***		**STATION PARAMETERS/Patterns tab**	**Fixed radiocom. (MW and PMP) - Radiocom. mobiles / Mobile radiocom.**	In "2D antenna H+V (1 polarization)" mode, the "Add .MSI/.PLN" feature now supports for antenna orientation (Azimuth and Tilt). If the "Clear current antenna patterns" option is used (1), then the MSI / PLN file will replace the current patterns (H and V). The patterns will be rotated by the user defined azimuth and tilt, except if the "noc" (no change) value is set. If the "Clear current antenna patterns" option is not used (0), the maximum gain will be considered between the current pattern and the imported pattern. Note: The tilt values are negative towards the ground and positive towards the sky.

Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
14/04/2021	V23.2.5	NEW		**TOOLS/Propagation model…**	**Calculs / Calculations**	When a troposcattering propagation model is selected, the "Tropo only" option has been added. It will set the parameters of the model to compute troposcattering propagation only.
15/04/2021	V23.2.5	NEW		**Path budget window**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	In the path budget window, when a tropo model is used, the "Orient tropo link antennas…" has been added. It will update the tilt of the antennas in direction of the tropo link.
15/04/2021	V23.2.5	NEW		**MAP/FILTER/Result modification…**	**Interface**	This feature will modify the current result values according to a given clutter code. If no clutter value is selected (-1), then the results will be modified everywhere.
16/04/2021	V23.2.5	NEW		**MW links parameters**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	For MW links using troposcaterring propagation, diversity gain tables have been added (for dual and quadruple diversity order). The total diversity gain will be Diversity gain from tables - "Squint loss".
18/04/2021	V23.2.5	NEW		**MW links parameters**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	When a troposcaterring model is used, the MW link path budget will work as follows: if Diversity order is 2 or 4, the diversity gain will be computed according to the percentage of time set in the propagation model window and the path budget margin will be increased. This margin is computed as follows: Margin (dB) = Flat margin (dB) - Rain attenuation (dB) + Diversity Gain (dB) - Squint loss (dB).
19/04/2021	V23.2.5	NEW		**MW links parameters**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	The results displayed in the path profile window for MW links computed with a troposcaterring model have been updated.
20/04/2021	V23.2.5	MODIF		**FILE/EXPORT/Tx/Rx to SHP points…** **FILE/EXPORT/ VECTORIZE COVERAGE - SITE BY SITE/ Vectorize to SHP (SBS)…**	**Interface**	The callsigns are now exported with up to 15 characters.
20/04/2021	V23.2.5	MODIF		**OBJECT/Object properties (<F5>)…**	**Interface**	The font size of the legend bar and the profile window can now be modified (from 2 to 7).
20/04/2021	V23.2.5	NEW		**Top bar**	**Interface**	The top bar has been resized with new icons.
26/04/2021	V23.2.5	MODIF		**SUBSCRIBER/POINT TO POINT/ 4G/5G connectivity report…**	**Radiocom. mobiles / Mobile radiocom.**	If the "Report all available connections" option is not checked, a parenting is performed. In that case, the loads of the station (DL and UL) are added at the end of the report.
26/04/2021	V23.2.5	MODIF		**MAP/RASTER OPERATION/GEOCODING/ XYZ - Lidar…** **MAP/CONVERT/Map data converter…**	**Interface**	A header (text file) has been added during the conversion LAZ to XYZC. The header speeds up the import process in "Fast import mode" (not memory mode).

Date	Version	Type	Snapshot	Nom de la fonction / *Function name*	Rubrique/Domain	Description
27/04/2021	V23.2.5	MODIF		**SUBSCRIBER/POINT TO POINT/ 4G/5G connectivity report… STATISTICS/COVERAGE MAP/ PUSCH throughput map…**	**Radiocom. mobiles / Mobile radiocom.**	The number of RBs UE has been replaced by "Overhead UE (pc)". This parameter will be used to consider the power allocated to the traffic channel (PUSCH). The "Overhead (pc)" parameter has been added to the subscribers parameters.
29/04/2021	V23.2.5	NEW		**TOOLS/Cartographic conversion…**	**Interface**	The projections Jamaica 1969 (grid code JAD69) and Jamaica 2001 (grid code JAD2001) have been added.
29/04/2021	V23.2.5	NEW		**TOOLS/Cartographic conversion…**	**Interface**	The India Everest 1956 projections have been added (zones 0, IA, IB, IIA, IIB, IIIA, IIIB, IVA and IVB). The grid codes are from KALIND1 to KALIND9.
30/04/2021	V23.2.5	MODIF		**SPECTRUM/NATIONAL / REGIONAL/ IT: Population covered at 50 and 10 pc...**	**Contrôle du spectre / Spectrum management**	The "Threshold" and "Max distance…" buttons have been added. Population points are reported only if the power received is greater than the threshold and if the distance to the station is lower than the limit distance.
30/04/2021	V23.2.5	MODIF		**MAP/RASTER OPERATION/GEOCODING/ XYZ - Lidar…**	**Interface**	In memory mode, the import method changes if the memory is not large enough.
30/04/2021	V23.2.5	MODIF		**TOOLS/Cartographic conversion…**	**Interface**	For the projections of UTM, Lambert, State-Plan, Albers and national types, a priority management of coordinate codes has been introduced.
01/05/2021	V23.2.5	MODIF		**Project reserved memory**	**Interface**	The project reserved memory has been reduced.
03/05/2021	V23.2.5	MODIF		**TOOLS/Propagation model…**	**Calculs / Calculations**	With the ITU-R P.1546 propagation model, the sea areas are now identified by areas where altitudes are lower than or equal to 0m and with a clutter code 6. Use Water polygons dataset (available in the Map Download Manager) to fill hydro clutter areas (oceans and seas) if no clutter is present or if clutter code 6 is missing in the current clutter layer.
04/05/2021	V23.2.5	NEW		**MAP/CONVERT/Map data converter…**	**Interface**	A new Lidar format (.PTCx) has been introduced. It is a binary version of the XYZC (Text) format.
05/05/2021	V23.2.5	MODIF		**FILE/IMPORT/Import generic microwave links…**	**Radiocom. fixes (FH et PMP) / Fixed radiocom. (MW and PMP)**	The "Update on map MW stations" option has been added. The MW links on the map with the same Ident as the one of the text file will be updated.
06/05/2021	V23.2.5	MODIF		**Map layer (<F4>)**	**Interface**	A new URL for the MapBox geoportal has been implemented. Note: access remains limited, however.

Date	Version	*Type*	Snapshot	**Nom de la fonction** / *Function name*	**Rubrique/Domain**	**Description**
06/05/2021	V23.2.5	***MODIF***		**MAP/RASTER OPERATION/DSM-DTM heights…** **MAP/RASTER OPERATION/GEOCODING/XYZ - Lidar…**	**Interface**	The "Modify Clutter vegetation from DSM/XYZ (codes: 5,8,14)" option has been added. It will modify clutter vegetation codes from delta DSM (or Lidar) elevation - Terrain elevation.