



Multitel
Railway Certification

OBA

Onboard Balise Analyzer (Interface and Catenary Maintenance)



Multitel offers a set of tools for asset management validation of new lines and maintenance of Balises, with quality measurements comparable to those of Subset-085.

Eurobalise Predictive Maintenance, Asset Management and Catenary Maintenance

The Onboard Balise Analyzer (OBA) is a valuable tool for infrastructure managers in both the validation phase of a new deployment as during the maintenance of the track. It is a tool used for asset management and for the detection of Balise failures as well the predictive detection of Balise failures.

As for the detection of Balise failures the parameters that are taken into account are:

- Uplink signal quality : centre frequency, frequency deviation, MTIE, Jitter...
- Noise : presence of noise in the uplink and telepowering signal bands
- Presence of metallics objects

As for the detection Interference and Catenary Maintenance:

- Detection of electromagnetic signals from 1MHz up to 250MHz, accumulated on a histogram based on the position on the track, intensity and distribution. It shows an indication of catenary issues, based on the electromagnetic interference detected by the OBA antenna.

As for the detection of asset it gathers the balises with its position. The balises are sorted by its ID and position. Additionnaly to producing the report on the current list of balises and changes on the list of the balises on the network, it provides Balise content consistency check : e.g. the linking information is checked for consistency, balise ID in the group of conformity with ERTMS is checked... It is placed on the train as shown in the schematic below:

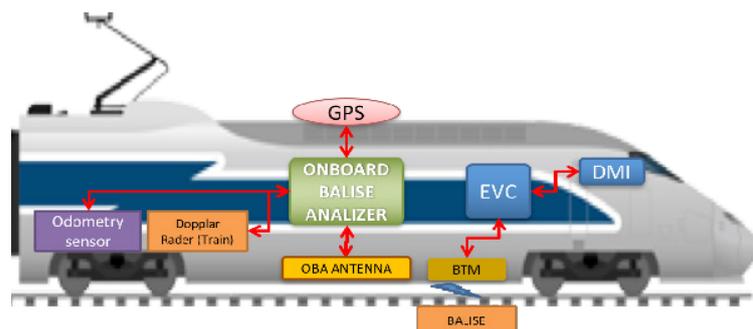


Fig 1- Schematic placement of the OBA on the train. There is no BTM interference

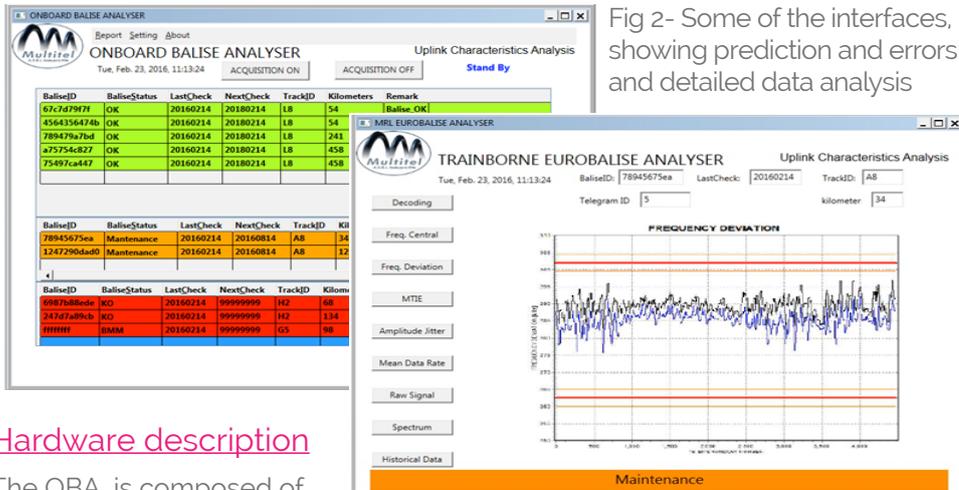
Onboard Balise Analyzer (OBA) features:

- Provides Balise signal quality measurements, Balise position with graphical representation and prediction of faults for maintenance scheduling.
- Provides location based electromagnetic interference measurements and catenary related issues base on the electromagnetic interference data analysis.
- It has being proved in use on commercial lines with trains up to 300 km/h and is designed to operate up to 500km/h.

Compliance and flexibility:

It provides results comparable with Subset -085 results and it is designed to work onboard trains in compliancy with EN 50155. It is flexible, with a large number of result output formats, including pdf, web interface and sms formats.

It can be synchronized with other tools, such as the JRU Visualization tool (JVT). It supports a number of standards, including ERTMS Baseline 2 (SRS 2.3.0.d) And Baseline 3 (MR1 and R2- SRS 3.4.0 and SRS 3.6.0).



Hardware description

The OBA is composed of Onboard the Train :

- OBA antenna and cable (up to 60m).
- OBA onboard processing unit (It's a 19" , 4U unit), with USB and /or GSM interfaces DC Input 64V-110V or AC input 100V- 240V).
- GPS antenna and cable (up to 20m)
- Odometry Input (wheel sensor, doppler radar).

Track side equipment:

- Track side processing unit (for collecting maintenance issues and reporting) (100-240V)

OBA Interface

Results can be transferred from the OBA to the Track side equipment by USB keys, GSM or Ethernet.



Fig 3- Hardware detailed pictures, including the ones validated at 300km/h.

Installation

There onboard part of OBA is composed of 2 main parts and 2 optional parts:

- Main parts are the OBA antenna and the OBA processing unit
- Optional parts are the GPS antenna and the Doppler radar.

There is a Track side equipment to gather the data from the OBA onboard units and produce a combined report for controlling and consistency check of assets, as well as to integrate and produce maintenance reports for issues found on balises on the track as well schedule future maintenance for predicted faults on balises.

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