

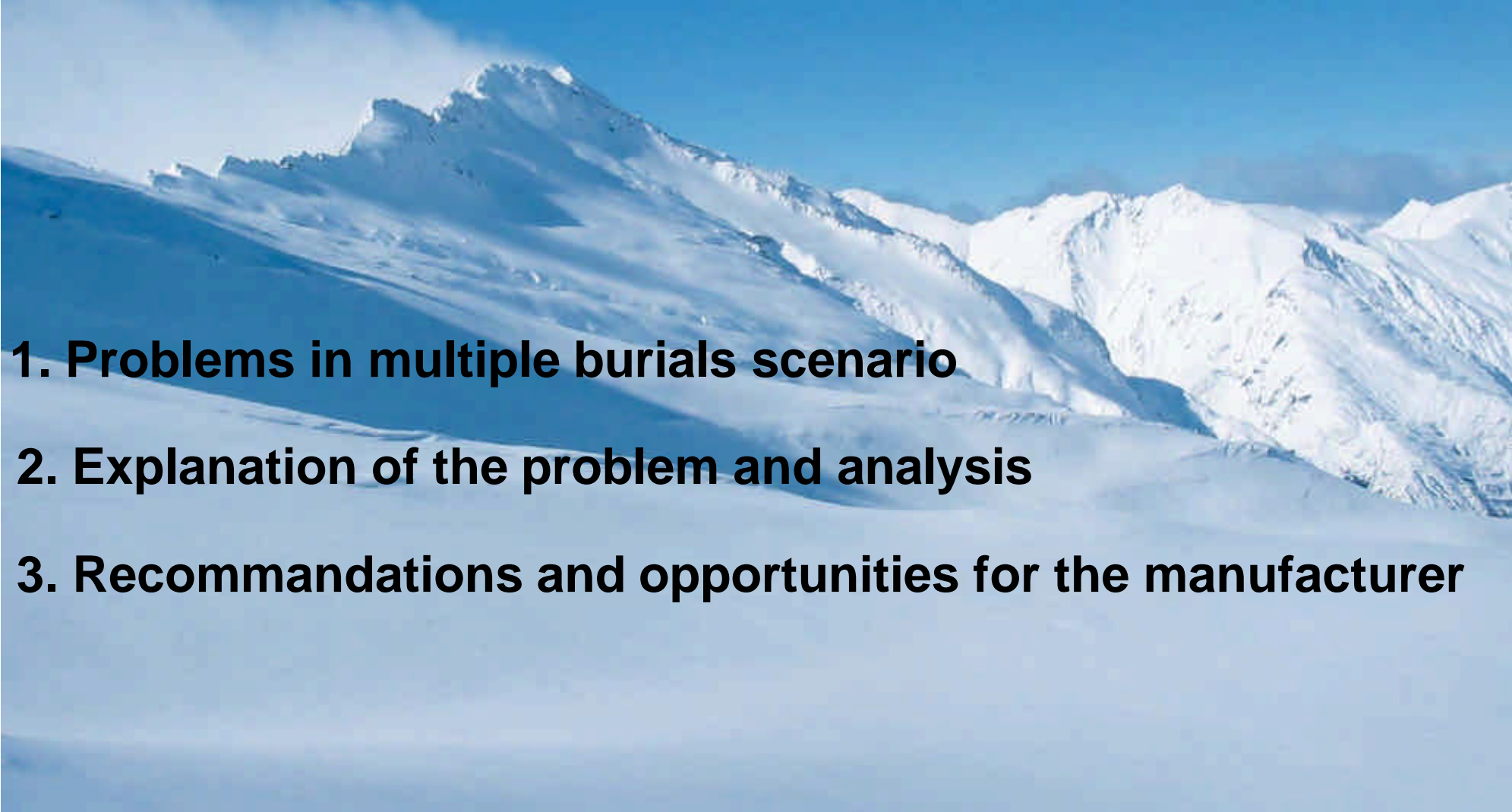




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✍ The opportunity for the manufacturers to solve the cases of multiple burials at 100% of the time



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- 1. Problems in multiple burials scenario**
 - 2. Explanation of the problem and analysis**
 - 3. Recommendations and opportunities for the manufacturer**



1. Problems in multiple burials scenario

- Counting the victims
- Erasing (Marking) the signal of one victim found
- Ethic problems if the rescuer knows who is buried
- Choosing one victim more than the other one...



2. Explanation of the problem and analysis

Each transceiver (brand) of the market has its own time signature :

T on

T off

Frequency

Strength of the signal



2.1 « T on – T off »

T on = Time when the beacon is emitting

T off = Time when the beacon is not emitting

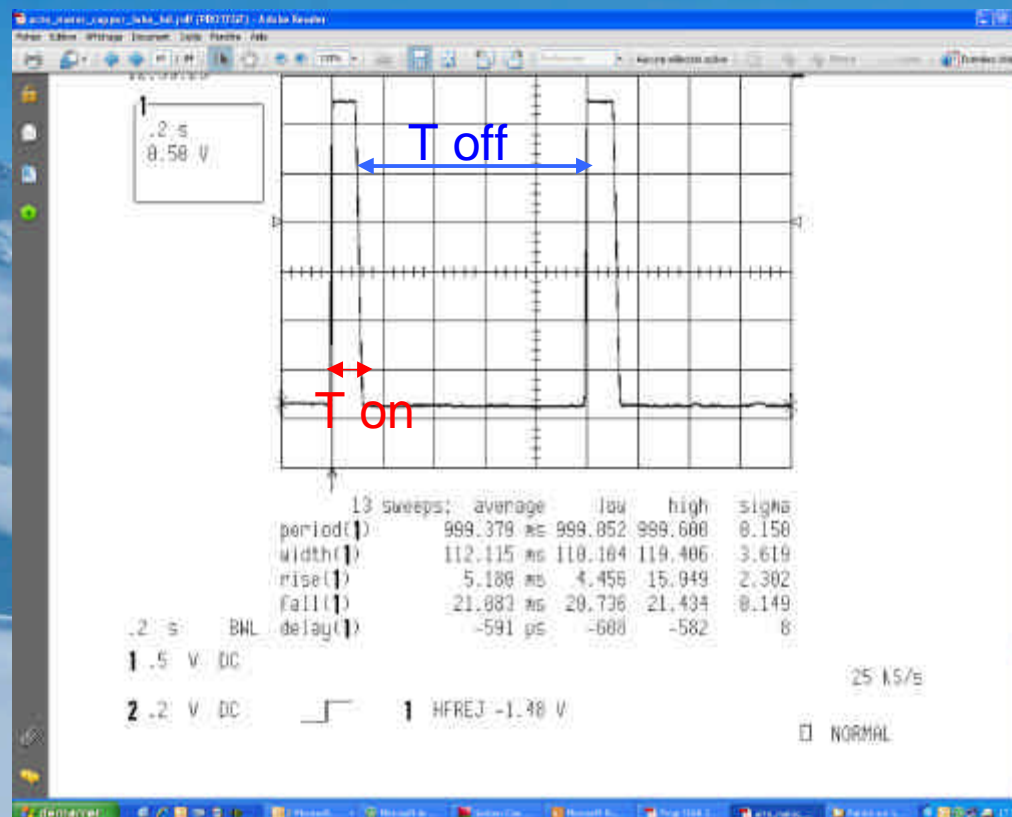
European standard ETS 300718

T on = 0.070'

T off = 0.2'

T on + T off = period

Period should be min 0.7'
max 1.3'

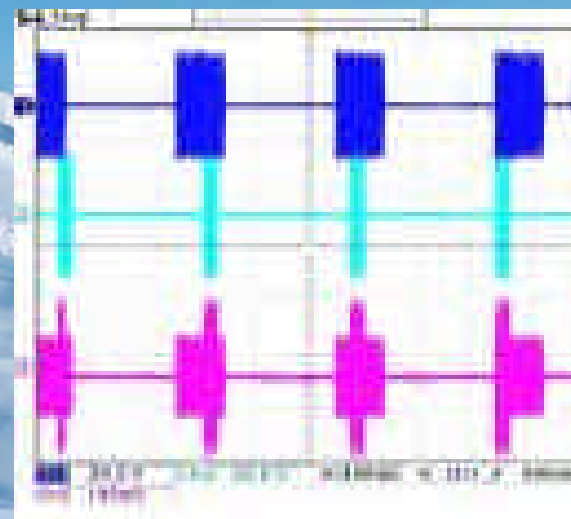




In fact the Ton and Toff are the audible specs that the users could hear...

Some transceivers (brands) are emitting for a long period...some others not...

The occurrence for cases of overlapping are huge...

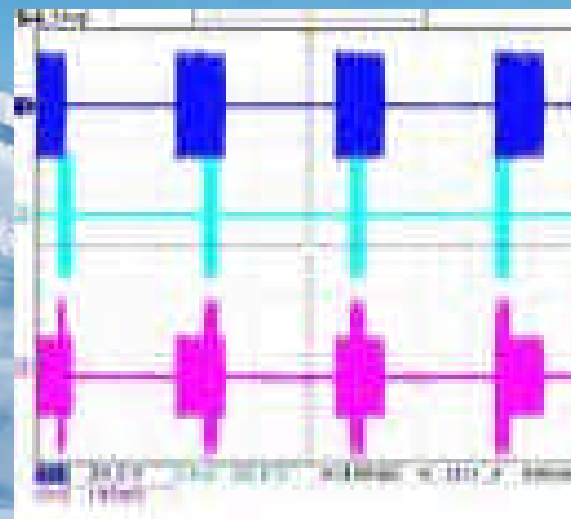




Problems :

The softwares of the digital beacons are not always seeing the difference or the processor can't separate the signal...

- + Wrong numbers of victims showed**
- + Impossible to mark the signal**
- + Icon displays later...**





2.2 « International Frequency 457 Khz »

Transceivers under the European standard ETS 300718 should transceive and receive between 457Khz +/- 80 Hz

Frequency directly influences performance in distance and accuracy

The band of receiving and transmitting frequency may be different

The right calibration of the emitting frequency on 457 Khz influence positively the performance of range and accuracy



Problems

Each brand has its own specs of receiving and emitting in terms of Frequency creating some big problems of compatibility.

The increasing of the receiving band will create more noise and would decrease the performance

Temperature is influencing the Frequency on some transceivers...some very old one are hard to receive



2.3 « Strength of the Signal »

Limited by the standard with a tolerance

Each brand has its own specs and power of signal

Problems :

Some products are emitting very poorly and some others very strongly...

Some digital beacons will choose the strongest signal, even if physically, one other weak transmitter is the nearest...



3. Recommendations and opportunities for the manufacturer

Global goal : Manufacturers have to work together in order to increase performance of their transceivers for the benefits of rescuers...

Working together on a new add in the standard ETS 300718 for the global benefits of users...



Proposal

3.1 « T on – T off »_c

Minimize the occupation of the band by a transceiver

Having a ratio $T_{on} / (T_{on} + T_{off})$ as small as possible

3.2 « Frequency »

Keep a band in receiving at 457Khz +/- 80 Hz

Having a new standard in transceiving as close as possible at 457 Khz +/- 10 Hz

3.3 « Signal strength »

Checking the maximum accepted by the standard and discussing about a new standard for all the manufacturers



Opportunities

- **Wireless technology to exchange some data**

Creating a network between the brands with some open informations and closed ones in Mhz

Having its own network (per brand) have no sense and it allows the recognition of the beacon buried so WHO is buried...

This kind of partnership will almost erase all the problems of marking, counting and would open new possibilities with much higher performance...



Risks

Shares of the market !

Lobbying allows to slow the direction of the market...

Internal policies of the manufacturer