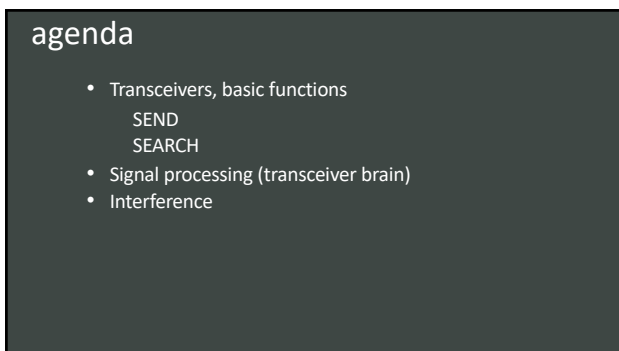




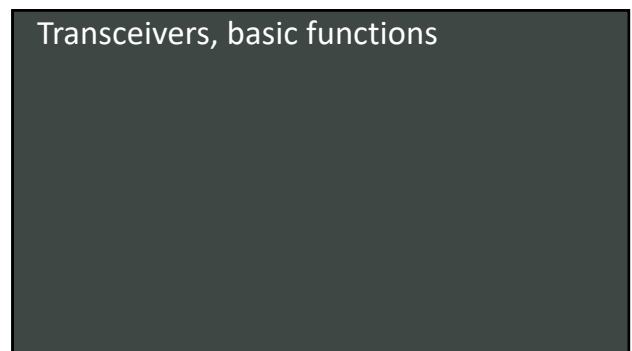
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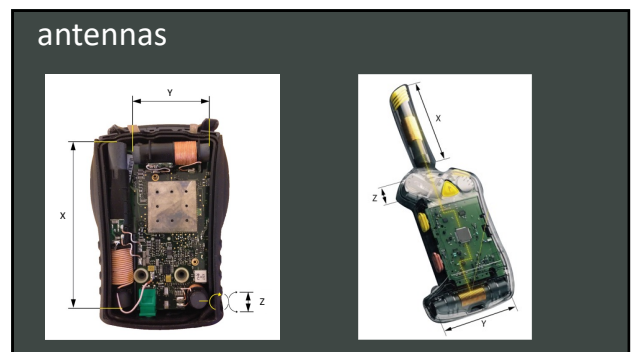
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6

### EN standards (300 718-1)

Frequency: 457 kHz ± 80 Hz  
 On: ≥ 70 ms  
 Off: ≥ 400 ms  
 Period: 1000 ± 300 ms  
 Strength: 0,5-2,23 µA/m at 10 m

PIEPS

7

### Is this a transceiver?

When the 1st signal is detected, its ON-time (pulse) will be verified

PIEPS

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### Is this a transceiver?

When the 2nd signal is detected, its pulse length will be verified

- on time (or pulse length): ≥ 70 ms (aprox the same as the 1st signal)
- off time: ≥ 400 ms

PIEPS

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### Confirmation of a transceiver

Prediction: The 3rd signal at T3 = T2 + Period.  
 Validation: if a signal is detected at T3, a sending transceiver is confirmed.  
 A model of this sending transceiver has been made

PIEPS

10

### Field lines

Signal strength depending on antenna orientation compared to field lines

- Strong signal
- Weak signal
- No signal

11

### Distance and direction

Orientation of the vector gives the direction

Length of the vector gives the distance

22

12

### Search – shortest distance

If distance increases, turn around!

13

### Switch of receiving antenna

At a precise calculated time, the antenna will be switched from X to Y

14

### receiving on both antennas

PIEPS Pro IPS has two equally long antennas (necessary for this to work). Thanks to this they can do simultaneous signal processing of the X and Y antennas. Quick, reliable and stable direction indication.

The X-antenna is shorter than normal, but the Y-antenna is longer than normal. The design moves the X-antenna away from the internal electronics and makes it as efficient as a longer antenna.

15

### Multiple signals...

Analog sound: All signals will be heard, much information from what you hear

Digital sound: Will not give you any information that you do not already have on your screen.

16

### Signal processing

17

### SIGNAL SEPARATION

Unseparated signals      Successful signal separation

18

### Pattern recognition

Separation by pattern recognition

19

### SIGNAL character

Modern short signal with a clear end

Old long signal with weak transmission between signals

20

### SIGNAL character

The pause between two pulses can vary between different transceivers, to reduce the risk of overlapping signals.

21

### SIGNAL DETECTION

The rise and flattening of the signal is what is detected as a new signal.

22

### SIGNAL OVERLAP

The first signal (W) hides the start of the second signal (Y).

23

### SIGNAL OVERLAP

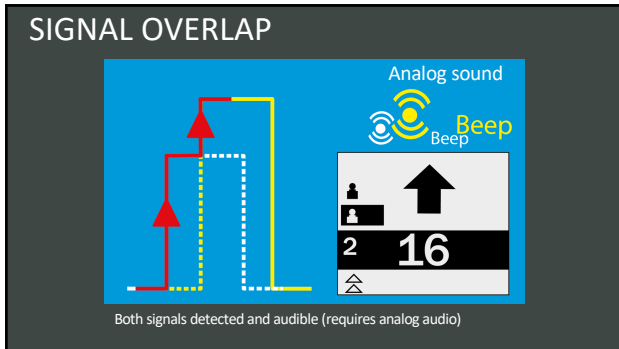
Analog sound

Beep Beep

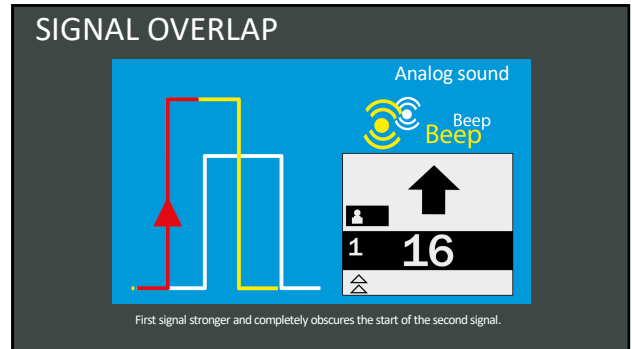
1 16

Only one signal detected but two audible (requires analog audio)

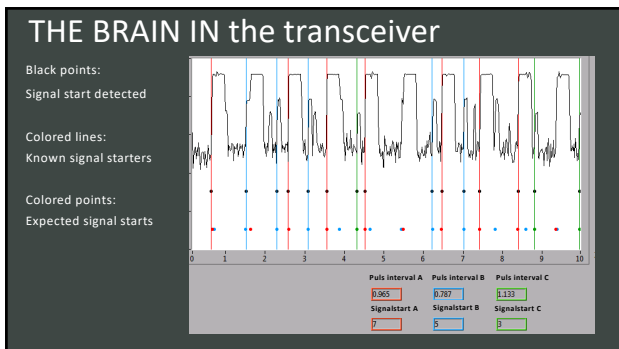
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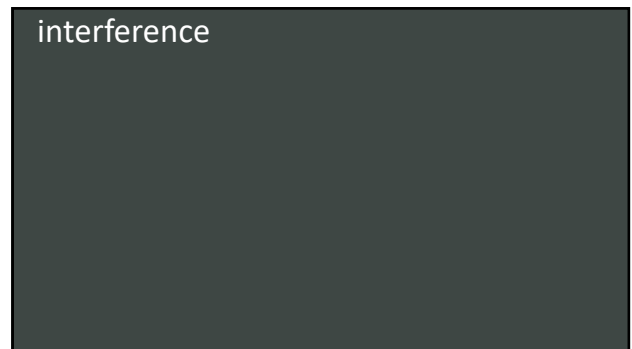
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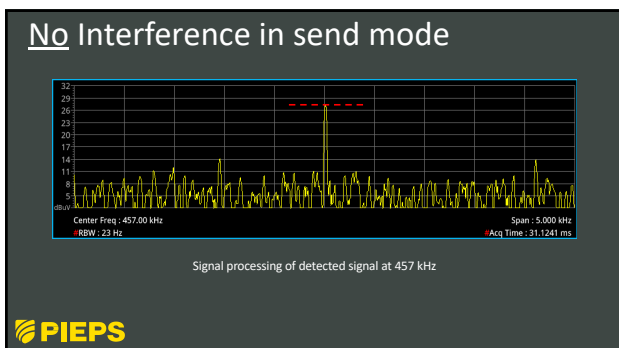
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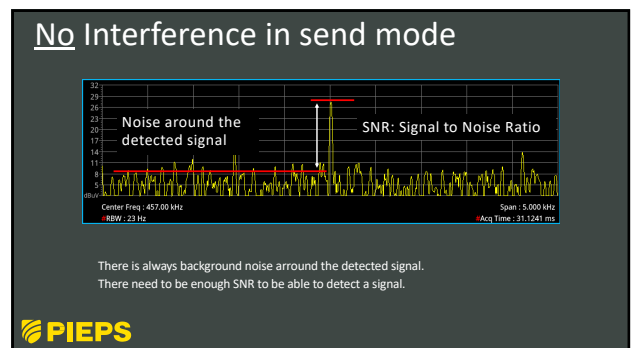
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30

### Interference in send mode

Interference to a transceiver in SEND mode means a weaker transmitting power than what the EN norm specifies

31

### Interference protection in send

There are other manufacturers that have similar systems of detecting interference and adapting the output.

32

### Interference in search mode

There is always background noise around the detected signal. There need to be enough SNR to be able to detect a signal.

33

### Interference in search mode

Transmit power is specified in the EN norm and cannot be changed. Noise (interference) goes up and SNR gets worse. Max range reduced significantly, direction reliability greatly compromised.

34

### Interference in search mode

In extreme situation, Signal is buried in the noise. It is impossible to detect a signal.

35

### recommendations

Avoid interference

36



37