Wialon and EYE proximity

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Contents

Introduction

Teltonika Eye Beacons have two new scenarios related to RSSI value. RSSI means “Received Signal Strength Indicator” and this value can be use as distance indicator, or to know if the Beacon is detected by the FM tracker.

Following sections describe **Proximity** and **Lost & Found** Scenarios.

Eye Beacon Configuration

Devices work constantly and are ready to perform out of the box. Default basic Sensor settings are set to:

- Transmitting at 2 dBm power.
- Data advertising at 3 second intervals.
- Eddystone protocol

However, these parameters can be changed. Transmitting power can be set from -14dBm to 8dBm – higher transmitting power equates to a larger beacon range. Data advertising interval can be selected from the range 20ms to 10s, shorter data advertising intervals ensure a more stable signal. However, increasing power or reducing the advertising interval affects the battery life of the Eye Beacon.

EYE Beacon / BTSID1	**EYE Sensor / BTSMP1**

2+ years (Tx=2 dBm; interval: 1 s)	1+ year (Tx=2 dBm; interval: 1 s)
5+ years (Tx=2 dBm; interval: 3 s)	2.5+ years (Tx=2 dBm; interval: 3 s)
8+ years (Tx=2 dBm; interval: 5 s)	4+ years (Tx=2 dBm; interval: 5 s)
10+ years (Tx=2 dBm; interval: 10s)	5+ years (Tx=2 dBm; interval: 10s)

More information can be found here All configuration of the Eye Beacon will be done via EYEapp. On the app, wanted protocol can be selected, transmitting power, advertising interval and Beacon ID can be easily configured. Below is an example configuration.

Teltonika Configurator

Common Settings

We need to set up proper Protocol and Bluetooth settings in order to have beacons information

1. In System Settings Enable Codec8 Extended.
2. In Bluetooth® settings Enable Bluetooth®, set this setting as either "Enable (hidden)" or "Enable (visible)", otherwise Bluetooth® will be disabled.

Proximity Scenario

EYE beacon Proximity events is a functionality which creates three different types of records, depending on the captured Beacons RSSI level. This functionality is only supported with Teltonika EYE beacons. Proximity events consist of near, away and lost events:

- When EYE beacon RSSI level is below the first configured threshold, the beacon will be added to Near Beacon Record **(AVL ID: 10828)**
- When EYE BEACON RSSI level is between the second and first configured threshold, beacon is added to Away Beacon record **(AVL ID: 10829)**
- When EYE Beacon RSSI level is lower than the second configured threshold, beacon is added to Lost Beacon record **(AVL ID: 10831)**. In the case of EYE Beacon disappearing from the environment and not being detected by the FM tracker anymore, the beacon will be added to Lost Beacon record and will be removed from Beacon list.

Event modes

- Disabled – Record generating is disabled for the selected range
- Periodic – Records will be periodically generated for the selected range, according to the configured record period on move or on stop value.
- On Change – Records will be generated as soon as the Eye Beacon number changes for the selected range.

Averaging Timeout

This parameter specifies how long it will take current RSSI value to reach new RSSI value. For example, current EYE Beacon RSSI value is -40 dBm. FMB captures same EYE Beacon with RSSI value of -60 dBm. If averaging timeout is configured to be 10 seconds, it will take 10 seconds for RSSI value to reach -60 dBm from -40 dBm. Keep in mind that this is assuming perfect conditions and subsequent EYE Beacon RSSI.

Lost & Found Scenario

Purpose of this functionality is to **periodically** generate records with all EYE Beacon list (AVL ID: 10828) and create eventual **On Change** records only when EYE Beacon is lost (AVL ID: 10831) or found (AVL ID: 10829).

Lost and Found Beacon records only include EYE Beacon which was lost or found, not the full Beacon list.

- If multiple EYE Beacons were found or lost at the same time, multiple will be included into the record.
- If Visible Beacon List is enabled, Beacon records containing the list of visible beacons will be generated according to the configured period parameters *Record Period on Move* and *Record Period on Stop*

Advanced Beacon protocol is being used to send Lost & Found records.

Note:Same AVL ID’s as for Proximity events are being used, since two features cannot work at the same time.

- **AVL ID: 10828** Visible Beacon List (periodic)
- **AVL ID: 10829** Found Beacon List (On Change)
- **AVL ID: 10831** Lost Eye Beacon List (On Change)

Parsing Data

Proximity Parsing

PROXIMITY FEATURE

Received data in hexadecimal stream:
00000000000000BD8E03
0000018D1468C11B00E42CC908F1F475CC000000000300002A4C0001000000000000000000000012A4C001401120001E50F067CD9F401EF770D01000E020BFE
0000018D1468C12500E42CC908F1F475CC000000000300002A4D0001000000000000000000000012A4D001401120001C80F067CD9F40255BE0D01000E020BF4
0000018D1468C12F00E42CC908F1F475CC000000000300002A4F0001000000000000000000000012A4F001401120001B90F067CD9F4004B490D01000E020BFE
03000086BA

AVL Data Packet

	AVL Data Packet Part	HEX Code Part	Decoded
AVL DATA	Zero Bytes	00 00 00 00	
	Data Field Length	00 00 00 BD	189 bytes
	Codec ID	8E	Codec8 Extended
	Number of Data 1 (Number of Total Records)	03	3
	Timestamp	00 00 01 8D 14 68 C1 1B	2024/01/16 - 22:33:46.001
	Priority	00	HIGH
	Longitude	E4 2C C9 08	-466827000
	Latitude	F1 F4 75 CC	-235637300
	Altitude	00 00	0
	Angle	00 00	0
	Satellites	03	3
	Speed	00 00	0
	Event IO ID	2A 4C	10828
	N of Total ID	00 01	1
	N1 of One Byte IO	00 00	0
	N2 of Two Bytes IO	00 00	0
	N4 of Four Bytes IO	00 00	0
	N8 of Eight Bytes IO	00 00	0
	NX of X Bytes IO	00 01	1
	N’th IO ID - AVL ID.	2A 4C	10828
	Length of Variable Length IO	00 14	20
	Value of Variable Length IO	01 12 00 01 E5 0F 06 7C D9 F4 01 EF 77 0D 01 00 0E 02 0B FE	

	Timestamp	00 00 01 8D 14 68 C1 25	2024/01/16 - 22:33:46.001
	Priority	00	0
	Longitude	E4 2C C9 08	-466827000
	Latitude	F1 F4 75 CC	-235637300
	Altitude	00 00	0
	Angle	00 00	0
	Satellites	03	3
	Speed	00 00	0
	Event IO ID	2A 4D	10829
AVL DATA	N of Total ID	00 01	1
	N1 of One Byte IO	00 00	0
	N2 of Two Bytes IO	00 00	0
	N4 of Four Bytes IO	00 00	0
	N8 of Eight Bytes IO	00 00	0
	NX of X Bytes IO	00 01	1
	N’th IO ID - AVL ID.	2A 4D	10829
	Length of Variable Length IO	00 14	20
	Value of Variable Length IO	01 12 00 01 C8 0F 06 7C D9 F4 02 55 BE 0D 01 00 0E 02 0B F4	
	Timestamp	00 00 01 8D 14 68 C1 2F	2024/01/16 - 22:33:46.001
	Priority	00	0
	Longitude	E4 2C C9 08	-466827000
	Latitude	F1 F4 75 CC	-235637300
	Altitude	00 00	0
	Angle	00 00	0
	Satellites	03	3
	Speed	00 00	0
	Event IO ID	2A 4F	10831
AVL DATA	N of Total ID	00 01	1
	N1 of One Byte IO	00 00	0
	N2 of Two Bytes IO	00 00	0
	N4 of Four Bytes IO	00 00	0
	N8 of Eight Bytes IO	00 00	0
	NX of X Bytes IO	00 01	1
	N’th IO ID - AVL ID.	2A 4F	10831
	Length of Variable Length IO	00 14	20
	Value of Variable Length IO	01 12 00 01 B9 0F 06 7C D9 F4 00 4B 49 0D 01 00 0E 02 0B FE	
	Number of Data 2 (Number of Total Records)	03	20
	CRC-16	00 00 86 BA	

Near example (AVL ID - 10828)

nEAR BEACONS (AVL ID - 10828)		
01120001E50F067CD9F401EF770D01000E020BFE		
AVL Data Packet		
AVL Data Packet Part	**HEX Code Part**	**Decoded**
Protocol ID	01	
Data Length	12	18
Parameter ID	00	Beacon RSSI Level
Parameter Data Length	01	1
Parameter Data	E5	-27
Parameter ID	0F	EYE Sensor MAC address
Parameter Data Length	06	6
Parameter Data	7C D9 F4 01 EF 77	7CD9F401EF77
Parameter ID	0D	EYE Sensor Low Battery
Parameter Data Length	01	1
Parameter Data	00	0
Parameter ID	0E	EYE Sensor Battery Voltage
Parameter Data Length	02	2
Parameter Data	0B FE	3070

Away example (AVL ID - 10829)

AWAY BEACONS (AVL ID - 10829)		
01120001C80F067CD9F40255BE0D01000E020BF4		
AVL Data Packet		
AVL Data Packet Part	**HEX Code Part**	**Decoded**
Protocol ID	01	
Data Length	12	18
Parameter ID	00	Beacon RSSI Level
Parameter Data Length	01	1
Parameter Data	C8	-56
Parameter ID	0F	EYE Sensor MAC address
Parameter Data Length	06	6
Parameter Data	7C D9 F4 02 55 BE	7CD9F40255BE
Parameter ID	0D	EYE Sensor Low Battery
Parameter Data Length	01	1
Parameter Data	00	0
Parameter ID	0E	EYE Sensor Battery Voltage
Parameter Data Length	02	2

Parameter Data	0BF4	3060

Lost example (AVL ID - 10831)

LOST BEACONS (AVL ID - 10831)

01120001E50F067CD9F401EF770D01000E020BFE

AVL Data Packet

AVL Data Packet Part	HEX Code Part	Decoded
Protocol ID	01	
Data Length	12	18
Parameter ID	00	Beacon RSSI Level
Parameter Data Length	01	01
Parameter Data	B9	-71
Parameter ID	0F	EYE Sensor MAC address
Parameter Data Length	06	6
Parameter Data	7C D9 F4 00 4B 49	7CD9F4004B49
Parameter ID	0D	EYE Sensor Low Battery
Parameter Data Length	01	1
Parameter Data	00	0
Parameter ID	0E	EYE Sensor Battery Voltage
Parameter Data Length	02	2
Parameter Data	0BFE	3070

Lost & Found Parsing

Visible Beacons (AVL ID - 10828)

LOST & FOUND FEATURE

Received data in hexadecimal stream:
00000000000000678E010000018D1459964B00E42CA472F1F5B94D00000000000000
2A4C0001000000000000000000000012A4C003A01120001D60F067CD9F40255BE0D01000E020BF4120001E00F067CD9F4004B490D01000E020BFE120001AC0F067CD9F401EF770D01000E020BFE
0100001ACD

AVL Data Packet

AVL Data Packet Part	HEX Code Part	Decoded
Zero Bytes	00 00 00 00	
Data Field Length	00 00 00 67	103
Codec ID	8E	142
Number of Data 1 (Number of Total Records)	01	1

AVL DATA	Timestamp	00 00 01 8D 14 59 96 4B	2024/01/16 - 22:17:12.001
	Priority	00	0
	Longitude	E4 2C A4 72	-466827000
	Latitude	F1 F5 B9 4D	-235637300
	Altitude	00 00	0
	Angle	00 00	0
	Satellites	00	0
	Speed	00 00	0
	Event IO ID	2A 4C	10828
	N of Total ID	00 01	1
	N1 of One Byte IO	00 00	0
	N2 of Two Bytes IO	00 00	0
	N4 of Four Bytes IO	00 00	0
	N8 of Eight Bytes IO	00 00	0
	NX of X Bytes IO	00 01	1
	N’th IO ID - AVL ID.	2A 4C	10828
	Length of Variable Length IO	00 3A	58
	Value of Variable Length IO	01120001D60F067CD9F402 55BE0D01000E020BF4 120001E00F067CD9F4004B 490D01000E020BFE 120001AC0F067CD9F401EF 770D01000E020BFE	
	Number of Data 2 (Number of Total Records)	01	1
	CRC-16	00 00 1A CD	

vISIBLE BEACONS (AVL ID - 10828)

01120001D60F067CD9F40255BE0D01000E020BF4
120001E00F067CD9F4004B490D01000E020BFE
120001AC0F067CD9F401EF770D01000E020BFE

AVL Data Packet

AVL Data Packet Part		HEX Code Part	Decoded
EYE BEACON 1	Protocol ID	00 00 00 00	
	Data Length	12	18
	Parameter ID	00	Beacon RSSI Level
	Parameter Data Length	01	1
	Parameter Data	D6	-42
	Parameter ID	0F	EYE Sensor MAC address
	Parameter Data Length	06	6
	Parameter Data	7CD9F40255BE	7CD9F40255BE
	Parameter ID	0D	EYE Sensor Low Battery
	Parameter Data Length	01	1
	Parameter Data	00	0
	Parameter ID	0E	EYE Sensor Battery Voltage
	Parameter Data Length	02	2

EYE BEACON 2	Data Length	12	18
	Parameter ID	00	Beacon RSSI Level
	Parameter Data Length	01	1
	Parameter Data	E0	-32
	Parameter ID	0F	EYE Sensor MAC address
	Parameter Data Length	06	6
	Parameter Data	7CD9F4004B49	7CD9F4004B49
	Parameter ID	0D	EYE Sensor Low Battery
	Parameter Data Length	01	1
	Parameter Data	00	0
	Parameter ID	0E	EYE Sensor Battery Voltage
	Parameter Data Length	02	2
	Parameter Data	0B FE	3070
EYE BEACON 3	Data Length	12	18
	Parameter ID	00	Beacon RSSI Level
	Parameter Data Length	01	1
	Parameter Data	AC	-32
	Parameter ID	0F	EYE Sensor MAC address
	Parameter Data Length	06	6
	Parameter Data	7CD9F401EF77	7CD9F401EF77
	Parameter ID	0D	EYE Sensor Low Battery
	Parameter Data Length	01	1
	Parameter Data	00	0
	Parameter ID	0E	EYE Sensor Battery Voltage
	Parameter Data Length	02	2
	Parameter Data	0B FE	3070

Lost Beacons (AVL ID 10831)

LOST & FOUND FEATURE

Received data in hexadecimal stream:
00000000000000418E010000018D145CF59300E42CA472F1F5B94D00000000000000
2A4F00010000000000000000000012A4F001401120001AB0F067CD9F401EF770D01000E020BFE010000CBD8

AVL Data Packet

AVL Data Packet Part	HEX Code Part	Decoded
Zero Bytes	00 00 00 00	
Data Field Length	00 00 00 41	65
Codec ID	8E	142
Number of Data 1 (Number of Total Records)	01	1

AVL DATA	Timestamp	00 00 01 8D 14 5C F5 93	2024/01/16 - 22:20:53.001
	Priority	00	0
	Longitude	E4 2C A4 72	-466827000
	Latitude	F1 F5 B9 4D	-235637300
	Altitude	00 00	0
	Angle	00 00	0
	Satellites	00	0
	Speed	00 00	0
	Event IO ID	2A 4F	10831
	N of Total ID	00 01	1
	N1 of One Byte IO	00 00	0
	N2 of Two Bytes IO	00 00	0
	N4 of Four Bytes IO	00 00	0
	N8 of Eight Bytes IO	00 00	0
	NX of X Bytes IO	00 01	1
	N’th IO ID - AVL ID.	2A 4F	10831
	Length of Variable Length IO	00 14	20
	Value of Variable Length IO	01120001AB0F067CD9F401 EF770D01000E020BFE	
	Number of Data 2 (Number of Total Records)	01	1
	CRC-16	00 00 CB D8	

lOST BEACONS (AVL ID - 10831)

01120001AB0F067CD9F401EF770D01000E020BFE

AVL Data Packet

AVL Data Packet Part		HEX Code Part
Protocol ID	01	
Data Length	12	18
Parameter ID	00	Beacon RSSI Level
Parameter Data Length	01	1
Parameter Data	AB	-85
Parameter ID	0F	EYE Sensor MAC address
Parameter Data Length	06	6
Parameter Data	7CD9F401EF77	7CD9F401EF77
Parameter ID	0D	EYE Sensor Low Battery
Parameter Data Length	01	1
Parameter Data	00	0
Parameter ID	0E	EYE Sensor Battery Voltage
Parameter Data Length	02	2
Parameter Data	0B FE	3070

Found Beacons (AVL ID - 10829)

LOST & FOUND FEATURE

Received data in hexadecimal stream:
00000000000000418E010000018D1464ECA300E42CD682F1F4768402B1005A050003
2A4D000100000000000000000000012A4D001401120001D60F067CD9F401EF770D01000E020BFE010000E720

AVL Data Packet

AVL Data Packet Part		HEX Code Part	Decoded
AVL DATA	Zero Bytes	00 00 00 00	
	Data Field Length	00 00 00 41	65
	Codec ID	8E	142
	Number of Data 1 (Number of Total Records)	01	1
	Timestamp	00 00 01 8D 14 64 EC A3	2024/01/16 - 22:29:35.001
	Priority	00	0
	Longitude	E4 2C D6 82	-466827000
	Latitude	F1 F4 76 84	-235637300
	Altitude	02 B1	689
	Angle	00 5A	90
	Satellites	05	5
	Speed	00 03	3
	Event IO ID	2A 4D	10829
	N of Total ID	00 01	1
	N1 of One Byte IO	00 00	0
	N2 of Two Bytes IO	00 00	0
	N4 of Four Bytes IO	00 00	0
	N8 of Eight Bytes IO	00 00	0
	NX of X Bytes IO	00 01	1
	N’th IO ID - AVL ID.	2A 4D	10829
	Length of Variable Length IO	00 14	20
	Value of Variable Length IO	01120001D60F067CD9F401 EF770D01000E020BFE	
	Number of Data 2 (Number of Total Records)	01	1
	CRC-16	00 00 E7 20	

FOUND BEACONS (AVL ID - 10829)

01120001D60F067CD9F401EF770D01000E020BFE

AVL Data Packet

AVL Data Packet Part		HEX Code Part
Protocol ID	01	
Data Length	12	18
Parameter ID	00	Beacon RSSI Level
Parameter Data Length	01	1
Parameter Data	D6	-42
Parameter ID	0F	EYE Sensor MAC address
Parameter Data Length	06	6
Parameter Data	7CD9F401EF77	7CD9F401EF77

Parameter ID	0D	EYE Sensor Low Battery
Parameter Data Length	01	1
Parameter Data	00	0
Parameter ID	0E	EYE Sensor Battery Voltage
Parameter Data Length	02	2
Parameter Data	0B FE	3070

New Features in Wialon

Wialon is identifying AVL ID's - 10828, 10829 and 10831. When registering parameters in messages - the following parameters will be created: "event_io_id=10828; event_io_id=10829; event_io_id=10831". All BLE will be registered as parameters as well.

When IO 10828 and 10829 will arrive - they are registered as **beacon_<ID>*id=ID;*** (as stated already){_} When IO 10831 arrives - it will be registered as **beacon_<ID>_id=0;** Although its possible to use Proximity feature, more or less, by manually creating sensors using the **beacon_<MAC or ID>_rssi** parameter, and manually inputting ranges, see below.