FMB+FMB Backup Tracker

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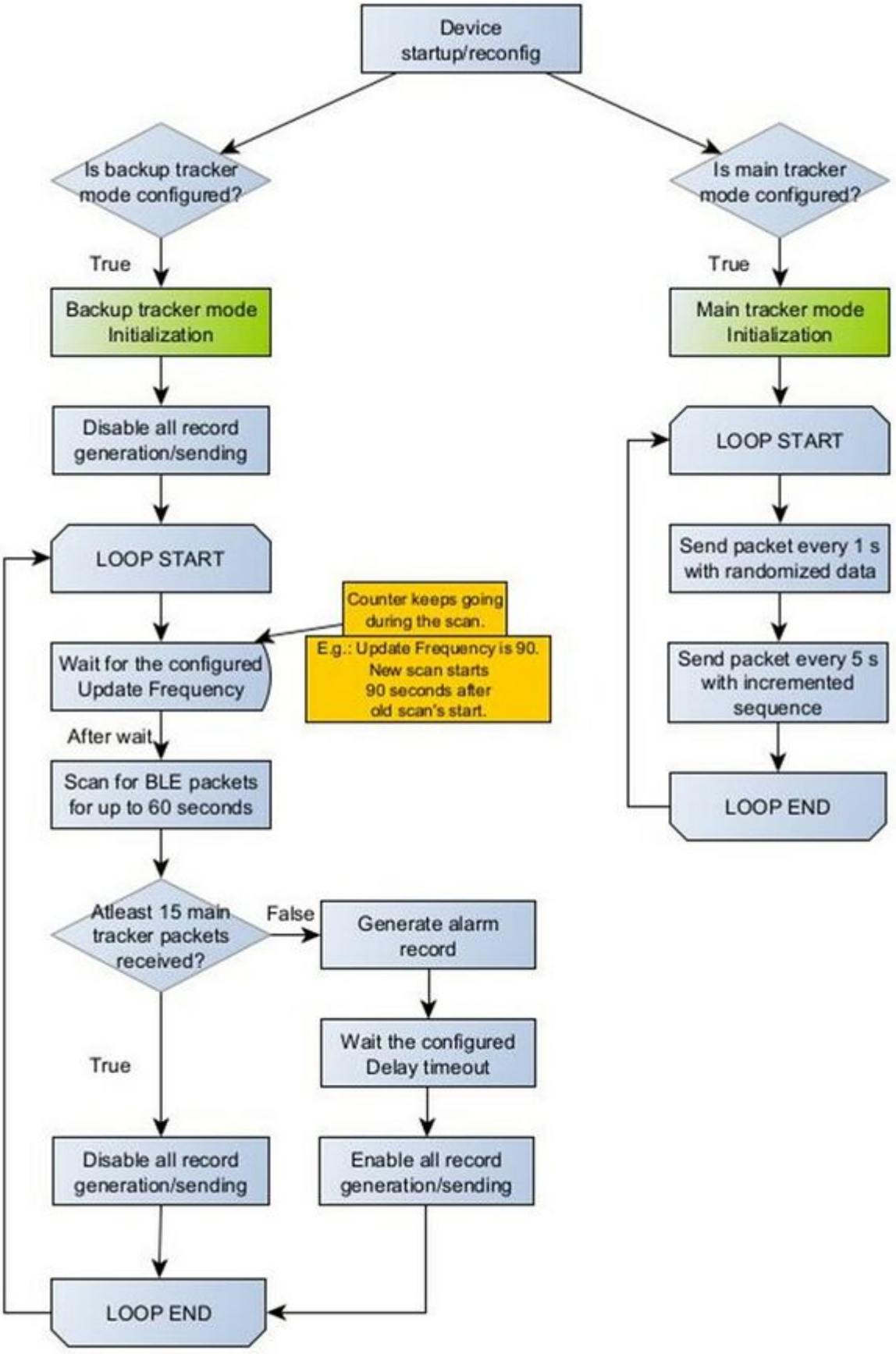
Introduction to Backup Tracker functionality

FMB+FMB Backup Tracker is a new feature which allows to transform device's work-mode to work as a backup tracker.
Each backup tracker's scan cycle lasts up to 60 seconds. If during those 60 seconds the Backup tracker is:

- Able to catch 15 valid Main tracker packets, the scan will stop and the device will wait for next cycle to start.
- Unable to catch at least 15 valid Main tracker packets, an alarm record will be generated with AVL ID 1153. After **delay timeout (s)** is reached, device will send that generated record to the server and enable other record generation/sending (Periodic and Eventual record).

Backup functionality logic



Each time the device is starts up or gets reconfigured, it checks if either main or backup tracker modes are enabled on the current configuration.
Both modes have some common initialization procedures:

- Check if **Sleep Mode** (ID: 102) is configured to **Ultra Sleep** (4). If it is, set **Sleep Mode** to **Disabled** (0). This means that both tracker modes overwrite configured **Ultra Sleep** mode and it's impossible to use Ultra Sleep mode with this functionality enabled;
- **Non stop scanning** (ID: 1115) is set **Disable** (0);
- **BLE connection control** (ID: 1112) is set to **Prohibit** (0);
- All **BLE connectionless functionalities** are set to **Disabled** (0).

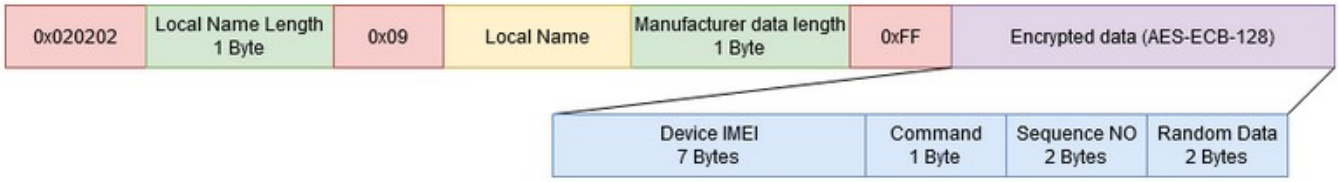
Then, both modes have some unique initialization procedures (specific to the tracker mode): Main tracker mode:

- **Beacon Detection** (ID: 134) is set to **Disabled** (0);
- BLE packet sending gets initialized and works according to flowchart.

Backup tracker mode:

- **Beacon Detection** (ID: 134) is set to **All** (1);
- All record generation is disabled. This means that if the device is not detecting the main tracker and starts generating records, it can be reconfigured or hard reset, and it will only start generating records again after the next failed scan (aka after next alarm record).
- Record sending is queued up to stop. Device waits for any currently queued up record sending to finish, so there might be a delay for this full record sending stop to occur.

Packet format



Parameter list

Parameter ID	Name	Data Type	Value range			Description
			Min	Max	Default	
70200	FMB Tracker mode	Uint8	0	2	0	0 - Disabled; 1 - Main; 2 - Backup.
70201	FMB Tracker mode	String	-	15	-	IMEI of the tracker which is configured as a main tracker
70202	Update frequency	Uint16	60	65535	120	Frequency, at which backup tracker should start scanning for Main Tracker BLE packets.
70203	Delay timeout	Uint16	0	65535	0	Delay, after which backup tracker starts sending records after an alarm occurs

Firmware compatibility

To start working with FMB + FMB functionality **03.27.13.Rev.452** firmware or newer will be required to be used. You can check what devices are compatible with using this firmware on **Compability table for FMB + FMB backup tracking** page.

Limitations

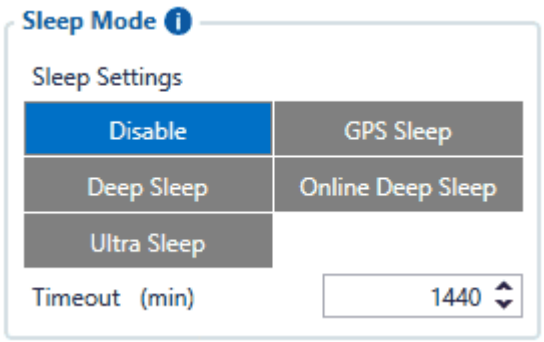
Since the feature relies on Bluetooth® functionality, all of the existing Bluetooth® limitations are applied. One of such limitations is the fact that FMB devices only store up to 100 BLE devices per scan. This means, that if there are more than 100 BLE devices in the surrounding environment, backup tracker being able to catch main tracker packets in time gets reduced.

Setup instructions

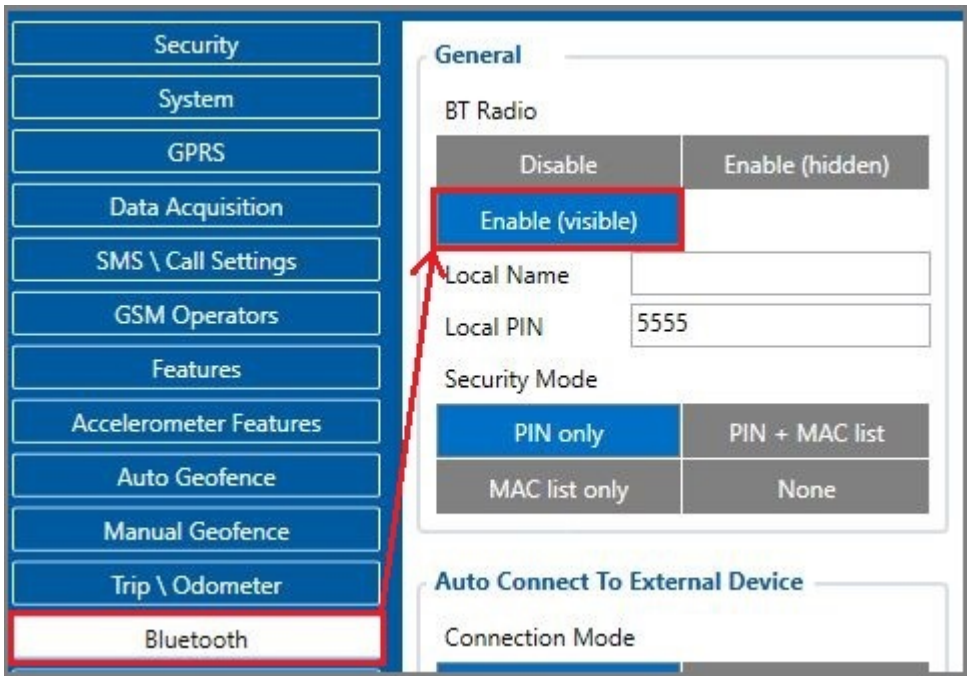
To ENABLE backup feature on FMBxxx device:

Both devices:

- Make sure `Ultra Sleep` mode → `Disabled`

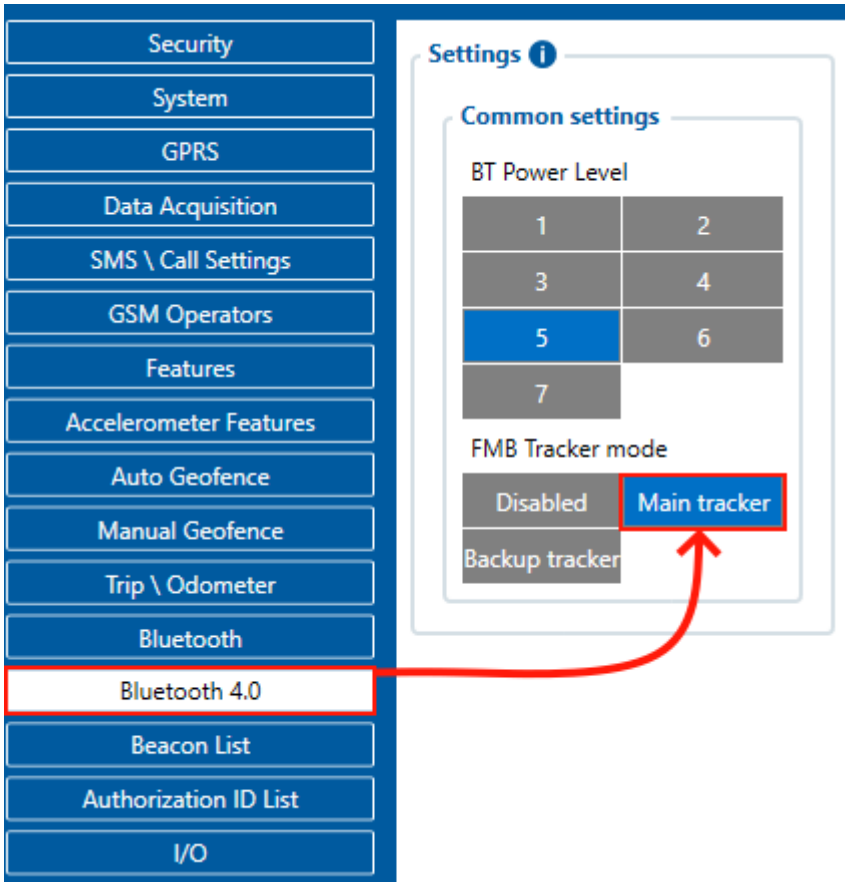


- `Bluetooth®` → `BT Radio` set to `Enable(visible)`



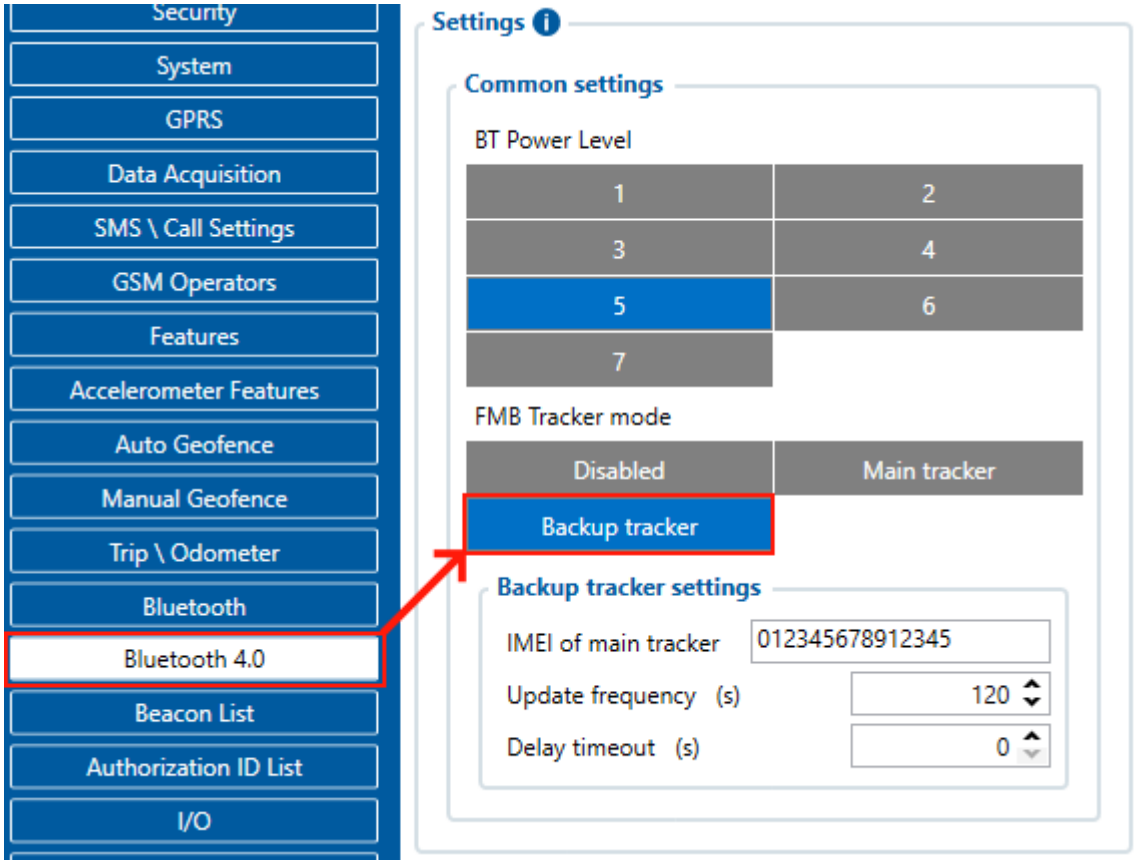
Main device:

- `Bluetooth® 4.0` → select `Main Tracker`



Backup device:

- `Bluetooth® 4.0` → select `Backup Tracker`
- Enter main device IMEI (15 digits)
- Set **Update frequency** to how frequent you want backup tracker to scan.
- Set **Delay timeout** to delay sending alarm record. Leave it default (0) if you want to immediately receive alarm record.



- Configure your **APN** and Server settings in **GPRS** section.

Parsed data

```
00000000000004A8E010000016B412CEE0001000000000000000000000000000000 0481
000500010001010001001100 1D00010010015E2C880002000B00000000
3544C87A000E000000001DD7E06A00000100002994
```

AVL Data Packet

AVL Data Packet Part	HEX Code Part
Zero Bytes	00 00 00 00
Data Field Length	00 00 00 4A
Codec ID	8E
Number of Data 1 (Records)	01

AVL Data	Timestamp	00 00 01 6B 41 2C EE 00 (GMT: Monday, June 10, 2019 11:36:32 AM)
	Priority	01
	Longitude	00 00 00 00
	Latitude	00 00 00 00
	Altitude	00 00
	Angle	00 00
	Satellites	00
	Speed	00 00
	Event IO ID	**04 81 (AVL: 1153 - Backup Tracker Alarm)**
	N of Total ID	00 05
	N1 of One Byte IO	00 01
	1’st IO ID	00 01 (AVL ID: 1, Name: DIN1)
	1’st IO Value	01
	N2 of Two Bytes IO	00 01
	1’st IO ID	00 11 (AVL ID: 17, Name: Axis X)
	1’st IO Value	00 1D
	N4 of Four Bytes IO	00 01
	1’st IO ID	00 10 (AVL ID: 16, Name: Total Odometer)
	1’st IO Value	01 5E 2C 88
	N8 of Eight Bytes IO	00 02
	1’st IO ID	00 0B (AVL ID: 11, Name: ICCID1)
	1’st IO Value	00 00 00 00 35 44 C8 7A
	2’nd IO ID	00 0E (AVL ID: 14, Name: ICCID2)
	2’nd IO Value	00 00 00 00 1D D7 E0 6A
	NX of X Byte IO	00 00
	Number of Data 2 (Number of Total Records)	01
	CRC-16	00 00 29 94