1. BLUETOOTH GENERAL INFORMATION

General information	**https://www.bluetooth.com/bluetooth-technology**
BLE Specifications	**https://www.bluetooth.com/specifications**
BLE Services et Characteristics	**https://www.bluetooth.com/specifications/gatt**

2. APPLICABLE PRODUCT

Blue PUCK ID
IDF25240X
Blue PUCK T
IDF25241X
Blue PUCK RHT
IDF25242X
Blue PUCK MAG
IDF25243X
Blue PUCK MOV
IDF25244X
Blue PUCK BUZZ
IDF25245X
Blue PUCK DI
IDF25246X
Blue PUCK AI
IDF25248X
Blue PUCK DO
IDF25247X
Blue PUCK T EN12830
IDF30241X
Blue PUCK T Probe
IDF25250X
Blue PUCK PIR
IDF25249X

Blue COIN ID
IDF10240X
Blue COIN T
IDF10241X
Blue COIN MAG
IDF10243X
Blue COIN MOV
IDF10244X

Blue SLIM ID
IDF03240X

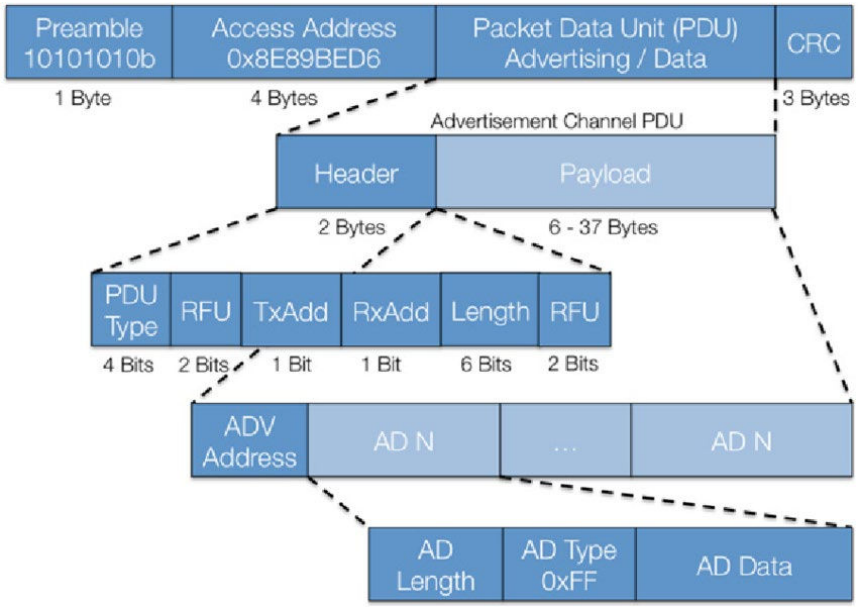
Blue WATCH ID
IDP27240X

Blue LITE ID
IDF28240X

3. GENERAL INFORMATION

BLE protocol fixes the length of BLE packets to 47 Bytes maximum among which a maximum of 37 are define by the user and are generally referred as the **payload**.

In this payload, the 6 first bytes are reserved for the advertiser address (mac address), the following 3 are used to flag the type of advertising frame and the 29 remaining contains actual datas of interest. Position, types and length of data defines **the frame format** that must be known on the scanner side in order to decode the payload. This document provide the information of available frame format in ELA INNOVATION tag as well as the information require to request a full custom frame format.



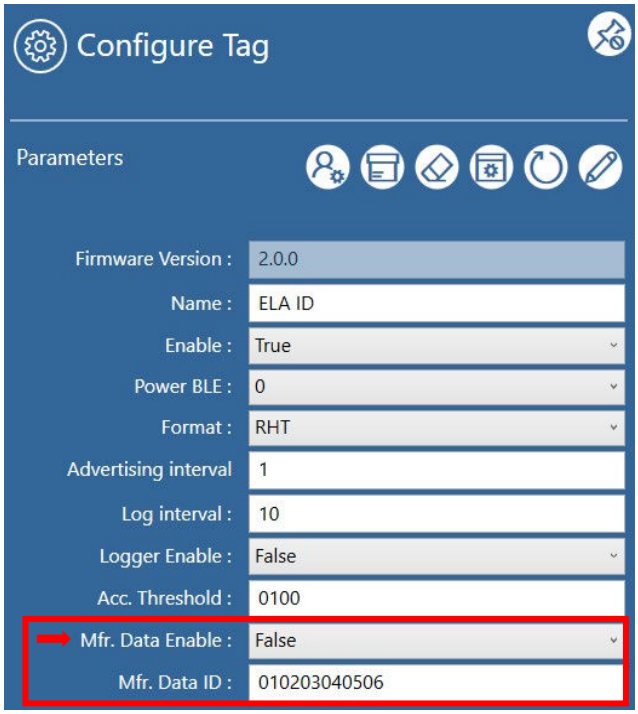
Blue LITE ID
IDF28240

Figure 1 : Advertising frame format as per BLE SIG specifications

a. “Services Data” and “Manufacturer specific Datas”

Historical ELA tag frame format uses “Service data“ identification of data type following BLE core specification. Starting from firmware version 2.0.0, it is possible to send ELA sensor and ID data through « Manufacturer Specific Data » identification of types type. The Manufacturer Specific data are specific Bluetooth frame fields that are unique to a company, that can be used to add custom data into advertising packets. If Manufacturer Specific data are not enabled, all sensor data will be sent into the Bluetooth Services data.

To enable it, it is necessary to set to « True » the configuration field « *Mfr. Data Enable* » in the NFC configuration.



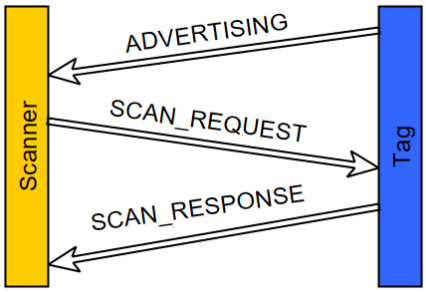
For a tag firmware below 2.0.0, the data advertised is always into Service datas.

b. « Scan Response » frame

In some formats and versions, the tag can send a frame called « Scan Response frame ».

Once an advertising packet has been received by a scanner, further information can be requested. Then the tag responds with the “scan response” frame.

This frame is located right after the advertising frame, and contains different data depending on the version and format.
The data sent in “Scan response” frame is also formatted either in Service mode or in Manufacturer Specific mode.



c. Custom Frames

Starting from version 4.0.0, ELA INNOVATION tags can be configured in factory with any frame format upon request.

4. RELEASE NOTE

1.0.0 Version

- When the battery drops below 15% capacity, the *Battery Service* is sent in the "Scan Response" frame for all formats.
- Nordic UART Service (NUS) is no longer sent in the Scan Response frame.

2.0.0 Version

- In iBeacon/Eddystone formats, the tag name is sent in the "SR" frame (after the battery info).
- The Company Identifier (CIN) number of ELA Innovation is 0x0757.
- In Manufacturer Specific Data mode, in ELA_ID and DIGI_OUT formats, it is possible to enter a hexadecimal number (max 0xFFFFFFFFFFFF) that will be sent in the frame. This field is called "ID Manufacturer Data" in the NFC configuration. This number is called "MFR_Num" in the frame formats of this document.

2.1.0 Version

- The names of the TOR IN and TOR OUT formats have been changed to Digi IN and Digi OUT respectively.

2.2.0 Version

- The Battery data is now sent in the Battery Level service feature (0x2A19).
- The MAC address type of the tag is changed from ***Random*** to ***Public***.

3.0.0 Version

- Ability to transmit the battery voltage in the Scan Response via an NFC parameter.

4.0.0 Version

- Custom Frame format available on request
- Predefine custom format: iBeacon with sensor data in scan response, Eddystone with sensor data in scan response, Geotab T, Geotab RHT, Geotab MAG.

5. BATTERY INFORMATION

Battery capacity

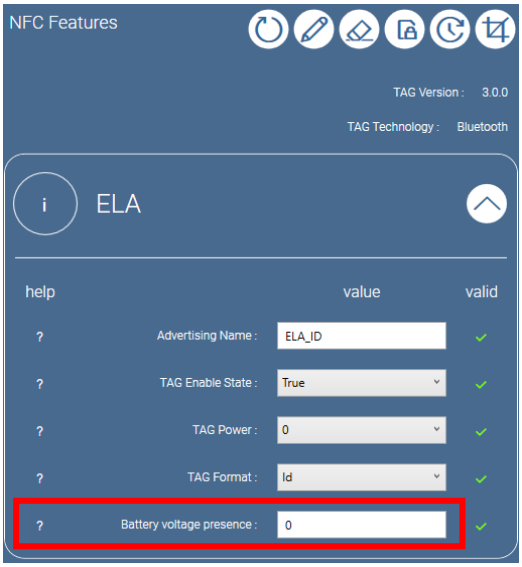
ELA Innovation's tags are based on the transmission of battery information in the Scan Response when the capacity of the battery falls below 15%. The formatting of the information is as follows:

Frame type		Service Data	Service Data	Mfr. Spec. Data
Version		1.0.0, 2.0.0, 2.1.x	≥2.2.0	≥2.0.0
Transmission		Batt. capacity < 15%	Batt. capacity < 15%	Batt. capacity < 15%
Frame bytes	1	Length : 0x04	Length: 0x04	Length : 0x05
	2	Type : 0x16	Type : 0x16	Type : 0xFF
	3	Battery Serv. LSB : 0x0F	Battery Serv. LSB : 0x19	ELA_CIN_LSB : 0x57
	4	Battery Serv. MSB : 0x18	Battery Serv. MSB : 0x2A	ELA_CIN_MSB: 0x07
	5	Batt. data (%)	Batt. data (%)	BATT_DATA_ID: 0xF1
	6	Not used	Not used	Batt. data (%)
	7	Not used	Not used	Not used

Battery voltage

From version 3.0.0 onwards, it is possible to transmit battery voltage information for all formats. For this purpose, the "**Battery voltage presence**" option must be configured in the NFC memory.

When the option is activated, the tag no longer transmits battery capacity information below 15%.



Once the option is enabled, the battery voltage information is transmitted in the "Scan Response" frame with the following formatting:

Frame type		All
Version		≥3.0.0
Transmission		Battery voltage presence = 1
Frame Bytes	1	Length : 0x06
	2	Type : 0xFF
	3	ELA_CIN_LSB : 0x57
	4	ELA_CIN_MSB: 0x07
	5	BATT_DATA_ID: 0xF2
	6	Batt. voltage (mV) LSB
	7	Batt. voltage (mV) MSB

Frame examples:

Received frame : ELA ID, Service Data, v3.0.0 Battery voltage presence = 0	
Name	*BE_BATTERY*
Battery cap.	*13% (0x0D)*

Raw data:

0x0201060B0942455F424154544552590416192A0D

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
11	0x09	0x42455F42415454455259
4	0x16	0x192A0D

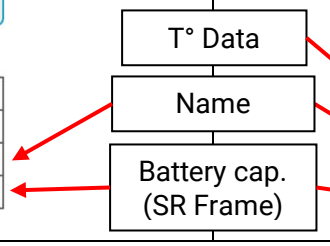
Received frame : ELA T, MFR Spec. Data, v3.0.0 Battery voltage presence = 0	
Name	*BE_BATTERY*
Measured temp.	*27.12°C (0x0A98)*
Battery cap	*13% (0x0D)*

Raw data:

0x02010606FF570712980A0B0942455F4241545445525905FF5707F10D

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
6	0xFF	0x570712980A
11	0x09	0x42455F42415454455259
5	0xFF	0x5707F10D



In Eddystone and iBeacon formats, the battery information is located before the Tag Name :

Received frame : iBeacon, v2.1.0	
Name	*BE_BATTERY*
Battery cap.	*13% (0x0D)*

Raw data:

0x0201061AFF4C000215010203040506070809A0B0C0D0E0F10020B010AC404160F180D0B0942455F42415454455259

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
26	0xFF	0x4C000215010203040506070809A0B0C0D0E0F10020B010AC4
4	0x16	0x0F180D
11	0x09	0x42455F42415454455259

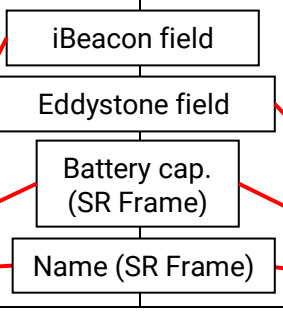
Received frame : Eddystone, v3.0.0 Battery voltage presence = 0	
Name	*BE_BATTERY*
Battery cap.	*13% (0x0D)*

Raw data:

0x0201060303AAFE1716AAFE00ED0102030405060708090A010203040A0B000004 16192A0D0B0942455F42415454455259

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
3	0x03	0xAAFE
23	0x16	0xAAFE00ED010203040506070809 0A010203040A0B0000
4	0x16	0x192A0D
11	0x09	0x42455F42415454455259



Received frame : iBeacon, v3.0.0 Battery voltage presence = 1	
Name	*BE_BATTERY*
Batt. voltage	*2.478V (0x09AE)*

Raw data:

0x0201061AFF4C000215010203040506070809A0B0C0D0E0F10020B010AC406FF5707F2AE090B0942455F42415454455259

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
26	0xFF	0x4C000215010203040506070809A0B0C0D0E0F10020B010AC4
6	0xFF	0x5707F2AE09
11	0x09	0x42455F42415454455259

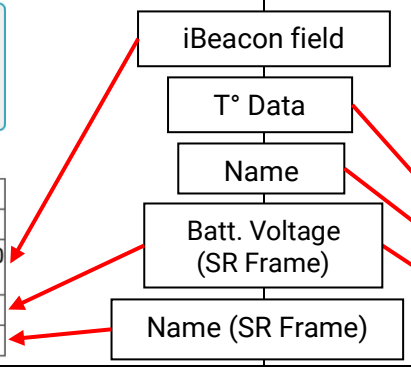
Received frame : ELA T, Service Data, v3.0.0 Battery voltage presence = 1	
Name	*BE_BATTERY*
Measured temp	*21.87°C (0x088B)*
Batt. voltage	*2.988 V (0x0BAC)*

Raw data:

0x02010605166E2A8B080B0942455F4241545445525906FF5707F2AC0B

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0x6E2A8B08
11	0x09	0x42455F42415454455259
6	0xFF	0x5707F2AC0B



6. FRAME FORMAT

General information of this document

To improve the readability of the screen formats, this document presents :

- The fixed Bluetooth fields highlighted in **blue**.
- The Variable Bluetooth fields highlighted in **orange**.
- User-defined fields highlighted in **green**.

The screenshots have been taken on the nRF Connect application, developed by Nordic Semiconductors.

The screenshots show examples of frame decoding of information sent in advertising by ELA Innovation's products. There is also sample software code developed by the ELA Innovation team that can be used to decode frame information.

These samples code are available at the following address:

https://github.com/elaInnovation

a. “ID” Format

Frame type		Service Data	Mfr Spec. Data
Version		All	≥2.0.0
Frame Bytes	1	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06
	4	Length : ≤0x10	Length : 0x0A
	5	Type : 0x09	Type: 0xFF
	6	Name[0]	ELA_CIN_LSB : 0x57
	7	Name[1]	ELA_CIN_MSB: 0x07
	8	Name[2]	MFR_ID : 0x06
	9	Name[3]	MFR_Num[0]
	10	Name[4]	MFR_Num[1]
	11	Name[5]	MFR_Num[2]
	12	Name[6]	MFR_Num[3]
	13	Name[7]	MFR_Num[4]
	14	Name[8]	MFR_Num[5]
	15	Name[9]	Length : ≤0x10
	16	Name 10]	Type : 0x09
	17	Name[11]	Name[0]
	18	Name[12]	Name[1]
	19	Name[13]	Name[2]
	20	Name[14]	Name[3]
	21	Not used	Name[4]
	22	Not used	Name[5]
	23	Not used	Name[6]
	24	Not used	Name[7]
	25	Not used	Name[8]
	26	Not used	Name[9]
	27	Not used	Name[10]
	28	Not used	Name[11]
	29	Not used	Name[12]
	30	Not used	Name[13]
	31	Not used	Name[14]

Frame example

Received frame : ELA ID, Service Data		***Received frame : ELA ID, MFR Spec. Data***	
Name	*BE_TEST_K ID A9*	***Name***	*BE_TEST_ID*
		MFR_Num	*0xAABBCCDDEEFF*

Raw data:

0x020106100942455F544553545F4B204944204139

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
16	0x09	0x42455F544553545F4B204944204139

ID Mfr Data

Name

Raw data:

0x0201060AFF570706AABBCCDDEEFF0B0942455F544553545F4944

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
10	0xFF	0x570706AABBCCDDEEFF
11	0x09	0x42455F544553545F4944

b. “iBeacon” Format

Frame type		Service & Mfr Spec. Data	Service & Mfr Spec. Data
Version		1.0.0, 2.0.0	≥2.1.0
Frame Bytes	1	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01
	3	Data: 0x04	Data : 0x06
	4	Length : 0x1A	Length : 0x1A
	5	Type : 0xFF	Type : 0xFF
	6	Apple CIN_LSB : 0x4C	Apple CIN_LSB : 0x4C
	7	Apple CIN_MSB : 0x00	Apple CIN_MSB : 0x00
	8	Beacon type : 0x02	Beacon type : 0x02
	9	Data size : 0x15	Data size : 0x15
	10	UUID[0]	UUID[0]
	11	UUID[1]	UUID[1]
	12	UUID[2]	UUID[2]
	13	UUID[3]	UUID[3]
	14	UUID[4]	UUID[4]
	15	UUID[5]	UUID[5]
	16	UUID[6]	UUID[6]
	17	UUID[7]	UUID[7]
	18	UUID[8]	UUID[8]
	19	UUID[9]	UUID[9]
	20	UUID[10]	UUID[10]
	21	UUID[11]	UUID[11]
	22	UUID[12]	UUID[12]
	23	UUID[13]	UUID[13]
	24	UUID[14]	UUID[14]
	25	UUID[15]	UUID[15]
	26	Major[0]	Major[0]
	27	Major[1]	Major[1]
	28	Minor[0]	Minor[0]
	29	Minor[1]	Minor[1]
	30	Power TX at 1m	Power TX at 1m
	31	Not used	Not used

For the iBeacon format, the Tag Name is transmitted into the Scan Response.

Frame type		Scan Response
Version		All
Frame Bytes	1	Length : ≤0x10
	2	Type : 0x09
	3	Name[0]
	4	Name[1]
	5	Name[2]
	6	Name[3]
	7	Name[4]
	8	Name[5]
	9	Name[6]
	10	Name[7]
	11	Name[8]
	12	Name[9]
	13	Name[10]
	14	Name[11]
	15	Name[12]
	16	Name[13]
	17	Name[14]

Frame example

Received frame : iBeacon, V2.1.0			
Name	*P ID 002BEA*		
UUID	*0xFF02030405FF0708090AA00C0D0E0F11*		
Major	*0x5555*	***Minor***	*0xAAAA*

Raw data:

0x0201061AFF4C000215FF02030405FF0
708090AA00C0D0E0F115555AAAAC40C0
9502049442030303242454 1

iBeacon field

Name (SR Frame)

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
26	0xFF	0x4C000215FF02030405FF0708090 AA00C0D0E0F115555AAAAC4
12	0x09	0x5020494420303032424541

c. “Eddystone” Format

Frame type		Service & Mfr Spec. Data
Version		All
Frame Bytes	1	Length : 0x02
	2	Type : 0x01
	3	Data : 0x06
	4	Length : 0x03
	5	Type : 0x03
	6	Eddystone_UUID_LSB : 0xAA
	7	Eddystone_UUID_MSB : 0xFE
	8	Length : 0x17
	9	Type : 0x16
	10	Eddystone_UUID_LSB : 0xAA
	11	Eddystone_UUID_MSB : 0xFE
	12	Frame type UUID : 0x00
	13	Power TX à 0m
	14	NID[0]
	15	NID[1]
	16	NID[2]
	17	NID[3]
	18	NID[4]
	19	NID[5]
	20	NID[6]
	21	NID[7]
	22	NID[8]
	23	NID[9]
	24	BID[0]
	25	BID[1]
	26	BID[2]
	27	BID[3]
	28	BID[4]
	29	BID[5]
	30	Reserved
	31	Reserved

For the Eddystone format, the Tag Name is transmitted into the Scan Response.

Frame type		Scan Response
Version		All
Frame Bytes	1	Length : ≤0x10
	2	Type : 0x09
	3	Name[0]
	4	Name[1]
	5	Name[2]
	6	Name[3]
	7	Name[4]
	8	Name[5]
	9	Name[6]
	10	Name[7]
	11	Name[8]
	12	Name[9]
	13	Name[10]
	14	Name[11]
	15	Name[12]
	16	Name[13]
	17	Name[14]

Frame example

Received frame : Eddystone, V3.0.0	
Name	*P ID 002BEA*
NID	*AA020FF40506070809FF*
BID	*01FA03BB05DD*

Raw data:

0x0201060303AAFE1716AAFE00EDAA020FF40506070809FF01FA03BB05DD00000C095020494420303032424541

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
3	0x03	0xAAFE
23	0x16	0xAAFE00EDAA020FF40506070809FF01FA03BB05DD0000
12	0x09	0x5020494420303032424541

Eddystone field

Name (SR Frame)

d. “T”, “T EN”, “T Probe” format

Frame type		Service Data	Mfr Spec. Data
Version		≥1.0.0	≥2.0.0
Frame bytes	1	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01
	3	Data: 0x06	Data : 0x06
	4	Length : 0x05	Length : 0x06
	5	Type : 0x16	Type: 0xFF
	6	*Temperature* carac. LSB : 0x6E	ELA_CIN_LSB : 0x57
	7	*Temperature* carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	T° Data (0,01°C) LSB	TEMP_ID: 0x12
	9	T° Data (0,01°C) MSB	T° Data (0,01°C) LSB
	10	Length : ≤0x10	T° Data (0,01°C) MSB
	11	Type : 0x09	Length : ≤0x10
	12	Name[0]	Type : 0x09
	13	Name[1]	Name[0]
	14	Name[2]	Name[1]
	15	Name[3]	Name[2]
	16	Name[4]	Name[3]
	17	Name[5]	Name[4]
	18	Name[6]	Name[5]
	19	Name[7]	Name[6]
	20	Name[8]	Name[7]
	21	Name[9]	Name[8]
	22	Name[10]	Name[9]
	23	Name[11]	Name[10]
	24	Name[12]	Name[11]
	25	Name[13]	Name[12]
	26	Name[14]	Name[13]
	27	Not used	Name[14]
	28	Not used	Not used
	29	Not used	Not used
	30	Not used	Not used
	31	Not used	Not used

Frame example

Received frame : ELA T, Service Data	
Name	*P T 801803*
Measured Temp.	*0x0A6C = 26.68°C*

Raw data:

0x02010605166E2A6C0A0B09502054203
83031383033

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0x6E2A6C0A
11	0x09	0x50205420383031383033

Received frame : ELA T, MFR Spec. Data	
Name	*P T 801803*
Measured Temp.	*0x0A85 = 26.93°C*

Raw data:

0x02010606FF570712850A0B095020542
0383031383033

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
6	0xFF	0x570712850A
11	0x09	0x50205420383031383033

T° Data

Name

e. “RHT” format

Frame type		Service Data	Mfr Spec. Data
Version		≥1.0.0	≥2.0.0
Frame bytes	1	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06
	4	Length : 0x05	Length : 0x08
	5	Type : 0x16	Type: 0xFF
	6	*Temperature* carac. LSB : 0x6E	ELA_CIN_LSB : 0x57
	7	*Temperature* carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	T° Data (0,01°C) LSB	RHT_DATA_ID: 0x21
	9	T° Data (0,01°C) MSB	RH Data (%)
	10	Length : 0x04	TEMP_DATA_ID: 0x12
	11	Type : 0x16	T° Data (0,01°C) LSB
	12	*Humidity* carac. LSB : 0x6F	T° Data (0,01°C) MSB
	13	*Humidity* carac. MSB : 0x2A	Length : ≤0x10
	14	RH Data (%)	Type : 0x09
	15	Length : ≤0x10	Name[0]
	16	Type : 0x09	Name[1]
	17	Name[0]	Name[2]
	18	Name[1]	Name[3]
	19	Name[2]	Name[4]
	20	Name[3]	Name[5]
	21	Name[4]	Name[6]
	22	Name[5]	Name[7]
	23	Name[6]	Name[8]
	24	Name[7]	Name[9]
	25	Name[8]	Name[10]
	26	Name[9]	Name[11]
	27	Name[10]	Name[12]
	28	Name[11]	Name[13]
	29	Name[12]	Name[14]
	30	Name[13]	Not used
	31	Name[14]	Not used

Frame example

Received frame : ELA RHT, Service Data				***Received frame : ELA RHT, MFR Spec. Data***			
Name	*P RHT 900459*			***Name***	*P RHT 900459*		
Measured Temp	*26.98°C*	***Measured RH***	*47%*	***Measured Temp***	*27.44°C*	***Measured RH***	*48%*

Raw data:

0x02010605166E2A8A0A04166F2A2F0D0
9502052485420393030343539

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0x6E2A8A0A
4	0x16	0x6F2A2F
13	0x09	0x502052485420393030343539

T° Data

RH Data

RH & T° Data

Name

Raw data:

0x02010608FF5707213012B80A0D09502
05248542039303034353 9

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
8	0xFF	0x5707213012B80A
13	0x09	0x502052485420393030343539

f. “MAG” format

Frame type		Service Data	Service Data	Mfr Spec. Data
Version		1.0.0	≥2.0.0	≥2.0.0
Frame Bytes	1	Length: 0x02	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06	Data : 0x06
	4	Length : 0x05	Length : 0x05	Length : 0x06
	5	Type : 0x16	Type : 0x16	Type: 0xFF
	6	*Alert Level* carac. LSB : 0x06	*Alert Level* carac. LSB : 0x06	ELA_CIN_LSB : 0x57
	7	*Alert Level* carac. MSB : 0x2A	*Alert Level* carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	MAG Data (cnt + state) LSB	MAG Data (cnt + state) LSB	MAG_DATA_ID: 0x32
	9	MAG Data (cnt + state) MSB	MAG Data (cnt + state) MSB	MAG Data (cnt + state) LSB
	10	Length : ≤0x10	Length : 0x04	MAG Data (cnt + state) MSB
	11	Type : 0x09	Type : 0x16	Length: ≤0x10
	12	Name[0]	*Alert Status* carac. LSB : 0x3F	Type : 0x09
	13	Name[1]	*Alert Status* carac. MSB: 0x2A	Name[0]
	14	Name[2]	Data : 0x00	Name[1]
	15	Name[3]	Length : ≤0x10	Name[2]
	16	Name[4]	Type : 0x09	Name[3]
	17	Name[5]	Name[0]	Name[4]
	18	Name[6]	Name[1]	Name[5]
	19	Name[7]	Name[2]	Name[6]
	20	Name[8]	Name[3]	Name[7]
	21	Name[9]	Name[4]	Name[8]
	22	Name[10]	Name[5]	Name[9]
	23	Name[11]	Name[6]	Name[10]
	24	Name[12]	Name[7]	Name[11]
	25	Name[13]	Name[8]	Name[12]
	26	Name[14]	Name[9]	Name[13]
	27	Not used	Name[10]	Name[14]
	28	Not used	Name[11]	Not used
	29	Not used	Name[12]	Not used
	30	Not used	Name[13]	Not used
	31	Not used	Name[14]	Not used

Frame example

Received frame : ELA MAG, V3.0.0, Service Data			
Name	*P MAG C0062E*		
Event Counter	*4*	***Magnet state***	*present*

Raw data:

0x0201060516062A090004163F2A000D0
950204D414720433030363245

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0x062A0900
4	0x16	0x3F2A00
13	0x09	0x50204D414720433030363245

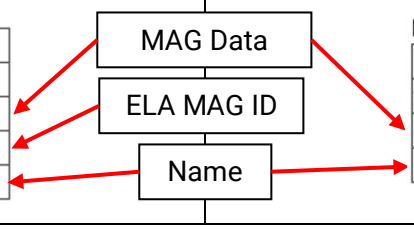
Received frame : ELA MAG, V3.0.0, MFR Spec. Data			
Name	*P MAG C0062E*		
Event Counter	*5*	***Magnet state***	*absent*

Raw data:

0x02010606FF5707320A000D0950204D4
14720433030363245

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
6	0xFF	0x5707320A00
13	0x09	0x50204D414720433030363245



g. “MOV” format

Frame type		Service Data	Service Data	Mfr Spec. Data
Version		1.0.0	≥2.0.0	≥2.0.0
Frame bytes	1	Length : 0x02	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06	Data : 0x06
	4	Length : 0x05	Length : 0x05	Length : 0x06
	5	Type : 0x16	Type : 0x16	Type: 0xFF
	6	*Alert Level* carac. LSB : 0x06	*Alert Level* carac. LSB : 0x06	ELA_CIN_LSB : 0x57
	7	*Alert Level* carac. MSB : 0x2A	*Alert Level* carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	MOV Data (cnt + state) LSB	MOV Data (cnt + state) LSB	MOV_DATA_ID: 0x42
	9	MOV Data (cnt + state) MSB	MOV Data (cnt + state) MSB	MOV Data (cnt + state) LSB
	10	Length : ≤0x10	Length : 0x04	MOV Data (cnt + state) MSB
	11	Type : 0x09	Type : 0x16	Length : ≤0x10
	12	Name[0]	*Alert Status* carac. LSB : 0x3F	Type : 0x09
	13	Name[1]	*Alert Status* carac. MSB: 0x2A	Name[0]
	14	Name[2]	Data : 0x01	Name[1]
	15	Name[3]	Length : ≤0x10	Name[2]
	16	Name[4]	Type : 0x09	Name[3]
	17	Name[5]	Name[0]	Name[4]
	18	Name[6]	Name[1]	Name[5]
	19	Name[7]	Name[2]	Name[6]
	20	Name[8]	Name[3]	Name[7]
	21	Name[9]	Name[4]	Name[8]
	22	Name[10]	Name[5]	Name[9]
	23	Name[11]	Name[6]	Name[10]
	24	Name[12]	Name[7]	Name[11]
	25	Name[13]	Name[8]	Name[12]
	26	Name[14]	Name[9]	Name[13]
	27	Not used	Name[10]	Name[14]
	28	Not used	Name[11]	Not used
	29	Not used	Name[12]	Not used
	30	Not used	Name[13]	Not used
	31	Not used	Name[14]	Not used

Frame example

Received frame : ELA MOV, V3.0.0, Service Data			
Name	*P MOV B00557*		
Event counter	***3***	***Mvt state***	*In progress*

Raw data:

0x0201060516062A070004163F2A010D0
950204D4F5620423030353537

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0x062A0700
4	0x16	0x3F2A01
13	0x09	0x50204D4F5620423030353537

MOV Data

ELA MOV ID

Name

Received frame : ELA MOV, V3.0.0, MFR Spec. Data			
Name	*P MOV B00557*		
Event counter	***6***	***Mvt state***	*No mvt*

Raw data:

0x02010606FF5707420C000D0950204D4
F5620423030353537

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
6	0xFF	0x5707420C00
13	0x09	0x50204D4F5620423030353537

h. “ANG” format

Frame type		Service Data	Mfr Spec. Data
Version		≥1.0.0	≥2.0.0
Frame bytes	1	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06
	4	Length : 0x09	Length : 0x0A
	5	Type : 0x16	Type: 0xFF
	6	*MAG 3D* carac. LSB : 0xA1	ELA_CIN_LSB : 0x57
	7	*MAG 3D* carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	Accel. Data X axis (mg) LSB	ANG_DATA_ID: 0x56
	9	Accel. Data X axis (mg) MSB	Accel. Data X axis (mg) LSB
	10	Accel. Data Y axis (mg) LSB	Accel. Data X axis (mg) MSB
	11	Accel. Data Y axis (mg) MSB	Accel. Data Y axis (mg) LSB
	12	Accel. Data Z axis (mg) LSB	Accel. Data Y axis (mg) MSB
	13	Accel. Data Z axis (mg) MSB	Accel. Data Z axis (mg) LSB
	14	Length : ≤0x10	Accel. Data Z axis (mg) MSB
	15	Type : 0x09	Length : ≤0x10
	16	Name[0]	Type : 0x09
	17	Name[1]	Name[0]
	18	Name[2]	Name[1]
	19	Name[3]	Name[2]
	20	Name[4]	Name[3]
	21	Name[5]	Name[4]
	22	Name[6]	Name[5]
	23	Name[7]	Name[6]
	24	Name[8]	Name[7]
	25	Name[9]	Name[8]
	26	Name[10]	Name[9]
	27	Name[11]	Name[10]
	28	Name[12]	Name[11]
	29	Name[13]	Name[12]
	30	Name[14]	Name[13]
	31	Not used	Name[14]

Frame example

Received frame : ELA ANG, Service Data	
Name	*P MOV B00557*
Accel. X axis	*0xFFB9 = -71 mg*
Accel. Y axis	*0x0007 = 7 mg*
Accel. Z axis	*0x0484 = 1156 mg*

Raw data:

0x0201060916A12AB9FF070084040D095
0204D4F5620423030353537

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
9	0x16	0xA12AB9FF07008404
13	0x09	0x50204D4F5620423030353537

ANG Data

Name

Received frame : ELA ANG, MFR Spec. Data	
Name	*P MOV B00557*
Accel. X axis	*0xFFB8 = -72mg*
Accel. Y axis	*0xFFEC = -20mg*
Accel. Z axis	*0xFCAC = -852 mg*

Raw data:

0x0201060AFF570756B8FFECFFACFC0D0
950204D4F5620423030353537

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
10	0xFF	0x570756B8FFECFFACFC
13	0x09	0x50204D4F5620423030353537

i. “DIGI IN” format

Frame type		Service Data	Mfr Spec. Data
Version		≥2.0.0	≥2.0.0
Frame bytes	1	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06
	4	Length : 0x05	Length : 0x06
	5	Type : 0x16	Type: 0xFF
	6	*Alert Level* carac. LSB : 0x06	ELA_CIN_LSB : 0x57
	7	*Alert Level* carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	DI Data (cnt + state) LSB	DIGI_IN_DATA_ID: 0x62
	9	DI Data (cnt + state) MSB	DI Data (cnt + state) LSB
	10	Length : 0x04	DI Data (cnt + state) MSB
	11	Type : 0x16	Length : ≤0x10
	12	*Alert Status* carac. LSB : 0x3F	Type : 0x09
	13	*Alert Status* carac. MSB: 0x2A	Name[0]
	14	Data : 0x02	Name[1]
	15	Length : ≤0x10	Name[2]
	16	Type : 0x09	Name[3]
	17	Name[0]	Name[4]
	18	Name[1]	Name[5]
	19	Name[2]	Name[6]
	20	Name[3]	Name[7]
	21	Name[4]	Name[8]
	22	Name[5]	Name[9]
	23	Name[6]	Name[10]
	24	Name[7]	Name[11]
	25	Name[8]	Name[12]
	26	Name[9]	Name[13]
	27	Name[10]	Name[14]
	28	Name[11]	Not used
	29	Name[12]	Not used
	30	Name[13]	Not used
	31	Name[14]	Not used

Frame example

Received frame : ELA DI, V3.0.0, Service Data			
Name	*BE_TEST_TORIN*		
Evt. counter	*5*	***Input state***	*Released*

Raw data:

0x0201060516062A0A0004163F2A020E0
942455F544553545F544F52494E

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0x062A0A00
4	0x16	0x3F2A02
14	0x09	0x42455F544553545F544F52494E

DIGI_IN Data

ELA DIGI_IN ID

Name

Received frame : ELA DI, V3.0.0, MFR Spec. Data			
Name	*BE_TEST_TORIN*		
Evt. counter	*5*	***Input state***	*Released*

Raw data:

0x02010606FF5707620A000E0942455F5
44553545F544F52494E

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
6	0xFF	0x5707620A00
14	0x09	0x42455F544553545F544F52494E

j. “Analog IN” format

Frame type		Service Data	Mfr Spec. Data
Version		≥2.0.0	≥2.0.0
Frame bytes	1	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06
	4	Length : 0x05	Length : 0x06
	5	Type : 0x16	Type: 0xFF
	6	*Analog Out* carac. LSB : 0x58	ELA_CIN_LSB : 0x57
	7	*Analog Out* carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	Analog. Data measure (mV) LSB	AN_IN_DATA_ID: 0x72
	9	Analog. Data measure (mV) MSB	Analog. Data measure (mV) LSB
	10	Length : ≤0x10	Analog. Data measure (mV) MSB
	11	Type : 0x09	Length : ≤0x10
	12	Name[0]	Type : 0x09
	13	Name[1]	Name[0]
	14	Name[2]	Name[1]
	15	Name[3]	Name[2]
	16	Name[4]	Name[3]
	17	Name[5]	Name[4]
	18	Name[6]	Name[5]
	19	Name[7]	Name[6]
	20	Name[8]	Name[7]
	21	Name[9]	Name[8]
	22	Name[10]	Name[9]
	23	Name[11]	Name[10]
	24	Name[12]	Name[11]
	25	Name[13]	Name[12]
	26	Name[14]	Name[13]
	27	Not used	Name[14]
	28	Not used	Not used
	29	Not used	Not used
	30	Not used	Not used
	31	Not used	Not used

Frame example

Received frame : ELA AI, Service Data		***Received frame : ELA AI, MFR Spec. Data***	
Name	*P AI 00003F*	***Name***	*P AI 00003F*
Measured voltage	*1975mV*	***Measured voltage***	*1975mV*

Raw data:

0x0201060516582AB7070C09502041492
0303030303346

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0x582AB707
12	0x09	0x5020414920303030303346

AI Data

Name

Raw data:

0x02010606FF570772B7070C095020414
920303030303346

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
6	0xFF	0x570772B707
12	0x09	0x5020414920303030303346

k. “DIGI OUT” format

Frame type		Service Data	Service Data	Mfr Spec. Data
Version		2.0.0, 2.1.x	≥2.2.0	≥2.0.0
Frame bytes	1	Length : 0x02	Length : 0x02	Length : 0x02
	2	Type : 0x01	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06	Data : 0x06
	4	Length : 0x04	Length : 0x04	Length : 0x0A
	5	Type : 0x16	Type : 0x16	Type: 0xFF
	6	*Alert Status* carac. LSB : 0x3F	*Alert Status* carac. LSB : 0x3F	ELA_CIN_LSB : 0x57
	7	*Alert Status* carac. MSB: 0x2A	*Alert Status* carac. MSB: 0x2A	ELA_CIN_MSB: 0x07
	8	Data : 0x03	Data : 0x00	MFR_NUM_ID:0x86
	9	Length : ≤0x10	Length : ≤0x10	MFR_Num[0]
	10	Type : 0x09	Type : 0x09	MFR_Num[1]
	11	Name[0]	Name[0]	MFR_Num[2]
	12	Name[1]	Name[1]	MFR_Num[3]
	13	Name[2]	Name[2]	MFR_Num[4]
	14	Name[3]	Name[3]	MFR_Num[5]
	15	Name[4]	Name[4]	Length : ≤0x10
	16	Name[5]	Name[5]	Type : 0x09
	17	Name[6]	Name[6]	Name[0]
	18	Name[7]	Name[7]	Name[1]
	19	Name[8]	Name[8]	Name[2]
	20	Name[9]	Name[9]	Name[3]
	21	Name[10]	Name[10]	Name[4]
	22	Name[11]	Name[11]	Name[5]
	23	Name[12]	Name[12]	Name[6]
	24	Name[13]	Name[13]	Name[7]
	25	Name[14]	Name[14]	Name[8]
	26	Not used	Not used	Name[9]
	27	Not used	Not used	Name[10]
	28	Not used	Not used	Name[11]
	29	Not used	Not used	Name[12]
	30	Not used	Not used	Name[13]
	31	Not used	Not used	Name[14]

Frame example

Received frame : ELA DO, V3.0.0, Service Data	
Name	*P DO 000037*

Raw data:

0x02010604163F2A000C095020444F20303030303337

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
4	0x16	0x3F2A00
12	0x09	0x5020444F20303030303337

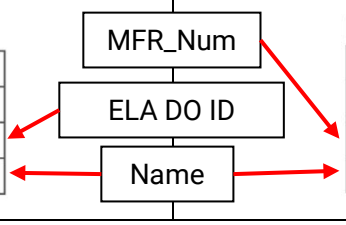
Received frame : ELA DO, V3.0.0, MFR Spec. Data	
Name	*P DO 000037*
MFR_Num	*BABA102030FF*

Raw data:

0x0201060AFF570786BABA102030FF0C095020444F20303030303337

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
10	0xFF	0x570786BABA102030FF
12	0x09	0x5020444F20303030303337



I. “PIR” format

Frame type		Service Data	Mfr Spec. Data
Version		≥3.0.1	≥3.0.1
Octets trame	1	Length: 0x02	Length: 0x02
	2	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06
	4	Length: 0x05	Length: 0x06
	5	Type : 0x16	Type: 0xFF
	6	*Rainfall* Carac. LSB : 0x78	ELA_CIN_LSB : 0x57
	7	*Rainfall* Carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	PIR Data (cnt + state) LSB	PIR_DATA_ID: 0x92
	9	PIR Data (cnt + state) MSB	PIR Data (cnt + state) LSB
	10	Length: ≤0x0F	PIR Data (cnt + state) MSB
	11	Type : 0x09	Length: ≤0x0F
	12	Name[0]	Type : 0x09
	13	Name[1]	Name[0]
	14	Name[2]	Name[1]
	15	Name[3]	Name[2]
	16	Name[4]	Name[3]
	17	Name[5]	Name[4]
	18	Name[6]	Name[5]
	19	Name[7]	Name[6]
	20	Name[8]	Name[7]
	21	Name[9]	Name[8]
	22	Name[10]	Name[9]
	23	Name[11]	Name[10]
	24	Name[12]	Name[11]
	25	Name[13]	Name[12]
	26	Name[14]	Name[13]
	27	Not used	Name[14]
	28	Not used	Not used
	29	Not used	Not used
	30	Not used	Not used
	31	Not used	Not used

Frame example

Received frame : ELA PIR, V3.0.1, Service Data			
Name	*ELA_PUCK_PIR_01*		
Evt. counter	*13*	***Mouvement state***	*Detected*

Raw data:

0x0201060516782A1B001009454C415F50554
34B5F5049525F3031

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0x782A1B00
16	0x09	0x454C415F5055434B5F5049525F3031

Received frame : ELA PIR, V3.0.1, MFR Spec. Data			
Name	*ELA_PUCK_PIR_01*		
Evt. counter	*78*	***Mouvement state***	*Not detected*

Raw data:

0x02010608FF5707929C0000001009454C415
F5055434B5F5049525F3031

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
8	0xFF	0x5707929C000000
16	0x09	0x454C415F5055434B5F5049525F3031

PIR Data

Name

m. “Touch” format

Frame type		Service Data	Mfr Spec. Data
Version		≥4.0.0	≥4.0.0
Octets trame	1	Length: 0x02	Length: 0x02
	2	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06
	4	Length: 0x05	Length: 0x06
	5	Type : 0x16	Type: 0xFF
	6	*Altitude* Carac. LSB : 0xB3	ELA_CIN_LSB : 0x57
	7	*Altitude* Carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	Touch Data (cnt + state) LSB	TOUCH_DATA_ID: 0x61
	9	Touch Data (cnt + state) MSB	Touch Data (cnt + state) LSB
	10	Length: ≤0x0F	Touch Data (cnt + state) MSB
	11	Type : 0x09	Length: ≤0x0F
	12	Name[0]	Type : 0x09
	13	Name[1]	Name[0]
	14	Name[2]	Name[1]
	15	Name[3]	Name[2]
	16	Name[4]	Name[3]
	17	Name[5]	Name[4]
	18	Name[6]	Name[5]
	19	Name[7]	Name[6]
	20	Name[8]	Name[7]
	21	Name[9]	Name[8]
	22	Name[10]	Name[9]
	23	Name[11]	Name[10]
	24	Name[12]	Name[11]
	25	Name[13]	Name[12]
	26	Name[14]	Name[13]
	27	Not used	Name[14]
	28	Not used	Not used
	29	Not used	Not used
	30	Not used	Not used
	31	Not used	Not used

Frame example

Received frame : ELA Touch, V4.0.0, Service Data			
Name	*BE_LITE_TOUCH*		
Evt. counter	*9*	***Button state***	*Pressed*

Raw data:

0x0201060516B32A13000E0942455F4C4954455F544F554348

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0xB32A1300
14	0x09	0x42455F4C4954455F544F554348

Received frame : ELA Touch, V4.0.0, MFR Spec. Data			
Name	*BE_LITE_TOUCH*		
Evt. counter	*21*	***Button state***	*Released*

Raw data:

0x02010606FF5707612A000E0942455F4C4954455F544F554348

Details:

LEN.	TYPE	VALUE
2	0x01	0x06
6	0xFF	0x5707612A00
14	0x09	0x42455F4C4954455F544F554348

TOUCH Data

Name

n. “PROXIR format

Frame type		Service Data	Mfr Spec. Data
Version		≥4.0.0	≥4.0.0
Octets trame	1	Length: 0x02	Length: 0x02
	2	Type : 0x01	Type : 0x01
	3	Data : 0x06	Data : 0x06
	4	Length: 0x05	Length: 0x06
	5	Type : 0x16	Type: 0xFF
	6	*Altitude* Carac. LSB : 0x8E	ELA_CIN_LSB : 0x57
	7	*Altitude* Carac. MSB : 0x2A	ELA_CIN_MSB: 0x07
	8	Distance Data (mm) + integrity bit LSB	PROXIR_DATA_ID: 0x91
	9	Distance Data (mm) MSB	Distance Data (mm) + integrity bit LSB
	10	Length: ≤0x0F	Distance Data (mm) MSB
	11	Type : 0x09	Length: ≤0x0F
	12	Name[0]	Type : 0x09
	13	Name[1]	Name[0]
	14	Name[2]	Name[1]
	15	Name[3]	Name[2]
	16	Name[4]	Name[3]
	17	Name[5]	Name[4]
	18	Name[6]	Name[5]
	19	Name[7]	Name[6]
	20	Name[8]	Name[7]
	21	Name[9]	Name[8]
	22	Name[10]	Name[9]
	23	Name[11]	Name[10]
	24	Name[12]	Name[11]
	25	Name[13]	Name[12]
	26	Name[14]	Name[13]
	27	Not used	Name[14]
	28	Not used	Not used
	29	Not used	Not used
	30	Not used	Not used
	31	Not used	Not used

7. CUSTOM FRAME

a. Specification Rules

Firmware version $\geq 4.0.0$ offers the possibility to customize entirely the frame format of the advertising and scan response payloads. The custom frame format are defined during the tag production and will be remain identical all over the operation of the tag.

Custom frame format specification follow the following rules:

- Frames are split in blocks that in turns, define the value of several bytes. A maximum of 5 blocks can be defined for each of the Advertising and Scan Response frame.

- Blocks are ordered which means that the bytes defined by the first block will be on the most significant side, the bytes defined by the second block will follow and so on.

- Block can be conditional which means that a block can be included in the payload only if a condition on sensor data is verified. A maximum of 2 conditional blocks per frame can be defined. For each conditions, the block can be defined when the condition is valid or invalid.

- If the sum of the number of bytes over all blocks must not exceed 28 - number of blocks, extra bytes are discarded

- Bloc type must be defined among the list of table 1

- Data included in a block can be of following types (table 1)

    - A static hexadecimal value (table 1)
    - Sensor data (table 1)

- Sensor value can be specifically rescaled and formatted (table 1)

Bloc type	Conditions	Data type			Scaling	Data format
		hex	Local naming	Sensor		
Incomplete List of UUID16	Always present	CIN_UUID1	NAME	T	X1000	uint8
Complete List of UUID16	Strictly inferior		MFR_ID	RH	X100	int8
Incomplete List of UUID32	Strictly superior		Eddystone NID	MAG (cpt + état)	X10	uint16 LSB
Complete List of UUID32	Equal to		Eddystone BID	MOV (cpt + état)	X1	uint16 MSB
Incomplete List of UUID128	In between		iBeacon UUID	ACC_X	/10	int16 LSB
Complete List of UUID128	Outside		iBeacon MAJOR	ACC_Y	/100	int16 MSB
Shortened Local Name			iBeacon MINOR	ACC_Z	/1000	uint32 [0-7]
Complete Local Name				DI (cpt + état)		uint32 [8-15]
TX Power level				AI		uint32 [16-23]
Solicited list of UUID16				PIR (cpt + état)		uint32 [24-31]
Solicited list of UUID128				CHOC		int32 [0-7]
Service Data 16				Tension pile		int32 [8-15]
Service Data 32				Capacité pile (%)		int32 [16-23]
Service Data 128				Puissance TX à 0m		int32 [24-31]
Manufacturer Specific Data				Puissance TX à 1m		FP32 [0-7]
				Compteur MAG		FP32 [8-15]
				Etat MAG		FP32 [16-23]
				Compteur MOV		FP32 [24-31]
				Etat MOV		FP24 [0-7]
				Compteur DI		FP24 [8-15]
				Etat DI		FP24 [16-23]
				Compteur PIR		
				Etat PIR		
				Puissance TX brute		
				Touch (cpt + état)		
				Compteur TOUCH		
				Etat TOUCH		
				Distance (PROXIR)		

b. Examples

Temperature sensor data with standard “Service data” type with constant ASCII string as “complete local name”

In this first example, the advertising frame is specified as follow:

N° Block	Conditionality	Type	N° Byte within block	Data type and scaling	Value or data format
1	Always present	Service data 16	1	Static value	6E
			2		2A
			3	Sensor T x100	In16 LSB
			4		Int16 MSB
2	Always present	Complete local name	1	Static value	E
			2		L
			3		A
			4		(space)
			5		I
			6		N
			7		N
			8		O
			9		V
			10		A
			11		T
			12		I
			13		O
			14		N

As a result the advertising payload will be the following (27°C):

Raw data:
0x020106051 66E2AAB0A0F 09454C4120494E4E 4F564154494F4E

0x6E2A : *Temperature* service

T° data:
- 0xAB : LSB
- 0x0A : MSB

T° = 0AAB = 2731 * 0.01 = 27.31°C

Details :

LEN.	TYPE	VALUE
2	0x01	0x06
5	0x16	0x6E2AAB0A
11	0x09	0x454C4120494E4E4F564154494F4E

Name (ASCII) : ELA INNOVATION

Note: For a negative temperature, data is sent in 2-complement: for example, -27.31°C is 6E2A55F5

Magnetic sensor data with "Manufacturer Specific data" data type (ELA specific), name with "service data type" and conditional name block

In this first example, the advertising frame is specified as follow:

N° Block	Conditionality	Type	Length	N° Byte	Data type	Value / format
1	Always present	Manufacturer data	5	1	Static value	57
				2		07
				3	Static value	32
				4	Sensor MAG (Event + counter)	In16 LSB
				5		Int16 MSB
2	Conditional MAG State value =1	Complete local name	5	1	Static value	C
				2		L
				3		O
				4		S
				5		E
	Complementary (MAG State value = 0)	Complete local name	4	1	Static Value	O
				2		P
				3		E
				4		N

As a result the advertising payload will be the following:

Case 1: The magnetic sensor detect a magnetic field

Raw data:

0x020106**06**FF570732FB0A06**09**434c4f5345

Details :

LEN.	TYPE	VALUE
2	0x01	0x06
5	0xFF	0x570732FB0A
6	0x09	0x434c4f5345

CLOSE (ASCII)

0x5707 : *ELA Innovation* Compagny Identifier
0x32 : *Magnetic sensor data* (ELA Mfr Specific data type
MAG data:

- 0xFB : LSB
- 0x0A : MSB

Hexa.	0	A	F	B
Binary	0000	1010	1111	1011

⇨ 1: instantaneous sensor state (magnet present)
⇨ 1010 1111 101: event counter value on 15 bits, 1405 in this example

Case 2: The magnetic sensor detects a magnetic field

Raw data:

0x020106**06**FF570732FA0A05**09**4f50454e

Details :

LEN.	TYPE	VALUE
2	0x01	0x06
5	0xFF	0x570732FA0A
5	0x09	0x4f50454e

OPEN (ASCII)

0x5707 : *ELA Innovation* Compagny Identifier
0x32 : *Magnetic sensor data* (ELA Mfr Specific data type
MAG data:

- 0xFA : LSB
- 0x0A : MSB

Hexa.	0	A	F	A
Binary	0000	1010	1111	1010

⇨ 0: instantaneous sensor state (magnet present)
⇨ 1010 1111 101: event counter value on 15 bits, 1405 in this example