



SECURITE  
HABITACLE

N°: 683080-430-001-A

## APPROVAL DOCUMENT

S OUI ☐ NON ☒  
R OUI ☒ NON ☐

### GM delta Keyfob

Approval reference 736 566 A

|              | Name                  | Function              | Date     | Signature |
|--------------|-----------------------|-----------------------|----------|-----------|
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# HISTORIC

| Level | Date     | Name | Change description |
|-------|----------|------|--------------------|
|       | 05/10/01 | HF   | Creation           |

# ABSTRACT

## Level A

Technical information needs for the approval product.

**SUMMARY**

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## 1. PURPOSE

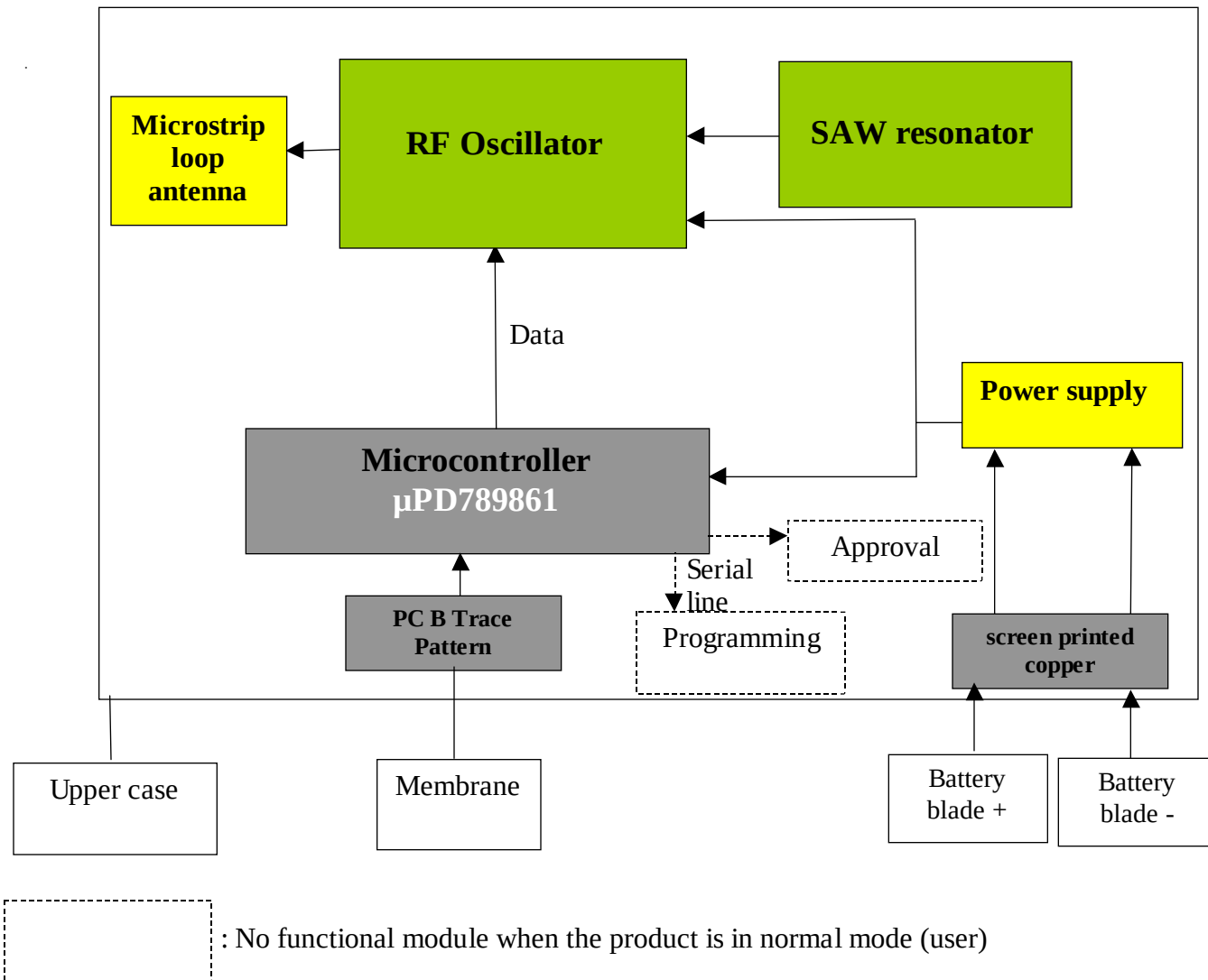
The aim of this document is to define the functional requirements of a device used to open or close remotely the doors following remote keyless. So it has to satisfy all standards in force in each country where the car will be sold.

## 2. THE PRODUCT AND ITS FUNCTIONAL ENVIRONMENT

The keyfob is a transmitter who provides enhanced customer convenience and security via a dedicated RF link with one or more electronic modules. The transmitter allows the customer to remotely activate functions by selectively depressing integral transmitter buttons.



## Product description

**2.1. BLOCK DIAGRAM****2.2. INTERNAL STRUCTURE**

The electronics of RF transmitter consists of a battery, of four PCB trace pattern for the pushbuttons of the silicone membrane, of a micro controller, of a Colpitts oscillator and an microstrip loop antenna. The micro controller detects activation of the trace pattern (short circuits between tracks). The oscillator is activated by the micro controller at the data rate of the data transmission. An interface of communication is necessary to initialize the transmitter and for the diagnostic. The micro controller is a NEC UPD789861.

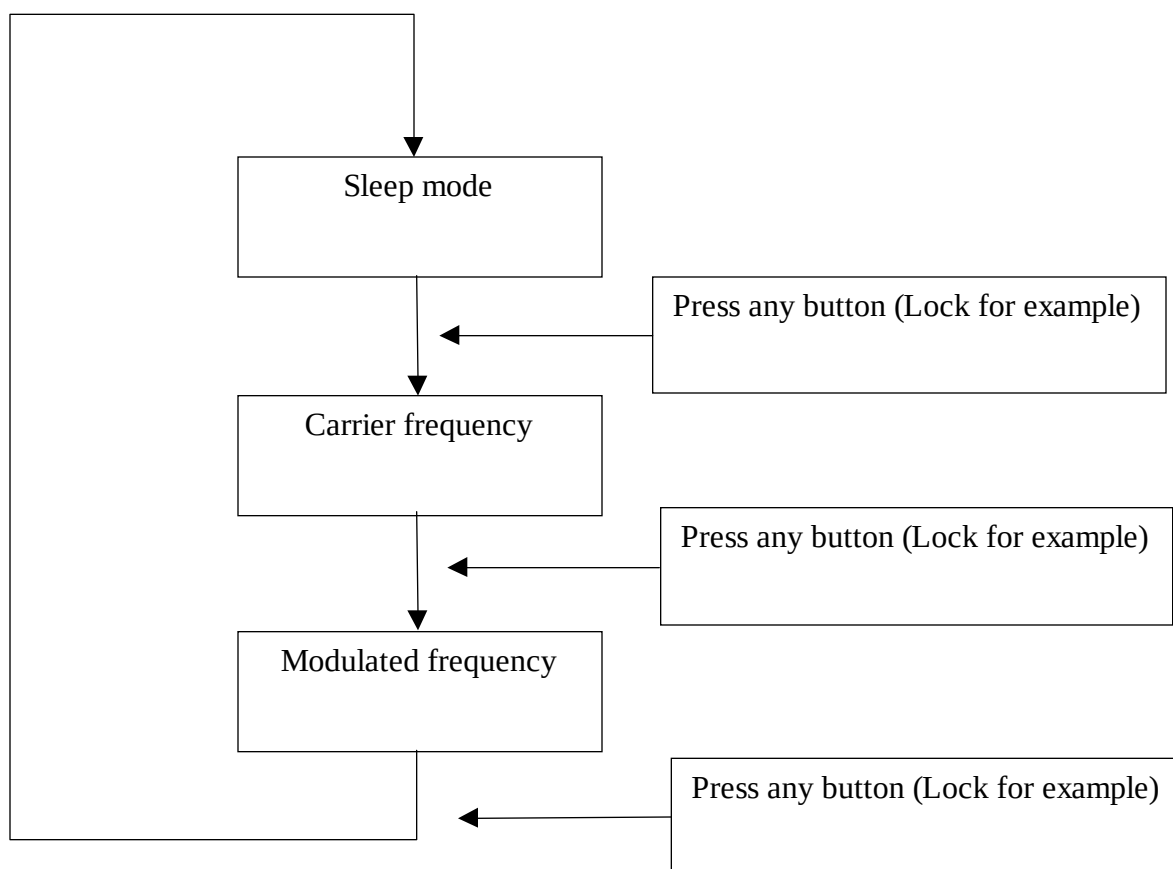
### 2.3. APPROVAL MODE

The transmitter have the capability of facilitate the RF testing by an approval mode. This mode is not accessible to the user because to enable it, we have to put a low level directly on the mode pin input of the microcontroller (thanks to a bridge of welding).

The approval mode has three states.

- **Sleep mode.**
- **Carrier frequency:** the transmitter generates a continuous R.F. signal at 315MHz.
- **Modulated frequency:** OOK modulation at 1.2 kbit/s with cyclic ratio of 50 %.

The transition from one state to another is accomplished by pressing one of the four buttons.



## Technical description

Type designation part: **736566**

Transmitter part

|   |                               |                                                         |
|---|-------------------------------|---------------------------------------------------------|
| ↺ | Carrier frequency :           | <b>315MHz fixed</b>                                     |
| ↺ | Frequency tolerance:          | <b>± 150kHz</b>                                         |
| ↺ | Method of carrier generation: | <b>SAW oscillator</b>                                   |
| ↺ | Duty cycle:                   | <b>&lt;1%</b>                                           |
| ↺ | Type of modulation :          | <b>AMPLITUDE MODULATION On / Off keying (OOK)</b>       |
| ↺ | Baud rate:                    | <b>1.2 kbits/s typ (1 kbits/s min, 1.4 kbits/s max)</b> |
| ↺ | Coding mode used:             | <b>MANCHESTER</b>                                       |
| ↺ | Number of channels:           | <b>1</b>                                                |
| ↺ | Use:                          | <b>Portable</b>                                         |
| ↺ | Duplex operation:             | <b>No</b>                                               |
| ↺ | Antenna:                      | <b>Integrated</b>                                       |
| ↺ | Alternative antenna:          | <b>No</b>                                               |
| ↺ | Operating temperature range:  | <b>-20°C up to +60°C</b>                                |
| ↺ | Rated Output Power:           | <b>75dBµV/m (under conditions 3V and 23°C)</b>          |
| ↺ | Voltage supply:               | <b>1 Lithium battery 3V (CR1620)</b>                    |
| ↺ | Voltage supply range:         | <b>2,5 up to 3,2V</b>                                   |
| ↺ | DC consumption:               | <b>8 mA</b>                                             |

## 2.4. BOM (BILL OF MATERIAL)

# Reference USINE : C00000443E.cms 05/10/2001  
 # Numero de la carte : C00000443  
 # Designation : TX RF DELTA PROTO BETA  
 # Technicien CAO : MAQUIN  
 # Responsable projet : FARINE  
 # -----  
 # Board Station BOM file  
 # date : Friday October 5, 2001; 17:11:18  
  
 # Variant : COMPLETE

| CODE ACHAT | NOMBRE | DEFINITION                               | REFERENCE                      |
|------------|--------|------------------------------------------|--------------------------------|
| 75053669   | 1      | CER, CER 1UF K 10V 0805 X5R, CMS         | C10                            |
| 75056009   | 1      | CER, CER 6.8PF B 50V 0603 NPO, CMS       | C9                             |
| 75056024   | 1      | CER, CER 100PF J 50V 0603 NPO, CMS       | C3                             |
| 75056025   | 1      | CER, CER 22PF J 50V 0603 NPO, CMS        | C4                             |
| 75056027   | 1      | CER, CER 4.7PF C 50V 0603 NPO, CMS       | C7                             |
| 75056030   | 1      | CER, CER 27PF F 50V 0603 NPO, CMS        | C1                             |
| 75056033   | 1      | CER, CER 2.7PF B 50V 0603 NPO, CMS       | C5                             |
| 75056034   | 1      | CER, CER 12PF C 50V 0603 NPO, CMS        | C8                             |
| 75056037   | 1      | CER, CER 1PF B 50V 0603 NPO, CMS         | C6                             |
| 75067025   | 2      | RES, RES 0603 CM 1/16W 5% 10 OHMS, CMS   | R7 R14                         |
| 75067059   | 1      | RES, RES 0603 CM 1/16W 5% 270 OHMS, CMS  | R6                             |
| 75067065   | 1      | RES, RES 0603 CM 1/16W 5% 470 OHMS, CMS  | R1                             |
| 75067083   | 1      | RES, RES 0603 CM 1/16W 5% 2.7 KOHMS, CMS | R5                             |
| 75067095   | 1      | RES, RES 0603 CM 1/16W 5% 8.2 KOHMS, CMS | R4                             |
| 75067105   | 8      | RES, RES 0603 CM 1/16W 5% 22 KOHMS, CMS  | R2 R3 R8 R9 R10<br>R11 R12 R13 |
| 75072071   | 1      | TRANS, TR NPN BFS505 SOT323, CMS         | T1                             |
| 75084077   | 1      | SAW, SAWR 315.00MHz QCC8C, CMS           | Q1                             |
| 75089053   | 1      | SELF, COIL 47nH J 0603 MLG 085, CMS      | L1                             |
| 99003898   | 1      | IC, UPD789861 8BITS SSOP20, CMS          | IC1                            |



### 3. DELIVERED PARTS

| Identification (serial number) | Part              | Remarks         |
|--------------------------------|-------------------|-----------------|
|                                | Keyfob proto beta | Permanent TX    |
|                                | Keyfob proto beta | Permanent TX    |
|                                | Keyfob proto beta | Full functional |

### 4. ANNEXES

Annex 1 : PCB – Upper layer of the printed circuit

Annex 2 : PCB –Lower layer of the printed circuit

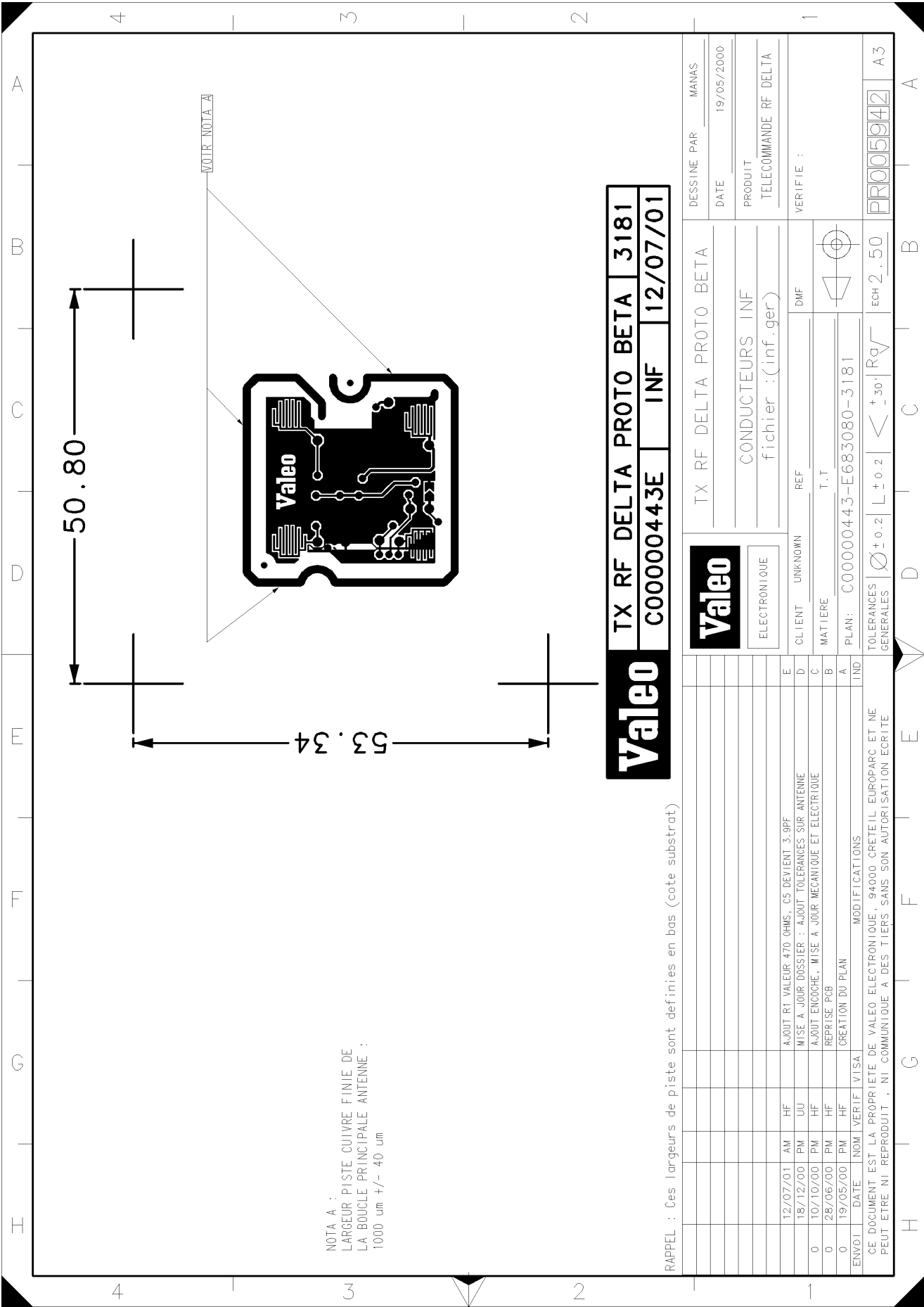
Annex 3 : schematic plan

Annex 4: Disposal of the component plan

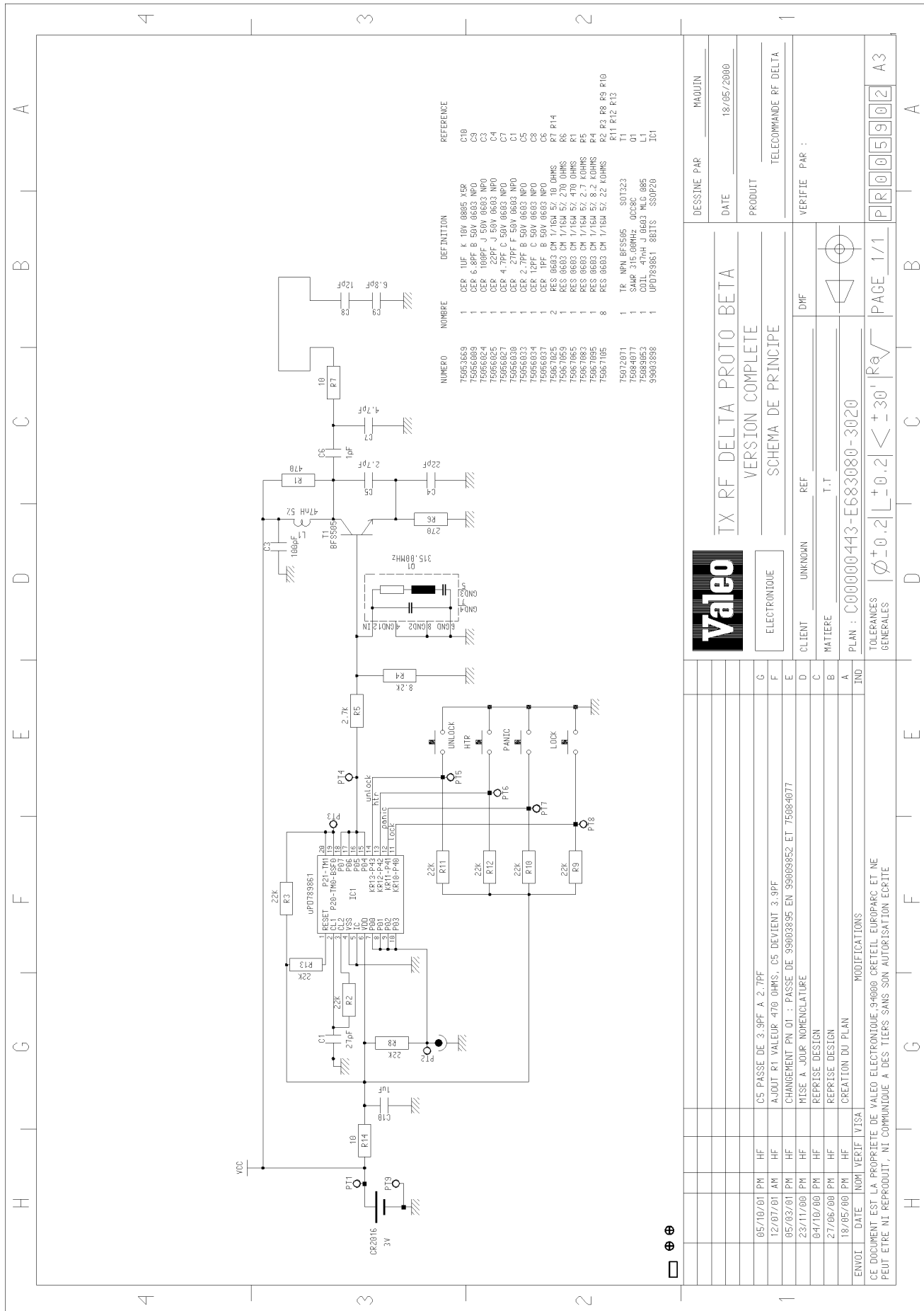
Annex 5 : Product's assembly plan

[illegible]

ANNEX 2 - LOWER LAYER OF THE PRINTED CIRCUIT



## ANNEX 3 - SCHEMATIC PLAN



Valeo

TX RF DELTA PROTO BETA

VERSION COMPLETE

SCHEMA DE PRINCIPE

|         |                        |     |  |
|---------|------------------------|-----|--|
| CLIENT  | UNKNOWN                | REF |  |
| MATIERE | T.T                    |     |  |
| PLAN :  | C00000443-E683080-3020 |     |  |

|                      |                                                                  |
|----------------------|------------------------------------------------------------------|
| TOLERANCES GENERALES | $\varnothing \pm 0.2$   $L \pm 0.2$   $< \pm 30$   $R_{\sqrt{}}$ |
|----------------------|------------------------------------------------------------------|

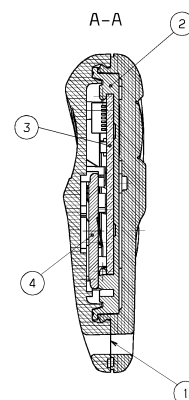
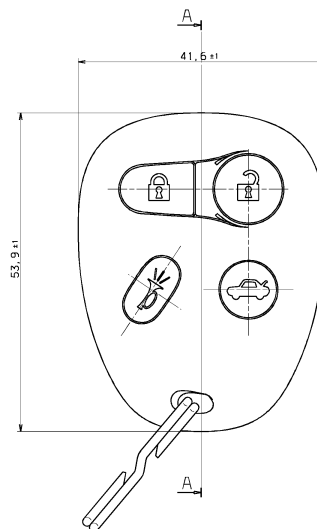
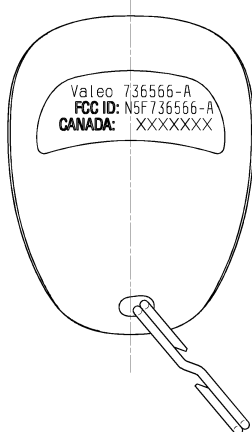
|      |     |
|------|-----|
| PAGE | 1/1 |
|------|-----|

|               |                       |
|---------------|-----------------------|
| DESSEIN PAR   | MAJUN                 |
| DATE          | 18/05/2000            |
| PRODUIT       | TELECOMMANDE RF DELTA |
| VERIFIE PAR : |                       |

|                |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |
|----------------|--|---|--|---|--|---|--|---|--|---|--|---|--|---|--|
| 4              |  | 3 |  | 2 |  | 1 |  | 4 |  | 3 |  | 2 |  | 1 |  |
| A              |  | B |  | C |  | D |  | E |  | F |  | G |  | H |  |
| EQUIPEMENT SUP |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |
|                |  |   |  |   |  |   |  |   |  |   |  |   |  |   |  |

## ANNEX 5 –PRODUCT’S ASSEMBLY PLAN

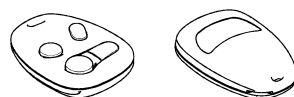
| REP | DRAWING REF. | Qty | DESCRIPTION                        |
|-----|--------------|-----|------------------------------------|
| 1   | 735 00 815   | 1   | Upper+lower+tabs+ring sub-assembly |
| 2   | 738 60 447   | 1   | Silicone membrane                  |
| 3   | C00000443-E  | 1   | Pcb                                |
| 4   | 750 39 218   | 1   | Battery CR2016                     |



SCHEMA.....réf. : C00000443-E683080-3020  
 IMPLANTATION.....réf. : C00000443-E683080-3000  
 SW Version.....réf. : V 1.4

## REMARKS:

1. Transmitter fulfill specification No 683080-115-100-C



SCALE : 1/1

|                                                                          |  |                       |  |                            |                                          |
|--------------------------------------------------------------------------|--|-----------------------|--|----------------------------|------------------------------------------|
| GENERAL TOLERANCES<br>according NF1 68000<br>CATEGORY 4, REDUCED CLASSES |  | MATERIAL              |  | SCALE<br>5/2               | <b>PLAN "P"</b><br><b>TX GM DELTA</b>    |
| SHAPE & POSITION<br>NF E 01-552                                          |  | Code:                 |  |                            |                                          |
| A 09OCT 01                                                               |  | PLATING               |  |                            | Made by<br>G. ROUSSEAU<br>09 OCTOBER 01  |
| ind Date                                                                 |  | Mass :                |  | Made for<br>General Motors | Checked by<br>J. LEXUAN<br>09 OCTOBER 01 |
| CREATION                                                                 |  | Modifications details |  | DE 683080                  | N°73656612                               |

End of the DOCUMENT