# Mounting a FN980(m) in a 30x52mm slot
## **Application Note**

80624NT11886A Rev. 1 – 2021-02-12

## APPLICABILITY TABLE

| PRODUCTS | PART NUMBER |
|---|---|
| FN980N | any |
| FN980 | any |
| | |
| | |

# CONTENTS

# 1. INTRODUCTION

## 1.1. Scope

This document describes how to install a FN980 Family M.2 card (30mmx50mm) into a customer application designed for a 30mmx52mm M.2 card. All features and solutions described in this document are applicable to all FN980 variants listed in the applicability table and may not fit for all customer cases. Please use this document as a starting point to choose the best solution for your application. If this guide fits with your application, Telit can also provide an adapter to fit the 2mm gap between the two cards, as showed in next steps.

## 1.2. Audience

This document is intended for Telit customers, especially system integrators, about to implement their applications using the Telit FN980 Family.

## 1.3. Contact Information, Support

For general contact, technical support services, technical questions and report of documentation errors contact Telit Technical Support at:

- *TS-EMEA@telit.com*
- *TS-AMERICAS@telit.com*
- *TS-APAC@telit.com*

Alternatively, use:

*http://www.telit.com/support*

For detailed information about where you can buy the Telit modules or for recommendations on accessories and components visit:

*http://www.telit.com*

Our aim is to make this guide as helpful as possible. Keep us informed of your comments and suggestions for improvements.

Telit appreciates the user feedback on our information.

## 1.4. Symbol Convention

|  |  |
|---|---|
| | **Danger:** This information MUST be followed or catastrophic equipment failure or personal injury may occur. |
| | **Warning:** Alerts the user on important steps about the module integration. |
| | **Note/Tip:** Provides advice and suggestions that may be useful when integrating the module. |
| | **Electro-static Discharge:** Notifies the user to take proper grounding precautions before handling the product. |

*Table 1: Symbol Conventions*

All dates are in ISO 8601 format, that is. YYYY-MM-DD.

## 1.5. Related Documents

Document one: PCI Express M.2 Specification, Revision 3.0, Version 1.2 (2019-06-29)

Not Subject to NDA

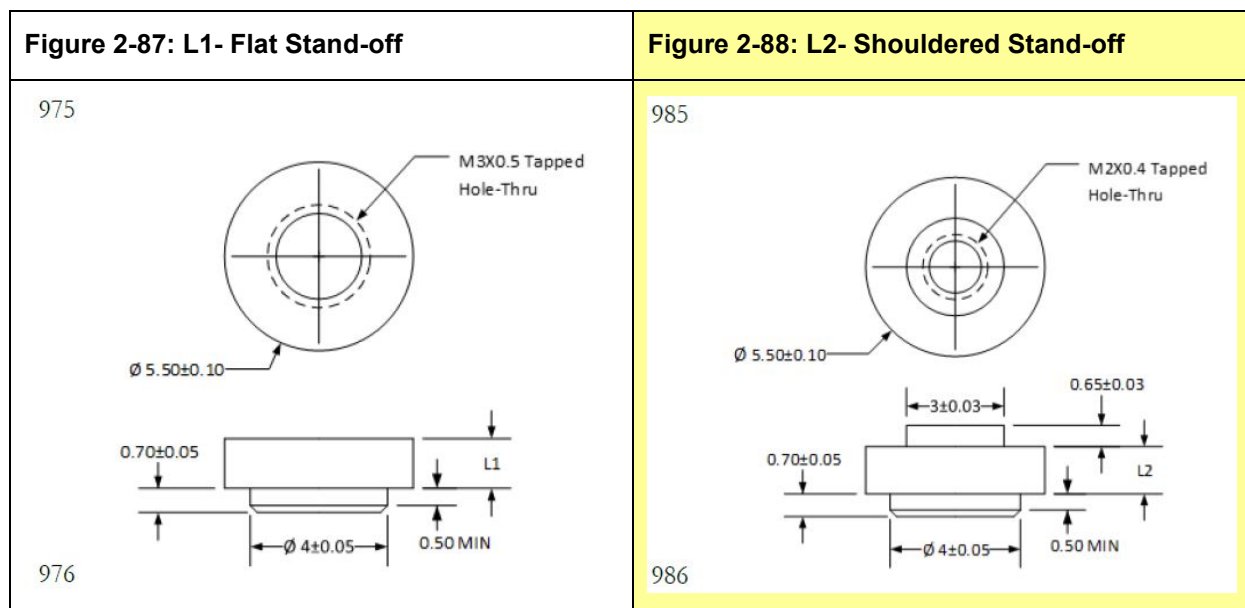## 2. STEPS TO INSTALL A FN980 FAMILY CARD IN A 30MMX52MM SLOT

### 2.1.  Change M.2 connector and stand off height

FN980 Family card is 30mm large and 50mm long, with components on both sides. If your design is made for a card with components only on the top side, probably you are using a lower height M.2 connector and stand-off solution.

Please refer to PCI Express M.2 Specification Rev.3.0, 2.5.4, Table 2-14:

| Connector Height Descriptor | L1- Flat Stand-off | L2- Shouldered Stand-off |
|---|---|---|
| H2.3 | 0.35 ± 0.03 | --------------- |
| H2.5 | 0.55 ± 0.03 | --------------- |
| H2.8 | 0.80 ± 0.03 | 0.80 ± 0.03 |
| H3.2 | 1.45 ± 0.03 | 1.45 ± 0.03 |
| H4.2 | 2.45 ± 0.03 | 2.45 ± 0.03 |

Please refer to PCI Express M.2 Specification Rev.3.0, Figure 2-87 and Figure 2-88 for L1 and L2:

| Figure 2-87: L1- Flat Stand-off | Figure 2-88: L2- Shouldered Stand-off |
|---|---|
|  |  |

Telit minimum required height is H3.2. If you are currently using a H2.3, H2.5, H2.8 connector, you must change both M.2 connector and stand-off using a different height (H3.2 or H4.2). There is no need to change footprint, your supplier probably has in catalog the same connector, but with different height.

If you change these two components (Fig.1), your design will be compatible both with Telit and with your current solution.
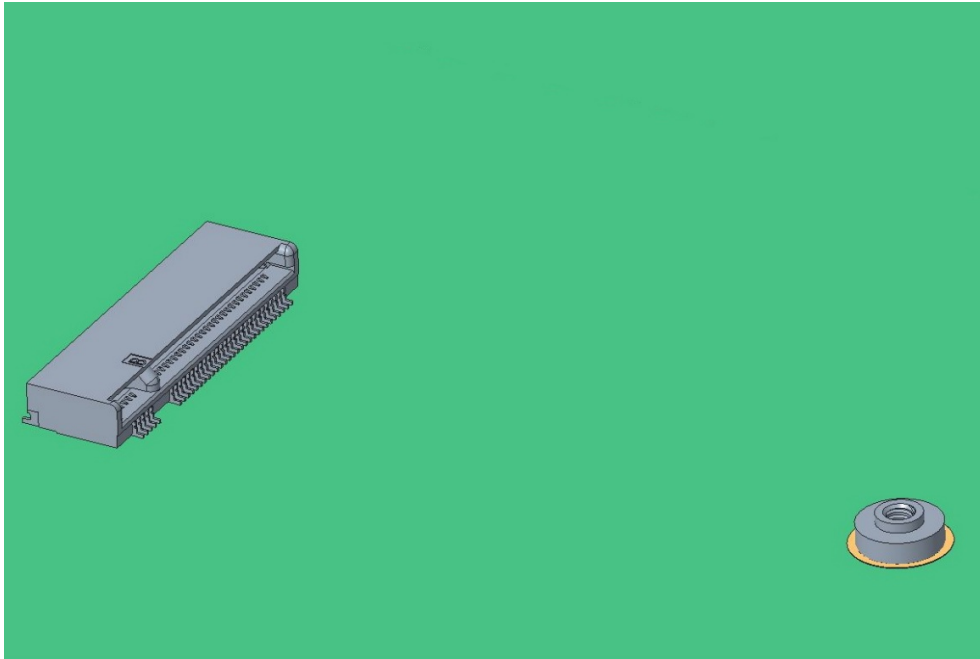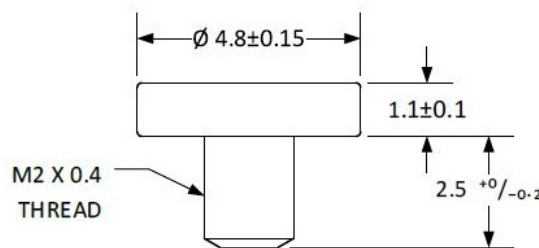


Fig.1

We suggest to use a shouldered stand-off (PCI Express M.2 Specification Rev.3.0, Figure 2-88) with a specific M2 screw.

For the M2 screw, please refer to PCI Express M.2 Specification Rev.3.0, 2.5.5.3:

## 2.2. FN980 Family assembly with Telit Adapter

FN980 Family card is 30mm large and 50mm long, with components on both sides. Probably your design is made for a 30mm x52mm M.2 card, with components only on the top side. After changing the connector and stand-off height, you need to fix the gap between the FN980 Family card and the stand-off.

Telit can provide a custom two parts adapter to fit the 2mm gap between the two cards, as showed in Fig.2 (lower adapter) and Fig.3 (upper adapter):
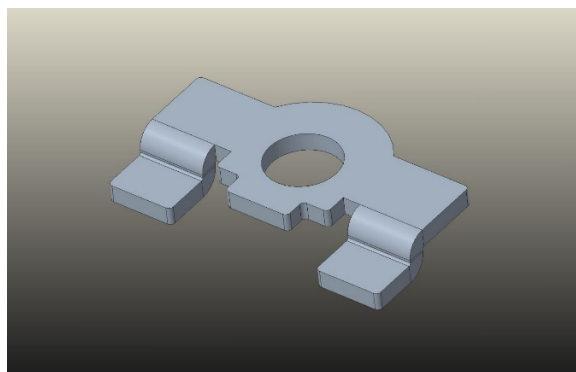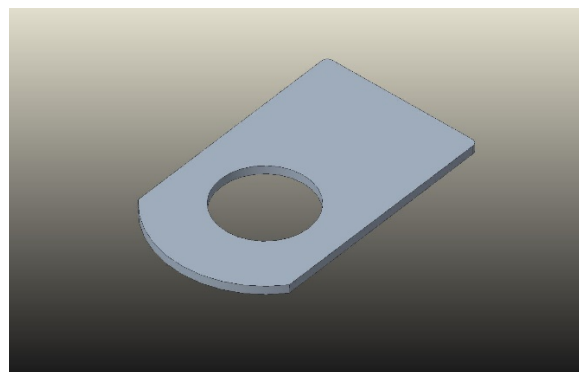


Fig.2



Fig.3

### 2.2.1. How to install the adapter on your application

Step 1:

Insert FN980 Family card into the M.2 connector (Fig.4):
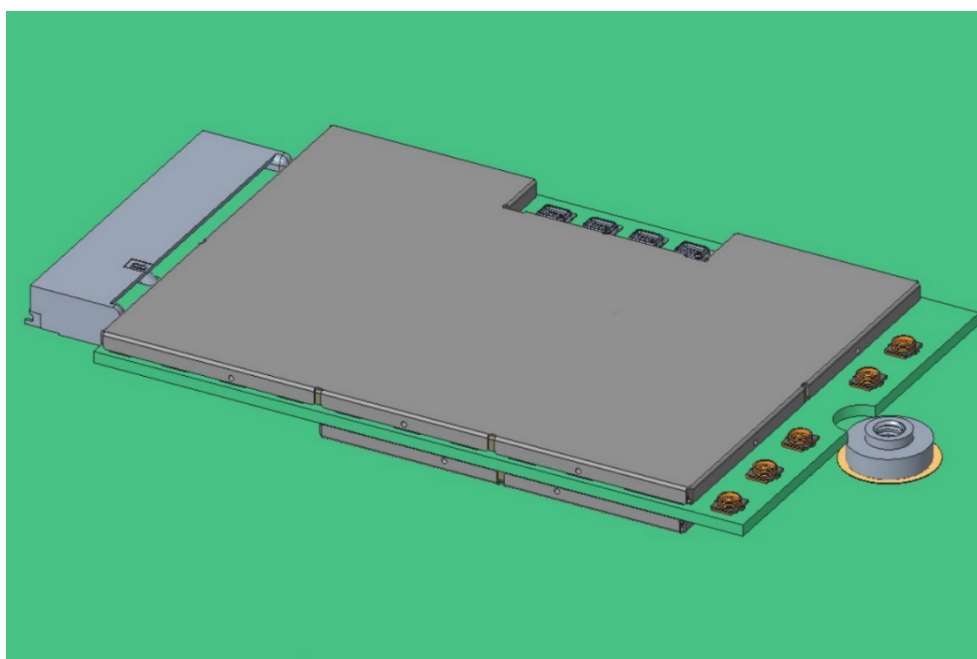


Fig.4

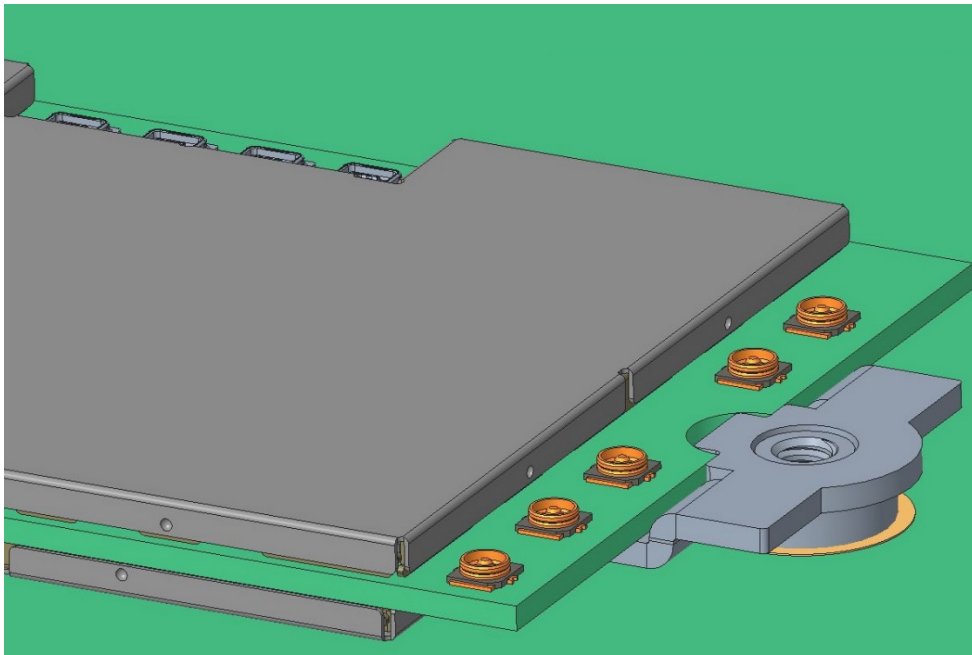Not Subject to NDA

Step 2:

Insert the lower adapter as showed (Fig.5):



Fig.5

Step 3:

Insert the upper adapter on top side as showed (Fig.6):



Fig.6

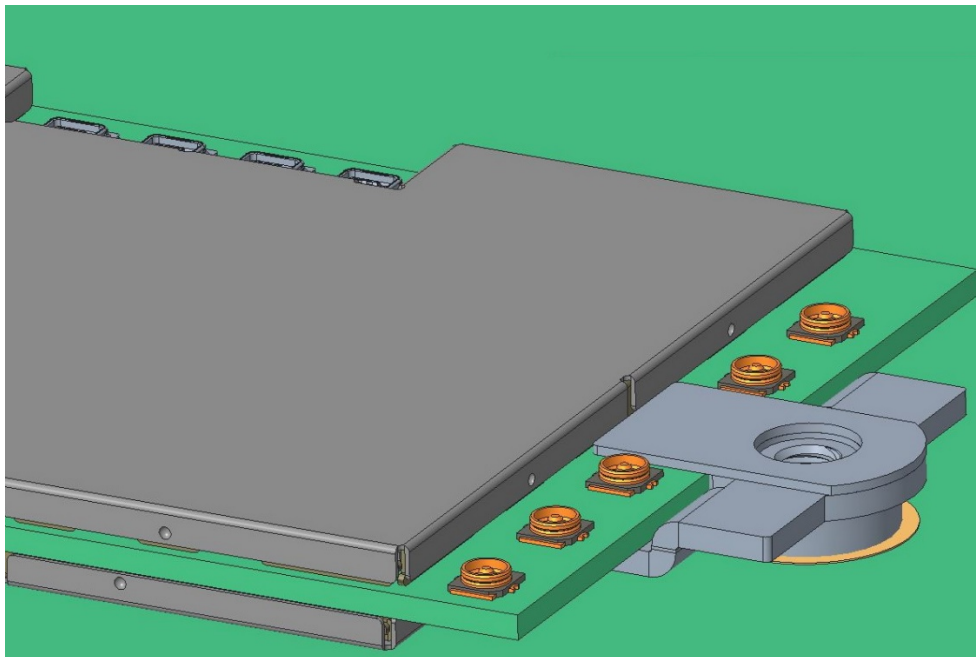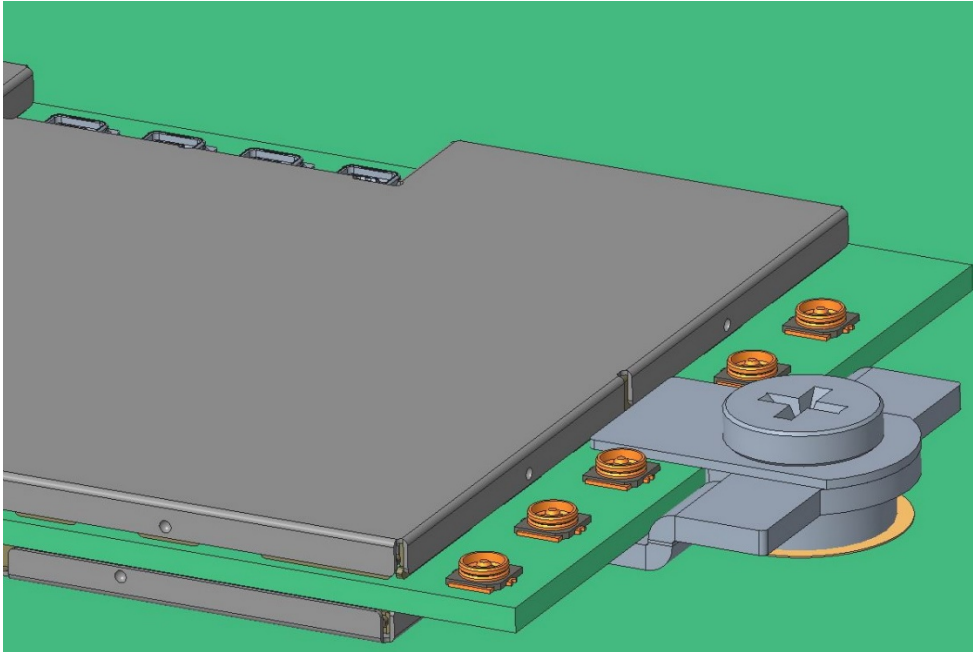Step 4:

Lock with the M2 screw (Fig.7):



Fig.7

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## 3.3. Safety Recommendations

Make sure the use of this product is allowed in your country and in the environment required. The use of this product may be dangerous and has to be avoided in areas where:

- it can interfere with other electronic devices, particularly in environments such as hospitals, airports, aircrafts, etc.
- there is a risk of explosion such as gasoline stations, oil refineries, etc. It is the responsibility of the user to enforce the country regulation and the specific environment regulation.

Do not disassemble the product; any mark of tampering will compromise the warranty validity. We recommend following the instructions of the hardware user guides for correct wiring of the product. The product has to be supplied with a stabilized voltage source and the wiring has to be conformed to the security and fire prevention regulations. The product has to be handled with care, avoiding any contact with the pins because electrostatic discharges may damage the product itself. Same cautions have to be taken for the SIM, checking carefully the instruction for its use. Do not insert or remove the SIM when the product is in power saving mode.

The system integrator is responsible for the functioning of the final product. Therefore, the external components of the module, as well as any project or installation issue, have to be handled with care. Any interference may cause the risk of disturbing the GSM network or external devices or having an impact on the security system. Should there be any doubt, please refer to the technical documentation and the regulations in force. Every module has to be equipped with a proper antenna with specific characteristics. The antenna has to be installed carefully in order to avoid any interference with other electronic devices and has to guarantee a minimum distance from the body (20 cm). In case this requirement cannot be satisfied, the system integrator has to assess the final product against the SAR regulation.

The equipment is intended to be installed in a restricted area location.

The equipment must be supplied by an external specific limited power source in compliance with the standard EN 62368-1:2014.
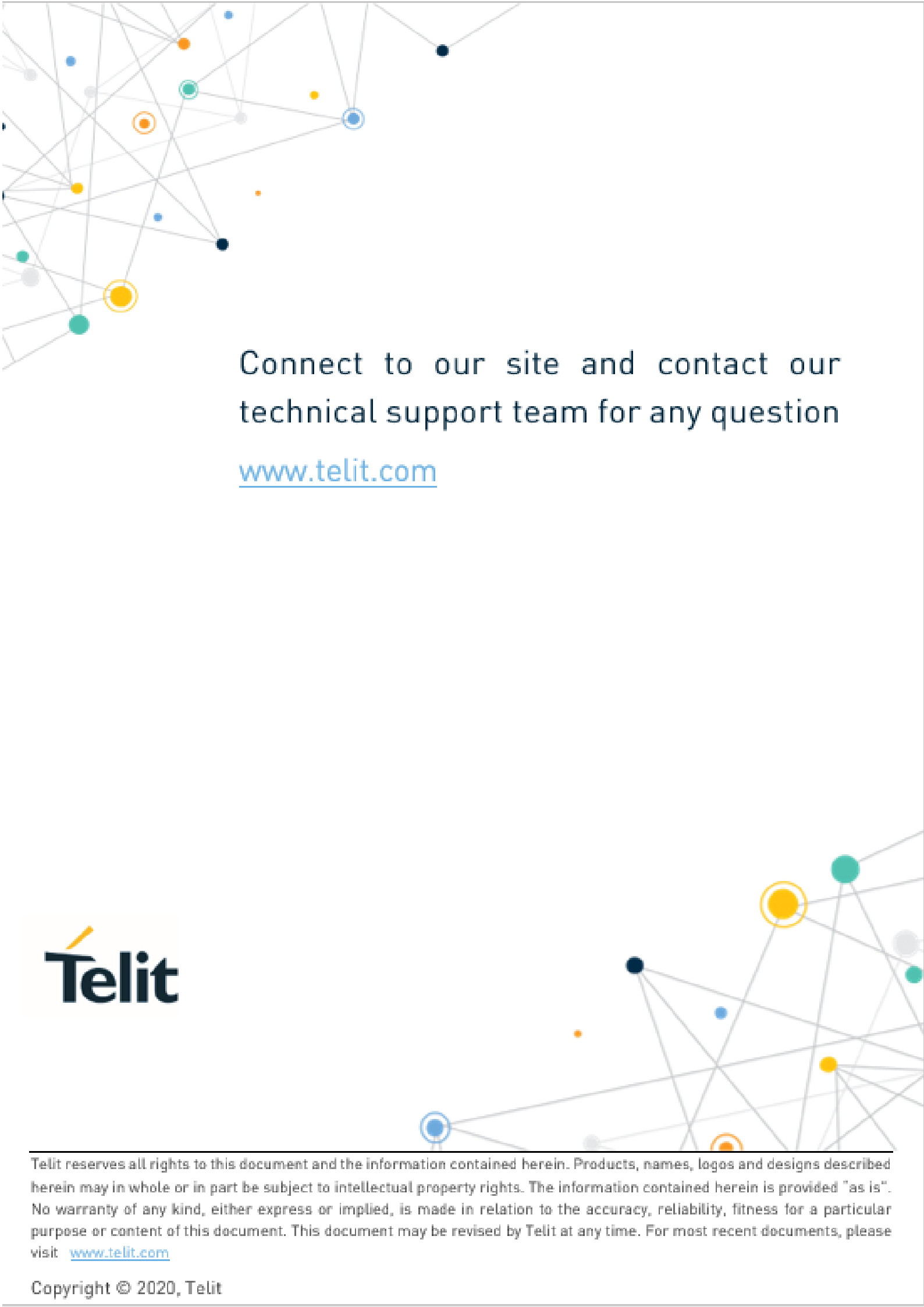
The European Community provides some Directives for the electronic equipment introduced on the market. All of the relevant information is available on the European Community website:

_https://ec.europa.eu/growth/sectors/electrical-engineering_en_

# 4. DOCUMENT HISTORY

| Revision | Date | Changes |
|----------|------|---------|
| 0 | 2021-02-10 | First issue |

From Mod.0809 rev.1

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