

# TECHNICAL REPORT



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**Flexible printed circuit boards (FPCBs) – Method to decrease signal loss by using noise suppression materials**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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## INTERNATIONAL ELECTROTECHNICAL COMMISSION

**FLEXIBLE PRINTED CIRCUIT BOARDS (FPCBs) – METHOD TO DECREASE SIGNAL LOSS BY USING NOISE SUPPRESSION MATERIALS**

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IEC TR 63018, which is a technical report, has been prepared by IEC technical committee 91: Electronics assembly technology.

The text of this technical report is based on the following documents:

Enquiry draft	Report on voting
91/1284/DTR	91/1309/RVC

Full information on the voting for the approval of this technical report can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "<http://webstore.iec.ch>" in the data related to the specific publication. At this date, the publication will be

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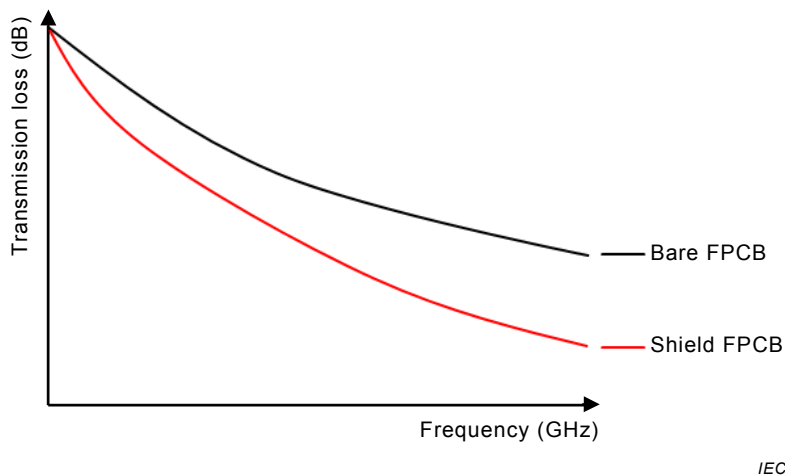
## INTRODUCTION

In recent years, since the use of smart phones, and other mobile and display devices has increased significantly, the supply of FPCBs has also been largely extended. Specifically, since the FPCB devices seek high speed performance, the requirements with respect to electromagnetic interference (EMI) suppression in the devices has also grown in importance. Therefore, FPCBs used inside smart phones employ noise suppression materials (NSMs) to solve EMI problems, as shown in Figure 1.



**Figure 1 – Bare/shield FPCB**

However, an application of noise suppression materials (NSMs) for FPCBs reaches the limit concerning the problem of incrementation of signal loss. Therefore, FPCB and NSMs manufacturers need to analyse signal loss variations of FPCBs shielded by NSMs, as shown in Figure 2.



**Figure 2 – Increment of signal loss using NSMs**

As FPCBs are used with high frequency, the problem of signal loss becomes more significant. As the user of FPCBs has a demand for the lowest value of signal loss by using NSMs, suppliers of FPCBs have to anticipate an appropriate design in order to achieve an adequate signal loss value.

# **FLEXIBLE PRINTED CIRCUIT BOARDS (FPCBs) – METHOD TO DECREASE SIGNAL LOSS BY USING NOISE SUPPRESSION MATERIALS**

## **1 Scope**

This Technical Report specifies a guideline for improvement of signal loss by using noise suppression materials (hereafter referred to as NSMs) for FPCBs.

This Technical Report also indicates a measuring method of signal loss variations of FPCBs using NSMs using network analyzer equipment. In addition, this method only measures the value of the signal loss variation by using NSMs for FPCBs. This report, however, neither determines nor indicates the structure or material of FPCBs.

## **2 Normative references**

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

IEC 62333-1:2006, *Noise suppression sheet for digital devices and equipment – Part 1: Definitions and general properties*