

TECHNICAL REPORT



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



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

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CONTENTS

FOREWORD.....	3
INTRODUCTION.....	5
1 Scope.....	6
2 Normative references	6
3 Test guideline.....	6
3.1 Apparatus	6
3.1.1 Network analyzer.....	6
3.1.2 Block diagram for signal loss measuring	6
3.2 Test specimen	7
3.2.1 Structure	7
3.2.2 Preparation.....	8
3.2.3 Test method	8
3.2.4 Calculation	9
3.2.5 Test result	9
3.2.6 Analysis.....	12
3.3 Improvement method of signal loss for a shield FPCB.....	13
Annex A (normative) Block diagram of signal loss test system	14
Figure 1 – Bare/shield FPCB.....	5
Figure 2 – Increment of signal loss using NSMs.....	5
Figure 3 – Signal loss test system.....	6
Figure 4 – Schematic diagram for two type of test specimen	7
Figure 5 – Cross-section of shield FPCB.....	8
Figure 6 – Difference of signal loss between bare and shield FPCBs	9
Figure 7 – Signal loss value of the bare and shield FPCB	10
Figure 8 – Signal loss variation according to the Cu conductive layer thickness	11
Figure 9 – Signal loss variation according to the Cu signal line width.....	11
Figure 10 – Two types of structure for FPCB.....	12
Figure 11 – Electric field diagram for two types of shield FPCB.....	13
Figure A.1 – Block diagram of signal loss test system	14
Figure A.2 – Signal loss test system according to the Agilent network analyzer N5230A	14
Table 1 – Comparison of cut-off frequency with bare/shild FPCB	10

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SIGNAL LOSS BY USING NOISE SUPPRESSION MATERIALS****FOREWORD**

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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.

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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.

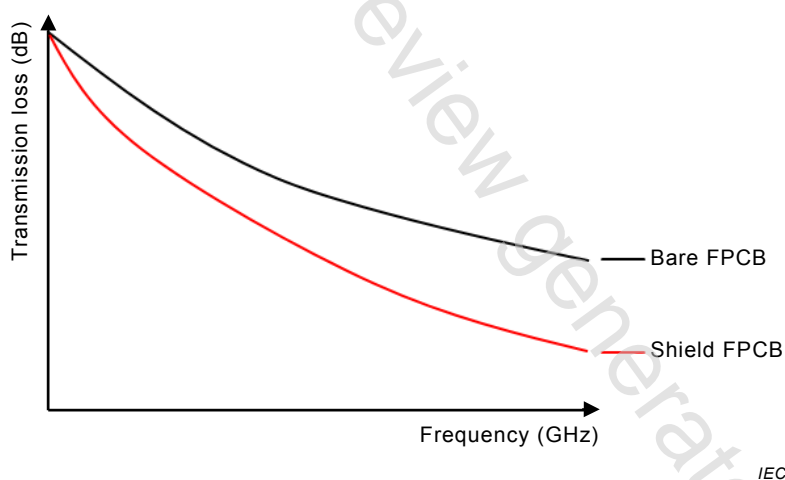


Figure 2 – Increment of signal loss using NSMs

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*

3 Test guideline

3.1 Apparatus

3.1.1 Network analyzer

A network analyzer is utilized to identify signal loss data at a specific frequency range of FPCBs.

3.1.2 Block diagram for signal loss measuring

Figure 3 indicates one of the examples of the network analyzer setup.

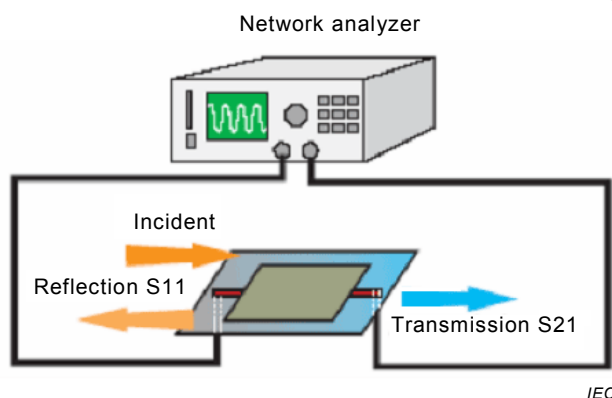


Figure 3 – Signal loss test system