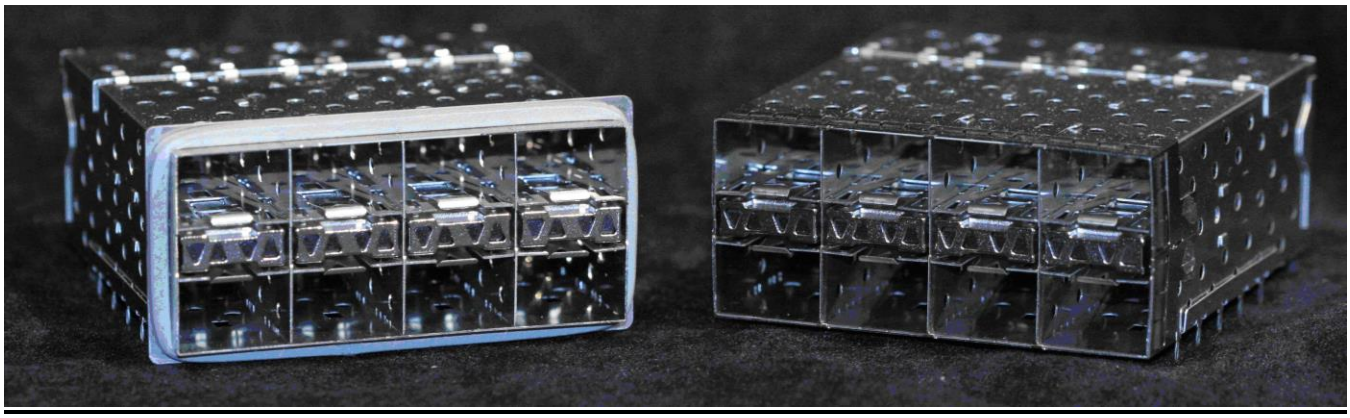
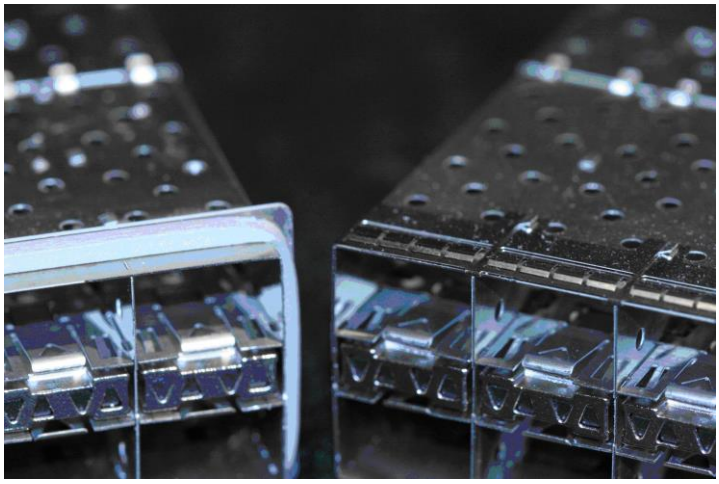
TEST SUMMARY





Shielding Effectiveness Testing Report
for
Elastomeric and Metal Gasket
Stacked SFP+ Connectors

REVISION:	ECR/ECN INFORMATION:	TITLE:	SHEET No.
A	EC No: **UCP2007-1767** DATE: **2007 / 01 / 19**	**SHIELDING EFFECTIVENESS TESTING FOR STACKED SFP+ CONNECTORS**	**1** of **8**

DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
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TEMPLATE FILENAME: TS760929.DOC

1.0 SCOPE

This Test Summary covers the Shielding Effectiveness Testing for the Stacked SFP+ 0.8mm pitch Connector product line. Testing was performed on the 2x4 product versions with Elastomeric and Metal EMI Gaskets. The performance data presented relates to these configurations and should be used as a reference to the other product configurations.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND PART NUMBER(S)

Part Number	Tested Product Description
76092-0001	2x4 Stacked SFP+ press-fit connector, w/ Elastomeric EMI Gasket
75046-0001	2x4 Stacked SFP+ press-fit connector, w/ EMI Metal Gasket

Series Number	Referenced Product Description
76090	2x1 Stacked SFP+ press-fit connector, w/ Elastomeric EMI Gasket
76091	2x2 Stacked SFP+ press-fit connector, w/ Elastomeric EMI Gasket
76092	2x4 Stacked SFP+ press-fit connector, w/ Elastomeric EMI Gasket
76093	2x5 Stacked SFP+ press-fit connector, w/ Elastomeric EMI Gasket
76094	2x6 Stacked SFP+ press-fit connector, w/ Elastomeric EMI Gasket
76044	2x1 Stacked SFP+ press-fit connector, w/ EMI Metal Gasket
76045	2x2 Stacked SFP+ press-fit connector, w/ EMI Metal Gasket
76046	2x4 Stacked SFP+ press-fit connector, w/ EMI Metal Gasket
76047	2x5 Stacked SFP+ press-fit connector, w/ EMI Metal Gasket
76048	2x6 Stacked SFP+ press-fit connector, w/ EMI Metal Gasket

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate Sales Drawing for information on dimensions, materials, plating, markings and footprint patterns.

2.3 PRODUCT SPECIFICATION TITLE AND DOCUMENT NUMBER

See the appropriate Sales Drawing for information on specifications.

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

3.1 TESTING PROCEDURES AND SEQUENCES

The shielding effectiveness data was collected using a cubic copper enclosure with provisions in it for attaching a DUT mounting plate. The mounting plate attaches to a square cutout in one of the sides of the copper enclosure. Two different mounting plates were fabricated, one with a hole in it for the connector and one without.

To make the measurements, two horn antennas were used. One was placed inside the enclosure and the other was placed outside the enclosure. The two antennas were placed as close as possible to the mounting plate, on the order of several inches. The performance goal is to design a shield that minimizes the amount of signal power transferred from one antenna to the other. See reference setup below.

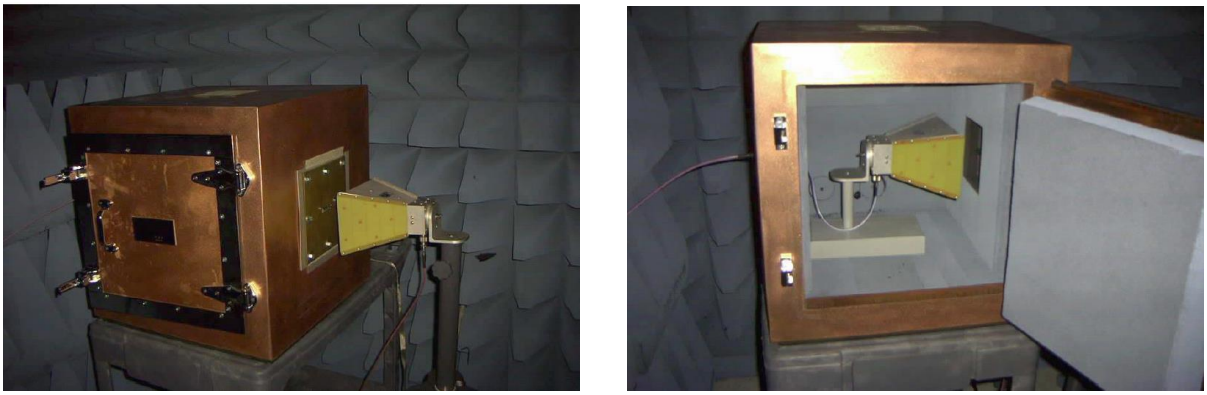

Figure 1 - Representative Test Environment

Several reference measurements are made to begin with.

1. A measurement of the sealed enclosure is made, using the mounting plate without the hole in it. We use this measurement to establish our noise “floor".
2. A measurement consisting of only the DUT plate with the hole in it and no connector installed is made. We use this measurement as our "ceiling" indicating the worst-case amount of energy that would be leaked if no shield were in place.
3. A measurement is made with nothing in between the antennas. This is shown as the dark black line within the ceiling.

Three Design Under Test (DUT) vehicles were then measured.
The first DUT is the 2x4 SFP Connector with EMI metal gasket, (orange line). See Figures 2 and 3
The second DUT is the 2x4 SFP+ Connector with the EMI Elastomeric gasket, (green line). See Figure 2
The third DUT is the 2x4 SFP+ Connector with the EMI Metal Gasket, (green line). See Figure 3

Note, the DUTs do not include any attached cable or SFP/SFP+ modules. The focus of the measurement is a comparative evaluation of the cage technologies. With modules or cables installed their performance contributions become dominant.

4.0 SFP+ SHIELDING EFFECTIVENESS PERFORMANCE DATA

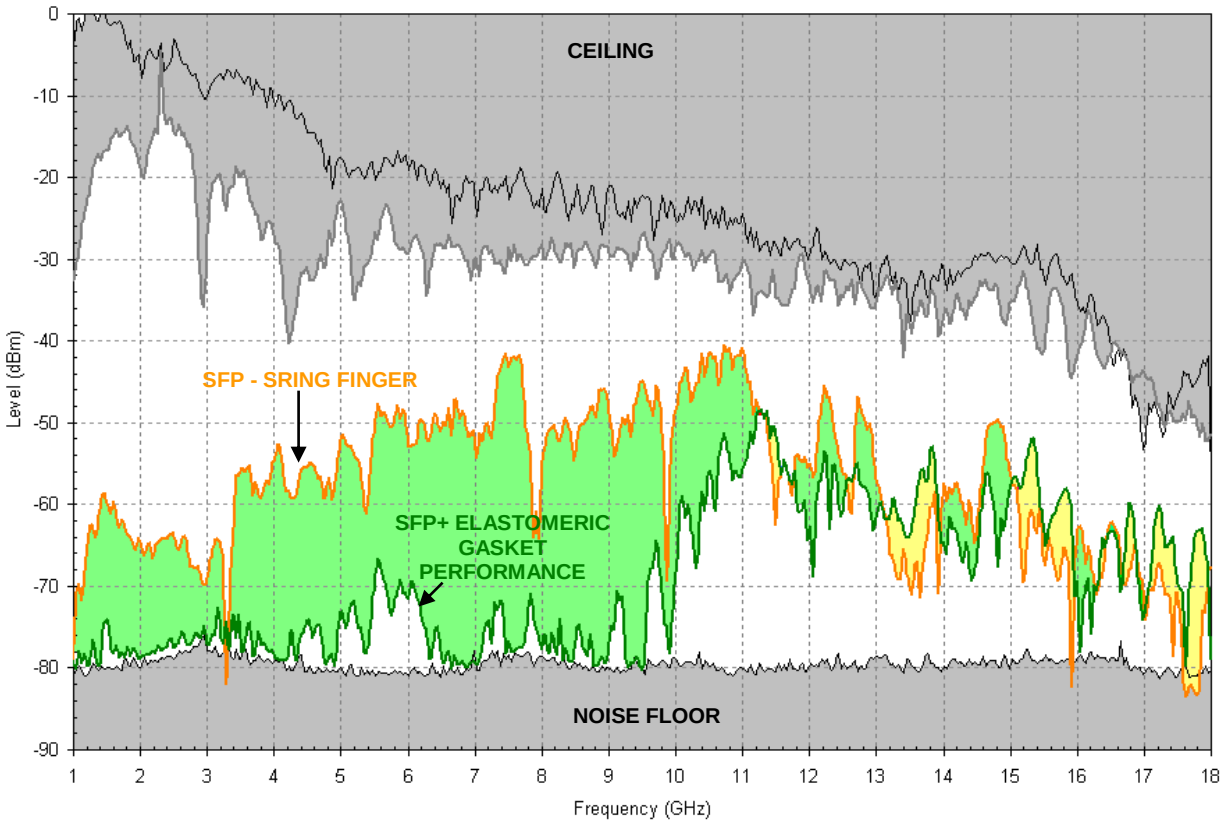

Figure 2 - Relative Performance of SFP+ EMI Elastomeric Gasket to SFP EMI Spring Fingers
[Areas of Performance Improvement (Green) and of Deterioration (Yellow)]

4.0 SFP+ SHIELDING EFFECTIVENESS PERFORMANCE DATA (CONTINUED)

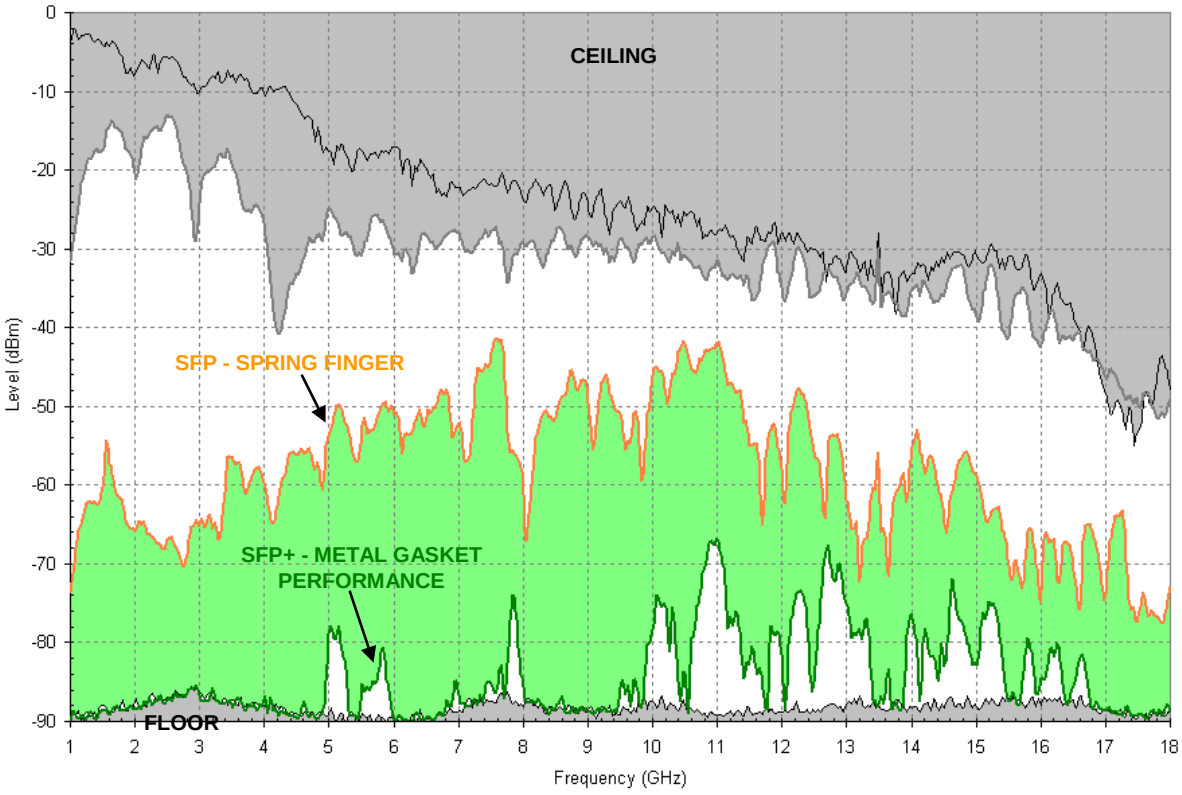

Figure 3 - Relative Performance of SFP+ EMI Metal Gasket to SFP EMI Spring Fingers
[Areas of Performance Improvement (Green]

4.0 SFP+ SHIELDING EFFECTIVENESS PERFORMANCE DATA (CONTINUED)

The following graphs show the performance the SFP+ Elastomeric Gasket design relative to the SFP spring finger design. Areas shaded in green show a performance advantage of the Elastomeric Gasket over the SFP spring fingers, while areas shaded in yellow show the complement.

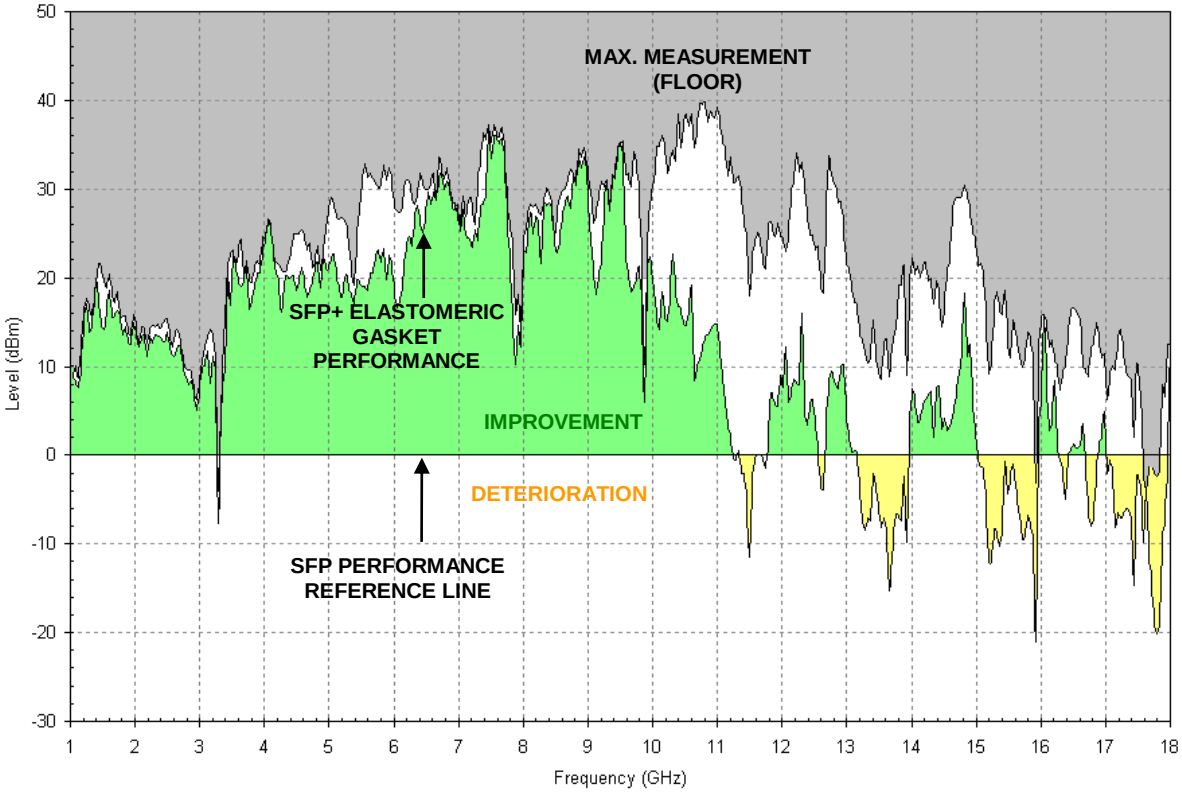

Figure 4 - SFP+ EMI Elastomeric Gasket Design vs. Reference SFP Spring Finger Design
[Areas of Improvement (Green) and Deterioration (Yellow)]

4.0 SFP+ SHIELDING EFFECTIVENESS PERFORMANCE DATA (CONTINUED)

The following graph show the performance the SFP+ Metal Gasket design relative to the SFP spring finger design. Areas shaded in green show a performance advantage of the Elastomeric Gasket over the SFP spring fingers.

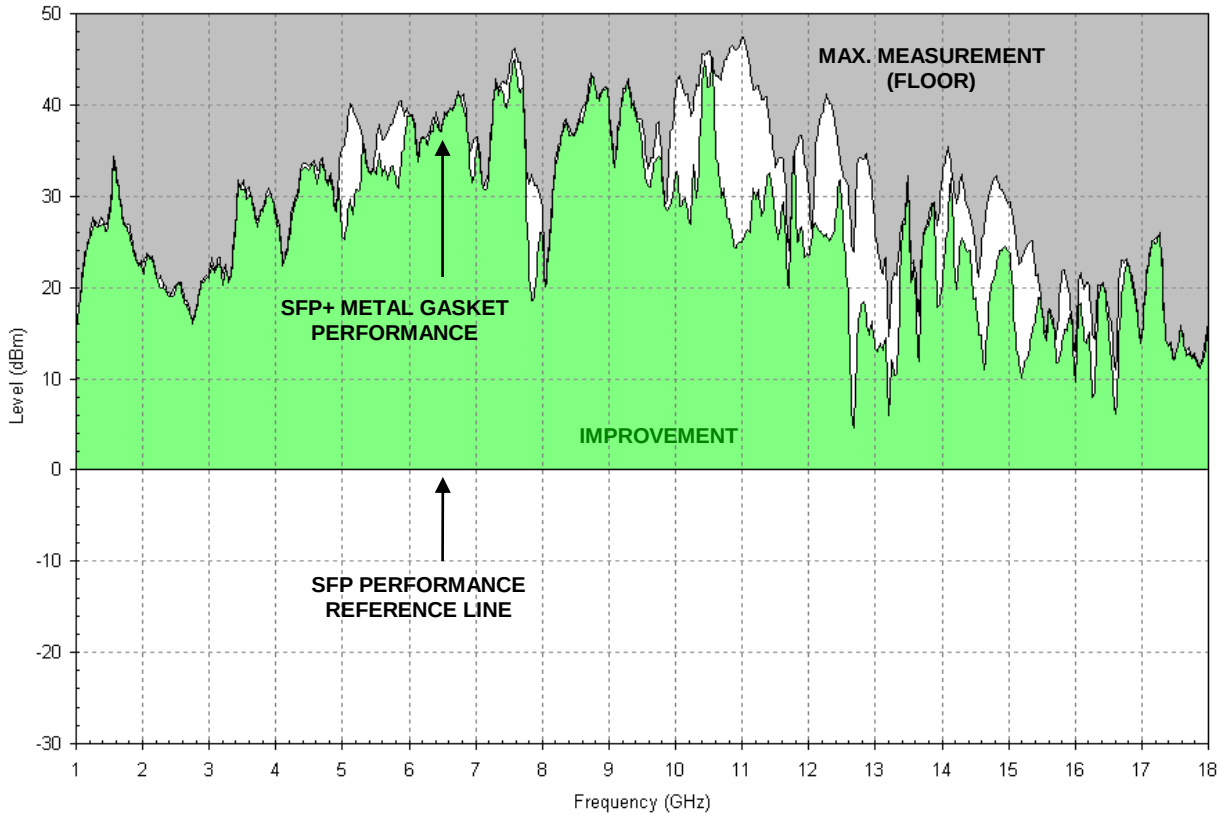

Figure 5 - Gasket SFP+ Spring Finger vs. Reference Spring Finger Design
[Areas of Improvement (Green)]

4.0 SFP+ SHIELDING EFFECTIVENESS PERFORMANCE DATA (CONTINUED)

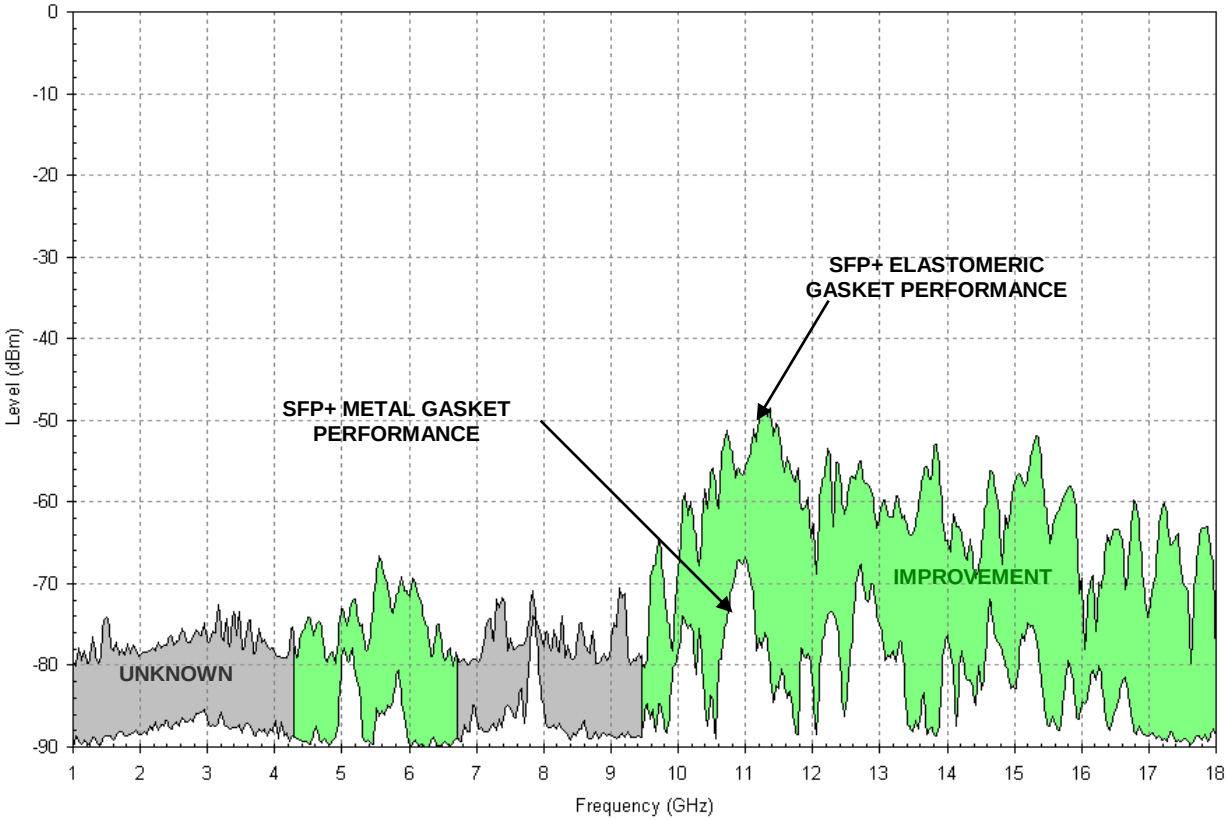

Figure 6 - SFP+ EMI Metal Gasket vs. SFP+ Elastomeric Gasket Design
[Areas of Improvement (Green) and no performance difference (Gray)]