



Fiber optic channel frequency response specification refinement

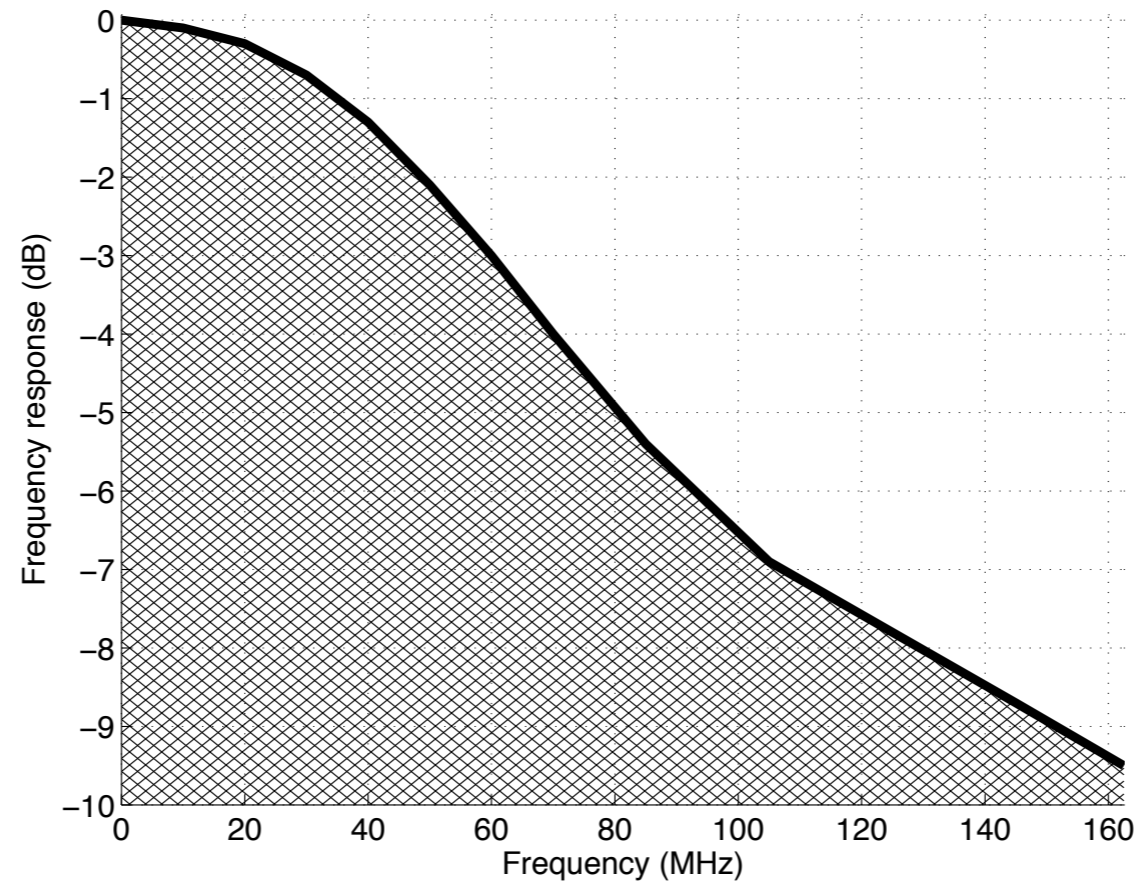
Rubén Pérez-Aranda
(rubenpda@kdpof.com)

Overview



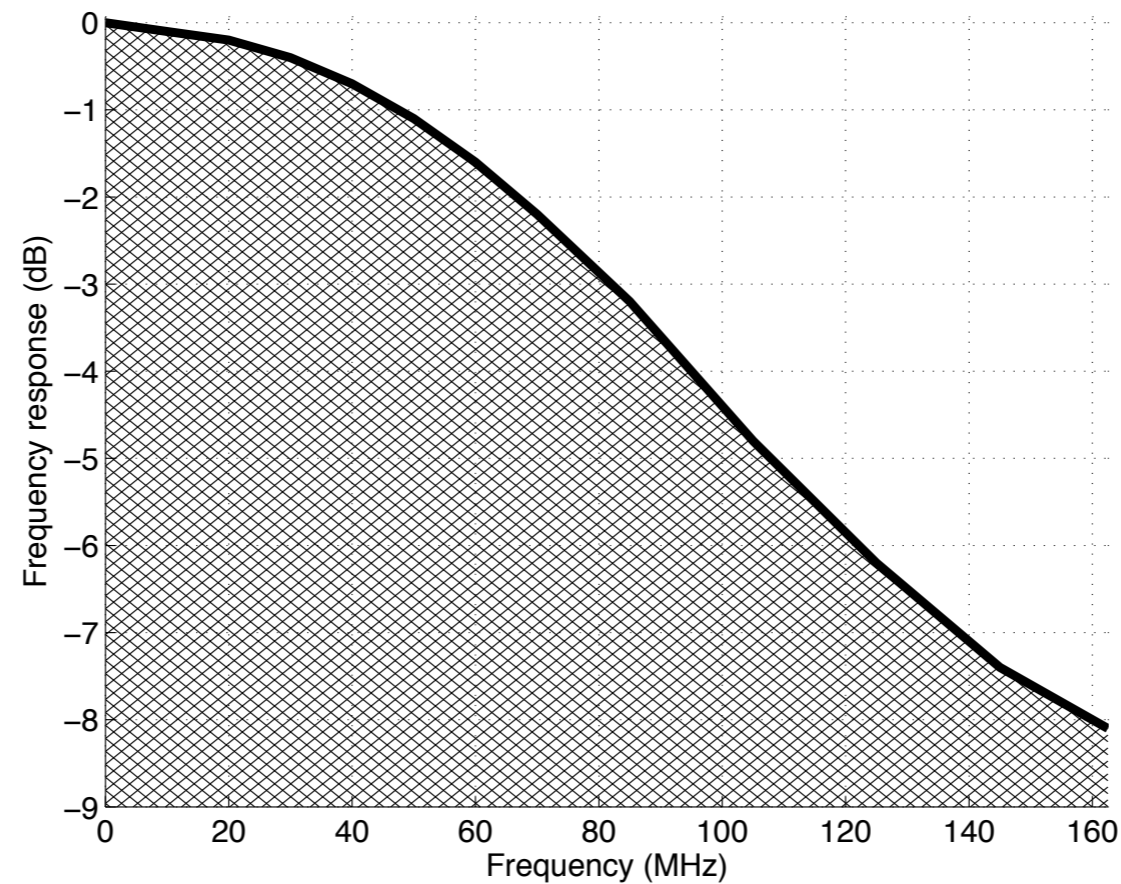
- 6 analog PMD TX analog samples with 6 samples for each fiber optic channel type have been measured.
- Measurement setup:
 - Analog transmitter that meets MPD per EAF at TP2 (Avago AFBR-59F3Z)
 - 30cm std SI-POF for throw calibration
 - Opto-electrical converter Graviton SPA-2 (low noise, linear, 1GHz bandwidth)
 - x meters of Mitsubishi GH4001
 - Vector Network Analyzer (VNA) from 10kHz to 1 GHz, 100 points per decade, magnitude measurement with averaging
- Worst case results are used to define channel response
- Refinement for D1.4:
 - lower bound limits for frequency responses are defined as piece-wise functions considering precision of 0.1 dB
 - specification is only up to Nyquist frequency of the system, i.e. 162.5 MHz. The performance of the system does not depend on the response for higher frequencies

Channel type I (50 m of SI-POF)



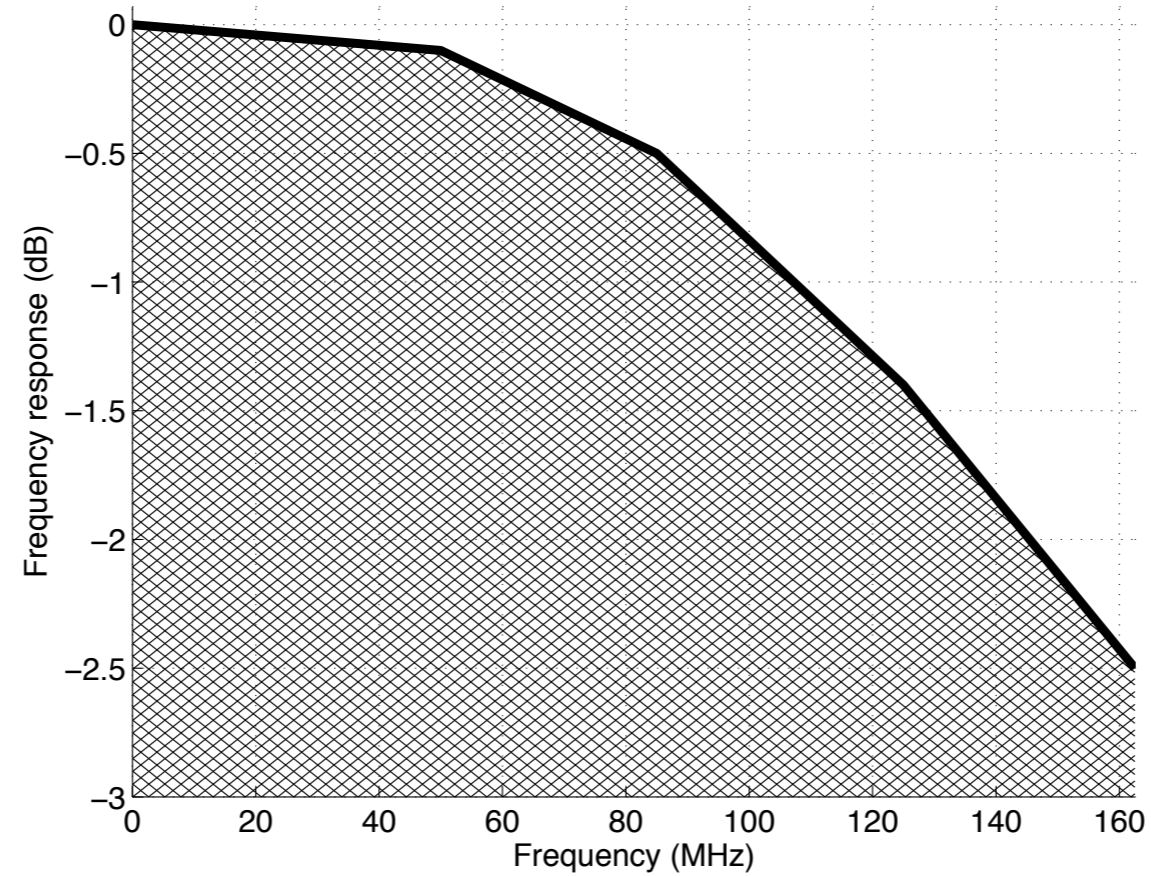
Frequency (MHz)	Magnitude response (dB)	Frequency (MHz)	Magnitude response (dB)
0	0	70	-4.0
10	-0.1	85	-5.4
20	-0.3	105	-6.9
30	-0.7	125	-7.8
40	-1.3	145	-8.7
50	-2.1	162.5	-9.5
60	-3.0	—	—

Channel type II (40 m of SI-POF)



Frequency (MHz)	Magnitude response (dB)	Frequency (MHz)	Magnitude response (dB)
0	0	70	-2.2
10	-0.1	85	-3.2
20	-0.2	105	-4.8
30	-0.4	125	-6.2
40	-0.7	145	-7.4
50	-1.1	162.5	-8.1
60	-1.6	—	—

Channel type III (15 m of SI-POF)



Frequency (MHz)	Magnitude response (dB)
0	0
50	-0.1
85	-0.5
125	-1.4
162.5	-2.5