Technical Datasheet

R&Mfreenet Advanced
Cat 6_A Unshielded Connection Module

PoE optimized
PowerSafe
IDC inside

R&M
Convincing cabling solutions

V2.0 December 2017

R&Mfreenet Advanced Cat 6A Connection Module

The R&Mfreenet Cat 6A unshielded connection modules, part of the Advanced cabling system, are ideal for voice, fast data transmissions and high bandwidth applications. This high-performance Cat 6A module is perfect for use in 10 Gigabit Ethernet (10GBASE-T) and future high-speed applications to 500 MHz.

R&Mfreenet Advanced Cat 6A Features

- Exceeds the Cat 6_A specification (mated) for the entire re-embedded plug range as specified by IEC 60603-7-41 and IEC 60512-27-100.
- Exceeds the Cat 6A specification (mated) for the entire re-embedded plug range as specified by TIA/EIA 568-C.2
- Attains Cat. 6_A values together with Cat. 6_A patch cables as specified in standard IEC 11801 Ed 2.2, June 2011, and EN50173-1: May 2011.
- Achieves exceptional margins when installed as part of an R&M Cat 6_A unshielded channel or permanent link, exceeding the IEEE 802.3an minimum requirements for 10GBASE-T performance, as well as the requirements for Class E_A performance according to ISO/IEC 11801 ed. 2.2, June 2011, and Cat. 6A performance according to TIA/EIA 568-C.2.
- Achieves best transmission characteristics with R&Mfreenet Advanced Cat 6_A patch cables
- Gold-plated contact area and tin-plated insulation displacement contact area
- Capacitive and inductive compensation
- Compatible with Cat 6_A standard patch cords and cables
- Automatic cutting of wires for precise, consistent termination
- X-Separator isolates pairs from each other, minimizing influence of cable termination on NEXT performance
- Use of all four sides of modules maximizes distance between pairs for optimum performance
- Unique cable handling part design maximizes space for routing wires without sacrificing density
- RJ-11 compatible
- Fits into all R&Mfreenet patch panels and most outlets, as well as in selected vendors' faceplates by using specific adapters
- Connection of installation cables of AWG 22-26 plus stranded cables of AWG 22/7 – 26/7 w/o special tools
- Wiring option according to TIA/EIA 568 A and B without splitting of pair 3,6
- Easy to read color wiring chart
- Integrated production date for quality tracing
- Supports PoE (IEEE 802.3af), PoEP (IEEE 802.3at), 4PpoE (IEEE 802.3bt) and is compatible to IEC 60512-99-001/002
- GHMT and 3P certified

Standards

IEC 60603-7-51: Electrical Characteristics of the Telecommunication Outlets
ISO/IEC 11801, Ed. 2.2: June 2011
EN50173-1: May 2011

Mechanical Data

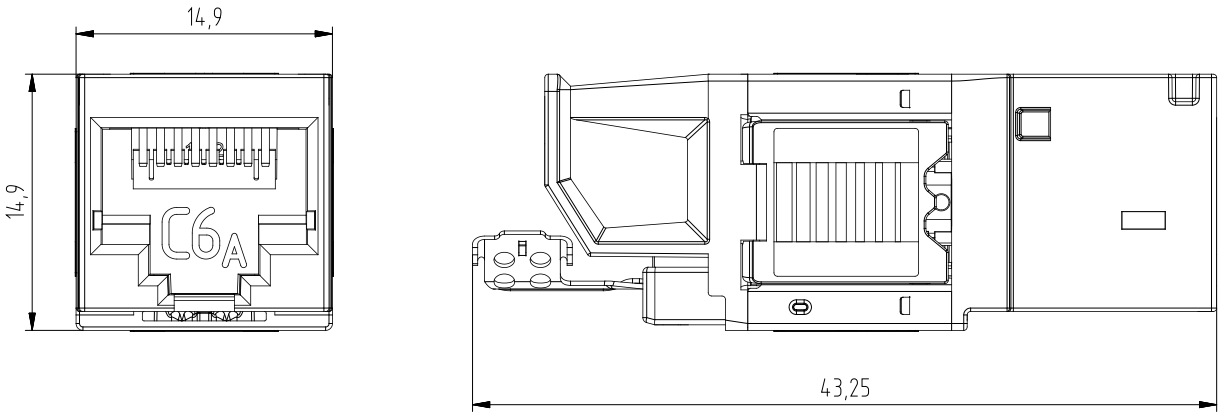
Number of RJ45 jacks	1
Number of signal contacts	8/jack
Operating temperature range	-10°C to 60°C
Storage temperature range	-40°C to 70°C
Humidity	95% (non-condensing)
Contact material	CuSn
Contact area plating	1.2 µm gold over nickel
IDC* plating	Tin-plated
Cutting blade material	Stainless steel
Housing material	Polycarbonate (UL-94-V0)
Admissible wire Ø	0.4 mm (AWG26) – 0.65 mm (AWG22)
Admissible strand Ø	AWG26/7 – AWG22/7
Admissible insulation Ø	0.8 mm – 1.6 mm
Cable diameter	10 mm maximum
Cable strain relief	Through cable tie

*IDC: Insulation Displacement Contact

Description	Standard value	Relevant Standard	Typical value (at 20°C)
Mating cycles min.	> 750	ISO/IEC 11801 2nd Ed.	> 1000
Re-terminations**	> 20	ISO/IEC 11801 2nd Ed.	> 20

**Re-terminations may be performed with wire of either larger or up to two wire gauges smaller than originally terminated.

Dimensions unshielded

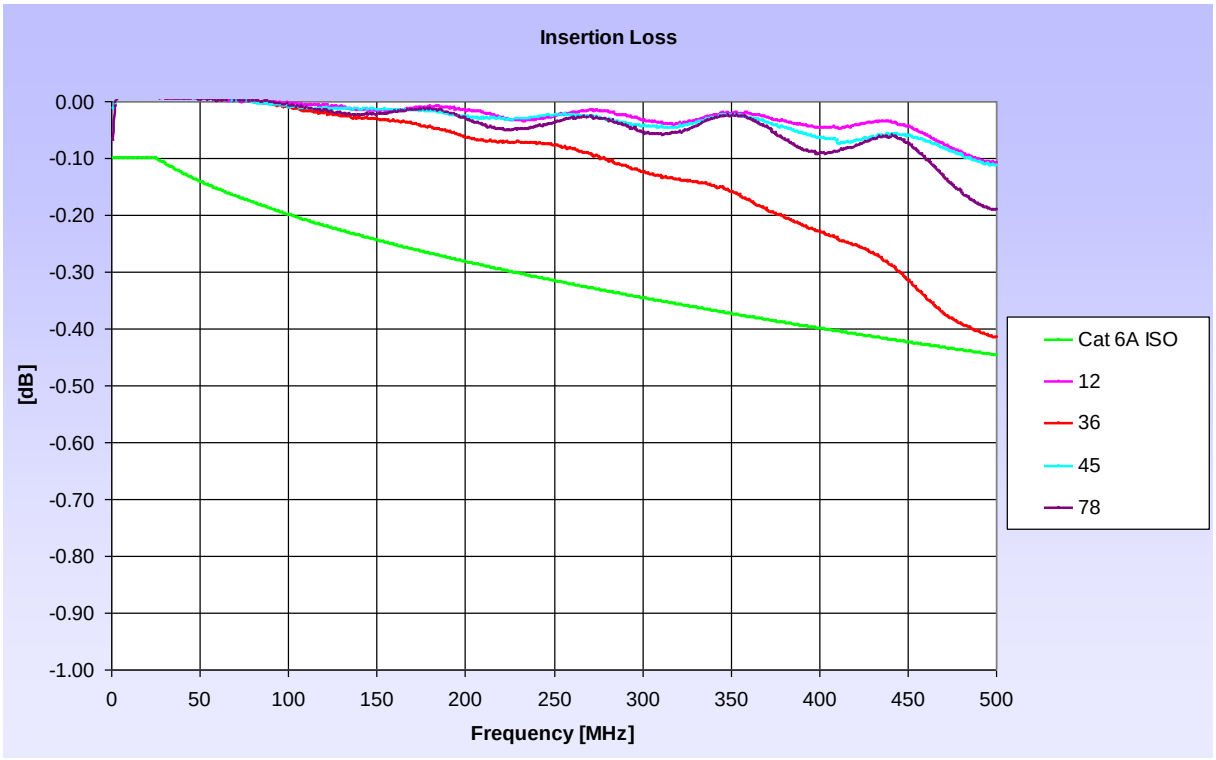


Electrical Data

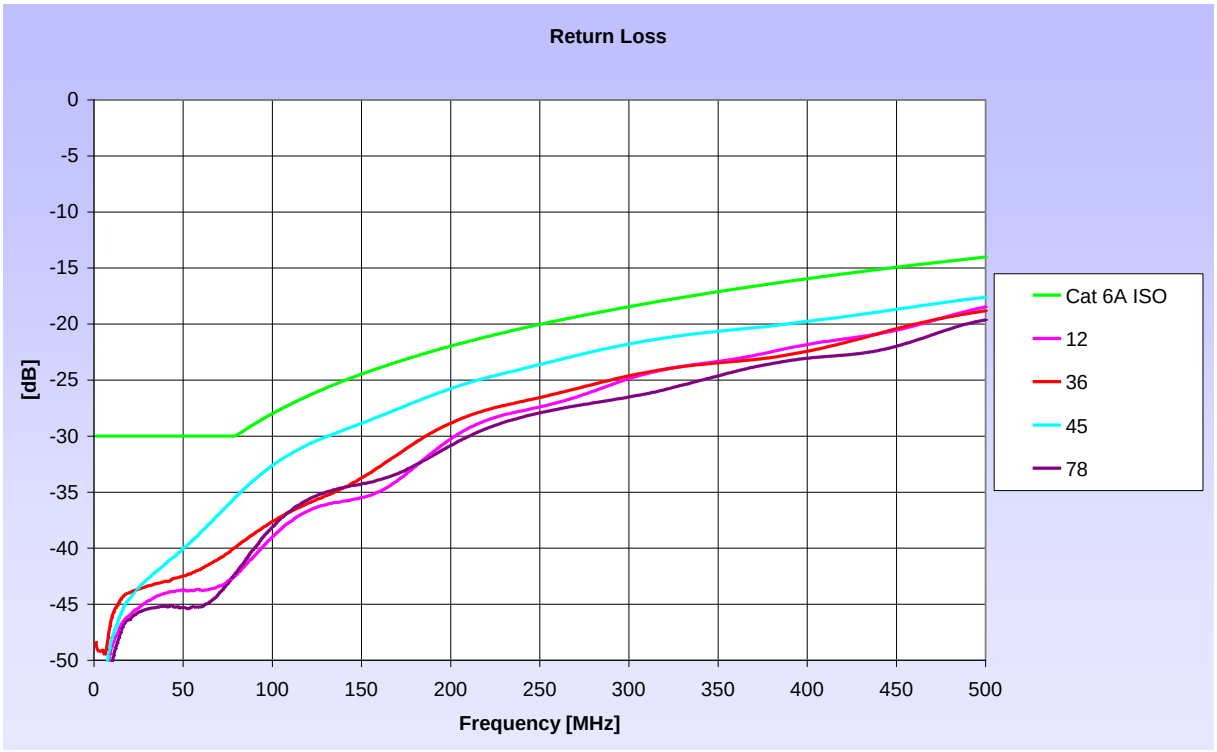
Description	Standard value	Relevant standard	Typical value (at 20°C)
Electric strength			
Contacts	1000 V DC or AC peak	IEC 60603-7-41	> 1000 V_{eff}
Insulation resistance	> 500 MΩ (100 V DC)	IEC 60603-7-41	> 5 GΩ (100 V DC)
Contact resistance	< 20 mΩ	IEC 60603-7-41	< 5 mΩ
I/O resistance	< 200 mΩ	IEC 60603-7-41	60 mΩ
I/O resistance unbalance	< 50 mΩ	IEC 60603-7-41	30 mΩ
Current carrying capacity	1 Amp @ 60°C	IEC 60603-7-41	Pass

Frequency (MHz)	Insertion Loss (20°C) [dB]	Return Loss (20°C) [dB]	NEXT (20°C) [dB] all pair combinations	TCL (20°C) [dB]	PS ANEXT (20°C) [dB]
1.0	> -0.05	-48.3	-97.3	-84.4	-81.2
4.0	> -0.05	-49.2	-86.2	-73.6	-83.2
10.0	> -0.05	-46.1	-80.0	-66.1	-81.1
16.0	> -0.05	-44.3	-79.7	-62.2	-79.2
20.0	> -0.05	-43.9	-73.2	-60.3	-80.8
31.0	> -0.05	-42.6	-69.5	-56.6	-81.2
62.0	> -0.05	-38.2	-63.4	-50.8	-84.2
100.0	> -0.05	-32.6	-59.5	-47.3	-80.5
125.0	> -0.05	-30.3	-57.7	-45.5	-78.6
155.0	> -0.05	-28.5	-55.4	-43.5	-76.8
175.0	> -0.05	-27.2	-54.1	-42.7	-76.1
200.0	-0.06	-25.7	-52.6	-42.0	-74.7
250.0	-0.08	-23.6	-49.8	-40.1	-72.8
300.0	-0.12	-21.7	-47.4	-38.5	-70.9
400.0	-0.23	-19.7	-41.6	-35.6	-69.5
500.0	-0.42	-17.6	-37.3	-33.5	-66.9

Insertion Loss



Return Loss



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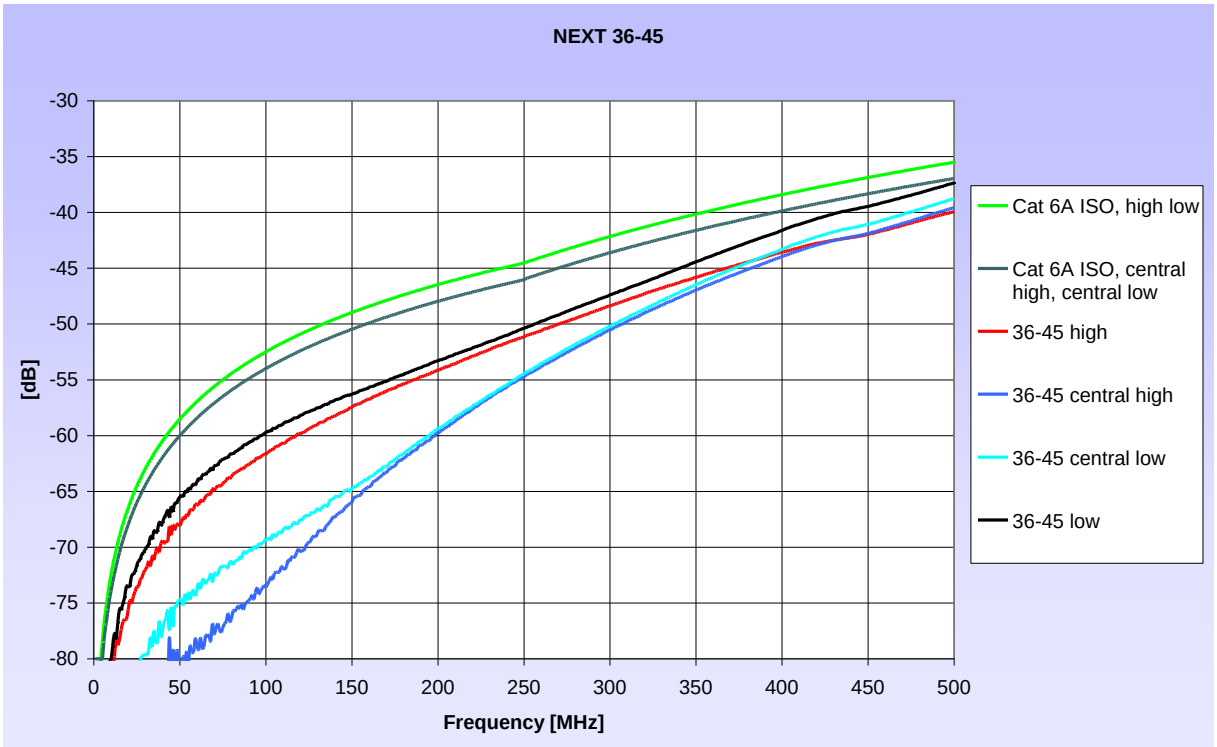

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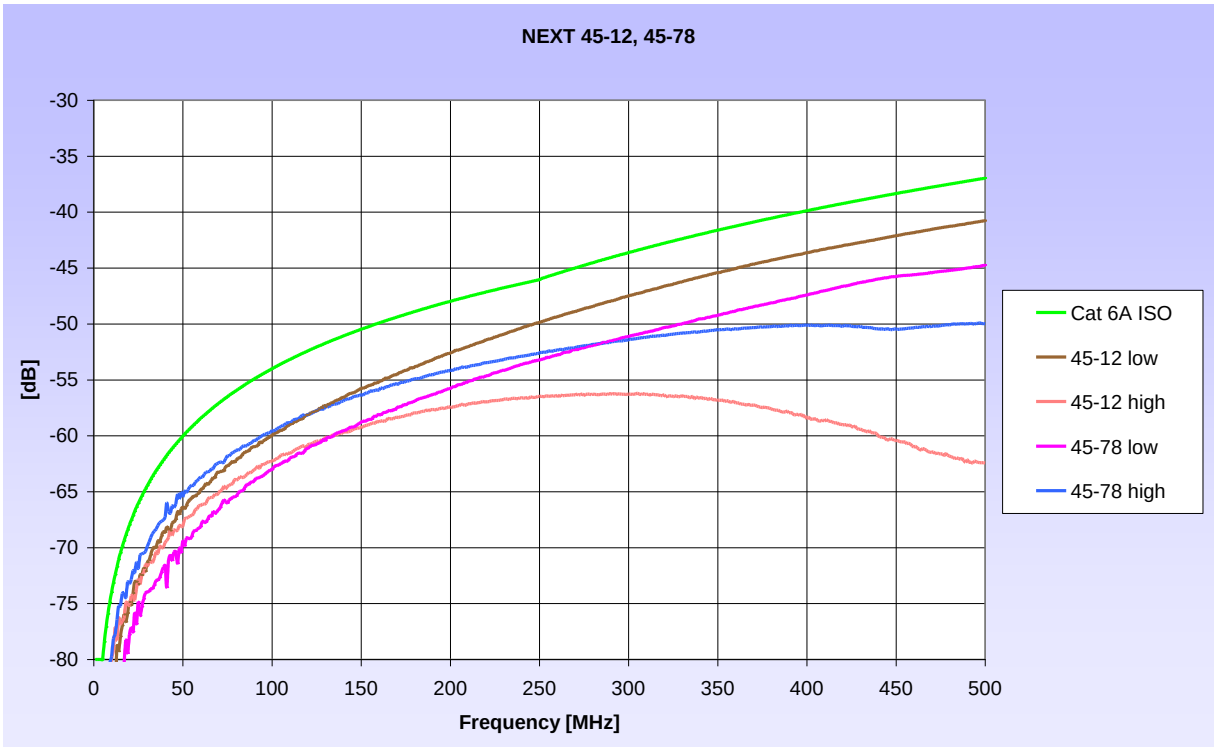

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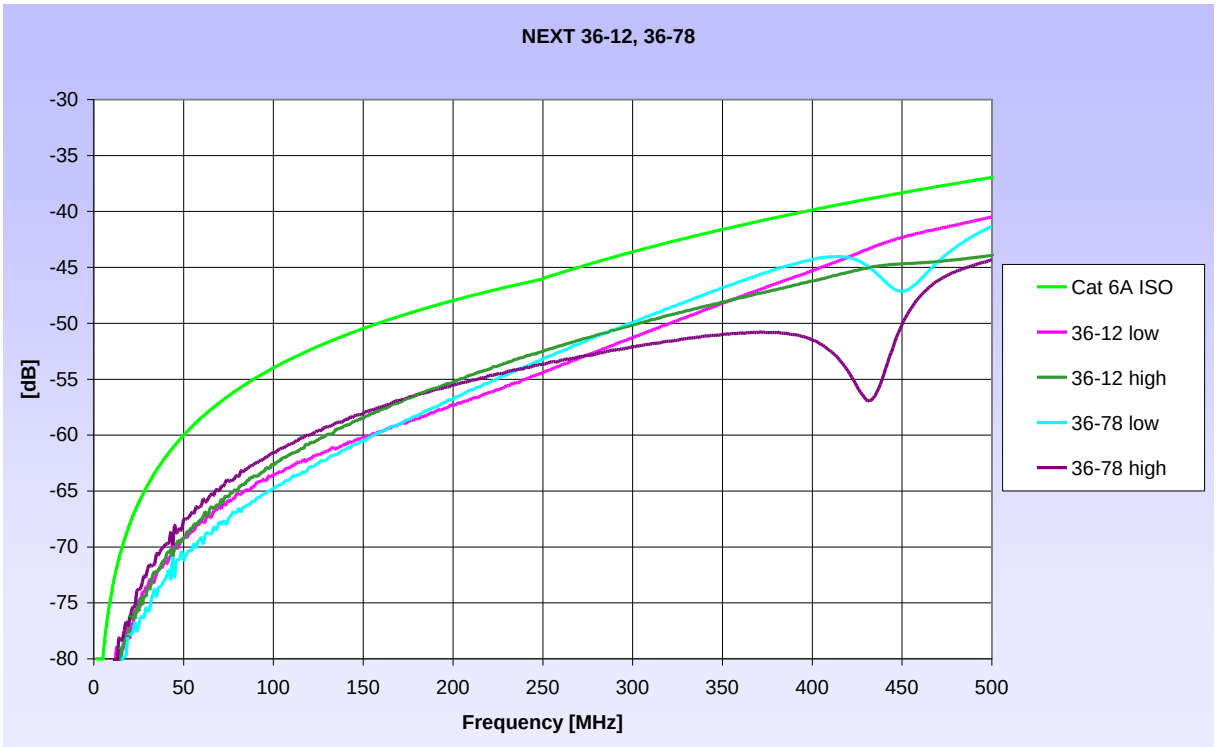

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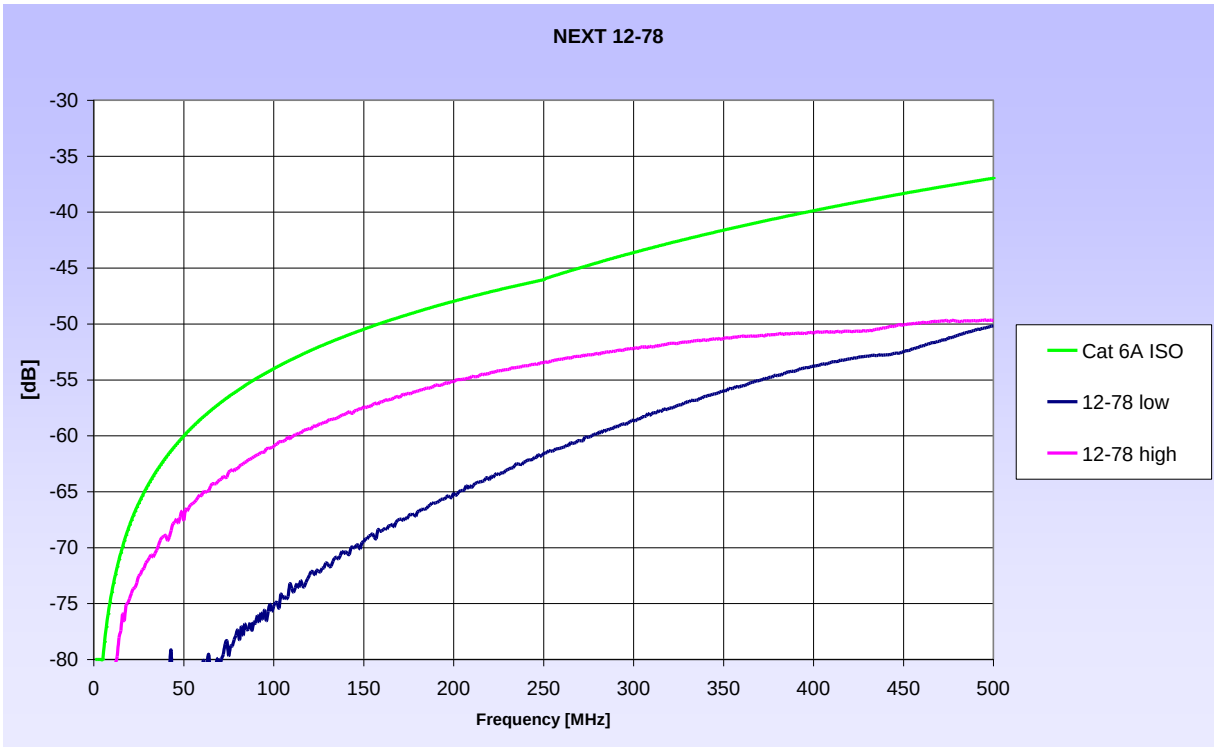
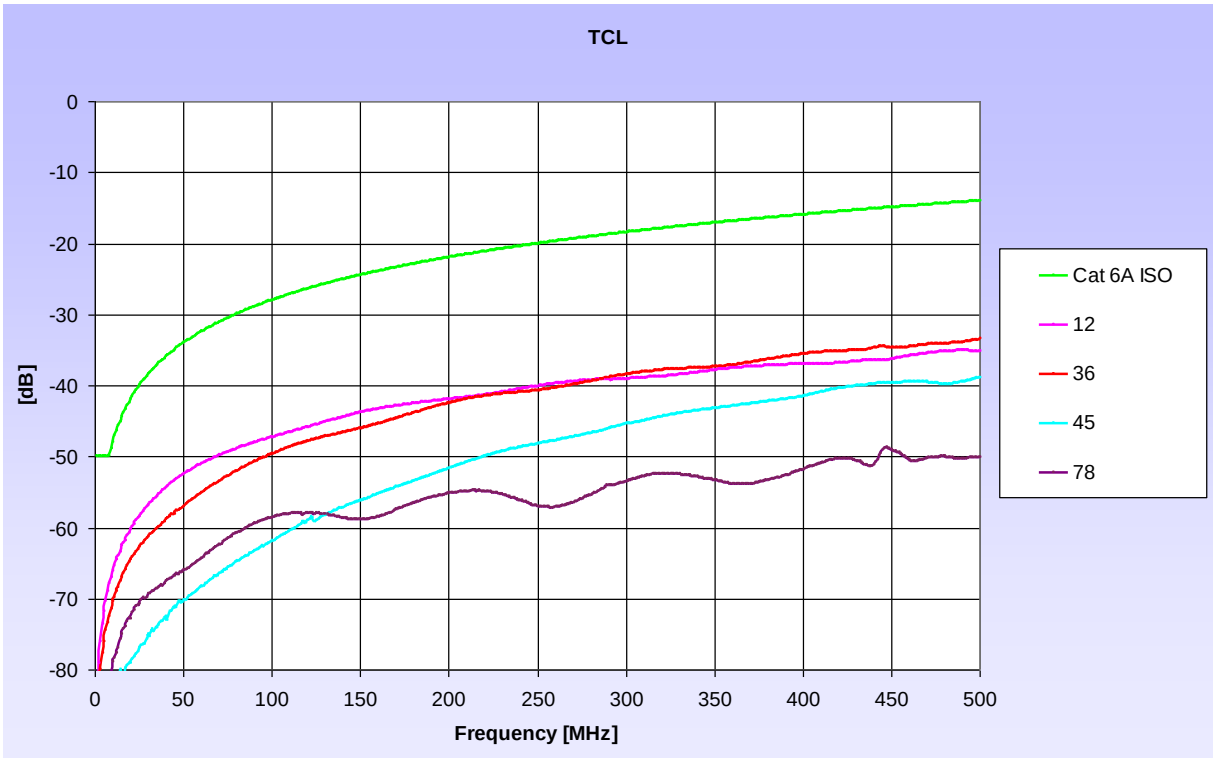
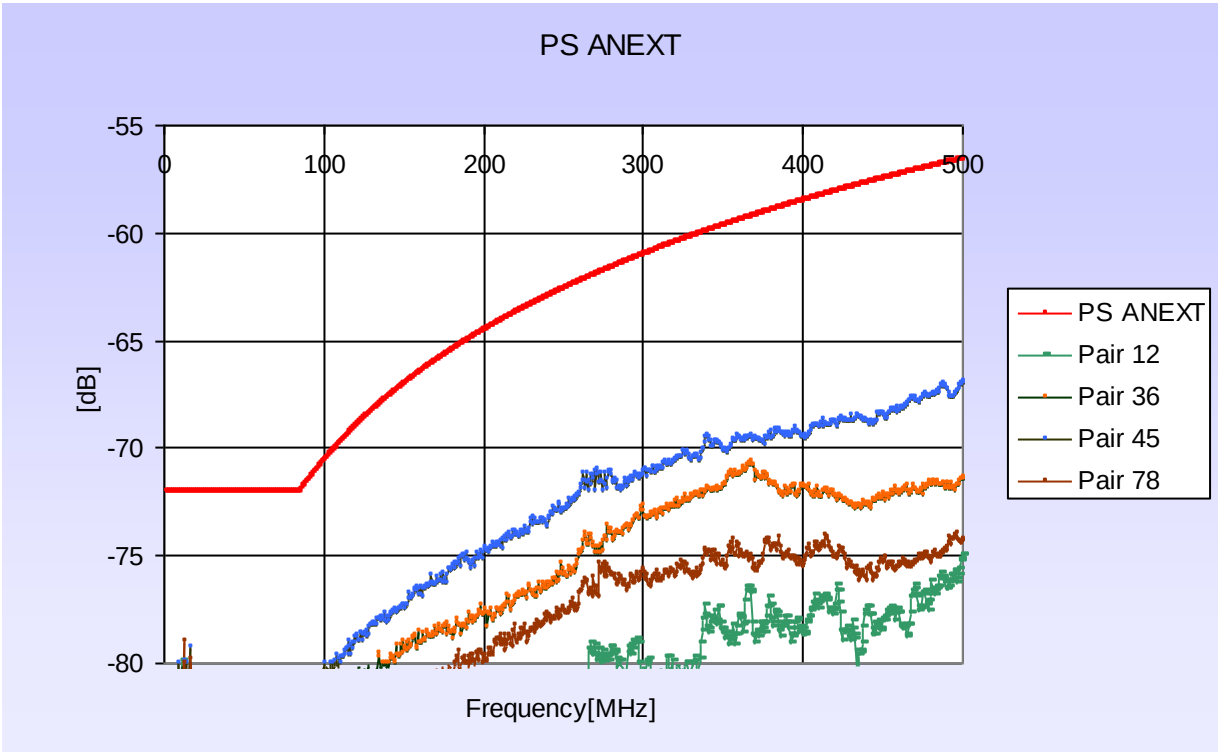


TCL

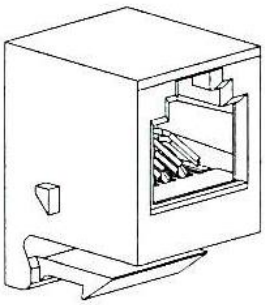

TCL
0
-10
-20
-30
-40
-50
-60
-70
-80
[dB]
0
50
100
150
200
250
300
350
400
450
500
Frequency [MHz]
Cat 6A ISO
12
36
45
78

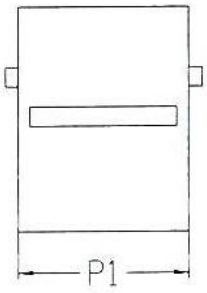
PSANEXT

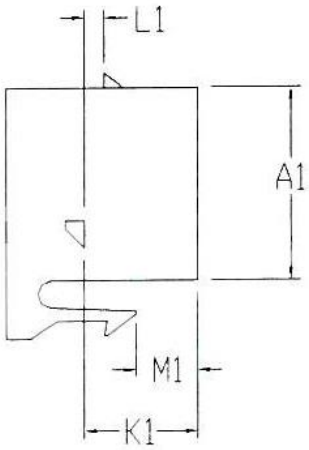

PS ANEXT
-55
-60
-65
-70
-75
-80
[dB]
0
100
200
300
400
500
Frequency[MHz]
PS ANEXT
Pair 12
Pair 36
Pair 45
Pair 78

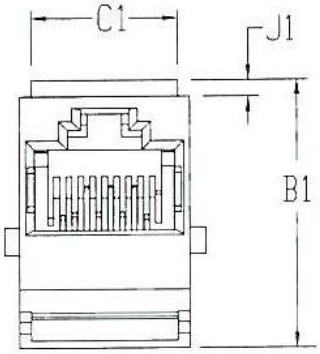
Keystone Cut-out

The keystone adapter ensures that the module will fit in keystone cut-outs as defined in IEC60603-7 ed. 3 Annex D.





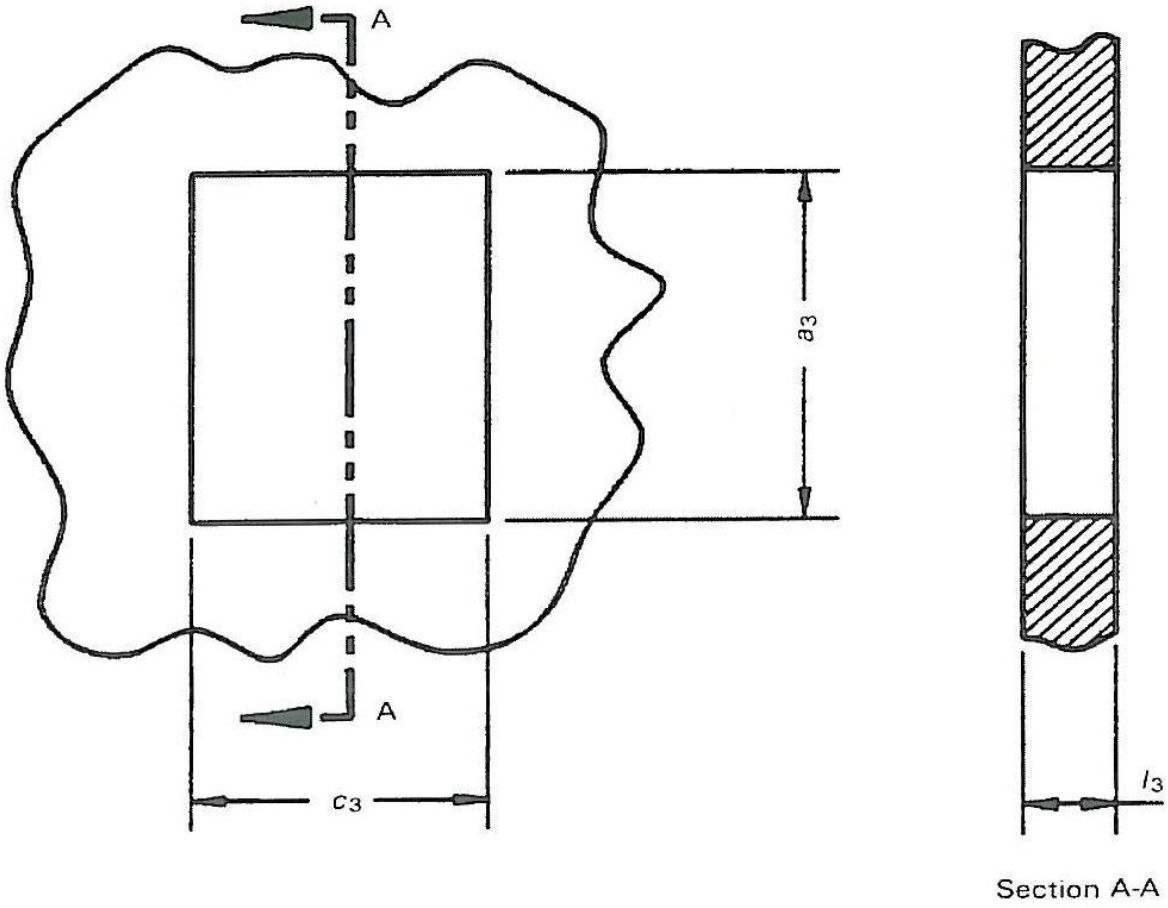




Connector dimensions

Letter	Maximum	Minimum
	mm	mm
A_1	16.51	16.00
B_1	22.43	22.07
C_1	12.65	12.34
J_1	1.65	1.17
K_1	9.78	9.53
L_1	1.75	1.55
M_1	5.46	5.16
P_1	14.61	14.35

Mounting Dimensions



Letter	Maximum	Minimum
	mm	mm
a_3	19.61	19.30
c_3	15.04	14.78
l_3	1.54	1.22