

Laboratório de Ensaios

RELATÓRIO DE ENSAIO 09013-V01-01-R01

CABO UTP CAT. 6 – 4PARES – CONDUTOR MULTIFILAR – PAR TRANÇADO DE 100 OHMS

HISTÓRICO DAS REVISÕES

Revisão	Motivo	Período	Autor	Data
01	Emissão Inicial	18/02/09 a 27/02/09	jpgongora	27/02/09

APROVAÇÃO

**FITec – Responsável
Técnico**

Gabriel Quinteiro

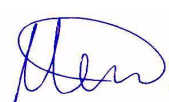


Data

27/02/09

Autor(es)

José Henrique D. Gongora



Data

27/02/09

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1. OBJETIVO

Apresentar os resultados dos ensaios, realizados no Cabo UTP – sem blindagem – CAT.6 – para uso interno – par trançado de 100 ohms (capacidade de 4pares) - Multifilar, de fabricação Microcenter Teleinformática Com. e Represent. Ltda, segundo os Documentos Normativos ANSI TIA/EIA-568-B.2 - Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair Cabling Components, ANSI TIA/EIA-568-B.2-1-2002 (Commercial Building Telecommunications Cabling Standard – Part 2: Balanced Twisted-Pair Cabling Components – Addendum 1 – Transmission Performance Specifications for 4-pair 100Ω Category 6 Cabling), ABNT NBR – 14703:2005 - Cabos de Telemática de 100 Ohms para Redes Internas Estruturadas e Requisitos Técnicos de Categoria I do sítio da Anatel na internet.

2. INFORMAÇÕES GERAIS

2.1. Dados do Fabricante

Nome do Fabricante: Microcenter Teleinformática Comercio e Representações Ltda
Endereço: Av. Anapólis, 490 – Bethaville – Barueri – S.P.
CEP: 06404-250
Contato: Eduardo Corigliano
Telefone: +55 11 5606.8000

2.2. Dados do Solicitante

Nome do Solicitante: UL do Brasil Certificações.
Endereço: Rua Fidêncio Ramos, 195 – 2º andar – Vila Olímpia - São Paulo – S.P
CEP: 04551.010
Contato: João Abel
Telefone: +55 11 3049-8791

2.3. Dados do OCD

Nome do OCD: UL do Brasil Certificações
Endereço: Rua Fidêncio Ramos, 195 – 2º andar – Vila Olímpia - São Paulo – S.P
CEP: 04551.010
Contato: João Abel
Telefone: +55 11 3049-8791

2.4. Local dos Testes

Nome do Laboratório: Laboratório de Ensaios de Certificação - FITLAB
Fundação para Inovações Tecnológicas - FITec
Contato: Douglas Roberto Vicente
Telefone: +55 19 2137-6853

2.5. Dados Comerciais

Número do Contrato: LPC 09011-01

3. DADOS DA AMOSTRA

3.1. Descrição

Cabo UTP – sem blindagem – cat. 6 – para uso interno – par trançado de 100 ohms (capacidade de 4pares) – Multifilar.

3.2. Identificação

Tabela 1 – Identificação das Amostras

Informações das Amostras	Amostra 1
Código da Amostra	AMO-09013-V01
Modelo	UTP CAT 6 Condutor Multifilar 24AWG 4 pares
Número de Série	Não se aplica
Versão SW	Não se aplica
Data do Recebimento	12/02//2009
Outras Informações	Gravação no cabo: MAXI CAT.6 UTP ISO/IEC 11801 & EN 50268 & TIA/EIA-568-B.2-1 ETL/3P VERIFIED – 24AWGX4P PATCH TYPE CM (UL) E164469-F5 002023M

3.3. Fotos



Foto 1: 09013-V01-01-R01_GRAVAÇÃO

4. CONDIÇÕES AMBIENTAIS

Tabela 2 – Temperatura (°C)

Temperatura Mínima	20,6
Temperatura Máxima	22,4

5. INSTRUMENTOS UTILIZADOS

Tabela 3 – Instrumentos Utilizados

Nome do Instrumento	Nº de série	Validade da Calibração
Network Analyzer E0562A	MY44100267	02/10
Medidor RLC 4284A	2940J09793	11/09
Hipot HD100	Não se aplica	02/09
Multímetro Digital Fluke 45	4975217	03/09
Mini data logger 175-H2	20026553/402	06/10
Medidor de Alta Resistência HP4339B	JP1KD01280	01/11
Termômetro 54II	75980097	07/10
Micrômetro 103-104	Não se aplica	07/09
Espessímetro Mitutoyo	Não se aplica	12/10
Trena Stanley	Não se aplica	03/09
Máquina de tração universal	5404	07/09
Estufa Kotterman	Não se aplica	Não se aplica

6. SW UTILIZADOS

Tabela 4 – Produtos/Ferramentas SW Utilizados

Código do Item SW	Nome do SW	Versão	Fornecedor
SW01	A1 – LAN	V1.0 R23.01.2006	Josaphat Engenharia
SW02	A1 – LCL	2.0	Josaphat Engenharia

7. ENSAIOS REALIZADOS

Tabela 5 – Ensaios Realizados

Documento Normativo: ANSI TIA/EIA-568-B.2 2001 - Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair Cabling Components										
Instrução de Testes: ITT-06001-02-CABOS_LAN-UTP-STP-CAT-3-5e-6										
Item da Norma	Ensaio	Método	Requisito	Resultado Obtido						
4.3.3.1	Diâmetro do condutor isolado	NBR NM-IEC 60811-1-1 : 2001	O Diâmetro do Condutor Isolado deve ser, no máximo, 1,22 mm	Máximo valor obtido 1,07 mm						
4.3.3.5	Resistência à tração de ruptura do cabo	ASTM-D-4565	O valor de pico da Resistência à Tração de Ruptura do cabo, medido de acordo com a ASTM D4565, deve ser, no mínimo, 400 N.	511,9 N						
4.3.3.6	Raio de dobramento (a frio)	ASTM-D-4565	O cabo UTP deve suportar o dobramento com um raio de 25,4 mm, à temperatura de -20°C ± 1°C, sem que haja trincas na blindagem, na capa ou no isolamento, quando ensaiado de acordo com a ASTM D4565.	A amostra suportou o dobramento com um raio de 25,4 mm, à temperatura de -20°C ± 1°C, sem que tenha sido cons tatadas trincas na capa e isolamento						
4.3.4.1	Resistência Elétrica dos condutores	ASTM D4566	A resistência (resistance) de cada condutor, medida de acordo com o documento de referência “ASTM D4566”, em corrente contínua, referida à 20°C, não deve exceder 9,38Ω por 100m.	<table><tr><th colspan="2">Pior caso</th></tr><tr><th>Par / Veia</th><th>Resistência Elétrica Máxima (Ω/100m) à 20°C</th></tr><tr><td>1 / A</td><td>9,14</td></tr></table>	Pior caso		Par / Veia	Resistência Elétrica Máxima (Ω/100m) à 20°C	1 / A	9,14
Pior caso										
Par / Veia	Resistência Elétrica Máxima (Ω/100m) à 20°C									
1 / A	9,14									
4.3.4.2	Desequilíbrio Resistivo	ASTM D4566	O desequilíbrio resistivo (resistance unbalance) entre dois condutores de qualquer par, medido de acordo com o documento de referência “ASTM D4566”, em corrente contínua, referida à 20°C, não deve exceder 5%.	<table><tr><th colspan="2">Pior caso</th></tr><tr><th>Par</th><th>DR Máximo Individual (%)</th></tr><tr><td>3</td><td>3,8</td></tr></table>	Pior caso		Par	DR Máximo Individual (%)	3	3,8
Pior caso										
Par	DR Máximo Individual (%)									
3	3,8									

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Documento Normativo: ANSI TIA/EIA-568-B.2 2001 - Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair Cabling Components								
Instrução de Testes: ITT-06001-02-CABOS_LAN-UTP-STP-CAT-3-5e-6								
Item da Norma	Ensaio	Método	Requisito	Resultado Obtido				
7.1 e 7.1.1	Atenuação	ASTM D4566	Para todas as frequências de 1MHz à 250MHz, a atenuação (insertion loss) deve satisfazer os valores determinados utilizando a equação “3” do documento normativo TIA/EIA-568-B.2-1.	Pior Caso				
				Temp. (°C)	N.º do Par	Freq. (MHz)	Especificado (dB/100m)	Atenuação (dB/100m)
				20	1	1,1	2,5	2,0
				40	3	1,1	2,5	2,1
				60	2	1,1	2,5	1,9
7.2 e 7.2.1.1	NEXT	ASTM D4566	Para todas as frequências de 0,772MHz à 250MHz, a perda NEXT (Near-end crosstalk “NEXT” loss), para um comprimento de 100m ou maior, deve satisfazer os valores determinados utilizando a equação “13” do documento normativo TIA/EIA-568-B.2-1.	Pior caso				
				Par	Frequência (MHz)	Especificado (dB)	NEXT (dB)	
				1x3	189,5	40,1	45,3	
7.2.2 e 7.2.2.1	PSNEXT	ASTM D4566	Para todas as frequências de 0,772MHz à 250MHz, a perda PSNEXT (power sum near-end crosstalk “PSNEXT” loss), para um comprimento de 100m ou maior, deve satisfazer os valores determinados utilizando a equação “23” do documento normativo TIA/EIA-568-B.2-1	Pior caso				
				Par	Frequência (MHz)	Especificado (dB)	PSNEXT (dB)	
				1	152,7	39,5	45,3	

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Item da Norma	Ensaio	Método	Requisito	Resultado Obtido			
7.3 e 7.3.1.1	ELFEXT	ASTM D4566	Para todas as frequências de 1MHz à 250MHz, ELFEXT (equal level far-end crosstalk “ELFEXT”), para um comprimento de 100m, deve satisfazer os valores determinados utilizando a equação “26” do documento normativo TIA/EIA-568-B.2-1.	Pior caso			
				Par	Frequência (MHz)	Especificado (dB/100m)	ELFEXT (dB/100m)
				1x3	228,8	20,6	22,9
7.3.2 e 7.3.2.1	PSELFEXT	ASTM D4566	Para todas as frequências de 1MHz à 250MHz, PSELFEXT (power sum equal level far-end crosstalk “PSELFEXT”), para um comprimento de 100m, deve satisfazer os valores determinados utilizando a equação “31” do documento normativo TIA/EIA-568-B.2-1.	Pior caso			
				Par	Frequência (MHz)	Especificado (dB/100m)	PSELFEXT (dB/100m)
				3	4,8	51,3	55,7
7.4 e 7.4..2	Perda de retorno	ASTM D4566	Para todas as frequências de 1MHz à 250MHz, a perda de retorno (return loss), para um comprimento de 100m, deve satisfazer os valores determinados utilizando as equações especificadas na tabela “23” do documento normativo TIA/EIA-568-B.2-1.	Pior caso			
				Par	Frequência (MHz)	Especificado (dB)	Perda de Retorno (dB)
				4	201,2	16,4	16,4

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Item da Norma	Ensaio	Método	Requisito	Resultado Obtido			
7.5 e 7.5.1	Atraso de propagação	ASTM D4566	Para todas as frequências de 1MHz à 250MHz, o atraso de propagação (propagation delay) deve satisfazer os valores determinados utilizando a equação “34” do documento normativo TIA/EIA-568-B.2-1.	Pior caso			
				Par	Frequência (MHz)	Especificado (ns/100m)	Atraso de propagação (ns/100m)
				1	218,6	536,4	505,6
7.5.3	Diferença entre os atrasos de propagação	ASTM D4566	Para todas as frequências de 1MHz à 250MHz, a diferença entre os atrasos de propagação (propagation delay skew), para um comprimento mínimo de 100m, não deve exceder 45ns/100m para as temperaturas de 20°C, 40°C e 60°C. A diferença entre os atrasos de propagação entre todos os pares também não deve variar mais que ±10ns da medida em 20°C quando medida à 40°C e 60°C.	Pior Caso			
				Temp. (°C)	Freq. (MHz)	Especificado à 20°C (ns/100m)	Diferença entre os Atrasos de Propagação à 20°C (ns/100m)
				20	1,3	45	31,2
				40	230,9	45	31,9
				60	227,5	45	32,0
				<u>VARIAÇÃO ENTRE AS DIFERENÇAS DOS ATRASOS DE PROPAGAÇÃO</u>			
				Pior Caso			
				Temp. (°C)	Freq. (MHz)	Especificado (ns)	Variação da Diferença entre os Atrasos de Propagação (ns)
				20 – 40	1,3	10,0	1,4
				20 – 60	1,0	10,0	2,2

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Item da Norma	Ensaio	Método	Requisito	Resultado Obtido			
7.6 e 7.6.1.1	Perda de Conversão Longitudinal	ASTM D4566	Para todas as frequências de 1MHz à 250MHz, LCL (longitudinal conversion loss) deve satisfazer os valores determinados utilizando a equação “35” do documento normativo TIA/EIA-568-B.2-1.	Pior caso			
				Sentido	Freq. (MHz)	Especificado (dB)	Perda de Conversão Longitudinal (dB)
				Crescente da gravação	1,8	40,0	46,7
				Decrescente da gravação	9,7	40,0	42,0
Documento Normativo: ANSI TIA/EIA-568-B.2 – 11 2005 - Commercial Building Telecommunications Cabling Standard - Part 2: Balanced Twisted-Pair Cabling Components – Addendum 11 – Specification of 4-Pair UTP and SCTP Cabling							
Instrução de Testes: Não se aplica							
Item da Norma	Ensaio	Método	Requisito	Resultado Obtido			
4.1	Diâmetro Externo do Cabo	NBR NM-IEC 60811-1-1 : 2001	O diâmetro do cabo completo deve ser menor que 9,0 mm	5,51 mm			

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Documento Normativo: ABNT NBR 14703:2005 - Cabos De Telemática De 100 Ohms Para Redes Internas Estruturadas																												
Instrução de Testes: ITT-06001-02-CABOS_LAN-UTP-STP-CAT-3-5e-6																												
Item da Norma	Ensaio	Método	Requisito	Resultado Obtido																								
4.5	Verificação	Visual	Os pares dos cabos de distribuição de 4 pares devem ser identificados, sequencialmente, conforme as tabelas 4 ou 5	<table><tr><th colspan="4">Identificação dos pares da amostra</th></tr><tr><th>NUMERO DO PAR</th><th>CONDUTOR "A"</th><th>CONDUTOR "B"</th><th>CÓDIGO DE CORES</th></tr><tr><td>1</td><td>Branca/azul</td><td>Azul</td><td>B/Az - Az</td></tr><tr><td>2</td><td>Branca/laranja</td><td>Laranja</td><td>B/L - L</td></tr><tr><td>3</td><td>Branca/ Verde</td><td>Verde</td><td>B/V - V</td></tr><tr><td>4</td><td>Branca/Marrom</td><td>Marrom</td><td>B/M - M</td></tr></table>	Identificação dos pares da amostra				NUMERO DO PAR	CONDUTOR "A"	CONDUTOR "B"	CÓDIGO DE CORES	1	Branca/azul	Azul	B/Az - Az	2	Branca/laranja	Laranja	B/L - L	3	Branca/ Verde	Verde	B/V - V	4	Branca/Marrom	Marrom	B/M - M
			Identificação dos pares da amostra																									
			NUMERO DO PAR		CONDUTOR "A"	CONDUTOR "B"	CÓDIGO DE CORES																					
			1		Branca/azul	Azul	B/Az - Az																					
			2		Branca/laranja	Laranja	B/L - L																					
			3		Branca/ Verde	Verde	B/V - V																					
			4		Branca/Marrom	Marrom	B/M - M																					
Tabela 4 da norma – Código de cores para cabos de 4 pares																												
NUMERO DO PAR	CONDUTOR "A"	CONDUTOR "B"	CÓDIGO DE CORES																									
1	Branca/azul	Azul	B/Az - Az																									
2	Branca/laranja	Laranja	B/L - L																									
3	Branca/ Verde	Verde	B/V - V																									
4	Branca/Marrom	Marrom	B/M - M																									
5.1.3	Tensão Elétrica Aplicada	NBR 9146	O isolamento entre condutores deve suportar, sem ruptura, conforme a NBR 9146: a) um potencial à corrente contínua de 1,0 kV por 1 minuto; b) um potencial à corrente contínua de 2,5 kV por 2 segundos.	O isolamento dos condutores suportou, sem ruptura: a) um potencial à corrente contínua de 1,0 kV por 1 minuto; b) um potencial à corrente contínua de 2,5 kV por 2 segundos.																								
5.1.4	Resistência de Isolamento	NBR 9145	A resistência de isolamento de cada condutor deve ser de no mínimo 5.000 MOhms.km, conforme a NBR 9145.	A resistência de isolamento de cada condutor foi superior a 50.000 MOhms.km																								

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5.2.1	Alongamento dos condutores	NBR 6810	O alongamento mínimo dos condutores à ruptura, medido conforme a NBR 6810, deve ser 8%.	Valor mínimo obtido: 17,3 %						
5.2.2	Alongamento do isolamento do condutor	NBR 9141	O alongamento mínimo do isolamento do condutor à ruptura, medido conforme a ABNT NBR 9141, deve ser de 100%	Valor mínimo obtido: 506,7 %						
N.A	Alongamento e Resistência à Tração do Revestimento externo	ABNT NBR 9141: 1998 e ABNT NBR 9148: 1998	O Alongamento e Resistência à Tração originais do revestimento externo devem atender aos valores estabelecidos na tabela 1 (Vide cópia da tabela no item 7.1.1 deste relatório)	<table><tr><td colspan="2">Valores Obtidos (Velocidade de tração: 300 mm/min)</td></tr><tr><td>Alongamento à ruptura</td><td>300,0 %</td></tr><tr><td>Tração à ruptura</td><td>17,5 MPa</td></tr></table> Obs.: Conforme informação do cliente o material da capa é PVC 75°C	Valores Obtidos (Velocidade de tração: 300 mm/min)		Alongamento à ruptura	300,0 %	Tração à ruptura	17,5 MPa
Valores Obtidos (Velocidade de tração: 300 mm/min)										
Alongamento à ruptura	300,0 %									
Tração à ruptura	17,5 MPa									
N.A	Retenção do Alongamento e resistência à tração do revestimento externo	A Retenção do Alongamento e da Resistência à Tração após envelhecimento do revestimento externo devem atender aos valores estabelecidos na tabela 2. (Vide cópia da tabela no item 7.1.1 deste relatório)	<table><tr><td colspan="2">Valores obtidos após envelhecimento em estufa (100°C – 168h) (Velocidade de tração: 300 mm/min)</td></tr><tr><td>Retenção do Alongamento</td><td>87,8 %</td></tr><tr><td>Retenção da Tração</td><td>104,1 %</td></tr></table>	Valores obtidos após envelhecimento em estufa (100°C – 168h) (Velocidade de tração: 300 mm/min)		Retenção do Alongamento	87,8 %	Retenção da Tração	104,1 %	
Valores obtidos após envelhecimento em estufa (100°C – 168h) (Velocidade de tração: 300 mm/min)										
Retenção do Alongamento	87,8 %									
Retenção da Tração	104,1 %									

OBS.: A incerteza expandida relatada é baseada em uma incerteza padronizada combinada, multiplicada por um fator de abrangência k fornecendo um nível de confiança de aproximadamente 95%.

7.1. Outras Informações

7.1.1. Cópia da página da Lista de requisitos de categoria I (Internet – Sítio da Anatel atualização de 19/06/08)

Produto: Cabo UTP e STP							
Documento normativo	Requisitos aplicáveis (vide nota II)					Procedimentos de ensaios	
	Tabela 1						
	Material	Descrição do material	Alongamento Mínimo (%)	Resistência à Tração Mínima (Mpa)			
	FEP	Etileno-polipropileno fluoretizado	200	17,2			
	FRPE	PE (polietileno) retardante à chama	100	8,3			
	PEAD	PE (polietileno) de alta densidade	300	16,5			
	PEBD	PE (polietileno) de baixa densidade	350	9,7			
	ETFE	Etileno-tetrafluoretileno	100	34,5			
	PVC	Policloreto de vinila	125	12,0			
	SRPVC	PVC semi-rígido	100	20,7			
	PTFE	Politetrafluoretileno	175	27,6			
	EVA	Etileno vinil acetato	100	8,3			
	PU	Poliuretano	300	10,0			
	Tabela 2						
	Classe (°C)	Material	Tempo (h)	Temperatura (°C)	Retenção do Original (%)		
					Alongamento		Resistência à Tração
	75	FRPE PEAD PEBD EVA PU	48	100	75		75
	75	PVC SRPVC	168 168	100 113	60 70		80 70
	90	PVC SRPVC	168 168	121 121	50 70		85 70
	90	EVA	168	100	75		80
	105	PVC SRPVC	168 168	136 136	50 70		85 70
	150	ETFE	168	180	75		85
200	FEP	168	232	75	75		
250	PTFE	1440	260	85	85		

7.1.2. Foi utilizado para o ensaio um comprimento de 100 metros da amostra, que permaneceu climatizada 24 horas antes e durante o ensaio na temperatura de $20 \pm 3^\circ\text{C}$. Para os ensaios à 40°C e 60°C , a mesma amostra foi acondicionada em estufa com variação de $\pm 3^\circ\text{C}$.

8. DOCUMENTOS ASSOCIADOS

8.1. Documentos de Referência

[1] ANSI TIA/EIA-568-B.2 – Commercial Building Telecommunications Cabling Standard – Part 2: Balanced Twisted-Pair Cabling Components;

[2] ANSI TIA/EIA-568-B.2-1-2002 (Commercial Building Telecommunications Cabling Standard – Part 2: Balanced Twisted-Pair Cabling Components – Addendum 1 – Transmission Performance Specifications for 4-pair 100Ω Category 6 Cabling);

[3] ABNT NBR – 14703:2005 - Cabos de Telemática de 100 Ohms para Redes Internas Estruturadas;

[4] Requisitos Técnicos de Categoria I do sítio da Anatel na internet.

9. LISTA DE COLABORADORES

Tabela 6 – Lista de colaboradores

Nome	Empresa	Fone	E-mail
José Henrique D. Gongora	Versus	+55 (19) 2137-6816	jgongora@fitec.org.br
Gabriel Quinteiro	FITec	+55 (19) 2137-6944	gquinteiro@fitec.org.br

10. ANEXOS

Relatórios emitidos pelo equipamento automático de teste SISTEMA A1.

[AMO-09013-V01][PP].pdf
[AMO-09013-V01][20GRAUS].pdf
[AMO-09013-V01][40GRAUS].pdf
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Os resultados apresentados referem-se exclusivamente às amostras ensaiadas nas condições relatadas.

[REL-07001-02-09013-V01-01-R01_MICROCENTER_LAN_UTP_CAT6_FLEX.doc]

14/14

Grau de Confidencialidade: ALTO]

CABEÇALHO

Codigo	AMO-09013-V01	Comprimento	100.0m
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Produto	Cabo Lan Categoria 6 Flexível	Data	20/2/2009
Tecnico	JGONGORA	Hora	15:05
		Observacao	
Categoria	CAT6_Flex	Certificacao	SIM

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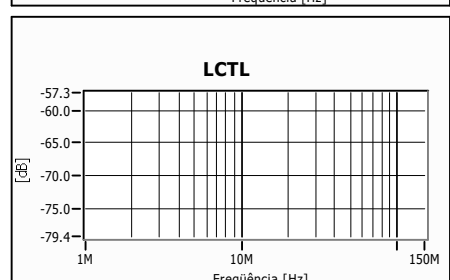
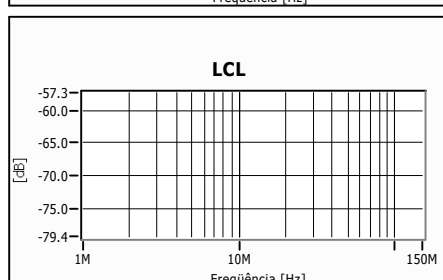
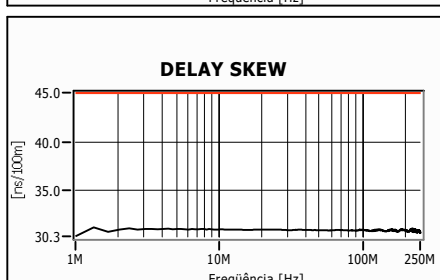
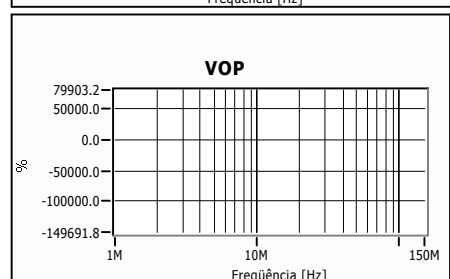
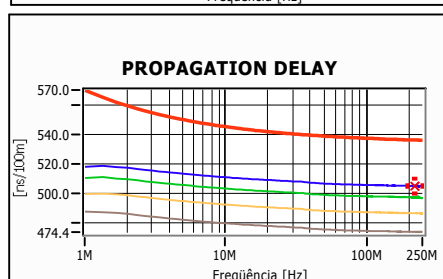
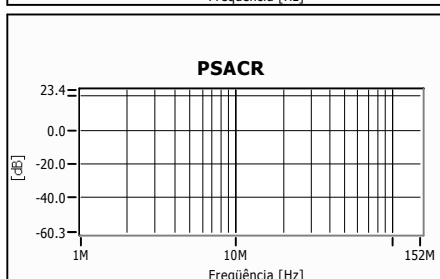
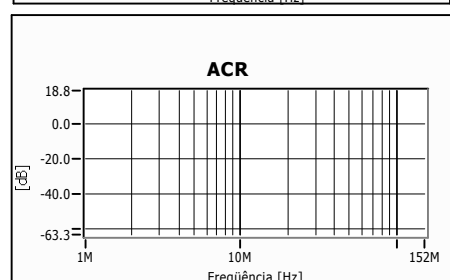
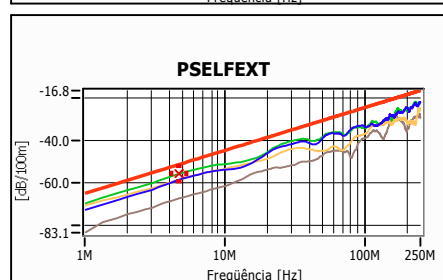
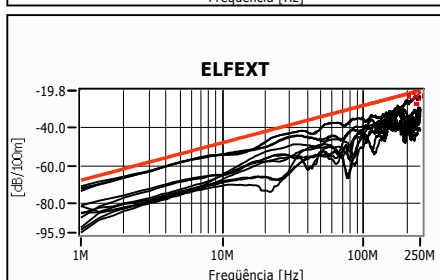
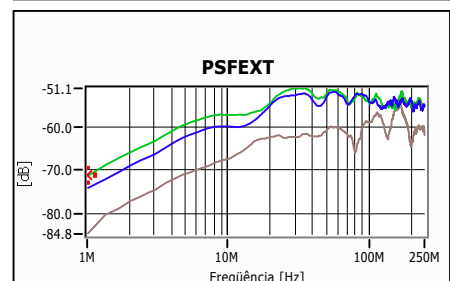
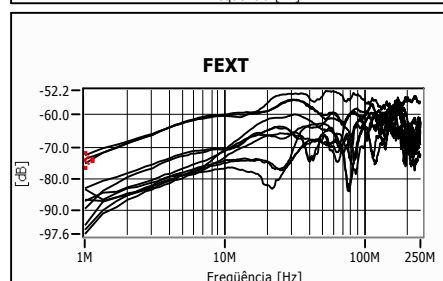
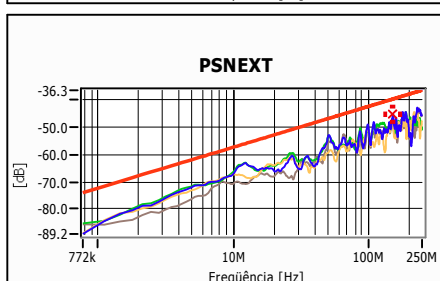
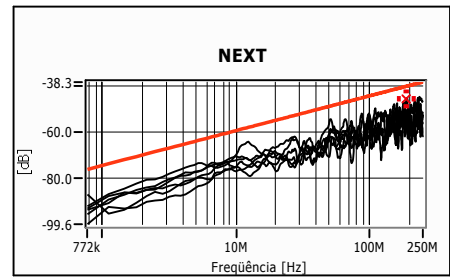
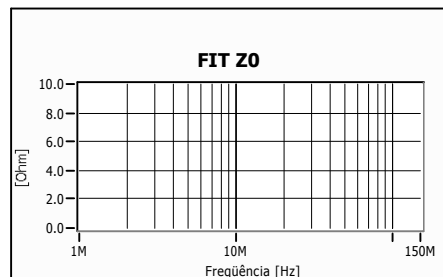
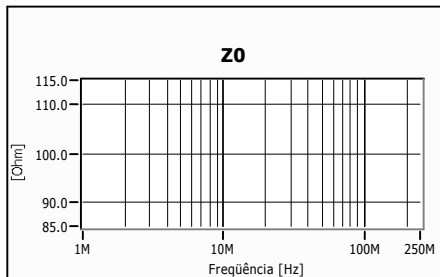
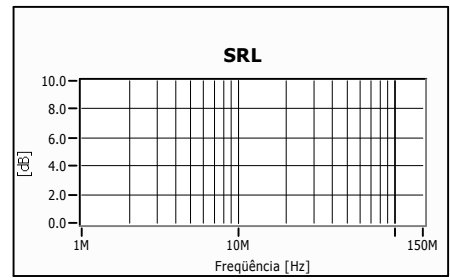
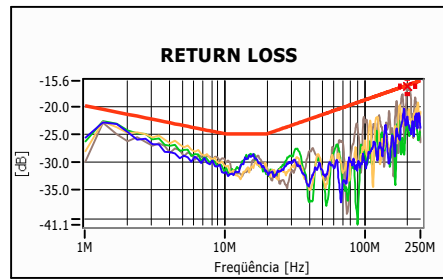
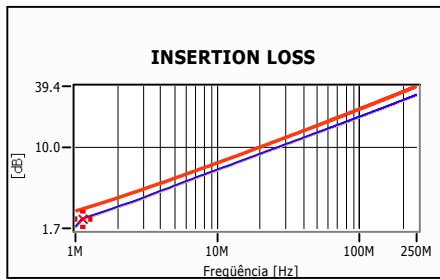
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CABEÇALHO

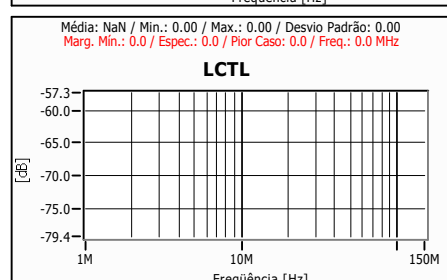
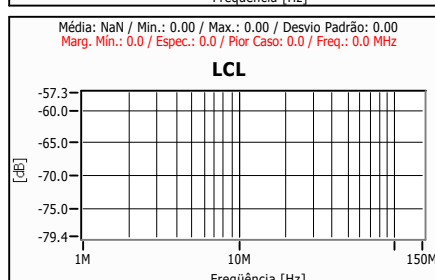
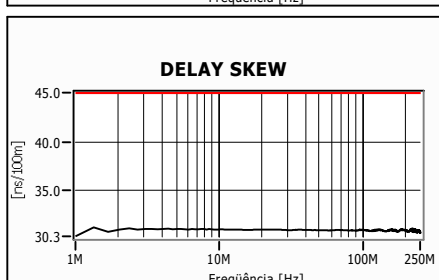
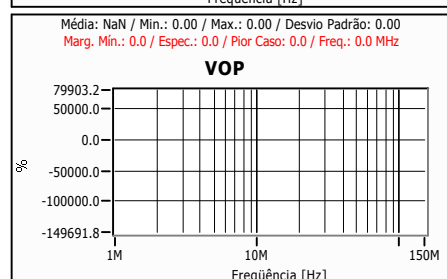
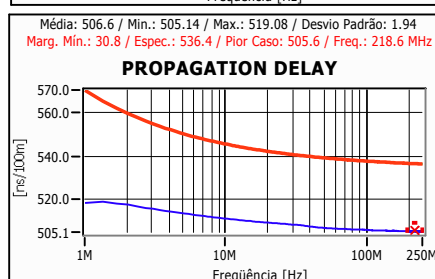
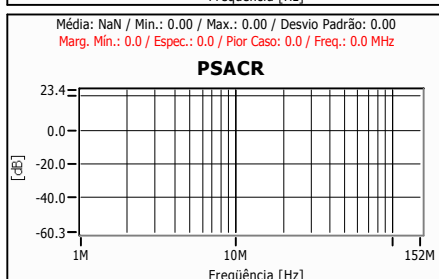
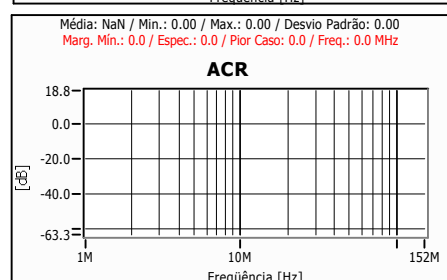
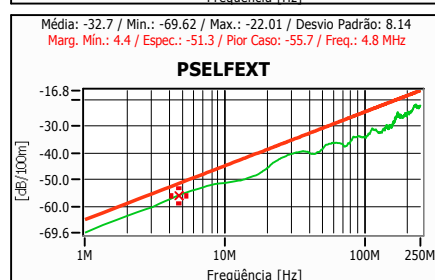
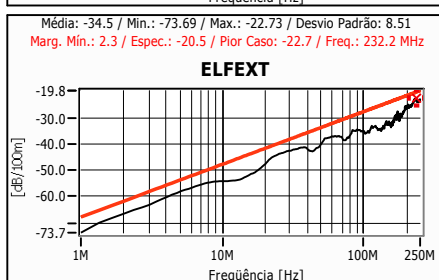
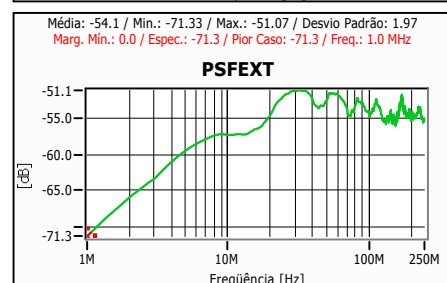
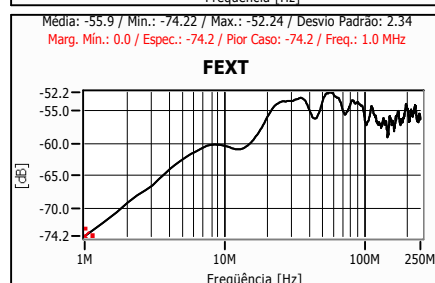
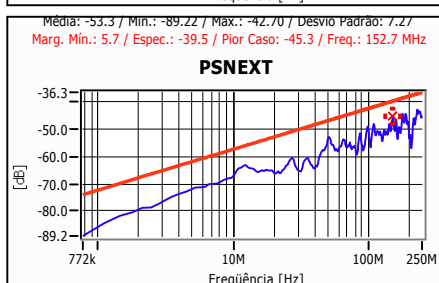
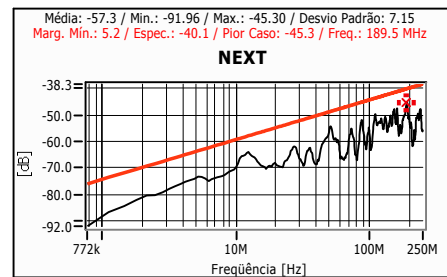
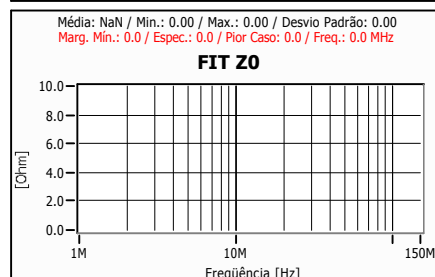
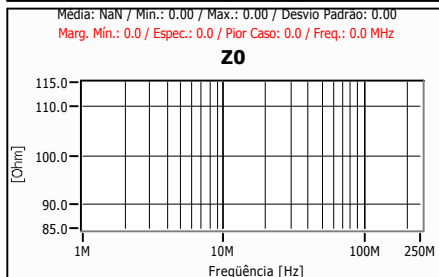
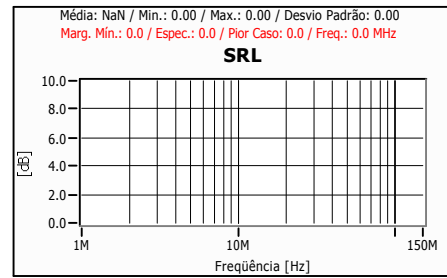
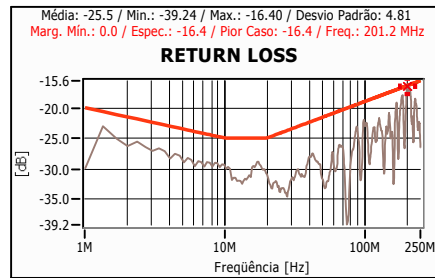
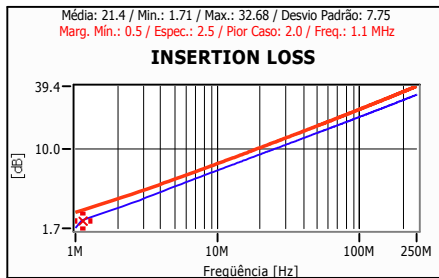
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Produto	Cabo Lan Categoria 6 Flexível	Data	18/2/2009
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		Observacao	
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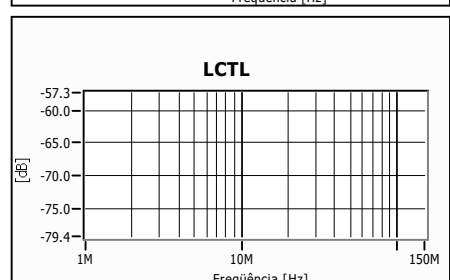
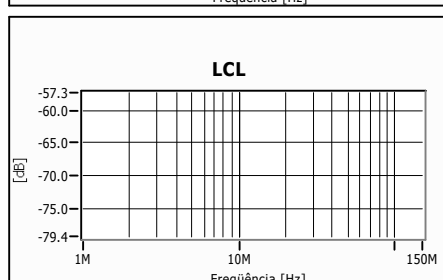
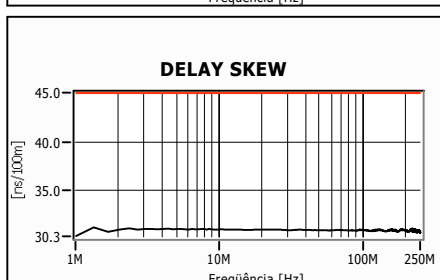
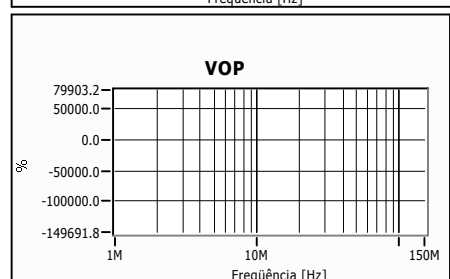
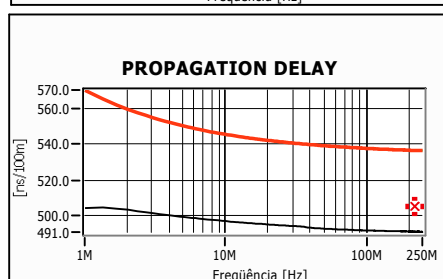
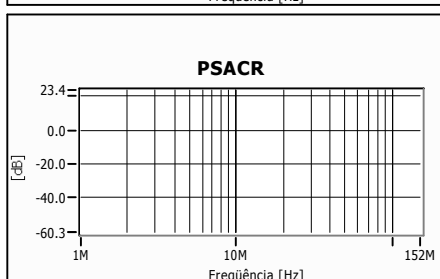
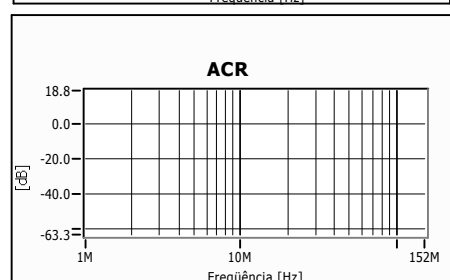
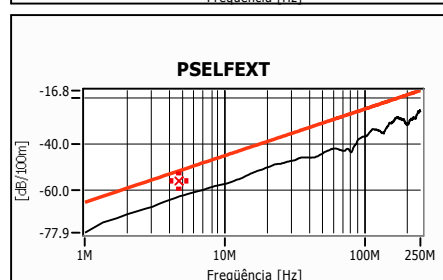
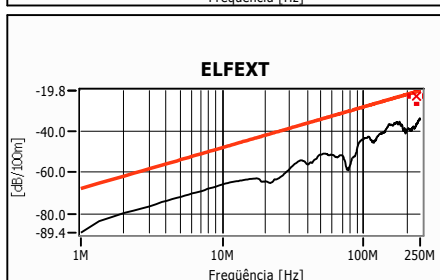
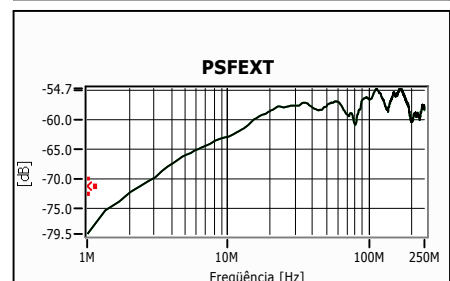
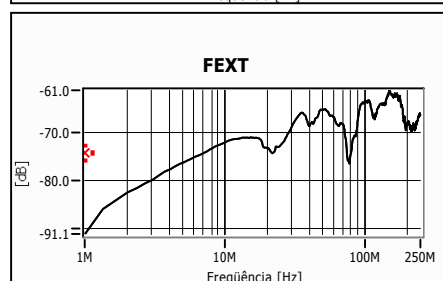
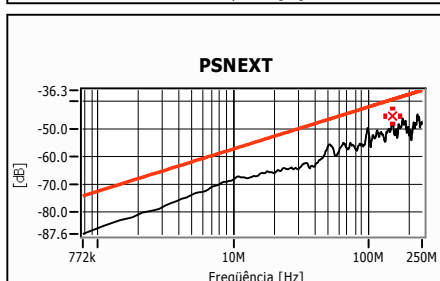
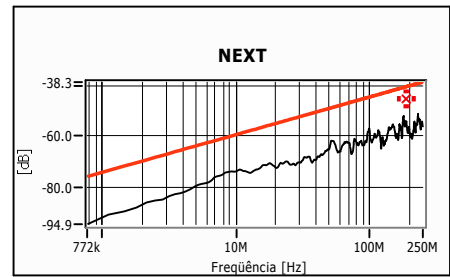
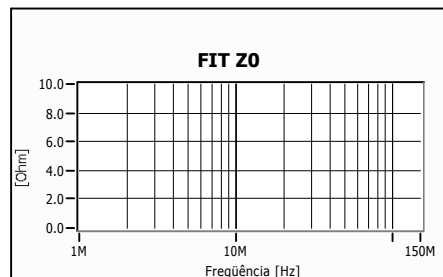
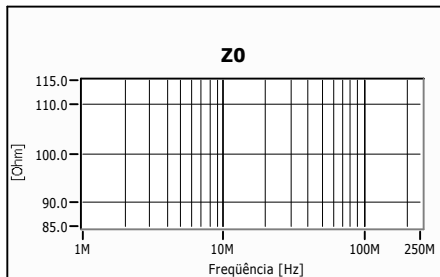
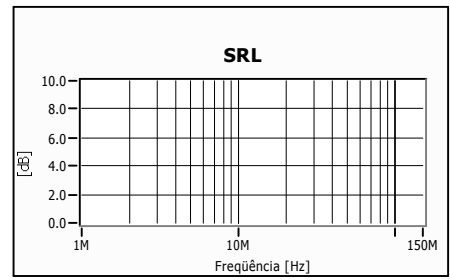
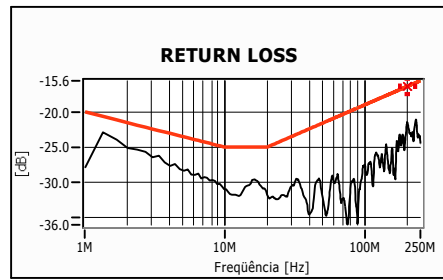
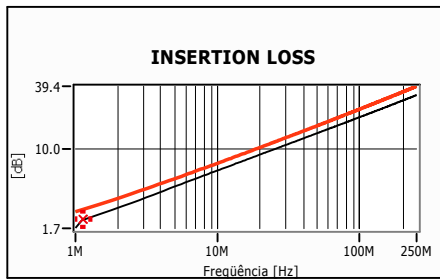
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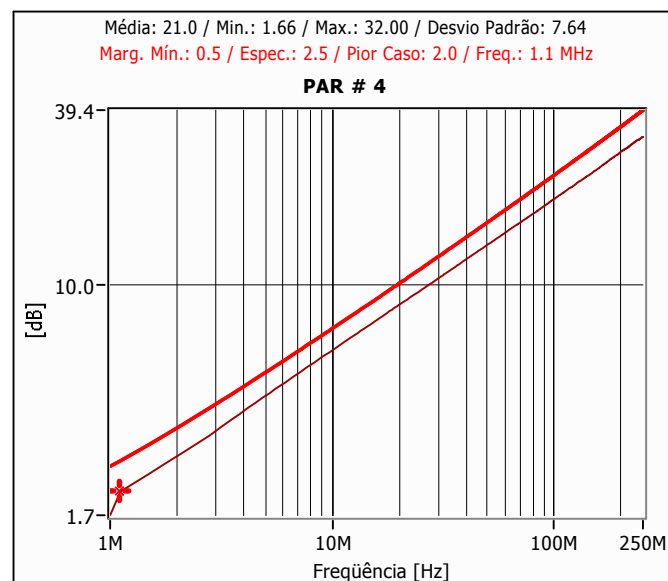
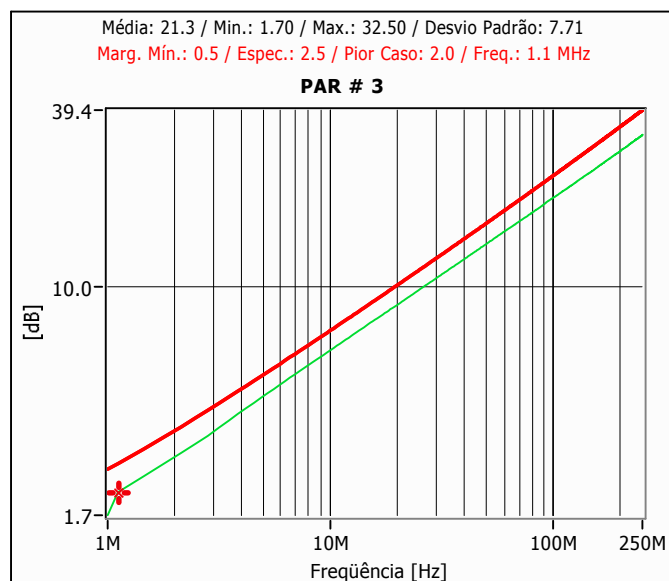
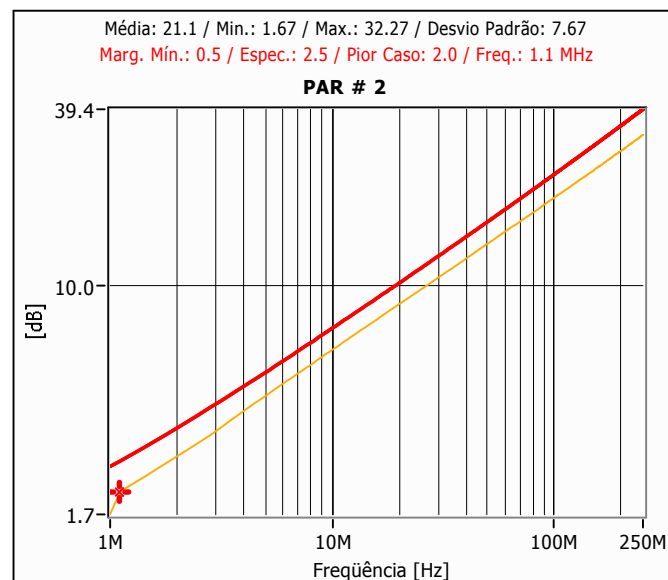
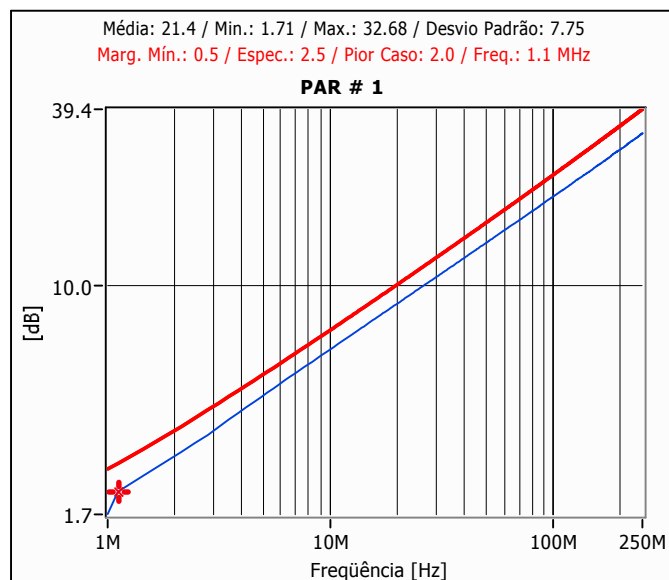
PIOR CASO



MÉDIAS

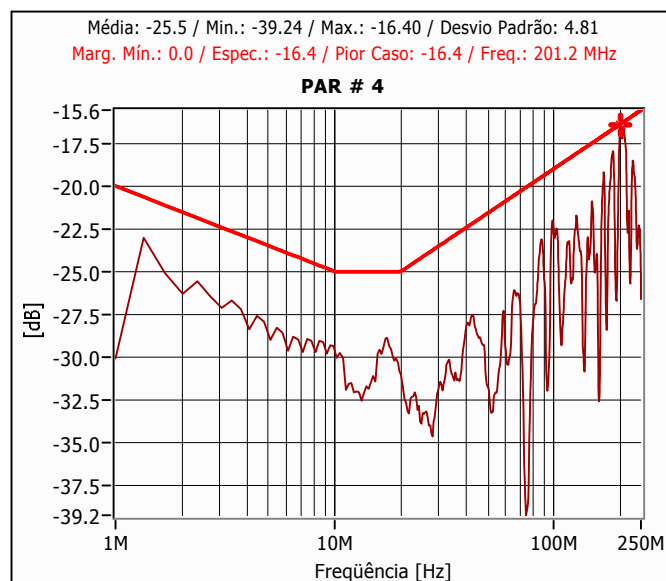
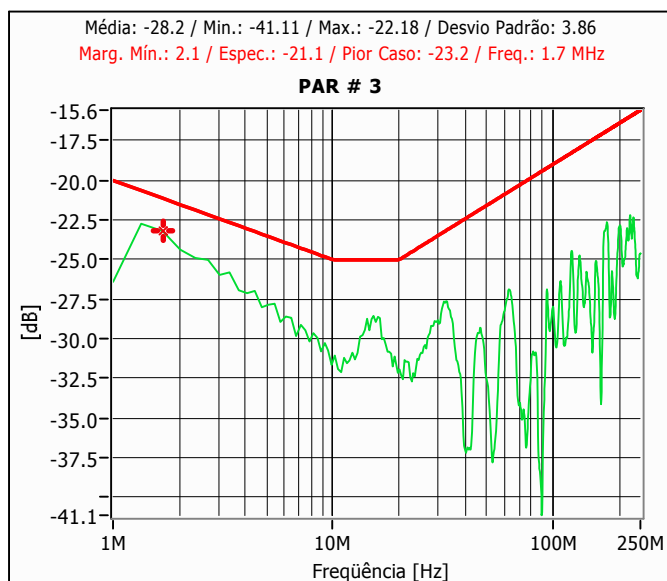
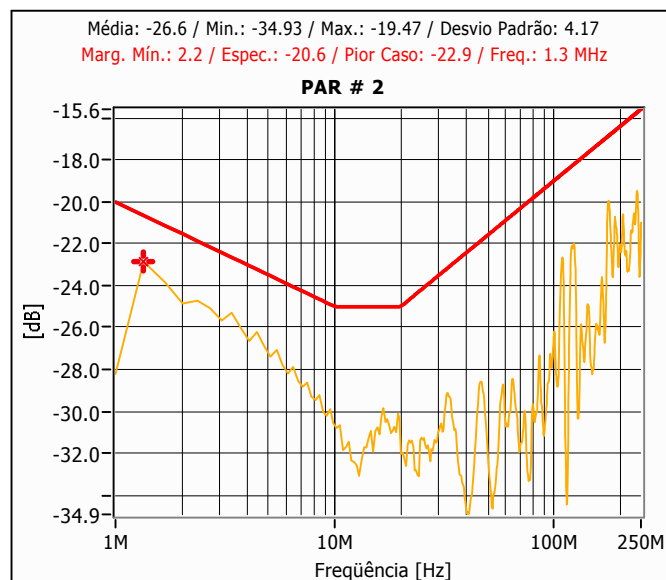
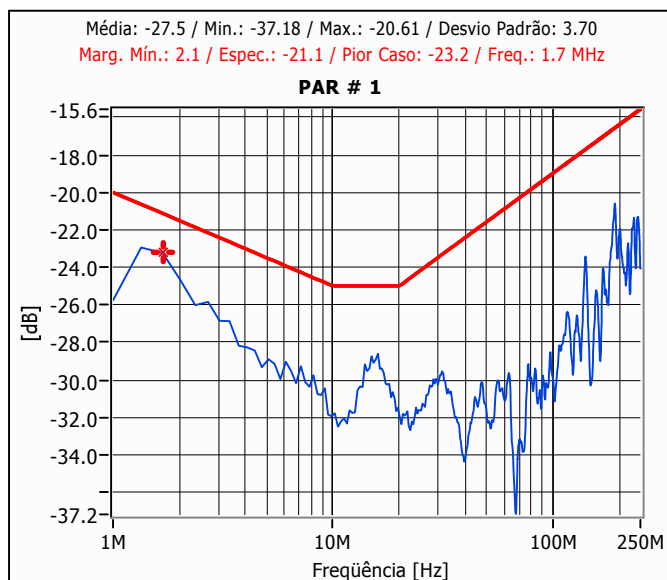


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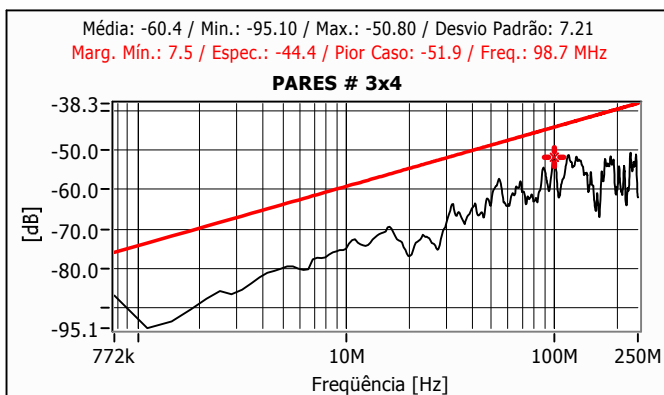
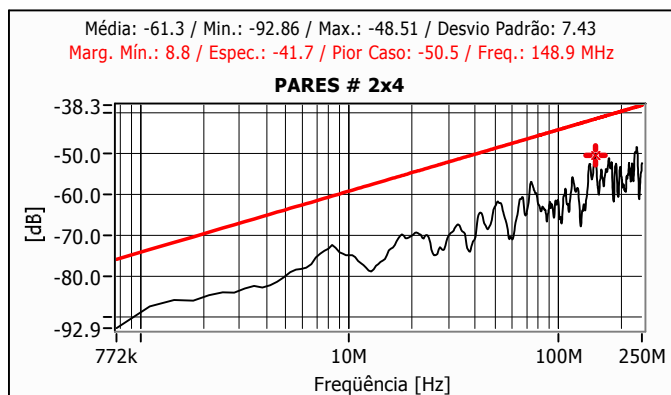
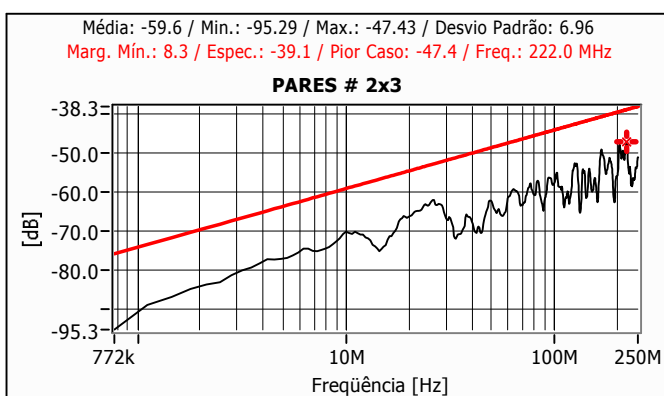
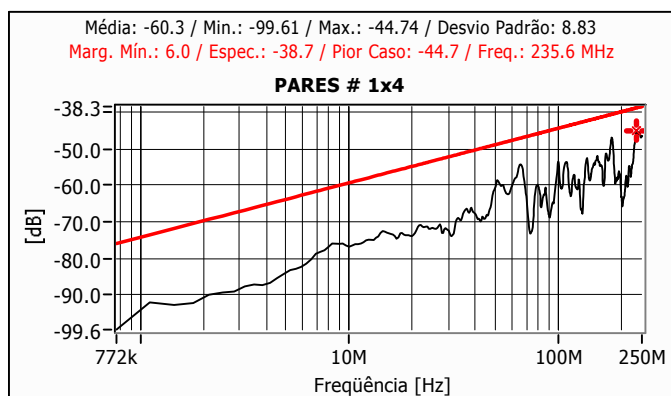
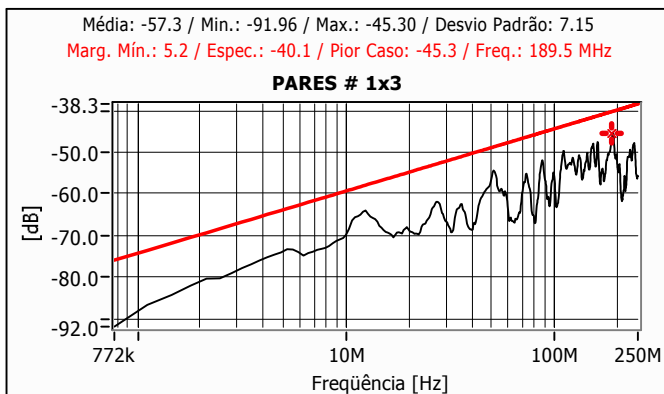
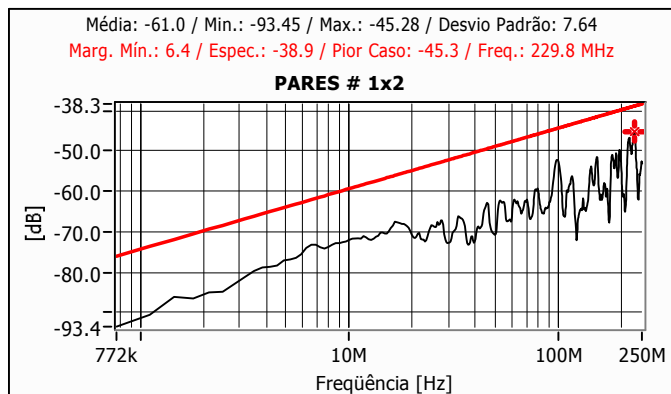
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8.00	5.46	5.35	5.44	5.35	5.35	5.46	5.40
10.00	6.15	6.03	6.13	6.02	6.02	6.15	6.08
16.00	7.86	7.72	7.83	7.70	7.70	7.86	7.78
20.00	8.75	8.60	8.71	8.58	8.58	8.75	8.66
25.00	9.83	9.66	9.79	9.63	9.63	9.83	9.73
31.25	11.00	10.81	10.96	10.78	10.78	11.00	10.89
62.50	15.76	15.53	15.68	15.47	15.47	15.76	15.61
100.00	20.11	19.82	20.03	19.73	19.73	20.11	19.92
200.00	28.94	28.57	28.83	28.57	28.57	28.94	28.73
250.00	32.68	32.27	32.50	32.00	32.00	32.68	32.36

RETURN LOSS



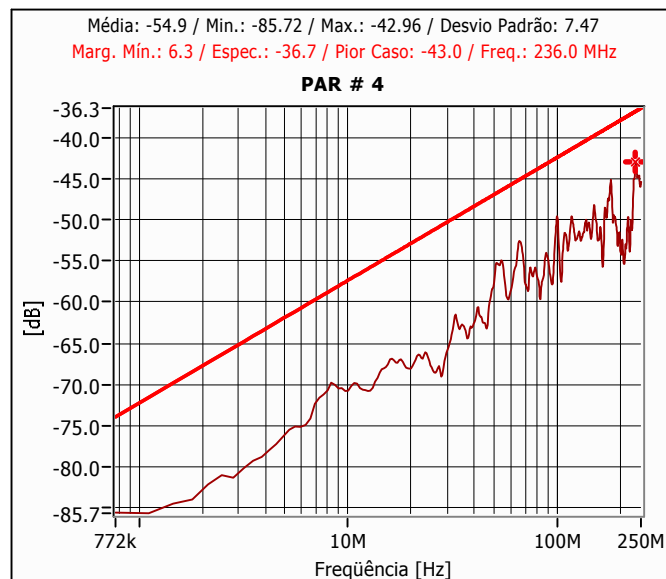
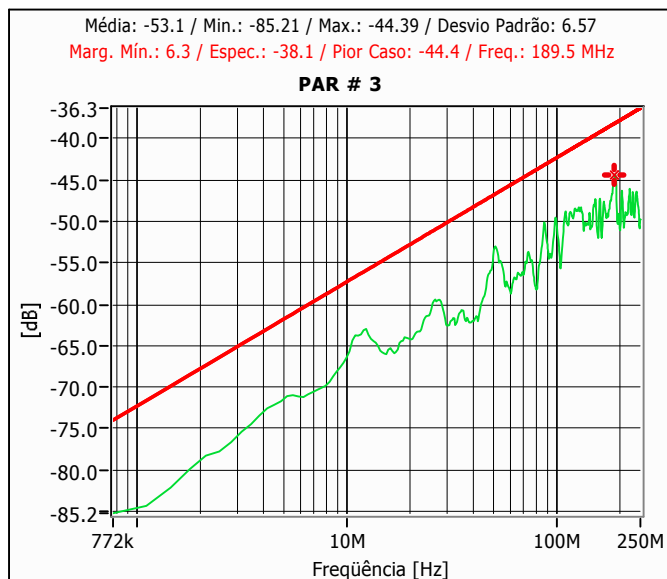
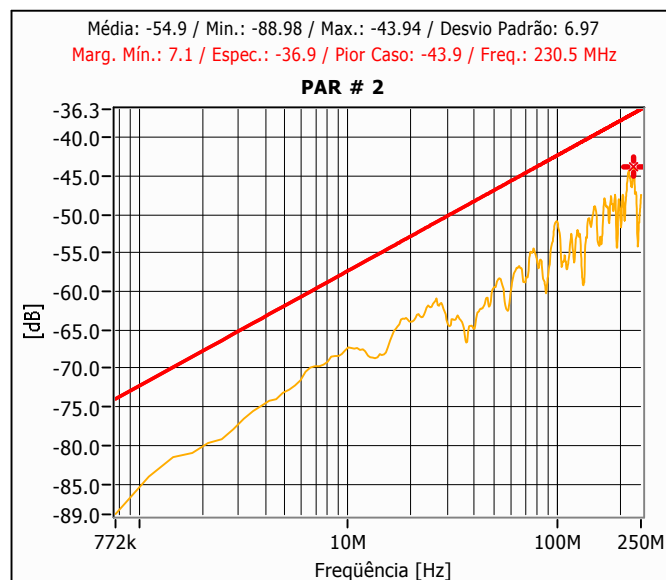
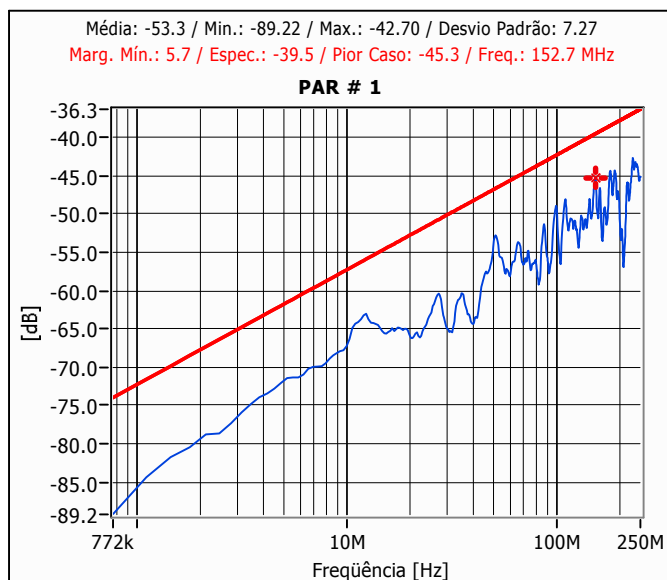
FREQ.	1	2	3	4	MIN.	MAX.	MÉDIA
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8.00	29.76	29.47	29.63	29.70	29.47	29.76	29.64
10.00	31.95	30.59	31.63	29.36	29.36	31.95	30.99
16.00	28.62	31.11	28.60	29.58	28.60	31.11	29.60
20.00	31.92	32.05	31.92	31.03	31.03	32.05	31.75
25.00	31.63	31.26	31.01	33.89	31.01	33.89	32.11
31.25	29.56	30.87	28.09	31.60	28.09	31.60	30.23
62.50	29.99	30.30	27.28	30.22	27.28	30.30	29.61
100.00	29.87	26.46	28.05	22.77	22.77	29.87	27.48
200.00	22.35	22.31	22.98	16.95	16.95	22.98	21.69
250.00	24.07	21.00	24.60	26.62	21.00	26.62	24.50

NEXT



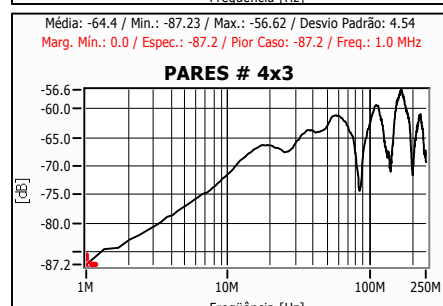
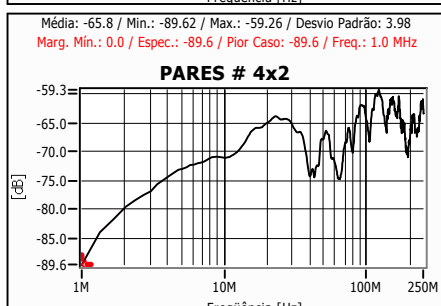
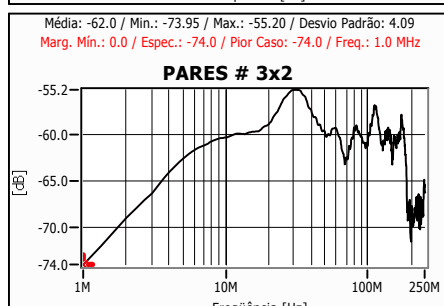
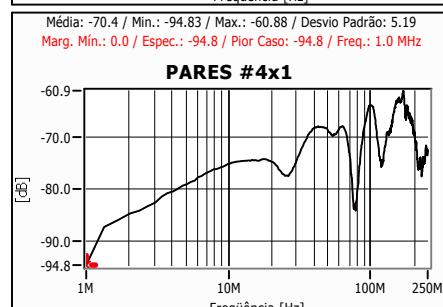
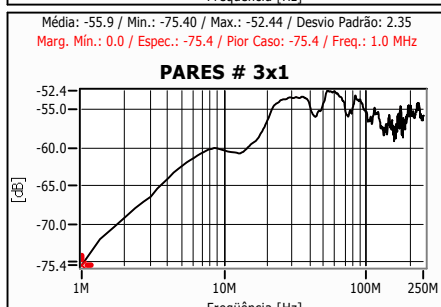
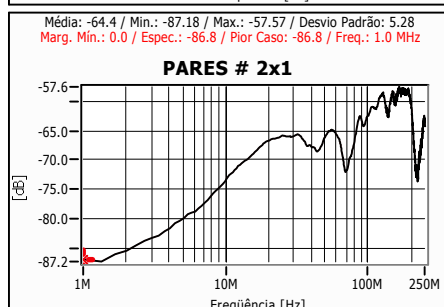
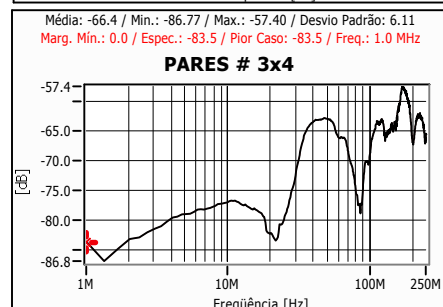
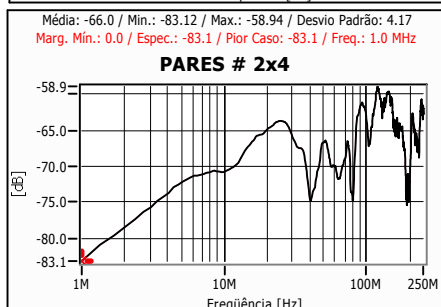
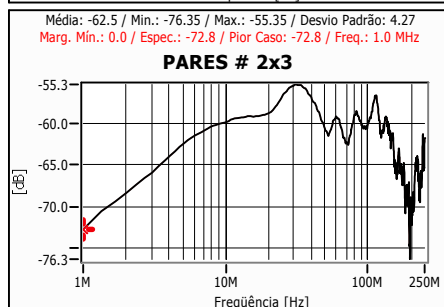
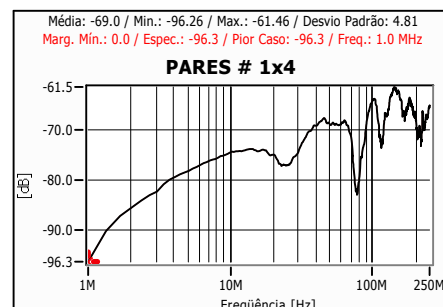
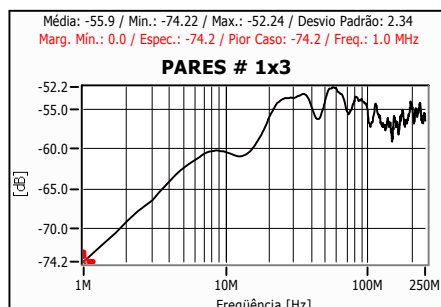
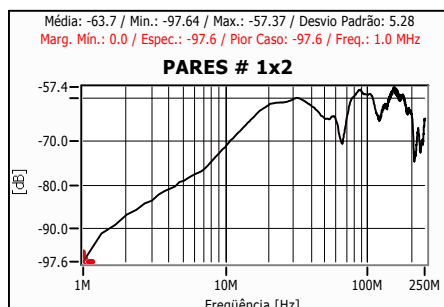
FREQ.	1x2	1x3	1x4	2x3	2x4	3x4	MIN.	MAX.	MÉDIA
0.77	93.45	91.96	99.61	95.29	92.86	86.82	86.82	99.61	94.94
1.00	90.50	86.73	92.18	89.00	87.54	95.10	86.73	95.10	91.16
4.00	78.78	76.01	87.39	78.44	82.89	82.21	76.01	87.39	82.61
8.00	73.77	73.01	76.93	74.60	73.45	77.21	73.01	77.21	75.16
10.00	71.98	69.84	76.90	70.35	75.05	75.02	69.84	76.90	73.95
16.00	68.43	69.55	73.59	71.50	73.12	69.46	68.43	73.59	71.37
20.00	70.70	68.56	73.94	66.56	70.24	76.90	66.56	76.90	72.54
25.00	68.40	65.67	71.73	63.45	74.44	72.38	63.45	74.44	70.84
31.25	70.28	67.93	73.70	66.57	69.27	66.24	66.24	73.70	69.82
62.50	62.81	66.52	57.85	59.73	66.44	61.10	57.85	66.52	63.57
100.00	52.81	57.56	53.84	57.53	62.72	52.84	52.81	62.72	57.82
200.00	56.73	53.92	63.63	55.81	56.08	59.55	53.92	63.63	58.95
250.00	53.05	55.74	46.39	51.39	52.52	61.99	46.39	61.99	56.23

PSNEXT



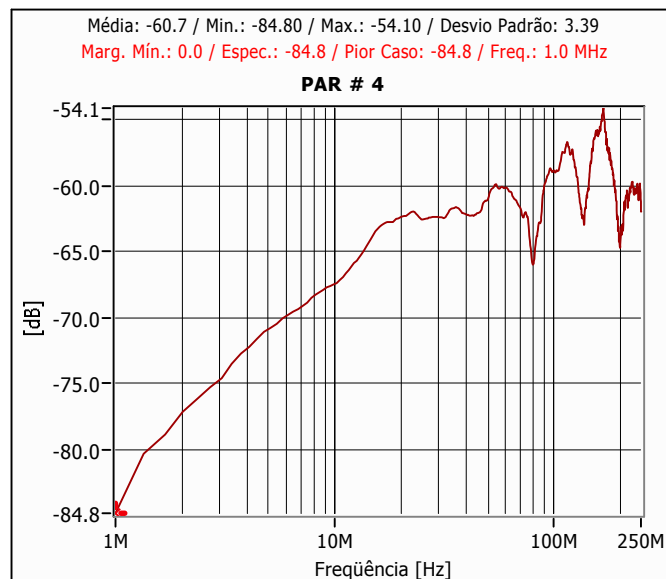
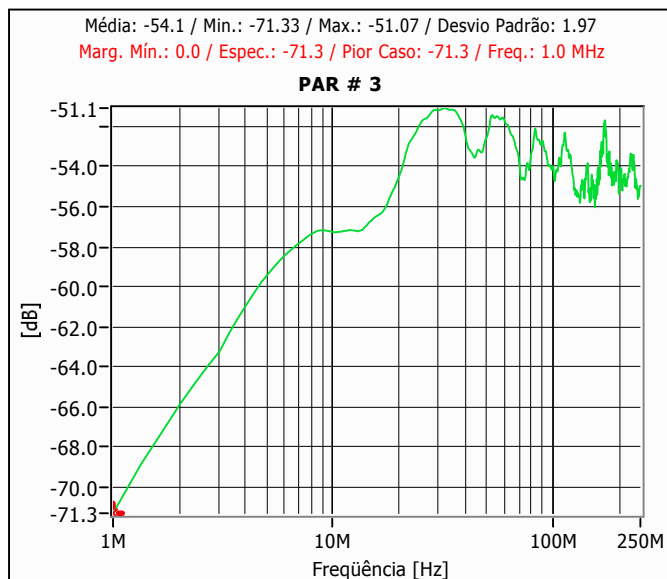
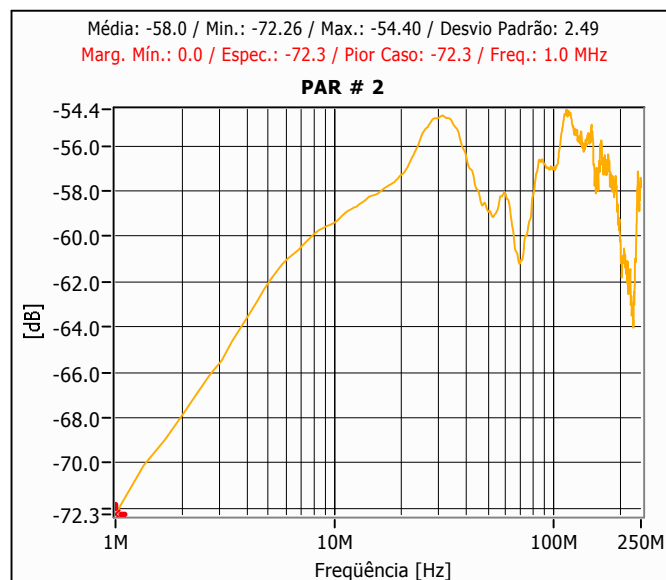
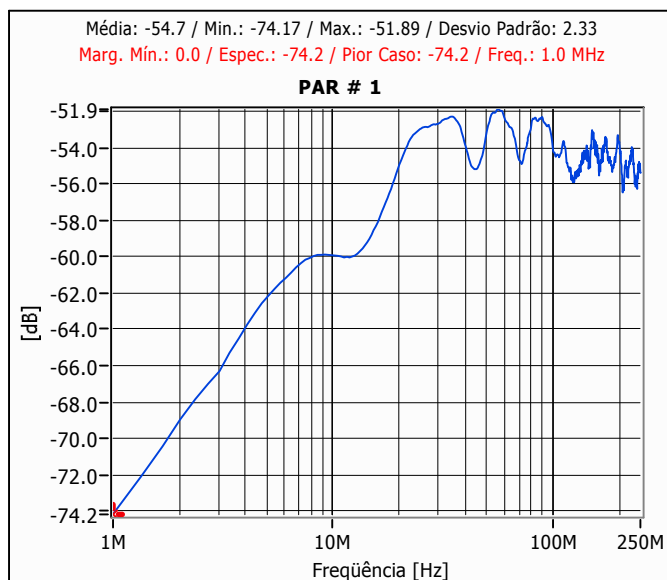
FREQ.	1	2	3	4	MIN.	MAX.	MÉDIA
0.77	89.22	88.98	85.21	85.67	85.21	89.22	87.65
1.00	84.41	84.08	84.33	85.72	84.08	85.72	84.68
4.00	73.97	74.85	73.43	78.86	73.43	78.86	75.87
8.00	69.50	69.14	69.84	70.73	69.14	70.73	69.85
10.00	67.27	67.28	66.43	70.80	66.43	70.80	68.31
16.00	65.25	65.80	65.30	66.87	65.25	66.87	65.85
20.00	65.77	63.97	64.19	68.09	63.97	68.09	65.84
25.00	63.16	61.99	61.08	67.93	61.08	67.93	64.45
31.25	65.27	63.64	62.08	63.99	62.08	65.27	63.89
62.50	56.22	57.41	56.85	55.78	55.78	57.41	56.61
100.00	49.54	51.23	50.60	50.06	49.54	51.23	50.40
200.00	51.80	51.42	51.09	53.97	51.09	53.97	52.23
250.00	45.15	47.49	49.76	45.35	45.15	49.76	47.36

FEXT



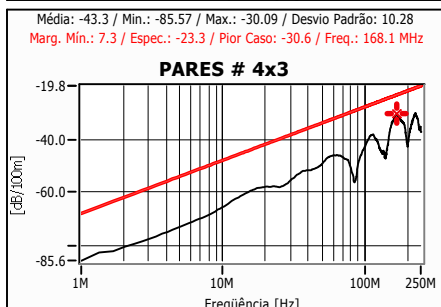
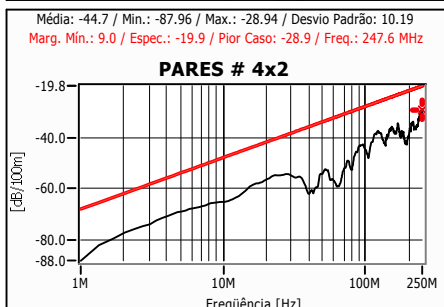
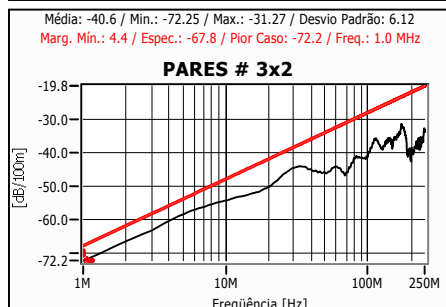
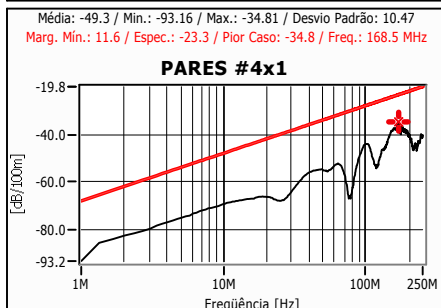
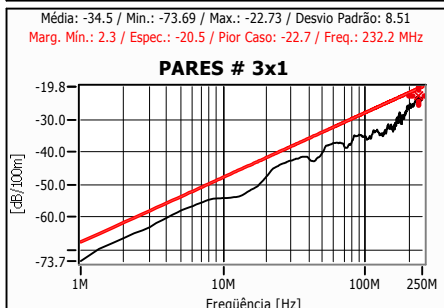
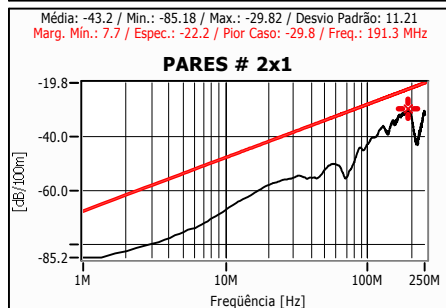
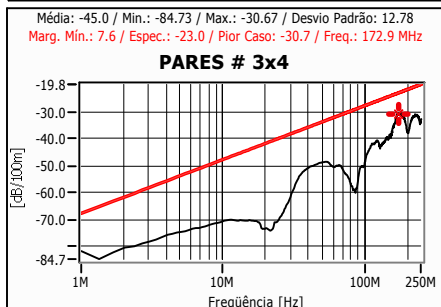
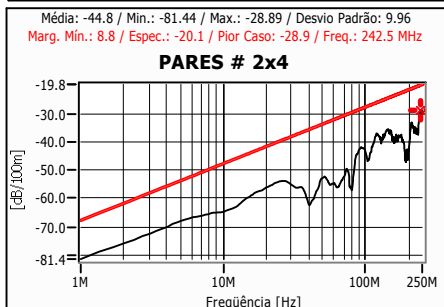
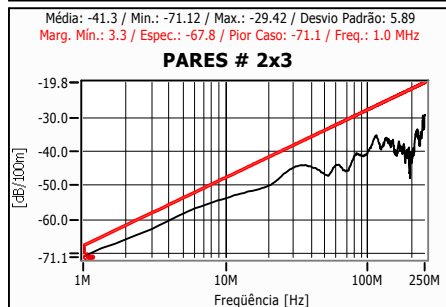
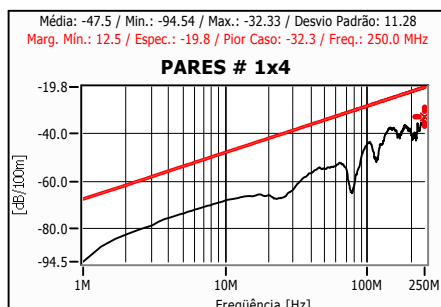
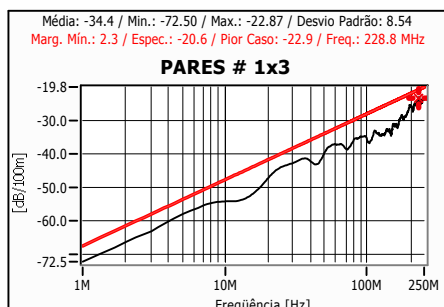
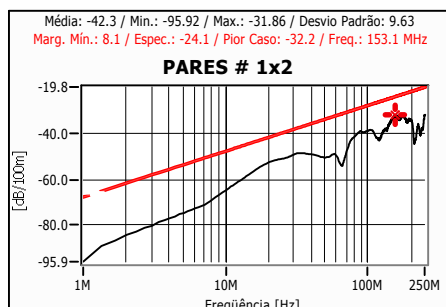
FREQ.	1x2	1x3	1x4	2x3	2x4	3x4	2x1	3x1	4x1	3x2	4x2	4x3	MIN.	MAX.	MÉDIA
1.00	97.64	74.22	96.26	72.80	83.12	83.50	86.84	75.40	94.83	73.95	89.62	87.23	72.80	97.64	91.12
4.00	80.81	63.95	79.40	63.93	73.69	79.48	81.57	63.89	80.48	63.95	74.25	78.56	63.89	81.57	77.55
8.00	74.18	60.27	75.52	60.35	70.73	77.46	75.64	60.08	76.14	60.65	70.99	73.40	60.08	77.46	73.12
10.00	71.26	60.42	74.49	59.94	70.78	76.96	73.64	60.28	75.15	60.33	71.05	71.50	59.94	76.96	72.00
16.00	64.04	59.52	74.16	59.21	66.42	78.22	68.64	59.27	74.54	59.70	66.10	66.80	59.21	78.22	70.89
20.00	61.43	56.07	74.90	58.79	64.85	82.05	66.67	56.37	74.79	58.88	64.97	66.37	56.07	82.05	73.01
25.00	60.89	53.78	77.03	56.82	63.73	79.82	65.82	53.74	77.44	56.49	64.39	67.54	53.74	79.82	72.62
31.25	59.85	53.44	72.98	55.36	66.73	69.98	65.71	53.33	73.21	55.20	66.28	65.40	53.33	73.21	67.59
62.50	68.09	52.92	68.29	59.54	71.60	66.01	66.33	52.83	67.88	60.20	74.26	61.46	52.83	74.26	67.81
100.00	59.18	56.23	63.94	59.89	63.65	69.30	62.50	55.23	63.74	60.50	64.61	62.67	55.23	69.30	63.34
200.00	62.86	54.45	68.05	69.15	72.15	66.17	60.19	55.87	69.16	71.49	67.93	70.56	54.45	72.15	68.17
250.00	64.67	56.47	65.15	61.85	62.01	65.46	64.26	55.75	72.51	66.22	63.35	69.24	55.75	72.51	66.10

PSFEXT



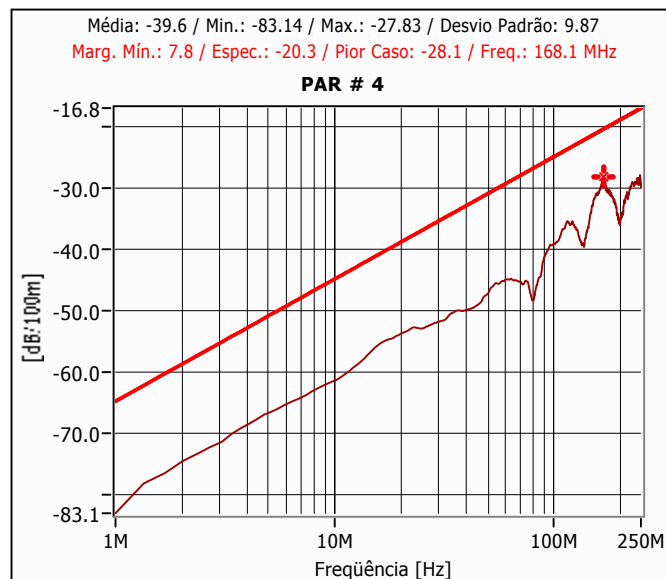
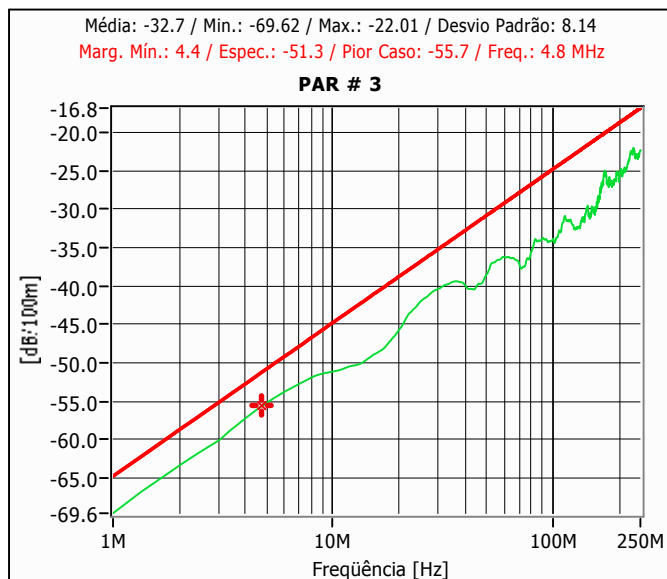
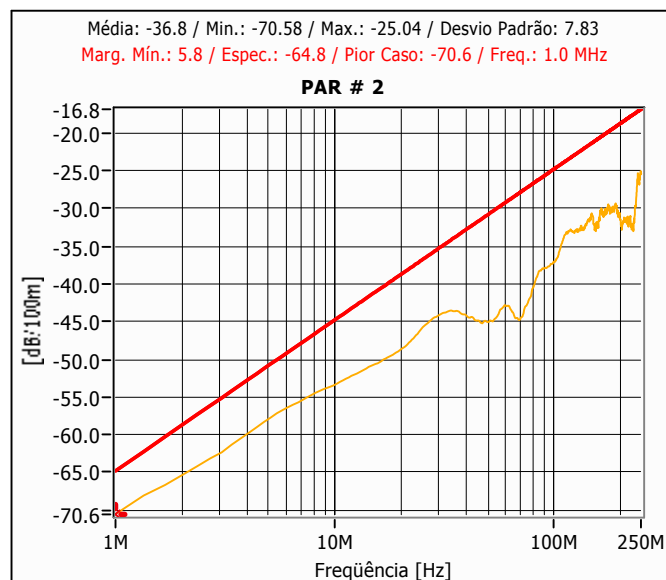
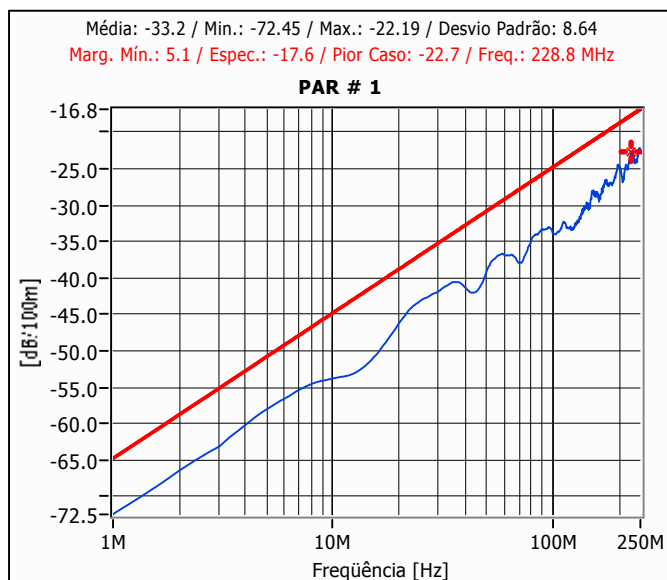
FREQ.	1	2	3	4	MIN.	MAX.	MÉDIA
1.00	74.17	72.26	71.33	84.80	71.33	84.80	79.52
4.00	63.75	63.42	60.85	72.19	60.85	72.19	67.47
8.00	59.98	59.85	57.31	68.25	57.31	68.25	63.61
10.00	59.92	59.43	57.25	67.45	57.25	67.45	62.98
16.00	58.10	58.05	56.44	63.10	56.44	63.10	59.74
20.00	54.91	57.30	54.43	62.35	54.43	62.35	58.51
25.00	52.99	55.58	51.88	62.53	51.88	62.53	57.97
31.25	52.51	54.70	51.10	62.43	51.10	62.43	57.69
62.50	52.67	58.50	51.92	60.39	51.92	60.39	57.29
100.00	53.99	56.95	53.97	58.83	53.97	58.83	56.43
200.00	53.70	59.43	55.37	64.31	53.70	64.31	60.17
250.00	55.37	57.80	54.97	61.95	54.97	61.95	58.50

ELFEXT



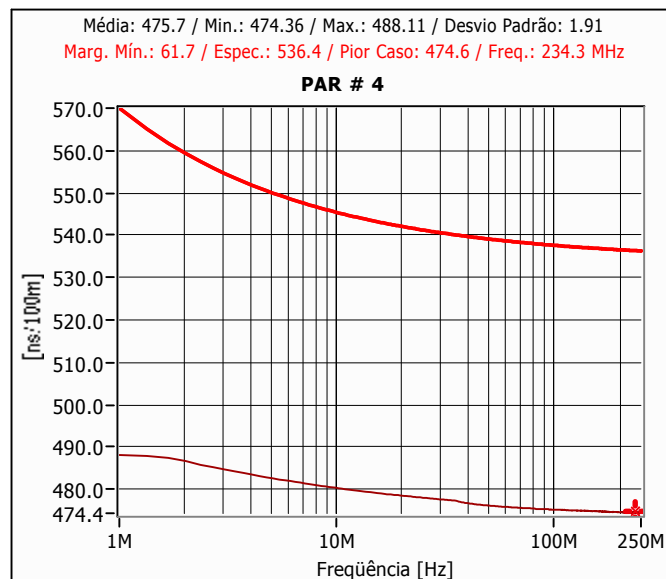
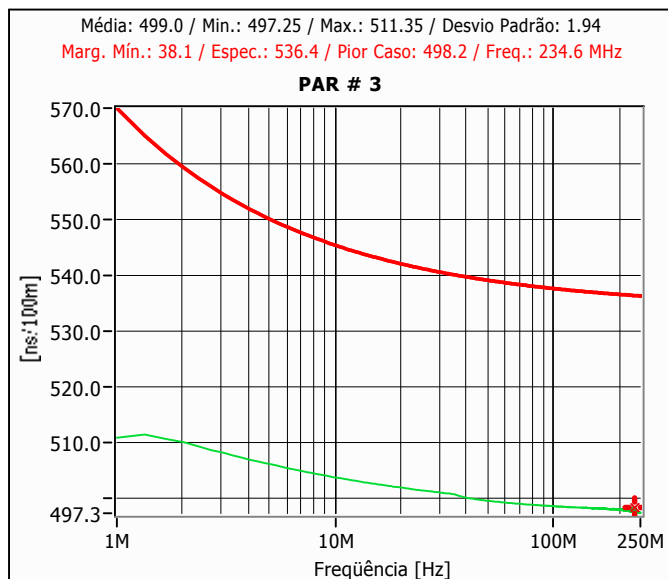
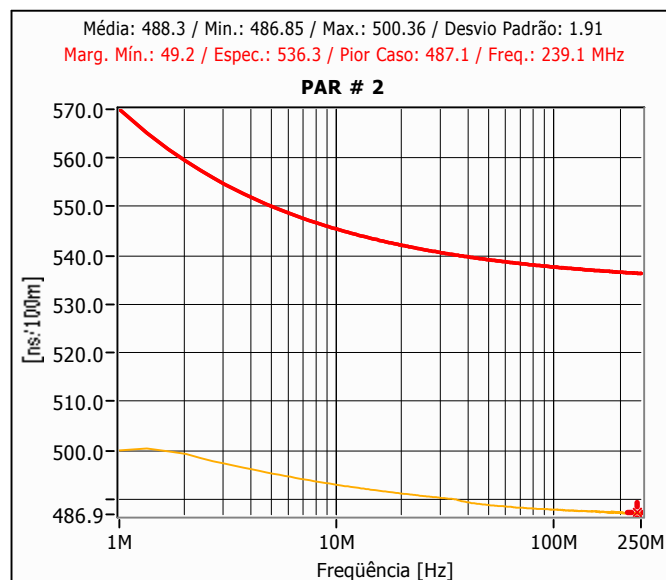
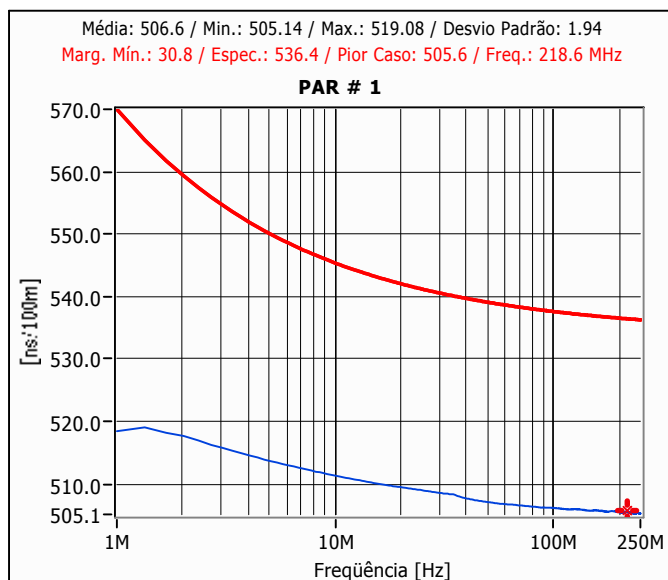
FREQ.	1x2	1x3	1x4	2x3	2x4	3x4	2x1	3x1	4x1	3x2	4x2	4x3	MIN.	MAX.	MÉDIA
1.00	95.92	72.50	94.54	71.12	81.44	81.79	85.16	73.69	93.16	72.25	87.96	85.57	71.12	95.92	89.42
4.00	77.05	60.19	75.64	60.24	70.00	75.73	77.88	60.14	76.80	60.20	70.57	74.87	60.14	77.88	73.84
8.00	68.69	54.79	70.04	54.98	65.36	72.00	70.26	54.62	70.77	55.19	65.61	68.03	54.62	72.00	67.69
10.00	65.20	54.35	68.42	53.99	64.84	70.92	67.69	54.24	69.21	54.29	65.11	65.56	53.99	70.92	66.00
16.00	56.24	51.71	66.36	51.54	58.75	70.44	60.98	51.49	66.89	51.92	58.45	59.15	51.49	70.44	63.15
20.00	52.65	47.28	66.11	50.16	56.22	73.30	58.03	47.63	66.18	50.14	56.36	57.76	47.28	73.30	64.29
25.00	51.09	43.98	67.23	47.19	54.10	70.07	56.19	43.99	67.84	46.73	54.79	57.94	43.98	70.07	62.90
31.25	48.81	42.40	61.93	44.51	55.88	58.98	54.86	42.32	62.38	44.20	55.46	54.57	42.32	62.38	56.67
62.50	52.31	37.15	52.52	43.99	56.05	50.31	50.78	37.12	52.40	44.49	58.78	45.98	37.12	58.78	52.24
100.00	39.02	36.08	43.78	40.03	43.79	49.22	42.64	35.15	43.96	40.43	44.82	42.89	35.15	49.22	43.37
200.00	33.81	25.40	39.00	40.48	43.48	37.27	31.52	26.97	40.50	42.59	39.27	41.90	25.40	43.48	39.41
250.00	31.86	23.65	32.33	29.44	29.60	32.83	31.85	23.11	40.38	33.59	31.22	37.12	23.11	40.38	33.77

PSELFEXT



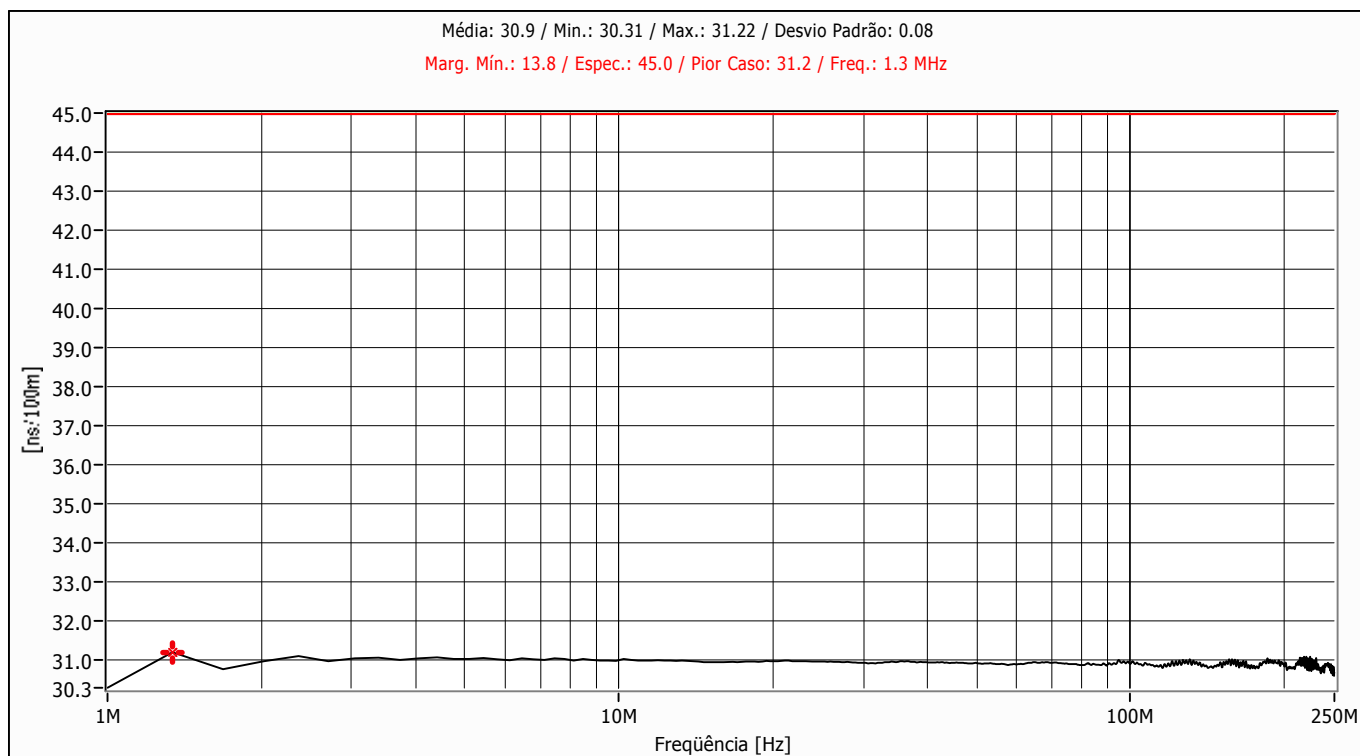
FREQ.	1	2	3	4	MIN.	MAX.	MÉDIA
1.00	72.45	70.58	69.62	83.14	69.62	83.14	77.85
4.00	59.98	59.74	57.10	68.50	57.10	68.50	63.77
8.00	54.49	54.48	51.84	62.88	51.84	62.88	58.22
10.00	53.86	53.48	51.21	61.51	51.21	61.51	57.02
16.00	50.29	50.39	48.66	55.45	48.66	55.45	52.05
20.00	46.13	48.67	45.69	53.74	45.69	53.74	49.87
25.00	43.19	45.95	42.13	52.93	42.13	52.93	48.34
31.25	41.47	43.85	40.09	51.60	40.09	51.60	46.84
62.50	36.89	42.95	36.22	44.91	36.22	44.91	41.74
100.00	33.83	37.09	33.89	39.05	33.83	39.05	36.53
200.00	24.65	30.76	26.48	35.65	24.65	35.65	31.46
250.00	22.56	25.40	22.33	29.83	22.33	29.83	26.18

PROPAGATION DELAY



FREQ.	1	2	3	4	MIN.	MAX.	MÉDIA
1.00	518.42	499.95	510.85	488.11	488.11	510.85	504.33
4.00	514.53	496.07	506.88	483.45	483.45	506.88	500.23
8.00	511.94	493.56	504.29	480.94	480.94	504.29	497.68
10.00	511.36	492.94	503.72	480.36	480.36	503.72	497.09
16.00	509.98	491.63	502.38	479.02	479.02	502.38	495.75
20.00	509.46	491.07	501.84	478.47	478.47	501.84	495.21
25.00	508.99	490.61	501.36	478.01	478.01	501.36	494.74
31.25	508.48	490.14	500.88	477.54	477.54	500.88	494.26
62.50	506.71	488.35	499.11	475.78	475.78	499.11	492.49
100.00	506.14	487.74	498.49	475.22	475.22	498.49	491.90
200.00	505.45	487.11	497.85	474.59	474.59	497.85	491.25
250.00	505.24	487.02	497.35	474.54	474.54	497.35	491.04

DELAY SKEW



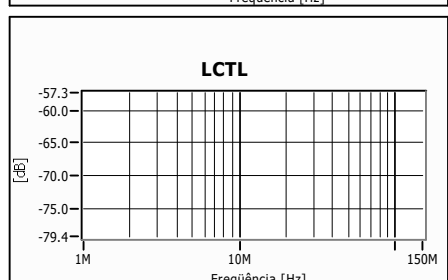
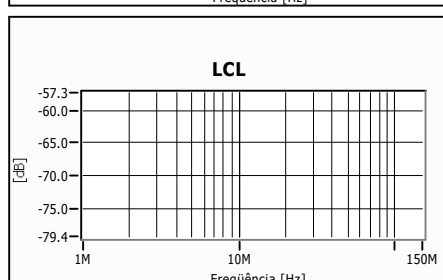
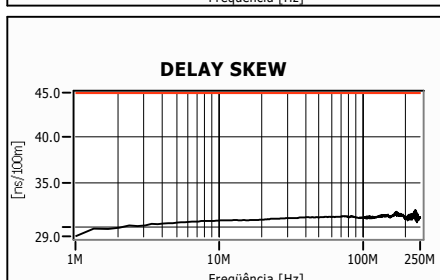
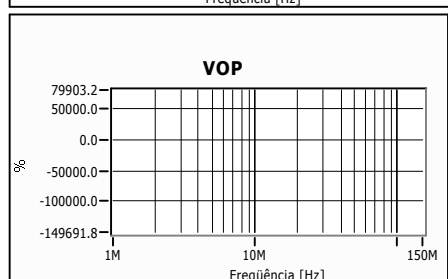
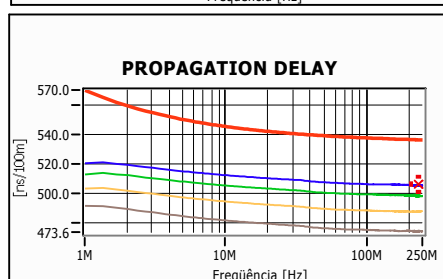
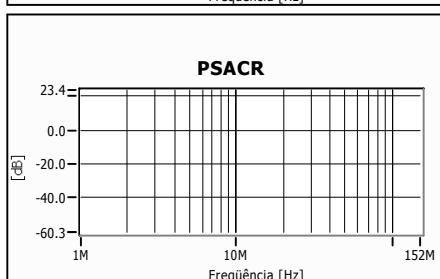
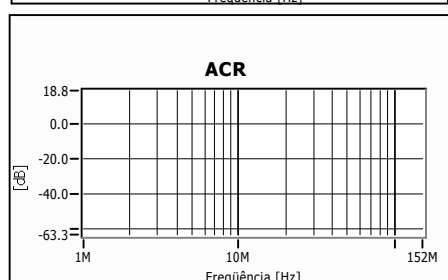
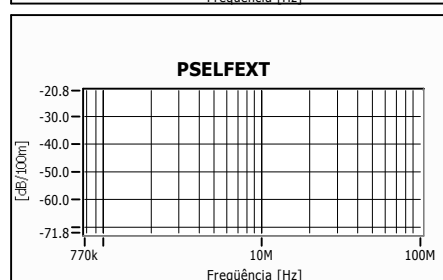
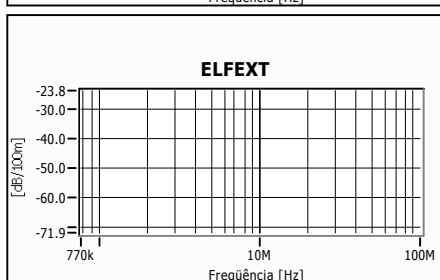
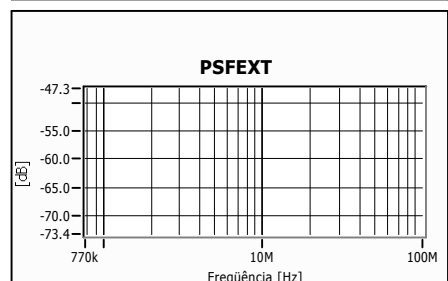
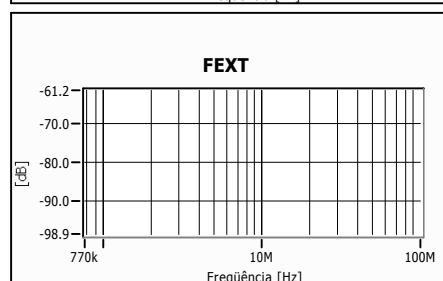
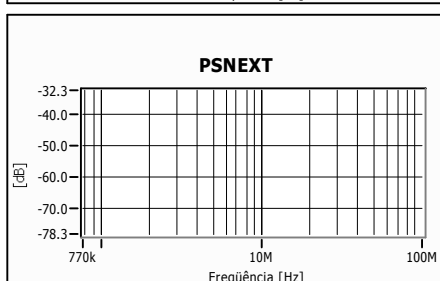
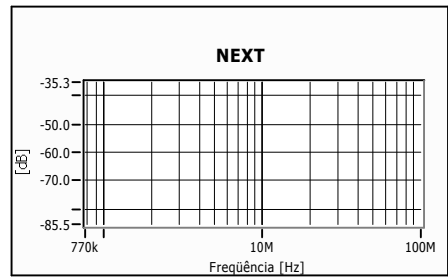
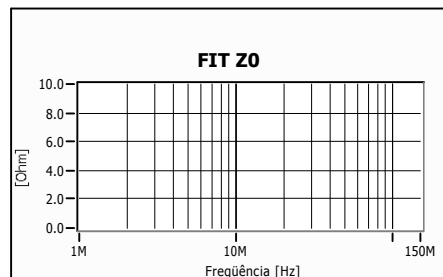
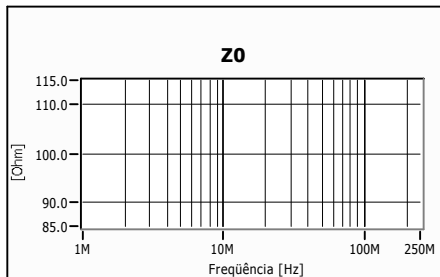
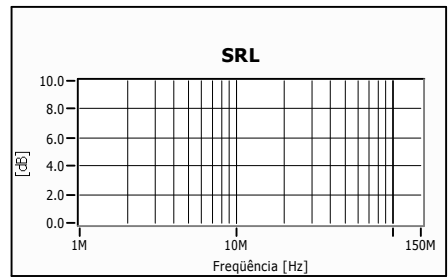
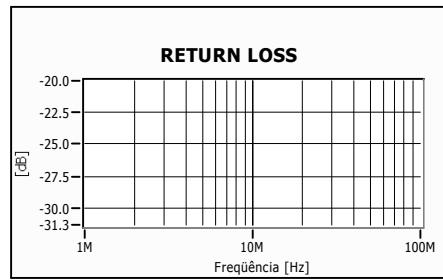
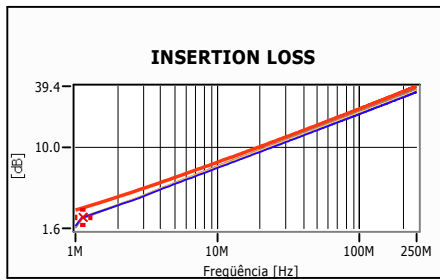
FREQ.	VALOR
1.00	30.31
4.00	31.07
8.00	31.01
10.00	31.00
16.00	30.97
20.00	30.99
25.00	30.98
31.25	30.94
62.50	30.93
100.00	30.92
200.00	30.85
250.00	30.69

CABEÇALHO

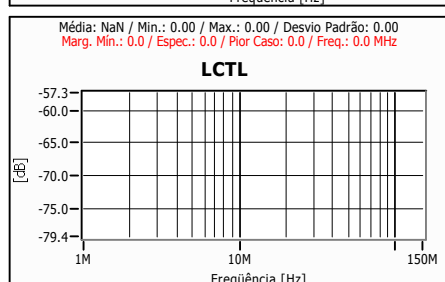
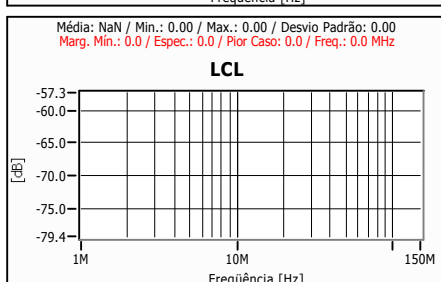
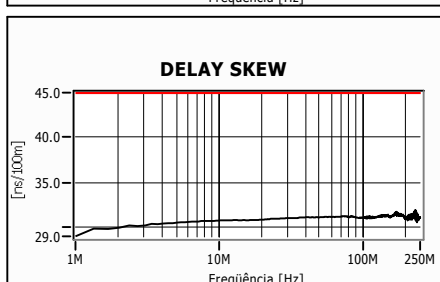
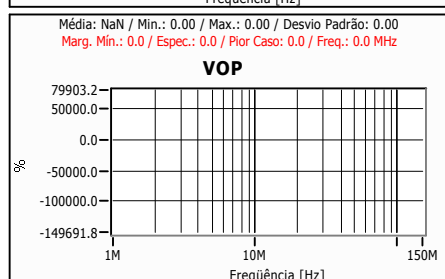
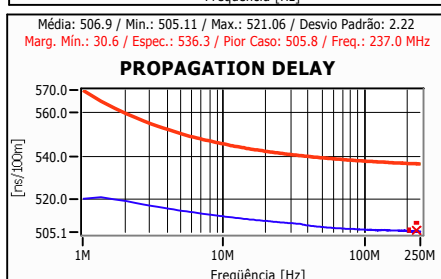
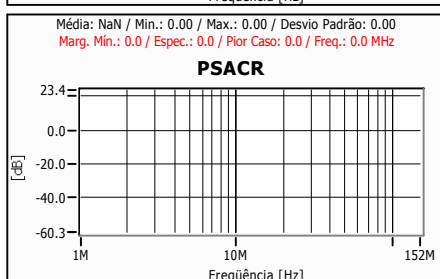
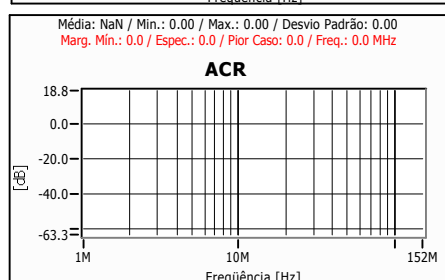
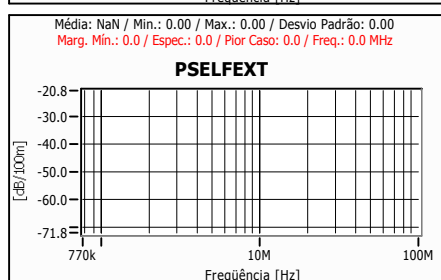
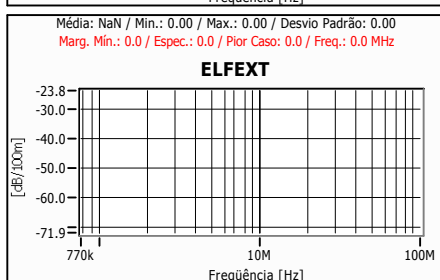
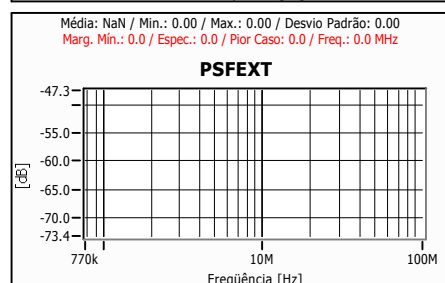
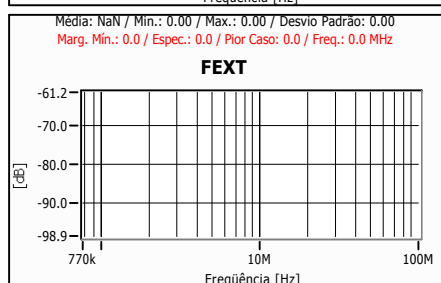
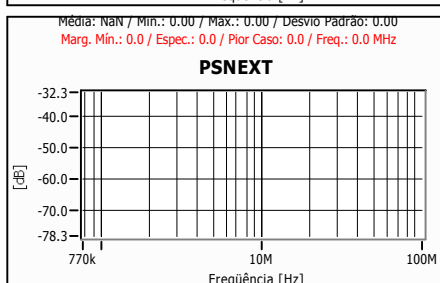
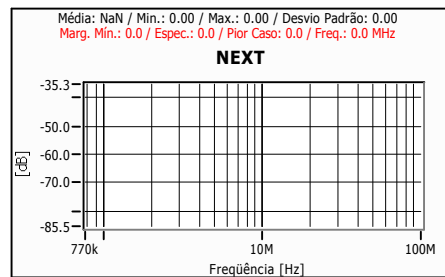
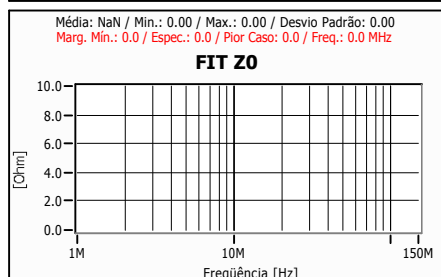
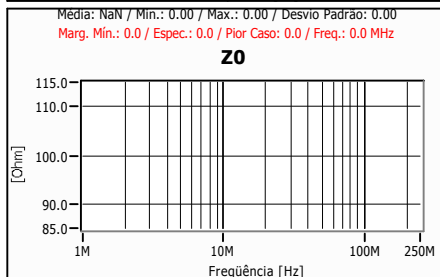
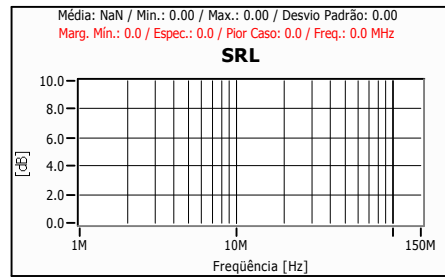
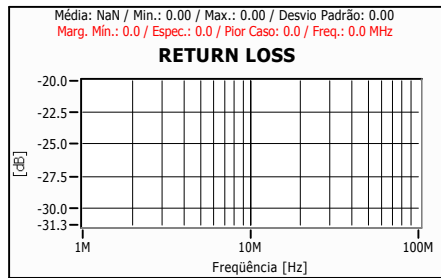
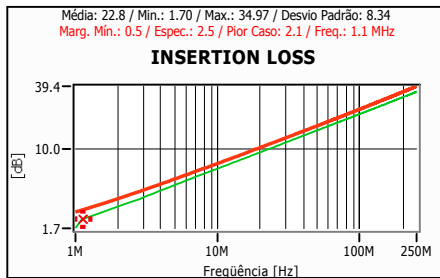
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Ensaio	40GRAUS	Temperatura	40°C
Produto	Cabo Lan Categoria 6 Flexível	Data	19/2/2009
Tecnico	JGONGORA	Hora	11:53
		Observacao	
Categoria	CAT6_FLEX	Certificacao	SIM

[illegible]

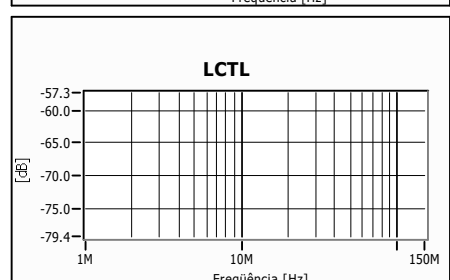
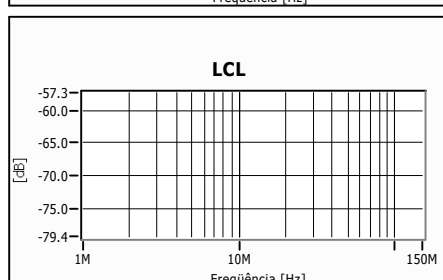
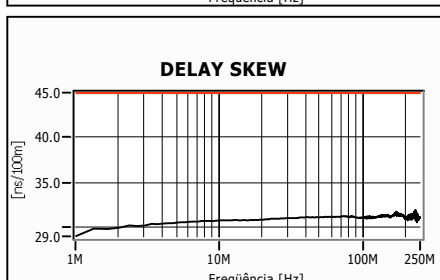
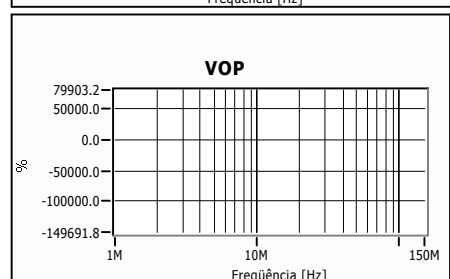
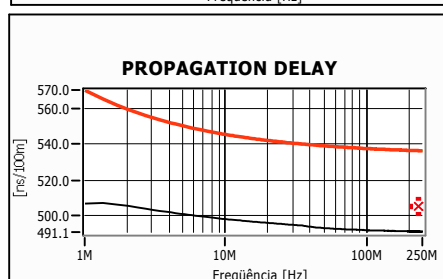
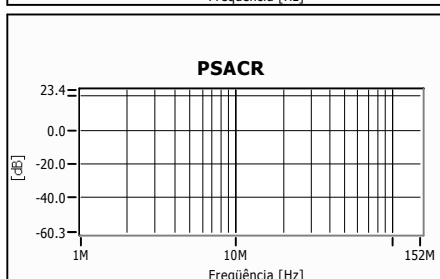
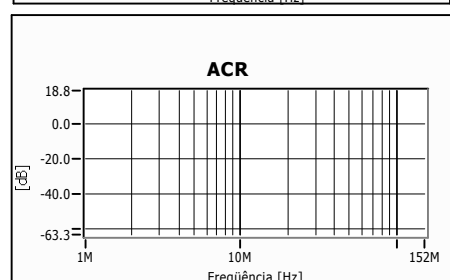
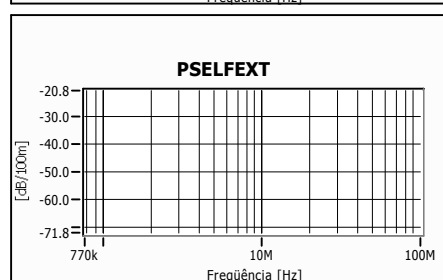
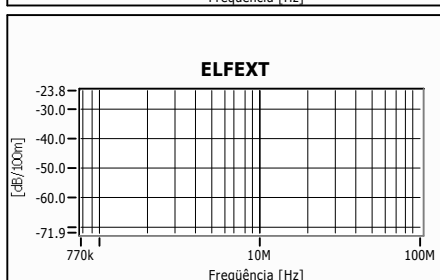
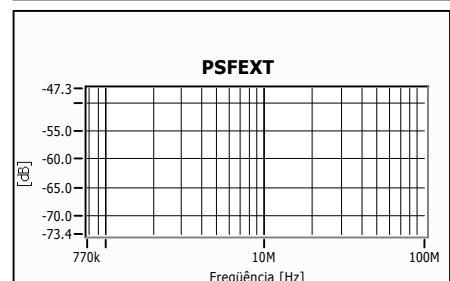
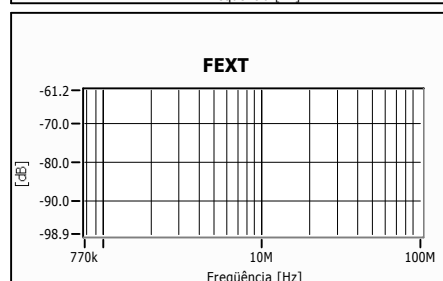
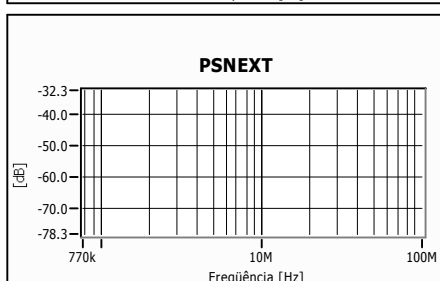
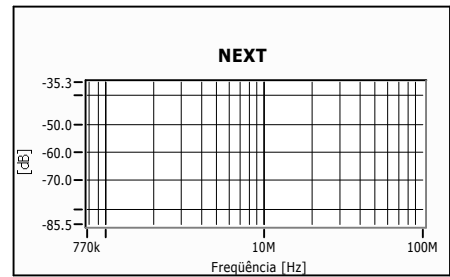
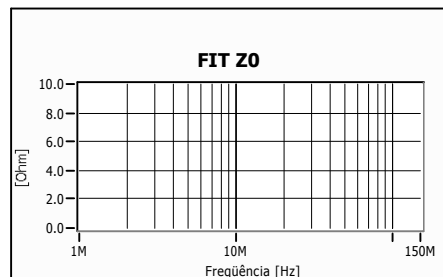
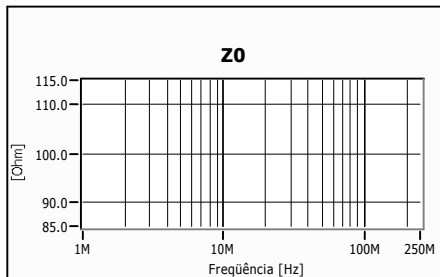
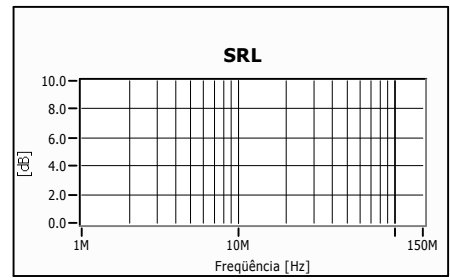
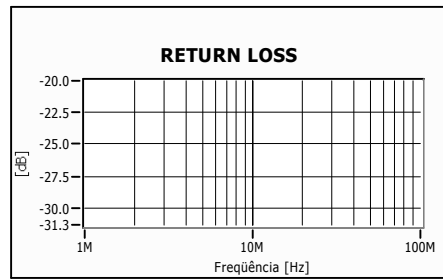
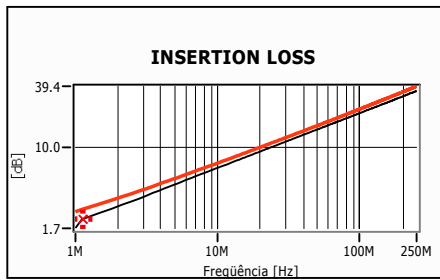
SUMÁRIO



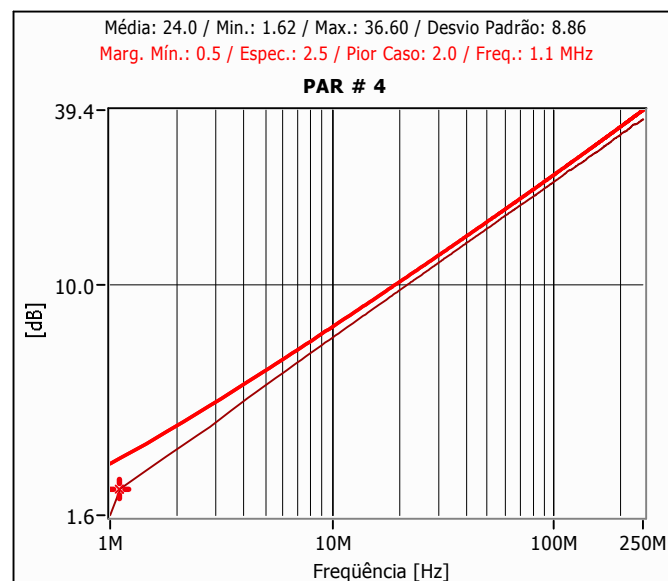
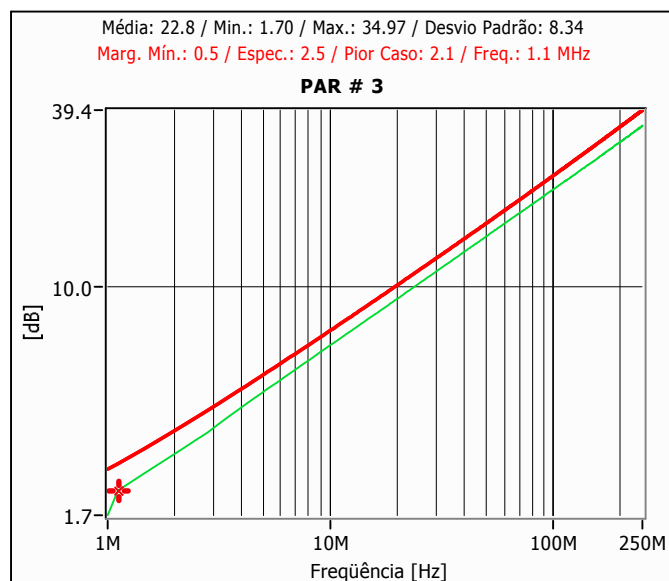
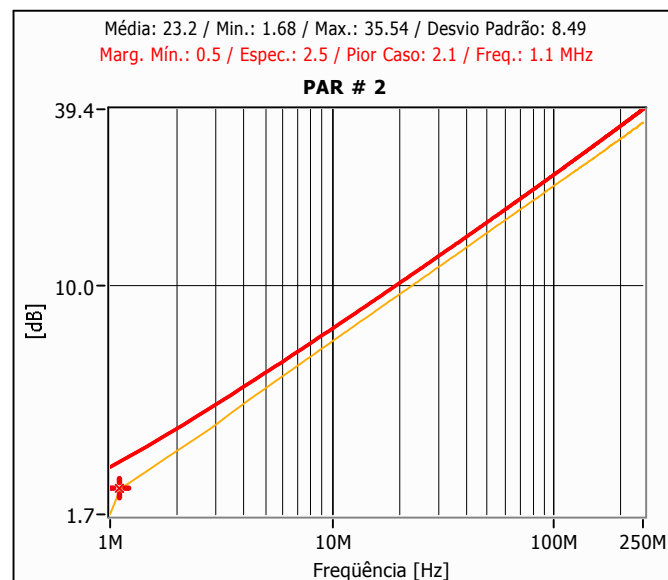
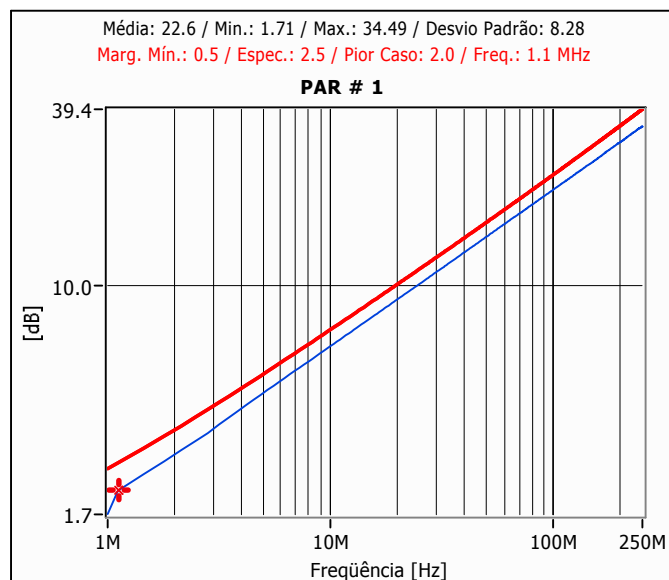
PIOR CASO



MÉDIAS

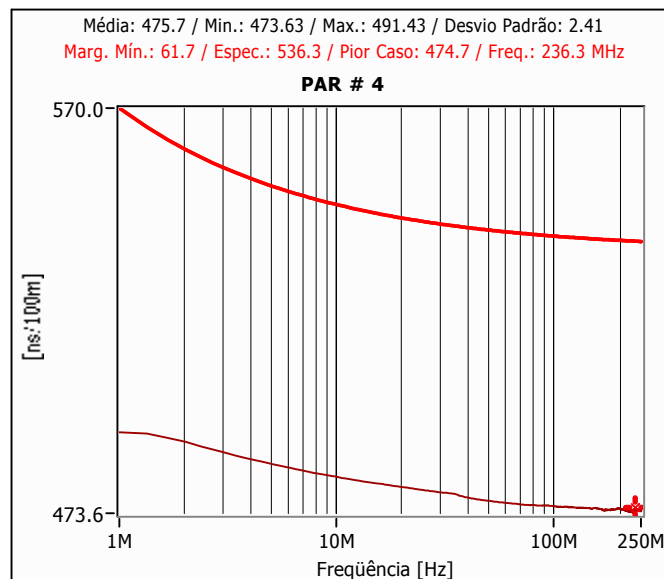
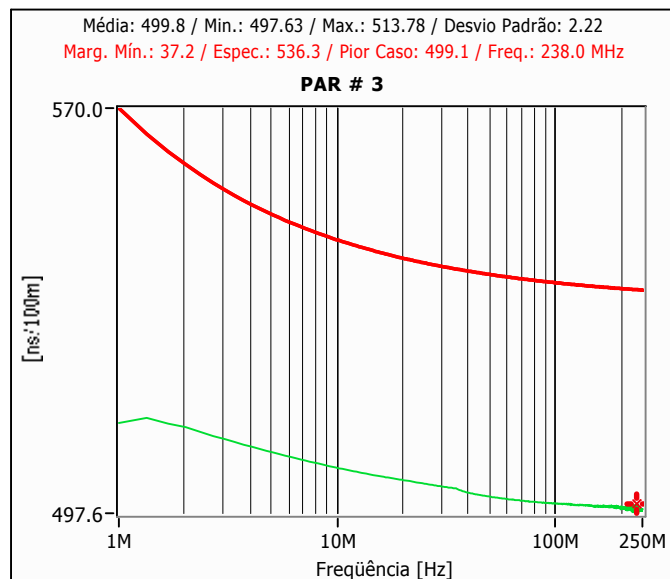
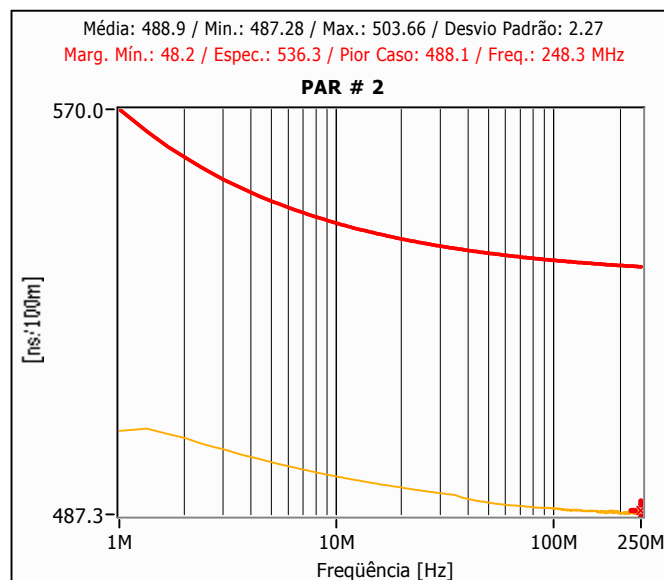
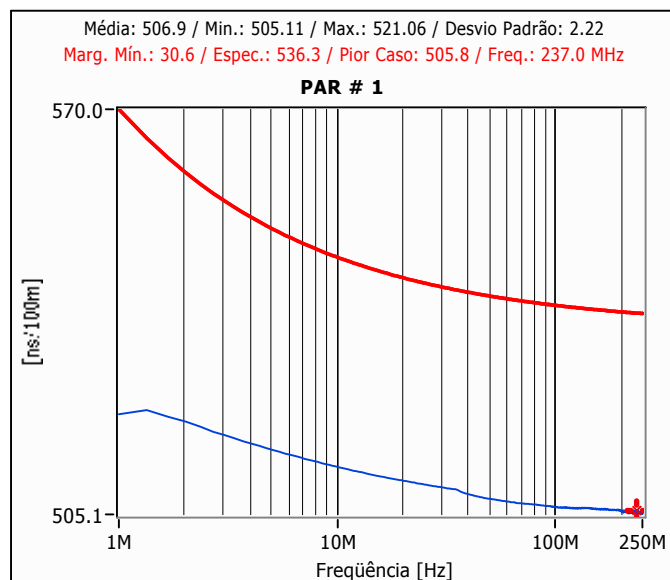


INSERTION LOSS



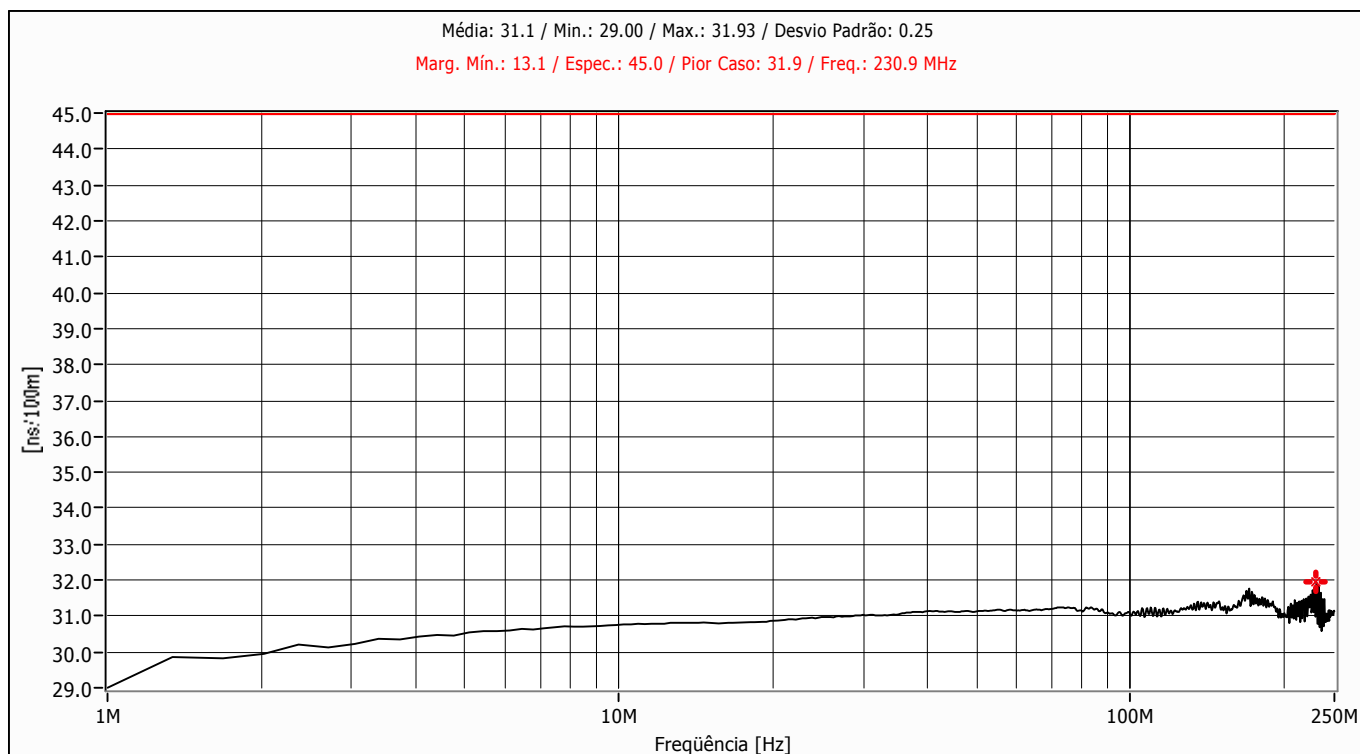
FREQ.	1	2	3	4	MIN.	MAX.	MÉDIA
1.00	1.71	1.68	1.70	1.62	1.62	1.71	1.68
4.00	3.80	3.89	3.85	3.89	3.80	3.89	3.86
8.00	5.57	5.72	5.65	5.79	5.57	5.79	5.68
10.00	6.28	6.46	6.36	6.55	6.28	6.55	6.41
16.00	8.07	8.32	8.17	8.48	8.07	8.48	8.26
20.00	9.01	9.29	9.12	9.48	9.01	9.48	9.22
25.00	10.16	10.47	10.28	10.72	10.16	10.72	10.40
31.25	11.41	11.75	11.55	12.07	11.41	12.07	11.69
62.50	16.52	17.00	16.69	17.55	16.52	17.55	16.92
100.00	21.17	21.80	21.37	22.49	21.17	22.49	21.68
200.00	30.65	31.46	30.93	32.75	30.65	32.75	31.38
250.00	34.42	35.54	34.95	36.60	34.42	36.60	35.30

PROPAGATION DELAY



FREQ.	1	2	3	4	MIN.	MAX.	MÉDIA
1.00	520.44	503.28	512.90	491.43	491.43	512.90	507.01
4.00	515.85	498.18	508.83	485.42	485.42	508.83	502.07
8.00	513.03	495.19	505.98	482.32	482.32	505.98	499.13
10.00	512.35	494.50	505.30	481.60	481.60	505.30	498.44
16.00	510.81	492.93	503.79	480.00	480.00	503.79	496.88
20.00	510.19	492.29	503.18	479.32	479.32	503.18	496.24
25.00	509.63	491.72	502.60	478.66	478.66	502.60	495.65
31.25	509.09	491.17	502.01	478.06	478.06	502.01	495.08
62.50	506.94	489.00	499.93	475.78	475.78	499.93	492.91
100.00	506.23	488.42	499.24	475.19	475.19	499.24	492.27
200.00	505.71	487.56	498.64	474.63	474.63	498.64	491.63
250.00	505.17	487.88	498.29	474.04	474.04	498.29	491.35

DELAY SKEW



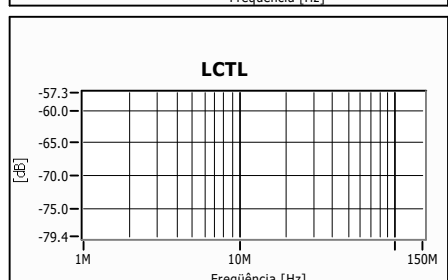
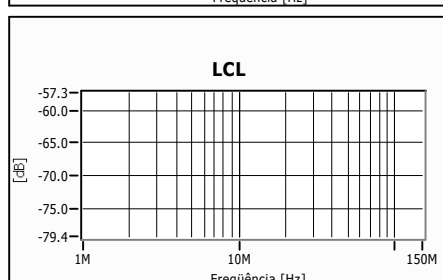
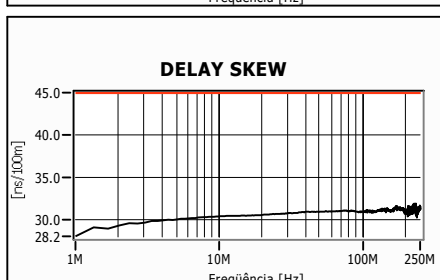
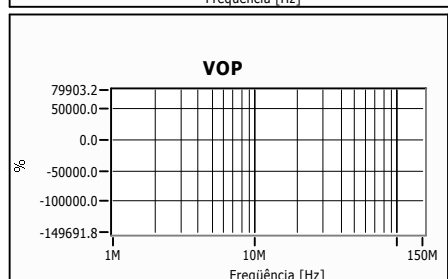
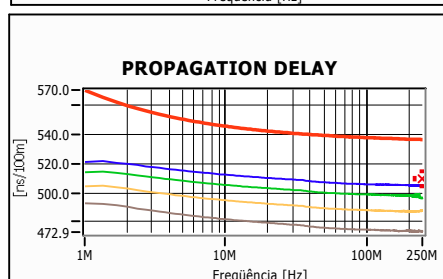
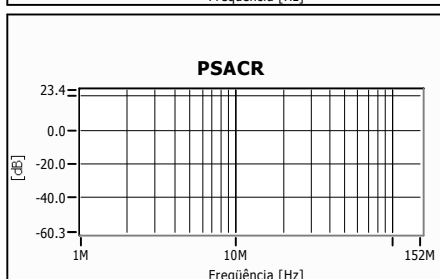
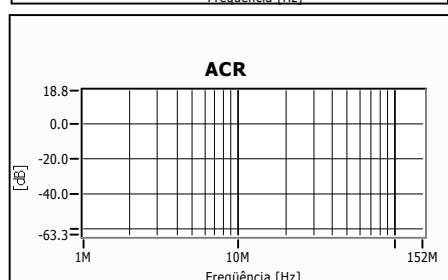
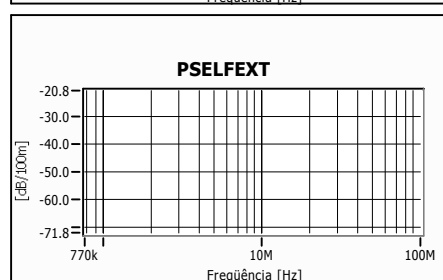
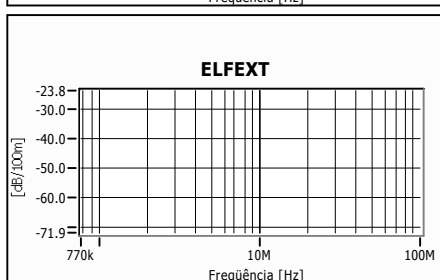
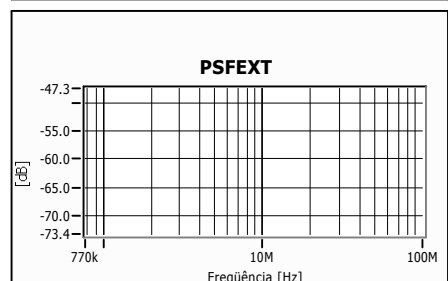
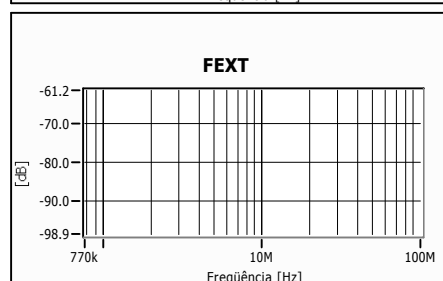
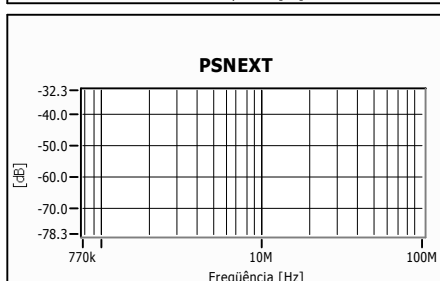
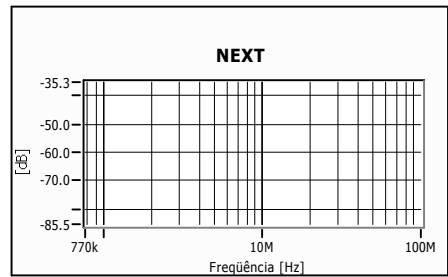
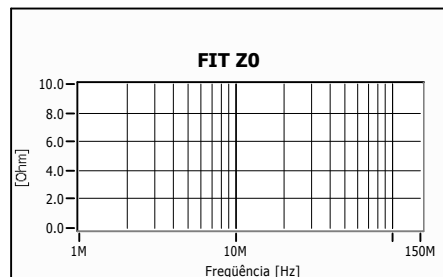
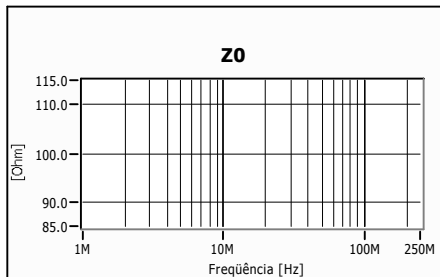
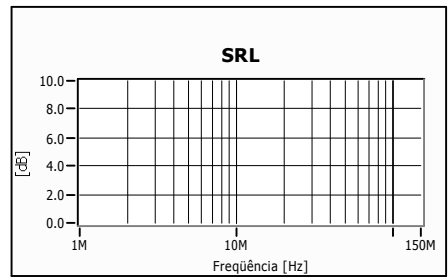
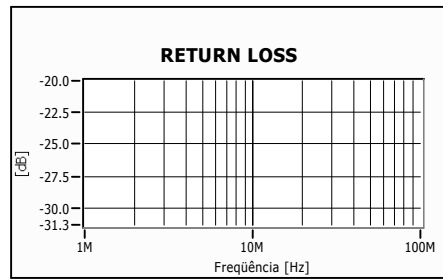
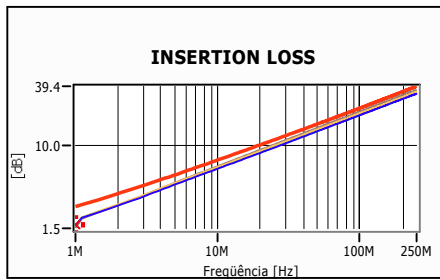
FREQ.	VALOR
1.00	29.00
4.00	30.43
8.00	30.71
10.00	30.75
16.00	30.81
20.00	30.87
25.00	30.97
31.25	31.03
62.50	31.17
100.00	31.04
200.00	31.08
250.00	31.14

CABEÇALHO

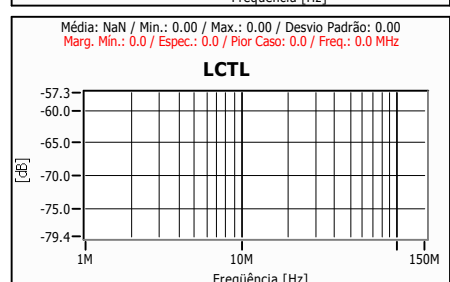
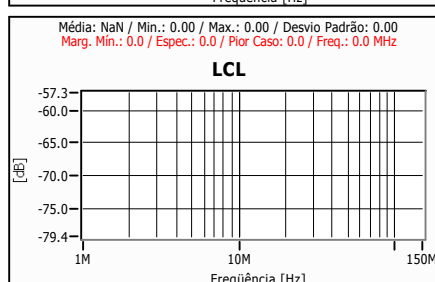
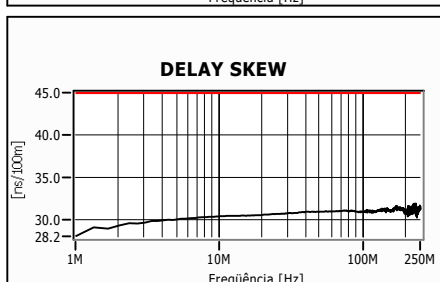
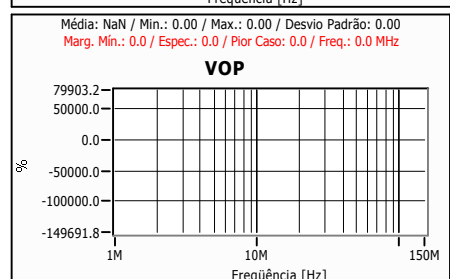
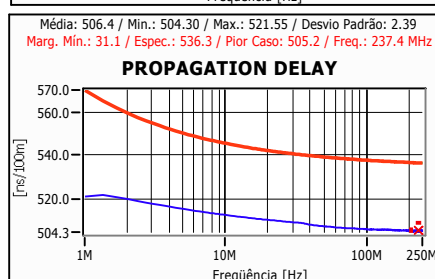
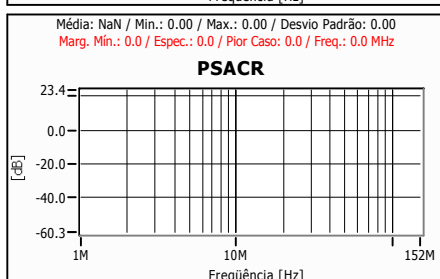
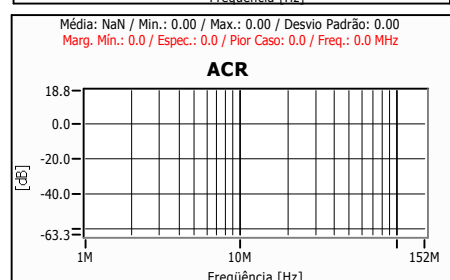
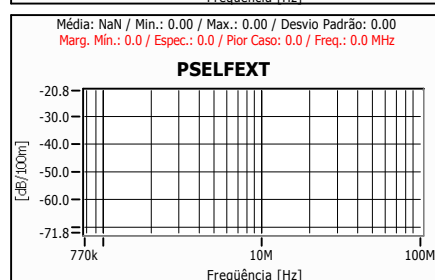
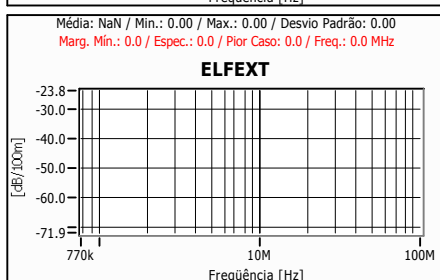
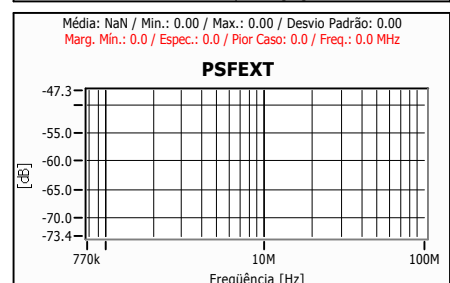
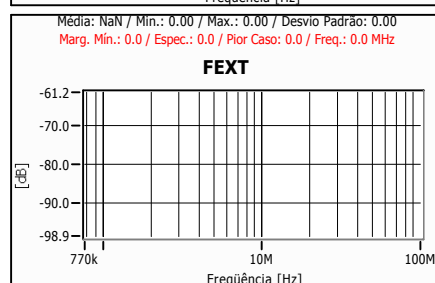
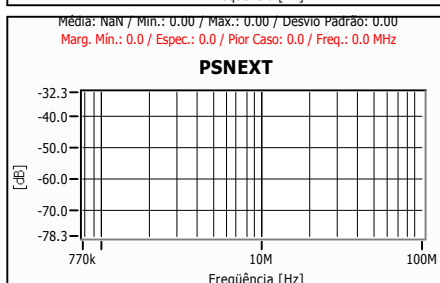
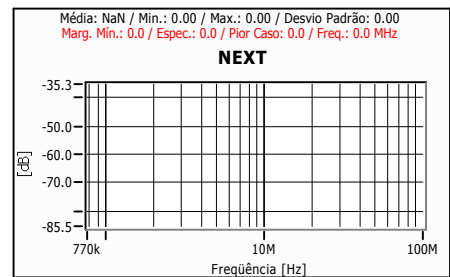
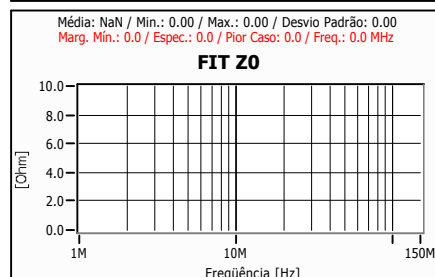
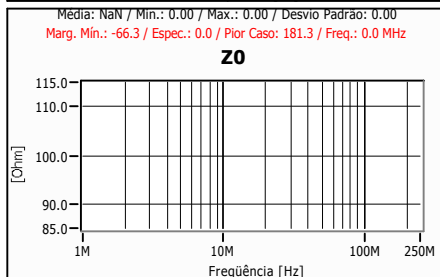
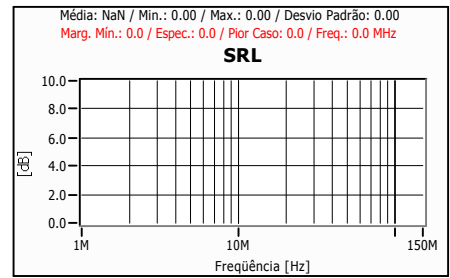
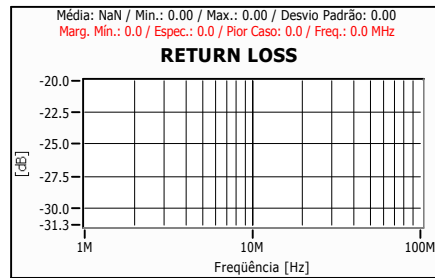
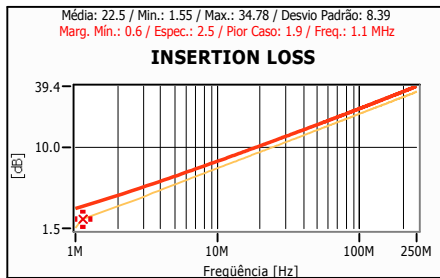
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Ensaio	60GRAUS	Temperatura	60°C
Produto	Cabo Lan Categoria 6 Flexível	Data	19/2/2009
Tecnico	JGONGORA	Hora	16:59
		Observacao	
Categoria	CAT6_FLEX	Certificacao	SIM

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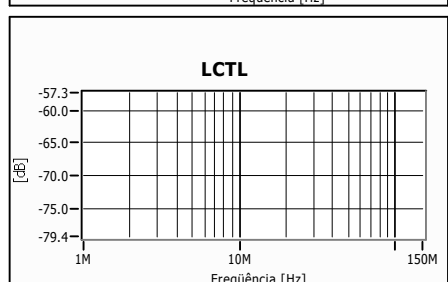
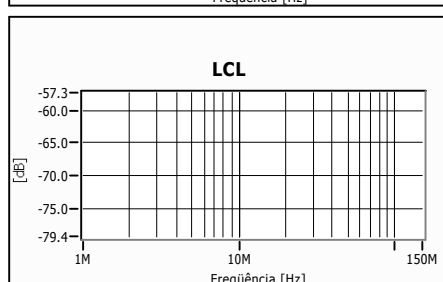
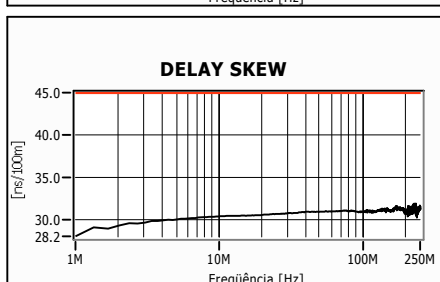
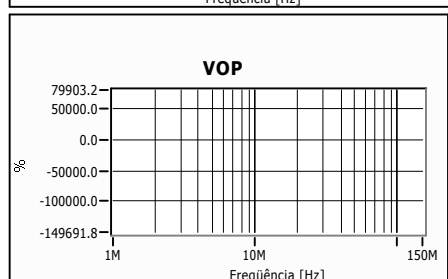
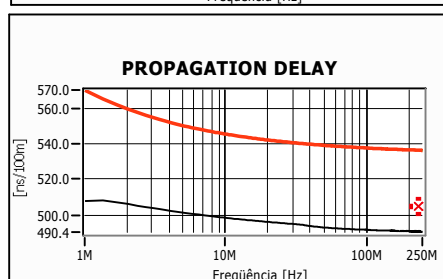
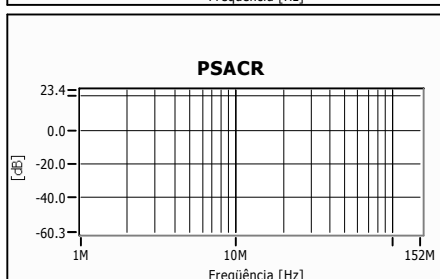
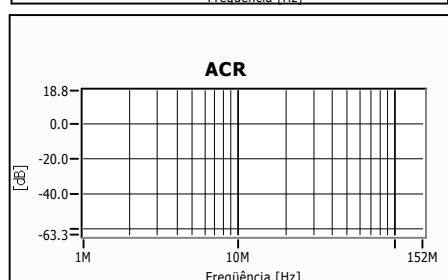
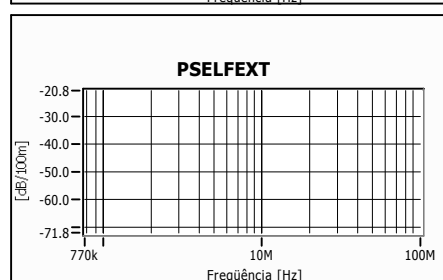
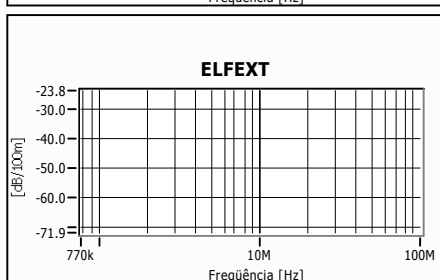
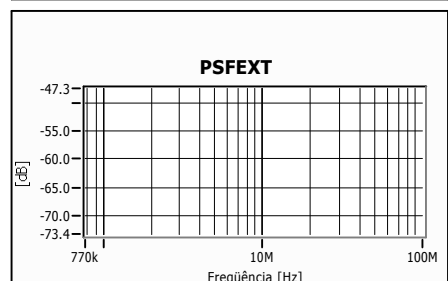
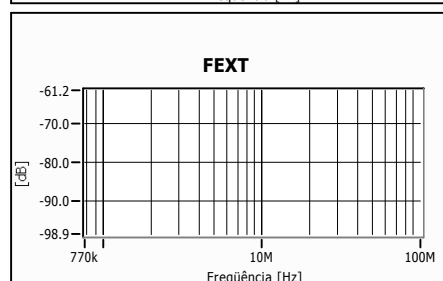
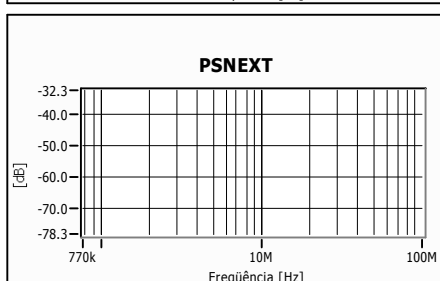
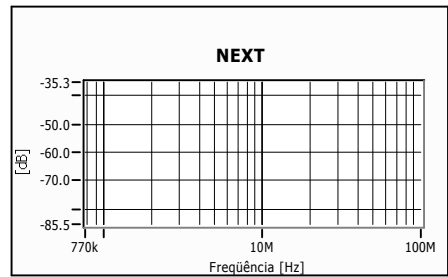
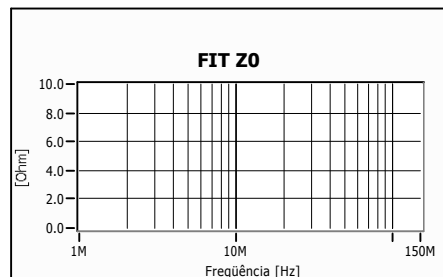
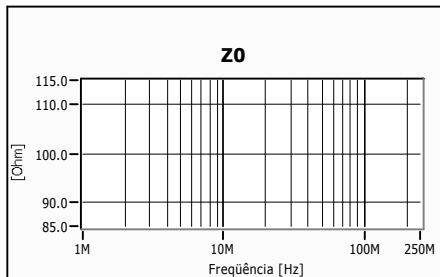
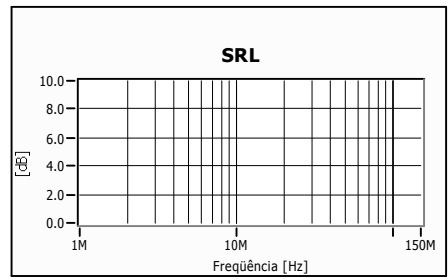
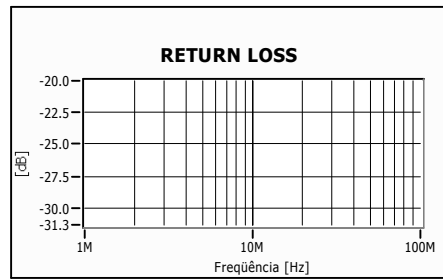
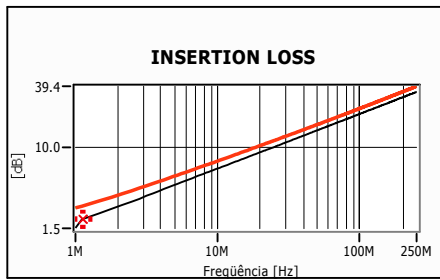
SUMÁRIO



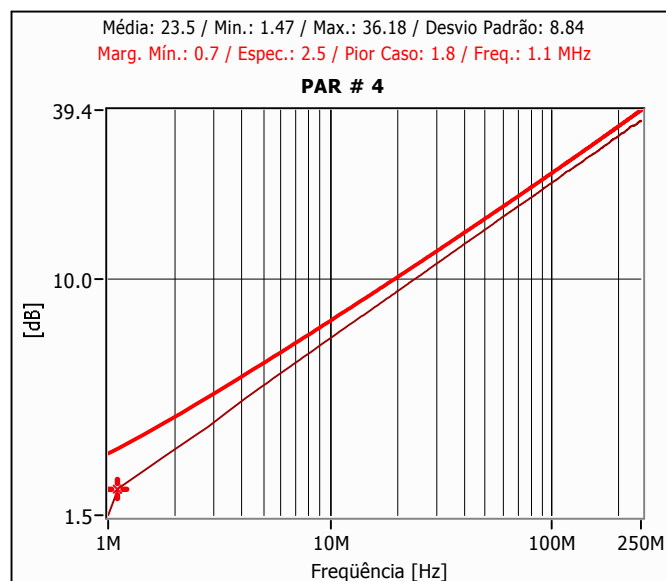
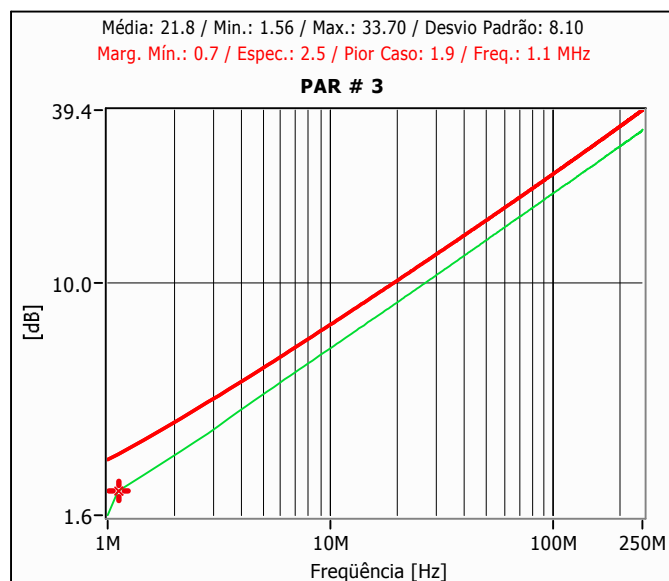
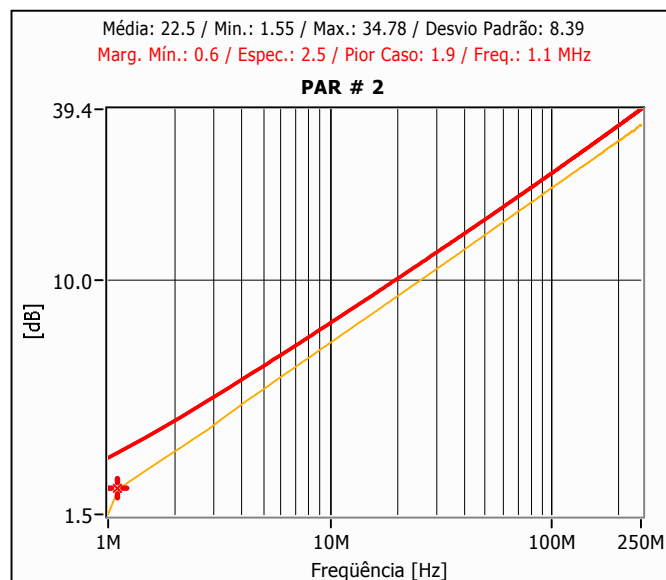
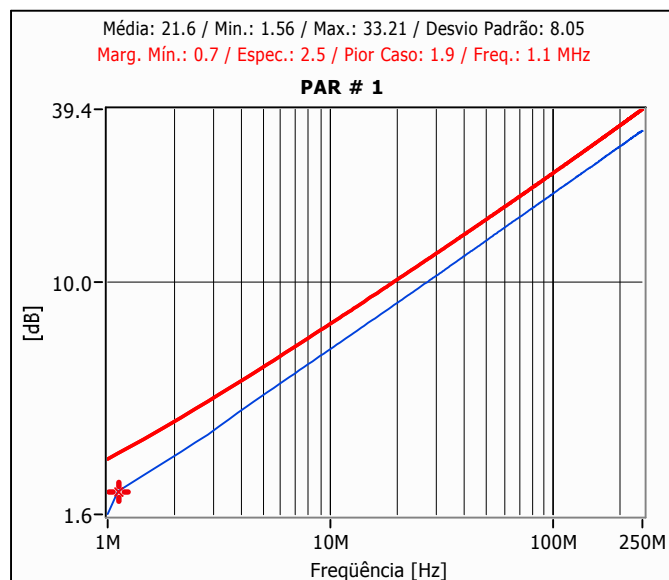
PIOR CASO



MÉDIAS

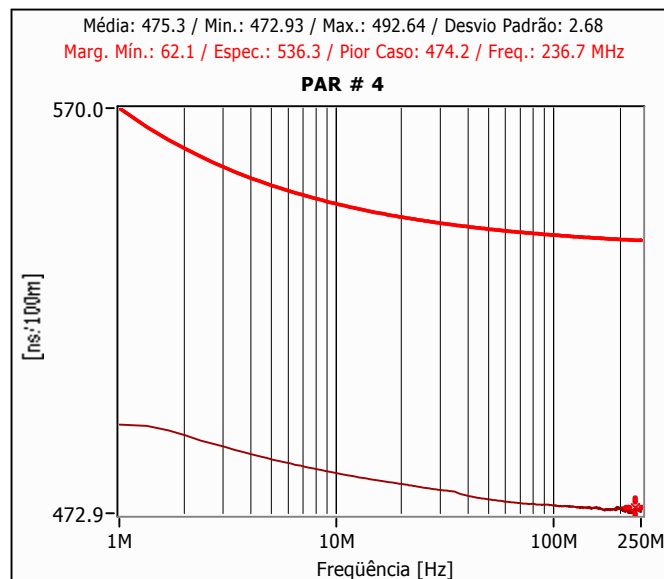
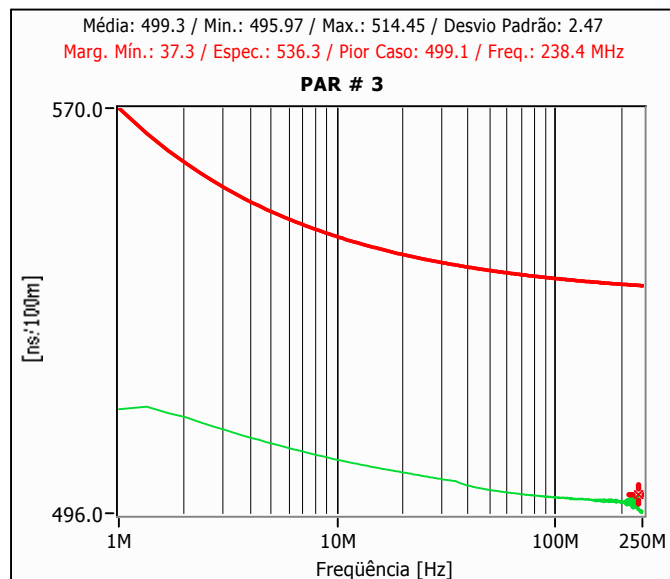
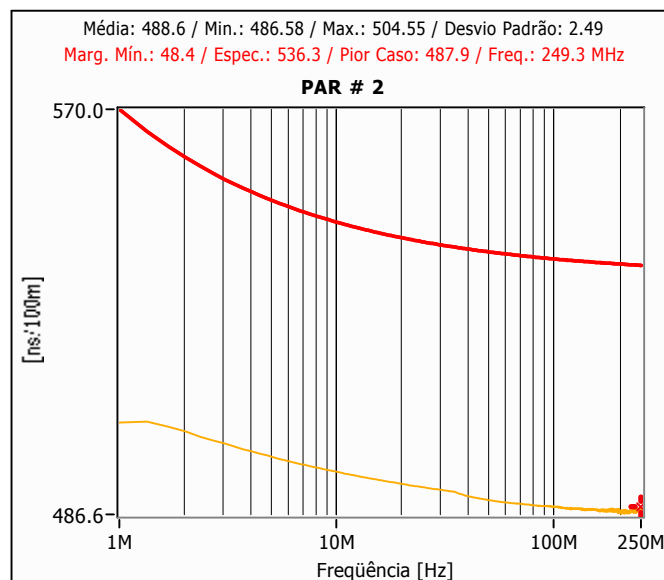
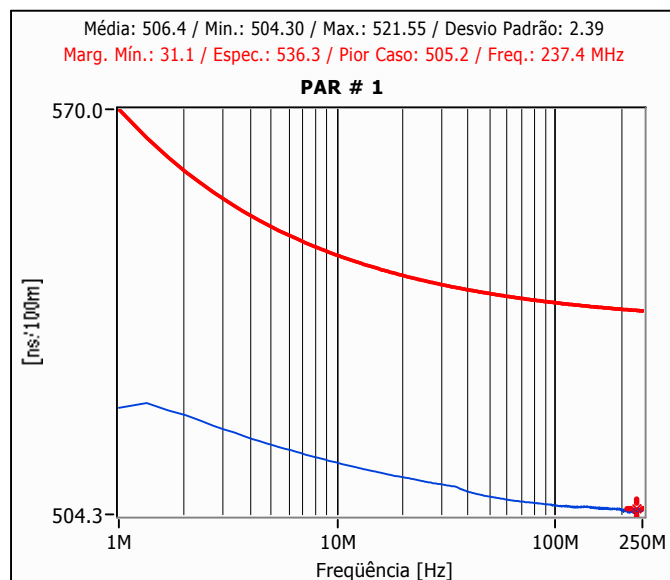


INSERTION LOSS



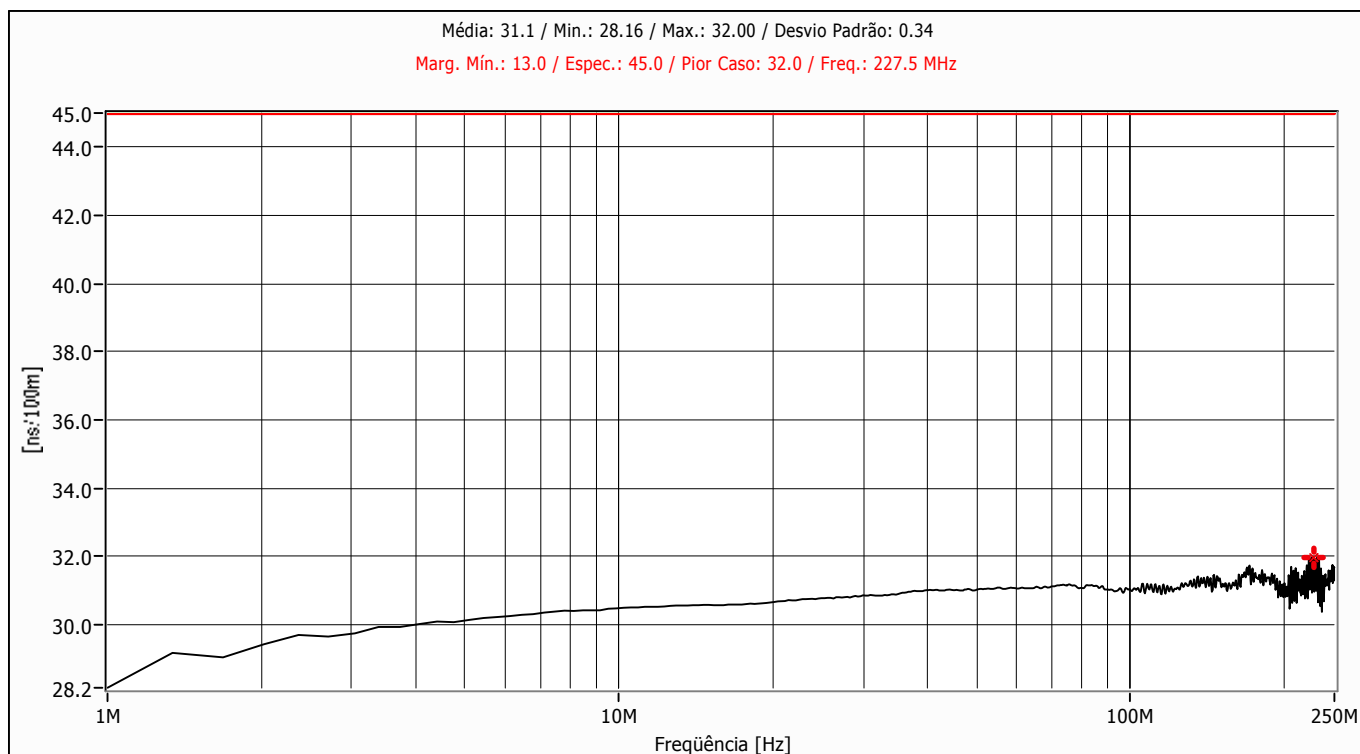
FREQ.	1	2	3	4	MIN.	MAX.	MÉDIA
1.00	1.56	1.55	1.56	1.47	1.47	1.56	1.54
4.00	3.51	3.64	3.56	3.64	3.51	3.64	3.59
8.00	5.17	5.39	5.24	5.46	5.17	5.46	5.31
10.00	5.83	6.09	5.91	6.19	5.83	6.19	6.01
16.00	7.53	7.88	7.62	8.05	7.53	8.05	7.76
20.00	8.42	8.81	8.52	9.03	8.42	9.03	8.69
25.00	9.52	9.96	9.62	10.24	9.52	10.24	9.82
31.25	10.72	11.21	10.84	11.57	10.72	11.57	11.07
62.50	15.67	16.37	15.81	17.01	15.67	17.01	16.18
100.00	20.20	21.14	20.38	21.96	20.20	21.96	20.87
200.00	29.46	30.74	29.74	32.24	29.46	32.24	30.41
250.00	33.13	34.78	33.70	36.06	33.13	36.06	34.28

PROPAGATION DELAY



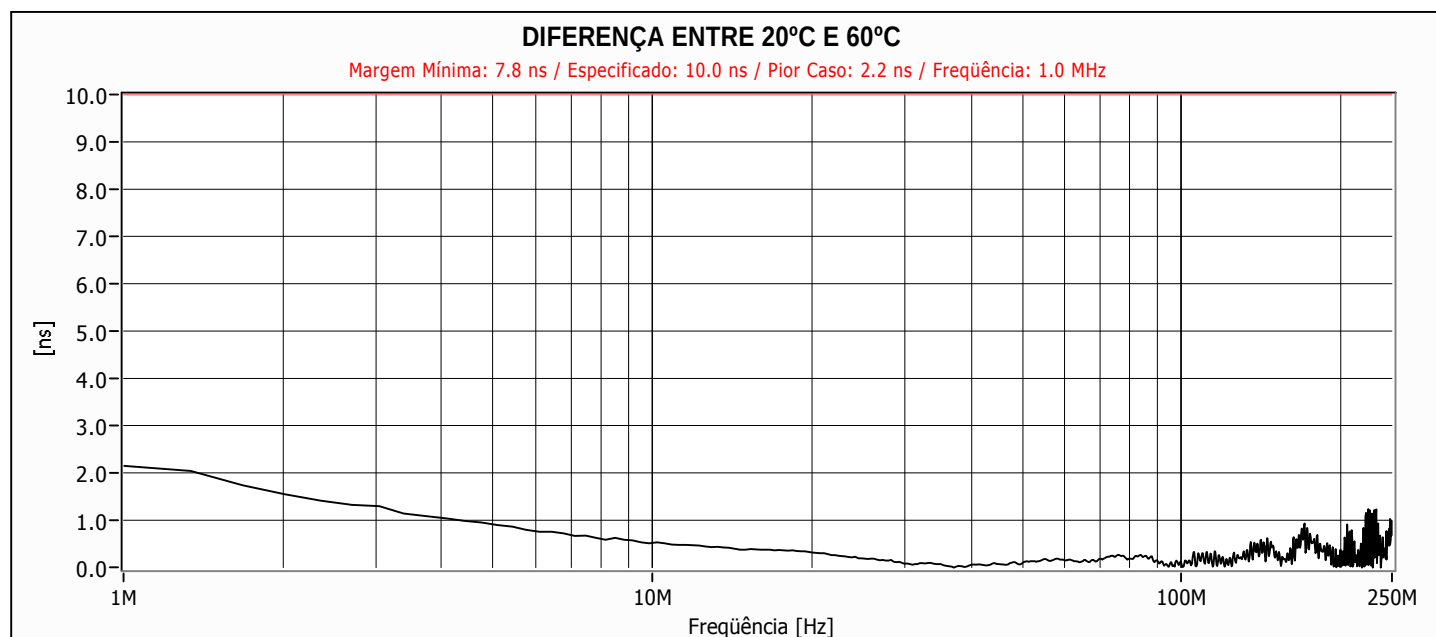
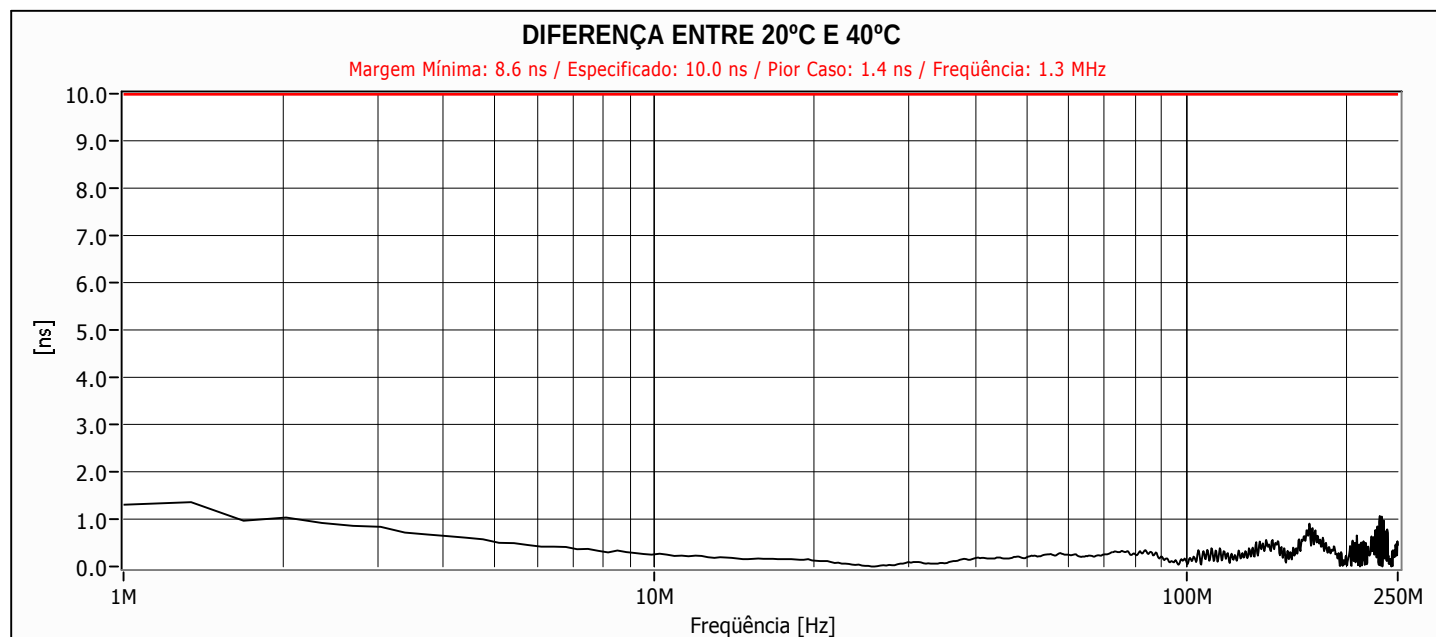
FREQ.	1	2	3	4	MIN.	MAX.	MÉDIA
1.00	520.80	504.30	513.98	492.64	492.64	513.98	507.93
4.00	515.94	498.66	508.94	485.92	485.92	508.94	502.36
8.00	512.99	495.47	505.94	482.57	482.57	505.94	499.24
10.00	512.28	494.73	505.22	481.79	481.79	505.22	498.50
16.00	510.62	493.05	503.60	480.04	480.04	503.60	496.83
20.00	509.96	492.35	502.95	479.28	479.28	502.95	496.14
25.00	509.36	491.73	502.33	478.57	478.57	502.33	495.50
31.25	508.77	491.12	501.69	477.90	477.90	501.69	494.87
62.50	506.45	488.74	499.43	475.37	475.37	499.43	492.50
100.00	505.67	488.07	498.63	474.64	474.64	498.63	491.75
200.00	505.11	487.20	497.86	473.88	473.88	497.86	491.01
250.00	505.02	487.40	496.35	473.33	473.33	496.35	490.52

DELAY SKEW



FREQ.	VALOR
1.00	28.16
4.00	30.03
8.00	30.41
10.00	30.48
16.00	30.59
20.00	30.68
25.00	30.79
31.25	30.87
62.50	31.08
100.00	31.04
200.00	31.23
250.00	31.69

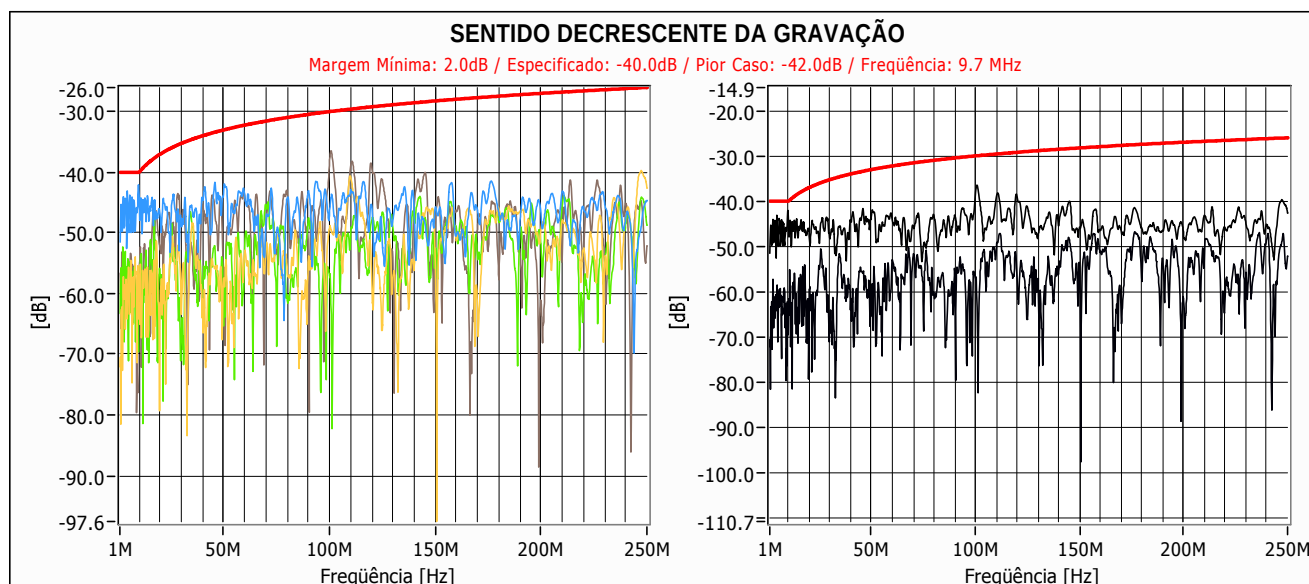
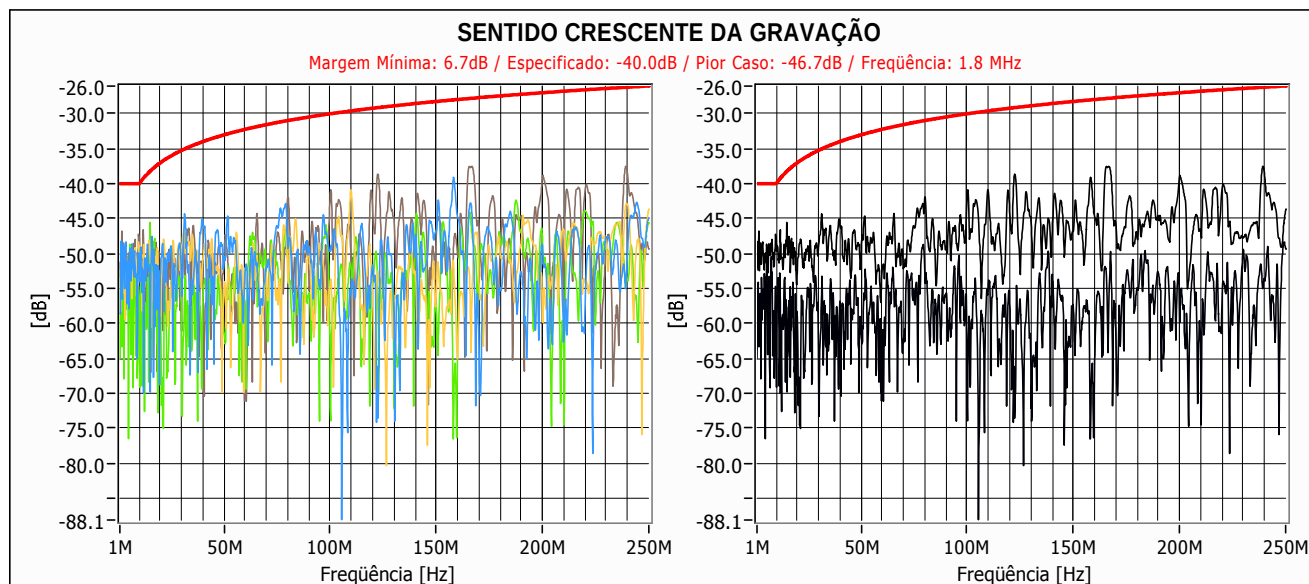
DIFERENÇA ENTRE AS DIFERENÇAS DOS ATRASOS DE PROPAGAÇÃO DE 20°C PARA 40°C E 60°C



FREQ. [MHz]	DIFERENÇA 20°C / 40°C [ns]	DIFERENÇA 20°C / 60°C [ns]
1.00	1.30	2.15
4.00	0.64	1.04
8.00	0.30	0.59
10.00	0.25	0.51
16.00	0.16	0.38
20.00	0.12	0.32
25.00	0.01	0.20
31.25	0.09	0.07
62.50	0.23	0.15
100.00	0.11	0.11
200.00	0.23	0.38
250.00	0.44	0.99

N. AMOSTRA	AMO-09013-V01	COMPRIMENTO	100 m	DATA/HORA	19/2/2009/07:28
CLIENTE	MICROCENTER	TEMPERATURA	21 C	TÉCNICO	JGONGORA

PERDA DE CONVERSÃO LONGITUDINAL (LCL)



FREQ. [MHz]	SENTIDO CRESCENTE				SENTIDO DECRESCENTE			
	PAR 1	PAR 2	PAR 3	PAR 4	PAR 1	PAR 2	PAR 3	PAR 4
1.00	-58.55	-52.36	-65.01	-53.33	-51.51	-72.09	-63.27	-56.66
4.00	-52.89	-50.47	-55.15	-50.45	-48.21	-59.22	-58.93	-60.66
8.00	-52.06	-50.42	-52.66	-47.97	-48.66	-54.99	-58.18	-59.17
10.00	-52.95	-49.99	-62.36	-47.78	-45.91	-64.18	-61.43	-55.29
16.00	-47.81	-56.71	-56.66	-54.78	-44.33	-56.61	-55.25	-50.26
20.00	-52.73	-58.95	-56.83	-54.20	-47.77	-59.50	-57.13	-52.86
25.00	-48.89	-55.07	-54.53	-50.77	-48.51	-54.51	-49.62	-49.06
31.25	-45.57	-46.59	-58.27	-51.05	-46.31	-58.16	-65.88	-47.02
62.50	-50.55	-54.03	-48.10	-50.83	-44.43	-56.76	-54.11	-48.68
100.00	-49.53	-54.01	-71.88	-41.42	-46.31	-49.41	-57.02	-37.99
200.00	-49.45	-59.85	-48.93	-38.88	-47.83	-48.72	-53.36	-61.79
250.00	-44.95	-43.64	-45.63	-49.33	-44.68	-42.63	-48.69	-52.19