

Akustische Messungen an Stethoskopen

verschiedene Stethoskope im Vergleich

Report

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AKUSTISCHE
MESSUNGEN
AN
STETHOSKOPEN

VERSCHIEDENE STETHOSKOPE IM
VERGLEICH

OKTOBER 1999 - THOMAS DEGEN

AKUSTISCHE MESSUNGEN AN STETHOSKOPEN

VERSCHIEDENE STETHOSKOPE IM VERGLEICH

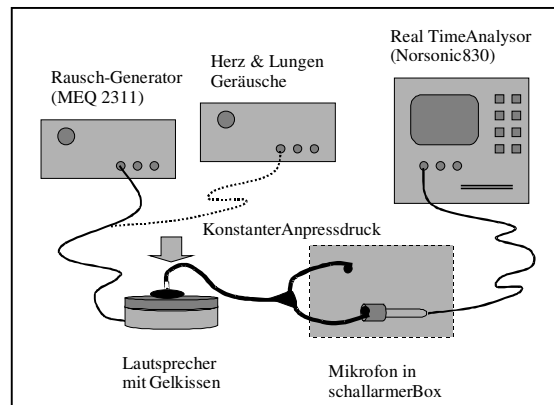
EINLEITUNG

Diese Messungen sind aus dem Wunsch entstanden genauer zu verstehen, welcher Hörbereich für eine optimale akustische Verstärkung der Herz- und Lungentöne wichtig ist. Dazu wurden verschiedenste gängige Stethoskope untersucht. Der Schwerpunkt lag auf elektronisch verstärkenden Stethoskopen.

Die Messungen sollen eine qualitative Aussage ermöglichen und dienen ausschliesslich der Forschung. Dies ist ein interner Bericht und darf nicht als Werbung für die darin getesteten Stethoskope angesehen werden. Die ETH verbittet sich die Erwähnung Ihres Namens im Zusammenhang mit den hier präsentierten Messresultaten. Die ETH kann keine Haftung übernehmen im Falle einer falschen Anwendung dieser Resultate.

Einen besonderen Dank an die Hersteller, die uns Ihre Stethoskope für diese Messungen zur Verfügung gestellt haben.

MESSAUFBAU



Die obige Zeichnung stellt den vereinfachten Messaufbau dar

Als Schallquellen standen zwei Geräte zur Verfügung. Einerseits ein Equalizer, der unter anderem ein gleichmäßiges Rauschsignal (pink noise) generieren kann (MEQ 2311) und andererseits ein Herz- und Lungengeräusch Tutor der Firma Wolff. Mittels einer Steckkarte lassen sich verschiedenste Geräusche auf den dazugehörigen Lautsprecher ausgeben. Das verwendete Herzgeräusch ist auf der Karte 141 Position 1, das verwendete Lungengeräusch ist auf der Karte 143 Position 1 aufgezeichnet. Der Lautsprecher wird von einem ca. 1cm dicken Gelkissen bedeckt, welches die Übertragung der Geräusche über die Haut simuliert.

Die Geräusche werden vom Real Time Analyser (Norsonic 830) per Mikrofon aufgezeichnet und auf Diskette gespeichert. Das Mikrofon steckt in einer kurzen Gummihülle, die sich dicht um die Olive des zu untersuchenden Stethoskops legen lässt. Dies soll den menschlichen Gehörgang nachempfinden. Das Mikrofon ist mitsamt dem Hörteil des zu messenden Stethoskops in einer mit Schaumstoff ausgekleideten Box. Der Lautsprecher und die Box stehen auf verschiedenen Tischen.

MESSABLAUF

Pro Stethoskop wurden je vier Messungen durchgeführt:

- Eine Messung ohne Geräusch (30s), um das Grundrauschen aufzunehmen. Das Grundrauschen hängt von der Empfindlichkeit des Mikrofons ab, welche in Funktion der Verstärkung des Stethoskopes eingestellt wurde.
- Eine Messung des Lungentons (60s)
- Eine Messung des Herztons (30s)
- Eine Messung des Rauschgenerators (30s)

Das Lungengeräusch dauert 5s, das Herzgeräusch dauert 3s. Beide Geräusche wiederholen sich unaufhörlich. Die Messdauer wurde entsprechend auf 30s festgesetzt. Für die Aufzeichnung des Lungengeräusches wurden zwei aufeinanderfolgende Messungen gemittelt.

AUSWERTUNG

Pro Messung werden 32 Terzbänder aufgezeichnet. Der Messbereich umfasst 20Hz bis 20kHz. Pro Kanal werden die gemittelte Leistung (Leq) sowie der maximale Wert der Messung aufgezeichnet (Max). Auf den Messblättern dargestellt wird die gemittelte Leistung (Leq) sowie die prozentuale Abweichung zwischen dem maximalen Wert und der gemittelten Leistung ($\Delta = 100 * (\text{Max}-\text{Leq})/\text{Leq}$). Unter der Kolonne steht die Gesamtleistung (Lin) sowie der an die Empfindlichkeit des menschlichen Gehör angepasste Wert der Gesamtleistung (A-Net). Dazu werden die einzelnen Terzbänder mehr oder weniger gewichtet. Eine Darstellung der Empfindlichkeit des menschlichen Gehörs steht auf der zweiten Seite der Messresultate.

Eine erste Messserie dient der Kalibration des Messaufbaus. Dazu wurden die verschiedenen Geräusche einzeln aufgenommen, wobei das Mikrofon direkt auf den Lautsprecher aufgesetzt wurde. Die so erhaltenen Kurven ermöglichen einen Vergleich des verstärkten und des unverstärkten Signals. Da die Bedingungen in den beiden Fällen stark voneinander abweichen kann das Resultat nicht als die *absolute* Verstärkung angesehen werden. Die entsprechenden Resultate können also nur für einen Vergleich *zwischen* den Stethoskopen dienen.

Eine zweite Messung der Signale so wie sie von den Schallquellen (Tutor und Equalizer) erzeugt werden, ermöglicht es, die Übertragungsfunktion des Lautsprechers qualitativ auszumessen. Diese Messungen sind mit dem Zusatz ‚Line‘ gekennzeichnet. Die Geräusche Lungenton2 und Herzton2 sind der CD der Firma 3M entnommen.

Bei der Rauschmessung wird ein möglichst kleiner Wert von Δ angestrebt. Grosse Werte von Δ sind ein Hinweis darauf, dass externe Störgeräusche mit aufgezeichnet wurden. Bei den Lungen- und Herzton Messungen zeigt der Bereich mit grossem Δ an, welche Frequenzen im Signal besonders sind. Wobei das Δ bei tiefen Frequenzen allgemein grösser ist.

Die Dynamik des Messgeräts (RTA 830) ist etwa 100dB. Messwerte, die 100dB unter dem oberen Grenzwert liegen sind deshalb nicht mehr aussagekräftig. Dies wirkt sich vor allem aus in den Bereichen unter 80Hz und über 5'000Hz, weil dort die Dämpfung des Lautsprechers (Gelkissen) die Dynamik des Messbereichs überschreitet und somit die Messwerte nur noch dem Grundrauschen des Messaufbaus entsprechen. In diesem Bereich ist die Aussage der Messungen nicht mehr gewährleistet.

Um die Resultate miteinander zu vergleichen wird bei jeder Messung immer zuerst des Grundrauschen abgezogen (korr) und dann mit der Eichmessung verglichen um daraus die Verstärkung zu berechnen (verst.). Bedingt durch die limitierte Dynamik der Messungen sind die so ermittelten Verstärkungskurven nur bedingt aussagekräftig. Das grösste Signal mit dem breitesten Spektrum ist das Rauschsignal. Deshalb werden im Vergleich der unterschiedlichen Stethoskope nur die Verstärkung des Rauschsignals miteinander verglichen.

Bei den Lungen- und Herzton Messungen wird die ermittelte Verstärkung zusätzlich noch dem menschlichen Gehör entsprechend gewichtet (A-Net). Dies dient vor allem der Veranschaulichung der für den Menschen wichtigen Frequenzanteile.

Die Messresultate sind in Dezibel (dB). Mathematisch gesehen entsprechen 20 dB einer Verzehnfachung der Spannung des Messsignals. Es ist aber sehr schwierig die gemessene Grösse des Messsignals mit der Lautstärke, wie sie vom menschlichen Gehör empfunden wird in einen Zusammenhang zu bringen. Die empfundene Lautstärke hängt von sehr vielen unterschiedlichen Faktoren ab. Als Faustregel kann man davon ausgehen, dass pro 10dB eine Verdopplung der Lautstärkenempfindung stattfindet.

Die Balkendiagramme vergleichen die Werte der Gesamtverstärkung unter Berücksichtigung der Empfindlichkeit des menschlichen Gehörs (A-Net). Sie sollen eine Ansatz geben, um die Verstärkung der verschiedenen Stethoskope untereinander zu vergleichen. Sie können aber auf Grund der schwierig nachvollziehbaren Lautstärkenempfindung des menschlichen Gehörs nur eine qualitative Information sein. Elektronische Stethoskope wurden immer mit maximaler Verstärkung gemessen. Weist ein Stethoskop verschiedene Funktionen auf (Trichter, Membran etc.) wurden alle Funktionen separat ausgemessen. Beim Littmann Master Cardiology wurde speziell eine Messung mit erhöhtem Anpressdruck vorgenommen, da sich dieses Stethoskop, wie alle Littmann Stethoskope, durch einen vom Anpressdruck abhängigen Frequenzgang auszeichnet.

ANSCHRIFT DES VERFASSERS

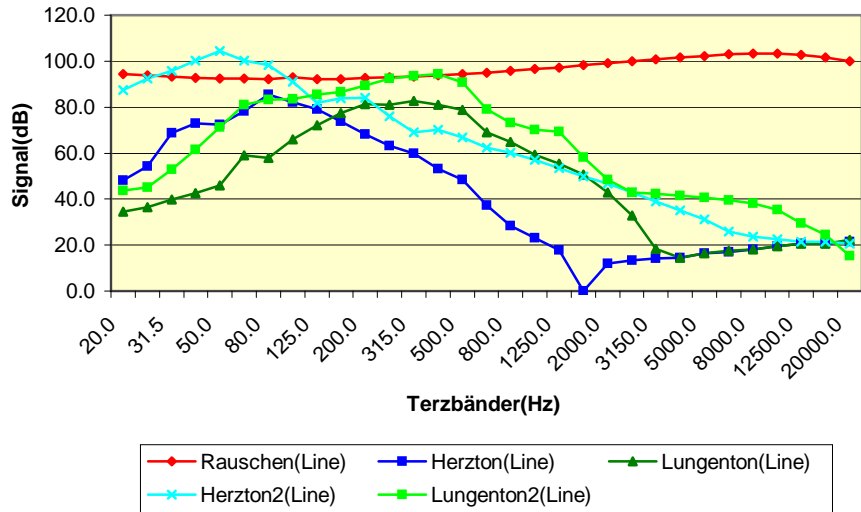
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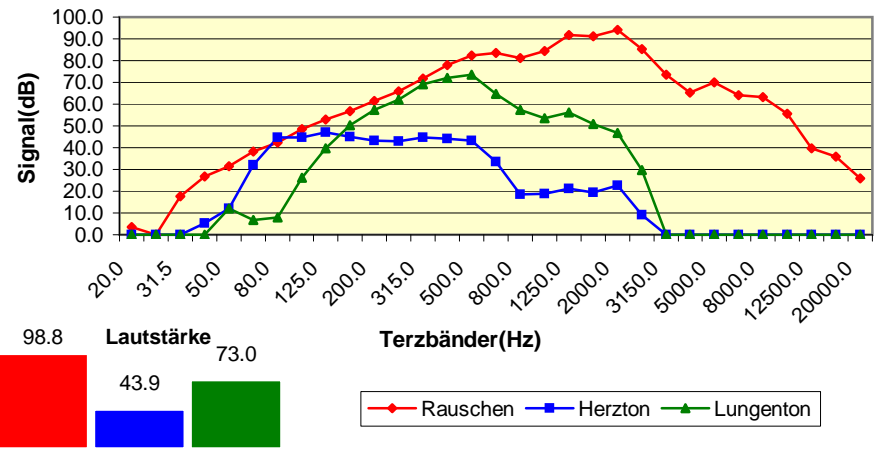
EichungRauschen/110dB

A-Net Terzbänder		Stille(Line)		Rauschen(Line)			Stille		Rausche n				
		Leq	Δ	Leq	Δ	korr	Leq	Δ	Leq	Δ	korr dämpfung		
-50.5	20.0	7.6	82.9	94.4	8.5	94.4	36.1	15.2	36.3	19.6	3.4	-91.0	
-44.7	25.0	8.6	66.3	93.7	7.2	93.7	43.3	15.7	43.1	16.5	0.0	-93.7	
-39.4	31.5	9.5	76.8	93.3	6.0	93.3	40.5	22.5	41.1	17.3	17.6	-75.7	
-34.6	40.0	10.7	44.9	92.6	6.9	92.6	31.7	28.7	35.6	17.7	26.8	-65.8	
-30.2	50.0	22.4	13.4	92.4	6.3	92.4	33.6	19.3	38.6	15.5	31.4	-61.0	
-26.2	63.0	13.0	31.5	92.3	5.3	92.3	28.3	18.4	40.6	11.8	38.2	-54.1	
-22.5	80.0	13.3	39.1	92.1	5.9	92.1	26.3	21.3	43.7	13.5	42.4	-49.7	
-19.1	100.0	14.6	35.6	92.9	4.6	92.9	27.2	15.8	49.3	10.5	48.6	-44.3	
-16.1	125.0	16.4	18.3	92.1	4.6	92.1	26.7	19.5	53.4	6.6	53.0	-39.1	
-13.4	160.0	23.0	12.2	92.2	4.1	92.2	24.5	18.0	57.0	7.2	56.8	-35.4	
-10.9	200.0	17.5	16.0	92.7	3.6	92.7	24.7	18.6	61.6	5.0	61.5	-31.2	
-8.6	250.0	21.9	11.4	93.0	3.2	93.0	18.0	35.6	66.0	4.8	66.0	-27.0	
-6.6	315.0	23.1	7.8	93.3	3.0	93.3	18.5	19.5	71.7	3.3	71.7	-21.6	
-4.8	400.0	23.1	6.1	93.8	2.5	93.8	18.6	37.1	78.0	3.1	78.0	-15.8	
-3.2	500.0	27.9	5.0	94.4	2.2	94.4	16.8	46.4	82.4	2.8	82.4	-12.0	
-1.9	630.0	22.6	8.4	94.9	2.7	94.9	13.0	19.2	83.5	2.6	83.5	-11.4	
-0.8	800.0	23.4	7.3	95.7	2.1	95.7	18.5	21.6	81.1	2.1	81.1	-14.6	
0.0	1000.0	26.0	7.3	96.5	1.6	96.5	17.2	27.9	84.5	1.5	84.5	-12.0	
0.6	1250.0	25.8	8.1	97.2	1.6	97.2	18.4	12.0	91.7	1.6	91.7	-5.5	
1.0	1600.0	29.4	3.7	98.2	1.5	98.2	18.5	11.9	91.3	1.4	91.3	-6.9	
1.2	2000.0	28.6	5.6	99.0	1.3	99.0	18.6	13.4	94.1	1.6	94.1	-4.9	
1.3	2500.0	29.2	3.1	99.9	1.0	99.9	18.8	6.4	85.3	1.6	85.3	-14.6	
1.2	3150.0	30.0	3.3	100.7	1.0	100.7	19.8	5.6	73.6	1.5	73.6	-27.1	
1.0	4000.0	31.1	2.3	101.5	0.9	101.5	21.3	3.3	65.3	1.2	65.2	-36.3	
0.5	5000.0	31.7	2.8	102.2	0.9	102.2	21.6	3.2	69.9	1.7	69.9	-32.3	
-0.1	6300.0	32.8	1.5	102.9	0.8	102.9	22.6	2.7	64.1	1.9	64.0	-38.9	
-1.1	8000.0	34.0	1.8	103.2	0.6	103.2	23.9	2.5	63.2	1.3	63.1	-40.1	
-2.5	10000.0	34.7	2.0	103.2	0.7	103.2	24.5	2.0	55.9	1.3	55.7	-47.5	
-4.3	12500.0	35.8	1.1	102.7	0.5	102.7	25.6	2.0	41.3	1.5	39.7	-63.0	
-6.6	16000.0	37.9	0.8	101.6	0.5	101.6	27.8	1.1	38.8	1.8	35.9	-65.7	
-9.3	20000.0	38.1	1.0	99.9	0.4	99.9	27.9	1.4	33.0	1.5	25.9	-73.9	
	A-Net	42.4	0.9	111.9	0.4	111.9	32.7	2.8	98.8	1.1	98.8		
	Lin	45.0	0.7	113.2	0.6	113.2	46.5	13.5	98.0	1.1	98.0		

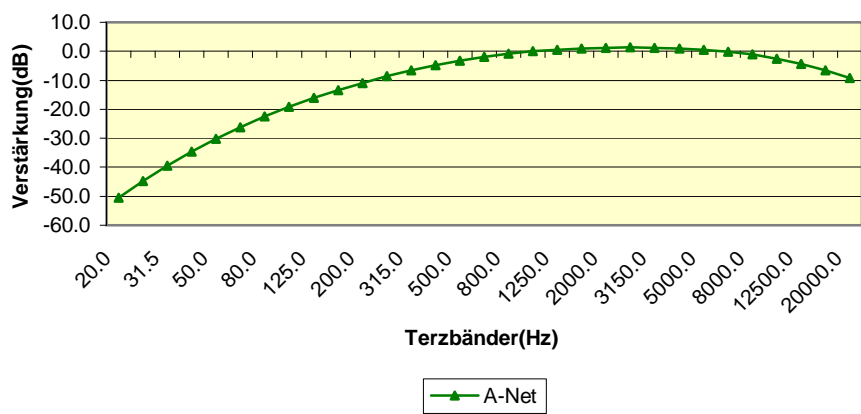
die hier verwendeten Eichtöne (Elektrisch)



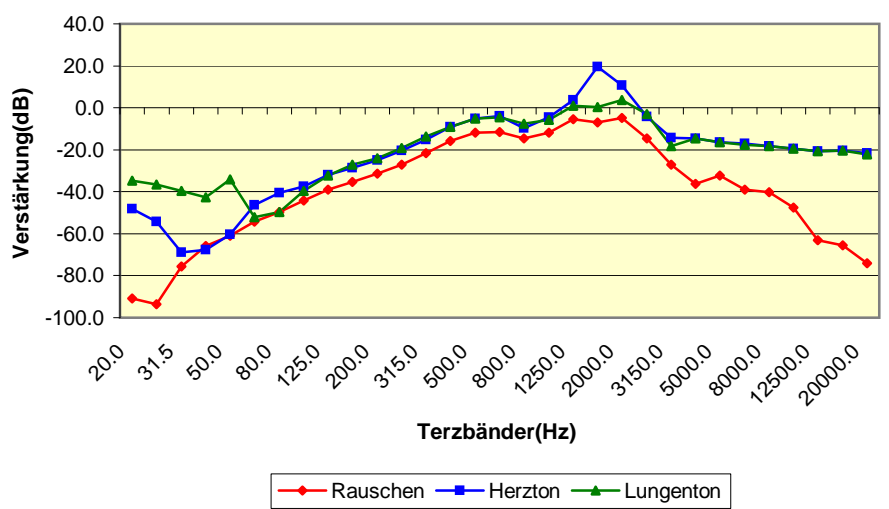
die Eichtöne, ab Lautsprecher aufgezeichnet



Frequenzabhängige Empfindlichkeit des menschlichen Gehörs (A-Net)



Dämpfung der Eichtöne durch den Lautsprecher



EichungHerz/Lunge/110dB

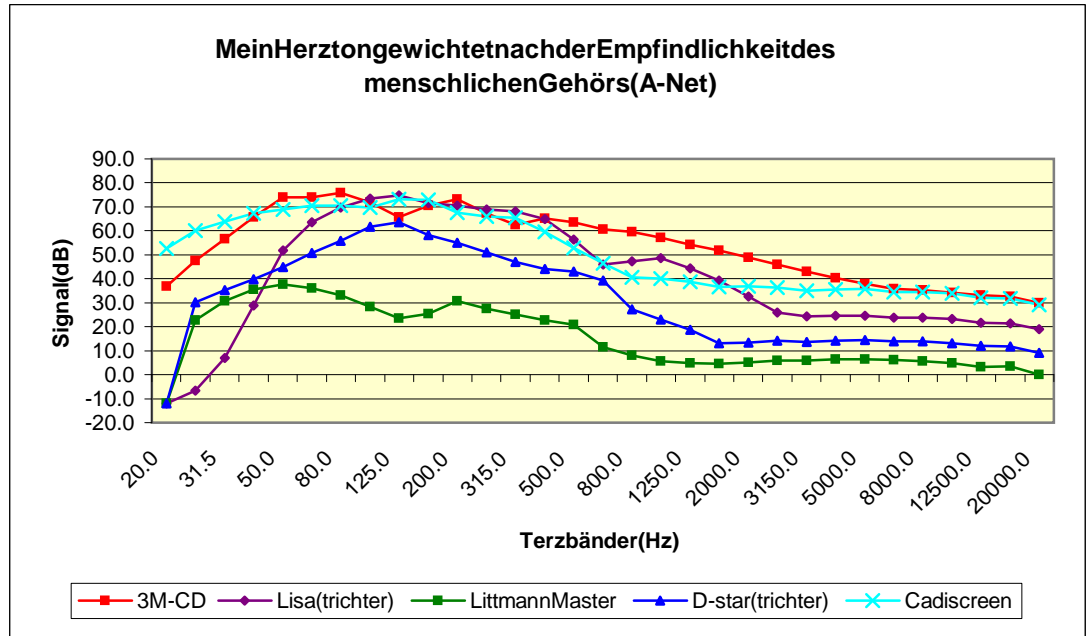
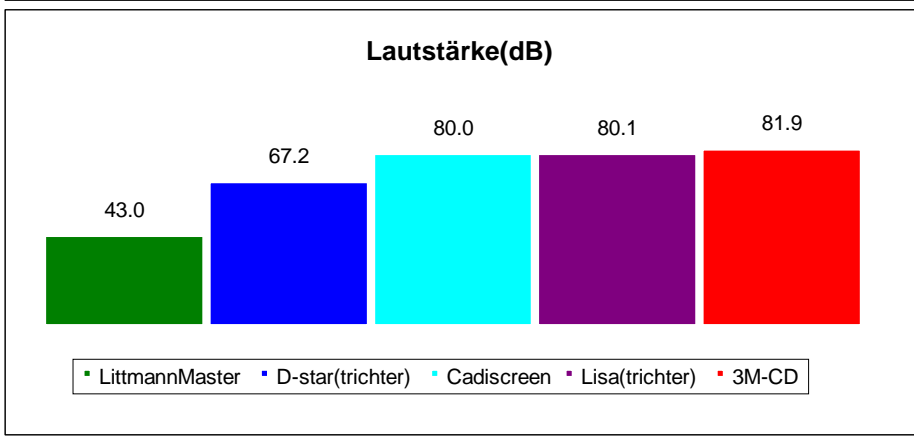
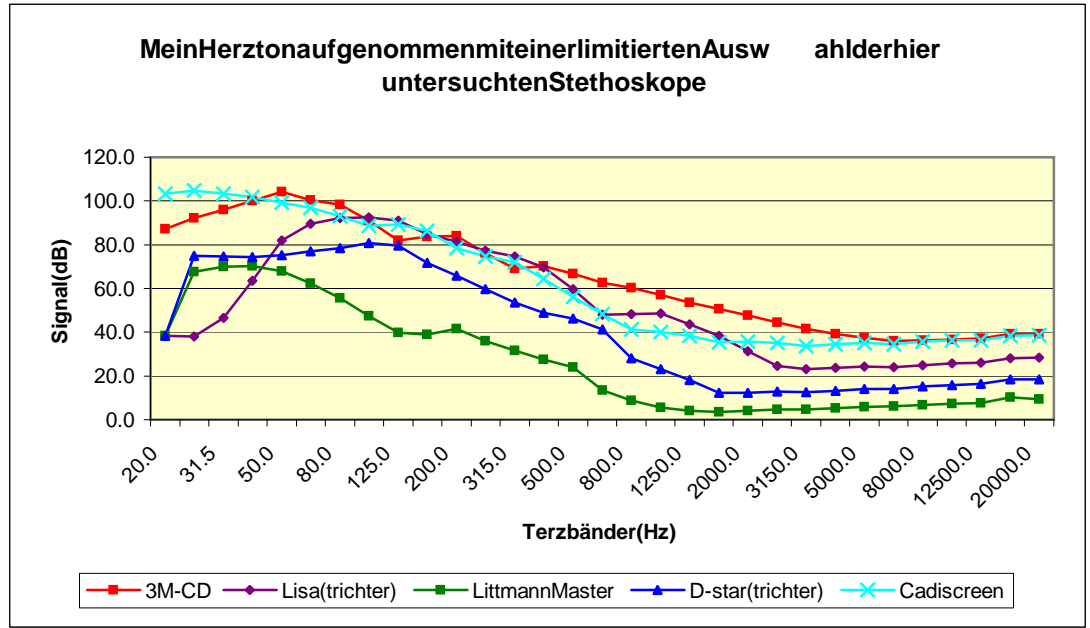
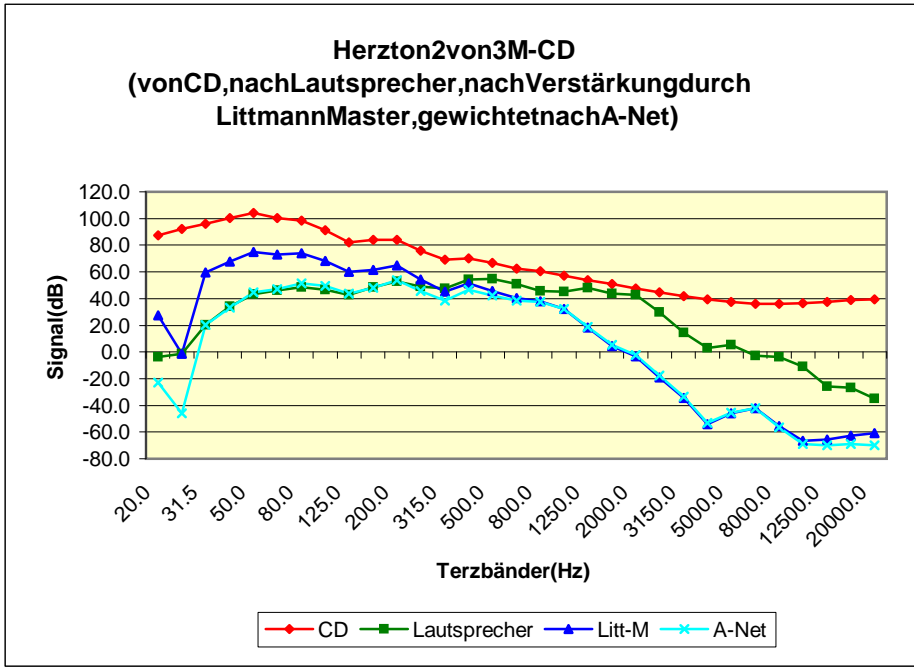
A-Net Terzbänder		Stille(Line)		Herzton(Line)			Lungenton(Line)			Herzton2(Line)			Lungenton2(Line)		
		Leq	Δ	Leq	Δ	korr	Leq	Δ	korr	Leq	Δ	korr	Leq	Δ	korr
-50.5	20.0	7.6	82.9	48.2	12.2	48.1	35.0	24.3	34.6	87.3	6.9	87.3	43.9	29.8	43.8
-44.7	25.0	8.6	66.3	54.4	10.7	54.4	36.9	20.9	36.6	92.3	6.7	92.3	45.3	23.6	45.2
-39.4	31.5	9.5	76.8	68.8	10.3	68.8	40.0	27.0	39.7	95.9	5.7	95.9	53.0	13.0	52.9
-34.6	40.0	10.7	44.9	72.9	9.9	72.9	42.8	14.0	42.6	100.2	7.6	100.2	61.6	14.1	61.6
-30.2	50.0	22.4	13.4	72.5	8.1	72.5	46.6	10.7	46.0	104.3	7.7	104.3	71.2	11.0	71.2
-26.2	63.0	13.0	31.5	78.3	8.8	78.3	59.0	4.7	59.0	100.3	7.6	100.3	81.1	11.3	81.1
-22.5	80.0	13.3	39.1	85.4	8.2	85.4	57.9	15.0	57.8	98.4	10.1	98.4	83.3	12.4	83.3
-19.1	100.0	14.6	35.6	82.2	8.4	82.2	65.9	14.1	65.9	91.0	10.0	91.0	83.6	11.7	83.6
-16.1	125.0	16.4	18.3	79.1	9.2	79.1	72.0	10.7	72.0	81.9	9.3	81.9	85.5	13.1	85.5
-13.4	160.0	23.0	12.2	73.7	11.1	73.7	77.4	11.0	77.4	83.8	11.7	83.8	86.7	9.3	86.7
-10.9	200.0	17.5	16.0	68.3	14.5	68.3	81.3	9.7	81.3	84.1	9.8	84.1	89.3	10.3	89.3
-8.6	250.0	21.9	11.4	63.2	13.9	63.1	81.1	8.8	81.1	76.0	13.2	76.0	92.5	10.1	92.5
-6.6	315.0	23.1	7.8	59.9	13.4	59.8	82.8	9.1	82.8	69.0	15.1	69.0	93.5	10.1	93.5
-4.8	400.0	23.1	6.1	53.5	9.0	53.2	81.1	11.0	81.1	70.1	12.6	70.1	94.5	11.4	94.5
-3.2	500.0	27.9	5.0	49.1	9.4	48.3	78.7	11.6	78.7	66.8	14.1	66.7	90.8	11.6	90.8
-1.9	630.0	22.6	8.4	38.8	11.9	37.3	69.1	12.2	69.1	62.5	13.8	62.4	79.0	13.8	79.0
-0.8	800.0	23.4	7.3	32.2	17.7	28.3	65.0	14.9	64.9	60.4	14.1	60.3	73.3	16.6	73.3
0.0	1000.0	26.0	7.3	30.7	11.4	23.1	59.5	12.6	59.3	57.2	15.9	57.0	70.2	18.2	70.1
0.6	1250.0	25.8	8.1	28.7	4.9	17.8	55.7	10.2	55.4	53.7	16.8	53.3	69.5	16.7	69.4
1.0	1600.0	29.4	3.7	29.3	4.1	0.0	51.3	6.8	50.6	50.7	17.4	49.9	58.6	21.8	58.3
1.2	2000.0	28.6	5.6	29.8	3.7	12.0	44.5	14.2	43.0	47.7	18.7	46.7	49.3	25.8	48.5
1.3	2500.0	29.2	3.1	30.5	3.0	13.4	37.2	20.4	32.8	44.6	19.1	43.0	44.6	22.0	43.0
1.2	3150.0	30.0	3.3	31.3	2.6	14.2	32.0	6.3	18.3	41.7	20.9	39.1	44.1	19.0	42.2
1.0	4000.0	31.1	2.3	32.3	2.5	14.5	32.3	2.5	14.5	39.3	20.4	35.0	43.7	19.7	41.4
0.5	5000.0	31.7	2.8	33.1	2.1	16.6	33.1	2.1	16.6	37.5	21.1	31.3	43.4	16.4	40.8
-0.1	6300.0	32.8	1.5	34.1	2.3	17.0	34.2	1.8	17.7	36.0	17.5	25.8	42.8	6.1	39.5
-1.1	8000.0	34.0	1.8	35.3	1.4	18.2	35.3	2.0	18.2	36.3	14.0	23.6	42.3	5.4	38.1
-2.5	10000.0	34.7	2.0	36.1	1.7	19.6	36.1	1.9	19.6	36.6	12.6	22.5	41.1	5.4	35.4
-4.3	12500.0	35.8	1.1	37.2	1.3	20.7	37.2	1.3	20.7	37.3	12.6	21.3	39.2	3.8	29.4
-6.6	16000.0	37.9	0.8	39.0	1.0	20.5	39.0	1.3	20.5	39.1	13.8	21.3	39.6	2.3	24.6
-9.3	20000.0	38.1	1.0	39.3	1.0	21.5	39.4	1.0	22.3	39.2	11.0	20.7	38.7	1.0	15.2
	A-Net	42.4	0.9	69.1	9.4	68.7	81.9	9.4	81.8	81.9	10.1	81.8	93.7	10.5	93.7
	Lin	45.0	0.7	88.5	7.2	88.4	88.6	7.6	88.5	107.8	6.5	107.8	100.0	9.3	100.0

EichungHerz/Lunge/110dB

Terzbände	Stille(verstärkt)		Herzton				Lungenton				Herzton(gemessen)				
	Leq	Δ	Leq	Δ	korr	A-Net	dämpfung	Leq	Δ	korr	A-Net	dämpfung	Leq	Δ	A-Net
20.0	36.1	15.2	36.2	14.1	0.0	-50.5	-48.1	35.9	16.4	0.0	-50.5	-34.6	37.4	15.8	-13.1
25.0	43.3	15.7	43.0	16.5	0.0	-44.7	-54.4	43.3	17.6	0.0	-44.7	-36.6	42.9	14.7	-1.8
31.5	40.5	22.5	40.4	19.1	0.0	-39.4	-68.8	39.2	19.1	0.0	-39.4	-39.7	41.3	16.0	1.9
40.0	31.7	28.7	32.1	24.0	5.2	-29.4	-67.7	30.6	19.9	0.0	-34.6	-42.6	38.2	15.7	3.6
50.0	33.6	19.3	34.3	14.9	12.1	-18.1	-60.4	34.3	19.8	12.1	-18.1	-34.0	41.3	14.8	11.1
63.0	28.3	18.4	36.4	20.1	32.1	5.9	-46.2	29.0	13.8	6.8	-19.4	-52.2	38.4	39.6	12.2
80.0	26.3	21.3	45.8	15.7	44.8	22.3	-40.6	27.3	15.8	8.0	-14.5	-49.8	38	26.3	15.5
100.0	27.2	15.8	45.9	16.1	44.8	25.7	-37.4	32.7	26.6	26.1	7.0	-39.8	46	20.2	26.9
125.0	26.7	19.5	47.9	15.0	47.1	31.0	-32.0	41.5	18.1	39.8	23.7	-32.2	55.9	13.4	39.8
160.0	24.5	18.0	45.9	19.2	45.1	31.7	-28.5	50.7	17.4	50.3	36.9	-27.1	63.6	12.7	50.2
200.0	24.7	18.6	44.2	22.2	43.2	32.3	-25.0	57.5	13.6	57.3	46.4	-24.0	64.6	12.4	53.7
250.0	18.0	35.6	43.3	18.5	42.8	34.2	-20.3	62.0	10.3	61.9	53.3	-19.1	60.7	12.2	52.1
315.0	18.5	19.5	45.0	17.3	44.6	38.0	-15.2	69.0	11.3	69.0	62.4	-13.8	58.2	12.2	51.6
400.0	18.6	37.1	44.6	10.1	44.2	39.4	-9.1	72.1	12.5	72.1	67.3	-9.0	47.5	18.1	42.7
500.0	16.8	46.4	43.6	11.2	43.2	40.0	-5.1	73.5	12.2	73.5	70.3	-5.2	51	17.3	47.8
630.0	13.0	19.2	34.2	14.3	33.4	31.5	-3.9	64.6	13.0	64.6	62.7	-4.5	39.6	22.5	37.7
800.0	18.5	21.6	24.5	22.4	18.5	17.7	-9.8	57.4	16.7	57.3	56.5	-7.6	28.4	31.0	27.6
1000.0	17.2	27.9	24.0	14.6	18.7	18.7	-4.4	53.8	13.4	53.7	53.7	-5.6	21.1	47.4	21.1
1250.0	18.4	12.0	26.0	5.8	21.3	21.9	3.6	56.4	9.2	56.3	56.9	0.9	12.4	102.4	13.0
1600.0	18.5	11.9	25.0	4.8	19.4	20.4	19.4	51.2	8.0	51.0	52.0	0.4	7.1	123.9	8.1
2000.0	18.6	13.4	26.9	3.7	22.7	23.9	10.7	47.0	12.8	46.7	47.9	3.7	3.7	262.2	4.9
2500.0	18.8	6.4	21.3	4.2	9.3	10.6	-4.1	31.9	23.8	29.7	31.0	-3.1	2.7	481.5	4.0
3150.0	19.8	5.6	20.2	5.0	0.0	1.2	-14.2	20.5	9.3	0.0	1.2	-18.3	2.6	496.2	3.8
4000.0	21.3	3.3	21.0	3.3	0.0	1.0	-14.5	21.0	3.3	0.0	1.0	-14.5	3.4	150.0	4.4
5000.0	21.6	3.2	21.6	3.2	0.0	0.5	-16.6	21.7	4.6	0.0	0.5	-16.6	3.3	54.5	3.8
6300.0	22.6	2.7	22.6	2.7	0.0	-0.1	-17.0	22.8	2.6	0.0	-0.1	-17.7	5.5	105.5	5.4
8000.0	23.9	2.5	23.9	2.5	0.0	-1.1	-18.2	24.0	2.1	0.0	-1.1	-18.2	7	117.1	5.9
10000.0	24.5	2.0	24.6	1.6	0.0	-2.5	-19.6	24.7	2.0	0.0	-2.5	-19.6	3.9	51.3	1.4
12500.0	25.6	2.0	25.7	2.3	0.0	-4.3	-20.7	25.9	1.5	0.0	-4.3	-20.7	3.7	16.2	-0.6
16000.0	27.8	1.1	27.9	1.4	0.0	-6.6	-20.5	28.0	1.8	0.0	-6.6	-20.5	5	12.0	-1.6
20000.0	27.9	1.4	28.0	1.1	0.0	-9.3	-21.5	28.1	1.4	0.0	-9.3	-22.3	4.3	18.6	-5.0
A-Net	32.7	2.8	46.0	10.9	43.9			73.1	11.5	73.0			58.5		
Lin	46.5	13.5	55.4	10.8	51.5			77.0	10.9	76.7			68.7		

Herztöne

A-Net Terzbänder		3M-CD					Lisa(trichter)		LittmannMaster		D-star(trichter)		Cadiscreen
		CD	Δ	A-Net	tester	Litt-M	Leq	Δ	Leq	Δ	Leq	Δ	Leq
-50.5	20.0	87.3	6.9	36.8	-3.7	27.7	38.4	19.0	38.4	19.0	38.4	19.0	103.2
-44.7	25.0	92.3	6.7	47.6	-1.4	-1.4	38.0	16.6	67.5	10.1	75.0	7.6	104.8
-39.4	31.5	95.9	5.7	56.5	20.2	59.6	46.4	14.2	70.0	9.0	74.7	9.6	103.2
-34.6	40.0	100.2	7.6	65.6	34.4	67.8	63.5	12.6	70.1	13.8	74.4	12.2	101.8
-30.2	50.0	104.3	7.7	74.1	43.3	75.1	82.0	10.2	68.0	11.9	75.2	11.2	99.2
-26.2	63.0	100.3	7.6	74.1	46.2	73.1	89.7	7.1	62.4	11.2	76.9	10.5	96.8
-22.5	80.0	98.4	10.1	75.9	48.7	73.9	92.1	9.0	55.6	12.6	78.3	9.8	93.1
-19.1	100.0	91.0	10.0	71.9	46.7	68.4	92.6	8.7	47.3	17.8	80.9	10.1	88.8
-16.1	125.0	81.9	9.3	65.8	42.8	59.9	91.0	9.6	39.7	18.9	79.7	11.2	89.4
-13.4	160.0	83.8	11.7	70.4	48.4	61.3	84.9	8.4	38.8	24.2	71.7	13.1	86.3
-10.9	200.0	84.1	9.8	73.2	52.9	64.7	81.3	11.8	41.6	28.4	65.8	14.4	78.4
-8.6	250.0	76.0	13.2	67.4	49.0	54.2	77.4	14.1	36.1	28.8	59.7	16.9	74.5
-6.6	315.0	69.0	15.1	62.4	47.4	45.3	74.6	13.8	31.7	32.2	53.6	22.8	72.0
-4.8	400.0	70.1	12.6	65.3	54.3	51.5	69.7	15.9	27.6	38.8	49.0	20.6	64.3
-3.2	500.0	66.8	14.1	63.6	54.8	45.5	59.6	22.8	24.0	43.3	46.3	22.7	56.2
-1.9	630.0	62.5	13.8	60.6	51.1	40.6	47.9	30.3	13.4	86.6	41.2	31.1	48.3
-0.8	800.0	60.4	14.1	59.6	45.8	38.2	48.2	34.6	8.8	138.6	28.1	51.6	41.4
0.0	1000.0	57.2	15.9	57.2	45.2	32.4	48.7	33.1	5.6	251.8	23.0	55.2	40.1
0.6	1250.0	53.7	16.8	54.3	48.2	18.2	43.7	40.0	4.2	152.4	18.1	52.5	38.2
1.0	1600.0	50.7	17.4	51.7	43.8	4.4	38.4	26.6	3.5	122.9	12.2	41.8	35.5
1.2	2000.0	47.7	18.7	48.9	42.8	-3.4	31.3	36.7	4.0	122.5	12.2	48.4	35.7
1.3	2500.0	44.6	19.1	45.9	30.0	-19.1	24.7	24.7	4.6	102.2	12.8	49.2	35.1
1.2	3150.0	41.7	20.9	42.9	14.6	-34.7	23.0	24.8	4.7	61.7	12.5	45.6	33.7
1.0	4000.0	39.3	20.4	40.3	3.0	-54.0	23.6	22.9	5.4	53.7	13.3	38.3	34.5
0.5	5000.0	37.5	21.1	38.0	5.2	-46.0	24.2	21.1	6.0	43.3	14.0	34.3	35.2
-0.1	6300.0	36.0	17.5	35.9	-2.9	-42.2	24.0	16.3	6.2	29.0	14.1	21.3	34.5
-1.1	8000.0	36.3	14.0	35.2	-3.8	-55.4	25.0	14.8	6.8	25.0	15.1	19.2	35.6
-2.5	10000.0	36.6	12.6	34.1	-10.9	-66.6	25.7	13.6	7.2	25.0	15.7	14.6	36.3
-4.3	12500.0	37.3	12.6	33.0	-25.7	-65.4	26.0	7.7	7.6	11.8	16.3	8.6	36.3
-6.6	16000.0	39.1	13.8	32.5	-26.6	-62.5	28.1	4.3	10.2	5.9	18.3	6.0	38.3
-9.3	20000.0	39.2	11.0	29.9	-34.7	-60.7	28.4	4.9	9.3	7.5	18.5	6.5	38.5
	A-Net	81.9	10.1				80.1		43.0		67.2		80.0
	Lin	107.8	6.5				97.8		75.2		86.6		110.0

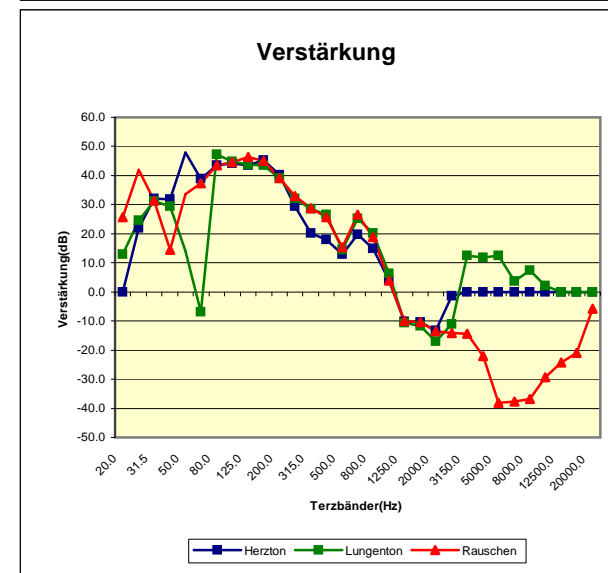
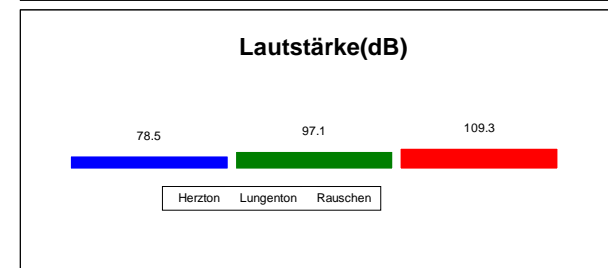
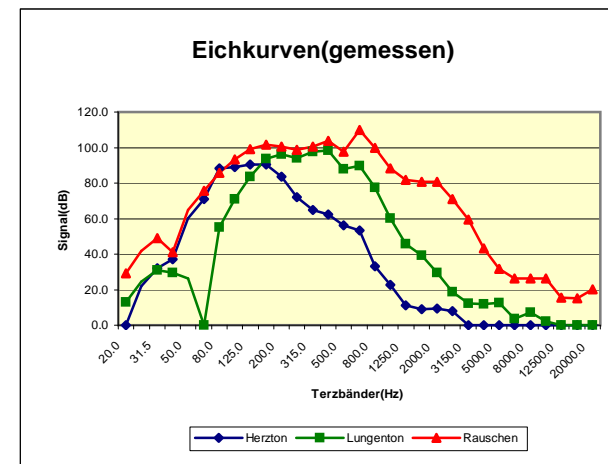


Escope(BS)/120db

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	39.5	19.7	41.8	19.1	29.1	25.7
-44.7	25.0	41.2		47.6	16.4	41.9	41.9
-39.4	31.5	42.9	11.2	52.5	10.3	49.0	31.4
-34.6	40.0	58.6	3.4	59.7	8.7	41.2	14.4
-30.2	50.0	61.4		69.4	9.7	65.0	33.6
-26.2	63.0	64.1	6.4	77.6	5.9	75.5	37.4
-22.5	80.0	60.1	7.7	86.3	6.4	85.9	43.4
-19.1	100.0	70.7	5.7	93.9	4.8	93.3	44.7
-16.1	125.0	78.1	7.4	100.0	3.8	99.3	46.3
-13.4	160.0	65.9	18.7	101.9	4.1	101.8	45.0
-10.9	200.0	58.3	20.4	100.7	3.1	100.6	39.2
-8.6	250.0	71.8	1.0	99.2	3.1	98.8	32.9
-6.6	315.0	75.1	2.4	101.0	2.8	100.5	28.9
-4.8	400.0	73.0	1.6	104.0	3.7	103.8	25.8
-3.2	500.0	51.2	2.5	97.8	1.7	97.8	15.4
-1.9	630.0	54.9	4.4	110.0	2.2	110.0	26.5
-0.8	800.0	49.9	3.2	100.0	1.4	100.0	18.9
0.0	1000.0	47.1	2.3	88.4	2.0	88.3	3.8
0.6	1250.0	40.2	3.2	81.9	2.0	81.8	-9.9
1.0	1600.0	33.6	3.6	80.9	2.2	80.9	-10.4
1.2	2000.0	30.9	4.2	80.6	1.2	80.6	-13.5
1.3	2500.0	30.8	3.2	71.2	2.1	71.1	-14.2
1.2	3150.0	30.7	2.6	59.6	1.8	59.3	-14.3
1.0	4000.0	31.0	2.3	45.1	2.7	43.2	-22.1
0.5	5000.0	31.8	2.2	37.8	4.5	31.8	-38.1
-0.1	6300.0	32.8	1.8	36.2	3.3	26.4	-37.6
-1.1	8000.0	33.9	1.5	36.9	4.1	26.2	-36.9
-2.5	10000.0	34.7	1.2	37.5	2.7	26.3	-29.4
-4.3	12500.0	35.9	1.1	36.7	1.9	15.6	-24.2
-6.6	16000.0	37.9	1.1	38.5	1.3	15.0	-20.9
-9.3	20000.0	38.4	1.0	39.4	1.0	20.1	-5.8
	A-Net	72.4	3.2	109.4	1.9	109.3	10.5
	Lin	84.5	3.0	112.9	1.8	112.6	14.6

Escope(BS)/120db

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	39.1	15.9	0.0	0.0	-50.5	39.9	16.0	13.0	13.0	-37.5
25.0	42.1		22.0	22.0	-22.7	42.4		24.6	24.6	-20.1
31.5	45.1	11.5	32.1	32.1	-7.3	44.9	23.2	31.2	31.2	-8.2
40.0	59.3	4.9	37.1	31.9	2.5	58.9	9.7	29.5	29.5	-5.1
50.0	66.8		60.1	48.0	29.9	61.5		26.2	14.1	-4.0
63.0	74.2	10.0	70.9	38.9	44.7	64.1	5.8	0.0	-6.8	-26.2
80.0	88.6	7.8	88.3	43.4	65.8	64.0	14.1	55.2	47.1	32.7
100.0	90.0	8.0	89.0	44.2	69.9	76.8	12.0	70.9	44.7	51.8
125.0	92.4	7.5	90.5	43.4	74.4	87.2	8.3	83.4	43.7	67.3
160.0	90.8	8.9	90.3	45.2	76.9	94.1	8.9	93.8	43.5	80.4
200.0	83.9	11.8	83.4	40.2	72.5	96.5	8.2	96.4	39.1	85.5
250.0	78.0	9.9	72.2	29.3	63.6	94.6	7.7	93.9	32.0	85.3
315.0	77.4	7.1	64.7	20.2	58.1	98.2	7.8	97.6	28.6	91.0
400.0	75.2	4.1	62.2	18.0	57.4	99.0	8.9	98.6	26.5	93.8
500.0	60.0	8.5	56.1	12.9	52.9	88.0	10.6	87.9	14.4	84.7
630.0	60.1	6.7	53.2	19.8	51.3	89.9	10.2	89.7	25.2	87.8
800.0	51.1	5.3	33.3	14.9	32.5	77.8	11.6	77.4	20.1	76.6
1000.0	47.6	3.4	22.6	3.9	22.6	61.8	12.6	60.0	6.4	60.0
1250.0	40.5	4.0	11.1	-10.2	11.7	49.4	13.4	45.7	-10.6	46.3
1600.0	34.1	3.5	9.1	-10.4	10.1	42.9	8.9	39.3	-11.7	40.3
2000.0	31.6	5.4	9.4	-13.3	10.6	36.3	15.4	29.6	-17.1	30.8
2500.0	31.4	6.4	7.9	-1.4	9.2	32.7	14.7	18.6	-11.2	19.9
3150.0	30.8	5.2	0.0	0.0	1.2	31.7	12.9	12.4	12.4	13.6
4000.0	31.0	5.5	0.0	0.0	1.0	31.9	12.2	11.8	11.8	12.8
5000.0	31.8	3.8	0.0	0.0	0.5	32.7	11.3	12.6	12.6	13.1
6300.0	32.7	2.8	0.0	0.0	-0.1	33.1	7.9	3.7	3.7	3.6
8000.0	34.0	2.4	0.0	0.0	-1.1	34.3	5.8	7.4	7.4	6.3
10000.0	34.6	2.6	0.0	0.0	-2.5	34.9	5.7	2.0	2.0	-0.5
12500.0	35.7	1.7	0.0	0.0	-4.3	35.8	2.5	0.0	0.0	-4.3
16000.0	37.9	1.1	0.0	0.0	-6.6	37.9	1.6	0.0	0.0	-6.6
20000.0	38.3	1.3	0.0	0.0	-9.3	38.5	3.1	0.0	0.0	0.0
A-Net	82.0	8.2	78.5	34.6		97.6	8.2	97.1	24.1	
Lin	97.0	6.3	94.6	43.1		104.1	6.9	103.1	26.4	

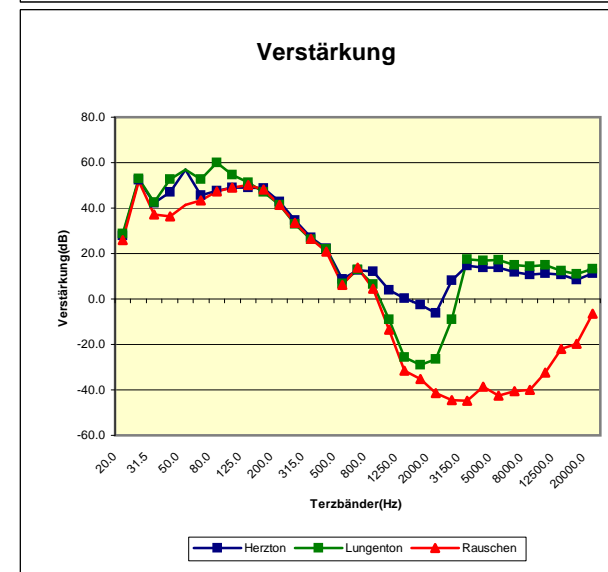
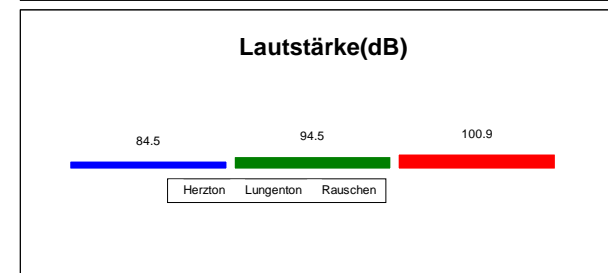
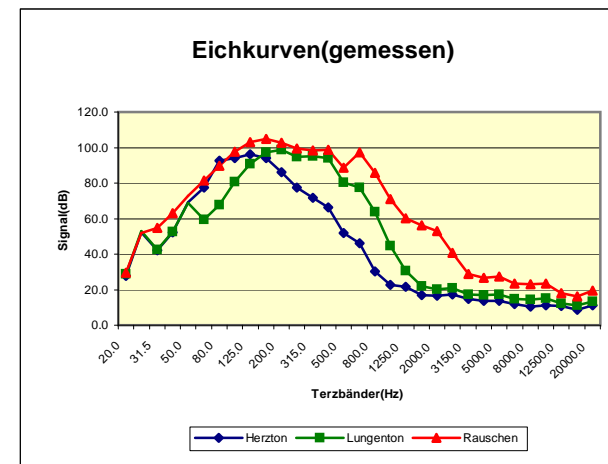


Escope(HS)/120db

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	38.6	18.1	41.2	18.2	29.5	26.0
-44.7	25.0	34.4	16.0	52.9	10.6	51.8	51.8
-39.4	31.5	33.0	16.4	55.5	13.2	54.8	37.2
-34.6	40.0	40.6	16.5	63.8	8.9	63.2	36.4
-30.2	50.0	36.8	20.4	73.1	6.4	73.0	41.5
-26.2	63.0	30.7	27.4	81.5	7.1	81.5	43.3
-22.5	80.0	29.3	18.8	89.9	5.2	89.9	47.5
-19.1	100.0	28.2	16.3	97.5	3.6	97.5	48.9
-16.1	125.0	26.8	20.1	103.1	3.1	103.1	50.1
-13.4	160.0	26.3	18.6	105.0	3.2	105.0	48.2
-10.9	200.0	25.2	19.8	102.8	3.0	102.8	41.3
-8.6	250.0	25.4	15.4	99.4	3.2	99.4	33.4
-6.6	315.0	25.3	11.9	98.3	2.6	98.3	26.6
-4.8	400.0	25.2	9.9	98.8	2.7	98.8	20.8
-3.2	500.0	24.1	12.0	88.5	2.5	88.5	6.1
-1.9	630.0	24.9	10.4	97.4	3.0	97.4	13.9
-0.8	800.0	25.4	9.8	85.7	2.3	85.7	4.6
0.0	1000.0	25.4	9.4	70.9	2.8	70.9	-13.6
0.6	1250.0	25.9	5.0	60.2	3.0	60.0	-31.7
1.0	1600.0	27.4	5.8	56.4	3.2	56.1	-35.2
1.2	2000.0	27.8	5.0	53.3	3.0	52.8	-41.3
1.3	2500.0	28.1	3.9	42.6	2.8	40.8	-44.5
1.2	3150.0	29.2	2.4	35.0	3.7	28.8	-44.8
1.0	4000.0	30.3	2.3	34.7	4.3	26.7	-38.6
0.5	5000.0	31.1	1.9	35.4	5.9	27.2	-42.6
-0.1	6300.0	32.2	1.9	34.9	2.9	23.4	-40.6
-1.1	8000.0	33.5	1.5	35.8	2.8	23.1	-40.0
-2.5	10000.0	34.2	1.8	36.4	3.6	23.4	-32.3
-4.3	12500.0	35.3	1.1	36.4	1.1	17.9	-21.8
-6.6	16000.0	37.6	1.6	38.3	1.0	16.1	-19.8
-9.3	20000.0	37.8	2.1	38.8	1.0	19.5	-6.4
	A-Net	41.9	1.0	100.9	1.8	100.9	2.1
	Lin	47.7	7.8	110.1	2.1	110.1	12.1

Escope(HS)/120db

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	40.8	13.7	27.8	27.8	-22.7	41.0	16.8	28.7	28.7	-21.8
25.0	53.3	10.9	52.3	52.3	7.6	54.0	11.5	53.0	53.0	8.3
31.5	44.8	13.8	42.2	42.2	2.8	45.1	18.0	42.6	42.6	3.2
40.0	54.2	11.8	52.2	47.0	17.6	54.7	25.4	52.8	52.8	18.2
50.0	69.3	6.1	69.1	57.0	38.9	69.1	14.8	68.9	56.8	38.7
63.0	77.6	9.5	77.6	45.5	51.4	59.9	17.5	59.6	52.8	33.4
80.0	92.5	7.6	92.5	47.7	70.0	68.0	12.6	67.9	59.9	45.4
100.0	93.9	7.5	93.9	49.1	74.8	80.8	11.1	80.8	54.7	61.7
125.0	96.1	7.1	96.1	49.0	80.0	90.9	8.3	90.9	51.1	74.8
160.0	94.0	8.7	94.0	48.9	80.6	97.2	8.5	97.2	46.9	83.8
200.0	86.1	11.6	86.1	42.9	75.2	98.7	8.0	98.7	41.4	87.8
250.0	77.5	11.7	77.5	34.7	68.9	94.8	7.9	94.8	32.9	86.2
315.0	71.6	11.0	71.6	27.0	65.0	95.3	7.9	95.3	26.3	88.7
400.0	66.4	7.5	66.3	22.2	61.5	94.1	9.4	94.1	22.0	89.3
500.0	52.2	10.0	51.9	8.7	48.7	80.4	11.2	80.4	6.9	77.2
630.0	46.7	9.0	46.0	12.6	44.1	77.5	11.9	77.5	12.9	75.6
800.0	34.3	13.4	30.4	12.0	29.6	63.9	13.8	63.8	6.5	63.0
1000.0	30.2	12.6	22.8	4.1	22.8	45.6	17.1	44.7	-9.0	44.7
1250.0	30.0	13.0	21.5	0.2	22.1	34.7	20.2	30.8	-25.5	31.4
1600.0	29.7	11.1	17.0	-2.4	18.0	31.1	12.9	21.9	-29.1	22.9
2000.0	29.9	11.4	16.5	-6.1	17.7	30.8	14.6	20.1	-26.6	21.3
2500.0	30.3	13.9	17.3	8.0	18.6	31.2	14.4	20.7	-9.0	22.0
3150.0	30.7	8.1	14.7	14.7	15.9	31.2	10.9	17.5	17.5	18.7
4000.0	31.5	7.6	13.7	13.7	14.7	32.0	10.3	17.0	17.0	18.0
5000.0	32.2	6.2	13.7	13.7	14.2	32.7	10.7	17.2	17.2	17.7
6300.0	33.0	3.9	11.9	11.9	11.8	33.3	6.9	14.8	14.8	14.7
8000.0	34.1	3.5	10.6	10.6	9.5	34.4	6.1	14.3	14.3	13.2
10000.0	34.8	3.7	11.3	11.3	8.8	35.1	5.1	15.0	15.0	12.5
12500.0	35.8	1.7	10.8	10.8	6.5	35.9	2.2	12.4	12.4	8.1
16000.0	37.9	1.6	8.5	8.5	1.9	38.0	1.8	11.1	11.1	4.5
20000.0	38.2	1.0	11.3	11.3	2.0	38.3	1.8	13.3	13.3	4.0
A-Net	84.6	8.3	84.5	40.7		94.5	7.4	94.5	21.5	
Lin	100.3	6.3	100.3	48.7		103.4	6.7	103.4	26.6	

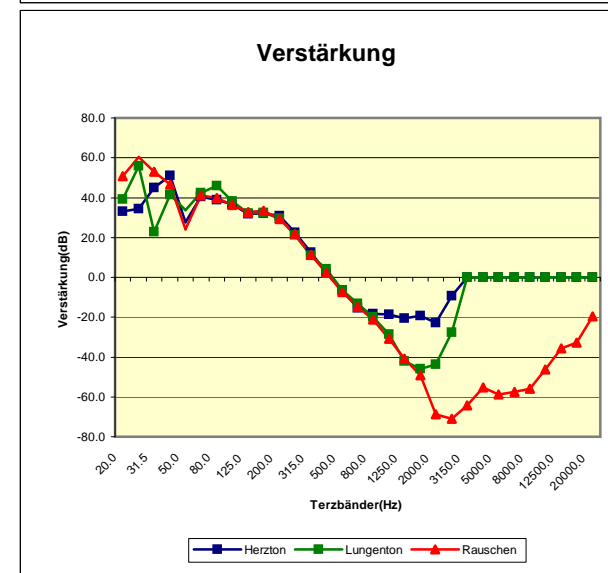
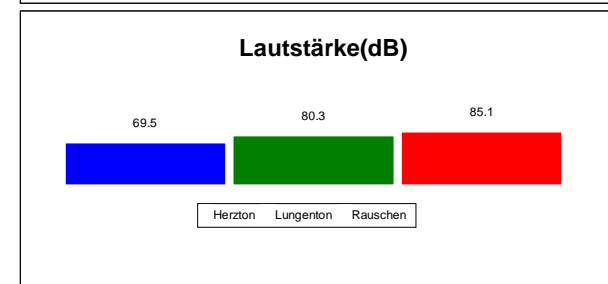
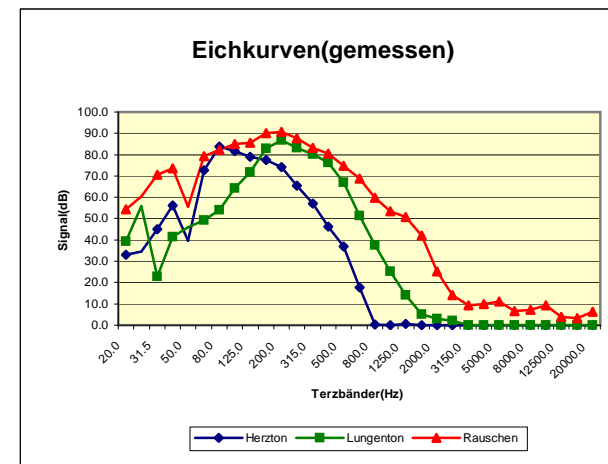


Delwastar(trichter)/110dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	49.7	14.1	58.3	12.2	54.3	50.8
-44.7	25.0	67.1	10.0	70.4	8.1	60.4	60.4
-39.4	31.5	61.5	10.1	73.1	7.7	70.4	52.9
-34.6	40.0	58.7	8.2	74.9	6.9	73.4	46.7
-30.2	50.0	78.5	1.1	79.1	9.5	55.6	24.2
-26.2	63.0	61.0	2.8	80.2	5.5	79.2	41.0
-22.5	80.0	48.6	9.5	82.5	5.3	82.3	39.9
-19.1	100.0	52.7	6.8	85.1	4.7	84.9	36.3
-16.1	125.0	55.5	7.0	85.9	4.0	85.6	32.6
-13.4	160.0	46.6	11.2	90.2	3.9	90.1	33.4
-10.9	200.0	38.1	19.4	90.7	3.6	90.7	29.2
-8.6	250.0	45.1	2.7	87.8	3.6	87.7	21.8
-6.6	315.0	37.1	3.5	83.1	2.9	83.1	11.4
-4.8	400.0	34.2	3.2	80.4	3.0	80.4	2.4
-3.2	500.0	20.1	10.9	74.9	3.2	74.9	-7.5
-1.9	630.0	16.9	11.2	68.7	2.8	68.7	-14.8
-0.8	800.0	16.0	11.9	59.8	3.0	59.7	-21.3
0.0	1000.0	16.4	9.8	53.7	3.0	53.6	-30.9
0.6	1250.0	17.3	6.9	51.0	3.1	50.8	-40.9
1.0	1600.0	17.8	7.9	42.7	3.5	42.2	-49.1
1.2	2000.0	18.2	6.0	28.5	4.2	25.3	-68.8
1.3	2500.0	18.8	5.3	22.8	8.8	14.1	-71.2
1.2	3150.0	19.7	5.1	22.0	5.5	9.3	-64.2
1.0	4000.0	20.7	4.3	22.9	5.2	9.9	-55.3
0.5	5000.0	21.4	3.3	23.7	4.6	11.0	-58.8
-0.1	6300.0	22.5	2.7	23.8	4.2	6.7	-57.4
-1.1	8000.0	23.7	2.5	24.9	2.8	7.1	-56.0
-2.5	10000.0	24.4	2.0	25.8	1.9	9.3	-46.4
-4.3	12500.0	25.5	2.0	26.2	1.9	4.0	-35.8
-6.6	16000.0	27.7	1.1	28.2	1.4	3.2	-32.8
-9.3	20000.0	27.9	1.1	28.6	1.0	6.4	-19.6
	A-Net	49.5	2.2	85.2	2.6	85.1	-13.7
	Lin	78.8	1.9	96.2	2.2	94.9	-3.0

Delwastar(trichter)/110dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	50.9	12.0	33.1	33.1	-17.4	52.0	11.9	39.3	39.3	-11.2
25.0	67.3	9.4	34.4	34.4	-10.3	69.2	11.0	55.8	55.8	11.1
31.5	62.7	10.7	44.9	44.9	5.5	61.6	15.4	22.8	22.8	-16.6
40.0	63.6	11.3	56.3	51.1	21.7	59.8	13.4	41.3	41.3	6.7
50.0	78.6	3.3	39.8	27.7	9.6	78.7	9.9	45.8	33.8	15.6
63.0	74.6	9.4	72.6	40.5	46.4	63.0	17.9	49.3	42.5	23.1
80.0	83.9	8.3	83.7	38.9	61.2	57.8	15.1	54.1	46.1	31.6
100.0	81.9	8.4	81.6	36.8	62.5	66.4	14.8	64.4	38.3	45.3
125.0	79.6	9.0	79.0	31.9	62.9	73.1	10.5	71.9	32.1	55.8
160.0	77.6	12.1	77.4	32.2	64.0	83.0	11.1	82.9	32.6	69.5
200.0	74.3	13.3	74.2	30.9	63.3	86.8	9.3	86.8	29.5	75.9
250.0	66.2	13.7	65.4	22.6	56.8	83.2	9.3	83.1	21.1	74.5
315.0	57.8	14.4	57.0	12.4	50.4	80.1	9.4	80.0	11.1	73.4
400.0	48.3	10.6	46.4	2.2	41.6	76.4	11.9	76.3	4.3	71.5
500.0	38.0	12.6	36.8	-6.4	33.6	67.0	14.0	67.0	-6.5	63.8
630.0	23.4	20.1	17.8	-15.6	15.9	51.6	16.7	51.4	-13.1	49.5
800.0	17.3	23.7	0.2	-18.3	-0.6	38.1	24.7	37.4	-19.9	36.6
1000.0	17.6	22.2	0.0	-18.7	0.0	27.8	29.1	25.1	-28.6	25.1
1250.0	18.5	21.1	0.7	-20.6	1.3	21.9	22.4	14.2	-42.1	14.8
1600.0	18.6	15.6	0.0	-19.4	1.0	19.6	20.4	5.0	-46.0	6.0
2000.0	18.9	20.1	0.0	-22.7	1.2	19.6	17.9	3.1	-43.6	4.3
2500.0	19.6	17.3	0.0	-9.3	1.3	20.0	20.0	2.2	-27.5	3.5
3150.0	20.2	10.4	0.0	0.0	1.2	20.4	12.3	0.0	0.0	1.2
4000.0	21.2	8.5	0.0	0.0	1.0	21.4	10.7	0.0	0.0	1.0
5000.0	21.9	6.8	0.0	0.0	0.5	22.1	10.9	0.0	0.0	0.5
6300.0	22.8	3.5	0.0	0.0	-0.1	22.9	7.0	0.0	0.0	-0.1
8000.0	24.0	3.3	0.0	0.0	-1.1	24.1	5.4	0.0	0.0	-1.1
10000.0	24.8	2.8	0.0	0.0	-2.5	24.9	4.8	0.0	0.0	-2.5
12500.0	25.7	1.6	0.0	0.0	-4.3	25.8	2.3	0.0	0.0	-4.3
16000.0	27.9	1.4	0.0	0.0	-6.6	28.0	1.8	0.0	0.0	-6.6
20000.0	28.1	1.4	0.0	0.0	-9.3	28.1	2.1	0.0	0.0	0.0
A-Net	70.3	11.0	69.5	25.6		80.5	8.6	80.3	7.2	
Lin	88.2	7.3	84.6	33.1		90.4	8.3	87.7	11.0	

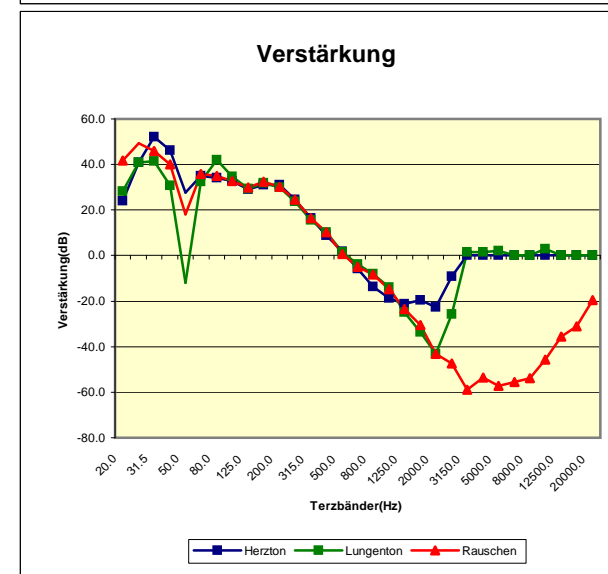
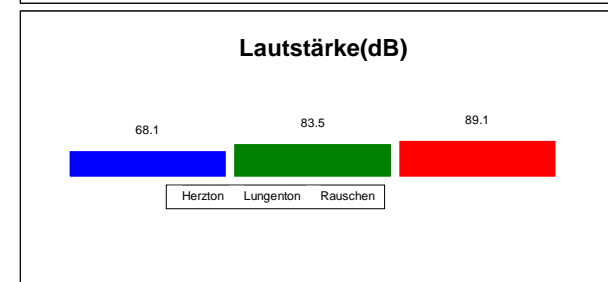
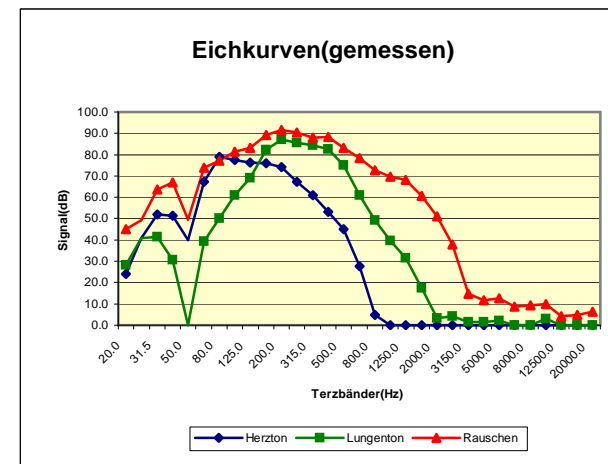


Delwastar(membran)/110dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	43.3	12.7	50.3	13.5	45.2	41.7
-44.7	25.0	60.0	10.3	62.2	13.2	49.2	49.2
-39.4	31.5	54.2	13.1	66.1	8.5	63.6	46.0
-34.6	40.0	52.2	8.4	68.4	7.0	66.9	40.2
-30.2	50.0	72.5	3.2	73.1	12.2	49.6	18.2
-26.2	63.0	55.1	6.4	74.9	7.2	74.0	35.8
-22.5	80.0	43.7	11.0	77.5	5.8	77.3	34.9
-19.1	100.0	48.8	7.6	81.5	4.8	81.3	32.7
-16.1	125.0	52.6	7.4	83.3	4.4	83.0	30.1
-13.4	160.0	45.0	8.9	89.2	4.6	89.1	32.4
-10.9	200.0	38.8	10.1	91.7	3.3	91.7	30.2
-8.6	250.0	47.9	2.9	90.5	3.8	90.4	24.5
-6.6	315.0	42.6	2.6	88.1	3.2	88.1	16.4
-4.8	400.0	40.1	3.0	88.3	3.2	88.3	10.3
-3.2	500.0	27.2	7.0	83.1	2.3	83.1	0.7
-1.9	630.0	23.1	8.7	78.5	2.3	78.5	-5.0
-0.8	800.0	20.7	7.7	72.8	2.2	72.8	-8.3
0.0	1000.0	21.2	7.5	69.8	2.1	69.8	-14.7
0.6	1250.0	23.5	6.4	68.2	2.1	68.1	-23.5
1.0	1600.0	22.9	6.6	60.9	3.4	60.8	-30.5
1.2	2000.0	22.6	4.9	51.3	2.9	51.0	-43.1
1.3	2500.0	20.7	4.3	39.1	3.1	38.0	-47.3
1.2	3150.0	19.9	5.0	23.7	4.2	14.7	-58.9
1.0	4000.0	20.8	3.8	23.4	4.7	11.7	-53.6
0.5	5000.0	21.4	3.7	24.1	5.4	12.6	-57.2
-0.1	6300.0	22.5	3.6	24.1	2.9	8.6	-55.4
-1.1	8000.0	23.7	2.1	25.2	2.8	9.2	-53.9
-2.5	10000.0	24.4	2.0	25.9	2.7	9.9	-45.8
-4.3	12500.0	25.6	1.6	26.3	2.3	4.1	-35.7
-6.6	16000.0	27.7	1.4	28.3	1.4	4.8	-31.1
-9.3	20000.0	27.9	1.4	28.6	1.4	6.4	-19.6
	A-Net	46.2	3.2	89.2	1.8	89.1	-9.7
	Lin	72.8	3.3	97.2	2.2	96.7	-1.3

Delwastar(membran)/110dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	44.2	15.2	24.1	24.1	-26.4	44.7	14.1	28.2	28.2	-22.3
25.0	60.9	16.3	40.8	40.8	-3.9	60.9	10.8	40.8	40.8	-3.9
31.5	59.2	24.2	52.0	52.0	12.6	56.0	25.2	41.4	41.4	2.0
40.0	57.8	11.6	51.3	46.2	16.7	52.9	15.9	30.7	30.7	-3.9
50.0	72.7	4.0	39.8	27.8	9.6	72.3	3.9	0.0	-12.1	-30.2
63.0	69.1	10.4	67.2	35.1	41.0	56.4	7.8	39.3	32.5	13.1
80.0	79.2	8.7	79.1	34.2	56.6	53.5	14.8	50.1	42.1	27.6
100.0	77.8	9.0	77.5	32.7	58.4	62.8	15.3	60.9	34.7	41.8
125.0	76.7	9.3	76.1	29.0	60.0	70.4	10.5	69.2	29.4	53.1
160.0	76.3	12.5	76.1	30.9	62.7	82.3	10.8	82.2	31.9	68.8
200.0	74.3	13.3	74.2	30.9	63.3	87.2	9.1	87.2	29.9	76.3
250.0	68.2	13.3	67.3	24.5	58.7	85.8	8.6	85.7	23.7	77.1
315.0	62.0	13.1	61.0	16.4	54.4	84.6	8.6	84.5	15.6	77.9
400.0	54.8	8.8	53.0	8.9	48.2	82.5	10.5	82.4	10.4	77.6
500.0	46.0	9.8	44.9	1.7	41.7	75.0	12.3	75.0	1.5	71.8
630.0	31.7	12.9	27.7	-5.7	25.8	61.0	14.1	60.9	-3.7	59.0
800.0	22.0	13.2	4.9	-13.6	4.1	49.7	19.1	49.4	-7.9	48.6
1000.0	21.7	9.2	0.0	-18.7	0.0	40.6	18.7	39.6	-14.1	39.6
1250.0	23.7	5.5	0.0	-21.3	0.6	34.4	17.7	31.5	-24.8	32.1
1600.0	23.0	5.2	0.0	-19.4	1.0	26.6	12.0	17.4	-33.6	18.4
2000.0	22.8	5.3	0.0	-22.7	1.2	23.5	11.5	3.4	-43.3	4.6
2500.0	21.0	7.6	0.0	-9.3	1.3	21.9	15.5	4.1	-25.6	5.4
3150.0	20.2	5.4	0.0	0.0	1.2	20.9	15.8	1.6	1.6	2.8
4000.0	21.1	5.7	0.0	0.0	1.0	21.7	12.0	1.6	1.6	2.6
5000.0	21.7	6.0	0.0	0.0	0.5	22.3	11.7	2.2	2.2	2.7
6300.0	22.7	3.1	0.0	0.0	-0.1	23.1	8.7	0.0	0.0	-0.1
8000.0	24.0	2.5	0.0	0.0	-1.1	24.2	5.8	0.0	0.0	-1.1
10000.0	24.8	2.0	0.0	0.0	-2.5	25.1	5.6	2.9	2.9	0.4
12500.0	25.8	1.6	0.0	0.0	-4.3	25.9	2.3	0.0	0.0	-4.3
16000.0	28.0	1.1	0.0	0.0	-6.6	28.0	1.8	0.0	0.0	-6.6
20000.0	28.1	1.8	0.0	0.0	-9.3	28.2	1.4	0.0	0.0	0.0
A-Net	68.8	12.1	68.1	24.2		83.6	8.3	83.5	10.5	
Lin	84.6	8.0	82.0	30.5		91.9	7.3	90.9	14.1	

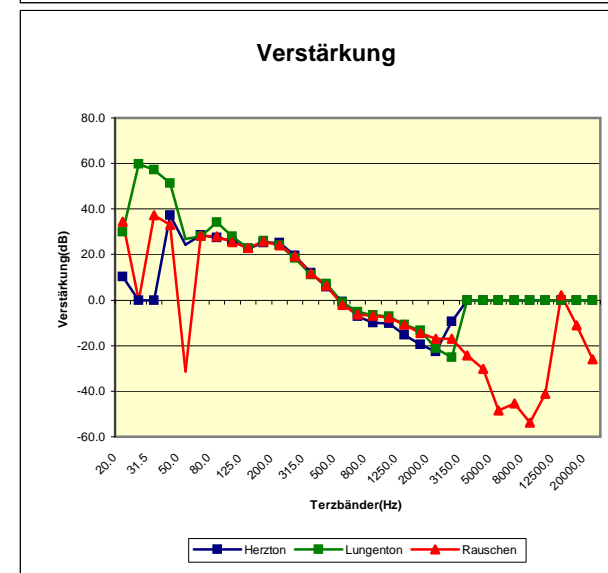
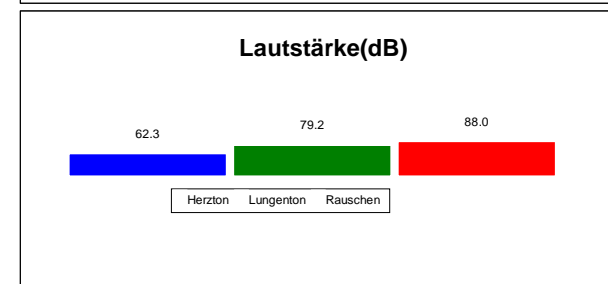
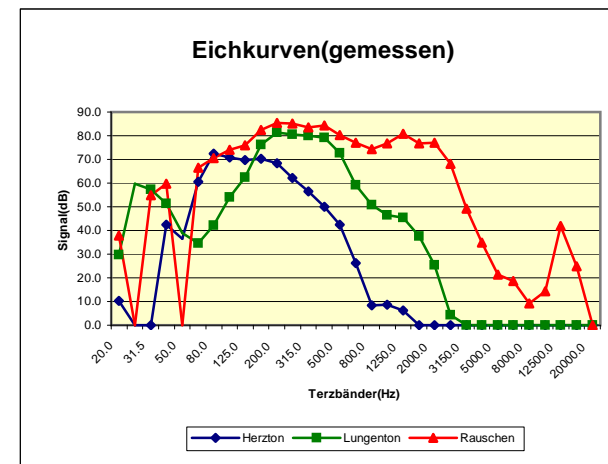


Delwastar(flash)/110dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	39.4	14.2	44.7	12.8	37.9	34.4
-44.7	25.0	53.7	12.3	53.7	11.5	0.0	0.0
-39.4	31.5	50.3	17.5	58.9	9.7	54.9	37.3
-34.6	40.0	45.6	9.9	61.3	11.3	59.7	33.0
-30.2	50.0	65.5	2.1	65.3	9.3	0.0	-31.4
-26.2	63.0	48.0	4.0	67.5	6.4	66.5	28.3
-22.5	80.0	37.3	17.7	70.6	6.9	70.4	28.0
-19.1	100.0	42.1	8.1	74.3	5.9	74.1	25.5
-16.1	125.0	48.6	7.2	76.3	4.6	75.9	22.9
-13.4	160.0	36.7	9.3	82.6	4.2	82.6	25.8
-10.9	200.0	33.1	10.0	85.5	3.3	85.5	24.0
-8.6	250.0	42.5	2.6	85.3	5.0	85.2	19.3
-6.6	315.0	37.9	2.6	83.5	3.4	83.5	11.8
-4.8	400.0	35.5	3.9	84.4	3.1	84.4	6.4
-3.2	500.0	22.7	8.4	80.2	2.7	80.2	-2.2
-1.9	630.0	19.5	10.3	77.1	2.2	77.1	-6.4
-0.8	800.0	18.4	10.9	74.3	2.6	74.3	-6.8
0.0	1000.0	18.5	8.6	76.7	2.5	76.7	-7.8
0.6	1250.0	20.0	6.0	80.9	1.9	80.9	-10.8
1.0	1600.0	19.9	6.0	76.8	1.8	76.8	-14.5
1.2	2000.0	20.1	7.0	77.0	1.6	77.0	-17.1
1.3	2500.0	19.6	5.6	68.2	1.8	68.2	-17.1
1.2	3150.0	19.9	4.0	49.6	2.0	49.3	-24.3
1.0	4000.0	20.8	3.4	36.5	1.9	34.9	-30.3
0.5	5000.0	21.5	3.3	27.5	1.8	21.5	-48.4
-0.1	6300.0	22.5	2.7	26.8	2.6	18.6	-45.4
-1.1	8000.0	23.7	2.1	25.2	2.4	9.2	-53.9
-2.5	10000.0	24.4	2.5	26.8	1.9	14.5	-41.2
-4.3	12500.0	25.6	2.0	43.1	2.6	41.9	2.1
-6.6	16000.0	27.8	1.4	32.5	1.2	24.9	-11.0
-9.3	20000.0	27.9	1.1	28.2	1.4	0.0	-25.9
	A-Net	40.9	2.9	88.0	1.8	88.0	-10.8
	Lin	66.0	3.5	92.7	2.5	92.3	-5.7

Delwastar(flash)/110dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	39.7	14.4	10.3	10.3	-40.2	41.9	24.8	29.9	29.9	-20.6
25.0	53.1	10.2	0.0	0.0	-44.7	63.3	22.9	59.8	59.8	15.1
31.5	49.6	12.3	0.0	0.0	-39.4	60.5	24.1	57.3	57.3	17.9
40.0	50.2	13.1	42.5	37.3	7.9	54.9	28.2	51.3	51.3	16.7
50.0	65.8	3.3	36.4	24.3	6.2	65.9	6.1	39.0	26.9	8.8
63.0	62.4	11.2	60.6	28.5	34.4	49.7	11.7	34.7	27.9	8.5
80.0	72.5	9.4	72.3	27.5	49.8	46.1	18.4	42.2	34.2	19.7
100.0	71.2	9.7	70.9	26.1	51.8	56.0	17.1	54.0	27.9	34.9
125.0	70.4	10.2	69.7	22.6	53.6	64.0	11.4	62.4	22.6	46.3
160.0	70.4	13.2	70.2	25.1	56.8	76.3	11.7	76.2	25.9	62.8
200.0	68.6	14.1	68.5	25.2	57.6	81.4	9.7	81.4	24.1	70.5
250.0	63.1	13.9	62.2	19.4	53.6	80.6	9.1	80.5	18.5	71.9
315.0	57.5	13.9	56.5	12.0	49.9	80.2	9.1	80.1	11.2	73.5
400.0	51.5	9.7	50.0	5.8	45.2	79.2	11.1	79.1	7.1	74.3
500.0	43.3	10.6	42.4	-0.7	39.2	72.6	12.7	72.6	-0.9	69.4
630.0	29.6	14.5	26.3	-7.1	24.4	59.4	14.3	59.3	-5.3	57.4
800.0	20.8	17.3	8.5	-10.0	7.7	51.0	18.8	50.8	-6.5	50.0
1000.0	20.9	13.4	8.6	-10.1	8.6	46.9	16.4	46.6	-7.1	46.6
1250.0	21.6	7.9	6.1	-15.2	6.7	45.9	12.0	45.4	-10.8	46.0
1600.0	20.5	6.8	0.0	-19.4	1.0	38.7	11.9	37.6	-13.4	38.6
2000.0	20.4	4.9	0.0	-22.7	1.2	29.2	21.2	25.4	-21.2	26.6
2500.0	19.6	4.6	0.0	-9.3	1.3	21.0	21.0	4.5	-25.3	5.8
3150.0	19.9	5.0	0.0	0.0	1.2	20.0	9.5	0.0	0.0	1.2
4000.0	20.8	3.8	0.0	0.0	1.0	21.0	7.6	0.0	0.0	1.0
5000.0	21.5	3.3	0.0	0.0	0.5	21.7	6.9	0.0	0.0	0.5
6300.0	22.5	3.6	0.0	0.0	-0.1	22.7	3.5	0.0	0.0	-0.1
8000.0	23.7	2.5	0.0	0.0	-1.1	23.9	2.9	0.0	0.0	-1.1
10000.0	24.5	2.0	0.0	0.0	-2.5	24.7	2.8	0.0	0.0	-2.5
12500.0	25.7	1.9	0.0	0.0	-4.3	25.7	2.3	0.0	0.0	-4.3
16000.0	27.8	1.8	0.0	0.0	-6.6	27.8	2.2	0.0	0.0	-6.6
20000.0	27.9	1.1	0.0	0.0	-9.3	28.0	1.8	0.0	0.0	0.0
A-Net	63.0	13.0	62.3	18.4		79.3	9.1	79.2	6.2	
Lin	78.2	8.8	75.8	24.2		86.9	7.5	86.1	9.3	

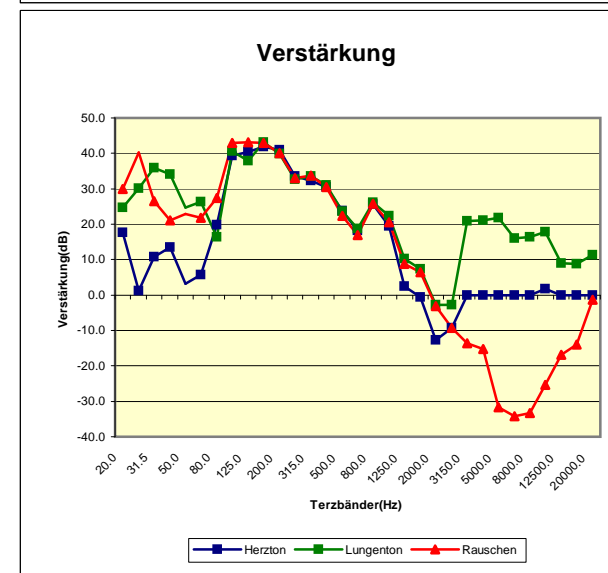
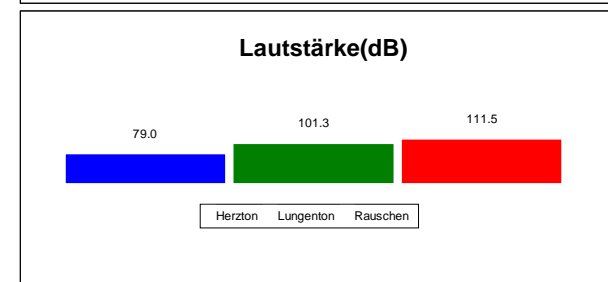
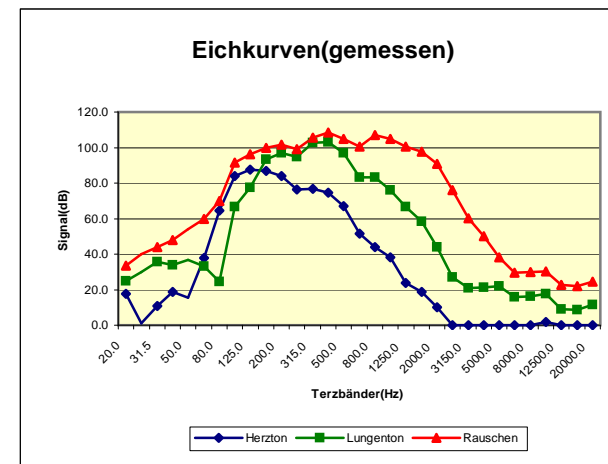


Lisa/120dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	38.0	16.1	42.0	14.5	33.3	29.9
-44.7	25.0	33.9	13.3	43.6	17.7	40.2	40.2
-39.4	31.5	31.1	19.9	45.8	16.8	44.0	26.4
-34.6	40.0	37.9	19.5	50.3	14.5	47.9	21.1
-30.2	50.0	33.6	19.3	55.0	14.9	54.2	22.8
-26.2	63.0	35.0	16.0	60.4	14.1	59.9	21.7
-22.5	80.0	53.5	12.9	71.1	7.9	69.9	27.4
-19.1	100.0	71.4	5.6	92.4	4.3	91.6	43.0
-16.1	125.0	78.1	5.9	97.2	4.1	96.2	43.2
-13.4	160.0	62.6	4.8	99.9	4.1	99.8	43.0
-10.9	200.0	57.5	6.1	101.6	3.5	101.5	40.1
-8.6	250.0	56.1	4.6	99.1	2.5	99.0	33.1
-6.6	315.0	59.9	4.2	105.5	2.6	105.5	33.8
-4.8	400.0	56.2	4.1	108.5	2.3	108.5	30.5
-3.2	500.0	48.5	4.5	104.7	2.0	104.7	22.3
-1.9	630.0	38.9	5.7	100.4	1.8	100.4	16.9
-0.8	800.0	43.1	3.9	106.9	1.6	106.9	25.8
0.0	1000.0	45.2	3.8	105.0	1.3	105.0	20.5
0.6	1250.0	39.6	4.0	100.5	1.4	100.5	8.8
1.0	1600.0	38.0	3.9	97.7	1.8	97.7	6.4
1.2	2000.0	31.5	4.1	91.0	1.4	91.0	-3.1
1.3	2500.0	29.1	3.1	76.1	1.6	76.1	-9.2
1.2	3150.0	29.7	3.0	60.3	5.8	60.0	-13.5
1.0	4000.0	30.7	2.9	50.9	7.9	50.0	-15.2
0.5	5000.0	31.4	2.5	41.4	7.2	38.1	-31.8
-0.1	6300.0	32.6	1.8	37.3	2.9	29.7	-34.3
-1.1	8000.0	33.7	1.8	38.0	3.2	29.8	-33.3
-2.5	10000.0	34.4	1.5	38.6	2.1	30.3	-25.4
-4.3	12500.0	35.6	1.4	37.4	1.3	22.8	-16.9
-6.6	16000.0	37.8	1.1	39.1	1.5	22.0	-14.0
-9.3	20000.0	37.9	0.8	39.6	1.3	24.6	-1.4
	A-Net	63.6	6.0	111.5	1.2	111.5	12.7
	Lin	79.0	5.3	114.3	1.4	114.1	16.2

Lisa/120dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	38.8	19.6	17.7	17.7	-32.8	39.7	17.4	24.7	24.7	-25.8
25.0	34.1	17.3	1.2	1.2	-43.5	38.2	25.9	30.0	30.0	-14.7
31.5	31.9	28.2	10.8	10.8	-28.6	39.8	30.4	35.8	35.8	-3.6
40.0	38.8	19.3	18.7	13.5	-15.9	42.2	25.1	34.0	34.0	-0.6
50.0	34.6	16.2	15.3	3.3	-14.9	41.4	26.1	36.9	24.8	6.7
63.0	42.5	15.3	37.7	5.7	11.5	40.1	24.7	33.0	26.3	6.8
80.0	66.8	10.5	64.7	19.9	42.2	53.8	13.6	24.4	16.4	1.9
100.0	85.9	8.8	84.1	39.3	65.0	75.4	10.3	66.7	40.6	47.6
125.0	90.0	7.7	87.5	40.3	71.4	83.9	8.5	77.7	37.9	61.6
160.0	87.5	10.1	87.0	41.9	73.6	93.6	9.8	93.4	43.1	80.0
200.0	84.5	11.7	84.1	40.9	73.2	97.2	8.1	97.1	39.8	86.2
250.0	77.1	11.5	76.3	33.5	67.7	94.7	7.8	94.6	32.7	86.0
315.0	78.0	9.9	76.8	32.3	70.2	102.6	7.7	102.5	33.6	95.9
400.0	75.6	6.5	74.6	30.5	69.8	103.2	8.5	103.2	31.1	98.4
500.0	67.9	6.8	66.9	23.7	63.7	97.1	9.5	97.1	23.6	93.9
630.0	53.4	9.4	51.6	18.2	49.7	83.3	10.2	83.2	18.7	81.3
800.0	49.6	12.5	44.0	25.6	43.2	83.5	12.1	83.4	26.1	82.6
1000.0	48.4	7.9	38.2	19.5	38.2	76.3	10.0	76.1	22.4	76.1
1250.0	40.9	3.2	23.8	2.4	24.4	66.9	9.4	66.5	10.2	67.1
1600.0	38.9	3.9	18.8	-0.7	19.8	59.1	5.9	58.3	7.3	59.3
2000.0	32.2	2.8	10.0	-12.7	11.2	45.7	12.7	43.8	-2.8	45.0
2500.0	29.3	4.8	0.0	-9.3	1.3	34.1	20.5	26.9	-2.8	28.2
3150.0	29.8	3.0	0.0	0.0	1.2	32.4	18.8	20.9	20.9	22.1
4000.0	30.9	3.2	0.0	0.0	1.0	33.2	16.9	21.2	21.2	22.2
5000.0	31.5	2.9	0.0	0.0	0.5	33.9	15.6	21.9	21.9	22.4
6300.0	32.6	2.1	0.0	0.0	-0.1	33.8	12.1	16.0	16.0	15.9
8000.0	33.8	1.8	0.0	0.0	-1.1	34.8	10.6	16.3	16.3	15.2
10000.0	34.6	1.2	1.7	1.7	-0.8	35.6	9.8	17.8	17.8	15.3
12500.0	35.7	1.1	0.0	0.0	-4.3	36.0	5.0	9.1	9.1	4.8
16000.0	37.9	0.8	0.0	0.0	-6.6	38.1	3.7	8.7	8.7	2.1
20000.0	38.0	1.1	0.0	0.0	-9.3	38.3	3.7	11.4	11.4	2.1
A-Net	80.4	9.0	79.0	35.2		101.4	8.0	101.3	28.3	
Lin	93.6	6.9	91.8	40.3		107.2	7.2	106.9	30.1	

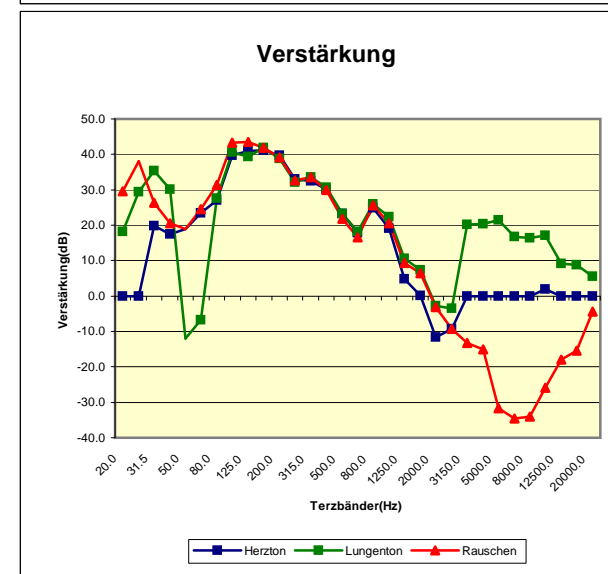
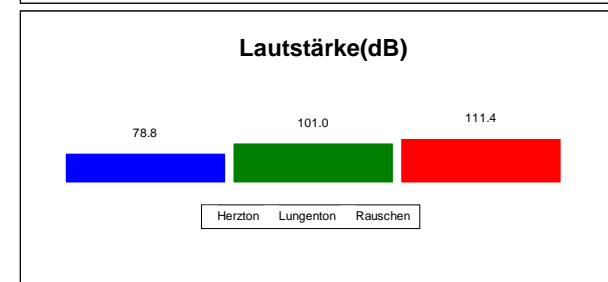
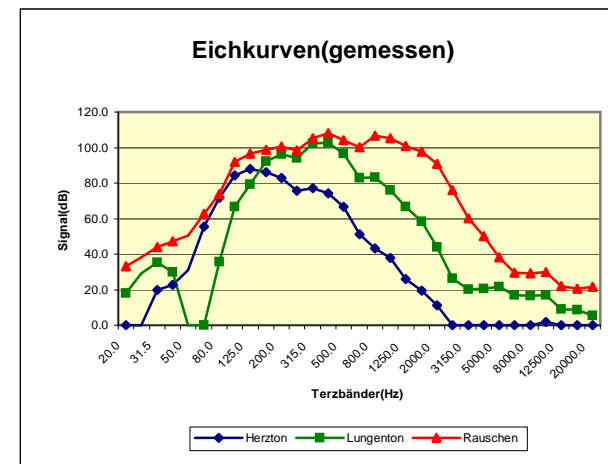


Lisa(trichter)/120dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	38.5	15.6	42.2	17.3	33.0	29.6
-44.7	25.0	34.3	16.6	42.4	16.0	38.1	38.1
-39.4	31.5	30.7	15.6	45.6	16.9	43.9	26.3
-34.6	40.0	39.2	22.4	50.2	20.1	47.3	20.6
-30.2	50.0	53.9	12.8	58.3	17.3	50.3	18.9
-26.2	63.0	49.3	11.0	64.4	11.5	62.7	24.5
-22.5	80.0	62.2	9.3	75.8	6.9	73.8	31.3
-19.1	100.0	73.7	5.2	92.9	4.4	91.9	43.3
-16.1	125.0	75.7	6.3	97.3	3.9	96.5	43.6
-13.4	160.0	60.3	4.5	98.8	4.3	98.7	41.9
-10.9	200.0	56.8	5.1	100.7	3.5	100.6	39.2
-8.6	250.0	55.4	4.7	98.6	2.8	98.5	32.6
-6.6	315.0	59.4	3.5	105.3	2.7	105.3	33.6
-4.8	400.0	55.8	5.7	108.0	2.4	108.0	30.0
-3.2	500.0	48.0	6.3	104.3	2.3	104.3	21.9
-1.9	630.0	38.3	5.0	100.1	1.8	100.1	16.6
-0.8	800.0	42.8	4.0	106.7	1.7	106.7	25.6
0.0	1000.0	44.9	3.3	105.1	1.9	105.1	20.6
0.6	1250.0	39.4	3.8	101.0	1.4	101.0	9.3
1.0	1600.0	37.9	3.7	97.8	1.6	97.8	6.5
1.2	2000.0	31.4	3.2	90.9	1.8	90.9	-3.2
1.3	2500.0	29.2	3.1	76.1	1.8	76.1	-9.2
1.2	3150.0	29.8	3.4	60.5	8.1	60.2	-13.3
1.0	4000.0	30.8	2.6	51.0	8.0	50.1	-15.1
0.5	5000.0	31.4	2.2	41.4	6.3	38.1	-31.8
-0.1	6300.0	32.6	1.5	37.2	3.5	29.5	-34.5
-1.1	8000.0	33.8	2.1	37.8	3.2	29.1	-34.0
-2.5	10000.0	34.5	1.4	38.5	2.6	29.8	-25.8
-4.3	12500.0	35.7	1.1	37.3	1.6	21.8	-17.9
-6.6	16000.0	37.9	1.1	39.0	1.3	20.5	-15.4
-9.3	20000.0	38.2	0.8	39.4	1.5	21.6	-4.3
	A-Net	62.3	5.8	111.4	1.3	111.4	12.6
	Lin	78.0	5.0	114.1	1.2	114.0	16.0

Lisa(trichter)/120dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	38.2	17.3	0.0	0.0	-50.5	39.3	20.1	18.2	18.2	-32.3
25.0	34.4	15.4	0.0	0.0	-44.7	38.2	25.7	29.4	29.4	-15.3
31.5	32.9	21.6	19.9	19.9	-19.5	39.4	31.5	35.4	35.4	-4.0
40.0	40.4	12.1	22.6	17.4	-12.0	41.8	25.4	30.1	30.1	-4.5
50.0	54.5	16.9	31.0	18.9	0.8	53.0	12.6	0.0	-12.1	-30.2
63.0	58.9	13.1	55.4	23.4	29.2	49.3	12.4	0.0	-6.8	-26.2
80.0	74.3	9.8	71.8	27.0	49.3	62.6	17.7	35.7	27.6	13.2
100.0	86.7	9.0	84.5	39.7	65.4	76.9	9.8	66.7	40.6	47.6
125.0	89.9	7.7	88.0	40.9	71.9	83.6	8.7	79.1	39.4	63.0
160.0	86.7	9.9	86.3	41.1	72.9	92.4	10.0	92.2	41.9	78.8
200.0	83.4	11.9	83.0	39.8	72.1	96.2	8.1	96.1	38.8	85.2
250.0	76.6	11.6	75.8	33.0	67.2	94.2	7.9	94.1	32.2	85.5
315.0	78.1	9.9	77.0	32.4	70.4	102.5	7.7	102.4	33.5	95.8
400.0	75.3	6.5	74.3	30.2	69.5	102.8	8.7	102.8	30.7	98.0
500.0	67.5	7.0	66.5	23.3	63.3	96.7	9.5	96.7	23.2	93.5
630.0	53.0	8.7	51.2	17.8	49.3	82.8	10.4	82.7	18.2	80.8
800.0	49.1	13.2	43.4	24.9	42.6	83.3	12.1	83.2	25.9	82.4
1000.0	48.1	7.9	37.9	19.2	37.9	76.2	9.8	76.0	22.3	76.0
1250.0	41.1	3.6	26.1	4.8	26.7	67.2	9.2	66.8	10.5	67.4
1600.0	38.9	3.9	19.6	0.2	20.6	59.1	6.3	58.3	7.3	59.3
2000.0	32.2	4.3	11.1	-11.6	12.3	45.8	13.3	44.0	-2.7	45.2
2500.0	29.4	4.4	0.0	-9.3	1.3	33.9	18.6	26.3	-3.4	27.6
3150.0	29.9	3.3	0.0	0.0	1.2	32.3	17.3	20.3	20.3	21.5
4000.0	30.9	2.3	0.0	0.0	1.0	33.1	17.8	20.4	20.4	21.4
5000.0	31.6	2.5	0.0	0.0	0.5	33.8	15.1	21.5	21.5	22.0
6300.0	32.7	2.1	0.0	0.0	-0.1	33.9	12.1	16.8	16.8	16.7
8000.0	33.9	2.1	0.0	0.0	-1.1	34.9	9.7	16.4	16.4	15.3
10000.0	34.7	1.4	1.8	1.8	-0.7	35.6	8.7	17.1	17.1	14.6
12500.0	35.8	1.4	0.0	0.0	-4.3	36.1	4.4	9.2	9.2	4.9
16000.0	37.9	1.1	0.0	0.0	-6.6	38.2	3.1	8.8	8.8	2.2
20000.0	38.1	1.0	0.0	0.0	-9.3	38.4	3.4	5.5	5.5	0.0
A-Net	80.0	8.6	78.8	34.9		101.1	8.0	101.0	28.0	
Lin	93.4	6.6	91.8	40.2		106.9	7.1	106.6	29.8	

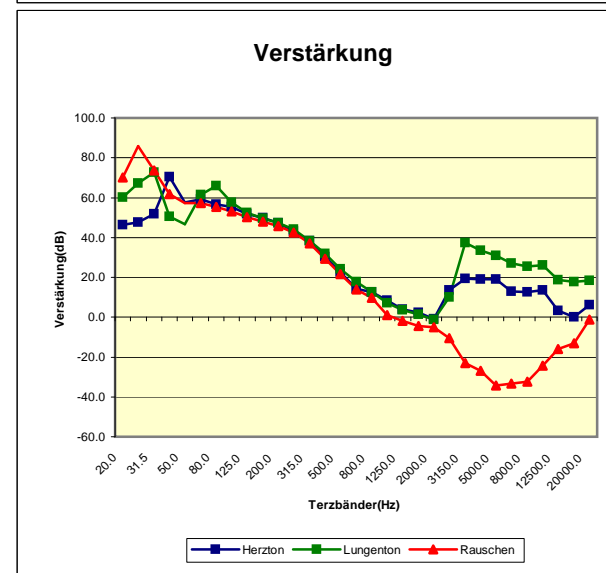
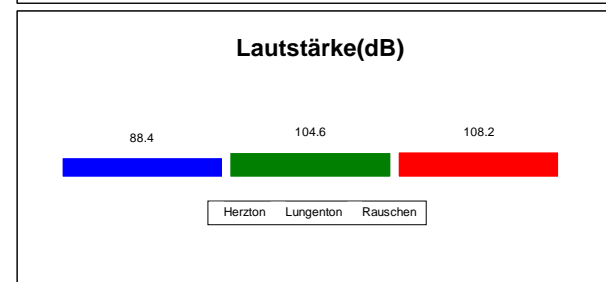
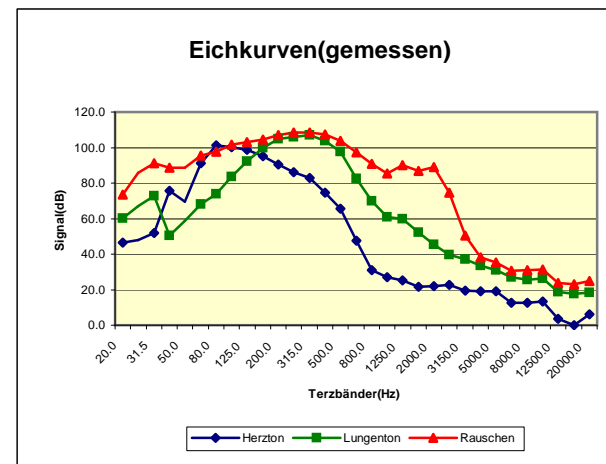


Cadiscreen(Breadboard)/120dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen		
		Leq	Δ	Leq	korr	verst.
-50.5	20.0	63.0	0.0	75.8	73.5	70.1
-44.7	25.0	72.3	0.0	87.4	85.7	85.7
-39.4	31.5	78.5	0.0	93.0	91.2	73.6
-34.6	40.0	65.1	0.0	89.2	88.6	61.9
-30.2	50.0	85.4	0.0	93.3	88.8	57.4
-26.2	63.0	68.2	0.0	95.9	95.5	57.3
-22.5	80.0	74.5	0.0	98.4	97.8	55.4
-19.1	100.0	73.0	0.0	102.0	101.7	53.1
-16.1	125.0	73.3	0.0	103.4	103.1	50.1
-13.4	160.0	70.0	0.0	104.8	104.6	47.8
-10.9	200.0	66.5	0.0	107.2	107.1	45.6
-8.6	250.0	68.7	0.0	108.6	108.5	42.5
-6.6	315.0	60.9	0.0	108.6	108.6	36.9
-4.8	400.0	55.9	0.0	107.4	107.4	29.4
-3.2	500.0	53.8	0.0	103.9	103.9	21.5
-1.9	630.0	45.8	0.0	97.3	97.3	13.8
-0.8	800.0	37.1	0.0	90.7	90.7	9.6
0.0	1000.0	33.5	0.0	85.6	85.6	1.1
0.6	1250.0	32.9	0.0	90.0	90.0	-1.7
1.0	1600.0	30.9	0.0	86.9	86.9	-4.4
1.2	2000.0	31.1	0.0	89.0	89.0	-5.1
1.3	2500.0	29.4	0.0	74.8	74.8	-10.5
1.2	3150.0	30.2	0.0	51.3	50.5	-23.1
1.0	4000.0	31.2	0.0	41.4	38.2	-27.1
0.5	5000.0	31.9	0.0	39.9	35.5	-34.4
-0.1	6300.0	33.1	0.0	38.0	30.7	-33.3
-1.1	8000.0	34.2	0.0	38.7	30.8	-32.3
-2.5	10000.0	35.0	0.0	39.4	31.4	-24.3
-4.3	12500.0	36.1	0.0	38.0	23.9	-15.9
-6.6	16000.0	38.1	0.0	39.5	23.0	-13.0
-9.3	20000.0	38.7	0.0	40.3	24.8	-1.1
	A-Net	65.4		108.3	108.2	9.4
	Lin	86.8		115.5	115.2	17.2

Cadiscreen(Breadboard)/120dB

Terzbänder	Herzton				Lungenton			
	Leq	korr	verst.	A-Net	Leq	korr	verst.	A-Net
20.0	64.2	46.4	46.4	-4.1	67.7	60.1	60.1	9.6
25.0	72.8	47.8	47.8	3.1	76.1	67.1	67.1	22.4
31.5	78.9	52.0	52.0	12.6	82.1	72.7	72.7	33.3
40.0	77.9	75.6	70.5	41.0	66.6	50.6	50.6	16.0
50.0	86.7	69.6	57.5	39.4	85.8	58.9	46.8	28.7
63.0	91.7	91.1	59.0	64.9	74.2	68.2	61.4	42.0
80.0	101.7	101.3	56.5	78.8	80.3	74.1	66.0	51.6
100.0	100.4	100.0	55.2	80.9	85.9	83.7	57.5	64.6
125.0	99.3	98.9	51.7	82.8	93.2	92.3	52.5	76.2
160.0	95.5	95.0	49.9	81.6	100.0	99.7	49.5	86.3
200.0	91.0	90.5	47.2	79.6	104.8	104.7	47.4	93.8
250.0	87.2	86.1	43.3	77.5	106.1	106.0	44.0	97.4
315.0	83.5	82.8	38.3	76.2	107.2	107.2	38.2	100.6
400.0	75.4	74.4	30.3	69.6	103.9	103.9	31.8	99.1
500.0	67.7	65.7	22.5	62.5	97.6	97.5	24.1	94.3
630.0	52.7	47.5	14.1	45.6	82.6	82.5	17.9	80.6
800.0	40.6	31.0	12.6	30.2	70.0	69.8	12.5	69.0
1000.0	36.9	27.1	8.4	27.1	61.2	60.8	7.2	60.8
1250.0	35.9	25.2	3.9	25.8	60.3	59.9	3.6	60.5
1600.0	33.5	21.8	2.3	22.8	53.1	52.4	1.4	53.4
2000.0	33.7	22.0	-0.7	23.2	47.0	45.5	-1.2	46.7
2500.0	32.7	22.7	13.4	24.0	42.0	39.7	10.0	41.0
3150.0	32.4	19.4	19.4	20.6	40.4	37.2	37.2	38.4
4000.0	33.1	19.0	19.0	20.0	38.5	33.6	33.6	34.6
5000.0	33.7	19.1	19.1	19.6	37.4	30.8	30.8	31.3
6300.0	33.9	12.8	12.8	12.7	36.6	27.0	27.0	26.9
8000.0	34.9	12.7	12.7	11.6	36.9	25.4	25.4	24.3
10000.0	35.7	13.5	13.5	11.0	37.7	26.2	26.2	23.7
12500.0	36.3	3.4	3.4	-0.9	37.2	18.7	18.7	14.4
16000.0	38.2	0.0	0.0	-6.6	38.9	17.8	17.8	11.2
20000.0	38.9	6.0	6.0	-3.3	39.5	18.4	18.4	9.1
A-Net	89.0	88.4	44.5		104.7	104.6	31.6	
Lin	108.0	107.2	55.7		112.0	111.5	34.8	

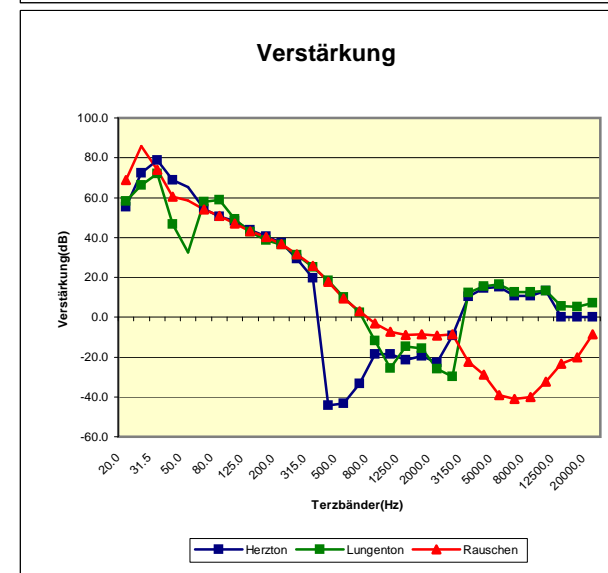
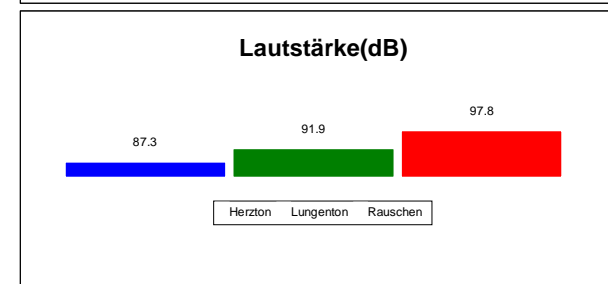
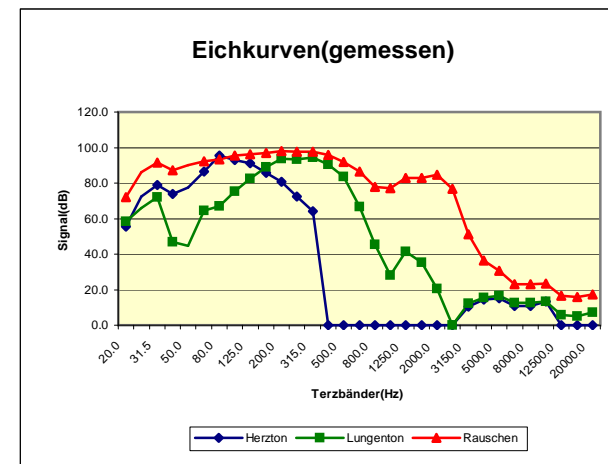


Cadiscope(trichter)/110dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	37.4	18.7	72.3	10.2	72.1	68.7
-44.7	25.0	61.4	7.3	86.5	4.4	86.0	86.0
-39.4	31.5	67.2	8.3	92.1	3.1	91.6	74.0
-34.6	40.0	53.4	17.2	87.4	5.5	87.2	60.5
-30.2	50.0	54.2	14.0	90.2	5.0	90.1	58.6
-26.2	63.0	55.8	12.7	92.3	4.1	92.2	54.0
-22.5	80.0	63.0	4.3	93.6	4.1	93.3	50.9
-19.1	100.0	62.7	10.2	95.7	3.9	95.5	46.9
-16.1	125.0	66.0	4.8	96.4	3.0	96.1	43.1
-13.4	160.0	68.3	2.5	97.3	3.2	97.0	40.2
-10.9	200.0	66.3	4.5	98.4	3.9	98.2	36.7
-8.6	250.0	69.7	4.7	98.0	3.1	97.7	31.7
-6.6	315.0	68.7	2.5	97.8	2.4	97.5	25.8
-4.8	400.0	64.3	3.7	96.1	2.4	95.9	17.9
-3.2	500.0	57.9	3.1	92.1	2.3	91.9	9.5
-1.9	630.0	58.0	2.4	86.7	2.1	86.4	2.9
-0.8	800.0	52.8	2.7	78.4	1.7	77.9	-3.2
0.0	1000.0	48.3	3.1	77.5	1.7	77.2	-7.3
0.6	1250.0	43.5	3.9	83.0	1.8	82.9	-8.8
1.0	1600.0	39.1	4.6	82.8	1.4	82.7	-8.6
1.2	2000.0	33.9	2.4	84.8	1.2	84.8	-9.3
1.3	2500.0	32.5	4.3	76.8	2.0	76.7	-8.5
1.2	3150.0	21.7	3.7	51.6	2.1	51.3	-22.3
1.0	4000.0	21.2	3.3	37.7	1.9	36.3	-29.0
0.5	5000.0	21.8	3.7	33.4	2.7	30.7	-39.1
-0.1	6300.0	22.9	2.2	29.0	3.4	23.1	-41.0
-1.1	8000.0	24.0	2.9	29.5	4.4	22.9	-40.2
-2.5	10000.0	24.9	2.8	30.2	3.6	23.4	-32.3
-4.3	12500.0	26.0	1.5	28.5	2.5	16.5	-23.3
-6.6	16000.0	28.0	1.4	29.9	3.0	15.8	-20.2
-9.3	20000.0	28.6	0.7	30.7	2.3	17.3	-8.6
	A-Net	64.8		98.0		97.8	-1.0
	Lin	76.6		106.6		106.3	8.3

Cadiscope(trichter)/110dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	56.4	9.4	55.4	55.4	4.9	59.0	21.2	58.2	58.2	7.7
25.0	74.6	2.0	72.5	72.5	27.8	70.1	8.4	66.1	66.1	21.4
31.5	80.8	3.1	78.8	78.8	39.4	75.9	4.2	71.9	71.9	32.5
40.0	74.8	9.4	74.0	68.9	39.4	56.7	15.0	46.7	46.7	12.1
50.0	78.0	7.4	77.4	65.3	47.2	56.7	6.9	44.7	32.6	14.5
63.0	86.7	8.3	86.4	54.4	60.2	67.3	8.6	64.6	57.8	38.4
80.0	95.6	7.4	95.4	50.6	72.9	71.2	9.7	66.9	58.9	44.4
100.0	93.4	7.7	93.1	48.3	74.0	77.1	12.1	75.3	49.1	56.2
125.0	91.5	8.1	91.0	43.9	74.9	83.8	9.1	82.6	42.8	66.5
160.0	86.9	9.8	85.8	40.7	72.4	89.8	9.6	89.0	38.8	75.6
200.0	82.1	12.3	80.6	37.3	69.7	94.2	8.4	93.8	36.5	82.9
250.0	77.1	11.3	72.3	29.5	63.7	93.9	7.6	93.3	31.4	84.7
315.0	72.8	10.9	64.3	19.7	57.7	94.7	7.5	94.3	25.3	87.7
400.0	64.1	7.5	0.0	-44.2	-4.8	90.8	9.7	90.4	18.3	85.6
500.0	56.0	7.9	0.0	-43.2	-3.2	84.0	11.1	83.6	10.1	80.4
630.0	40.9	12.2	0.0	-33.4	-1.9	69.5	12.5	66.8	2.2	64.9
800.0	27.3	24.5	0.0	-18.5	-0.8	55.9	16.6	45.4	-11.9	44.6
1000.0	25.9	26.6	0.0	-18.7	0.0	49.1	15.3	28.0	-25.7	28.0
1250.0	26.6	25.6	0.0	-21.3	0.6	48.6	10.7	41.5	-14.7	42.1
1600.0	25.1	25.1	0.0	-19.4	1.0	43.5	9.4	35.5	-15.5	36.5
2000.0	24.9	20.1	0.0	-22.7	1.2	35.6	17.4	20.6	-26.1	21.8
2500.0	25.1	24.7	0.0	-9.3	1.3	26.9	23.0	0.0	-29.7	1.3
3150.0	23.8	22.7	10.4	10.4	11.6	24.2	22.3	12.2	12.2	13.4
4000.0	24.5	21.2	14.5	14.5	15.5	24.8	20.2	15.4	15.4	16.4
5000.0	25.1	9.6	15.1	15.1	15.6	25.6	18.4	16.6	16.6	17.1
6300.0	24.8	5.6	10.7	10.7	10.6	25.2	15.5	12.5	12.5	12.4
8000.0	25.7	5.4	10.7	10.7	9.6	26.1	12.6	12.7	12.7	11.6
10000.0	26.9	3.3	13.2	13.2	10.7	26.9	12.6	13.2	13.2	10.7
12500.0	26.2	4.2	0.0	0.0	-4.3	26.8	7.5	5.7	5.7	1.4
16000.0	28.2	3.2	0.0	0.0	-6.6	28.6	5.2	5.1	5.1	-1.5
20000.0	28.8	2.4	0.0	0.0	-9.3	29.3	4.8	7.1	7.1	0.0
A-Net	87.9		87.3	43.4		92.3		91.9	18.9	
Lin	105.7		105.4	53.9		100.1		99.5	22.8	

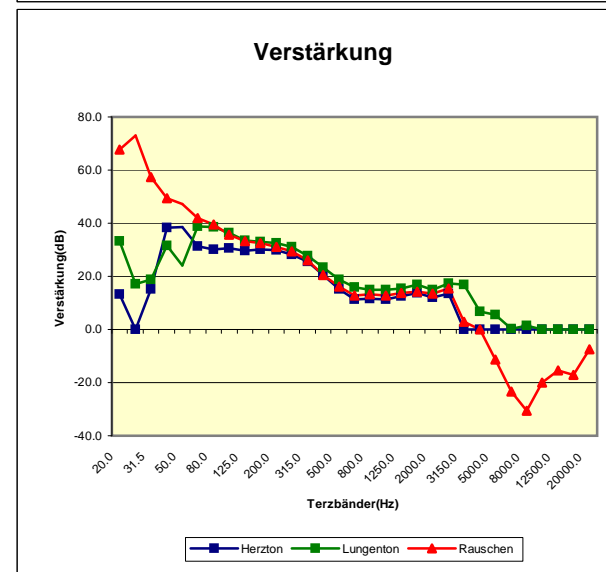
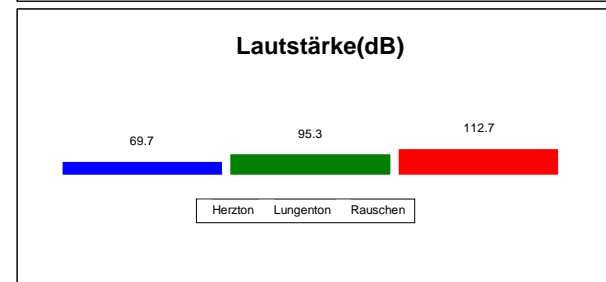
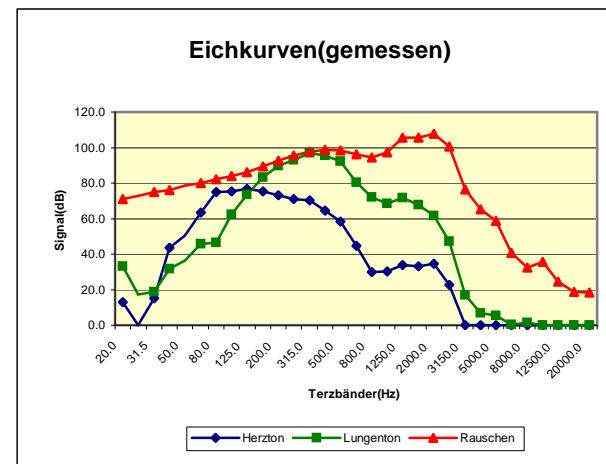


Cadiscope(membran)/110dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen		
		Leq	Δ	Leq	korr	verst.
-50.5	20.0	21.9	0.0	71.1	71.1	67.6
-44.7	25.0	41.7	0.0	73.2	73.0	73.0
-39.4	31.5	47.8	0.0	75.2	74.8	57.2
-34.6	40.0	31.3	0.0	76.1	76.0	49.3
-30.2	50.0	30.3	0.0	78.6	78.6	47.1
-26.2	63.0	33.0	0.0	80.2	80.2	42.0
-22.5	80.0	50.4	0.0	82.3	82.1	39.6
-19.1	100.0	49.5	0.0	84.3	84.1	35.6
-16.1	125.0	49.9	0.0	86.4	86.3	33.3
-13.4	160.0	46.6	0.0	89.3	89.2	32.4
-10.9	200.0	45.4	0.0	92.7	92.7	31.2
-8.6	250.0	51.7	0.0	95.4	95.3	29.4
-6.6	315.0	47.1	0.0	97.7	97.7	26.0
-4.8	400.0	45.9	0.0	98.6	98.6	20.6
-3.2	500.0	47.0	0.0	98.5	98.5	16.1
-1.9	630.0	38.4	0.0	96.2	96.2	12.7
-0.8	800.0	32.4	0.0	94.3	94.3	13.2
0.0	1000.0	31.0	0.0	97.2	97.2	12.7
0.6	1250.0	33.0	0.0	105.5	105.5	13.8
1.0	1600.0	34.1	0.0	105.5	105.5	14.2
1.2	2000.0	34.7	0.0	107.6	107.6	13.5
1.3	2500.0	33.5	0.0	100.7	100.7	15.4
1.2	3150.0	30.2	0.0	76.4	76.4	2.8
1.0	4000.0	31.3	0.0	65.4	65.2	0.0
0.5	5000.0	32.1	0.0	59.0	58.6	-11.3
-0.1	6300.0	33.0	0.0	43.7	40.7	-23.3
-1.1	8000.0	34.2	0.0	39.4	32.5	-30.6
-2.5	10000.0	35.1	0.0	41.4	35.7	-20.0
-4.3	12500.0	36.1	0.0	38.1	24.4	-15.4
-6.6	16000.0	38.0	0.0	38.9	18.8	-17.2
-9.3	20000.0	38.7	0.0	39.5	18.4	-7.6
	A-Net	50.3		112.7	112.7	13.9
	Lin	58.8		112.3	112.3	14.3

Cadiscope(membran)/110dB

Terzbänder	Herzton				Lungenton			
	Leq	korr	verst.	A-Net	Leq	korr	verst.	A-Net
20.0	24.6	13.1	13.1	-37.4	35.3	33.2	33.2	-17.3
25.0	41.7	0.0	0.0	-44.7	42.2	17.2	17.2	-27.5
31.5	48.0	15.1	15.1	-24.3	48.1	18.7	18.7	-20.7
40.0	45.4	43.5	38.3	8.9	37.5	31.7	31.7	-2.9
50.0	51.4	50.6	38.5	20.4	39.8	36.3	24.2	6.1
63.0	63.7	63.4	31.4	37.2	47.5	45.7	38.9	19.5
80.0	75.4	74.9	30.1	52.4	54.7	46.5	38.5	24.0
100.0	75.8	75.4	30.5	56.3	64.2	62.4	36.3	43.3
125.0	77.1	76.7	29.6	60.6	73.9	73.3	33.6	57.2
160.0	75.5	75.2	30.1	61.8	83.3	83.2	32.9	69.8
200.0	73.5	73.2	29.9	62.3	89.9	89.8	32.5	78.9
250.0	71.8	70.9	28.1	62.3	93.1	93.0	31.1	84.4
315.0	70.8	70.2	25.6	63.6	96.8	96.8	27.8	90.2
400.0	65.5	64.5	20.4	59.7	95.6	95.6	23.5	90.8
500.0	60.5	58.4	15.2	55.2	92.4	92.4	18.9	89.2
630.0	48.2	44.8	11.4	42.9	80.5	80.4	15.9	78.5
800.0	37.3	30.0	11.5	29.2	72.3	72.2	14.9	71.4
1000.0	36.6	30.1	11.4	30.1	68.7	68.6	14.9	68.6
1250.0	39.5	33.9	12.6	34.5	71.9	71.8	15.5	72.4
1600.0	39.7	33.2	13.8	34.2	68.1	67.9	16.9	68.9
2000.0	40.7	34.7	12.0	35.9	61.9	61.5	14.8	62.7
2500.0	35.7	22.7	13.4	24.0	48.8	47.2	17.4	48.5
3150.0	30.2	0.0	0.0	1.2	31.9	16.9	16.9	18.1
4000.0	31.2	0.0	0.0	1.0	31.8	6.8	6.8	7.8
5000.0	31.9	0.0	0.0	0.5	32.5	5.6	5.6	6.1
6300.0	32.9	0.0	0.0	-0.1	33.2	0.3	0.3	0.2
8000.0	34.1	0.0	0.0	-1.1	34.4	1.5	1.5	0.4
10000.0	35.0	0.0	0.0	-2.5	35.2	0.0	0.0	-2.5
12500.0	36.1	0.0	0.0	-4.3	36.1	0.0	0.0	-4.3
16000.0	38.0	0.0	0.0	-6.6	38.1	0.0	0.0	-6.6
20000.0	38.7	0.0	0.0	-9.3	38.7	0.0	0.0	0.0
A-Net	70.6	69.7	25.8		95.3	95.3	22.2	
Lin	83.2	82.7	31.1		101.1	101.0	24.3	

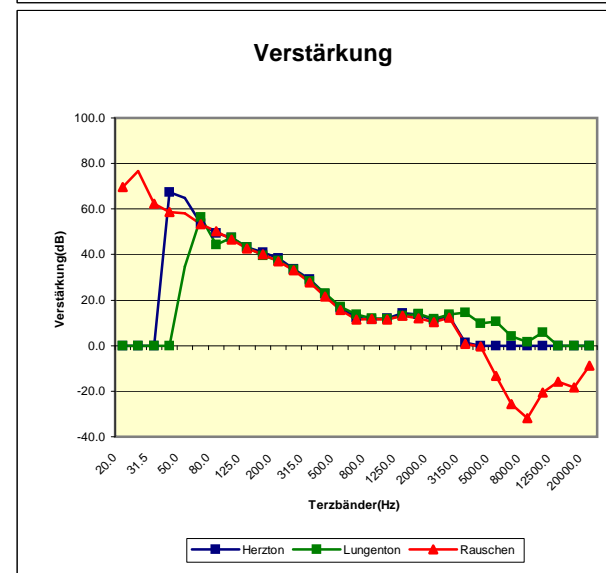
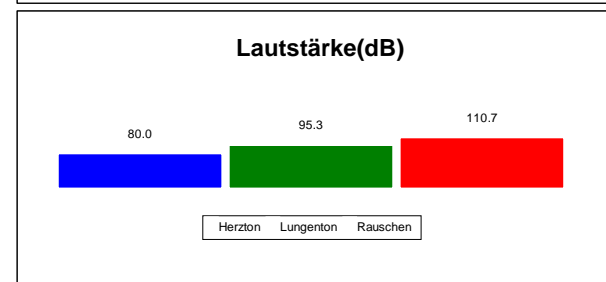
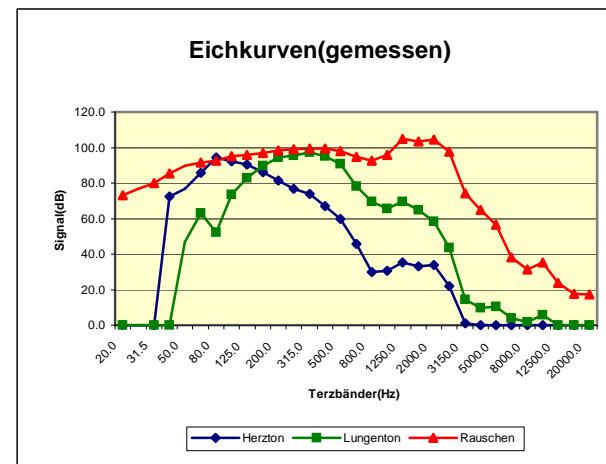


Cadiscope(erweitert)/110dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen		
		Leq	Δ	Leq	korr	verst.
-50.5	20.0	59.4	0.0	74.8	73.2	69.7
-44.7	25.0	75.1	0.0	82.0	76.8	76.8
-39.4	31.5	81.3	0.0	86.7	80.0	62.4
-34.6	40.0	60.0	0.0	85.9	85.4	58.7
-30.2	50.0	53.0	0.0	89.8	89.7	58.3
-26.2	63.0	56.7	0.0	91.6	91.4	53.3
-22.5	80.0	69.8	0.0	93.2	92.6	50.2
-19.1	100.0	67.2	0.0	95.4	95.1	46.5
-16.1	125.0	63.0	0.0	95.9	95.7	42.7
-13.4	160.0	59.1	0.0	96.9	96.8	40.0
-10.9	200.0	53.4	0.0	98.5	98.5	37.0
-8.6	250.0	58.4	0.0	99.1	99.0	33.1
-6.6	315.0	51.8	0.0	99.6	99.6	27.9
-4.8	400.0	48.1	0.0	99.5	99.5	21.5
-3.2	500.0	48.5	0.0	98.0	98.0	15.6
-1.9	630.0	39.4	0.0	94.9	94.9	11.4
-0.8	800.0	32.8	0.0	92.8	92.8	11.7
0.0	1000.0	31.1	0.0	95.9	95.9	11.4
0.6	1250.0	32.7	0.0	104.8	104.8	13.1
1.0	1600.0	33.9	0.0	103.4	103.4	12.1
1.2	2000.0	34.4	0.0	104.4	104.4	10.3
1.3	2500.0	33.4	0.0	97.5	97.5	12.2
1.2	3150.0	30.3	0.0	74.4	74.3	0.8
1.0	4000.0	31.3	0.0	65.1	64.9	-0.3
0.5	5000.0	32.0	0.0	57.2	56.7	-13.2
-0.1	6300.0	33.1	0.0	42.1	38.3	-25.7
-1.1	8000.0	34.3	0.0	38.9	31.2	-31.9
-2.5	10000.0	35.0	0.0	41.1	35.2	-20.5
-4.3	12500.0	36.1	0.0	38.0	23.9	-15.9
-6.6	16000.0	38.0	0.0	38.8	17.7	-18.2
-9.3	20000.0	38.7	0.0	39.4	17.2	-8.8
	A-Net	56.4		110.7	110.7	11.9
	Lin	82.6		111.6	111.3	13.3

Cadiscope(erweitert)/110dB

Terzbänder	Herzton				Lungenton			
	Leq	korr	verst.	A-Net	Leq	korr	verst.	A-Net
20.0	55.0	0.0	0.0	-50.5	56.1	0.0	0.0	-50.5
25.0	73.9	0.0	0.0	-44.7	74.5	0.0	0.0	-44.7
31.5	80.1	0.0	0.0	-39.4	80.6	0.0	0.0	-39.4
40.0	74.4	72.6	67.4	38.0	58.9	0.0	0.0	-34.6
50.0	77.4	76.9	64.8	46.7	56.5	46.9	34.8	16.7
63.0	86.0	85.7	53.6	59.5	66.5	63.1	56.3	36.9
80.0	94.8	94.3	49.5	71.8	70.9	52.4	44.4	29.9
100.0	92.7	92.2	47.4	73.1	76.9	73.5	47.3	54.4
125.0	90.8	90.4	43.3	74.3	83.7	82.9	43.1	66.8
160.0	86.4	86.0	40.9	72.6	90.1	89.9	39.6	76.5
200.0	81.9	81.6	38.3	70.7	94.6	94.5	37.2	83.6
250.0	77.6	76.6	33.8	68.0	95.5	95.4	33.4	86.8
315.0	74.5	73.8	29.3	67.2	97.4	97.4	28.4	90.8
400.0	67.8	66.9	22.7	62.1	95.0	95.0	22.9	90.2
500.0	61.9	59.8	16.6	56.6	90.7	90.6	17.1	87.4
630.0	49.1	45.7	12.2	43.8	78.4	78.3	13.7	76.4
800.0	37.5	29.9	11.5	29.1	69.5	69.4	12.1	68.6
1000.0	36.9	30.7	12.0	30.7	65.7	65.5	11.9	65.5
1250.0	40.2	35.4	14.1	36.0	69.6	69.5	13.2	70.1
1600.0	39.5	33.0	13.6	34.0	65.2	65.0	14.0	66.0
2000.0	40.2	34.0	11.3	35.2	58.8	58.3	11.6	59.5
2500.0	35.5	22.1	12.9	23.4	45.9	43.5	13.8	44.8
3150.0	30.6	1.2	1.2	2.4	31.6	14.5	14.5	15.7
4000.0	31.5	0.0	0.0	1.0	32.0	9.8	9.8	10.8
5000.0	32.2	0.0	0.0	0.5	32.7	10.5	10.5	11.0
6300.0	33.1	0.0	0.0	-0.1	33.4	4.0	4.0	3.9
8000.0	34.2	0.0	0.0	-1.1	34.5	1.6	1.6	0.5
10000.0	35.0	0.0	0.0	-2.5	35.3	5.9	5.9	3.4
12500.0	36.0	0.0	0.0	-4.3	36.2	0.0	0.0	-4.3
16000.0	38.0	0.0	0.0	-6.6	38.1	0.0	0.0	-6.6
20000.0	38.6	0.0	0.0	-9.3	38.7	0.0	0.0	0.0
A-Net	80.6	80.0	36.2		95.4	95.3	22.3	
Lin	98.5	97.0	45.4		102.3	101.4	24.6	

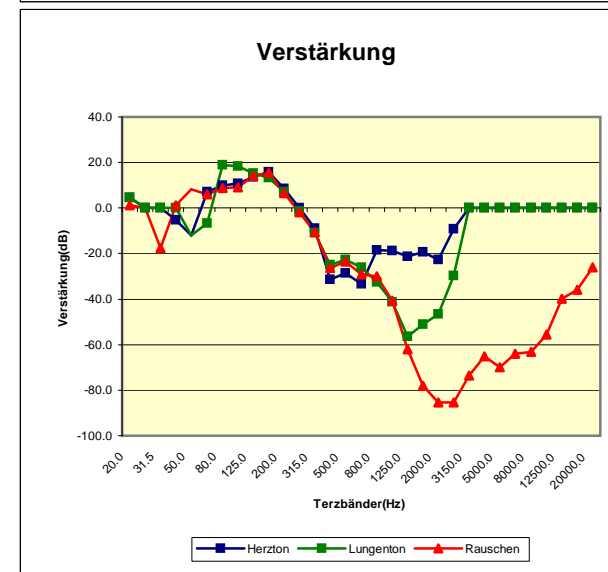
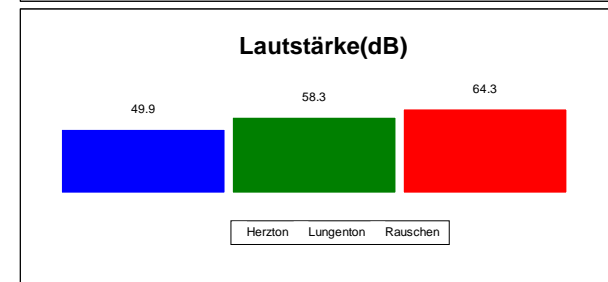
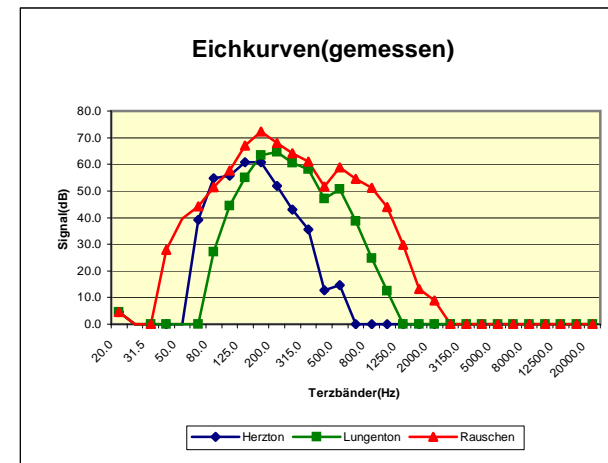


Littmann2000(trichter)/80dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	37.2	15.3	37.4	15.8	4.5	1.1
-44.7	25.0	48.2	10.8	45.8	12.0	0.0	0.0
-39.4	31.5	43.9	13.2	43.5	15.2	0.0	-17.6
-34.6	40.0	40.1	14.5	42.0	17.1	27.9	1.1
-30.2	50.0	42.8	18.2	47.4	23.0	39.7	8.3
-26.2	63.0	38.3	20.6	47.7	12.6	44.1	5.9
-22.5	80.0	35.1	27.9	52.6	7.8	51.4	8.9
-19.1	100.0	30.0	16.3	57.9	7.4	57.5	9.0
-16.1	125.0	34.9	26.6	67.3	6.4	67.1	14.1
-13.4	160.0	28.7	12.5	72.4	5.5	72.3	15.6
-10.9	200.0	25.2	23.8	68.0	4.0	67.9	6.5
-8.6	250.0	23.5	18.7	64.2	3.9	64.1	-1.8
-6.6	315.0	20.9	33.0	61.1	5.9	61.0	-10.7
-4.8	400.0	19.4	53.6	51.9	4.0	51.7	-26.3
-3.2	500.0	19.9	50.8	58.9	3.9	58.8	-23.6
-1.9	630.0	20.1	58.2	54.6	3.5	54.4	-29.1
-0.8	800.0	18.9	65.1	51.4	3.5	51.2	-29.9
0.0	1000.0	17.1	53.8	44.3	4.1	43.9	-40.6
0.6	1250.0	11.3	57.5	30.7	8.1	29.7	-62.0
1.0	1600.0	6.9	37.7	16.7	13.2	13.3	-78.0
1.2	2000.0	3.2	62.5	12.5	22.4	8.9	-85.2
1.3	2500.0	2.0	120.0	5.1	52.9	0.0	-85.3
1.2	3150.0	2.2	127.3	3.6	75.0	0.0	-73.6
1.0	4000.0	3.1	32.3	4.3	20.9	0.0	-65.2
0.5	5000.0	3.0	30.0	4.4	22.7	0.0	-69.9
-0.1	6300.0	5.3	56.6	6.6	36.4	0.0	-64.0
-1.1	8000.0	6.8	114.7	8.6	40.7	0.0	-63.1
-2.5	10000.0	3.7	40.5	4.8	25.0	0.0	-55.7
-4.3	12500.0	3.6	13.9	4.0	15.0	0.0	-39.7
-6.6	16000.0	4.9	6.1	5.0	10.0	0.0	-35.9
-9.3	20000.0	3.8	15.8	5.0	12.0	0.0	-25.9
	A-Net	27.4	28.8	64.4		64.3	-34.5
	Lin	51.3	8.2	75.3		74.7	-23.2

Littmann2000(trichter)/80dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	37.4	15.8	4.5	4.5	-46.0	37.4	15.8	4.5	4.5	-46.0
25.0	44.5	14.2	0.0	0.0	-44.7	42.9	14.7	0.0	0.0	-44.7
31.5	42.3	19.4	0.0	0.0	-39.4	41.3	16.0	0.0	0.0	-39.4
40.0	38.9	14.1	0.0	-5.2	-34.6	38.2	15.7	0.0	0.0	-34.6
50.0	41.6	11.1	0.0	-12.1	-30.2	41.3	14.8	0.0	-12.1	-30.2
63.0	44.8	17.0	39.2	7.2	13.0	38.4	39.6	0.0	-6.8	-26.2
80.0	55.6	12.2	54.7	9.9	32.2	38.0	26.3	27.1	19.0	4.6
100.0	56.1	12.8	55.7	10.8	36.6	46.0	20.2	44.5	18.4	25.4
125.0	61.1	11.6	60.7	13.6	44.6	55.9	13.4	55.1	15.3	39.0
160.0	61.1	13.6	60.9	15.8	47.5	63.6	12.7	63.4	13.2	50.0
200.0	52.2	19.0	51.8	8.6	40.9	64.6	12.4	64.5	7.2	53.6
250.0	43.9	20.3	43.0	0.2	34.4	60.7	12.2	60.6	-1.4	52.0
315.0	37.1	22.6	35.6	-8.9	29.0	58.2	12.2	58.1	-10.9	51.5
400.0	22.7	28.6	12.7	-31.5	7.9	47.5	18.1	47.2	-24.9	42.4
500.0	23.7	32.9	14.7	-28.5	11.5	51.0	17.3	50.8	-22.7	47.6
630.0	19.6	54.1	0.0	-33.4	-1.9	39.6	22.5	38.6	-25.9	36.7
800.0	18.5	33.0	0.0	-18.5	-0.8	28.4	31.0	24.9	-32.4	24.1
1000.0	17.4	41.4	0.0	-18.7	0.0	21.1	47.4	12.4	-41.2	12.4
1250.0	11.6	75.0	0.0	-21.3	0.6	12.4	102.4	0.0	-56.3	0.6
1600.0	6.8	60.3	0.0	-19.4	1.0	7.1	123.9	0.0	-51.0	1.0
2000.0	3.3	154.5	0.0	-22.7	1.2	3.7	262.2	0.0	-46.7	1.2
2500.0	2.3	134.8	0.0	-9.3	1.3	2.7	481.5	0.0	-29.7	1.3
3150.0	2.3	121.7	0.0	0.0	1.2	2.6	496.2	0.0	0.0	1.2
4000.0	3.3	27.3	0.0	0.0	1.0	3.4	150.0	0.0	0.0	1.0
5000.0	3.2	31.3	0.0	0.0	0.5	3.3	54.5	0.0	0.0	0.5
6300.0	5.3	15.1	0.0	0.0	-0.1	5.5	105.5	0.0	0.0	-0.1
8000.0	6.9	17.4	0.0	0.0	-1.1	7.0	117.1	0.0	0.0	-1.1
10000.0	3.8	15.8	0.0	0.0	-2.5	3.9	51.3	0.0	0.0	-2.5
12500.0	3.7	13.5	0.0	0.0	-4.3	3.7	16.2	0.0	0.0	-4.3
16000.0	5.1	9.8	0.0	0.0	-6.6	5.0	12.0	0.0	0.0	-6.6
20000.0	4.1	9.8	0.0	0.0	-9.3	4.3	18.6	0.0	0.0	0.0
A-Net	50.5		49.9	6.0		58.5		58.3	-14.8	
Lin	65.4		63.5	12.0		68.7		67.4	-9.3	

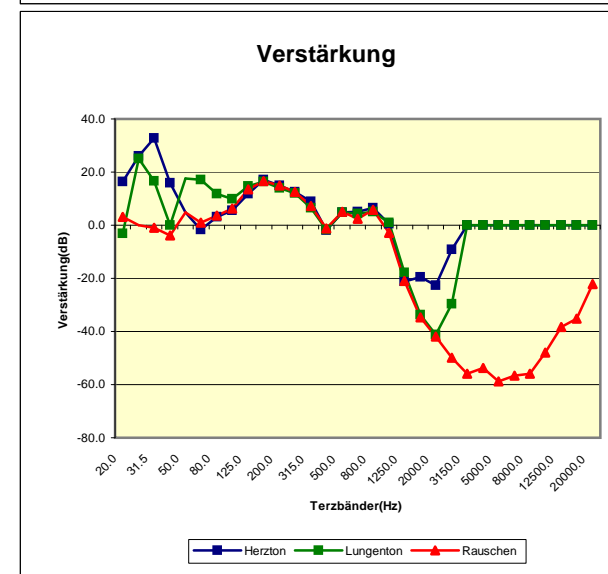
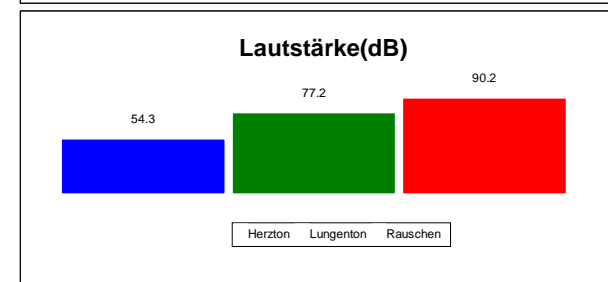
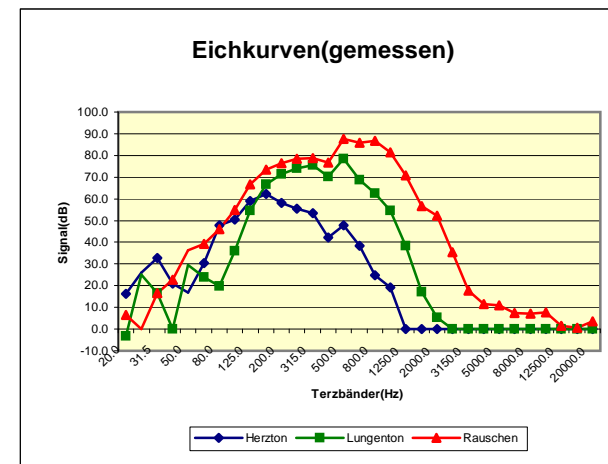


Littmann2000(membran)/100dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	35.6	17.1	35.9	18.1	6.5	3.1
-44.7	25.0	43.3	13.6	43.2	16.9	0.0	0.0
-39.4	31.5	41.1	16.8	41.6	20.0	16.6	-1.0
-34.6	40.0	35.6	13.8	37.4	17.1	22.8	-3.9
-30.2	50.0	38.4	16.9	43.4	29.7	36.2	4.8
-26.2	63.0	36.2	19.6	43.8	13.9	39.1	0.9
-22.5	80.0	31.5	18.4	47.6	9.9	46.1	3.7
-19.1	100.0	28.1	13.5	55.2	8.5	54.8	6.2
-16.1	125.0	29.4	12.2	66.7	5.8	66.6	13.6
-13.4	160.0	25.1	14.7	73.4	5.0	73.4	16.6
-10.9	200.0	26.1	19.5	76.4	3.7	76.4	14.9
-8.6	250.0	25.6	20.7	78.5	3.9	78.5	12.5
-6.6	315.0	23.6	18.2	78.9	4.4	78.9	7.2
-4.8	400.0	18.6	14.5	76.7	3.1	76.7	-1.3
-3.2	500.0	21.1	16.6	87.5	2.6	87.5	5.1
-1.9	630.0	17.4	19.5	85.8	2.8	85.8	2.3
-0.8	800.0	19.4	11.3	86.8	2.5	86.8	5.7
0.0	1000.0	17.1	11.1	81.5	2.1	81.5	-3.0
0.6	1250.0	11.8	17.8	70.8	3.1	70.8	-20.9
1.0	1600.0	10.2	10.8	56.6	2.7	56.6	-34.7
1.2	2000.0	9.5	10.5	52.2	2.9	52.1	-42.0
1.3	2500.0	9.9	12.1	35.8	2.0	35.3	-49.9
1.2	3150.0	10.6	9.4	20.8	3.4	17.6	-56.0
1.0	4000.0	11.5	7.8	17.5	6.9	11.5	-53.8
0.5	5000.0	12.1	5.8	17.6	8.0	11.0	-58.8
-0.1	6300.0	13.3	5.3	16.9	4.7	7.5	-56.5
-1.1	8000.0	14.5	4.1	17.6	4.5	7.1	-56.0
-2.5	10000.0	15.0	4.0	18.1	4.4	7.6	-48.0
-4.3	12500.0	16.0	2.5	17.5	2.9	1.5	-38.2
-6.6	16000.0	18.1	2.2	19.2	2.6	0.7	-35.2
-9.3	20000.0	18.2	1.6	19.7	2.0	3.7	-22.2
	A-Net	28.0	5.7	90.2	1.8	90.2	-8.6
	Lin	47.4	9.5	92.4	1.7	92.4	-5.6

Littmann2000(membran)/100dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	36.5	16.4	16.4	16.4	-34.1	35.7	18.8	-3.1	-3.1	-53.6
25.0	44.4	14.4	25.9	25.9	-18.8	44.3	16.0	25.0	25.0	-19.7
31.5	43.9	14.1	32.7	32.7	-6.7	41.6	17.5	16.6	16.6	-22.8
40.0	37.1	17.3	21.1	15.9	-13.5	35.4	20.1	0.0	0.0	-34.6
50.0	39.1	17.9	16.9	4.8	-13.3	41.1	29.4	29.6	17.6	-0.6
63.0	39.8	18.8	30.4	-1.6	4.2	38.1	31.2	24.0	17.2	-2.2
80.0	49.1	14.7	47.9	3.0	25.4	33.5	29.0	19.8	11.7	-2.7
100.0	51.0	14.5	50.4	5.5	31.3	39.0	21.3	36.1	10.0	17.0
125.0	59.3	12.1	59.0	11.9	42.9	55.0	13.1	54.5	14.8	38.4
160.0	62.3	14.4	62.2	17.1	48.8	66.8	13.0	66.7	16.5	53.3
200.0	58.4	16.8	58.2	15.0	47.3	71.4	10.9	71.4	14.1	60.5
250.0	55.7	15.3	55.4	12.6	46.8	74.0	9.3	74.0	12.0	65.4
315.0	53.7	15.6	53.4	8.8	46.8	75.4	9.3	75.4	6.4	68.8
400.0	42.8	10.5	42.2	-1.9	37.4	70.3	12.5	70.3	-1.8	65.5
500.0	48.3	12.0	47.9	4.7	44.7	78.4	11.1	78.4	4.9	75.2
630.0	39.1	12.5	38.4	4.9	36.5	68.9	12.8	68.9	4.3	67.0
800.0	28.6	26.2	24.9	6.4	24.1	62.5	14.7	62.4	5.1	61.6
1000.0	24.2	20.2	19.1	0.4	19.1	54.7	15.0	54.6	0.9	54.6
1250.0	13.5	14.1	0.0	-21.3	0.6	38.9	17.2	38.5	-17.8	39.1
1600.0	10.5	10.5	0.0	-19.4	1.0	20.4	27.9	17.2	-33.8	18.2
2000.0	9.7	11.3	0.0	-22.7	1.2	13.7	40.1	5.4	-41.3	6.6
2500.0	9.9	12.1	0.0	-9.3	1.3	11.8	41.5	0.0	-29.7	1.3
3150.0	10.8	8.3	0.0	0.0	1.2	11.8	23.7	0.0	0.0	1.2
4000.0	11.7	7.7	0.0	0.0	1.0	12.7	21.3	0.0	0.0	1.0
5000.0	12.4	5.6	0.0	0.0	0.5	13.3	21.1	0.0	0.0	0.5
6300.0	13.6	3.7	0.0	0.0	-0.1	14.2	13.4	0.0	0.0	-0.1
8000.0	14.6	4.8	0.0	0.0	-1.1	15.2	9.2	0.0	0.0	-1.1
10000.0	15.2	3.3	0.0	0.0	-2.5	15.8	9.5	0.0	0.0	-2.5
12500.0	16.1	3.1	0.0	0.0	-4.3	16.5	4.8	0.0	0.0	-4.3
16000.0	18.2	2.2	0.0	0.0	-6.6	18.6	3.2	0.0	0.0	-6.6
20000.0	18.4	1.6	0.0	0.0	-9.3	18.9	2.6	0.0	0.0	0.0
A-Net	54.7	13.7	54.3	10.4		77.2	10.8	77.2	4.2	
Lin	66.1	12.0	65.0	13.5		82.1	9.1	81.9	5.2	

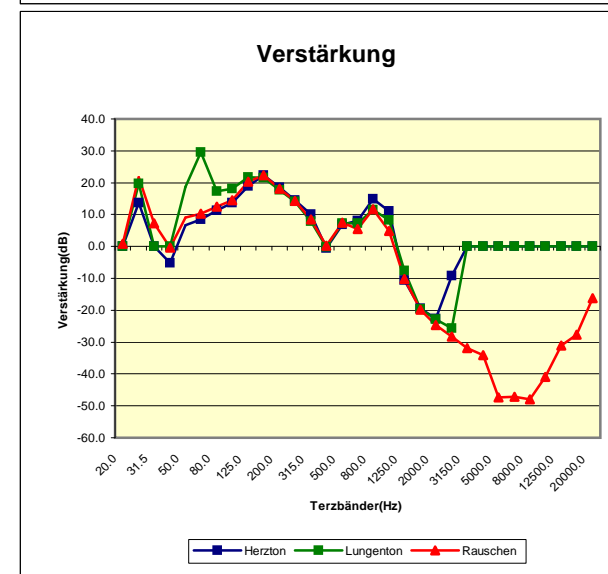
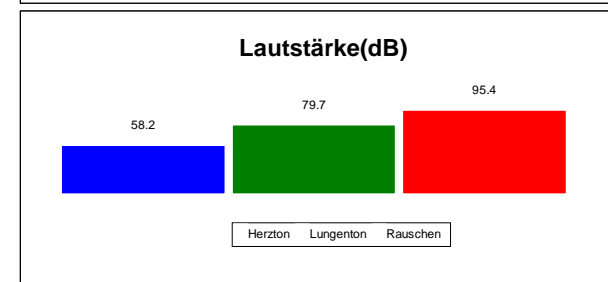
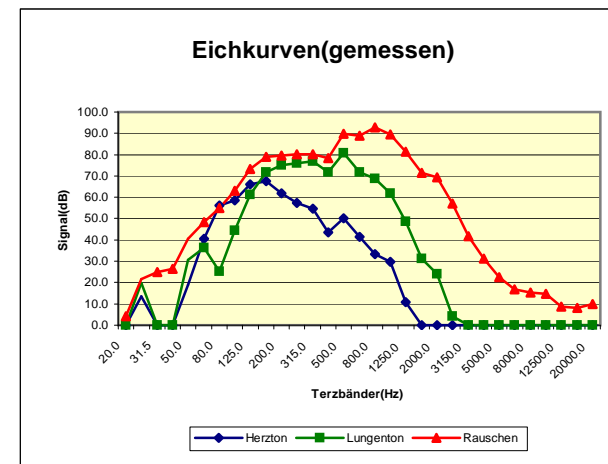


Littmann2000(erweitert)/100dB

A-Net	Terzbänder	Stille(verstärkt)		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	36.9	16.8	37.1	19.7	4.2	0.8
-44.7	25.0	46.3	14.0	46.8	13.5	21.8	21.8
-39.4	31.5	42.2	20.6	43.3	15.2	24.8	7.2
-34.6	40.0	40.3	13.6	41.9	12.6	26.4	-0.3
-30.2	50.0	39.1	18.7	45.8	9.6	40.4	9.0
-26.2	63.0	37.2	18.8	50.5	11.9	48.4	10.2
-22.5	80.0	37.0	26.8	55.9	8.1	54.9	12.4
-19.1	100.0	33.4	25.4	63.4	5.5	63.1	14.5
-16.1	125.0	35.2	10.8	73.5	4.4	73.4	20.4
-13.4	160.0	32.5	28.3	79.1	4.2	79.1	22.3
-10.9	200.0	28.0	41.1	79.6	3.9	79.6	18.1
-8.6	250.0	27.7	20.9	80.2	3.5	80.2	14.2
-6.6	315.0	27.3	26.4	80.1	3.4	80.1	8.4
-4.8	400.0	22.6	45.6	78.3	2.7	78.3	0.3
-3.2	500.0	23.0	13.9	89.8	3.5	89.8	7.4
-1.9	630.0	18.7	49.2	89.0	2.7	89.0	5.5
-0.8	800.0	18.2	26.9	92.7	2.8	92.7	11.6
0.0	1000.0	16.3	27.6	89.4	1.8	89.4	4.9
0.6	1250.0	11.4	20.2	81.4	2.6	81.4	-10.3
1.0	1600.0	10.0	13.0	71.5	1.7	71.5	-19.8
1.2	2000.0	9.5	15.8	69.4	2.4	69.4	-24.7
1.3	2500.0	9.9	14.1	57.0	1.8	57.0	-28.3
1.2	3150.0	10.6	7.5	41.9	6.9	41.7	-31.9
1.0	4000.0	11.5	7.8	32.1	30.2	31.2	-34.0
0.5	5000.0	12.2	4.9	24.9	62.7	22.6	-47.3
-0.1	6300.0	13.4	3.7	21.3	80.3	16.8	-47.2
-1.1	8000.0	14.5	4.1	20.9	65.1	15.2	-47.9
-2.5	10000.0	15.0	3.3	20.9	40.2	14.8	-40.9
-4.3	12500.0	16.0	2.5	19.1	29.8	8.6	-31.1
-6.6	16000.0	18.1	1.7	20.5	20.0	8.2	-27.8
-9.3	20000.0	18.2	1.6	21.0	6.7	9.8	-16.1
	A-Net	29.8	14.8	95.4	1.8	95.4	-3.4
	Lin	49.9	10.2	96.9	1.4	96.9	-1.1

Littmann2000(erweitert)/100dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	36.9	17.3	0.0	0.0	-50.5	36.8	18.5	0.0	0.0	-50.5
25.0	46.5	11.4	13.6	13.6	-31.1	46.7	13.9	19.8	19.8	-24.9
31.5	42.0	13.3	0.0	0.0	-39.4	42.1	17.6	0.0	0.0	-39.4
40.0	39.0	14.9	0.0	-5.2	-34.6	38.8	15.7	0.0	0.0	-34.6
50.0	39.9	13.5	18.8	6.7	-11.4	41.9	22.0	30.7	18.6	0.5
63.0	45.0	16.9	40.5	8.4	14.3	42.8	32.5	36.3	29.6	10.1
80.0	57.1	11.9	56.2	11.4	33.7	39.0	30.0	25.3	17.2	2.8
100.0	59.0	12.5	58.5	13.7	39.4	46.5	19.6	44.3	18.2	25.2
125.0	66.3	11.0	66.1	18.9	50.0	61.8	12.0	61.4	21.6	45.3
160.0	67.6	12.7	67.4	22.3	54.0	71.9	11.8	71.8	21.5	58.4
200.0	62.0	16.1	61.8	18.6	50.9	75.1	10.4	75.1	17.8	64.2
250.0	57.5	14.8	57.2	14.4	48.6	76.0	9.1	76.0	14.0	67.4
315.0	55.1	15.1	54.7	10.2	48.1	76.9	9.0	76.9	7.9	70.3
400.0	44.3	10.2	43.6	-0.6	38.8	71.9	12.1	71.9	-0.2	67.1
500.0	50.5	11.5	50.1	6.9	46.9	80.7	10.8	80.7	7.2	77.5
630.0	42.0	11.4	41.4	8.0	39.5	71.9	12.2	71.9	7.3	70.0
800.0	34.7	23.1	33.3	14.8	32.5	68.9	13.2	68.9	11.6	68.1
1000.0	31.4	18.5	29.7	11.0	29.7	62.0	13.1	62.0	8.3	62.0
1250.0	17.1	13.5	10.7	-10.6	11.3	48.8	13.5	48.7	-7.6	49.3
1600.0	11.6	12.9	0.0	-19.4	1.0	32.0	13.4	31.3	-19.7	32.3
2000.0	10.3	13.6	0.0	-22.7	1.2	25.4	22.8	23.9	-22.8	25.1
2500.0	9.9	13.1	0.0	-9.3	1.3	13.5	44.4	4.1	-25.6	5.4
3150.0	10.6	8.5	0.0	0.0	1.2	12.4	33.1	0.0	0.0	1.2
4000.0	11.6	6.9	0.0	0.0	1.0	13.1	27.5	0.0	0.0	1.0
5000.0	12.3	5.7	0.0	0.0	0.5	13.8	27.5	0.0	0.0	0.5
6300.0	13.4	6.0	0.0	0.0	-0.1	14.4	17.4	0.0	0.0	-0.1
8000.0	14.6	3.4	0.0	0.0	-1.1	15.4	13.6	0.0	0.0	-1.1
10000.0	15.1	2.6	0.0	0.0	-2.5	16.0	13.1	0.0	0.0	-2.5
12500.0	16.0	3.1	0.0	0.0	-4.3	16.7	5.4	0.0	0.0	-4.3
16000.0	18.2	1.6	0.0	0.0	-6.6	18.6	3.8	0.0	0.0	-6.6
20000.0	18.3	2.2	0.0	0.0	-9.3	18.9	3.7	0.0	0.0	0.0
A-Net	58.5	13.2	58.2	14.3		79.7	10.4	79.7	6.7	
Lin	71.3	10.5	70.5	19.0		84.5	8.9	84.3	7.6	

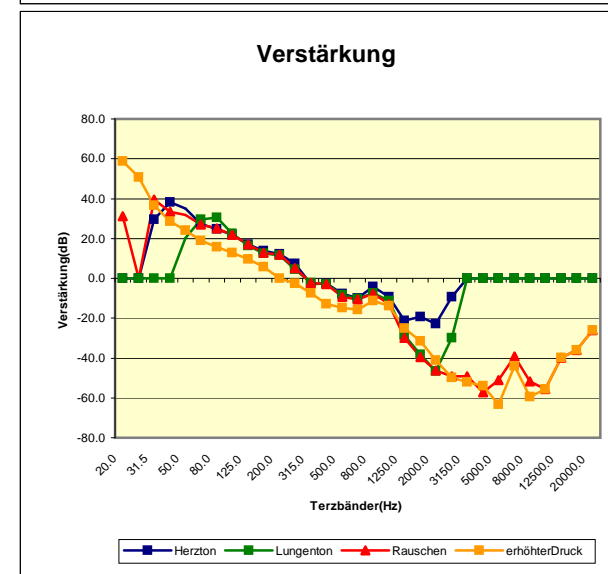
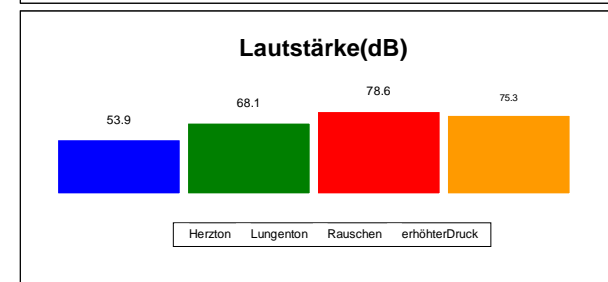
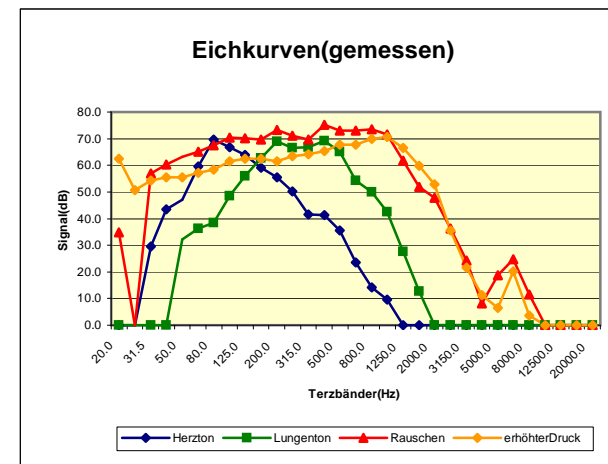


LittmannMaster/90dB

A-Net	Terzbänder	Stille		Rauschen				erhöhterDruck			
		Leq	Δ	Leq	Δ	korr	verst.	Leq	Δ	korr	verst.
-50.5	20.0	44.3	16.5	46.8	13.5	34.8	31.3	63.4	11.5	62.4	58.9
-44.7	25.0	57.5	13.4	56.7	12.2	0.0	0.0	60.8	10.5	50.8	50.8
-39.4	31.5	46.9	15.6	59.4	9.8	57.0	39.5	57.3	11.5	54.2	36.6
-34.6	40.0	47.8	15.5	62.1	10.8	60.2	33.5	58.5	12.6	55.5	28.7
-30.2	50.0	48.1	10.2	64.6	8.5	63.2	31.8	58.6	9.7	55.5	24.1
-26.2	63.0	34.7	17.6	65.4	8.6	65.1	27.0	57.9	10.2	57.3	19.1
-22.5	80.0	34.2	17.5	67.8	7.8	67.6	25.2	58.8	8.0	58.3	15.8
-19.1	100.0	38.3	10.4	70.5	5.4	70.3	21.7	62.0	7.3	61.4	12.8
-16.1	125.0	41.4	12.1	70.4	6.0	70.1	17.1	63.3	6.3	62.6	9.6
-13.4	160.0	21.8	17.9	69.7	6.0	69.7	12.9	62.5	6.2	62.4	5.6
-10.9	200.0	13.5	33.3	73.3	3.8	73.3	11.8	61.6	6.2	61.6	0.1
-8.6	250.0	8.4	28.6	71.2	4.9	71.2	5.2	63.4	4.6	63.4	-2.6
-6.6	315.0	14.1	14.2	69.6	4.2	69.6	-2.1	64.2	5.3	64.2	-7.5
-4.8	400.0	6.8	42.6	75.2	2.9	75.2	-2.8	65.3	4.1	65.3	-12.7
-3.2	500.0	3.1	77.4	73.1	2.5	73.1	-9.3	67.7	3.7	67.7	-14.7
-1.9	630.0	0.2	1000.0	73.0	2.2	73.0	-10.5	67.7	2.5	67.7	-15.8
-0.8	800.0	0.3	666.7	73.5	2.3	73.5	-7.6	70.0	2.4	70.0	-11.1
0.0	1000.0	0.7	228.6	71.7	3.1	71.7	-12.8	70.7	2.1	70.7	-13.8
0.6	1250.0	1.0	130.0	61.7	1.8	61.7	-30.0	66.5	1.8	66.5	-25.2
1.0	1600.0	1.7	64.7	51.9	2.5	51.9	-39.4	59.8	2.2	59.8	-31.5
1.2	2000.0	2.3	39.1	47.9	2.9	47.9	-46.2	52.9	2.6	52.9	-41.2
1.3	2500.0	2.9	34.5	36.4	2.2	36.2	-49.1	35.8	3.1	35.6	-49.7
1.2	3150.0	3.7	18.9	25.1	4.4	24.3	-49.3	22.7	6.2	21.7	-51.9
1.0	4000.0	4.4	13.6	12.5	8.0	8.2	-57.1	14.6	10.3	11.4	-53.9
0.5	5000.0	5.0	14.0	20.3	6.9	18.7	-51.2	11.8	7.6	6.5	-63.4
-0.1	6300.0	5.6	8.9	25.6	3.5	24.7	-39.3	21.6	4.6	20.1	-43.9
-1.1	8000.0	6.3	7.9	15.3	3.3	11.5	-51.6	11.1	5.4	3.7	-59.4
-2.5	10000.0	6.7	7.5	9.2	7.6	0.0	-55.7	7.9	6.3	0.0	-55.7
-4.3	12500.0	7.4	5.4	8.6	5.8	0.0	-39.7	8.0	5.0	0.0	-39.7
-6.6	16000.0	9.2	4.3	10.0	5.0	0.0	-35.9	9.5	3.2	0.0	-35.9
-9.3	20000.0	9.0	3.3	9.9	4.0	0.0	-25.9	9.4	4.3	0.0	-25.9
	A-Net	27.6	14.1	78.6	1.5	78.6	-20.2	75.3	1.7	75.3	-23.5
	Lin	58.8	11.2	82.9	1.8	82.3	-15.6	77.7	2.2	76.7	-21.3

LittmannMaster/90dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	42.1	15.4	0.0	0.0	-50.5	43.3	14.1	0.0	0.0	-50.5
25.0	55.3	13.6	0.0	0.0	-44.7	56.8	17.8	0.0	0.0	-44.7
31.5	48.0	11.3	29.5	29.5	-9.9	45.8	13.1	0.0	0.0	-39.4
40.0	51.9	13.5	43.4	38.2	8.8	46.4	16.2	0.0	0.0	-34.6
50.0	53.6	11.9	47.0	34.9	16.8	49.4	24.1	32.3	20.2	2.1
63.0	60.0	11.7	59.5	27.5	33.3	41.5	22.9	36.2	29.4	10.0
80.0	69.7	9.8	69.6	24.7	47.1	42.6	19.5	38.4	30.4	15.9
100.0	67.1	10.1	66.8	22.0	47.7	50.9	18.5	48.6	22.5	29.5
125.0	64.6	11.0	64.0	16.9	47.9	57.5	13.6	56.0	16.3	39.9
160.0	59.1	13.7	59.0	13.9	45.6	62.8	13.5	62.7	12.5	49.3
200.0	55.5	17.5	55.4	12.2	44.5	69.0	11.4	69.0	11.7	58.1
250.0	50.2	18.9	50.1	7.3	41.5	66.6	12.2	66.6	4.6	58.0
315.0	41.9	17.9	41.5	-3.0	34.9	66.7	12.1	66.7	-2.3	60.1
400.0	41.6	11.5	41.4	-2.7	36.6	69.1	12.9	69.1	-3.0	64.3
500.0	35.7	13.2	35.5	-7.7	32.3	65.0	14.3	65.0	-8.5	61.8
630.0	24.1	20.7	23.5	-9.9	21.6	54.3	15.3	54.3	-10.3	52.4
800.0	15.8	39.9	14.2	-4.3	13.4	49.9	19.2	49.9	-7.4	49.1
1000.0	12.2	44.3	9.5	-9.2	9.5	42.6	18.5	42.5	-11.1	42.5
1250.0	3.5	122.9	0.0	-21.3	0.6	28.1	22.4	27.7	-28.6	28.3
1600.0	2.8	135.7	0.0	-19.4	1.0	14.8	27.7	12.6	-38.4	13.6
2000.0	3.1	96.8	0.0	-22.7	1.2	6.1	83.6	0.0	-46.7	1.2
2500.0	3.8	81.6	0.0	-9.3	1.3	4.4	86.4	0.0	-29.7	1.3
3150.0	4.2	50.0	0.0	0.0	1.2	4.4	54.5	0.0	0.0	1.2
4000.0	4.9	51.0	0.0	0.0	1.0	5.2	46.2	0.0	0.0	1.0
5000.0	5.5	40.0	0.0	0.0	0.5	5.8	41.4	0.0	0.0	0.5
6300.0	5.9	22.0	0.0	0.0	-0.1	6.1	26.2	0.0	0.0	-0.1
8000.0	6.6	16.7	0.0	0.0	-1.1	6.7	23.9	0.0	0.0	-1.1
10000.0	7.0	14.3	0.0	0.0	-2.5	7.2	22.2	0.0	0.0	-2.5
12500.0	7.5	8.0	0.0	0.0	-4.3	7.6	9.2	0.0	0.0	-4.3
16000.0	9.3	6.5	0.0	0.0	-6.6	9.4	6.4	0.0	0.0	-6.6
20000.0	9.2	4.3	0.0	0.0	-9.3	9.2	7.6	0.0	0.0	0.0
A-Net	54.3	12.3	53.9	10.0		68.2	11.6	68.1	-4.9	
Lin	72.9	8.5	71.0	19.5		74.9	9.5	73.4	-3.3	

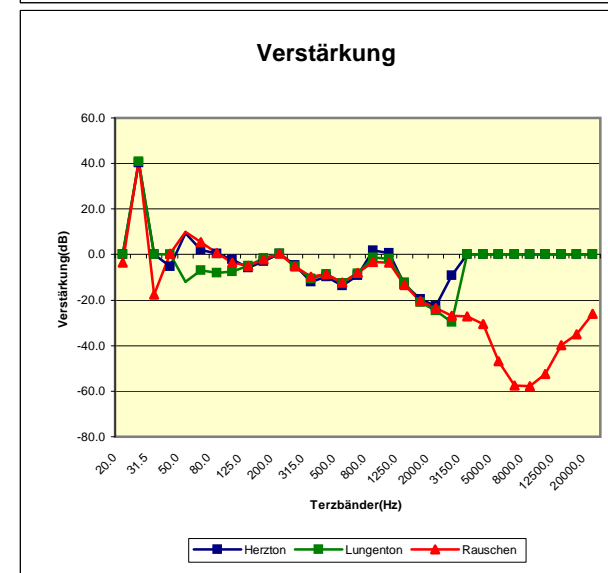
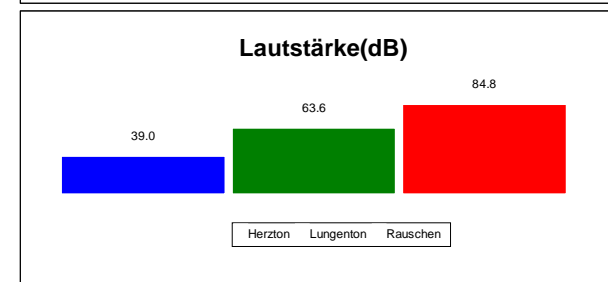
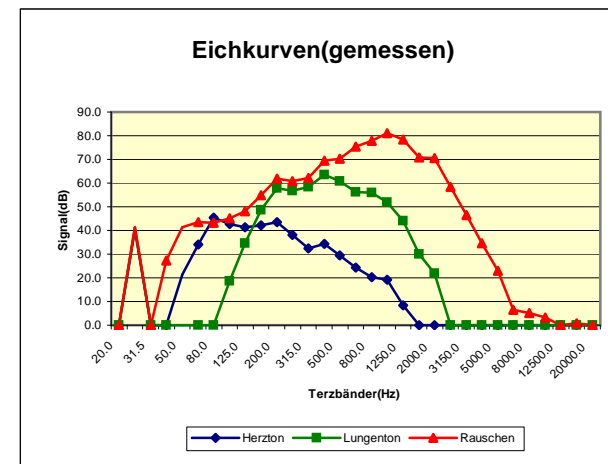


LittmannCardiologyII/90dB

A-Net	Terzbänder	Stille		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	36.9	16.8	36.7	20.2	0.0	-3.4
-44.7	25.0	35.5	17.2	44.9	14.7	41.3	41.3
-39.4	31.5	44.5	13.3	42.7	17.3	0.0	-17.6
-34.6	40.0	40.6	20.9	42.3	12.1	27.3	0.5
-30.2	50.0	38.0	16.3	45.8	11.6	41.3	9.8
-26.2	63.0	37.5	17.3	47.1	12.5	43.6	5.4
-22.5	80.0	34.3	18.1	45.9	8.3	43.2	0.8
-19.1	100.0	29.4	19.7	46.4	7.3	45.1	-3.5
-16.1	125.0	26.3	15.2	48.7	7.8	48.0	-5.0
-13.4	160.0	26.6	15.8	55.1	6.0	54.8	-2.0
-10.9	200.0	24.1	17.8	62.1	6.4	62.0	0.5
-8.6	250.0	25.6	19.1	61.0	4.9	60.9	-5.1
-6.6	315.0	19.0	38.4	62.1	4.2	62.0	-9.6
-4.8	400.0	21.4	15.0	69.4	3.6	69.4	-8.6
-3.2	500.0	16.5	27.3	70.3	3.4	70.3	-12.1
-1.9	630.0	11.1	52.3	75.4	2.8	75.4	-8.1
-0.8	800.0	7.7	131.2	77.9	3.2	77.9	-3.2
0.0	1000.0	4.9	261.2	81.0	2.3	81.0	-3.5
0.6	1250.0	2.6	161.5	78.3	1.8	78.3	-13.4
1.0	1600.0	1.8	94.4	70.9	2.0	70.9	-20.4
1.2	2000.0	2.0	65.0	70.5	2.6	70.5	-23.6
1.3	2500.0	2.4	41.7	58.5	1.9	58.5	-26.8
1.2	3150.0	3.1	25.8	46.6	2.6	46.5	-27.0
1.0	4000.0	3.8	23.7	34.9	5.2	34.7	-30.6
0.5	5000.0	4.5	17.8	24.0	7.1	23.0	-46.8
-0.1	6300.0	5.0	12.0	11.8	5.9	6.5	-57.5
-1.1	8000.0	5.7	12.3	11.5	6.1	5.3	-57.9
-2.5	10000.0	6.3	7.9	10.9	5.5	3.2	-52.5
-4.3	12500.0	6.8	7.4	9.1	5.5	0.0	-39.7
-6.6	16000.0	7.5	5.3	10.8	3.7	0.8	-35.1
-9.3	20000.0	9.6	4.2	10.6	4.7	0.0	-25.9
	A-Net	9.1	5.5	84.8	1.7	84.8	-14.0
	Lin	22.4	17.4	85.1	1.6	85.1	-12.9

LittmannCardiologyII/90dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	36.2	18.8	0.0	0.0	-50.5	36.5	26.0	0.0	0.0	-50.5
25.0	44.3	14.7	40.4	40.4	-4.3	44.7	14.8	41.0	41.0	-3.7
31.5	41.8	14.6	0.0	0.0	-39.4	41.0	18.3	0.0	0.0	-39.4
40.0	38.7	13.2	0.0	-5.2	-34.6	38.1	17.1	0.0	0.0	-34.6
50.0	39.2	15.6	21.4	9.3	-8.8	37.8	15.9	0.0	-12.1	-30.2
63.0	42.0	17.6	34.1	2.1	7.9	35.7	26.3	0.0	-6.8	-26.2
80.0	47.5	14.7	45.4	0.5	22.9	31.9	35.4	0.0	-8.0	-22.5
100.0	44.4	15.8	42.7	-2.1	23.6	31.6	49.1	18.6	-7.5	-0.5
125.0	42.8	17.1	41.4	-5.7	25.3	37.5	24.8	34.7	-5.1	18.6
160.0	43.4	21.4	42.0	-3.1	28.6	49.4	17.8	48.7	-1.5	35.3
200.0	44.4	21.4	43.5	0.3	32.6	57.9	13.6	57.7	0.4	46.8
250.0	39.9	23.3	38.0	-4.8	29.4	57.0	13.3	56.8	-5.2	48.2
315.0	34.2	22.5	32.5	-12.0	25.9	58.6	13.5	58.5	-10.5	51.9
400.0	36.1	14.7	34.3	-9.8	29.5	63.5	14.2	63.4	-8.7	58.6
500.0	31.3	14.4	29.6	-13.6	26.4	60.9	14.8	60.8	-12.6	57.6
630.0	26.0	17.7	24.3	-9.1	22.4	56.3	15.3	56.3	-8.3	54.4
800.0	22.0	32.7	20.1	1.7	19.3	56.1	17.1	56.1	-1.2	55.3
1000.0	20.8	18.8	19.3	0.6	19.3	51.8	14.7	51.8	-1.9	51.8
1250.0	11.9	14.3	8.3	-13.1	8.9	44.1	14.5	44.0	-12.3	44.6
1600.0	5.1	27.5	0.0	-19.4	1.0	30.4	13.5	30.1	-20.9	31.1
2000.0	4.2	54.8	0.0	-22.7	1.2	22.8	27.6	22.0	-24.7	23.2
2500.0	3.3	30.3	0.0	-9.3	1.3	6.7	82.1	0.0	-29.7	1.3
3150.0	3.8	23.7	0.0	0.0	1.2	4.2	100.0	0.0	0.0	1.2
4000.0	4.5	17.8	0.0	0.0	1.0	4.7	27.7	0.0	0.0	1.0
5000.0	5.1	13.7	0.0	0.0	0.5	5.3	22.6	0.0	0.0	0.5
6300.0	5.8	10.3	0.0	0.0	-0.1	5.9	15.3	0.0	0.0	-0.1
8000.0	6.4	7.8	0.0	0.0	-1.1	6.5	12.3	0.0	0.0	-1.1
10000.0	6.9	7.2	0.0	0.0	-2.5	7.0	8.6	0.0	0.0	-2.5
12500.0	7.6	5.3	0.0	0.0	-4.3	7.7	9.1	0.0	0.0	-4.3
16000.0	9.6	4.2	0.0	0.0	-6.6	9.8	4.1	0.0	0.0	-6.6
20000.0	9.1	5.5	0.0	0.0	-9.3	9.3	4.3	0.0	0.0	0.0
A-Net	39.3	19.1	39.0	-4.9		63.6	13.1	63.6	-9.4	
Lin	53.8	12.3	53.6	2.0		67.9	11.8	67.9	-8.9	

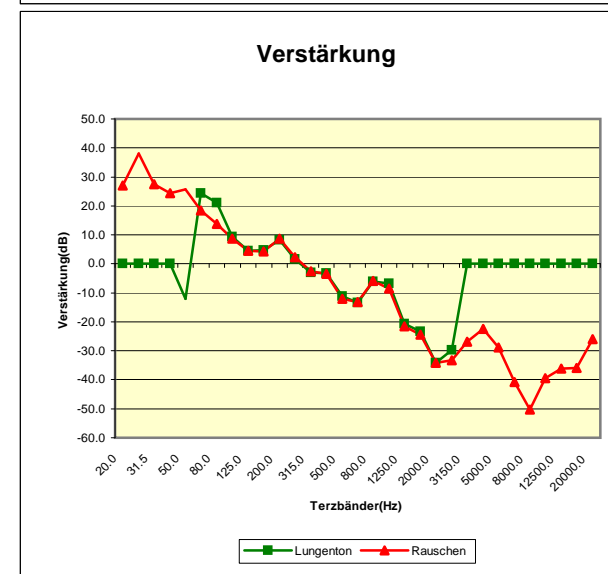
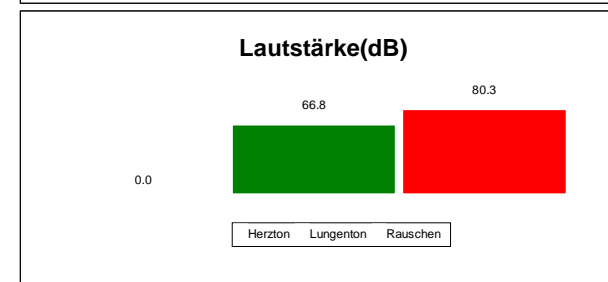
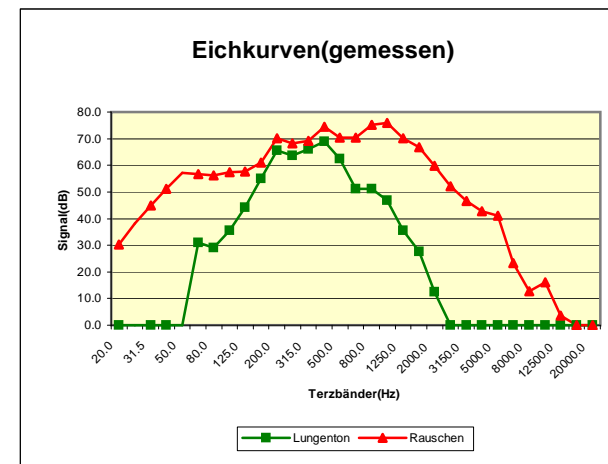


LittmannSelect/90dB

A-Net	Terzbänder	Stille		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	49.6	11.1	50.5	10.7	30.4	26.9
-44.7	25.0	59.7	7.5	60.4	6.6	38.2	38.2
-39.4	31.5	53.0	11.5	55.9	10.0	45.0	27.4
-34.6	40.0	55.0	10.9	59.3	9.1	51.1	24.4
-30.2	50.0	43.4	14.1	58.7	8.3	57.1	25.6
-26.2	63.0	34.2	19.3	57.3	9.4	56.7	18.5
-22.5	80.0	30.0	24.7	56.6	7.2	56.2	13.7
-19.1	100.0	27.4	31.0	57.6	7.8	57.3	8.7
-16.1	125.0	26.9	18.2	57.8	6.2	57.5	4.6
-13.4	160.0	23.6	25.4	61.2	5.4	61.1	4.3
-10.9	200.0	23.5	22.6	70.3	5.1	70.3	8.8
-8.6	250.0	19.5	52.8	68.3	4.8	68.3	2.3
-6.6	315.0	20.5	55.6	69.2	4.0	69.2	-2.5
-4.8	400.0	16.6	53.0	74.6	3.4	74.6	-3.4
-3.2	500.0	10.0	87.0	70.3	2.7	70.3	-12.1
-1.9	630.0	3.9	382.1	70.4	2.6	70.4	-13.1
-0.8	800.0	3.3	500.0	75.3	2.1	75.3	-5.8
0.0	1000.0	1.6	650.0	76.0	2.2	76.0	-8.5
0.6	1250.0	1.5	173.3	70.1	2.1	70.1	-21.6
1.0	1600.0	2.0	95.0	66.9	1.8	66.9	-24.4
1.2	2000.0	2.6	100.0	59.9	1.8	59.9	-34.2
1.3	2500.0	3.2	50.0	52.1	1.9	52.1	-33.2
1.2	3150.0	3.8	26.3	46.7	1.9	46.6	-26.9
1.0	4000.0	4.5	20.0	42.9	2.1	42.8	-22.5
0.5	5000.0	5.1	13.7	41.1	2.4	41.0	-28.9
-0.1	6300.0	5.8	13.8	24.3	3.3	23.2	-40.8
-1.1	8000.0	6.5	6.2	16.2	3.7	12.8	-50.3
-2.5	10000.0	6.8	8.8	18.7	3.7	16.2	-39.5
-4.3	12500.0	7.5	6.7	11.8	4.2	3.6	-36.1
-6.6	16000.0	9.6	5.2	10.4	3.8	0.0	-35.9
-9.3	20000.0	9.2	3.3	10.2	4.9	0.0	-25.9
	A-Net	25.1	21.5	80.3	1.9	80.3	-18.5
	Lin	61.8	7.0	82.2	1.9	81.3	-16.6

LittmannSelect/90dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	49.6	11.1	0.0	0.0	0.0	49.1	8.6	0.0	0.0	-50.5
25.0	59.7	7.5	0.0	0.0	0.0	59.3	6.7	0.0	0.0	-44.7
31.5	53.0	11.5	0.0	0.0	0.0	52.3	11.7	0.0	0.0	-39.4
40.0	55.0	10.9	0.0	0.0	0.0	53.3	11.6	0.0	0.0	-34.6
50.0	43.4	14.1	0.0	0.0	0.0	42.1	12.4	0.0	-12.1	-30.2
63.0	34.2	19.3	0.0	0.0	0.0	38.8	28.4	31.1	24.3	4.9
80.0	30.0	24.7	0.0	0.0	0.0	35.6	23.3	29.1	21.1	6.6
100.0	27.4	31.0	0.0	0.0	0.0	38.4	24.0	35.5	9.4	16.4
125.0	26.9	18.2	0.0	0.0	0.0	45.3	16.8	44.2	4.4	28.1
160.0	23.6	25.4	0.0	0.0	0.0	55.3	15.9	55.1	4.8	41.7
200.0	23.5	22.6	0.0	0.0	0.0	65.7	12.0	65.6	8.3	54.7
250.0	19.5	52.8	0.0	0.0	0.0	63.6	12.1	63.5	1.6	54.9
315.0	20.5	55.6	0.0	0.0	0.0	66.1	12.0	66.1	-2.9	59.5
400.0	16.6	53.0	0.0	0.0	0.0	68.9	12.9	68.9	-3.2	64.1
500.0	10.0	87.0	0.0	0.0	0.0	62.4	14.6	62.4	-11.1	59.2
630.0	3.9	382.1	0.0	0.0	0.0	51.3	16.2	51.3	-13.3	49.4
800.0	3.3	500.0	0.0	0.0	0.0	51.2	18.0	51.2	-6.1	50.4
1000.0	1.6	650.0	0.0	0.0	0.0	46.9	16.6	46.9	-6.8	46.9
1250.0	1.5	173.3	0.0	0.0	0.0	35.7	16.0	35.5	-20.8	36.1
1600.0	2.0	95.0	0.0	0.0	0.0	28.1	13.9	27.7	-23.3	28.7
2000.0	2.6	100.0	0.0	0.0	0.0	14.9	34.9	12.5	-34.2	13.7
2500.0	3.2	50.0	0.0	0.0	0.0	5.2	82.7	0.0	-29.7	1.3
3150.0	3.8	26.3	0.0	0.0	0.0	4.5	51.1	0.0	0.0	1.2
4000.0	4.5	20.0	0.0	0.0	0.0	5.2	40.4	0.0	0.0	1.0
5000.0	5.1	13.7	0.0	0.0	0.0	5.7	33.3	0.0	0.0	0.5
6300.0	5.8	13.8	0.0	0.0	0.0	6.2	21.0	0.0	0.0	-0.1
8000.0	6.5	6.2	0.0	0.0	0.0	6.9	17.4	0.0	0.0	-1.1
10000.0	6.8	8.8	0.0	0.0	0.0	7.3	15.1	0.0	0.0	-2.5
12500.0	7.5	6.7	0.0	0.0	0.0	7.9	5.1	0.0	0.0	-4.3
16000.0	9.6	5.2	0.0	0.0	0.0	9.9	4.0	0.0	0.0	-6.6
20000.0	9.2	3.3	0.0	0.0	0.0	9.6	5.2	0.0	0.0	0.0
A-Net	25.1	21.5	0.0	0.0		66.9	12.3	66.8	-6.2	
Lin	61.8	7.0	0.0	0.0		73.2	10.1	70.5	-6.3	

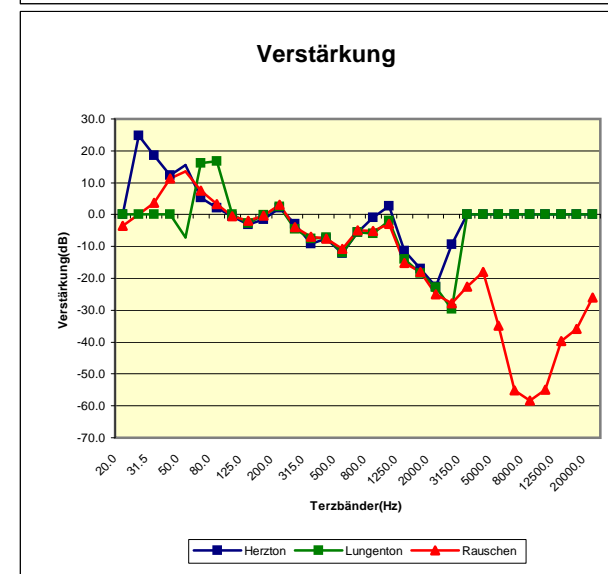
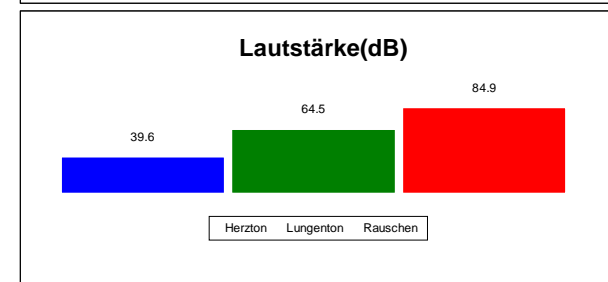
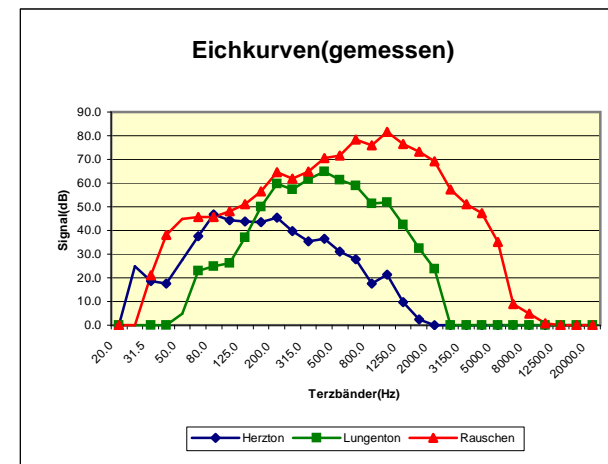


LittmannClassicII(trichter)/90dB

A-Net	Terzbänder	Stille		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	36.2	15.7	34.9	16.0	0.0	-3.4
-44.7	25.0	44.1	16.1	42.5	13.6	0.0	0.0
-39.4	31.5	41.5	19.5	42.3	18.7	21.2	3.6
-34.6	40.0	37.9	13.5	44.0	14.1	38.1	11.3
-30.2	50.0	37.5	16.0	48.0	10.6	44.9	13.5
-26.2	63.0	33.7	22.3	47.6	9.2	45.6	7.5
-22.5	80.0	29.8	17.8	47.0	11.7	45.7	3.3
-19.1	100.0	26.6	16.9	48.7	7.0	48.0	-0.6
-16.1	125.0	27.2	12.9	51.6	7.8	51.1	-1.9
-13.4	160.0	24.3	16.0	56.6	6.0	56.4	-0.4
-10.9	200.0	25.3	22.9	64.6	6.5	64.5	3.0
-8.6	250.0	18.2	48.9	62.0	4.0	61.9	-4.0
-6.6	315.0	21.8	13.3	64.8	3.5	64.7	-6.9
-4.8	400.0	16.3	27.6	70.5	3.4	70.5	-7.5
-3.2	500.0	11.5	47.0	71.7	3.1	71.7	-10.7
-1.9	630.0	10.9	27.5	78.5	2.9	78.5	-5.0
-0.8	800.0	2.6	73.1	76.0	2.9	76.0	-5.1
0.0	1000.0	2.4	108.3	81.5	1.8	81.5	-3.0
0.6	1250.0	1.6	112.5	76.6	2.0	76.6	-15.1
1.0	1600.0	1.9	78.9	73.3	1.9	73.3	-18.0
1.2	2000.0	2.5	40.0	69.1	2.2	69.1	-25.0
1.3	2500.0	3.1	54.8	57.4	2.3	57.4	-27.9
1.2	3150.0	3.7	29.7	51.1	2.5	51.1	-22.5
1.0	4000.0	4.5	15.6	47.4	2.1	47.3	-17.9
0.5	5000.0	5.0	20.0	35.3	4.2	35.0	-34.8
-0.1	6300.0	5.7	10.5	13.5	5.2	9.0	-55.1
-1.1	8000.0	6.3	7.9	11.6	6.0	4.8	-58.3
-2.5	10000.0	6.8	7.4	10.3	9.7	0.7	-54.9
-4.3	12500.0	7.5	6.7	9.1	6.6	0.0	-39.7
-6.6	16000.0	9.7	4.1	10.9	3.7	0.0	-35.9
-9.3	20000.0	9.1	3.3	10.7	4.7	0.0	-25.9
	A-Net	22.5	12.4	84.9	1.3	84.9	-13.9
	Lin	47.7	9.9	85.4	1.3	85.3	-12.7

LittmannClassicl(trichter)/90dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	36.2	16.9	0.0	0.0	-50.5	35.6	19.1	0.0	0.0	-50.5
25.0	45.0	13.8	24.9	24.9	-19.8	44.1	13.4	0.0	0.0	-44.7
31.5	42.1	16.6	18.6	18.6	-20.8	41.0	22.7	0.0	0.0	-39.4
40.0	38.7	14.5	17.6	12.4	-17.0	37.6	20.2	0.0	0.0	-34.6
50.0	39.9	16.5	27.6	15.5	-2.6	37.7	21.5	4.8	-7.2	-25.4
63.0	41.8	16.3	37.5	5.4	11.3	35.9	39.3	22.9	16.1	-3.3
80.0	48.0	14.6	46.9	2.0	24.4	33.7	39.8	24.9	16.8	2.4
100.0	45.4	17.4	44.3	-0.5	25.2	32.4	30.6	26.2	0.0	7.1
125.0	45.1	16.2	43.9	-3.2	27.8	39.5	19.0	37.1	-2.7	21.0
160.0	44.5	20.7	43.6	-1.5	30.2	50.5	17.4	50.1	-0.2	36.7
200.0	46.2	20.8	45.4	2.2	34.5	59.9	13.4	59.7	2.4	48.8
250.0	40.5	22.2	39.8	-3.0	31.2	57.5	13.2	57.4	-4.5	48.8
315.0	37.1	20.2	35.5	-9.1	28.9	61.6	12.7	61.5	-7.5	54.9
400.0	37.4	14.4	36.6	-7.6	31.8	65.0	13.5	65.0	-7.1	60.2
500.0	31.9	14.1	31.0	-12.2	27.8	61.5	14.6	61.5	-12.0	58.3
630.0	29.0	22.1	27.8	-5.6	25.9	59.0	14.7	59.0	-5.6	57.1
800.0	19.0	54.7	17.6	-0.9	16.8	51.3	16.8	51.3	-6.0	50.5
1000.0	22.3	21.5	21.4	2.7	21.4	51.8	14.5	51.8	-1.9	51.8
1250.0	12.7	18.9	9.9	-11.5	10.5	42.4	13.9	42.3	-14.0	42.9
1600.0	8.2	35.4	2.5	-17.0	3.5	32.8	12.5	32.5	-18.4	33.5
2000.0	5.2	28.8	0.0	-22.7	1.2	24.5	20.4	23.8	-22.9	25.0
2500.0	3.2	31.3	0.0	-9.3	1.3	7.3	74.0	0.0	-29.7	1.3
3150.0	3.8	18.4	0.0	0.0	1.2	4.2	38.1	0.0	0.0	1.2
4000.0	4.5	20.0	0.0	0.0	1.0	4.8	29.2	0.0	0.0	1.0
5000.0	5.0	12.0	0.0	0.0	0.5	5.3	26.4	0.0	0.0	0.5
6300.0	5.8	12.1	0.0	0.0	-0.1	6.0	18.3	0.0	0.0	-0.1
8000.0	6.4	17.2	0.0	0.0	-1.1	6.5	16.9	0.0	0.0	-1.1
10000.0	6.8	5.9	0.0	0.0	-2.5	7.0	14.3	0.0	0.0	-2.5
12500.0	7.6	5.3	0.0	0.0	-4.3	7.7	7.8	0.0	0.0	-4.3
16000.0	9.8	4.1	0.0	0.0	-6.6	9.8	5.1	0.0	0.0	-6.6
20000.0	9.1	4.4	0.0	0.0	-9.3	9.3	4.3	0.0	0.0	0.0
A-Net	40.7	18.2	39.6	-4.3		64.6	12.7	64.5	-8.5	
Lin	54.7	11.9	49.6	-2.0		69.3	11.4	68.5	-8.2	

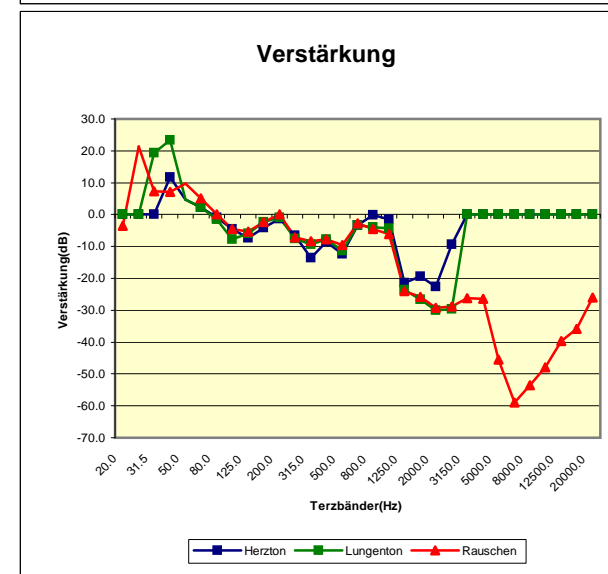
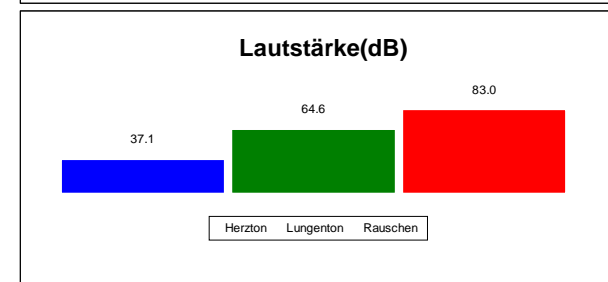
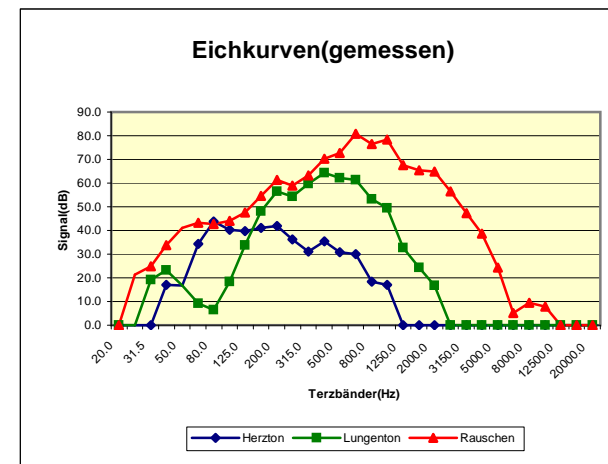


LittmannClassicII(membran)/90dB

A-Net	Terzbänder	Stille		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	36.4	18.4	36.1	16.9	0.0	-3.4
-44.7	25.0	44.2	15.2	44.8	13.6	21.3	21.3
-39.4	31.5	42.2	17.8	43.3	14.5	24.8	7.2
-34.6	40.0	39.9	18.0	43.4	12.2	33.8	7.0
-30.2	50.0	38.3	17.5	45.8	10.5	41.0	9.6
-26.2	63.0	33.7	18.7	45.7	11.6	43.2	5.0
-22.5	80.0	29.4	19.7	44.3	10.8	42.6	0.1
-19.1	100.0	27.9	15.4	45.3	9.5	44.0	-4.5
-16.1	125.0	26.6	18.4	48.4	8.1	47.7	-5.3
-13.4	160.0	23.7	15.6	54.8	8.2	54.6	-2.2
-10.9	200.0	25.1	21.9	61.6	5.8	61.5	0.0
-8.6	250.0	18.9	19.6	59.0	4.7	58.9	-7.1
-6.6	315.0	24.2	27.3	63.4	5.7	63.3	-8.4
-4.8	400.0	18.8	34.0	70.2	3.6	70.2	-7.8
-3.2	500.0	16.1	36.0	72.8	3.3	72.8	-9.6
-1.9	630.0	11.4	57.9	80.7	3.2	80.7	-2.8
-0.8	800.0	3.9	133.3	76.5	2.4	76.5	-4.6
0.0	1000.0	3.0	66.7	78.4	2.3	78.4	-6.1
0.6	1250.0	1.6	287.5	67.6	2.4	67.6	-24.1
1.0	1600.0	2.1	52.4	65.5	2.0	65.5	-25.8
1.2	2000.0	2.5	48.0	64.9	2.9	64.9	-29.2
1.3	2500.0	3.1	29.0	56.4	1.8	56.4	-28.9
1.2	3150.0	3.9	17.9	47.4	2.5	47.3	-26.2
1.0	4000.0	4.6	17.4	38.9	3.6	38.7	-26.5
0.5	5000.0	5.1	15.7	25.2	5.6	24.3	-45.6
-0.1	6300.0	5.8	10.3	11.5	6.1	5.1	-58.9
-1.1	8000.0	6.4	7.8	14.1	5.7	9.5	-53.6
-2.5	10000.0	6.8	7.4	13.3	5.3	7.7	-47.9
-4.3	12500.0	7.6	5.3	9.1	6.6	0.0	-39.7
-6.6	16000.0	9.7	4.1	10.6	3.8	0.0	-35.9
-9.3	20000.0	9.1	4.4	10.3	3.9	0.0	-25.9
	A-Net	23.6	17.4	83.0	2.0	83.0	-15.8
	Lin	48.2	10.2	84.3	1.9	84.2	-13.8

LittmannClassicII(membran)/90dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	34.7	15.3	0.0	0.0	-50.5	35.6	20.5	0.0	0.0	-50.5
25.0	43.2	14.1	0.0	0.0	-44.7	43.9	15.0	0.0	0.0	-44.7
31.5	41.8	13.6	0.0	0.0	-39.4	42.8	22.9	19.3	19.3	-20.1
40.0	40.5	15.6	17.0	11.8	-17.6	41.1	21.4	23.3	23.3	-11.3
50.0	39.0	18.5	16.8	4.7	-13.4	39.0	18.7	16.8	4.7	-13.4
63.0	40.0	18.3	34.3	2.2	8.1	34.2	19.9	9.2	2.4	-17.0
80.0	45.4	15.4	43.9	-0.9	21.4	30.0	19.0	6.5	-1.5	-16.0
100.0	42.2	17.3	40.3	-4.5	21.2	30.4	29.9	18.4	-7.8	-0.7
125.0	41.5	17.3	39.8	-7.3	23.7	36.9	23.0	33.7	-6.0	17.6
160.0	42.1	22.3	41.0	-4.1	27.6	48.5	18.4	48.0	-2.3	34.6
200.0	43.0	22.8	41.8	-1.4	30.9	56.7	14.1	56.5	-0.8	45.6
250.0	37.3	24.9	36.2	-6.6	27.6	54.5	14.1	54.4	-7.6	45.8
315.0	34.3	21.3	31.0	-13.5	24.4	59.8	13.5	59.7	-9.3	53.1
400.0	36.7	14.4	35.5	-8.6	30.7	64.4	13.8	64.4	-7.7	59.6
500.0	32.3	14.6	30.8	-12.4	27.6	62.1	14.3	62.1	-11.4	58.9
630.0	31.0	15.5	30.0	-3.4	28.1	61.3	14.4	61.3	-3.3	59.4
800.0	19.8	33.3	18.3	-0.2	17.5	53.3	17.1	53.3	-4.0	52.5
1000.0	18.7	29.9	17.1	-1.6	17.1	49.4	15.6	49.4	-4.3	49.4
1250.0	4.5	48.9	0.0	-21.3	0.6	33.0	19.1	32.8	-23.5	33.4
1600.0	3.4	41.2	0.0	-19.4	1.0	25.0	16.0	24.4	-26.6	25.4
2000.0	3.3	33.3	0.0	-22.7	1.2	18.2	31.9	16.6	-30.0	17.8
2500.0	3.2	34.4	0.0	-9.3	1.3	5.4	94.4	0.0	-29.7	1.3
3150.0	3.8	28.9	0.0	0.0	1.2	4.1	41.5	0.0	0.0	1.2
4000.0	4.6	13.0	0.0	0.0	1.0	4.7	29.8	0.0	0.0	1.0
5000.0	5.0	16.0	0.0	0.0	0.5	5.3	28.3	0.0	0.0	0.5
6300.0	5.8	12.1	0.0	0.0	-0.1	5.9	15.3	0.0	0.0	-0.1
8000.0	6.4	10.9	0.0	0.0	-1.1	6.5	15.4	0.0	0.0	-1.1
10000.0	6.8	8.8	0.0	0.0	-2.5	6.9	11.6	0.0	0.0	-2.5
12500.0	7.6	6.6	0.0	0.0	-4.3	7.7	5.2	0.0	0.0	-4.3
16000.0	9.7	4.1	0.0	0.0	-6.6	9.8	4.1	0.0	0.0	-6.6
20000.0	9.2	4.3	0.0	0.0	-9.3	9.3	3.2	0.0	0.0	0.0
A-Net	38.8	17.8	37.1	-6.7		64.7	13.0	64.6	-8.4	
Lin	52.5	11.8	44.3	-7.2		68.8	11.9	67.9	-8.8	

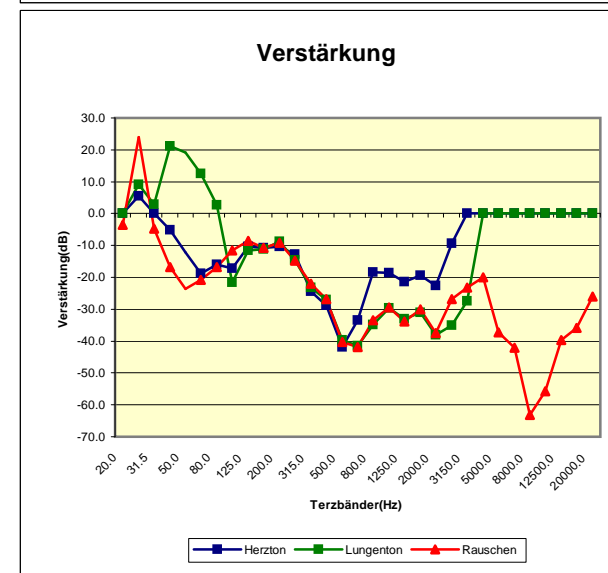
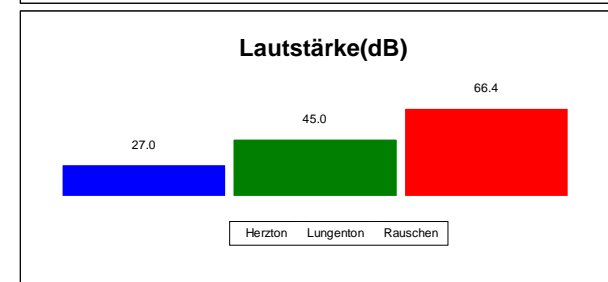
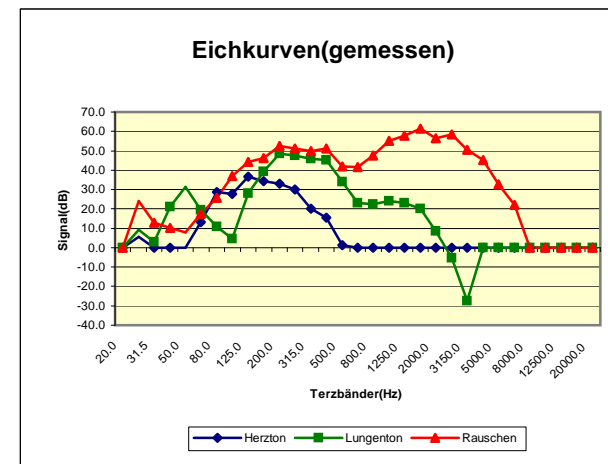


Sonoplus/80dB

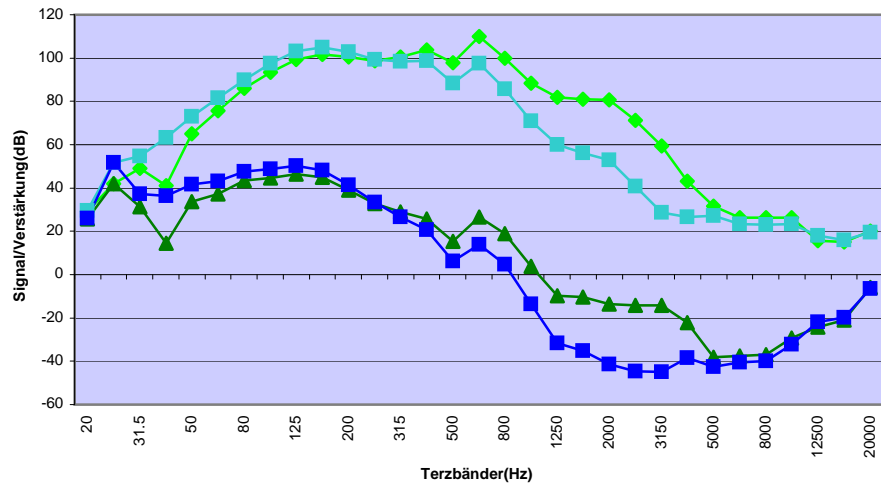
A-Net	Terzbänder	Stille		Rauschen			
		Leq	Δ	Leq	Δ	korr	verst.
-50.5	20.0	38.4	19.0	38.4	19.0	0.0	-3.4
-44.7	25.0	32.0	15.0	34.9	14.6	24.0	24.0
-39.4	31.5	27.4	23.0	28.9	19.4	12.9	-4.7
-34.6	40.0	29.3	17.4	30.2	21.9	10.1	-16.7
-30.2	50.0	30.7	18.6	31.3	20.1	7.8	-23.6
-26.2	63.0	17.9	27.9	23.7	16.0	17.5	-20.7
-22.5	80.0	21.1	24.6	29.7	18.5	25.7	-16.8
-19.1	100.0	24.8	20.6	38.9	9.0	37.0	-11.6
-16.1	125.0	26.5	14.7	45.4	7.9	44.4	-8.6
-13.4	160.0	21.9	19.6	46.6	7.7	46.1	-10.7
-10.9	200.0	19.6	24.5	52.6	6.8	52.4	-9.1
-8.6	250.0	13.8	25.4	51.3	6.6	51.2	-14.8
-6.6	315.0	9.8	21.4	49.8	4.6	49.7	-22.0
-4.8	400.0	7.8	38.5	51.3	6.0	51.2	-26.7
-3.2	500.0	1.3	430.8	42.1	4.3	42.0	-40.4
-1.9	630.0	-0.1	-6700.0	41.7	6.0	41.6	-41.9
-0.8	800.0	-0.4	-1175.0	47.6	5.9	47.6	-33.5
0.0	1000.0	-0.3	-500.0	55.1	4.0	55.1	-29.4
0.6	1250.0	-0.5	-320.0	57.8	2.8	57.8	-33.9
1.0	1600.0	0.1	1300.0	61.3	2.1	61.3	-30.0
1.2	2000.0	0.4	325.0	56.6	3.2	56.6	-37.5
1.3	2500.0	1.0	90.0	58.5	2.4	58.5	-26.8
1.2	3150.0	1.7	52.9	50.5	1.8	50.5	-23.1
1.0	4000.0	2.3	26.1	45.3	2.4	45.2	-20.0
0.5	5000.0	2.5	28.0	32.9	2.7	32.6	-37.2
-0.1	6300.0	3.0	20.0	22.9	6.6	22.0	-42.1
-1.1	8000.0	3.2	18.8	4.9	8.2	0.0	-63.1
-2.5	10000.0	3.3	18.2	3.7	13.5	0.0	-55.7
-4.3	12500.0	3.4	17.6	3.6	13.9	0.0	-39.7
-6.6	16000.0	4.1	7.3	4.6	8.7	0.0	-35.9
-9.3	20000.0	3.5	8.6	3.8	7.9	0.0	-25.9
	A-Net	17.6	11.9	66.4	1.5	66.4	-32.4
	Lin	37.1	10.2	66.2	1.5	65.9	-32.1

Sonoplus/80dB

Terzbänder	Herzton					Lungenton				
	Leq	Δ	korr	verst.	A-Net	Leq	Δ	korr	verst.	A-Net
20.0	38.4	19.0	0.0	0.0	-50.5	38.4	19.0	0.0	0.0	-50.5
25.0	32.4	21.9	5.5	5.5	-39.2	32.6	20.9	9.1	9.1	-35.6
31.5	27.4	16.4	0.0	0.0	-39.4	27.9	39.8	2.9	2.9	-36.5
40.0	28.3	23.0	0.0	-5.2	-34.6	32.2	44.1	21.3	21.3	-13.3
50.0	30.5	17.0	0.0	-12.1	-30.2	37.0	36.8	31.3	19.2	1.1
63.0	21.9	31.5	13.2	-18.8	-13.0	24.7	61.5	19.4	12.6	-6.8
80.0	31.8	23.6	28.8	-16.0	6.3	23.4	53.4	10.7	2.7	-11.8
100.0	32.4	23.1	27.7	-17.1	8.6	25.6	32.4	4.5	-21.6	-14.6
125.0	39.1	19.9	36.8	-10.3	20.7	33.4	23.1	28.2	-11.6	12.1
160.0	36.2	23.8	34.3	-10.8	20.9	40.3	21.8	39.2	-11.1	25.8
200.0	34.6	26.9	32.9	-10.3	22.0	48.9	15.7	48.6	-8.7	37.7
250.0	31.3	29.7	30.1	-12.8	21.5	47.6	16.8	47.4	-14.5	38.8
315.0	22.4	36.2	20.1	-24.5	13.5	45.9	16.8	45.8	-23.2	39.2
400.0	18.4	29.9	15.4	-28.8	10.6	45.2	19.5	45.1	-27.0	40.3
500.0	7.3	61.6	1.3	-41.9	-1.9	34.1	26.7	33.9	-39.6	30.7
630.0	0.9	333.3	0.0	-33.4	-1.9	23.7	36.3	23.1	-41.5	21.2
800.0	0.9	170.6	0.0	-18.5	-0.8	23.1	36.4	22.5	-34.8	21.7
1000.0	0.8	262.5	0.0	-18.7	0.0	24.5	30.2	24.0	-29.7	24.0
1250.0	0.3	500.0	0.0	-21.3	0.6	23.8	27.7	23.3	-33.0	23.9
1600.0	1.1	127.3	0.0	-19.4	1.0	20.8	16.8	20.0	-31.0	21.0
2000.0	0.6	166.7	0.0	-22.7	1.2	11.4	46.5	8.5	-38.1	9.7
2500.0	1.3	84.6	0.0	-9.3	1.3	4.4	143.2	-5.4	-35.1	-4.1
3150.0	1.8	44.4	0.0	0.0	1.2	2.0	65.0	-27.4	-27.4	-26.2
4000.0	2.3	34.8	0.0	0.0	1.0	2.3	34.8	0.0	0.0	1.0
5000.0	2.5	24.0	0.0	0.0	0.5	2.5	32.0	0.0	0.0	0.5
6300.0	3.0	20.0	0.0	0.0	-0.1	3.0	30.0	0.0	0.0	-0.1
8000.0	3.2	15.6	0.0	0.0	-1.1	3.2	18.8	0.0	0.0	-1.1
10000.0	3.3	15.2	0.0	0.0	-2.5	3.3	18.2	0.0	0.0	-2.5
12500.0	3.4	11.8	0.0	0.0	-4.3	3.4	17.6	0.0	0.0	-4.3
16000.0	4.1	9.8	0.0	0.0	-6.6	4.1	9.8	0.0	0.0	-6.6
20000.0	3.5	8.6	0.0	0.0	-9.3	3.5	11.4	0.0	0.0	-9.3
A-Net	29.5	26.1	27.0	-16.9		45.4	45.0	-28.0		
Lin	43.7	14.6	38.2	-13.3		53.5	52.1	-24.7		

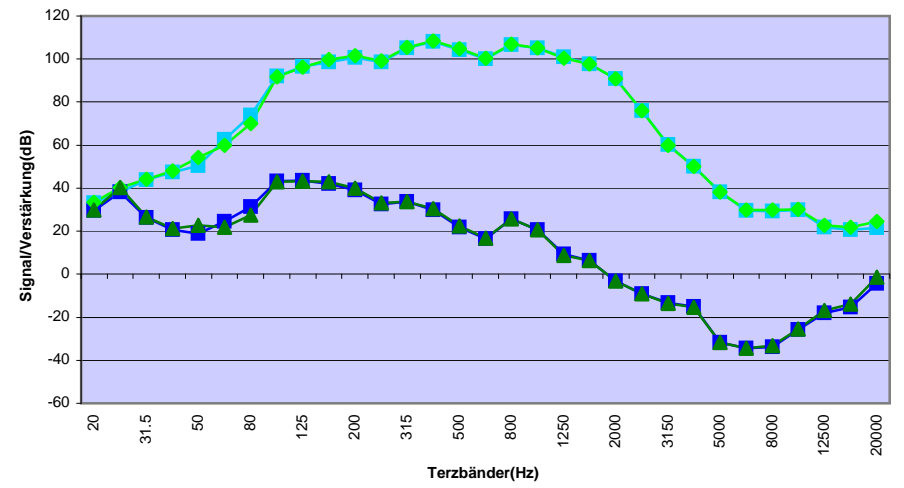


Escope



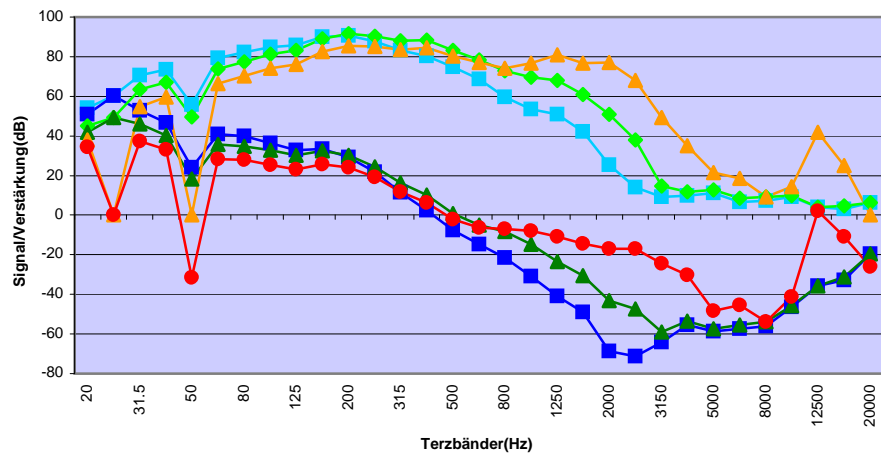
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Lisa



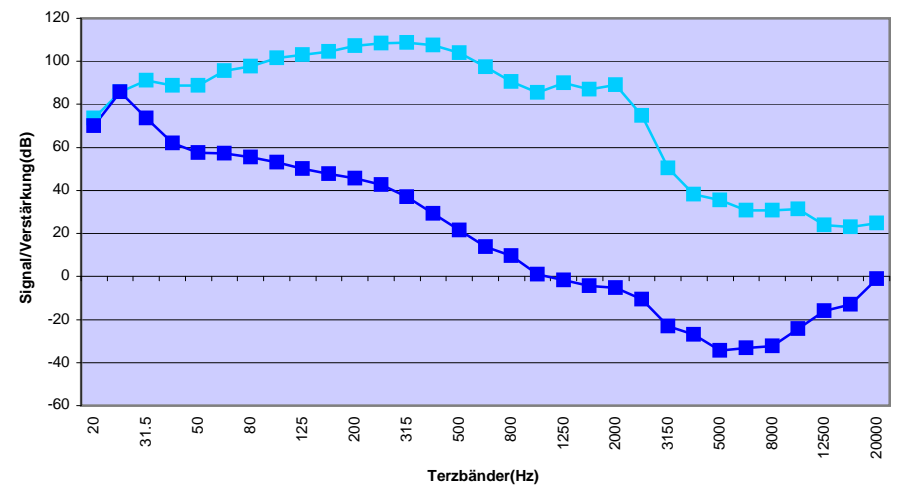
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Delwastar



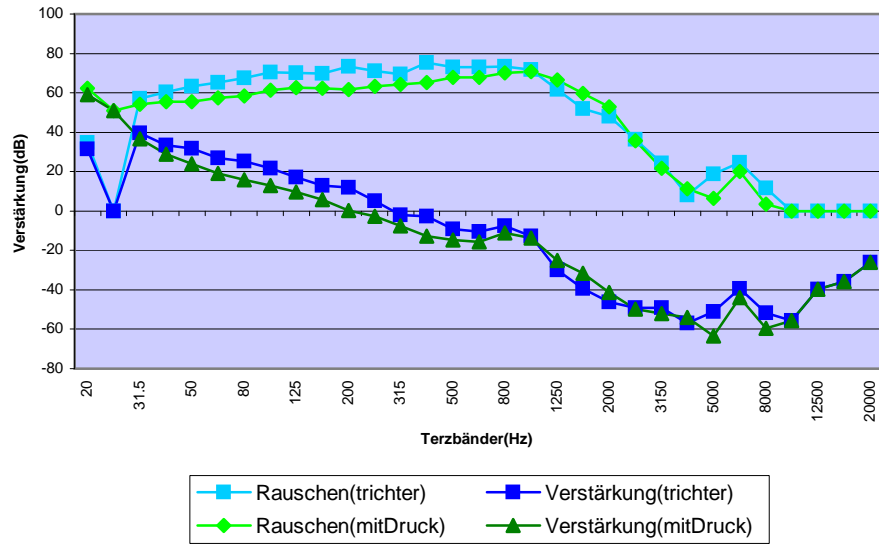
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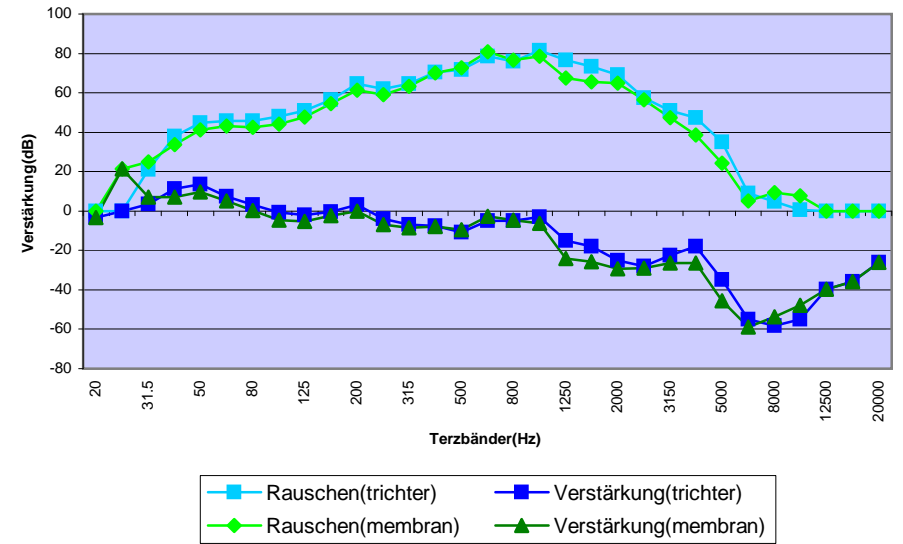


□ Rauschen(trichter) ■ Verstärkung(trichter)

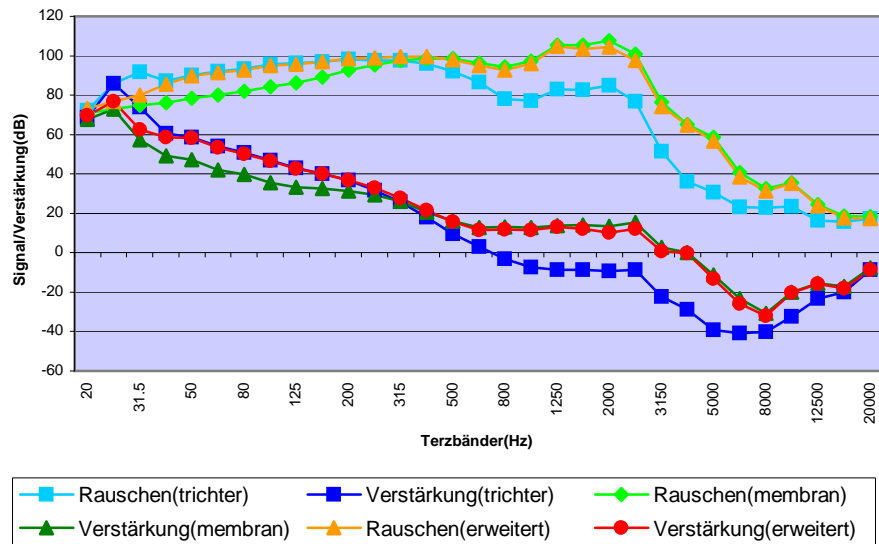
LittmannMaster



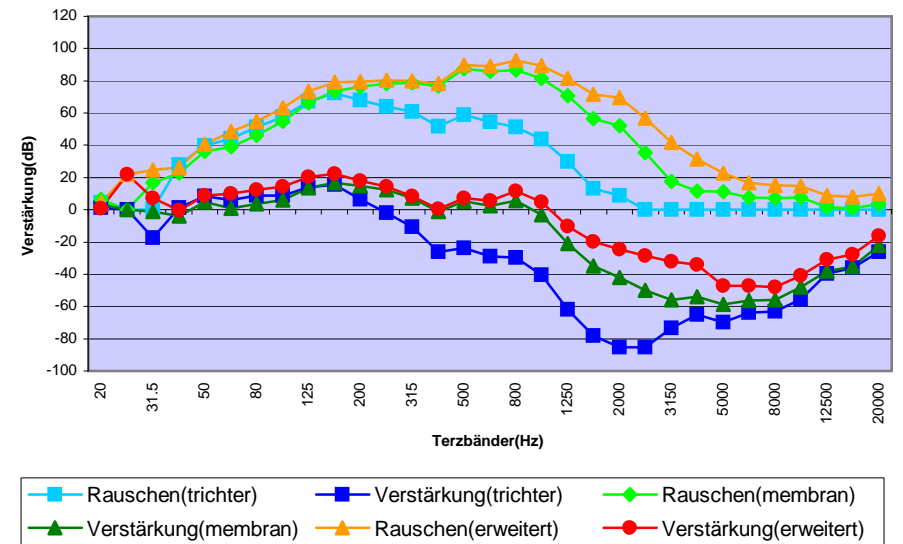
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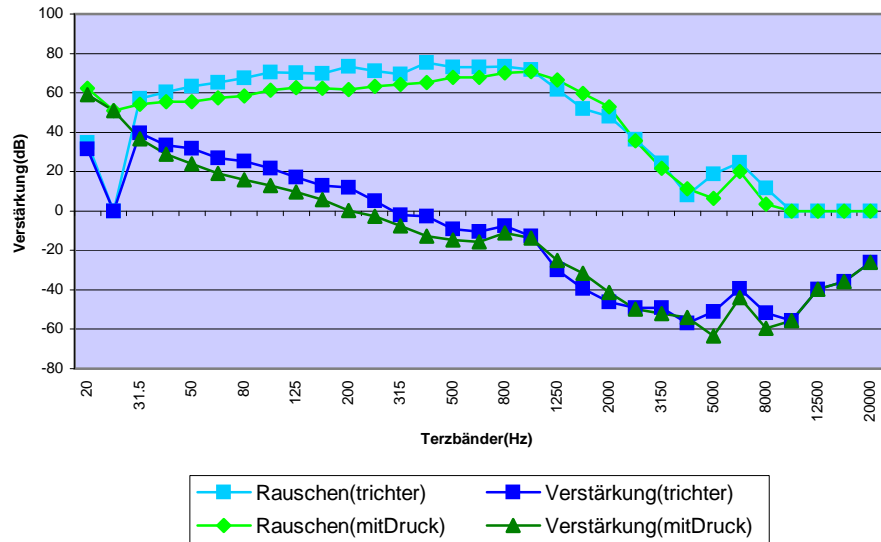
Cadiscope



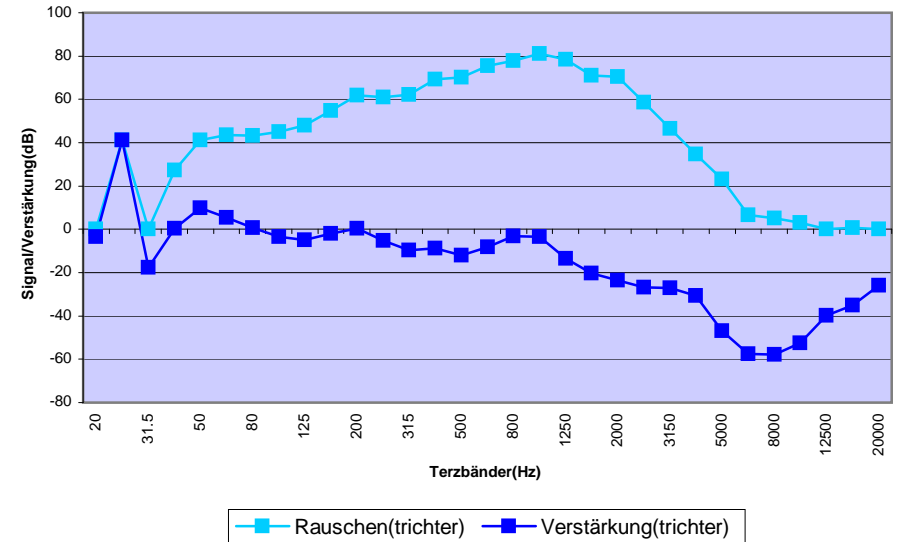
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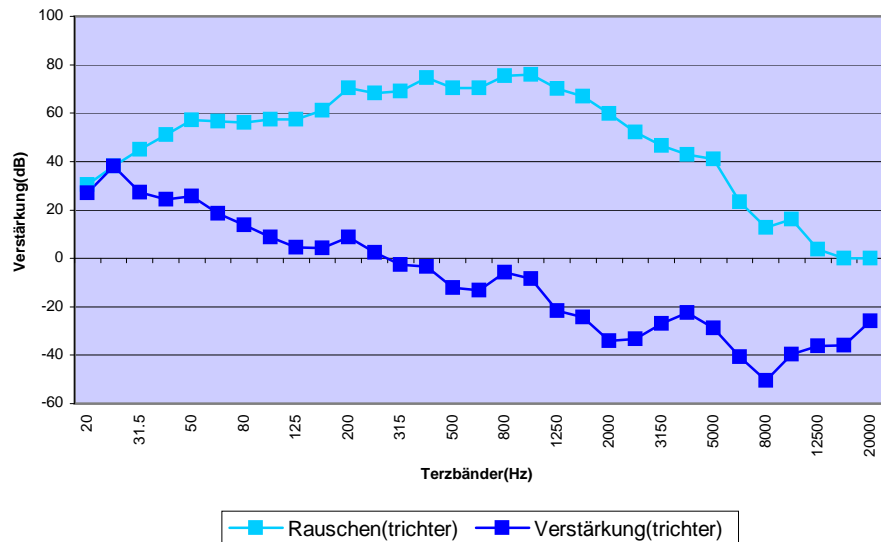
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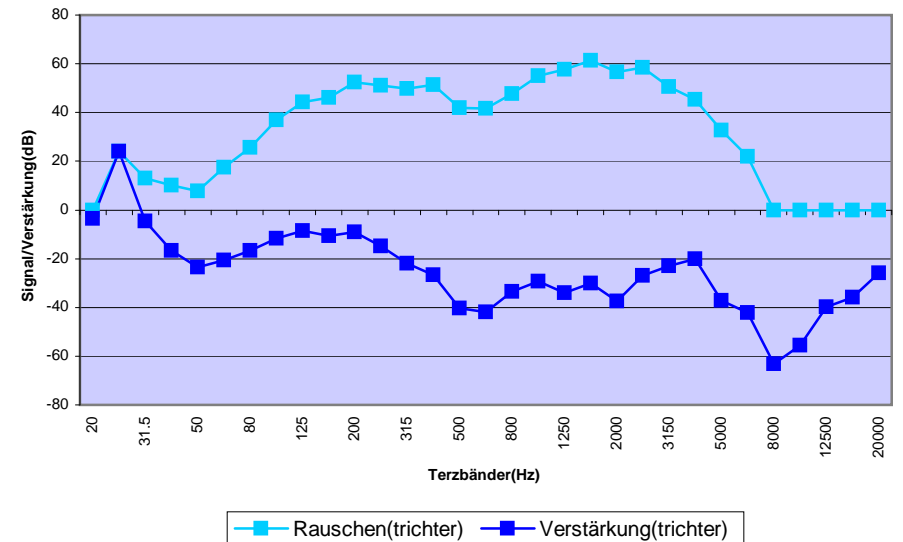
LittmannCardiologyII



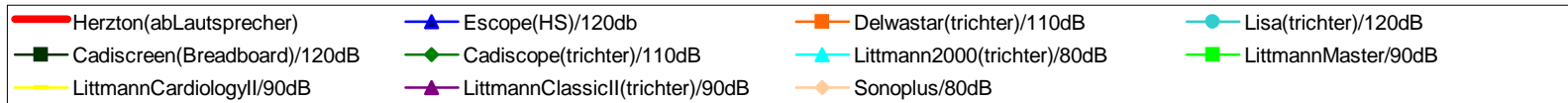
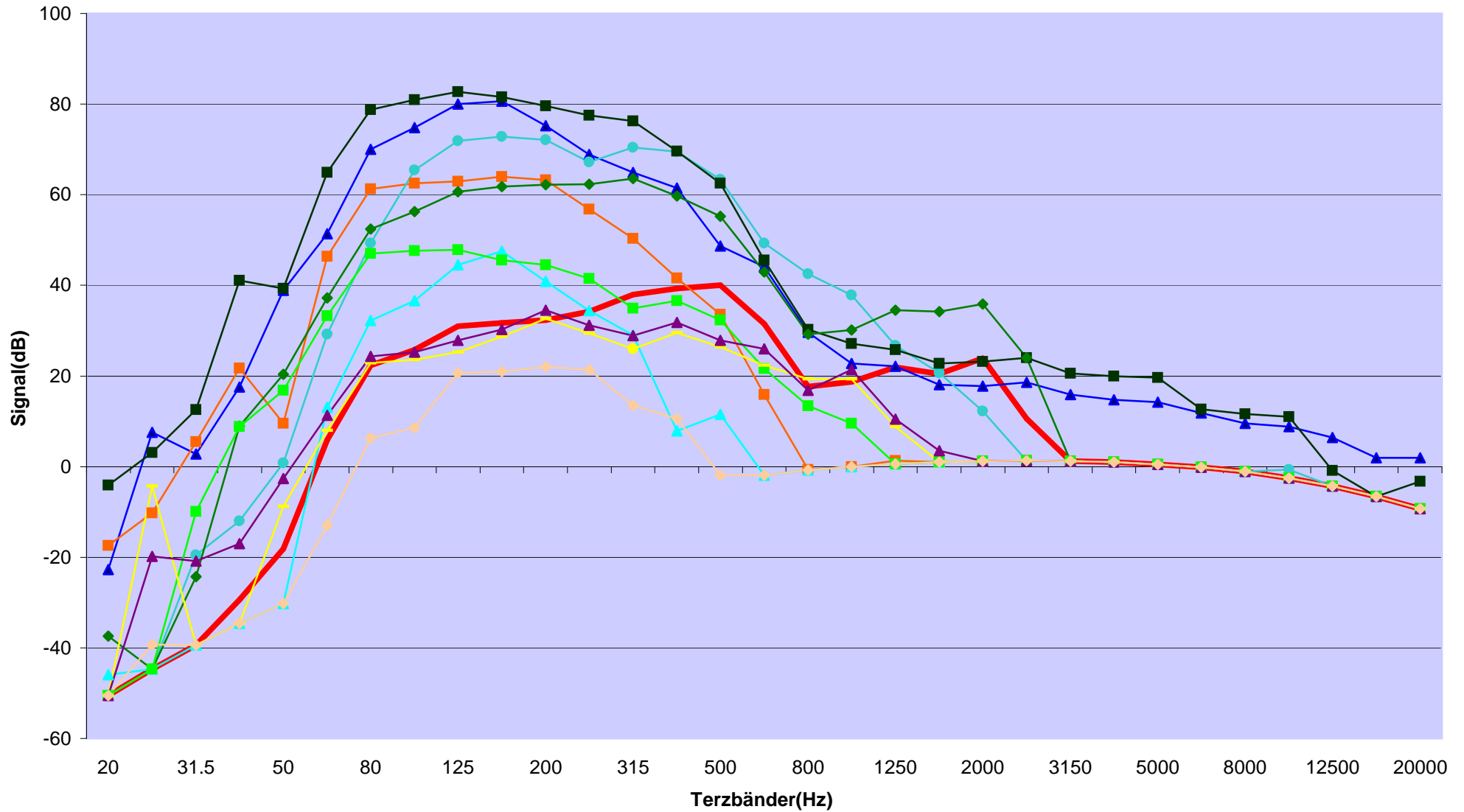
LittmannSelect



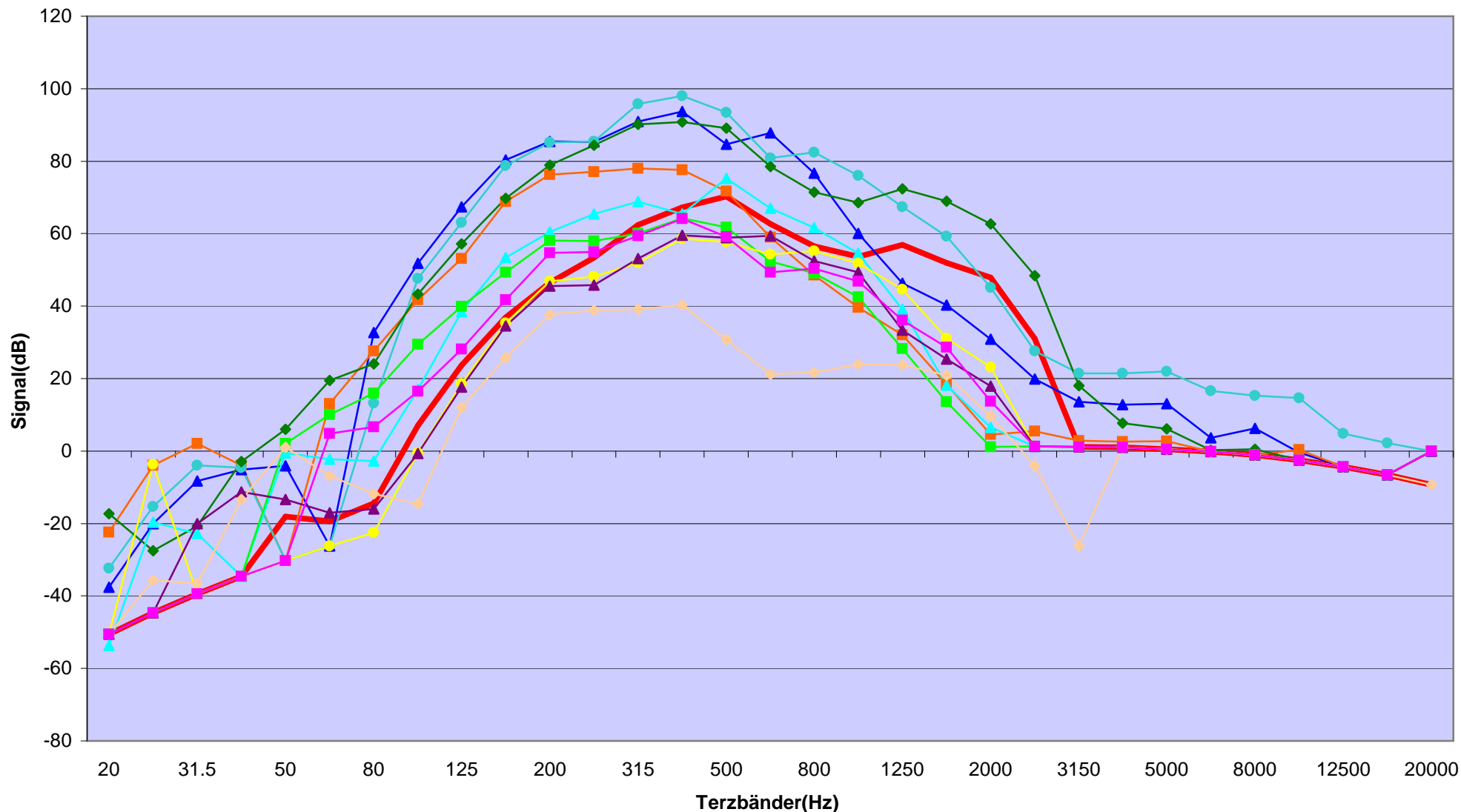
Sonoplus



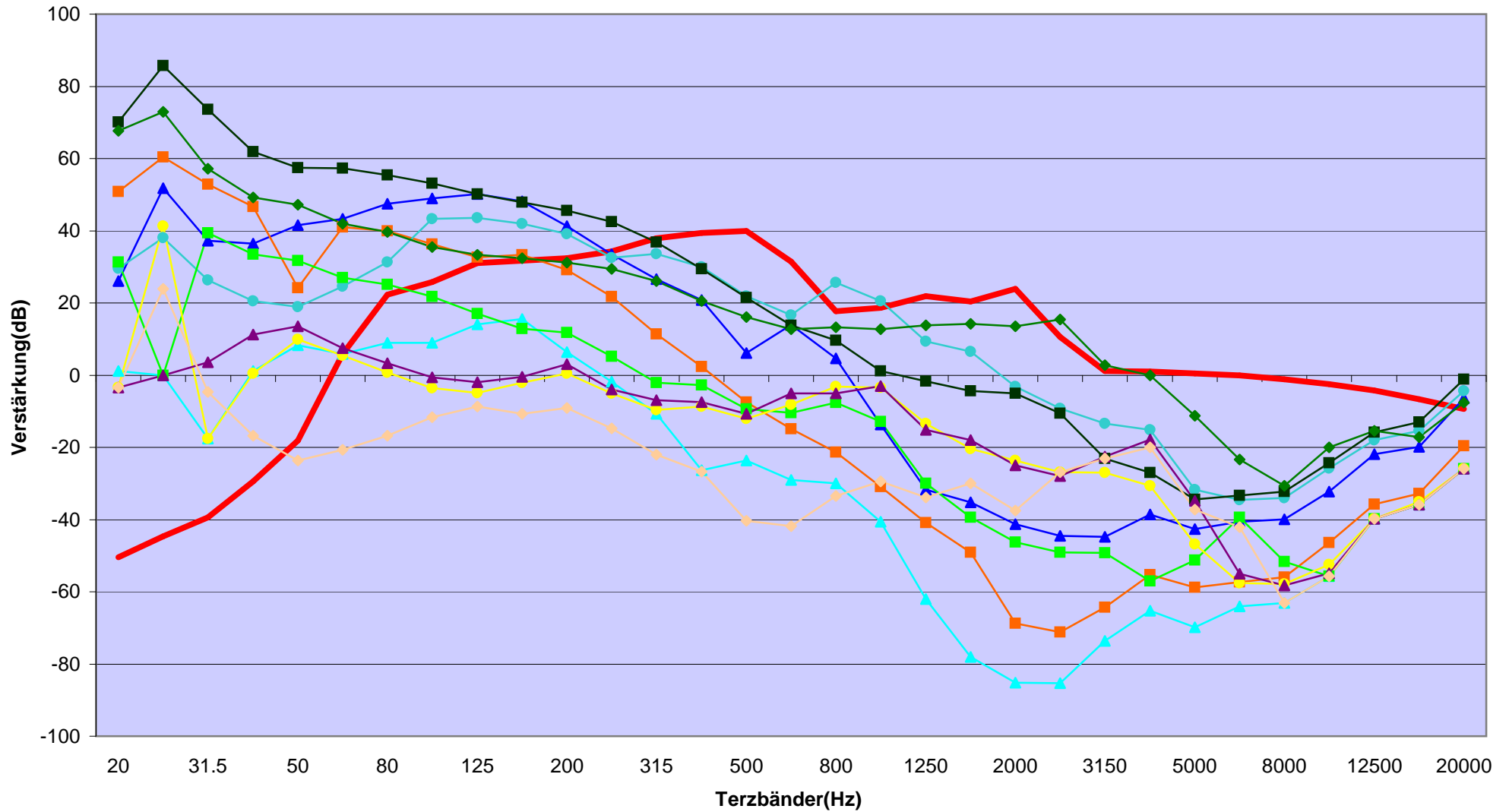
DerHerztonimVergleich,gewichtetnachderEmpfindlichkeitdesGehörs(A-Net)



DerLungentonimVergleich,gemässderEmpfindlichk eitdesGehörs(A-Net)

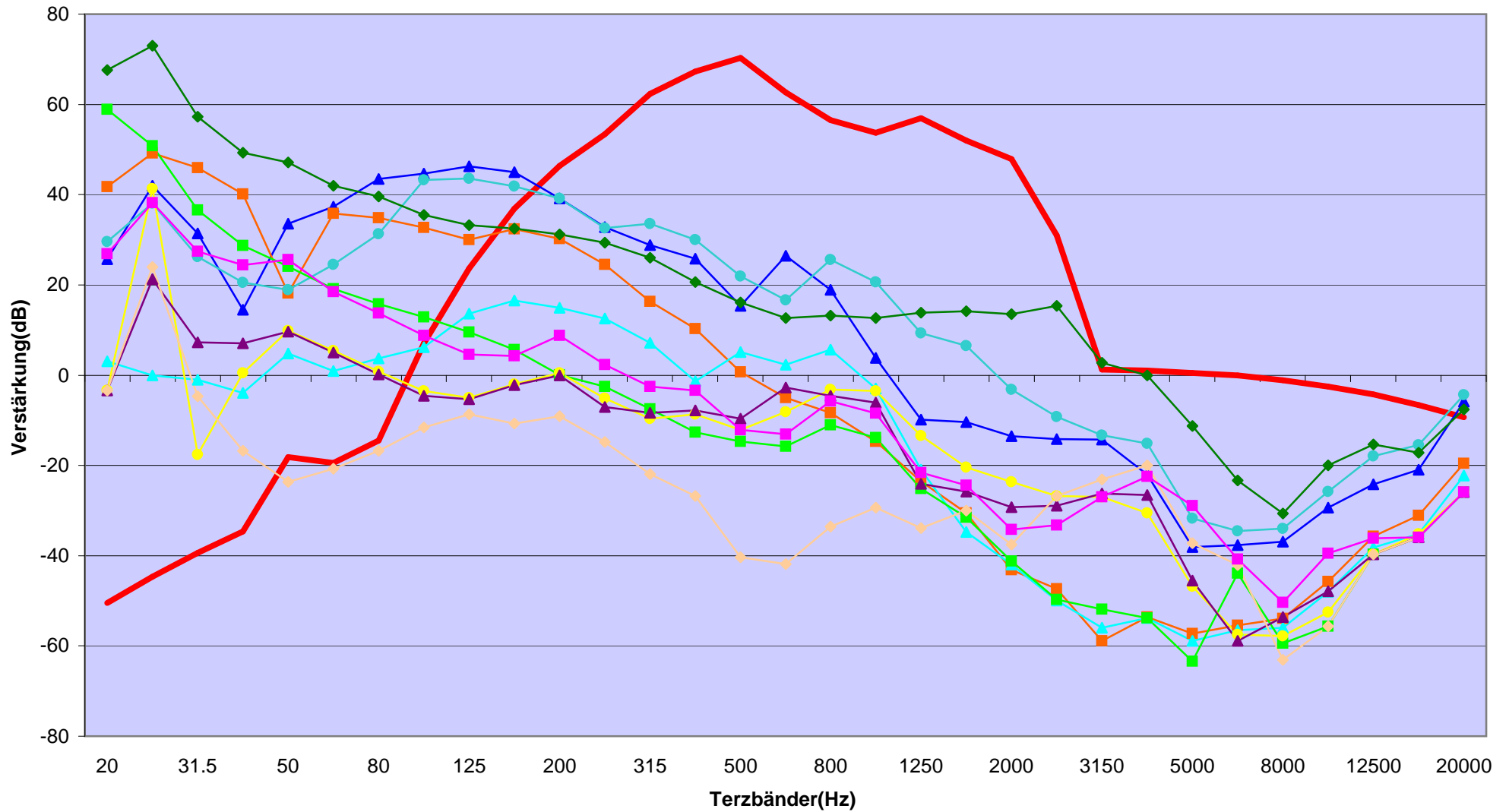


Verstärkung(desRauschens)derStethoskopeimVergleich
 imHerzton-ModusmitdemHerzton-Signal(A-Net)als Referenz



- "Referenz(Herzton-Signal)"
- Cadiscreeen(Breadboard)/120dB
- Escope(HS)/120db
- Delwastar(trichter)/110dB
- Littmann2000(trichter)/80dB
- LittmannClassicII(trichter)/90dB
- LittmannCardiologyII/90dB
- LittmannMaster/90dB
- Sonoplus/80dB
- Lisa(trichter)/120dB

Verstärkung(desRauschens)derStethoskopeimVergleich
 imLungenton-ModusmitdemLungenton-Signal(A-Net)alsReferenz



Relative Lautstärkeim Vergleich(gemässA-Net)

in jedem Modus wird der entsprechende Eichton aufgeführt

Rauschen(extended)
 Lungenton(membran)
 Herzton(trichter)

