ROHDE&SCHWARZ

Calibration Certificate
Kalibrierschein

Certificate Number
Zertifikatsnummer

Unit Data

Object / Gegenstand: **Audio Analyzer**

Manufacturer / Hersteller:

Type / Typ: **UPL**

Material Number / Materialnummer: **1078.2008.06**

Serial Number / Seriennummer:

Asset Number / Inventarnummer:

Order Data

Customer / Auftraggeber:

Order Number / Bestellnummer:

Date of Receipt / Eingangsdatum: **2021-05-14**

Performance

Place and Date of Calibration / Ort und Datum der Kalibrierung: **Köln, 2021-05-25**

Scope of Calibration / Umfang der Kalibrierung: **Standard Calibration**

Statement of Compliance (Incoming) / Konformitätsaussage (Anlieferung): **All measured values are within the datasheet specifications.**

Statement of Compliance (Outgoing) / Konformitätsaussage (Auslieferung): **All measured values are within the datasheet specifications.**

Extent of Calibration Document / Umfang des Kalibrierdokuments: **2 Pages Certificate**
46 Pages Outgoing Results

This calibration certificate documents, that the named item is tested and measured against defined specifications. Measurement results are located usually in the corresponding interval with a probability of approx. 95 % (coverage factor k = 2). Calibration is performed with test equipment and standards directly or indirectly traceable by means of approved calibration techniques to the standards of PTB or other national/international standards, which realize the physical units of measurement according to the International System of Units (SI). In all cases where no standards are available, measurements are referenced to standards of the R&S laboratories. Principles and methods of calibration correspond with EN ISO/IEC 17025. The applied quality system is certified to EN ISO 9001. This calibration certificate may not be reproduced other than in full. Calibration certificates without signatures are not valid. The user is obliged to have the object recalibrated at appropriate intervals.

Dieser Kalibrierschein dokumentiert, dass der genannte Gegenstand nach festgelegten Vorgaben geprüft und gemessen wurde. Die Messwerte lagen im Regelfall mit einer Wahrscheinlichkeit von annähernd 95 % im zugeordneten Werteintervall (Erweiterte Messunsicherheit mit k = 2). Die Kalibrierung erfolgte mit Messmitteln und Normalen, die direkt oder indirekt durch Ableitung mittels anerkannter Kalibriertechniken rückgeführt sind auf Normale der PTB oder andere nationale / internationale Standards zur Darstellung der physikalischen Einheiten in Übereinstimmung mit dem Internationalen Einheitensystem (SI). Wenn keine Normale existieren, erfolgt die Rückführung auf Bezugsnormale der R&S-Laboratorien. Grundsätze und Verfahren der Kalibrierung entsprechen EN ISO / IEC 17025. Das angewandte Qualitätsmanagement-System ist zertifiziert nach EN ISO 9001. Dieser Kalibrierschein darf nur vollständig und unverändert weiterverbreitet werden. Kalibrierscheine ohne Signifizierungen sind ungültig. Für die Einhaltung einer angemessenen Frist zur Wiederholung der Kalibrierung ist der Benutzer verantwortlich.

Rohde & Schwarz GmbH & Co. KG, International Service

Date of Issue Ausstellungsdatum	Head of Laboratory Laborleitung	Person Responsible Bearbeiter
2021-05-25	Ralf Schwagereit	Hans-Peter Wolf

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Geschäftsführung: Christian Leicher (Vorsitzender), Peter Riedel · Sitz München · Registereintrag: HRA 16 270
Persönlich haftender Gesellschafter: RUSEG Verwaltungs-GmbH · Sitz München · Registereintrag: AG München HRB 7 534

Calibration Method Kalibrieranweisung	1078.2008.01-T-03.00 / 11.96	**Ambient Temperature** Umgebungstemperatur	(23 ± 3) °C
This Calibration fulfils the requirements of the standard / guideline Diese Kalibrieranweisung entspricht den Forderungen der Norm/ Richtlinie	--	**Relative Humidity** Relative Luftfeuchte	(45 ± 30) %
Firmware Version Firmwareversion	3.06	**Customers Due Interval** Kalibrierintervall	--
Options Optionen	UPL-B1, -B2. -B4, -B5		

Working standards used (having a significant effect on the accuracy)
Verwendete Gebrauchsnormale (mit signifikantem Einfluss auf die Genauigkeit)

Object Gegenstand	Type Typ	Serial Number Seriennummer	Calibration Certificate Number Kalibrierscheinnummer	Cal. Due Kalibr. bis
Multimeter	3458A	2823A21714	K20-805-D-K-15195-01-00-2020-08	2021-08-31
Waveform Synthesizer	ADS	100001	K20-560-D-K-15012-01-00-2020-07	2021-07-31
Counter	PM6680B	SM 716965	581135-D-K-15195-01-00-2021-01	2023-01-31
Audio Analyzer	UPV	101603	589807-D-K-15195-01-00-2021-02	2022-02-28
Terminal Board	TBACS210	9409252	K20-239-D-K-15012-01-00-2020-02	2022-02-28

UGB1: A compliance statement may be possible where a confidence level of less than 95 % is acceptable.
Die Bestätigung der Konformität ist möglich, sofern ein Grad des Vertrauens von weniger als 95% akzeptabel ist.

UGB2: A non-compliance statement may be possible where a confidence level of less than 95 % is acceptable.
Die Bestätigung der Nicht-Konformität ist möglich, sofern ein Grad des Vertrauens von weniger als 95% akzeptabel ist.

Ref.: ILAC-G8:1996 'Guidelines on Assessment and Reporting of Compliance with Specification (based on measurements and tests in a laboratory)'

Notes
Anmerkungen

Outgoing Results

Type:	**UPL**
Material No.:	**1078.2008K06**
Serial No.:	**0**
Certificate No.:	
Referring to Test Documentation / Issue:	**1078.2008.01-T-03.00 / 11.96**
Reference No.:	

Test Department:	**5TSKT1**
Name:	**Hans-Peter Wolf**
Date:	**2021-05-25**

The following abbreviations may be used in this document

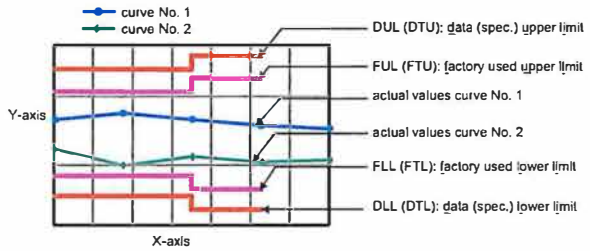
{a}	No measurement uncertainty stated because the errors always add together. So it is sure that a measurement result evaluated as "PASS" is pass.
{b}	The measurement uncertainty depends on the measurement result. The stated measurement uncertainty is valid for the close area around the specification. Measurement results outside the close area have a higher measurement uncertainty but are within the specification.
{c}	Functional test, therefore no measurement uncertainty is stated.
{d}	Typical value, refer to performance test.
{e}	The measurement uncertainty is taken into account when setting the measuring system.

DL or DT	Data Limit for symmetrical tolerance limits
DLL	Datasheet Lower Limit
DUL	Datasheet Upper Limit
MU	Symmetrical Measurement Uncertainty
MLL or MLV	Measurement Uncertainty Lower Value
MUL or MUV	Measurement Uncertainty Upper Value
Nom.	Nominal Value
Dev.	Deviation
Act.	Actual Value
UGB	Uncertainty Guard Band: Measuring uncertainty violates the data (spec.) limit.
UGB1	A compliance statement may be possible where a confidence level of less than 95 % is acceptable.
UGB2	A non-compliance statement may be possible where a confidence level of less than 95 % is acceptable.
DU	Datasheet Uncertainty

Explanation of charts

Uncertainties are part of the appendix

factory used limit = data specification - uncertainty of actual value



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Software used for measurement			
Item	**Type**	**Version**	**Remark**
Suite	Setup	V11.37.05	Test Management Software G5
Test Program (C730_)	Component	V02.51	

1. Generator: Accuracy Sine ANLG at 1 kHz

Amplifier switching

>> Channel 1 unbal <<

Level [V]	MDAC	V1_gain	Atten.	DL [dB]	actual [dB]	MU [dB]
8	6 dB	6 dB	--	+/-0.09	0.006	0.011
4	6 dB	0 dB	--	+/-0.09	0.006	0.011
2	6 dB	- 6 dB	--	+/-0.09	0.007	0.011
1	6 dB	-12 dB	--	+/-0.09	0.008	0.011
0.5	0 dB	-12 dB	--	+/-0.09	0.007	0.011
0.25	6 dB	0 dB	24 dB	+/-0.09	0.000	0.011
0.015	6 dB	0 dB	48 dB	+/-0.09	0.003	0.011

>> Channel 1 bal <<

8	6 dB	6 dB	--	+/-0.09	0.007	0.011
4	6 dB	0 dB	--	+/-0.09	0.011	0.011
2	6 dB	- 6 dB	--	+/-0.09	0.009	0.011
1	6 dB	-12 dB	--	+/-0.09	0.011	0.011
0.5	0 dB	-12 dB	--	+/-0.09	0.004	0.011
0.25	6 dB	0 dB	24 dB	+/-0.09	0.004	0.011
0.015	6 dB	0 dB	48 dB	+/-0.09	0.008	0.011

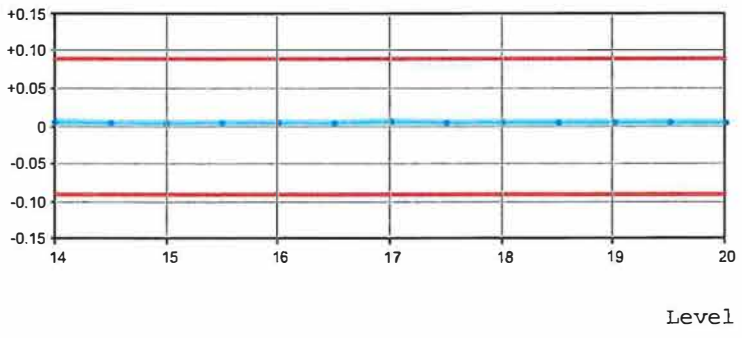
>> Channel 2 unbal <<

Level [V]	MDAC	V1_gain	Atten.	DL [dB]	actual [dB]	MU [dB]
2	6 dB	- 6 dB	--	+/-0.09	0.007	0.011

>> Channel 2 bal <<

4	6 dB	- 6 dB	--	+/-0.09	0.010	0.011

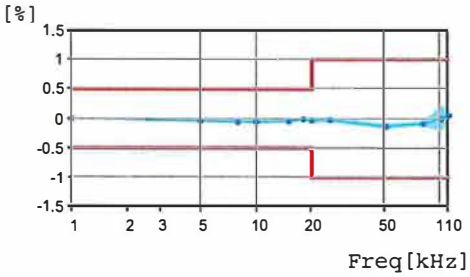
Accuracy Level Control



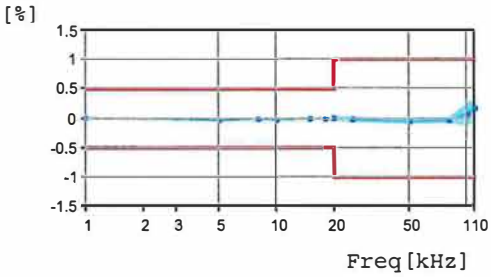
2. Generator: Frequency Response Sine

Low Dist. Generator on (unbal)

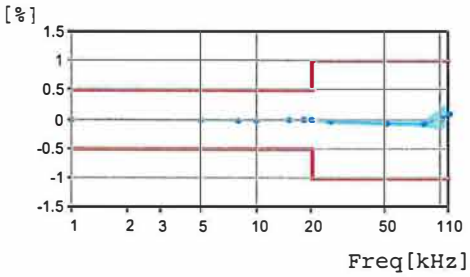
Channel 1 (15 mV)



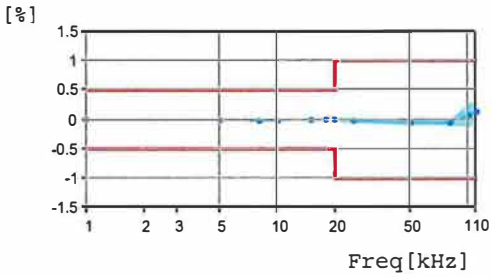
Channel 1 (250 mV)



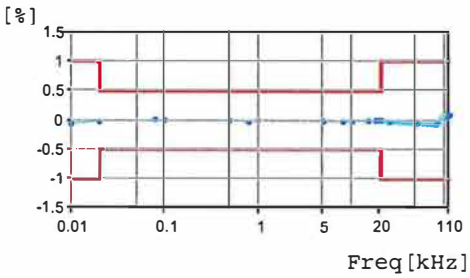
Channel 1 (0.5 V)



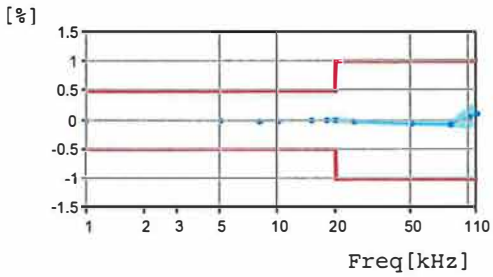
Channel 1 (1 V)



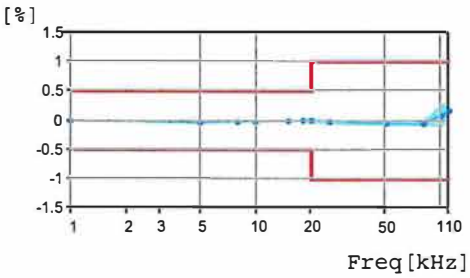
Channel 1 (2 V)



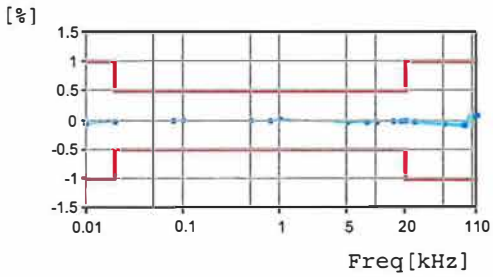
Channel 1 (4 V)



Channel 1 (8 V)

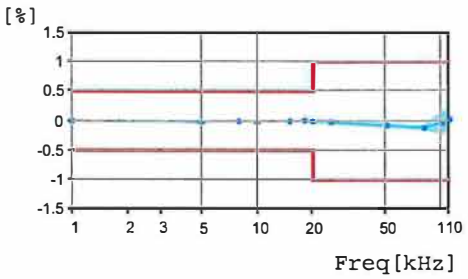


Channel 2 (2 V)

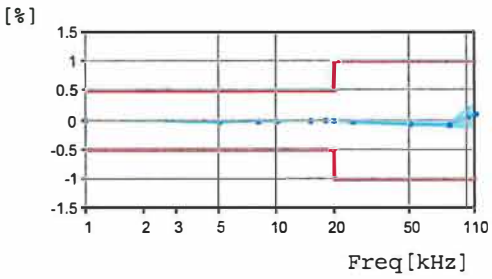


Low Dist. Generator on (bal)

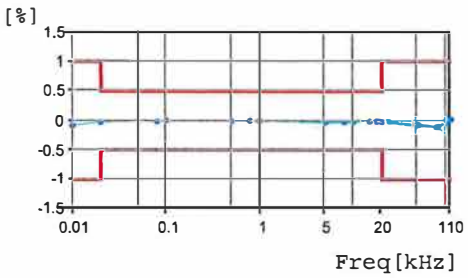
Channel 1 (30 mV)



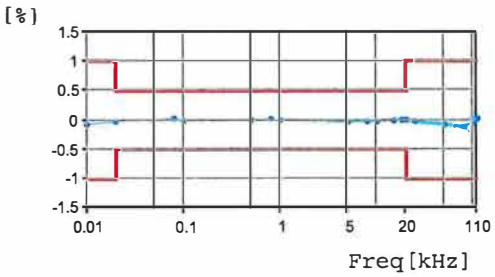
Channel 1 (500 mV)



Channel 1 (2 V)

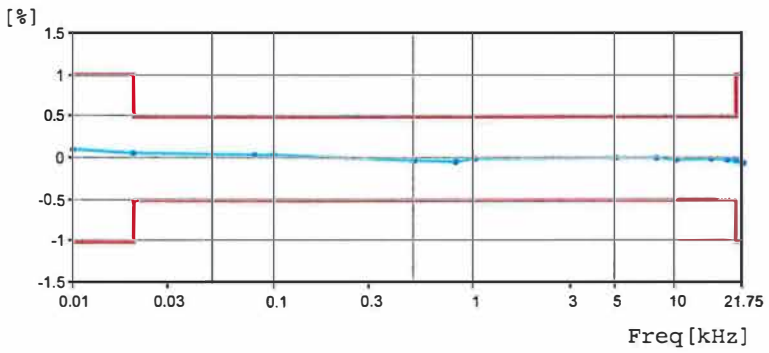


Channel 2 (2 V)



Low Dist. Generator off (unbal)

Channel 1 (2 V)



3. Generator: Frequency Accuracy

DSP-Signals

Frequency [Hz]	DL [ppm]	actual [ppm]	MU [ppm]
1000	+/- 50	15	0.14

Low Dist Generator

Frequency	DL [%]	actual [%]	MU [%]
0.01 kHz	+/- 0.5	0.0904	0.0007
0.10 kHz	+/- 0.5	-0.0031	0.0007
0.18 kHz	+/- 0.5	0.0464	0.0004
0.20 kHz	+/- 0.5	0.0600	0.0004
1.00 kHz	+/- 0.5	-0.0037	0.0001
1.50 kHz	+/- 0.5	0.0433	0.0001
2.00 kHz	+/- 0.5	-0.0462	0.0001
4.00 kHz	+/- 0.5	-0.0474	0.0001
6.00 kHz	+/- 0.5	0.0151	0.0001
8.00 kHz	+/- 0.5	0.0057	0.0001
10 kHz	+/- 0.5	-0.0025	0.0001
12 kHz	+/- 0.5	-0.1123	0.0001
14 kHz	+/- 0.5	-0.0993	0.0001
16 kHz	+/- 0.5	-0.0973	0.0001
18 kHz	+/- 0.5	-0.0676	0.0001
20 kHz	+/- 0.5	-0.0624	0.0001
30 kHz	+/- 0.5	0.0359	0.0001
50 kHz	+/- 0.5	0.0012	0.0001
110 kHz	+/- 0.5	0.0171	0.0001

4. Generator: DC-Offset

Offset error with DC Offset ON (DC Voltage 0.0000 V)

Output Type >> U N B A L
Frequency >> 1 kHz

Level [Vrms]	DL [mV]	actual [mV]	MU [mV]
8.0	+/- 80	-1.6	0.1
4.0	+/- 40	-1.0	0.1
2.0	+/- 20	0.5	0.1
1.0	+/- 10	-0.3	0.1
0.5	+/- 5	0.0	0.1

Output Type >> B A L

Level [Vrms]	DL [mV]	actual [mV]	MU [mV]
16.0	+/- 160	-1.9	0.1
8.0	+/- 80	-0.8	0.1
4.0	+/- 40	0.4	0.1
2.0	+/- 20	0.7	0.1
1.0	+/- 10	1.2	0.1

5. Generator: THD,THD+N

THD with Low Dist.

Frequency 20 Hz

Level [V]	Output	Dul [dB]	actual [dB]	MU [dB]
10.00	UNBAL	< -105	-110.8	0.4
2.50	UNBAL	< -110	-118.6	0.4
20.00	BAL	< -105	-113.5	0.4
5.00	BAL	< -110	-120.4	0.4

Frequency 180 Hz

Level [V]	Output	Dul [dB]	actual [dB]	MU [dB]
10.00	UNBAL	< -105	-112.9	0.4
2.50	UNBAL	< -110	-124.5	0.4
20.00	BAL	< -105	-117.0	0.4
5.00	BAL	< -110	-124.5	0.4

Frequency 1 kHz

Level [V]	Output	Dul [dB]	actual [dB]	MU [dB]
10.00	UNBAL	< -105	-117.1	0.4
2.50	UNBAL	< -110	-126.7	0.4
20.00	BAL	< -105	-122.5	0.4
5.00	BAL	< -110	-127.9	0.4

Frequency 1.82 kHz

Level [V]	Output	Dul [dB]	actual [dB]	MU [dB]
10.00	UNBAL	< -105	-117.2	0.4
2.50	UNBAL	< -110	-119.5	0.4
20.00	BAL	< -105	-119.1	0.4
5.00	BAL	< -110	-120.8	0.4

Frequency 7.03 kHz

Level [V]	Output	Dul [dB]	actual [dB]	MU [dB]
10.00	UNBAL	< -105	-112.9	0.4
2.50	UNBAL	< -105	-113.7	0.4
20.00	BAL	< -105	-114.4	0.4
5.00	BAL	< -105	-114.6	0.4

Frequency 20 kHz

Level [V]	Output	Dul [dB]	actual [dB]	MU [dB]
10.00	UNBAL	< -100	-111.0	0.4
2.50	UNBAL	< -100	-109.6	0.4
20.00	BAL	< -100	-113.2	0.4
5.00	BAL	< -100	-110.3	0.4

Frequency 50 kHz

Level [V]	Output	Dul [dB]	actual [dB]	MU [dB]
10.00	UNBAL	< - 86	-102.1	1.2
2.50	UNBAL	< - 86	-103.8	1.2
20.00	BAL	< - 86	-103.2	1.2
5.00	BAL	< - 86	-104.8	1.2

THD+N with Low Dist. (20 Hz - 20 kHz)

Frequency [kHz]	Bandwidth [kHz]	Level [V]	Output	DL [dB]	actual [dB]	MU
0.02	22	10.0	unb	< -100	-107.8	{c}
0.05	22	10.0	unb	< -100	-108.4	{c}
0.50	22	10.0	unb	< -100	-109.8	{c}
2.00	22	10.0	unb	< -100	-106.4	{c}
5.00	22	10.0	unb	< -100	-105.4	{c}
10.00	22	10.0	unb	< -100	-102.5	{c}
15.00	22	10.0	unb	< -100	-106.8	{c}
20.00	22	10.0	unb	< -100	-107.3	{c}

0.02	22	2.5	unb	< -100	-113.4	{c}
0.05	22	2.5	unb	< -100	-114.3	{c}
0.50	22	2.5	unb	< -100	-113.2	{c}
2.00	22	2.5	unb	< -100	-108.6	{c}
5.00	22	2.5	unb	< -100	-108.4	{c}
10.00	22	2.5	unb	< -100	-107.6	{c}
15.00	22	2.5	unb	< -100	-108.2	{c}
20.00	22	2.5	unb	< -100	-108.5	{c}
0.20	100	10.0	unb	< - 88	-99.5	{c}
0.50	100	10.0	unb	< - 88	-99.5	{c}
2.00	100	10.0	unb	< - 88	-99.0	{c}
5.00	100	10.0	unb	< - 88	-98.6	{c}
10.00	100	10.0	unb	< - 88	-98.1	{c}
15.00	100	10.0	unb	< - 88	-96.6	{c}
20.00	100	10.0	unb	< - 88	-95.3	{c}
0.20	100	2.5	unb	< - 88	-102.7	{c}
0.50	100	2.5	unb	< - 88	-102.9	{c}
2.00	100	2.5	unb	< - 88	-101.8	{c}
5.00	100	2.5	unb	< - 88	-102.0	{c}
10.00	100	2.5	unb	< - 88	-101.8	{c}
15.00	100	2.5	unb	< - 88	-100.8	{c}
20.00	100	2.5	unb	< - 88	-100.2	{c}
0.02	22	20.0	bal	< -100	-103.3	{c}
0.05	22	20.0	bal	< -100	-103.7	{c}
0.50	22	20.0	bal	< -100	-103.8	{c}
2.00	22	20.0	bal	< -100	-103.0	{c}
5.00	22	20.0	bal	< -100	-103.2	{c}
10.00	22	20.0	bal	< -100	-103.3	{c}
15.00	22	20.0	bal	< -100	-103.8	{c}
20.00	22	20.0	bal	< -100	-103.7	{c}
0.02	22	5.0	bal	< -100	-106.5	{c}
0.05	22	5.0	bal	< -100	-106.8	{c}
0.50	22	5.0	bal	< -100	-107.0	{c}
2.00	22	5.0	bal	< -100	-105.0	{c}
5.00	22	5.0	bal	< -100	-105.4	{c}
10.00	22	5.0	bal	< -100	-105.3	{c}
15.00	22	5.0	bal	< -100	-106.2	{c}
20.00	22	5.0	bal	< -100	-105.9	{c}
0.20	100	20.0	bal	< - 88	-96.5	{c}
0.50	100	20.0	bal	< - 88	-96.3	{c}
2.00	100	20.0	bal	< - 88	-96.2	{c}
5.00	100	20.0	bal	< - 88	-96.2	{c}
10.00	100	20.0	bal	< - 88	-96.3	{c}
15.00	100	20.0	bal	< - 88	-96.5	{c}
20.00	100	20.0	bal	< - 88	-96.5	{c}
0.20	100	5.0	bal	< - 88	-99.6	{c}
0.50	100	5.0	bal	< - 88	-99.5	{c}
2.00	100	5.0	bal	< - 88	-99.3	{c}
5.00	100	5.0	bal	< - 88	-99.3	{c}
10.00	100	5.0	bal	< - 88	-99.2	{c}
15.00	100	5.0	bal	< - 88	-99.2	{c}
20.00	100	5.0	bal	< - 88	-99.0	{c}

THD+N with Low Dist. (20 - 50 kHz / Bandwidth 100 kHz)

Frequency [kHz]	Level [V]	Output	DL [dB]	actual [dB]	MU
25	10.0	unb	< - 80	-98.7	{c}
50	10.0	unb	< - 80	-97.8	{c}
25	2.5	unb	< - 80	-100.8	{c}
50	2.5	unb	< - 80	-102.1	{c}
25	20.0	bal	< - 80	-98.1	{c}
50	20.0	bal	< - 80	-99.8	{c}
25	5.0	bal	< - 80	-98.8	{c}
50	5.0	bal	< - 80	-99.8	{c}

THD without Low Dist.

Level : 2.5 (rms) unbal

Frequency [kHz]	DL [dB]	actual [dB]	MU
0.2	< - 100	-112.6	{c}
1.0	< - 100	-111.1	{c}
3.0	< - 100	-110.0	{c}
6.0	< - 100	-107.2	{c}
8.0	< - 100	-105.5	{c}
10.0	< - 96	-102.7	{c}

THD+N without Low Dist.

Level : 2.5 (rms)

Frequency [kHz]	Bandwidth	DL [dB]	actual [dB]	MU [dB]
0.02	20 kHz	< - 94	-99.7	0.5
0.05	20 kHz	< - 94	-100.8	0.5
0.10	20 kHz	< - 94	-101.5	0.5
0.20	20 kHz	< - 94	-102.7	0.7
0.50	20 kHz	< - 94	-103.4	0.7
1.00	20 kHz	< - 94	-102.6	0.7
5.00	20 kHz	< - 94	-103.9	0.7
10.00	20 kHz	< - 94	-99.2	0.7
15.00	20 kHz	< - 94	-104.9	0.7
20.00	20 kHz	< - 94	-105.6	0.7
1.00	100 kHz	< - 86	-99.9	1.0
5.00	100 kHz	< - 86	-100.3	1.0
10.00	100 kHz	< - 86	-97.6	1.0
15.00	100 kHz	< - 86	-97.9	1.0
20.00	100 kHz	< - 86	-96.7	1.0

Frequency 1 kHz / bandwidth 20 kHz

Level [V]	DL [dB]	actual [dB]	MU [dB]
0.30	< - 94	-100.6	0.7
1.00	< - 94	-102.3	0.7
2.00	< - 94	-102.2	0.7
4.00	< - 94	-101.5	0.7
8.00	< - 94	-102.2	0.7

6. Generator: MOD DIST Self Distortion

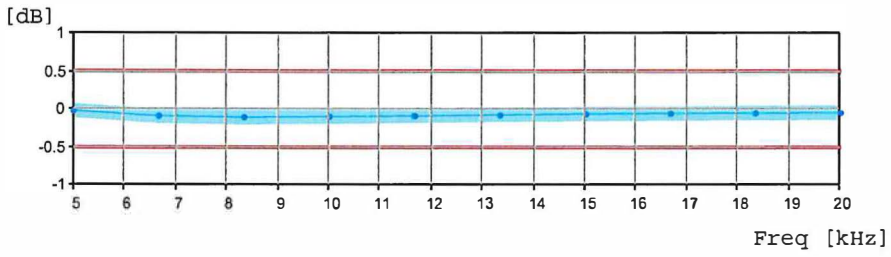
Lower Frequency : 60 Hz

F_HF [kHz]	LF:UF	Output	Tot. Volt [Vpp]	DL [dB]	actual [dB]	MU [dB]
4	4:1	UNBAL	28.0	< - 90	-102.5	1.0
7	4:1	UNBAL	28.0	< - 96	-101.5	1.0
10	4:1	UNBAL	28.0	< - 90	-100.6	1.0
15	4:1	UNBAL	28.0	< - 84	-97.6	1.0
20	4:1	UNBAL	28.0	< - 84	-91.7	1.0
4	4:1	UNBAL	6.0	< - 90	-108.6	1.0
7	4:1	UNBAL	6.0	< - 96	-102.8	1.0
10	4:1	UNBAL	6.0	< - 90	-102.2	1.0
15	4:1	UNBAL	6.0	< - 84	-97.1	1.0
20	4:1	UNBAL	6.0	< - 84	-91.6	1.0
4	4:1	BAL	56.0	< - 90	-105.6	1.0
7	4:1	BAL	56.0	< - 96	-103.7	1.0
10	4:1	BAL	56.0	< - 90	-102.0	1.0
15	4:1	BAL	56.0	< - 84	-98.4	1.0
20	4:1	BAL	56.0	< - 84	-92.9	1.0
4	4:1	BAL	12.0	< - 90	-106.3	1.0
7	4:1	BAL	12.0	< - 96	-104.3	1.0
10	4:1	BAL	12.0	< - 90	-103.5	1.0
15	4:1	BAL	12.0	< - 84	-98.5	1.0
20	4:1	BAL	12.0	< - 84	-91.8	1.0

7. Generator: DFD

Level Accuracy

Total Volt : 1.5 V (6 Vpp)
Diff Freq : 425 Hz



DFD d2 Self Distortion

Diff Freq : 425 Hz

F_mean [kHz]	DC Offs.	Output	Tot. Volt [Vpp]	DL [dB]	actual [dB]	MU [dB]
with HP DIFF						
5	OFF	UNBAL	28.0	< -114	-133.5	0.1
10	OFF	UNBAL	28.0	< -114	-136.5	0.1
15	OFF	UNBAL	28.0	< -114	-131.9	0.1
20	OFF	UNBAL	28.0	< -114	-128.4	0.1
5	OFF	UNBAL	6.0	< -114	-130.6	0.1
10	OFF	UNBAL	6.0	< -114	-130.6	0.1
15	OFF	UNBAL	6.0	< -114	-130.0	0.1
20	OFF	UNBAL	6.0	< -114	-127.9	0.1

with HP DIFF

5	OFF	BAL	56.0	< -114	-139.4	0.1
10	OFF	BAL	56.0	< -114	-135.8	0.1
15	OFF	BAL	56.0	< -114	-132.7	0.1
20	OFF	BAL	56.0	< -114	-127.5	0.1
5	OFF	BAL	12.0	< -114	-134.2	0.1
10	OFF	BAL	12.0	< -114	-134.1	0.1
15	OFF	BAL	12.0	< -114	-131.7	0.1
20	OFF	BAL	12.0	< -114	-127.9	0.1

DFD d3 Self Distortion

Diff Freq : 425 Hz

F_mean [kHz]	Output	Tot. Volt [Vpp]	DL [dB]	act [dB]	MU [dB]
5	UNBAL	28.0	< - 94	-115.2	1.8
10	UNBAL	28.0	< - 94	-116.9	1.8
15	UNBAL	28.0	< - 94	-114.8	1.8
20	UNBAL	28.0	< - 94	-110.4	1.8
5	UNBAL	6.0	< - 94	-122.4	1.8
10	UNBAL	6.0	< - 94	-121.6	1.8
15	UNBAL	6.0	< - 94	-122.8	1.8
20	UNBAL	6.0	< - 94	-115.3	1.8
5	BAL	56.0	< - 94	-116.8	1.8
10	BAL	56.0	< - 94	-113.1	1.8
15	BAL	56.0	< - 94	-110.4	1.8
20	BAL	56.0	< - 94	-110.2	1.8
5	BAL	12.0	< - 94	-116.3	1.8
10	BAL	12.0	< - 94	-121.9	1.8
15	BAL	12.0	< - 94	-122.9	1.8
20	BAL	12.0	< - 94	-115.2	1.8

8. Generator: Internal Resistance

Channel	Ri [Ohm]	Dll [Ohm]	Dul [Ohm]	act [Ohm]	MU [Ohm]
1 BAL /off	200	199.00	201.00	199.97	0.04
1 BAL /off	600	597.00	603.00	600.09	0.04

Channel	Ri [Ohm]	Dll [Ohm]	Dul [Ohm]	act [Ohm]	MU [Ohm]
2 BAL /off	200	199.00	201.00	199.95	0.04
2 BAL /off	600	597.00	603.00	600.07	0.04

9. Generator: Cross Talk Attenuation

(Level = 10 V ; Freq =20 kHz)

OUTP.	Ri [Ohm]	Direction	DL [dB]	act [dB]	MU [dB]
UNB	5	Ch. 1 -> Ch. 2	< -115	-115	1.0
BAL	10	Ch. 1 -> Ch. 2	< -115	-142	1.0
BAL	200	Ch. 1 -> Ch. 2	< -115	-138	1.0
BAL	600	Ch. 1 -> Ch. 2	< -115	-135	1.0
UNB	5	Ch. 2 -> Ch. 1	< -115	-120	1.0
BAL	10	Ch. 2 -> Ch. 1	< -115	-138	1.0
BAL	200	Ch. 2 -> Ch. 1	< -115	-138	1.0
BAL	600	Ch. 2 -> Ch. 1	< -115	-139	1.0

10. Generator: Rejection Factor

Freq [kHz]	Level [V]	Ri [Ohm]	Channel	DL [dB]	act [dB]	MU [dB]
1.025	20	10	1	< -75	-92.1	0.19
1.025	20	200	1	< -75	-96.1	0.19
1.025	20	600	1	< -75	-105.9	0.19
20	20	10	1	< -60	-74.2	0.19
20	20	200	1	< -60	-76.2	0.19
20	20	600	1	< -60	-78.1	0.19
1.025	2	10	1	< -75	-92.7	0.19
1.025	2	200	1	< -75	-97.1	0.19
1.025	2	600	1	< -75	-108.8	0.19
20	2	10	1	< -60	-74.6	0.19
20	2	200	1	< -60	-76.6	0.19
20	2	600	1	< -60	-78.4	0.19
1.025	20	10	2	< -75	-105.4	0.19
1.025	20	200	2	< -75	-101.9	0.19
1.025	20	600	2	< -75	-99.9	0.19
20	20	10	2	< -60	-78.3	0.19
20	20	200	2	< -60	-77.9	0.19
20	20	600	2	< -60	-77.5	0.19
1.025	2	10	2	< -75	-102.6	0.19
1.025	2	200	2	< -75	-99.9	0.19
1.025	2	600	2	< -75	-98.1	0.19
20	2	10	2	< -60	-78.2	0.19
20	2	200	2	< -60	-77.7	0.19
20	2	600	2	< -60	-77.2	0.19

11. Common Mode Ripple

Testpoint	DL [mV]	Ist [mV]	MU
AC measurement between GEN COM u. Ground	< 5	0	{c}

12. Analyzer: Level Accuracy RMS

Level Accuracy at 1 kHz

Input Voltage = 0.75 * Range

Channel 1

Range [V]	Inst.	Pre att [dB]	Preamp. [dB]	Rangeamp. [dB]	DL [dB]	act [dB]	MU [dB]
0.1	22 kHz	0	+20	+10	+/-0.05	-0.009	0.002
0.3	22 kHz	0	0	+20	+/-0.05	-0.009	0.002
1.8	22 kHz	0	0	+ 5	+/-0.05	-0.006	0.002
3.0	22 kHz	0	0	0	+/-0.05	-0.008	0.002
6.0	22 kHz	-15	0	+10	+/-0.05	-0.017	0.002
30	22 kHz	-30	0	+10	+/-0.05	-0.009	0.002
3.0	110 kHz	0	0	0	+/-0.05	-0.001	0.002

Channel 2

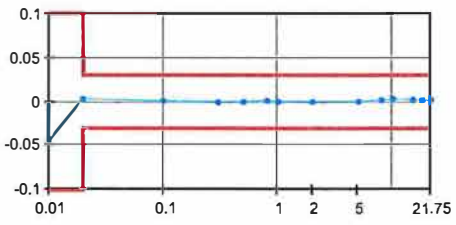
Range [V]	Inst.	pre att [dB]	Preamp. [dB]	Rangeamp. [dB]	DL [dB]	act [dB]	MU [dB]
0.1	22 kHz	0	+20	+10	+/-0.05	-0.008	0.002
0.3	22 kHz	0	0	+20	+/-0.05	-0.009	0.002
1.8	22 kHz	0	0	+ 5	+/-0.05	-0.008	0.002
3.0	22 kHz	0	0	0	+/-0.05	-0.008	0.002
6.0	22 kHz	-15	0	+10	+/-0.05	-0.017	0.002
30	22 kHz	-30	0	+10	+/-0.05	-0.006	0.002
3.0	110 kHz	0	0	0	+/-0.05	0.000	0.002

13. Analyzer: Frequency Response

Frequency Response Analyzer 22 kHz

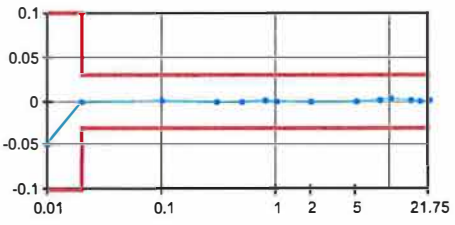
Range 3 V / Input Voltage = 0.75 * Range

[dB] < Channel 1>



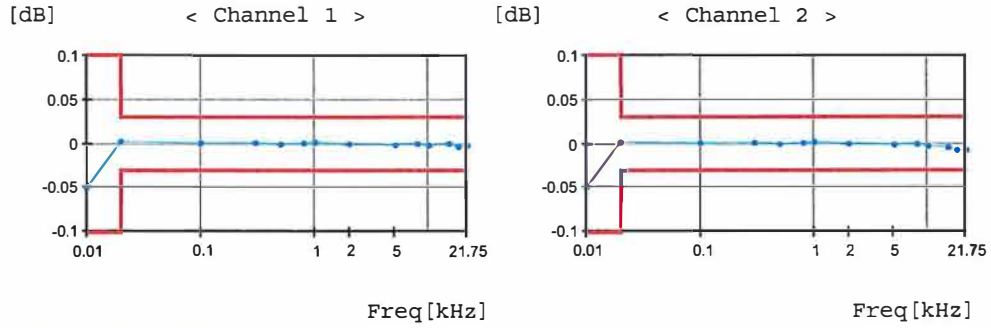
Freq[kHz]

[dB] < Channel 2>



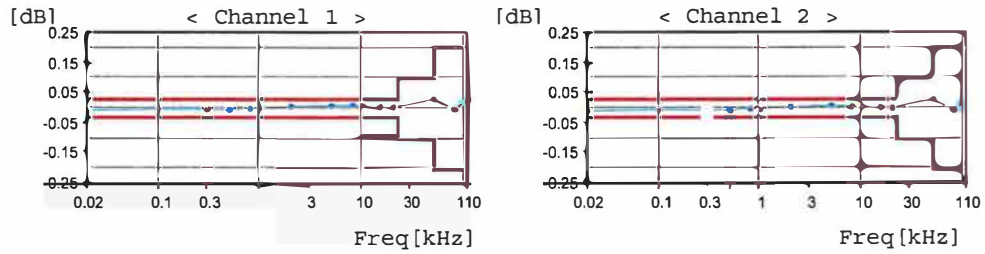
Freq[kHz]

Range 6 V / Input Voltage = 0.75 * Range

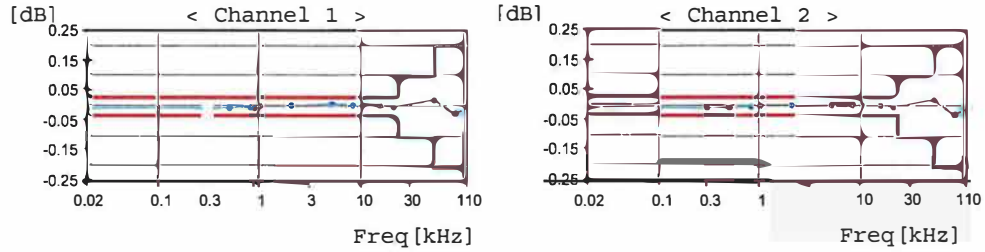


Frequency Response Analyzer 110 kHz (100 mV - 1.8V)

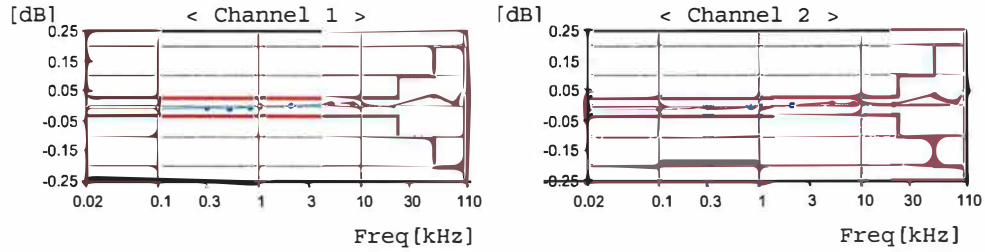
Range 100 mV / Input Voltage = 0.75 * Range



Range 300 mV / Input Voltage = 0.75 * Range

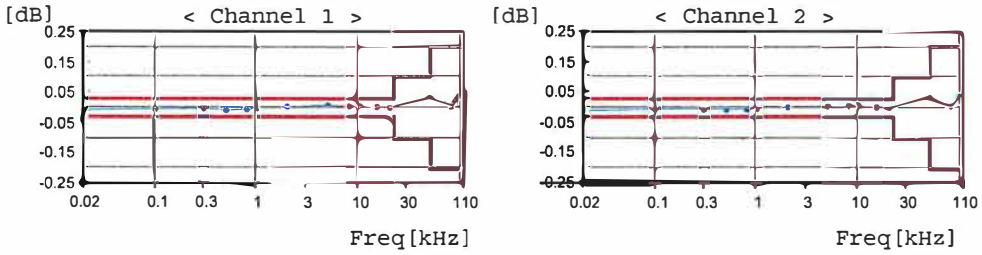


Range 1.8 V / Input Voltage = 0.75 * Range

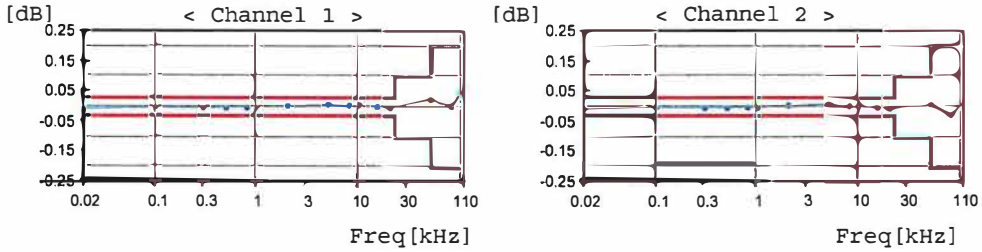


Frequency Response Analyzer 110 kHz (3V - 30V)

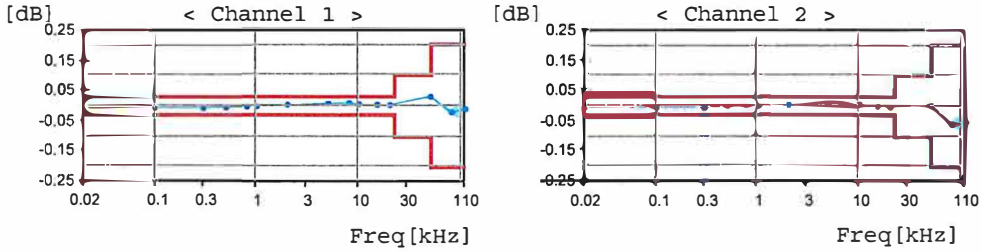
Range 3 V / Input Voltage = 0.75 * Range



Range 6 V / Input Voltage = 0.75 * Range



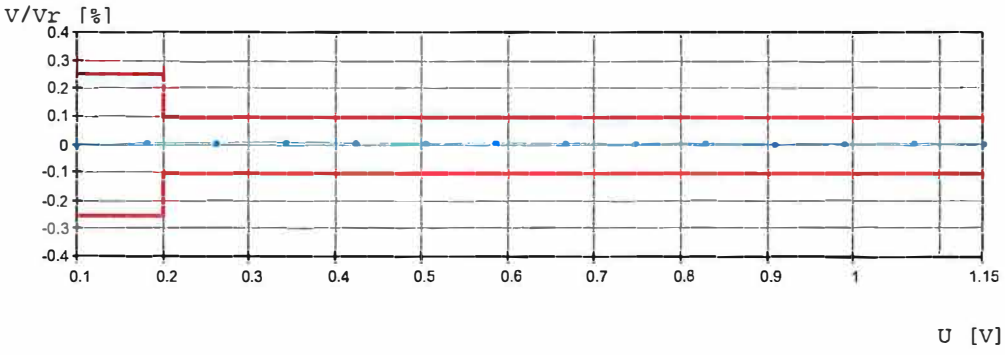
Range 30 V / Input Voltage = 0.75 * Range



Linearity at 20 kHz Analyzer 22 kHz

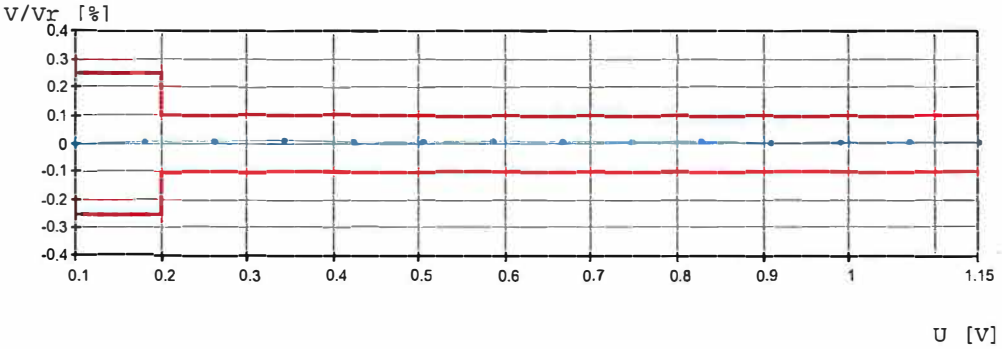
Channel 1

MU see convention {d}



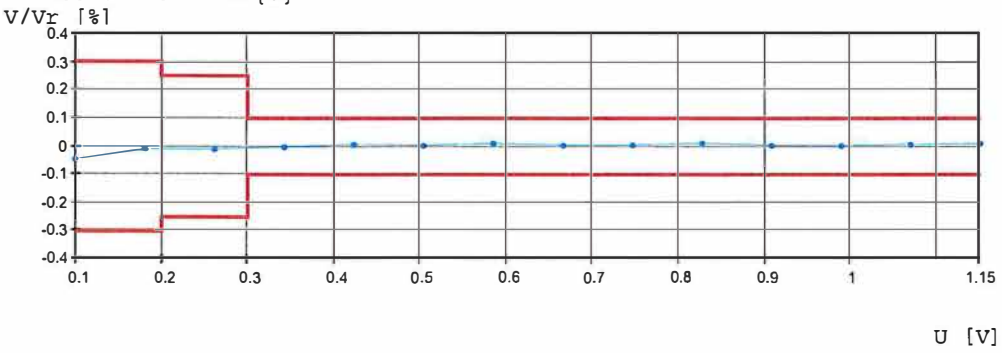
Channel 2

MU see convention {d}



Linearity at 20 kHz Analyzer 110 kHz Channel 1

MU see convention {d}



14. Analyzer: Self Noise

These values are only display indications. Uncertainty can not be fixed.

Analyzer	Function	Filter	Channel	DL [uV]	act [uV]
22 kHz	RMS & S/N	CCIR unwtd	1	2	1.34
22 kHz	RMS & S/N	CCIR unwtd	2	2	1.42
22 kHz	QPEAK & S/N	CCIR wtd	1	8	4.83
22 kHz	QPEAK & S/N	CCIR wtd	2	8	4.97
110 kHz	RMS & S/N		1	8	4.24
110 kHz	RMS & S/N		2	8	4.82

15. Analyzer: Input Resistances

Channel	Ri [Ohm]	Dll [Ohm]	Dul [Ohm]	act [Ohm]	MU [Ohm]
1	200000	198300.0	201700.0	200756.04	3.92
1	600	597.0	603.0	600.19	0.04
1	300	298.5	301.5	300.79	0.04

Channel	Ri [Ohm]	Dll [Ohm]	Dul [Ohm]	act [Ohm	MU [Ohm]
2	200000	198300.0	201700.0	200803.43	3.92
2	600	597.0	603.0	600.02	0.04
2	300	298.5	301.5	300.69	0.04

16. Analyzer: Cross Talk Attenuation

Input Signal Sine 10 V / 20 kHz

Direction	DL [dB]	act [dB]	MU [dB]
Ch. 1 -> Ch. 2	< -130	-147.17	0.25
Ch. 2 -> Ch. 1	< -130	-148.56	0.25

17. Analyzer: Rejection Factor

Channel 1 / Ri 200 K

Frequency [kHz]	Ue [V]	Range	Dul [dB]	act [dB]	MU [dB]	
0.05	3	18 mV	- 100	-102.51	0.32	
1.00	3	18 mV	- 86	-103.06	0.15	
16.00	3	18 mV	- 80	-90.83	0.15	
0.05	3	3 V	- 100	-96.24	0.32	FAIL
1.00	3	3 V	- 86	-96.29	0.15	
16.00	3	3 V	- 80	-81.03	0.15	
0.05	10	10 V	- 60	-66.74	0.32	
1.00	10	10 V	- 60	-84.11	0.15	
16.00	10	10 V	- 60	-69.26	0.15	
0.05	10	18 V	- 50	-66.72	0.32	
1.00	10	18 V	- 50	-84.02	0.15	
16.00	10	18 V	- 50	-69.25	0.15	

Channel 2 / Ri 200 K

Frequency [kHz]	Ue [V]	Range	Dul [dB]	act [dB]	MU [dB]
0.05	3	18 mV	- 100	-103.52	0.32
1.00	3	18 mV	- 86	-104.26	0.15
16.00	3	18 mV	- 80	-84.69	0.15
0.05	3	3 V	- 100	-101.97	0.32
1.00	3	3 V	- 86	-103.94	0.15
16.00	3	3 V	- 80	-85.00	0.15
0.05	10	10 V	- 60	-66.87	0.32
1.00	10	10 V	- 60	-86.18	0.15
16.00	10	10 V	- 60	-70.97	0.15
0.05	10	18 V	- 50	-66.86	0.32
1.00	10	18 V	- 50	-86.07	0.15
16.00	10	18 V	- 50	-70.90	0.15

9. Generator: Cross Talk Attenuation

(Level = 10 V ; Freq =20 kHz)

OUTP.	Ri [Ohm]	Direction	DL [dB]	act [dB]	MU [dB]
UNB	5	Ch. 1 -> Ch. 2	< -115	-115	1.0
BAL	10	Ch. 1 -> Ch. 2	< -115	-142	1.0
BAL	200	Ch. 1 -> Ch. 2	< -115	-138	1.0
BAL	600	Ch. 1 -> Ch. 2	< -115	-135	1.0
UNB	5	Ch. 2 -> Ch. 1	< -115	-120	1.0
BAL	10	Ch. 2 -> Ch. 1	< -115	-138	1.0
BAL	200	Ch. 2 -> Ch. 1	< -115	-138	1.0
BAL	600	Ch. 2 -> Ch. 1	< -115	-139	1.0

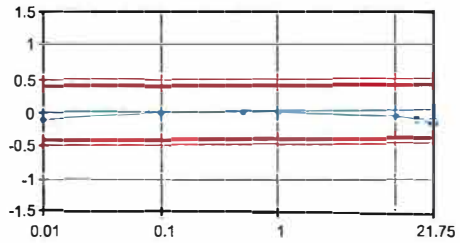
10. Generator: Rejection Factor

Freq [kHz]	Level [V]	Ri [Ohm]	Channel	DL [dB]	act [dB]	MU [dB]
1.025	20	10	1	< -75	-92.1	0.19
1.025	20	200	1	< -75	-96.1	0.19
1.025	20	600	1	< -75	-105.9	0.19
20	20	10	1	< -60	-74.2	0.19
20	20	200	1	< -60	-76.2	0.19
20	20	600	1	< -60	-78.1	0.19
1.025	2	10	1	< -75	-92.7	0.19
1.025	2	200	1	< -75	-97.1	0.19
1.025	2	600	1	< -75	-108.8	0.19
20	2	10	1	< -60	-74.6	0.19
20	2	200	1	< -60	-76.6	0.19
20	2	600	1	< -60	-78.4	0.19
1.025	20	10	2	< -75	-105.4	0.19
1.025	20	200	2	< -75	-101.9	0.19
1.025	20	600	2	< -75	-99.9	0.19
20	20	10	2	< -60	-78.3	0.19
20	20	200	2	< -60	-77.9	0.19
20	20	600	2	< -60	-77.5	0.19
1.025	2	10	2	< -75	-102.6	0.19
1.025	2	200	2	< -75	-99.9	0.19
1.025	2	600	2	< -75	-98.1	0.19
20	2	10	2	< -60	-78.2	0.19
20	2	200	2	< -60	-77.7	0.19
20	2	600	2	< -60	-77.2	0.19

11. Common Mode Ripple

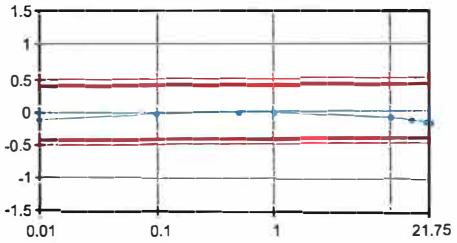
Testpoint	DL [mV]	Ist [mV]	MU
AC measurement between GEN COM u. Ground	< 5	0	{c}

[Deg.] Range 10 V



Freq [kHz]

[Deg.] Range 30 V



Freq [kHz]

20. Analyzer: DC Measurement

DC Offset 22 kHz Analyzer (Channel 1)

These values are only display indications. Uncertainty can not be fixed.

Range	DL [mV]	act [mV]
100 mV	+/- 0.1	0.00
300 mV	+/- 0.3	0.00
1 V	+/- 1.0	0.00
3 V	+/- 3.0	0.00
10 V	+/- 10.0	-0.02
30 V	+/- 30.0	0.03

DC Offset 22 kHz Analyzer (Channel 2)

These values are only display indications. Uncertainty can not be fixed.

Range	DL [mV]	act [mV]
100 mV	+/- 0.1	0.00
300 mV	+/- 0.3	0.01
1 V	+/- 1.0	0.01
3 V	+/- 3.0	0.01
10 V	+/- 10.0	0.12
30 V	+/- 30.0	0.10

DC Offset 110 kHz Analyzer (Channel 1)

These values are only display indications. Uncertainty can not be fixed.

Range	DL [mV]	act [mV]
3 V	+/- 3	0.02

DC Accuracy Analyzer 22 kHz

Channel 1

Level /V	DL /%	actual /%	MU /%
+4.5	+/- 1.067	-0.026	0.001
-4.5	+/- 1.067	-0.002	0.001
+2.5	+/- 1.120	-0.002	0.001
-2.5	+/- 1.120	-0.004	0.001
+1.5	+/- 1.200	-0.003	0.001
-1.5	+/- 1.200	-0.003	0.001
+0.5	+/- 1.600	-0.004	0.001
-0.5	+/- 1.600	-0.003	0.001
+0.3	+/- 1.200	-0.004	0.001
-0.3	+/- 1.200	0.004	0.001

Channel 2

Level /V	DL /%	actual /%	MU /%
+4.5	+/- 1.067	-0.022	0.001
-4.5	+/- 1.067	0.001	0.001
+2.5	+/- 1.120	0.001	0.001
-2.5	+/- 1.120	-0.001	0.001
+1.5	+/- 1.200	0.003	0.001
-1.5	+/- 1.200	0.000	0.001
+0.5	+/- 1.600	0.002	0.001
-0.5	+/- 1.600	0.000	0.001
+0.3	+/- 1.200	0.005	0.001
-0.3	+/- 1.200	0.003	0.001

DC Accuracy Analyzer 110 kHz

Channel 1

Level /V	DL /%	actual /%	MU /%
+4.5	+/- 1.067	-0.053	0.001
-4.5	+/- 1.067	-0.023	0.001
+3.0	+/- 1.100	-0.045	0.001
-3.0	+/- 1.100	-0.017	0.001
+2.5	+/- 1.120	-0.047	0.001
-2.5	+/- 1.120	-0.013	0.001
+2.0	+/- 1.150	-0.045	0.001
-2.0	+/- 1.150	-0.020	0.001
+1.5	+/- 1.200	-0.061	0.001
-1.5	+/- 1.200	-0.026	0.001
+1.0	+/- 1.300	-0.089	0.001
-1.0	+/- 1.300	-0.019	0.001
+0.5	+/- 1.600	-0.074	0.001
-0.5	+/- 1.600	-0.035	0.001
+0.3	+/- 1.200	-0.146	0.001
-0.3	+/- 1.200	0.004	0.001

21. Analyzer: THD, THD+N

Self Distortion THD Analyzer 22 kHz Channel 1

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Range [V]	U_in [V]	Freq [kHz]	OutType	Dul [dB]	act [dB]
10	10	0.01	bal	- 100	-114.1
3	2	0.01	bal	- 100	-111.4
3	2	0.01	unb	- 100	-114.7
1	1	0.01	unb	- 100	-112.7
10	10	0.02	bal	- 110	-117.0
3	2	0.02	bal	- 110	-116.9
3	2	0.02	unb	- 110	-117.1
1	1	0.02	unb	- 110	-114.4
10	10	0.05	bal	- 110	-119.7
3	2	0.05	bal	- 110	-120.7
3	2	0.05	unb	- 110	-118.4
1	1	0.05	unb	- 110	-118.4
10	10	0.10	bal	- 110	-121.3
3	2	0.10	bal	- 110	-123.5
3	2	0.10	unb	- 110	-119.6
1	1	0.10	unb	- 110	-120.7
10	10	0.45	bal	- 110	-114.7
3	2	0.45	bal	- 110	-116.9
3	2	0.45	unb	- 110	-116.3
1	1	0.45	unb	- 110	-114.0
10	10	1.00	bal	- 110	-129.8
3	2	1.00	bal	- 110	-129.9
3	2	1.00	unb	- 110	-125.3
1	1	1.00	unb	- 110	-129.2
10	10	3.00	bal	- 110	-117.6
3	2	3.00	bal	- 110	-117.8
3	2	3.00	unb	- 110	-116.5
1	1	3.00	unb	- 110	-116.9
10	10	7.00	bal	- 110	-115.0
3	2	7.00	bal	- 110	-115.5
3	2	7.00	unb	- 110	-115.3
1	1	7.00	unb	- 110	-116.1

Self Distortion THD Analyzer 22 kHz Channel 2

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Range [V]	U_in [V]	Freq [kHz]	OutType	Dul [dB]	act [dB]
10	10	0.01	bal	- 100	-112.0
3	2	0.01	bal	- 100	-114.4
3	2	0.01	unb	- 100	-112.4
1	1	0.01	unb	- 100	-108.8
10	10	0.02	bal	- 110	-115.2
3	2	0.02	bal	- 110	-117.9
3	2	0.02	unb	- 110	-116.0
1	1	0.02	unb	- 110	-114.8
10	10	0.05	bal	- 110	-117.6
3	2	0.05	bal	- 110	-119.6
3	2	0.05	unb	- 110	-118.6
1	1	0.05	unb	- 110	-119.6
10	10	0.10	bal	- 110	-121.6
3	2	0.10	bal	- 110	-120.8
3	2	0.10	unb	- 110	-122.1
1	1	0.10	unb	- 110	-122.8
10	10	0.45	bal	- 110	-114.3
3	2	0.45	bal	- 110	-117.3
3	2	0.45	unb	- 110	-117.5
1	1	0.45	unb	- 110	-114.9
10	10	1.00	bal	- 110	-126.3
3	2	1.00	bal	- 110	-127.5
3	2	1.00	unb	- 110	-129.2
1	1	1.00	unb	- 110	-126.0
10	10	3.00	bal	- 110	-118.2
3	2	3.00	bal	- 110	-120.6
3	2	3.00	unb	- 110	-122.6
1	1	3.00	unb	- 110	-118.6
10	10	7.00	bal	- 110	-117.2
3	2	7.00	bal	- 110	-117.5
3	2	7.00	unb	- 110	-117.9
1	1	7.00	unb	- 110	-116.0

Self Distortion THD Analyzer 110 kHz Channel 1

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Range [V]	U_in [V]	Freq [kHz]	OutType	Dul [dB]	act [dB]
10	10	0.05	bal	- 100	-115.6
3	2	0.05	bal	- 100	-111.2
3	2	0.05	unb	- 100	-111.0
1	1	0.05	unb	- 100	-112.2
10	10	0.10	bal	- 100	-117.0
3	2	0.10	bal	- 100	-108.7
3	2	0.10	unb	- 100	-109.7
1	1	0.10	unb	- 100	-115.3
10	10	0.45	bal	- 100	-114.4
3	2	0.45	bal	- 100	-115.3
3	2	0.45	unb	- 100	-112.5
1	1	0.45	unb	- 100	-114.1
10	10	1.00	bal	- 100	-116.1
3	2	1.00	bal	- 100	-115.3
3	2	1.00	unb	- 100	-112.5
1	1	1.00	unb	- 100	-118.5
10	10	3.00	bal	- 100	-113.9
3	2	3.00	bal	- 100	-112.5
3	2	3.00	unb	- 100	-115.3
1	1	3.00	unb	- 100	-115.3
10	10	7.00	bal	- 100	-112.8
3	2	7.00	bal	- 100	-111.4
3	2	7.00	unb	- 100	-112.8
1	1	7.00	unb	- 100	-112.2
10	10	22.00	bal	- 100	-105.7
3	2	22.00	bal	- 100	-108.3
3	2	22.00	unb	- 100	-106.1
1	1	22.00	unb	- 100	-106.0

Self Distortion THD Analyzer 110 kHz Channel 2

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Range [V]	U_in [V]	Freq [kHz]	OutType	Dul [dB]	act [dB]
10	10	1.00	bal	- 100	-120.2
3	2	1.00	bal	- 100	-114.1
3	2	1.00	unb	- 100	-116.0
1	1	1.00	unb	- 100	-117.6
10	10	22.00	bal	- 100	-104.1
3	2	22.00	bal	- 100	-107.5
3	2	22.00	unb	- 100	-106.9
1	1	22.00	unb	- 100	-103.3

THD+N Self Distortion 22 kHz Analyzer Channel 1

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Bandwidth 20 Hz - 21.9 kHz

Range [V]	U_in [V]	Freq [kHz]	Dul [dB]	act [dB]
10	10	0.02	- 104	-111.1
6	3	0.02	- 99	-102.5
3	2	0.02	- 101	-111.4
1	1	0.02	- 104	-107.9
10	10	0.05	- 104	-111.9
6	3	0.05	- 99	-102.6
3	2	0.05	- 101	-111.9
1	1	0.05	- 104	-108.9
10	10	0.10	- 104	-112.0
6	3	0.10	- 99	-102.6
3	2	0.10	- 101	-112.5
1	1	0.10	- 104	-108.8
10	10	0.45	- 104	-110.1
6	3	0.45	- 99	-102.5
3	2	0.45	- 101	-111.3
1	1	0.45	- 104	-108.0
10	10	1.00	- 104	-111.4
6	3	1.00	- 99	-102.6
3	2	1.00	- 101	-111.7
1	1	1.00	- 104	-108.5
10	10	3.00	- 104	-108.0
6	3	3.00	- 99	-102.1
3	2	3.00	- 101	-108.0
1	1	3.00	- 104	-106.8
10	10	7.00	- 104	-107.7
6	3	7.00	- 99	-102.1
3	2	7.00	- 101	-107.2
1	1	7.00	- 104	-106.8
10	10	20.00	- 104	-108.4
6	3	20.00	- 99	-102.6
3	2	20.00	- 101	-107.5
1	1	20.00	- 104	-106.8

THD+N Self Distortion 22 kHz Analyzer Channel 2

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Bandwidth 20 Hz - 21.9 kHz

Range [V]	U_in [V]	Freq [kHz]	Dul [dB]	act [dB]
10	10	0.02	- 104	-110.8
6	3	0.02	- 99	-102.3
3	2	0.02	- 101	-111.2
1	1	0.02	- 104	-108.0
10	10	0.05	- 104	-111.4
6	3	0.05	- 99	-102.5
3	2	0.05	- 101	-112.5
1	1	0.05	- 104	-108.8
10	10	0.10	- 104	-111.9
6	3	0.10	- 99	-102.3
3	2	0.10	- 101	-112.5
1	1	0.10	- 104	-109.0
10	10	0.45	- 104	-110.2
6	3	0.45	- 99	-102.4
3	2	0.45	- 101	-111.5
1	1	0.45	- 104	-108.1
10	10	1.00	- 104	-111.5
6	3	1.00	- 99	-102.4
3	2	1.00	- 101	-111.8
1	1	1.00	- 104	-108.7
10	10	3.00	- 104	-107.9
6	3	3.00	- 99	-102.1
3	2	3.00	- 101	-108.5
1	1	3.00	- 104	-106.6
10	10	7.00	- 104	-108.0
6	3	7.00	- 99	-102.2
3	2	7.00	- 101	-107.5
1	1	7.00	- 104	-106.8
10	10	20.00	- 104	-108.1
6	3	20.00	- 99	-102.6
3	2	20.00	- 101	-107.9
1	1	20.00	- 104	-106.8

THD+N Self Distortion 110 kHz Analyzer Channel 1

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Bandwidth 200 Hz - 20 kHz

Range [V]	U_in [V]	Freq [kHz]	Dul [dB]	act [dB]
10	10	0.50	- 97	-108.4
6	3	0.50	- 91	-100.6
3	2	0.50	- 94	-106.3
1	1	0.50	- 97	-106.9
10	10	1.00	- 97	-108.3
6	3	1.00	- 91	-100.8
3	2	1.00	- 94	-106.0
1	1	1.00	- 97	-106.9
10	10	7.00	- 97	-106.4
6	3	7.00	- 91	-100.6
3	2	7.00	- 94	-104.5
1	1	7.00	- 97	-105.1
10	10	22.00	- 97	-106.2
6	3	22.00	- 91	-101.2
3	2	22.00	- 94	-105.0
1	1	22.00	- 97	-105.6

THD+N Self Distortion 110 kHz Analyzer Channel 2

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Bandwidth 200 Hz - 20 kHz

Range [V]	U_in [V]	Freq [kHz]	Dul [dB]	act [dB]
10	10	1.00	- 97	-108.9
6	3	1.00	- 91	-101.0
3	2	1.00	- 94	-106.4
1	1	1.00	- 97	-107.3
10	10	22.00	- 97	-106.5
6	3	22.00	- 91	-101.0
3	2	22.00	- 94	-104.8
1	1	22.00	- 97	-105.8

THD+N Self Distortion 110 kHz Analyzer Channel 1

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Bandwidth 200 Hz - 110 kHz

Range [V]	U_in [V]	Freq [kHz]	Dul [dB]	act [dB]
10	10	0.50	- 90	-102.7
6	3	0.50	- 84	-94.9
3	2	0.50	- 87	-100.2
1	1	0.50	- 90	-100.5
10	10	1.00	- 90	-102.8
6	3	1.00	- 84	-94.7
3	2	1.00	- 87	-100.1
1	1	1.00	- 90	-100.6
10	10	7.00	- 90	-102.0
6	3	7.00	- 84	-94.6
3	2	7.00	- 87	-99.6
1	1	7.00	- 90	-100.3
10	10	22.00	- 90	-100.2
6	3	22.00	- 84	-94.7
3	2	22.00	- 87	-98.7
1	1	22.00	- 90	-99.6

THD+N Self Distortion 110 kHz Analyzer Channel 2

Total inherent distortion of analyzer and generator together as specified in datasheet. Therefore no measurement uncertainty can be fixed.

Bandwidth 200 Hz - 110 kHz

Range [V]	U_in [V]	Freq [kHz]	Dul [dB]	act [dB]
10	10	1.00	- 90	-102.7
6	3	1.00	- 84	-94.9
3	2	1.00	- 87	-100.2
1	1	1.00	- 90	-100.5
10	10	22.00	- 90	-99.6
6	3	22.00	- 84	-94.4
3	2	22.00	- 87	-98.7
1	1	22.00	- 90	-99.6

THD+N Measurement Accuracy

Channel 1

Dyn Mode	nominal [dB]	DL [dB]	act [dB]	MU [dB]
Precision	- 40	+/-0.5	-0.11	0.01
FAST rej. NARROW	- 40	+/-0.5	0.01	0.01
FAST rej. WIDE	- 40	+/-0.5	-0.08	0.01

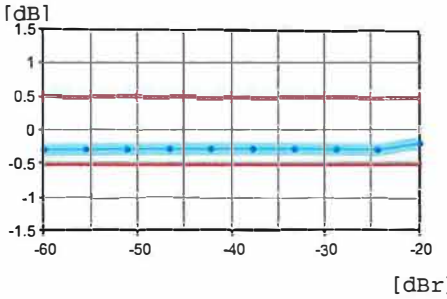
Channel 2

Dyn Mode	nominal [dB]	DL [dB]	act [dB]	MU [dB]
Precision	- 40	+/-0.5	-0.11	0.01
FAST rej. NARROW	- 40	+/-0.5	0.01	0.01
FAST rej. WIDE	- 40	+/-0.5	-0.08	0.01

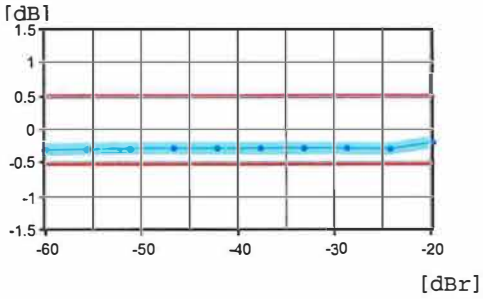
Measurement Accuracy THD >= -60 dB Analyzer 22 kHz Channel 1/2

Range 3 V / reference of subharmonics 2V
Measurement 9 kHz / K2

Channel 1



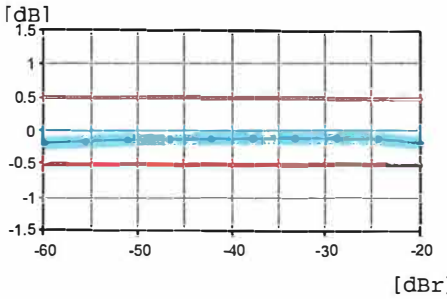
Channel 2



Measurement Accuracy THD >= -60 dB Analyzer 110 kHz

Measurement 22 kHz / K2

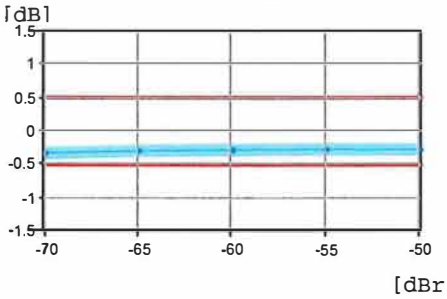
Channel 1



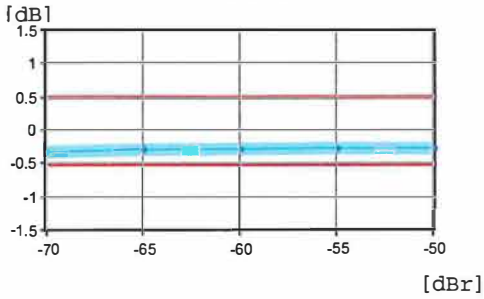
Measurement Accuracy THD < -60 dB Analyzer 22 kHz Channel 1/2

Range 3 V / Reference of subharmonics 2V
Measurement 9 kHz / K2

Channel 1

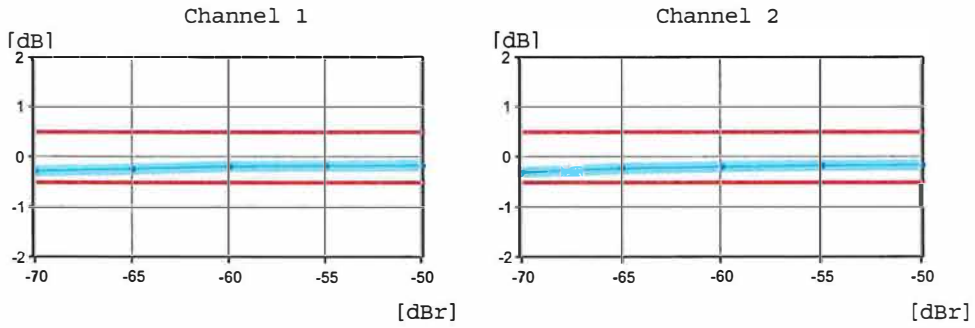


Channel 2



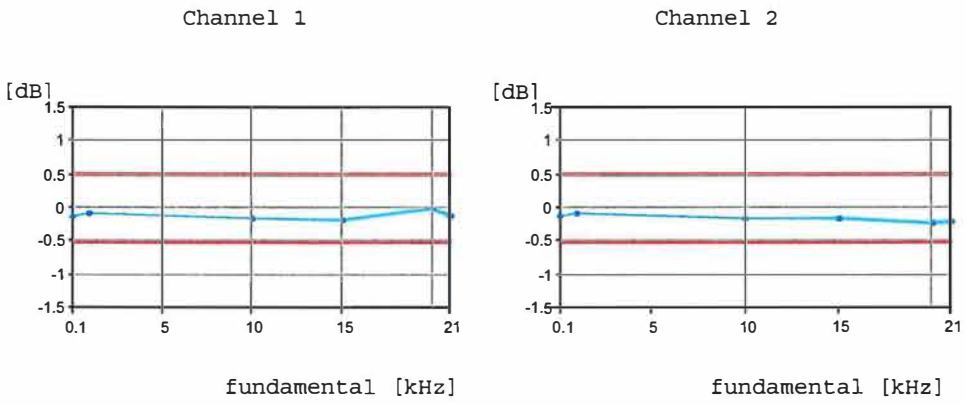
Measurement Accuracy THD < -60 dB Analyzer 110 kHz Channel 1/2

Measurement 21 kHz / K2



22. Testing Notchfilter Channel 1/2

Nominal = -60 dB / K2



23. Analyzer: MOD DIST

Mod Dist Self Distortion Analyzer 22 kHz Channel 1

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Level [Veff]	F-hf [kHz]	F-nf [Hz]	Dul [dB]	act [dB]
5	4	30	- 90	-106.0
5	4	200	- 96	-107.7
5	4	500	- 96	-109.8
5	7	30	- 90	-103.1
5	7	200	- 96	-108.1
5	7	500	- 96	-107.2
5	15	30	- 85	-98.6
5	15	200	- 96	-101.9
5	15	500	- 96	-100.7
5	20	60	- 85	-94.0
5	20	200	- 96	-99.2
5	20	500	- 96	-99.8

3	4	30	- 90	-102.4
3	4	200	- 96	-109.5
3	4	500	- 96	-115.7
3	7	30	- 90	-103.9
3	7	200	- 96	-109.1
3	7	500	- 96	-110.8
3	15	30	- 85	-94.4
3	15	200	- 96	-102.8
3	15	500	- 96	-106.1
3	20	60	- 85	-98.7
3	20	200	- 96	-106.5
3	20	500	- 96	-102.7

Mod Dist Self Distortion Analyzer 22 kHz Channel 2

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Level [Veff]	F-hf [kHz]	F-nf [Hz]	Dul [dB]	act [dB]
5	4	30	- 90	-99.1
5	4	200	- 96	-99.3
5	4	500	- 96	-98.9
5	7	30	- 90	-98.5
5	7	200	- 96	-99.5
5	7	500	- 96	-100.0
5	15	30	- 85	-94.7
5	15	200	- 96	-97.8
5	15	500	- 96	-97.2
5	20	60	- 85	-96.4
5	20	200	- 96	-97.2
5	20	500	- 96	-96.5
3	4	30	- 90	-109.1
3	4	200	- 96	-111.6
3	4	500	- 96	-111.3
3	7	30	- 90	-102.8
3	7	200	- 96	-109.4
3	7	500	- 96	-110.4
3	15	30	- 85	-94.4
3	15	200	- 96	-106.3
3	15	500	- 96	-105.5
3	20	60	- 85	-99.9
3	20	200	- 96	-104.3
3	20	500	- 96	-102.7

Mod Dist Self Distortion Analyzer 110 kHz Channel 1

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Level [Veff]	F-hf [kHz]	F-nf [Hz]	Dul [dB]	act [dB]
5	4	200	- 80	-99.5
5	4	500	- 80	-98.6
5	7	200	- 80	-100.4
5	7	500	- 80	-93.3
5	20	200	- 80	-94.6
5	20	500	- 80	-96.3
5	50	200	- 80	-89.8
5	50	500	- 80	-90.6
5	100	200	- 80	-89.5
5	100	500	- 80	-87.8

3	4	200	- 80	-99.2
3	4	500	- 80	-100.3
3	7	200	- 80	-100.4
3	7	500	- 80	-100.4
3	20	200	- 80	-95.5
3	20	500	- 80	-95.8
3	50	200	- 80	-91.6
3	50	500	- 80	-92.4
3	100	200	- 80	-89.3
3	100	500	- 80	-90.7

Mod Dist Self Distortion Analyzer 110 kHz Channel 2

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Level [Veff]	F-hf [kHz]	F-nf [Hz]	Dul [dB]	act [dB]
5	4	200	- 80	-99.1
5	4	500	- 80	-96.4
5	7	200	- 80	-98.4
5	7	500	- 80	-95.7
5	20	200	- 80	-94.9
5	20	500	- 80	-93.1
5	50	200	- 80	-88.5
5	50	500	- 80	-90.6
5	100	200	- 80	-83.9
5	100	500	- 80	-86.0
3	4	200	- 80	-98.6
3	4	500	- 80	-98.4
3	7	200	- 80	-98.6
3	7	500	- 80	-96.7
3	20	200	- 80	-99.2
3	20	500	- 80	-96.8
3	50	200	- 80	-90.7
3	50	500	- 80	-96.3
3	100	200	- 80	-87.4
3	100	500	- 80	-89.5

Measurement Accuracy MOD DIST >= - 60 dB Analyzer 22 kHz

Level reference = f_hf with 0.7 V
Unit of interfering frequencies U3-U6 = dBr related to f_hf

interfering frequencies :

U3 f_hf-2*f_nf
U4 f_hf-f_nf
U5 f_hf+f_nf
U6 f_hf+2*f_nf

Channel 1

f_Hf [kHz]	f_nf [Hz]	U3	U4	U5	U6	nom [dB]	DL [dB]	act[dB]	MU [dB]
4	500	-140	-140	- 60	-140	-60	+/-0.50	0.01	0.05
7	60	-140	- 66	- 66	-140	-60	+/-0.50	0.03	0.05
15	200	- 60	- 60	- 60	- 60	-51	+/-0.50	0.03	0.10

Channel 2

f_Hf [kHz]	f_nf [Hz]	U3	U4	U5	U6	nom [dB]	DL [dB]	act[dB]	MU [dB]
4	500	-140	-140	- 60	-140	-60	+/-0.50	0.03	0.05
7	60	-140	- 66	- 66	-140	-60	+/-0.50	0.02	0.05
15	200	- 60	- 60	- 60	- 60	-51	+/-0.50	0.05	0.10

Measurement Accuracy MOD DIST >= -60 dB Analyzer 110 kHz

Level reference = f_hf with 0.7 V
Units of interfering frequencies U3-U6 = dBr related to f_hf

interfering frequencies:

U3 f_hf-2*f_nf
U4 f_hf-f_nf
U5 f_hf+f_nf
U6 f_hf+2*f_nf

Channel 1

f_Hf [kHz]	f_nf [Hz]	U3	U4	U5	U6	nom [dB]	DL [dB]	act[dB]	MU[dB]
4	500	- 20	-140	-140	-140	-20	+/-0.50	0.01	0.05
7	200	- 60	- 60	- 60	- 60	-51	+/-0.50	0.03	0.05
15	300	-140	-140	- 60	-140	-60	+/-1.00	0.07	0.05
20	500	-140	-140	-140	- 38	-38	+/-0.50	0.03	0.05
50	400	- 30	- 30	-140	-140	-27	+/-0.75	0.02	0.12
75	500	- 50	-140	-140	- 50	-44	+/-0.75	0.03	0.23

Channel 2

f_Hf [kHz]	f_nf [Hz]	U3	U4	U5	U6	nom [dB]	DL [dB]	act[dB]	MU [dB]
4	500	- 20	-140	-140	-140	-20	+/-0.50	0.01	0.05
7	200	- 60	- 60	- 60	- 60	-51	+/-0.50	0.04	0.05
15	300	-140	-140	- 60	-140	-60	+/-1.00	0.03	0.05
20	500	-140	-140	-140	- 38	-38	+/-0.50	0.02	0.05
50	400	- 30	- 30	-140	-140	-27	+/-0.75	0.02	0.12
75	500	- 50	-140	-140	- 50	-44	+/-0.75	0.01	0.23

Measurement Accuracy MODDIST <-60 dB Analyzer 22 kHz

Level reference = f_hf with 0.7 V
Units of interfering frequencies U3-U6 = dBr related to f_hf

interfering frequencies :

U3 f_hf-2*f_nf
U4 f_hf-f_nf
U5 f_hf+f_nf
U6 f_hf+2*f_nf

Channel 1

f_Hf [kHz]	f_nf [Hz]	U3	U4	U5	U6	nom [dB]	DL [dB]	act [dB]	MU [dB]
4	500	+ 20	-140	-140	-140	-40	+/-0.5	0.16	0.05
4	500	- 0	-140	-140	-140	-60	+/-0.5	0.13	0.05
4	500	- 10	-140	-140	-140	-70	+/-0.5	0.13	0.07
4	500	- 20	-140	-140	-140	-80	+/-1.0	0.18	0.10
4	500	- 23	- 23	-140	-140	-80	+/-1.0	0.32	0.10
7	60	- 14	- 20	- 20	-140	-71	+/-0.5	0.20	0.10
15	200	- 20	- 20	- 20	- 20	-71	+/-0.5	0.14	0.10
20	500	-140	-140	-140	- 10	-70	+/-0.5	0.23	0.07

Channel 2

f_Hf [kHz]	f_nf [Hz]	U3	U4	U5	U6	nom [dB]	DL [dB]	act [dB]	MU [dB]
4	500	+ 20	-140	-140	-140	-40	+/-0.5	0.16	0.05
4	500	- 0	-140	-140	-140	-60	+/-0.5	0.12	0.05
4	500	- 10	-140	-140	-140	-70	+/-0.5	0.12	0.07
4	500	- 20	-140	-140	-140	-80	+/-1.0	0.27	0.10
4	500	- 23	- 23	-140	-140	-80	+/-1.0	0.27	0.10
7	60	- 14	- 20	- 20	-140	-71	+/-0.5	0.20	0.10
15	200	- 20	- 20	- 20	- 20	-71	+/-0.5	0.15	0.10
20	500	-140	-140	-140	- 10	-70	+/-0.5	0.23	0.07

24. Analyzer: DFD

Self Distortion DFD d2 Analyzer 22 kHz Channel 1

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Ueff [V]	Meanfreq [kHz]	Difffreq [Hz]	Dul [dB]	act [dB]
4	7	80	- 112	-134.5
4	7	225	- 112	-125.8
4	7	525	- 112	-133.0
4	7	975	- 112	-135.8
4	7	2000	- 112	-130.2
4	15	80	- 112	-127.0
4	15	225	- 112	-126.2
4	15	525	- 112	-127.6
4	15	975	- 112	-129.0
4	15	2000	- 112	-128.1
4	20	80	- 112	-122.7
4	20	225	- 112	-124.4
4	20	525	- 112	-124.6
4	20	975	- 112	-123.6
4	20	2000	- 112	-123.2
2.3	7	80	- 112	-123.1
2.3	7	225	- 112	-123.8
2.3	7	525	- 112	-127.3
2.3	7	975	- 112	-127.8
2.3	7	2000	- 112	-125.2
2.3	15	80	- 112	-117.7
2.3	15	225	- 112	-118.6
2.3	15	525	- 112	-117.5
2.3	15	975	- 112	-118.4
2.3	15	2000	- 112	-117.8
2.3	20	80	- 112	-113.0
2.3	20	225	- 112	-113.5
2.3	20	525	- 112	-113.9
2.3	20	975	- 112	-113.7
2.3	20	2000	- 112	-113.6

Self Distortion DFD d2 Analyzer 22 kHz Channel 2

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Ueff [V]	Meanfreq [kHz]	Difffreq [Hz]	Dul [dB]	act [dB]
4	7	80	- 112	-133.6
4	7	225	- 112	-128.6
4	7	525	- 112	-135.6
4	7	975	- 112	-137.3
4	7	2000	- 112	-128.1
4	15	80	- 112	-128.5
4	15	225	- 112	-127.8
4	15	525	- 112	-137.2
4	15	975	- 112	-134.5
4	15	2000	- 112	-135.0
4	20	80	- 112	-126.3
4	20	225	- 112	-125.5
4	20	525	- 112	-129.4
4	20	975	- 112	-129.8
4	20	2000	- 112	-129.7

2.3	7	80	- 112	-135.9
2.3	7	225	- 112	-126.4
2.3	7	525	- 112	-135.9
2.3	7	975	- 112	-137.4
2.3	7	2000	- 112	-137.2
2.3	15	80	- 112	-123.3
2.3	15	225	- 112	-122.3
2.3	15	525	- 112	-122.5
2.3	15	975	- 112	-123.6
2.3	15	2000	- 112	-122.3
2.3	20	80	- 112	-116.8
2.3	20	225	- 112	-117.5
2.3	20	525	- 112	-116.8
2.3	20	975	- 112	-117.1
2.3	20	2000	- 112	-116.0

Self Distortion DFD d2 Analyzer 110 kHz Channel 1

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Ueff [V]	Meanfreq [kHz]	Difffreq [Hz]	Dul [dB]	act [dB]
4	7	225	- 110	-118.8
4	7	525	- 110	-127.5
4	7	975	- 110	-131.4
4	7	2000	- 110	-120.1
4	20	225	- 110	-121.0
4	20	525	- 110	-119.3
4	20	975	- 110	-119.4
4	20	2000	- 110	-117.2
4	50	225	- 95	-108.5
4	50	525	- 95	-108.5
4	50	975	- 95	-108.2
4	50	2000	- 95	-109.0
4	100	225	- 80	-97.5
4	100	525	- 80	-97.5
4	100	975	- 80	-97.6
4	100	2000	- 80	-97.3
2.3	7	225	- 110	-119.0
2.3	7	525	- 110	-126.2
2.3	7	975	- 110	-126.3
2.3	7	2000	- 110	-121.9
2.3	20	225	- 110	-111.2
2.3	20	525	- 110	-112.3
2.3	20	975	- 110	-112.0
2.3	20	2000	- 110	-115.4
2.3	50	225	- 95	-98.5
2.3	50	525	- 95	-98.5
2.3	50	975	- 95	-98.5
2.3	50	2000	- 95	-98.6
2.3	100	225	- 80	-86.8
2.3	100	525	- 80	-86.8
2.3	100	975	- 80	-86.9
2.3	100	2000	- 80	-86.9

Self Distortion DFD d2 Analyzer 110 kHz Channel 2

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Ueff [V]	Meanfreq [kHz]	Difffreq [Hz]	Dul [dB]	act [dB]
4	7	225	- 110	-121.1
4	7	525	- 110	-128.9
4	7	975	- 110	-130.5
4	7	2000	- 110	-126.6
4	20	225	- 110	-117.1
4	20	525	- 110	-123.1
4	20	975	- 110	-124.7
4	20	2000	- 110	-122.3
4	50	225	- 95	-109.7
4	50	525	- 95	-109.8
4	50	975	- 95	-110.6
4	50	2000	- 95	-111.5
4	100	225	- 80	-98.9
4	100	525	- 80	-98.7
4	100	975	- 80	-99.0
4	100	2000	- 80	-99.1
2.3	7	225	- 110	-114.1
2.3	7	525	- 110	-125.2
2.3	7	975	- 110	-127.9
2.3	7	2000	- 110	-127.2
2.3	20	225	- 110	-117.4
2.3	20	525	- 110	-115.7
2.3	20	975	- 110	-114.7
2.3	20	2000	- 110	-116.1
2.3	50	225	- 95	-100.0
2.3	50	525	- 95	-100.0
2.3	50	975	- 95	-100.2
2.3	50	2000	- 95	-100.3
2.3	100	225	- 80	-88.1
2.3	100	525	- 80	-88.1
2.3	100	975	- 80	-88.2
2.3	100	2000	- 80	-88.2

Self Distortion DFD d3 Analyzer 22 kHz Channel 1

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Ueff [V]	Meanfreq [kHz]	Difffreq [Hz]	Dul [dB]	act [dB]
4.0	7	80	- 96	-114.6
4.0	7	225	- 96	-116.7
4.0	7	525	- 96	-118.4
4.0	7	975	- 96	-122.5
4.0	7	2000	- 96	-119.5
4.0	15	225	- 96	-111.1
4.0	15	525	- 96	-114.6
4.0	15	975	- 96	-118.3
4.0	15	2000	- 96	-119.9
4.0	20	225	- 96	-108.4
4.0	20	525	- 96	-112.1
4.0	20	975	- 96	-114.5
4.0	20	2000	- 96	-118.2

2.0	7	80	- 96	-113.1
2.0	7	225	- 96	-117.9
2.0	7	525	- 96	-117.9
2.0	7	975	- 96	-118.6
2.0	7	2000	- 96	-119.6
2.0	15	225	- 96	-111.8
2.0	15	525	- 96	-118.6
2.0	15	975	- 96	-117.1
2.0	15	2000	- 96	-120.3
2.0	20	225	- 96	-109.1
2.0	20	525	- 96	-116.0
2.0	20	975	- 96	-111.8
2.0	20	2000	- 96	-114.9

Self Distortion DFD d3 Analyzer 22 kHz Channel 2

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Ueff [V]	Meanfreq [kHz]	Difffreq [Hz]	Dul [dB]	act [dB]
4.0	7	80	- 96	-117.4
4.0	7	225	- 96	-115.9
4.0	7	525	- 96	-118.5
4.0	7	975	- 96	-117.2
4.0	7	2000	- 96	-119.3
4.0	15	225	- 96	-111.4
4.0	15	525	- 96	-119.0
4.0	15	975	- 96	-116.1
4.0	15	2000	- 96	-117.3
4.0	20	225	- 96	-108.9
4.0	20	525	- 96	-113.0
4.0	20	975	- 96	-112.7
4.0	20	2000	- 96	-112.5
2.0	7	80	- 96	-112.9
2.0	7	225	- 96	-114.0
2.0	7	525	- 96	-118.7
2.0	7	975	- 96	-121.9
2.0	7	2000	- 96	-114.9
2.0	15	225	- 96	-114.8
2.0	15	525	- 96	-114.5
2.0	15	975	- 96	-117.2
2.0	15	2000	- 96	-119.3
2.0	20	225	- 96	-110.4
2.0	20	525	- 96	-115.4
2.0	20	975	- 96	-113.0
2.0	20	2000	- 96	-112.8

Self Distortion DFD d3 Analyzer 110 kHz Channel 1

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Ueff [V]	Meanfreq [kHz]	Difffreq [Hz]	Dul [dB]	act [dB]
4.0	7	225	- 80	-93.2
4.0	7	525	- 80	-91.5
4.0	7	975	- 80	-92.2
4.0	7	2000	- 80	-90.8
4.0	20	225	- 80	-94.7
4.0	20	525	- 80	-93.8
4.0	20	975	- 80	-93.4
4.0	20	2000	- 80	-95.3
4.0	50	225	- 75	-97.3
4.0	50	525	- 75	-93.3
4.0	50	975	- 75	-92.3
4.0	50	2000	- 75	-93.2
4.0	100	225	- 70	-76.7
4.0	100	525	- 70	-76.3
4.0	100	975	- 70	-76.6
4.0	100	2000	- 70	-76.7
2.0	7	225	- 80	-93.0
2.0	7	525	- 80	-90.2
2.0	7	975	- 80	-90.8
2.0	7	2000	- 80	-92.3
2.0	20	225	- 80	-91.2
2.0	20	525	- 80	-92.7
2.0	20	975	- 80	-91.8
2.0	20	2000	- 80	-92.1
2.0	50	225	- 75	-90.2
2.0	50	525	- 75	-91.8
2.0	50	975	- 75	-92.2
2.0	50	2000	- 75	-92.2
2.0	100	225	- 70	-79.3
2.0	100	525	- 70	-78.7
2.0	100	975	- 70	-79.0
2.0	100	2000	- 70	-78.7

Self Distortion DFD d3 Analyzer 110 kHz Channel 2

Uncertainty can not be fixed.
Because the reference signal is generated by two low distortion generators. Both generators are sufficiently uncoupled by the resistance network. An inherent distortion can be excluded.

Ueff [V]	Meanfreq [kHz]	Difffreq [Hz]	Dul [dB]	act [dB]
4.0	7	225	- 80	-93.6
4.0	7	525	- 80	-95.4
4.0	7	975	- 80	-93.1
4.0	7	2000	- 80	-93.5
4.0	20	225	- 80	-93.3
4.0	20	525	- 80	-94.6
4.0	20	975	- 80	-93.1
4.0	20	2000	- 80	-94.5
4.0	50	225	- 75	-90.3
4.0	50	525	- 75	-93.0
4.0	50	975	- 75	-96.4
4.0	50	2000	- 75	-93.5
4.0	100	225	- 70	-77.2
4.0	100	525	- 70	-76.5
4.0	100	975	- 70	-76.1
4.0	100	2000	- 70	-76.7

2.0	7	225	- 80	-90.5
2.0	7	525	- 80	-93.8
2.0	7	975	- 80	-91.7
2.0	7	2000	- 80	-92.6
2.0	20	225	- 80	-92.2
2.0	20	525	- 80	-95.2
2.0	20	975	- 80	-93.2
2.0	20	2000	- 80	-90.0
2.0	50	225	- 75	-93.6
2.0	50	525	- 75	-91.3
2.0	50	975	- 75	-91.4
2.0	50	2000	- 75	-91.5
2.0	100	225	- 70	-78.9
2.0	100	525	- 70	-78.2
2.0	100	975	- 70	-78.4
2.0	100	2000	- 70	-78.5

Measurement Accuracy DFD d2 (Analyzer 22 kHz)

Channel 1

MeanFreq [kHz]	DiffFreq [Hz]	U3	nom [dB]	DL [dB]	act[dB]	MU [dB]
7	400	- 20	- 20	+/-0.50	-0.02	0.02
7	400	- 50	- 50	+/-0.50	-0.07	0.03
7	400	- 60	- 60	+/-0.50	-0.06	0.09

Channel 2

MeanFreq [kHz]	DiffFreq [Hz]	U3	nom [dB]	DL [dB]	act[dB]	MU [dB]
7	400	- 20	- 20	+/-0.50	-0.02	0.02
7	400	- 50	- 50	+/-0.50	-0.08	0.03
7	400	- 60	- 60	+/-0.50	-0.07	0.09

Measurement Accuracy DFD d2 (Analyzer 110 kHz)

Channel 1

MeanFreq [kHz]	DiffFreq [Hz]	U3	nom [dB]	DL [dB]	act[dB]	MU [dB]
5	200	- 40	- 40	+/-0.50	-0.02	0.05
20	300	- 60	- 60	+/-0.50	-0.04	0.05
50	500	- 50	- 50	+/-1.00	-0.09	0.05
75	1000	- 60	- 60	+/-1.00	0.05	0.15
75	2000	- 60	- 60	+/-1.00	0.04	0.15

Channel 2

MeanFreq [kHz]	DiffFreq [Hz]	U3	nom [dB]	DL [dB]	act[dB]	MU [dB]
5	200	- 40	- 40	+/-0.50	-0.02	0.05
20	300	- 60	- 60	+/-0.50	-0.05	0.05
50	500	- 50	- 50	+/-1.00	-0.10	0.05
75	1000	- 60	- 60	+/-1.00	-0.01	0.15
75	2000	- 60	- 60	+/-1.00	-0.07	0.15

Measurement Accuracy DFD d3 (Analyzer 22 kHz)

Channel 1

MeanFreq [kHz]	DiffFreq [Hz]	U4	U5	nom [dB]	DL [dB]	act [dB]	MU [dB]
15	100	- 60	- 60	- 54	+/-0.50	0.01	0.01
15	200	- 40	-140	- 40	+/-0.50	-0.02	0.01
15	500	-140	- 60	- 60	+/-0.50	0.03	0.01
7	1000	- 20	- 60	- 20	+/-0.50	0.06	0.01
7	2000	- 60	- 60	- 54	+/-0.50	0.01	0.01

Channel 2

MeanFreq [kHz]	DiffFreq [Hz]	U4	U5	nom [dB]	DL [dB]	act [dB]	MU [dB]
15	100	- 60	- 60	- 54	+/-0.50	0.01	0.01
15	200	- 40	-140	- 40	+/-0.50	-0.02	0.01
15	500	-140	- 60	- 60	+/-0.50	0.03	0.01
7	1000	- 20	- 60	- 20	+/-0.50	0.06	0.01
7	2000	- 60	- 60	- 54	+/-0.50	0.01	0.01

Measurement Accuracy DFD d3 (Analyzer 110 kHz)

Channel 1

MeanFreq [kHz]	DiffFreq [Hz]	U4	U5	nom [dB]	DL [dB]	act [dB]	MU [dB]
7	2000	- 60	- 60	- 54	+/-0.75	-0.15	0.01
7	1000	- 20	-140	- 20	+/-0.75	-0.03	0.01
25	500	- 60	- 60	- 54	+/-0.75	-0.08	0.01
75	200	-140	- 40	- 40	+/-0.75	-0.01	0.01

Channel 2

MeanFreq [kHz]	DiffFreq [Hz]	U4	U5	nom [dB]	DL [dB]	act [dB]	MU [dB]
7	2000	- 60	- 60	- 54	+/-0.75	-0.16	0.01
7	1000	- 20	-140	- 20	+/-0.75	-0.03	0.01
25	500	- 60	- 60	- 54	+/-0.75	-0.16	0.01
75	200	-140	- 40	- 40	+/-0.75	-0.01	0.01

DFD d2 Low Pass (Analyzer 22 kHz)

11.4.1 DFD d2 Low Pass (Analyzer 22 kHz)

Channel 1

MeanFreq [kHz]	DiffFreq [Hz]	U3	nom [dB]	DL [dB]	act [dB]	MU [dB]
6.1	100	- 60	- 60	+/-0.50	0.08	0.01
15	200	- 60	- 60	+/-0.50	0.11	0.01
15	500	- 60	- 60	+/-0.50	0.10	0.01
15	1000	- 60	- 60	+/-0.50	0.04	0.01
15	2000	- 60	- 60	+/-0.50	0.03	0.01

Channel 2

MeanFreq [kHz]	DiffFreq [Hz]	U3	nom [dB]	DL [dB]	act [dB]	MU [dB]
6.1	100	- 60	- 60	+/-0.50	0.08	0.01
15	200	- 60	- 60	+/-0.50	0.11	0.01
15	500	- 60	- 60	+/-0.50	0.08	0.01
15	1000	- 60	- 60	+/-0.50	0.00	0.01
15	2000	- 60	- 60	+/-0.50	-0.08	0.01

25. B2/B29: Digital Audio

	nominal	actual
Functiontest	pass	pass

Digital Audio FFT

	nominal	actual
Functiontest FFT	pass	pass

26. Option UPL-B5

Function Test Speaker

Function Test Speaker

	nominal	act
	pass	pass

5.2.1 Output Switch / Output Selection

	nominal	act
	pass	pass

5.2.2 Signal switching

Signal source	nominal	actual
Input Ch1	pass	pass
Input Ch2	pass	pass
Input Ch1&2	pass	pass
Funct Ch1	pass	pass
Funct Ch2	pass	pass
Funct Ch1&2	pass	pass

5.2.3 Monitor switching — only possible with implemented option UPL-B29 and UPL-B5 Var03

Signal source	nominal	actual
Dig CH1&2	pass	

5.3 Measurement maximum values

	nom [V]	act [%]
Phone right	5.00	0.60
Phone left	5.00	0.75

5.4 Linearity (Volume Control)

Volume [%]	Channel	Ua nom. [V]	act [%]
10	right	0.50	7.47
25	"	1.25	7.28
50	"	2.50	7.29
75	"	3.75	7.35
100	"	5.00	7.36

Volume [%]	Channel	Ua nom. [V]	act [%]
10	left	0.50	7.56
25	"	1.25	7.40
50	"	2.50	7.42
75	"	3.75	7.51
100	"	5.00	7.52

5.7 Capture Range PLL

Sample Rate	nominal	act
27 kHz	pass	pass
41 kHz	pass	pass
55 kHz	pass	pass

LED Test

LED	Nominal	Actual
Start	pass	pass
Single	pass	pass
Remote	pass	pass
Gen On/Off	pass	pass