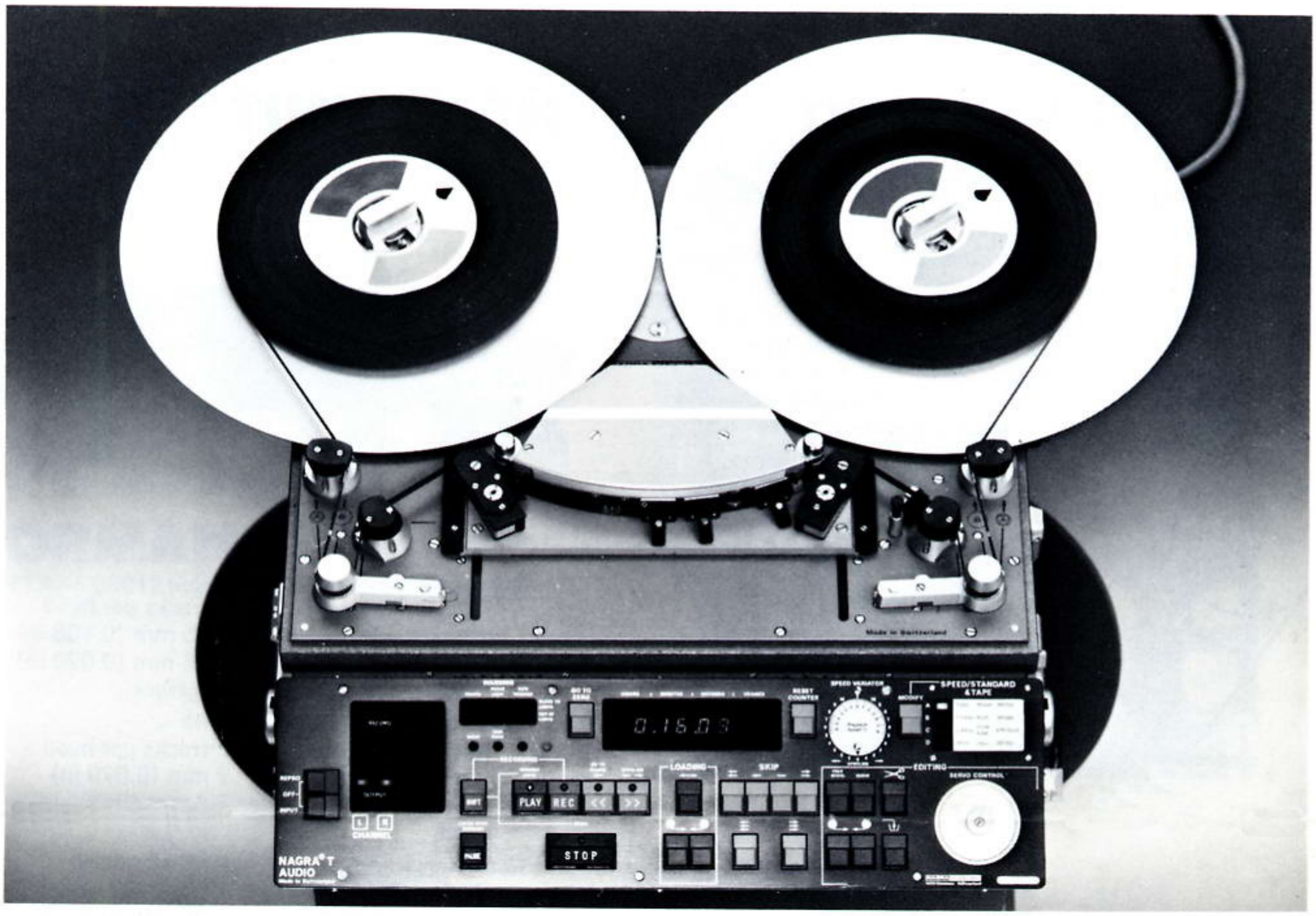
NAGRA T-Audio
transportable studio recorder



SPECIFICATIONS

The NAGRA T–Audio is a transportable studio recorder accepting tape reels up to 300 mm (11.8") either with NAB, AEG or cinema type hubs. It is specially designed for Time Code applications and includes a new wide band predistortion system covering the whole spectrum.

FEATURES

Tape transport Twin capstan open loop system ensuring very low wow and flutter and modulation noise.

Preset calibrations Direct access to four preadjusted recording calibrations in respect of speed, type of tape (bias) and standard.

Playback speed selection of four playback speeds with respect to standard (CCIR, NAB, NAGRAMASTER, AES)

Fast copying facilities at 30 ips.

Editing standard: – manual with free spools, bidirectionnal hand pull, dump and built–in cutter.
optional: – servo–controlled with automatic displacement of edit point to built–in cutter.

Remote control Detachable, individual control unit with full remote capabilities and access to all functions including counter by means of a 25 pin Cannon type connector.

Power supply AC/DC operation with very low power consumption.

Warning display two levels of alarm: close to limits, out of limits for: power (internal DC voltage supply), phase lock (servo–control of capstan motor speeds) and interhead tape tension.

Matrix display for "record" and "output" modes.

Tape counter time display, 5 digits (h.mm.ss.) bidirectional, 7 segment LED (8 digits for optional time code: hh.mm.ss.frames). Time indication corresponding to selected speed. Accuracy better than 0.1% at all speeds including spooling mode. Zero locator and reset push–button.

Optical clear tape sensor

Speed variator variable playback speed ± 6% and variable spooling speed 0 to 10 m/s in both directions.

Skip 3 speeds in both directions by non–latching switches: nominal speed and 2x nominal speed with listen facilities; fast winding speed without listen.

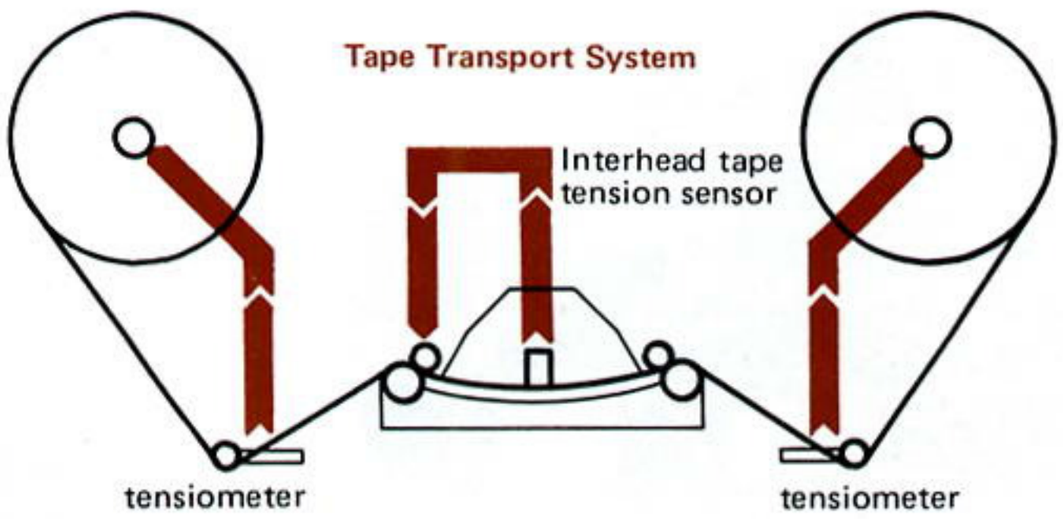
TAPE TRANSPORT

twin capstan open loop system with two servo–controlled capstan motors and interhead tape tension sensor.

Tape tension — two independent tape tension servo control loops, one between the two capstans and the other between spools and capstans.

between capstans 75 gr (internally adjustable)
between spool and capstan normally 75 gr.
max. tape tension 180 gr. when starting or stopping at fastest spooling speed.

Tape Transport System



Tape speeds	30 ips = 76.2 cm/s 15 ips = 38.1 cm/s 7½ ips = 19.05 cm/s 3¾ ips = 9.525 cm/s
Tape width	6.35 mm (1/4 in)
Tape thickness	from 25 µm to 50 µm (0.7 mil to 1.5 mil) without adjustment
Max. spool diameter	up to 180 mm (7") with lid up to 300 mm (11.8") without lid
Spool hub type	NAB – AEG – cinema

Speed accuracy < ± 0.05% (0.1%) from –20 to +70° C

Wow and Flutter

weighted peak flutter recording/playback system
IEE 193–1971 / ANSI S 4.3.1972 standards

30 ips :	⩽ ±0.015% (±0.025%)
15 ips :	⩽ ±0.02% (±0.027%)
7½ ips :	⩽ ±0.025% (±0.035%)
3¾ ips :	⩽ ±0.03% (±0.05%)

Start time

30 ips:	500 ms.
15 ips:	300 ms.
7½ ips:	250 ms.
3¾ ips:	200 ms.

Stop time

measured with 300 mm (11.8") full spool, IEC standard

from fastest speed to tape stationary	1.5 sec.
from 30 ips to tape stationary	0.5 sec.

Fast winding speed up to 10 m/s (730 m or 2'400ft : 100 s)

HEAD UNIT

Interchangeable head unit with erase, reference (optional) record and playback heads

Stereo head unit

Record/Playback	2 tracks per head
track width	2.75 mm (0.108 in)
inter-track distance	0.75 mm (0.029 in)
Erase	full track

Two–tracks head unit

Record/Playback	2 tracks per head
track width	2 mm (0.079 in)
inter-track distance	2.4 mm (0.095 in)
Erase	two tracks

(IEC standard)

Mono head unit

Record/Playback	1 track per head
track width	6.35 mm (0.25 in)
Erase	full track

RECORD-REPRODUCE

Inputs

symmetrical floating (isolated from chassis)

Impedance	> 10 kΩ
Nominal level 0 dB	≙ 390 mV to 4.4 V (internally switchable)
Clipping level	> +14 dB
Record calibration	mounted on plug–in cards (max. 4 per channel) operator adjustable and interchangeable

Outputs

symmetrical floating (isolated from chassis)

Load	200 Ω to ∞
Nominal level 0 dB	≙ 775 mV to 4.4 V (internally adjustable)
Max. output level	> +24 dBm
Output impedance	< 30 Ω

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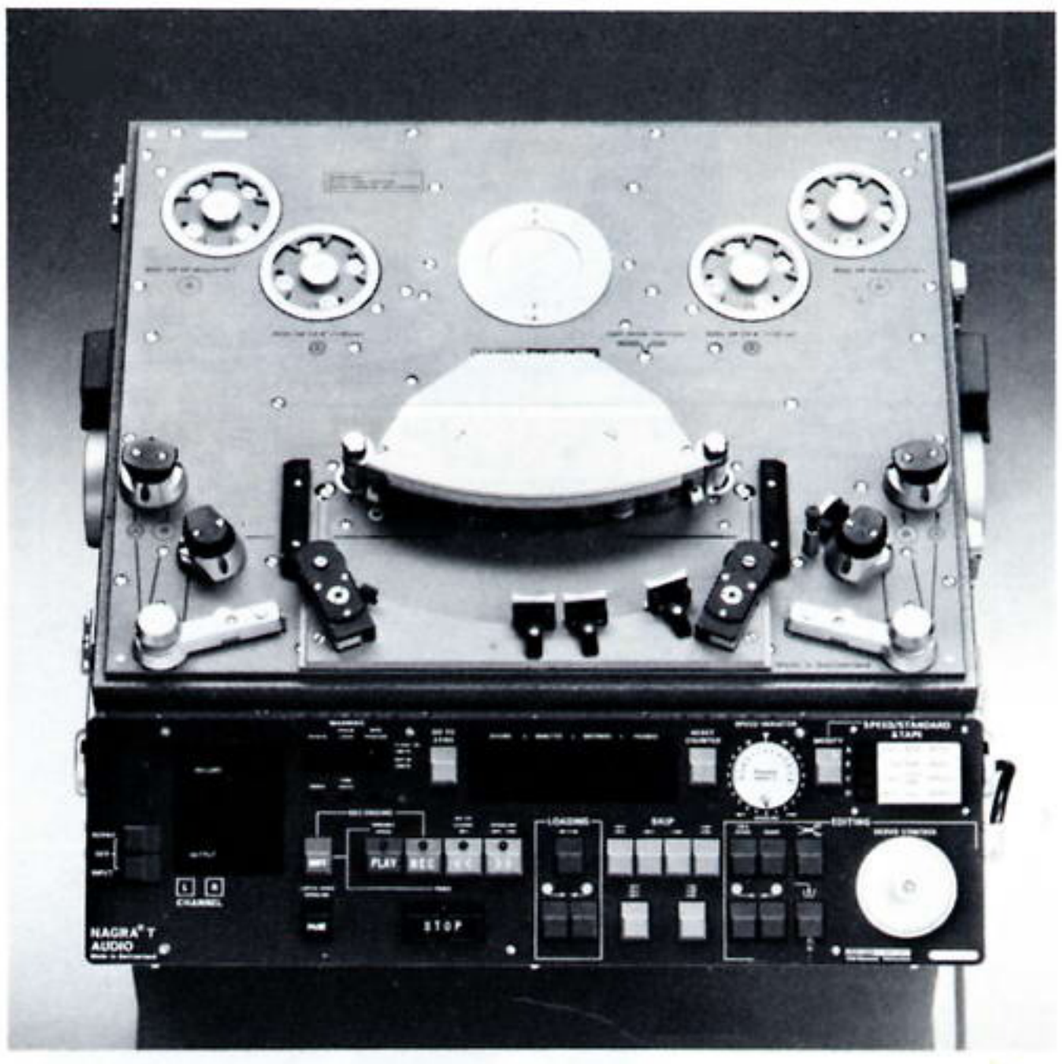
Erase

Frequency	256 kHz crystal–controlled
Efficiency	> 82 dB standard head > 90 dB special head

at max. peak level, 1250 Hz–1020 nWb/m

Bias

Frequency	256 kHz crystal–controlled



PERFORMANCE

Measured on NTA–S 09012 model, 6.35 mm (0.25 in) stereo version.

See also enclosed curves

Crosstalk

> 50 dB at 1 kHz
> 40 dB at 10 kHz

Frequency response

Test tapes	3M 250 for NAB standard 3M 256 for CCIR standard
15 ips CCIR / NAB	30 Hz to 20 kHz ±1 dB (±1.5 dB)
7½ ips CCIR / NAB	30 Hz to 15 kHz ±1.5 dB(± 2 dB)
Fast copying 30 ips	50 Hz to 60 kHz ± 1 dB (± 2dB)

tape tolerance not taken into account

Signal to noise ratio

RMS, ASA A weighted, reference signal at max. peak level (1020 nWb/m; *810 nWb/m)

	NAB	CCIR		
	3M 250	3M 256	SPR 50 LH	PEM 468
15 ips	73.5 dB	75 dB	76 dB	74.5 dB
7½ ips	73.5 dB	71 dB*	70 dB*	69.5 dB*
30 ips	AES		77.5 dB	
15 ips	Nagramaster		77.5 dB	

tape tolerance not taken into account

Distortion

measured at 160 Hz and 1600 Hz (1020 nWb/m) *(810 nWb/m)

	NAB		CCIR	
	H2	H3	H2	H3
15 ips	0.3%	0.7%	0.3%	0.7%
7½ ips	0.3%	1.0%	0.5%*	1.0%*

Tape used for test: NAB standard, 3M 250
CCIR standard, 3M 256, SPR 50 LH and PEM 468

GENERAL

Size (WxDxH)	
with 180 mm (7") reels and without control unit	400 x 335 x 238 mm
with 300 mm (11.8") spools and without control unit	610 x 420 x 250 mm
control unit	400 x 110 x 50 mm
Power supply	mains adaptor or 11 to 14 V DC
Power consumption	AC typ. 65 VA max. 85 VA DC typ. 40 W
Operating positions	any position
Operating temperature (tape limited)	–20 to + 70 °C (DC supply) –20 to + 50 °C (AC supply)

Note:
Unless otherwise stated all measurements made in accordance with IEC standard (publication 94–3, 1st ed. 1979) at 23 °C with 60 % humidity at ground level (600 m MSL).
All mentioned values are typical (average measured values), values between brackets are max. values (value below which or above which the machine is rejected when going through the final check procedure.

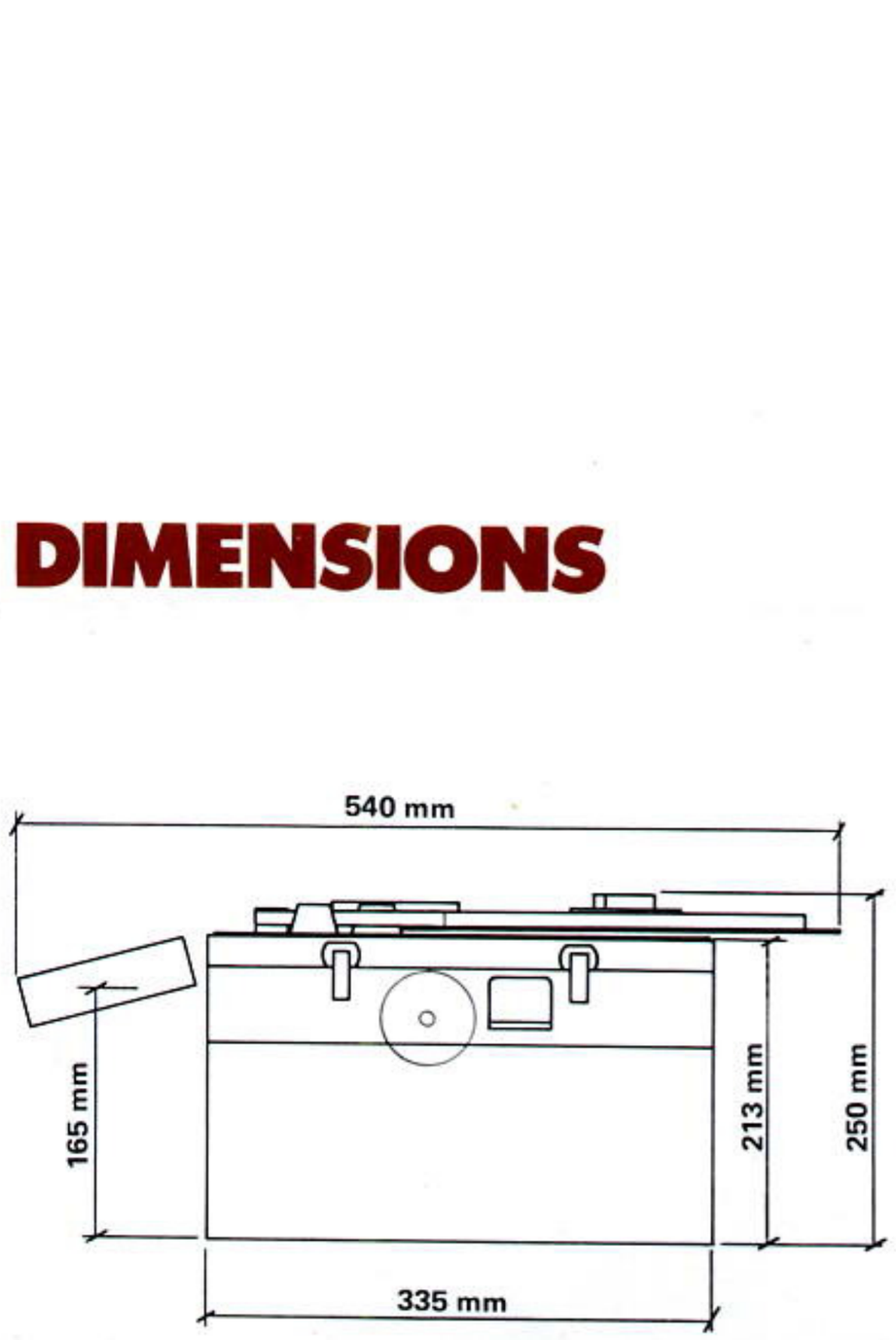
Revised specifications (provisional) February 1982

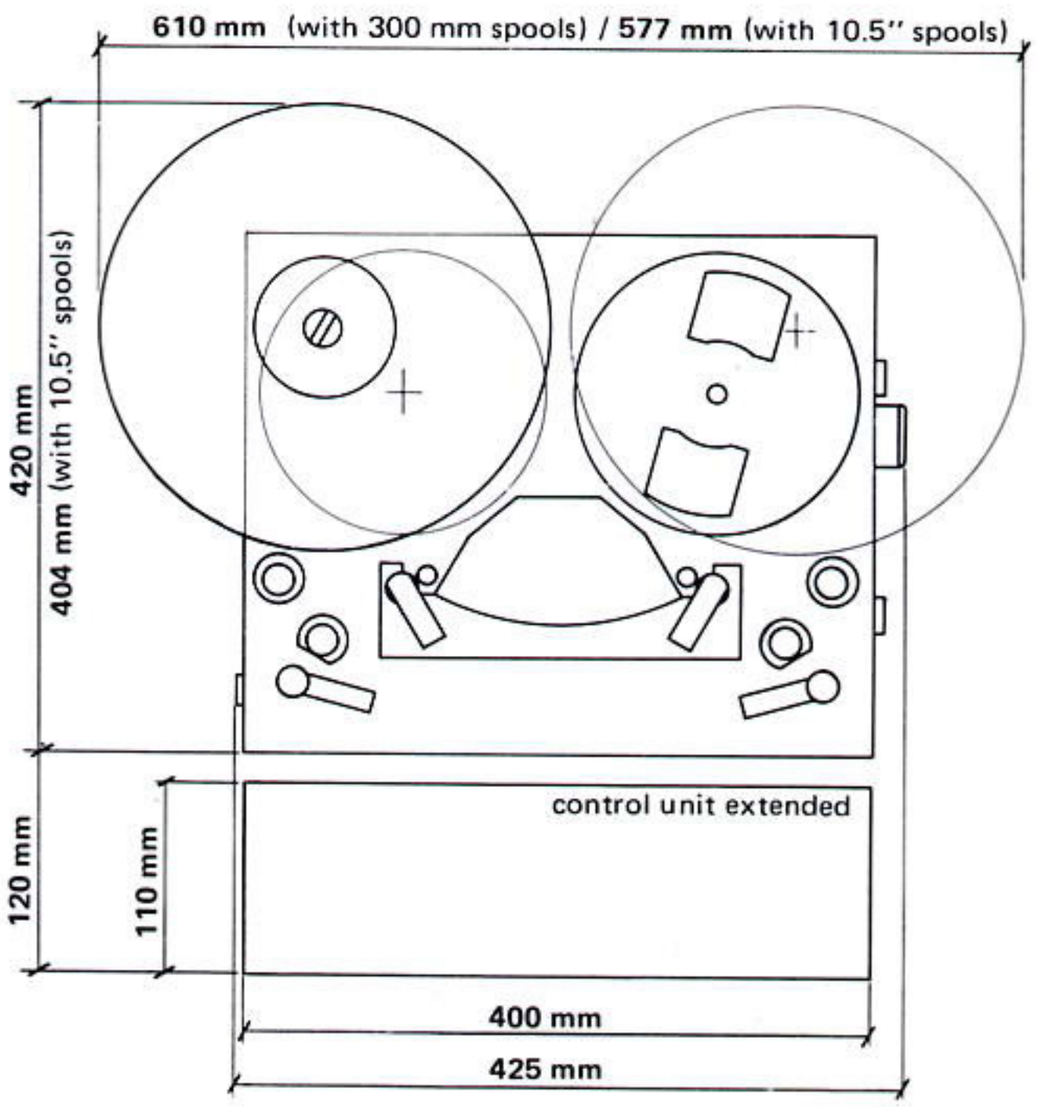
Ordering information

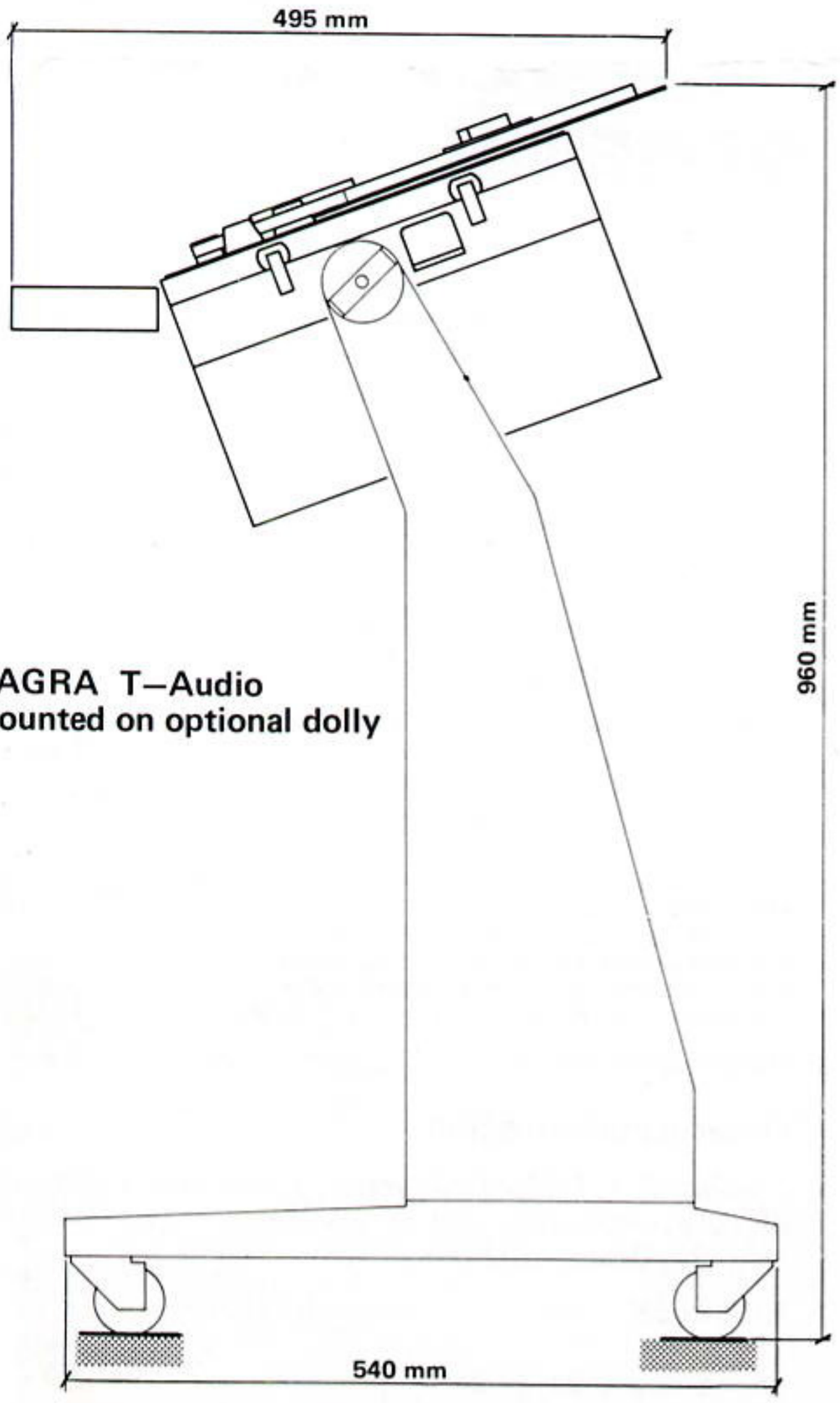
The NAGRA T–Audio is available with many combinations of data electronics and accessories. Contact your nearest NAGRA Dealer or phone or write directly to:

KUDELSKI S.A. CH–1033 Cheseaux-sur-Lausanne
Switzerland
phone: (021) 91.21.21 telex: 24 392 nagra ch

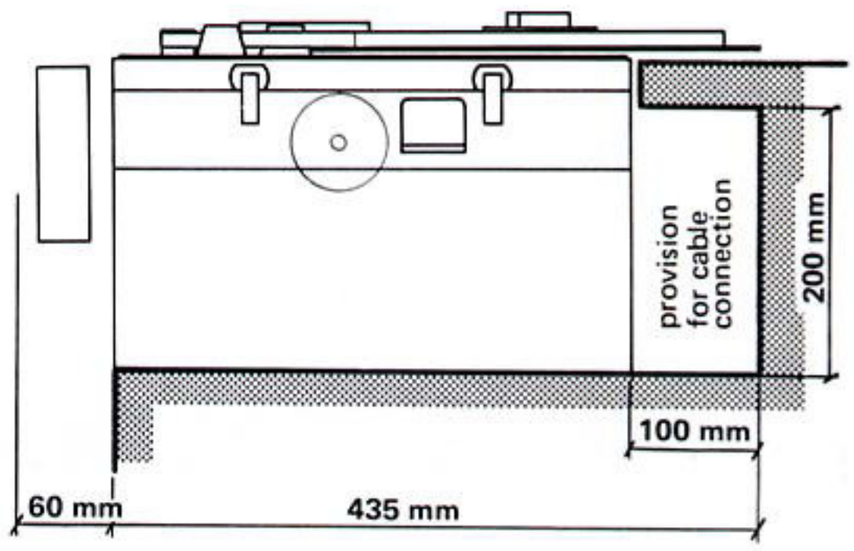
DIMENSIONS







NAGRA T–Audio
mounted on optional dolly



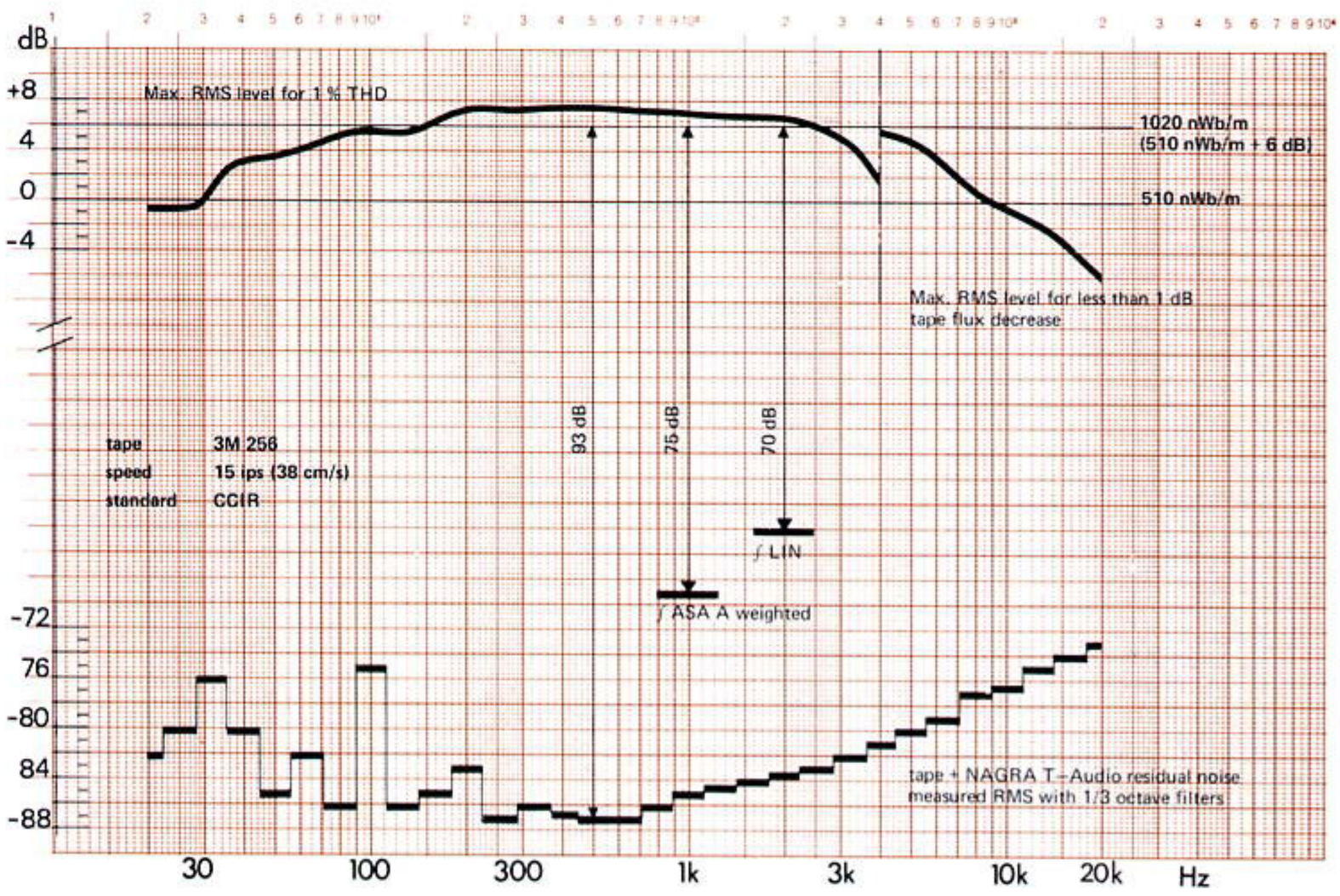
Installation dimensions for fixed or semi–fixed applications
(control unit folded)

NAGRA KUDELSKI GMBH
Birkenau 7 – 8000 München 90
Telefon 089/656633 – Telex 529893

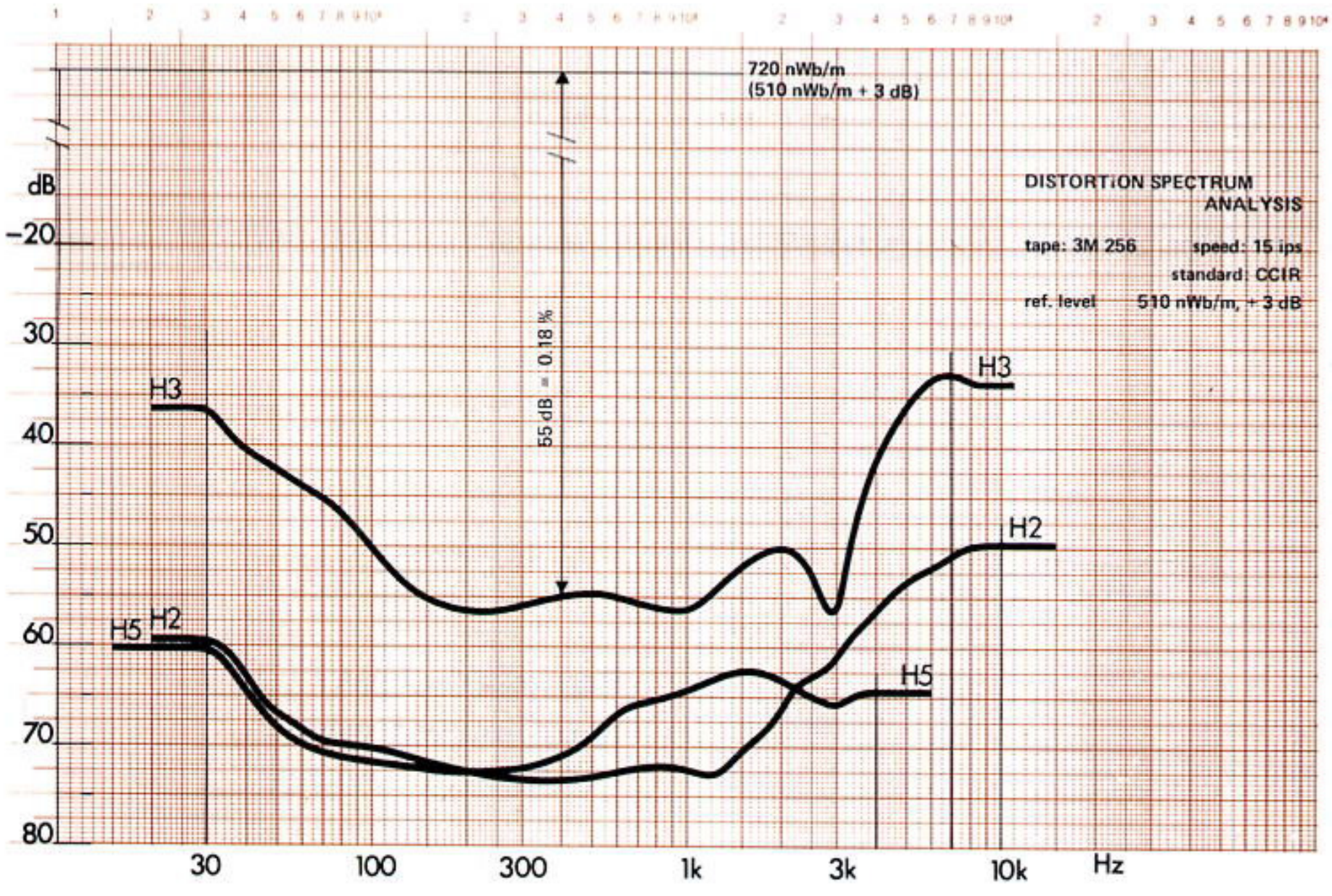
NAGRA KUDELSKI

Printed in Switzerland by Kudelski s.a.

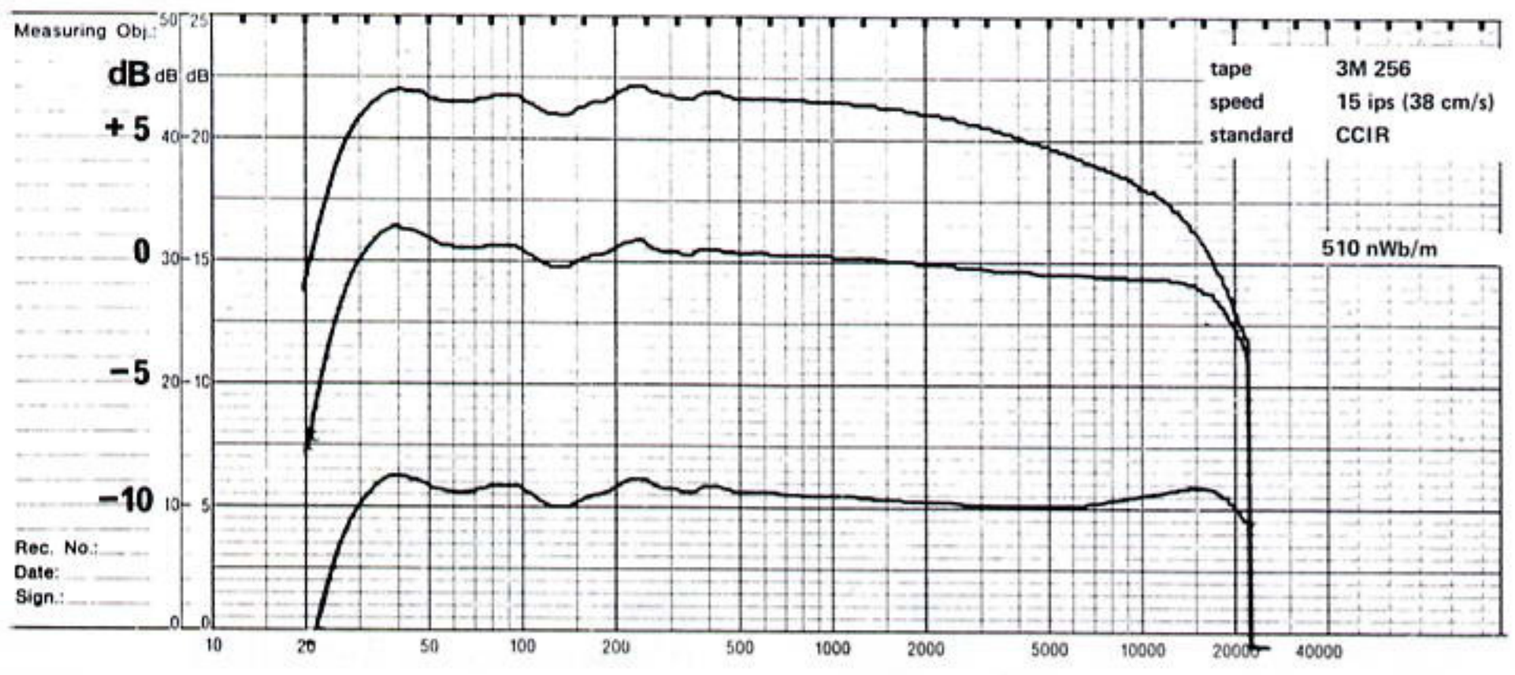
NAGRA T-Audio CURVES



Dynamic range



Distortion spectrum analysis



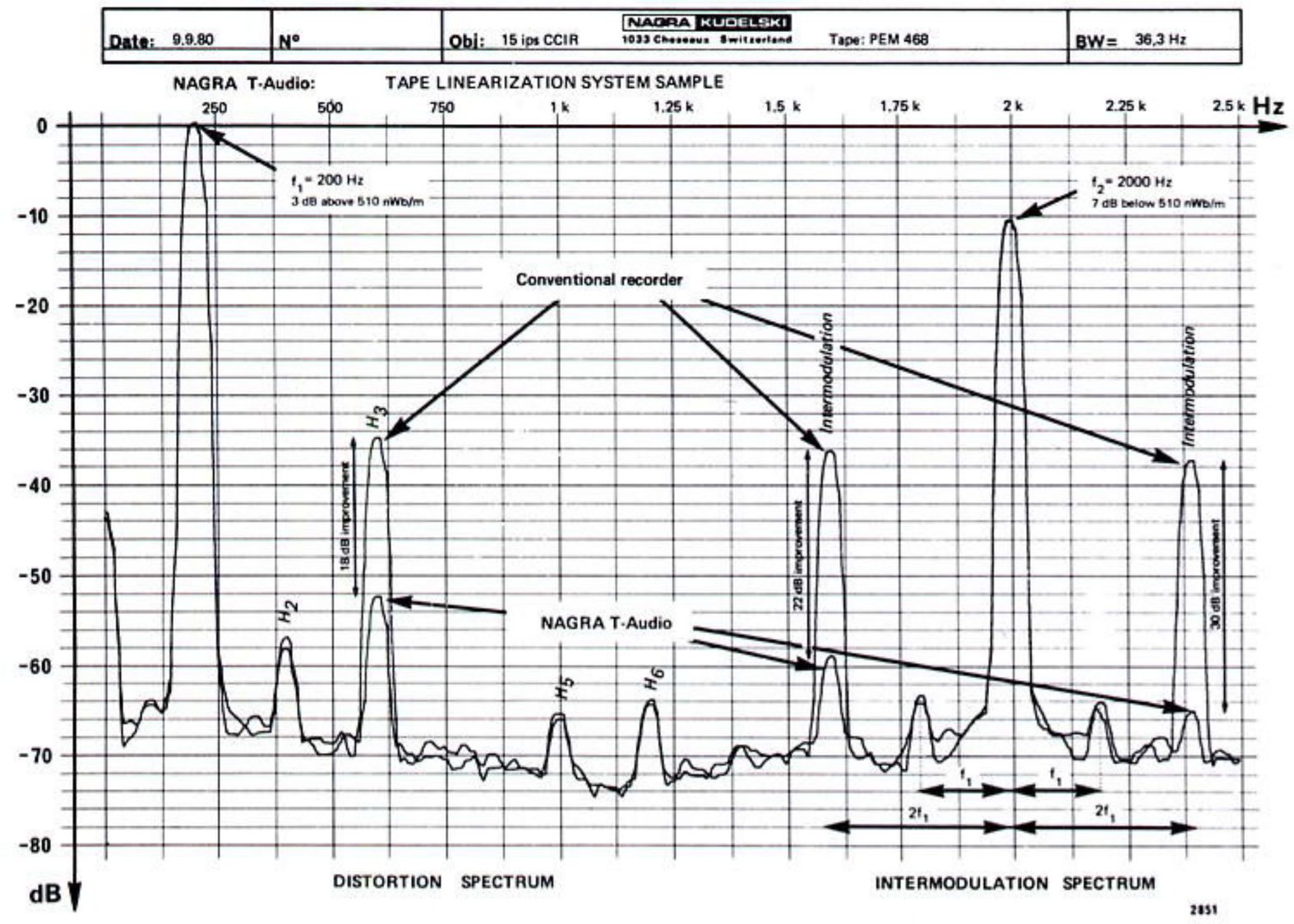
Frequency response curves

20 Hz – 20 kHz

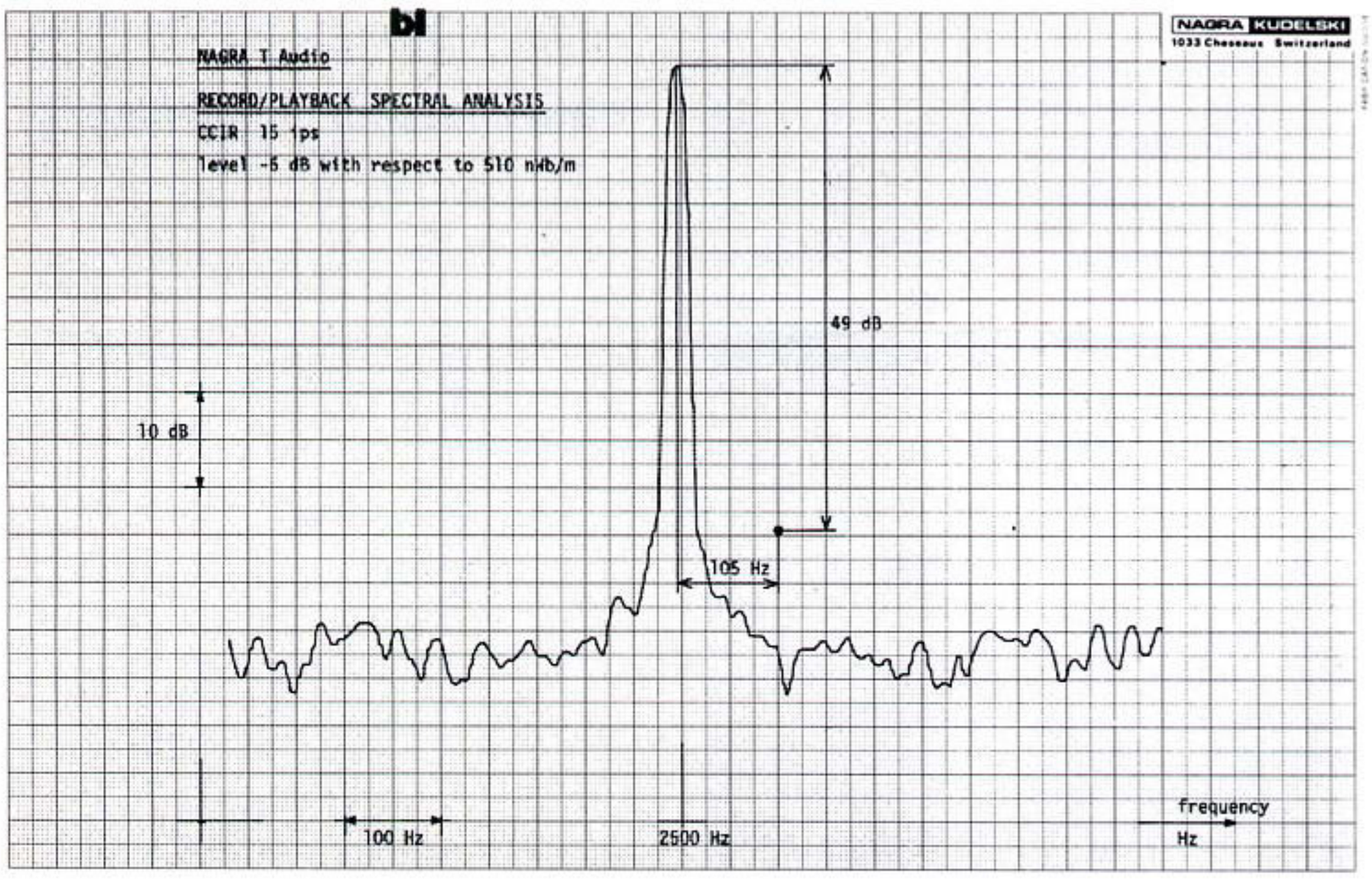
ref. level 510 nWb/m

\+ 6 dB
0 dB
–10 dB

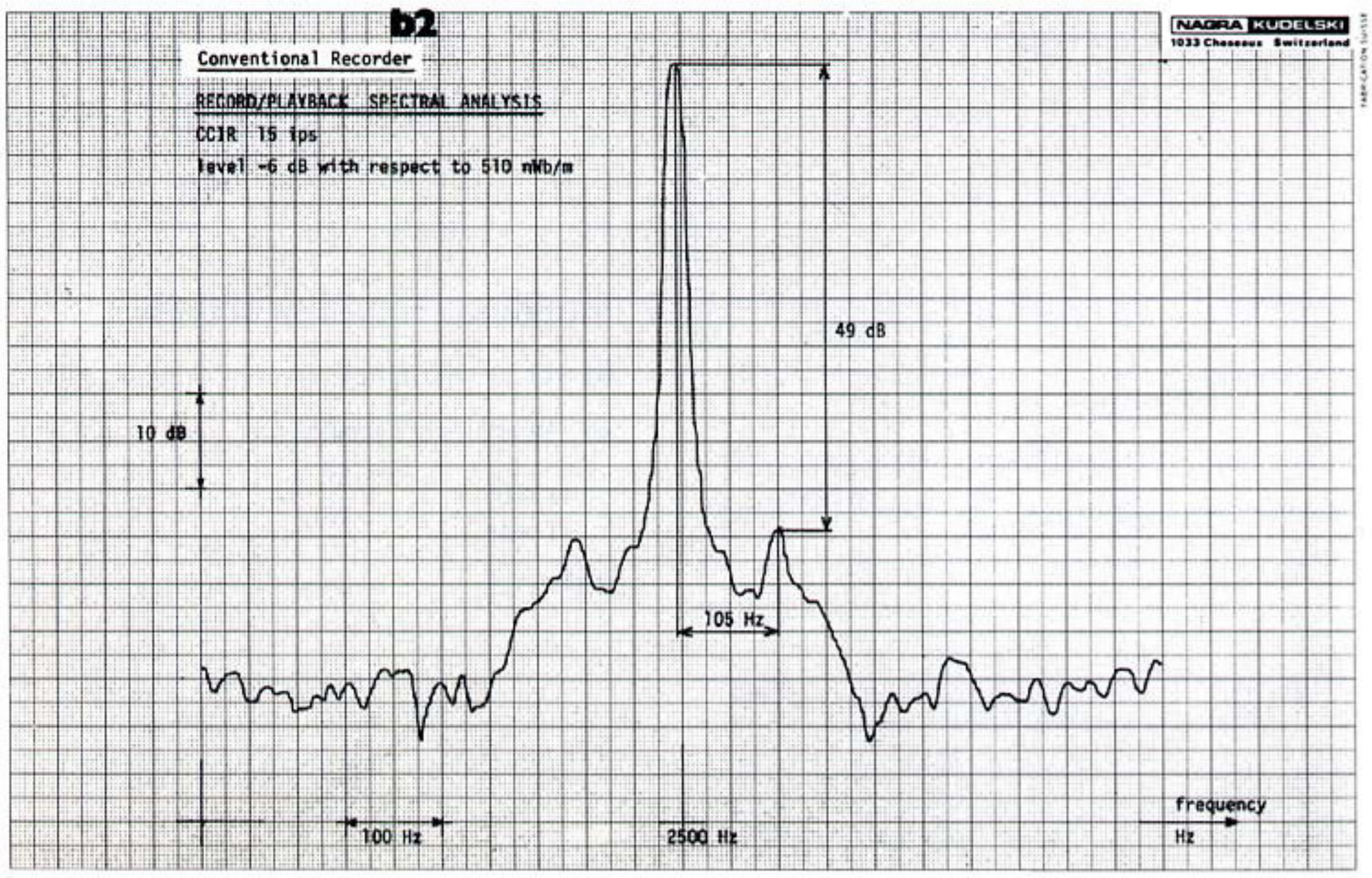
NAGRA T-Audio CURVES



Tape Linearization
System Sample



Record/Playback
Spectrum analysis
(NAGRA T–Audio)



Record/Playback
Spectrum Analysis
(Conventional Recorder)

NAGRA
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Birkenau 7 · 8000 München 90
Postfach 950308
Telefon 089/656633
Telex 529893 tefo d

P r e i s l i s t e

N A G R A T - A U D I O

1.2.1983

1. Geräte:

		DM
NAGRA TA-M	Mono-Gerät incl. 2 TACAL* u. 2 TPBC	20.215,--
NAGRA TA-S	Stereo-Gerät incl. 4 TACAL* u. 2 TPBC	21.080,--
NAGRA TA-2	2-Spur-Gerät incl. 4 TACAL* u. 2 TPBC	21.330,--

1/4"-Band; 9,5 + 19 + 38 + 76 cm/s;
elektron. Zählwerk; Spulen-Ø bis 30 cm.

Bis zu 4 direkt anwählbare Kombinationen von Bandgeschwindigkeit, Entzerrung und Bandsorte durch 4 (mono) bzw. 8 (stereo o. 2-Spur) TACAL-Schaltkreise.

* Einmeßwunsch bitte bei Auftrag angeben!

2. Steuerkonsolen:

TACA-M	Steuerkonsole mit Grundfunktionen für TA-M	1.950,--
TACA-S	Steuerkonsole mit Grundfunktionen für TA-S	1.950,--
TACA-2	Steuerkonsole mit Grundfunktionen für TA-2	2.010,--
TACA-MM	wie TACA-M, jedoch mit Schneideeinrichtung	2.340,--
TACA-SM	wie TACA-S, jedoch mit Schneideeinrichtung	2.340,--
TACA-2M	wie TACA-2, jedoch mit Schneideeinrichtung	2.400,--
TASC	Servoregler für Schnittstellenwahl (in Verbindung mit TACA-MM, -SM, -2M)	720,--
TAC-5	Verlängerungskabel für Steuerkonsole (5 m)	135,--

3. Optionen:

TAHP	Monitor-Lautsprecher u. Kopfhörer-Ausgang, für jeden Kanal getrennt schaltbar	605,--

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		DM
TASIM	Schaltkreis für direkte Wiedergabe über den Aufnahmekopf (1 TASIM pro Kanal)	275,--
TACAL	Zusatz-Aufnahmeschaltkreis (werksseitig justiert) für jede gewünschte Bandgeschwindigkeit, Entzerrung u. Bandsorte (bei TA-S bzw. TA-2 je 2 pro Kanal erforderlich!)	270,--

4. Stromversorgung:

TAPS	Netzgerät (im Gerät eingebaut) incl. Netzkabel	1.550,--

5. MonitorLautsprecher, Kopfhörer:

DSM	Playback-Lautsprecher (netz- o. batterie-betrieben, 8 - 20 W, dyn. Mikrofoneingang)	2.933,--
IACC	Spezialbox mit Akku für DSM	480,--
DT 48-mta	BEYER-Kopfhörer mit Spiralschnur u. Klinkenstecker (mono)	226,--
DT 48-sta	dto., jedoch stereo	226,--

6. Spulenadapter:

TPBC	Dreizack-Spulenhalter	56,--
TPNN	NAB-Adapter mit Teller (Ø 30 cm)	235,--
TPNA	AEG-Adapter mit Teller (Ø 30 cm)	125,--
TPBA	AEG-Spulenhalter	125,--

7.Kabel:

TACE	Eingangskabel (3 m)	70,--
TACS	Ausgangskabel (3 m)	75,--
TACR	Ein-/Ausgangskabel für Schnellkopieren (3 m)	55,--

Die Preise verstehen sich rein netto ab Lager München ausschl. Verpackung u.Transportversicherung zuzügl. Mehrwertsteuer.

Zahlung: rein netto!

Preisänderungen und Änderungen, die im Zuge des technischen Fortschritts erfolgen, bleiben, auch ohne vorherige Ankündigung, vorbehalten!

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