



Samples

Specification: **TCXO-S533-LF**

Frequency: **20,000 MHz**

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- Specification
- Endtest at 25°C
- Temperature characteristic
- Phase noise

Design Engineer: *Fast*
(J. Fast)

Date: *30.11.2006*

Manager R&D: *Fieger*
(U. Fieger)



ROHS-Compliant Product

TCXO-S533-LF



1. Specification	
Nominal frequency:	20.000 MHz
Nominal frequency tolerance 24 h after IR reflow (peak temperature +260 °C):	< ± 0.5 ppm < ± 1.0 ppm
Frequency stability vs. temperature range 0 °C to +70°C vs. temperature range -20 °C to +85 °C vs. supply voltage changes $U_B \pm 5\%$: vs. load changes ± 5%:	< ± 0.5 ppm < ± 0.7 ppm < ± 0.05 ppm < ± 0.05 ppm
Aging ($T_A = +25^\circ\text{C}$) 1 st year: 10 years:	< ± 0.8 ppm < ± 2.8 ppm
Overall stability incl. nominal freq. tol., frequency stab. vs. temp., vs. supply voltage, vs. load changes and 10 years aging	< ± 4.6 ppm
Supply voltage V_S :	+3.3 V ± 5%
Current consumption:	≤ 10 mA
Output signal: level: load: rise & fall time: duty cycle:	(LV)HCMOS $V_{OH} > +2.97\text{ V}; V_{OL} < +0.33\text{ V}$ 10 kOhm // 10 pF < 6 ns 40/60...60/40
Tri-state (E/D function) E/D control input HIGH or open E/D control input LOW	output enable output disable (high Z)
Phase Noise @ dF_c 1 kHz: 10 kHz: 100 kHz:	Typical values -135 dBc/Hz -140 dBc/Hz -145 dBc/Hz
Intrinsic Jitter (12 kHz...20 MHz)	< 1 ps RMS (typ)
Temperature Ranges Operating: Extended operating: Storage:	...0 °C to +70 °C -25 °C to +85 °C -40 °C to +85 °C
2. Environmental conditions	
According to KVG Product Qualification Procedure AA-QM-200	

4				KVG Quartz Crystal Technology GmbH
3				P.O.Box 61
2				D-74924 Neckarbischofsheim
1		23.08.2006	Rudolph	Tel. +49 (0) 7263 / 648-0
ED	Description	Date	Name	Fax. +49 (0) 7263 / 6196



ROHS-Compliant Product

TCXO-S533-LF

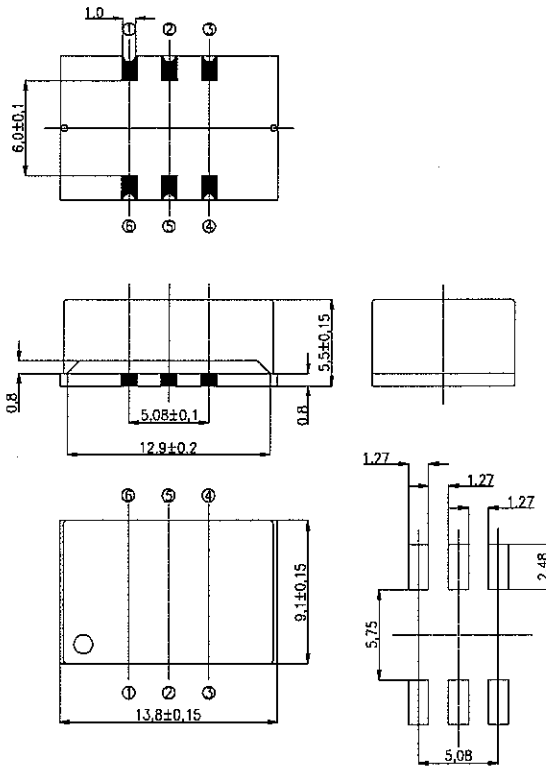


3. Marking

Date Code (YY/KVG/WW); Specification; Center frequency

4. Case

Case Style BF157-5.5D



Pin configuration

1. NC
2. Tri-state (E/D) control input
3. Ground, Case
4. RF Output
5. n.c.
6. Supply Voltage V_s

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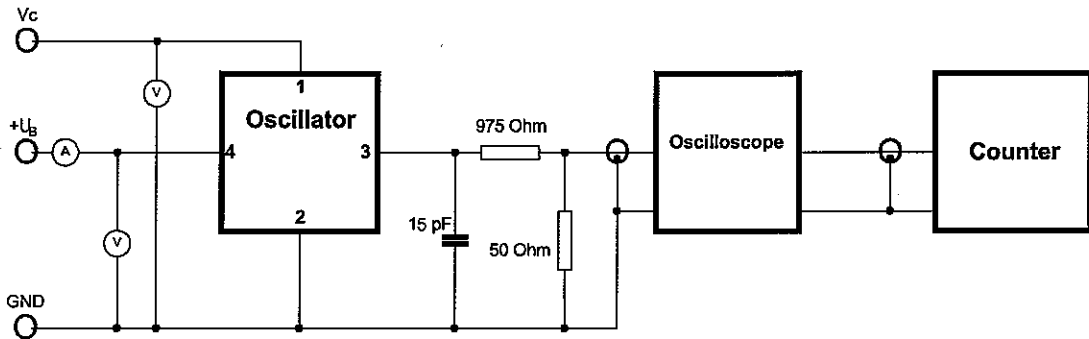


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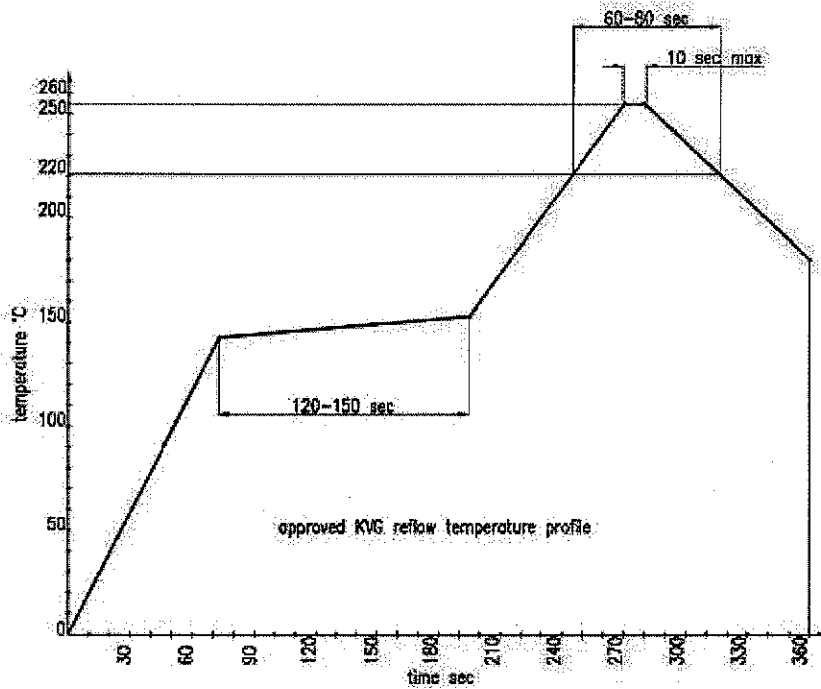
TCXO-S533-LF



5. Test circuit



6. Recommended soldering profile



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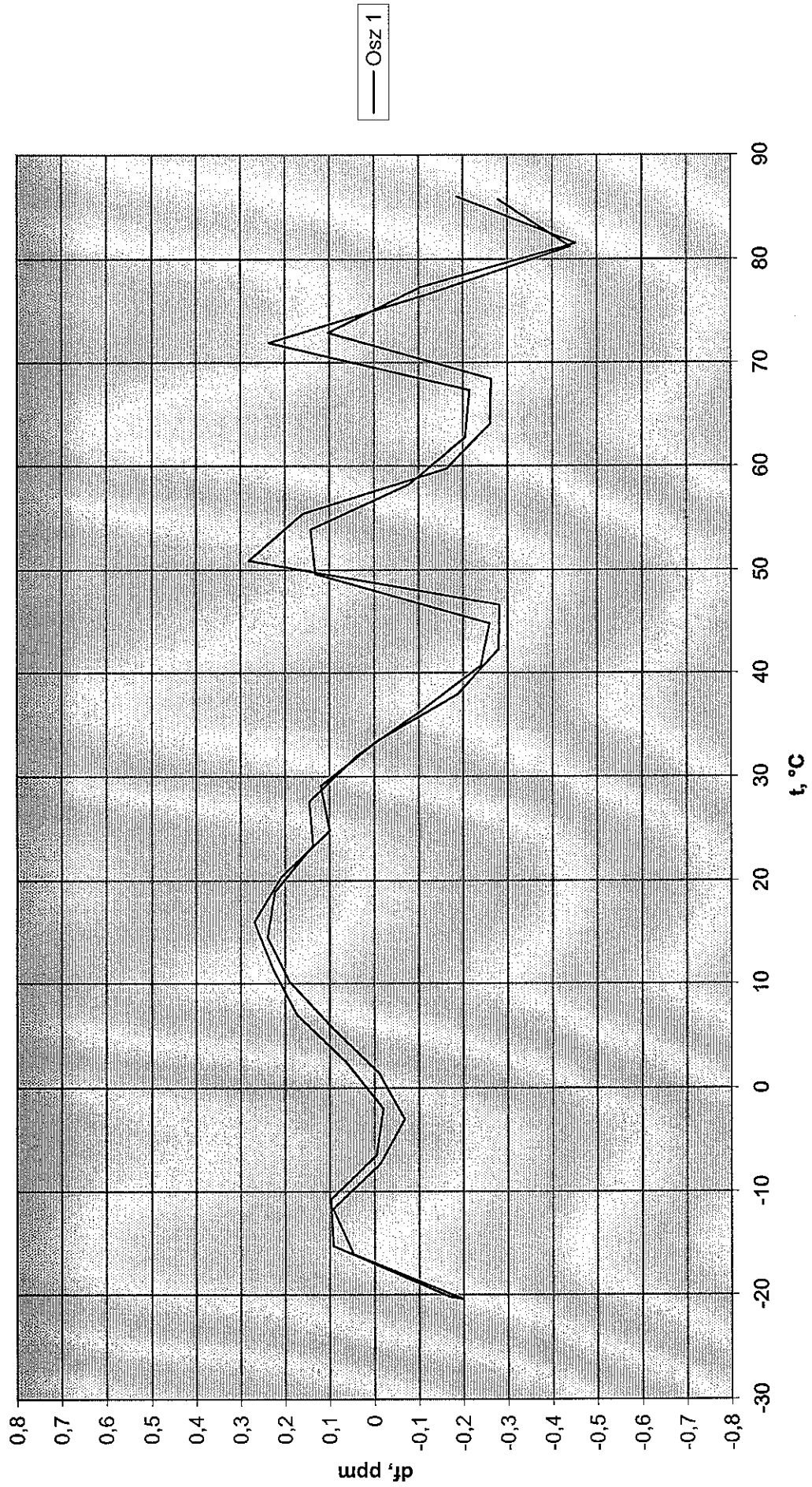
Electrical test sheet

Customer:	Keymile	Frequency, MHz	20,000	Output signal:	HCMOS
Specification:	TCXO-S533-LF	Date:	29.11.06		
Tested by:	J.Fast	Art.Nr.:	800171		

	Units	Limits	1	2	3	4	5	6	7	8	9	10
Part no.:												
Nominal Frequency @T=25±3°C,	ppm	≤± 0,5	-0,3	-0,3	-0,5	-0,4	-0,5	-0,2	-0,4	-0,3	-0,3	0,0
Freq. Temperature dependency 0 °C 70 °C	ppm	≤± 0,5	0,3	0,3	0,4	0,3	0,3	0,3	0,4	0,4	0,3	0,4
Freq. Temperature dependency -20 °C 85 °C	ppm	≤± 0,7	0,4	0,3	0,5	0,6	0,3	0,4	0,5	0,6	0,4	0,4
vs supply volt. Change 3,3 V ± 5 %	ppm	≤± 0,05	0,045 -0,029	0,046 -0,037	0,038 -0,045	0,039 -0,036	0,040 -0,031	0,043 -0,041	0,047 -0,039	0,043 -0,040	0,038 -0,036	0,024 -0,071
vs load change 1k/ 10 pF ± 5 %	ppm	≤± 0,05	< 0,01 ppm									
Duty cycle	%	50±	47	49	48	48	48	49	49	49	47	48
Rise time.....	ns	<	2,0	2,0	2,0	1,9	2,0	1,9	2,0	2,01	1,99	1,97
Fall time.....	ns	<	-1,6	-1,8	-1,7	-1,7	-1,7	-1,7	-1,7	-1,61	-1,64	-1,71
Current consumption	mA	≤	13,3	13,4	13,5	13,4	13,2	13,5	13,4	13,5	13,5	13,5

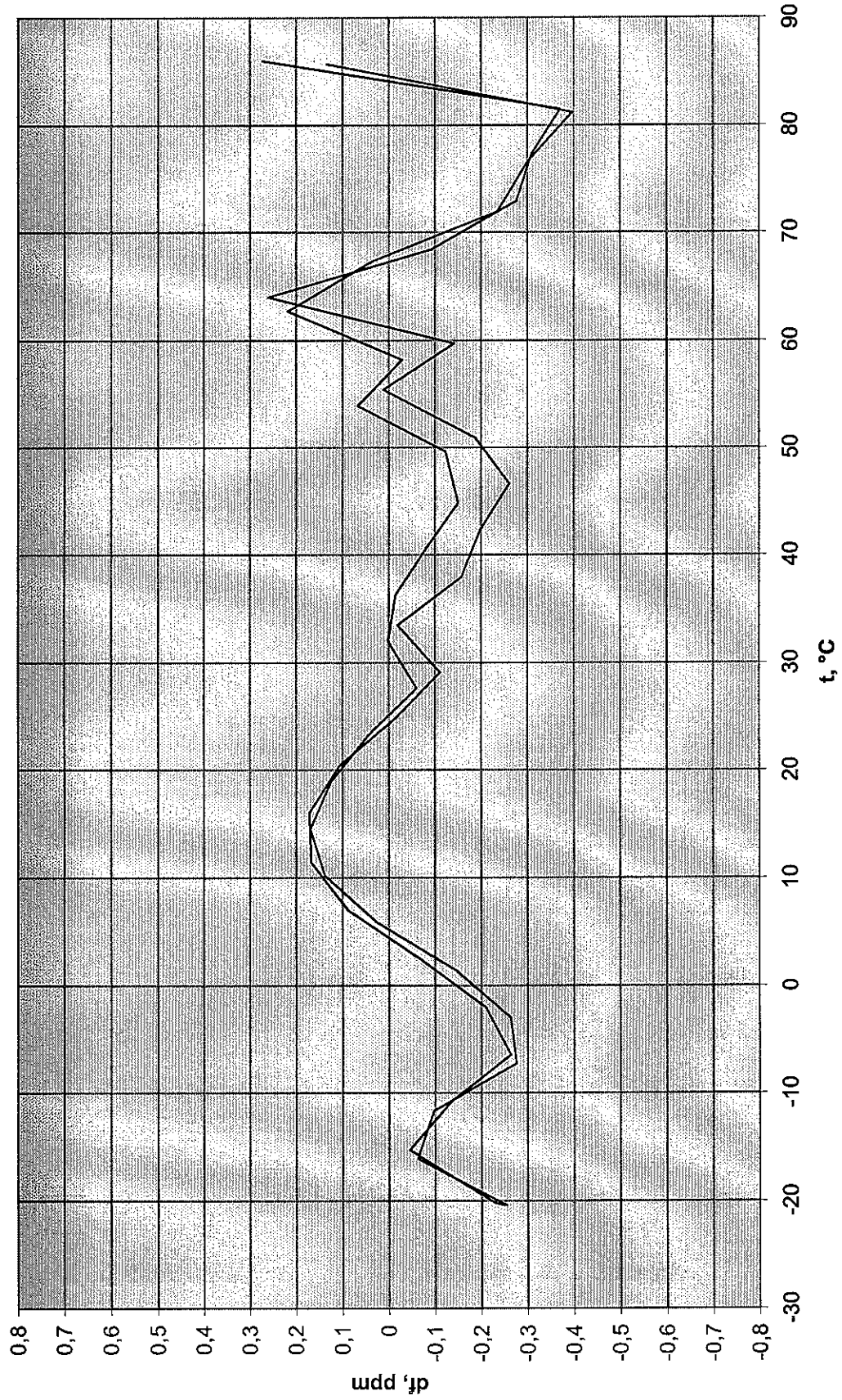


TK TCXO-S533-LF 20MHz





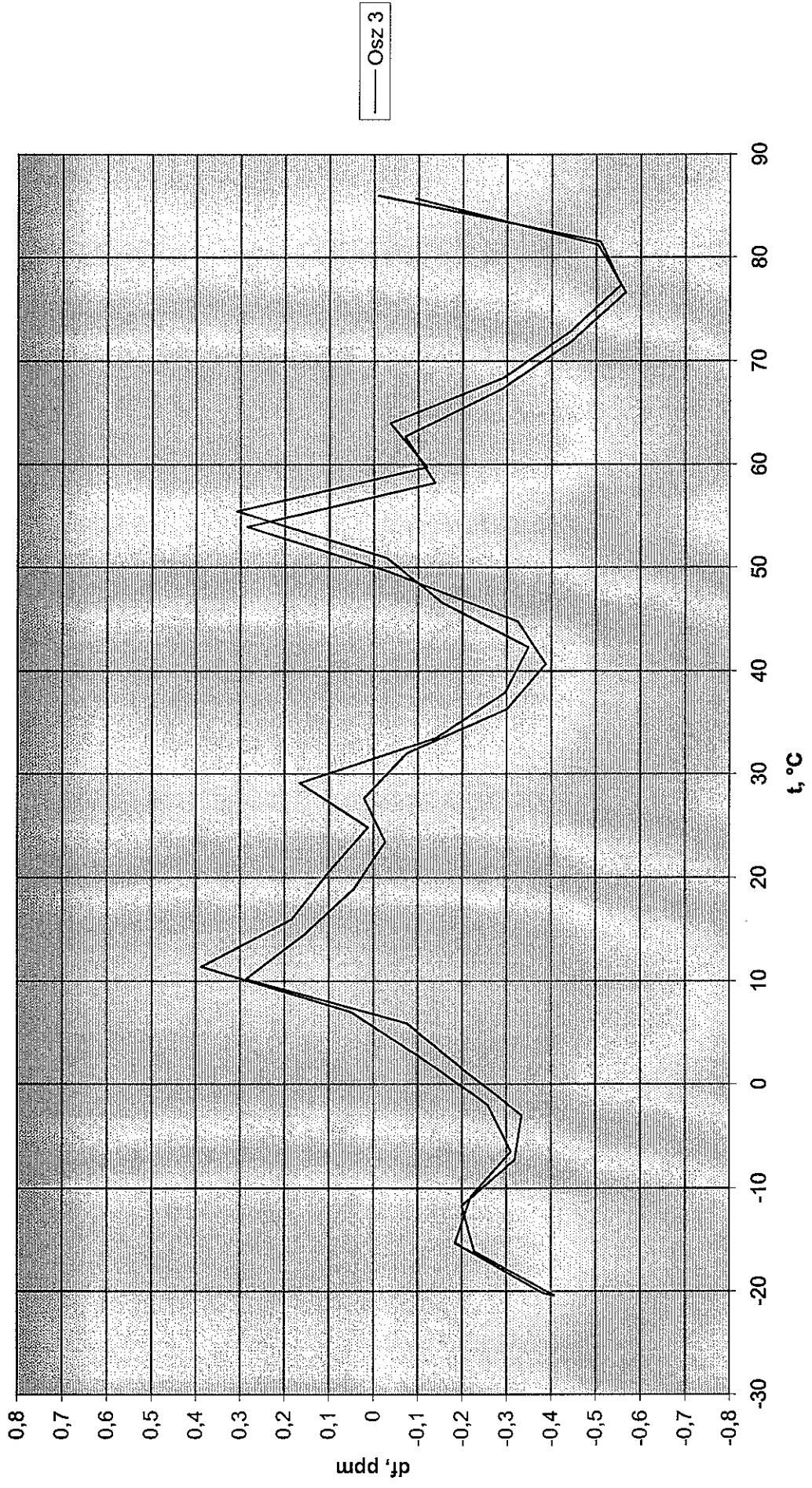
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— Osz 2



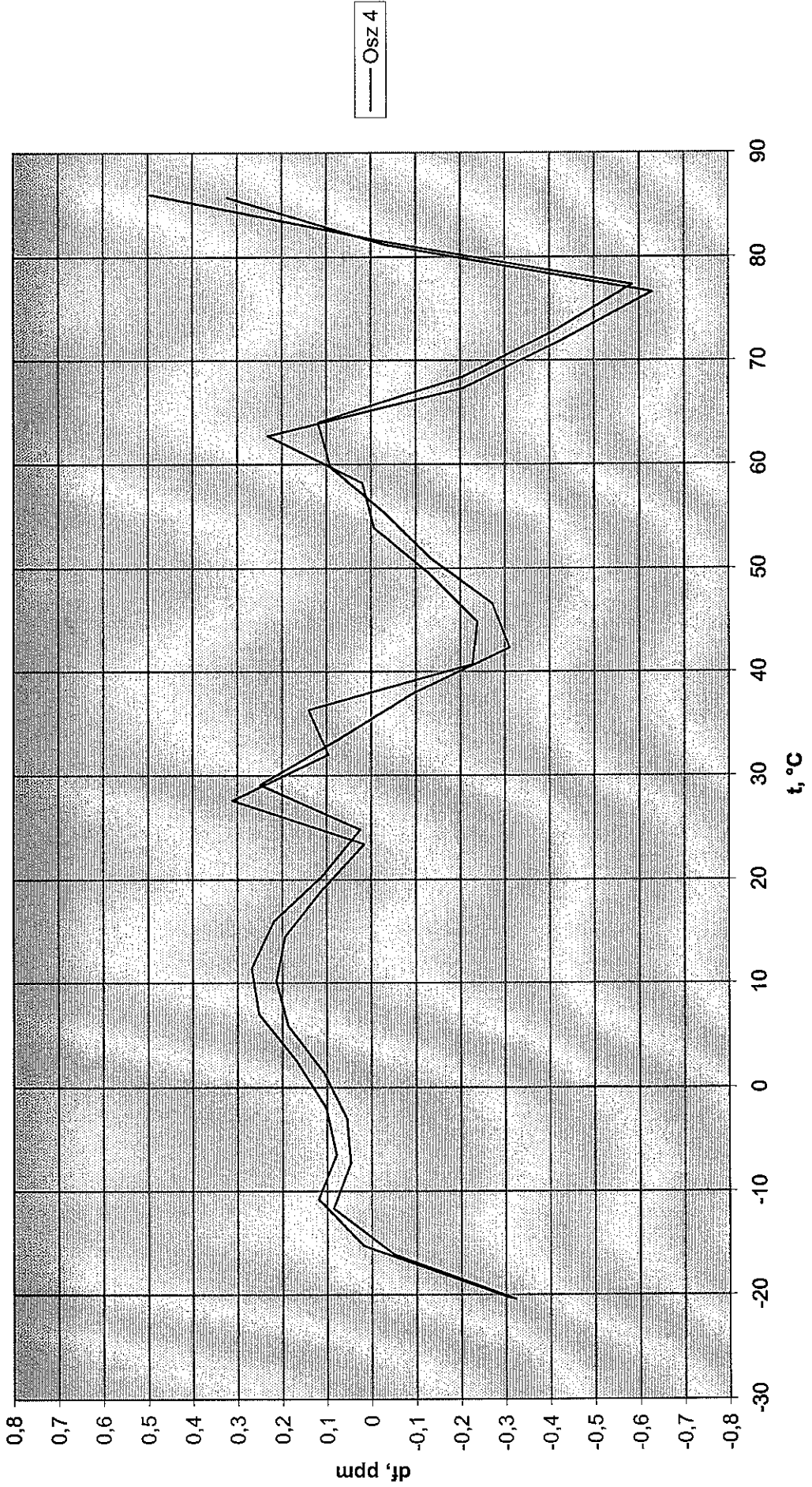
TK TCXO-S533-LF 20MHz



— Osc 3

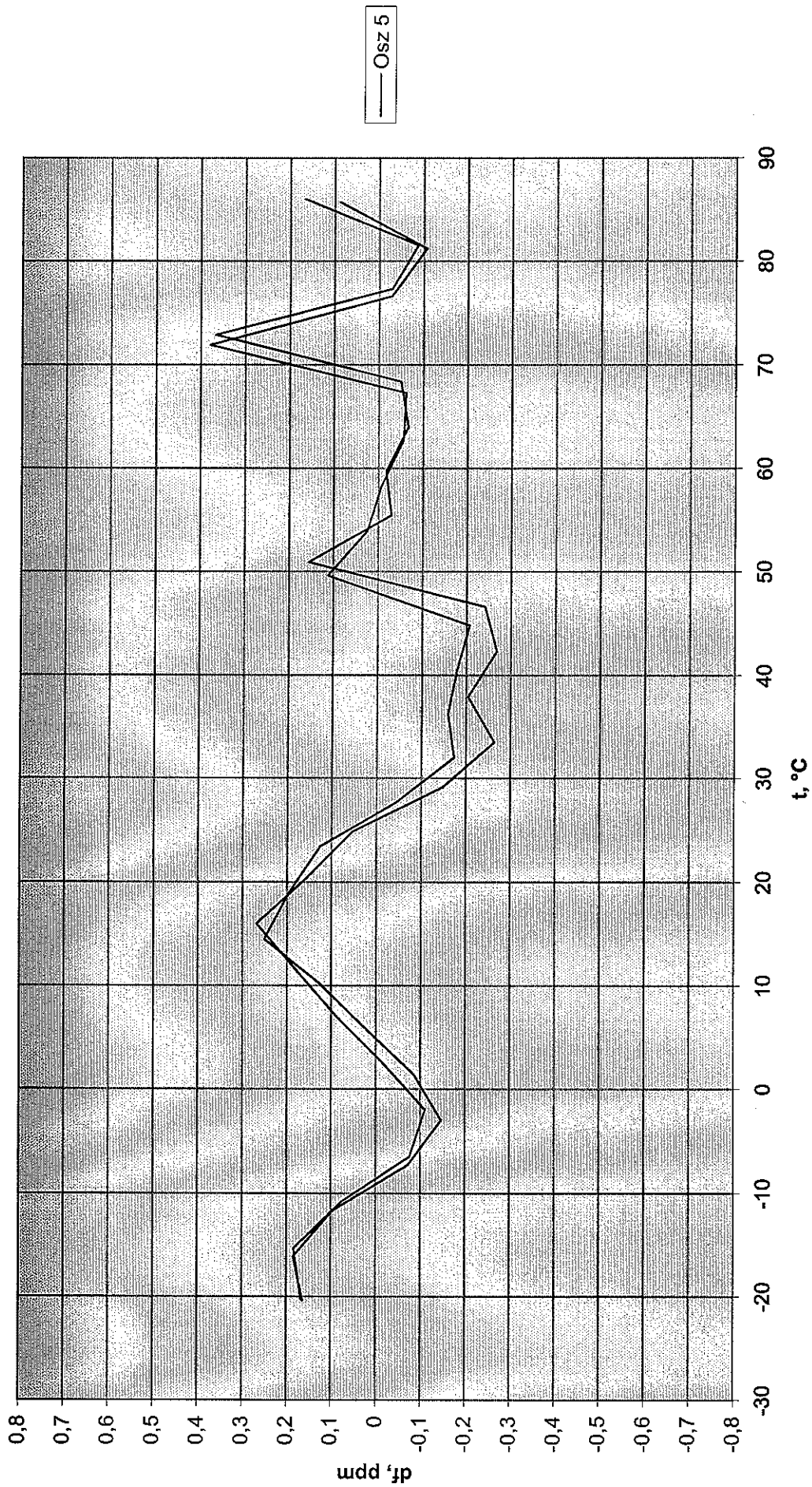


TK TCXO-S533-LF 20MHz



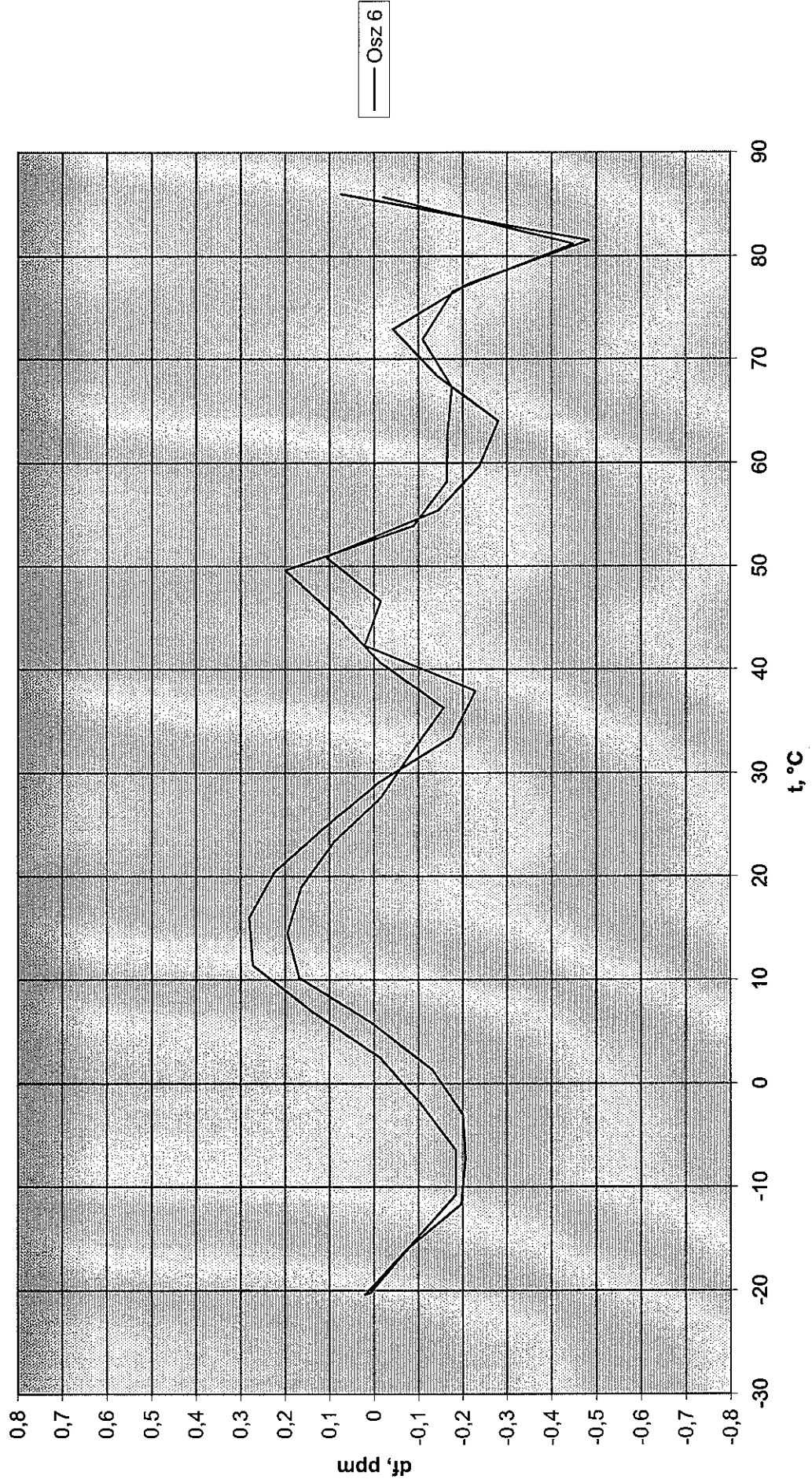


TK TCXO-S533-LF 20MHz



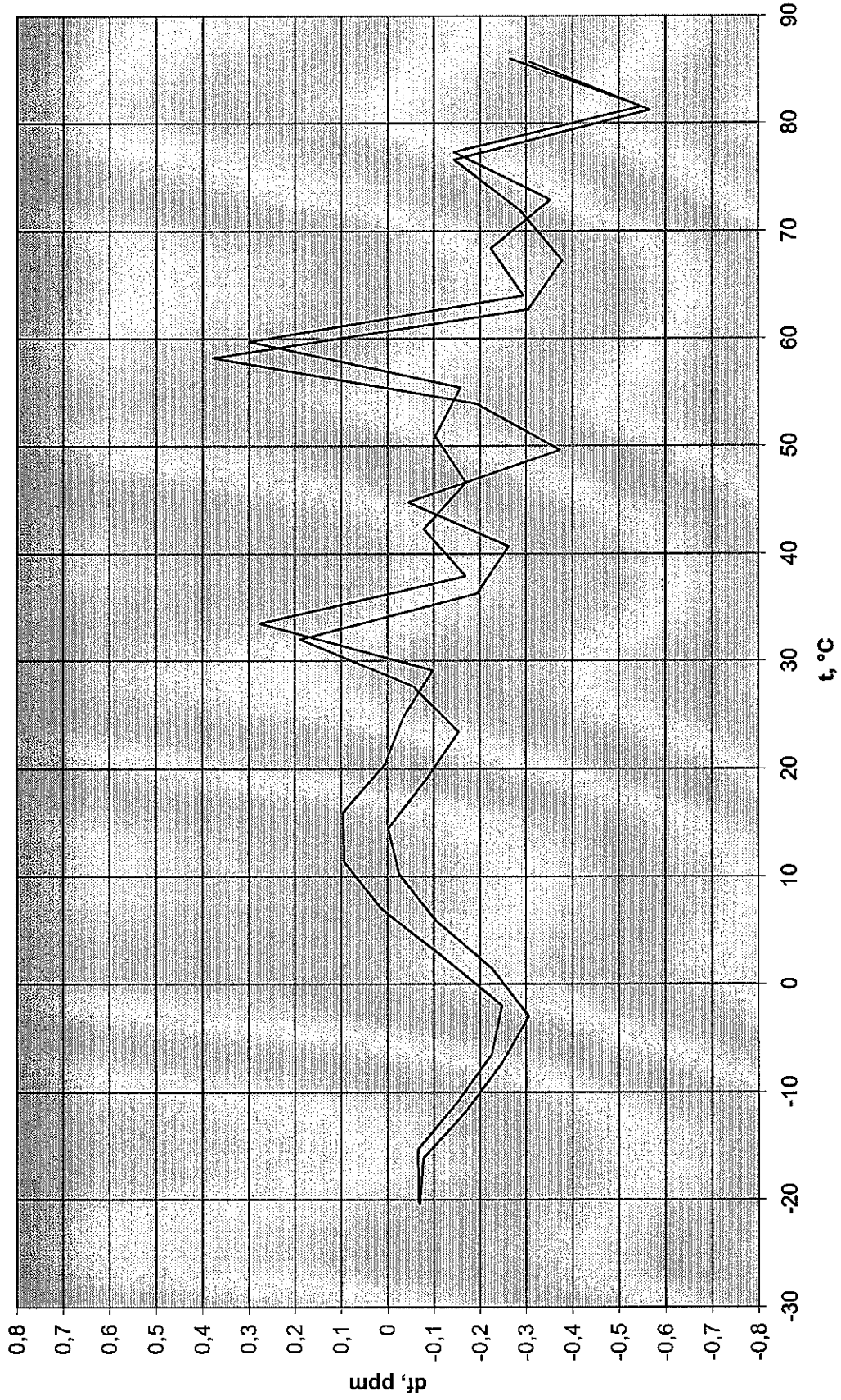


TK TCXO-S533-LF 20MHz





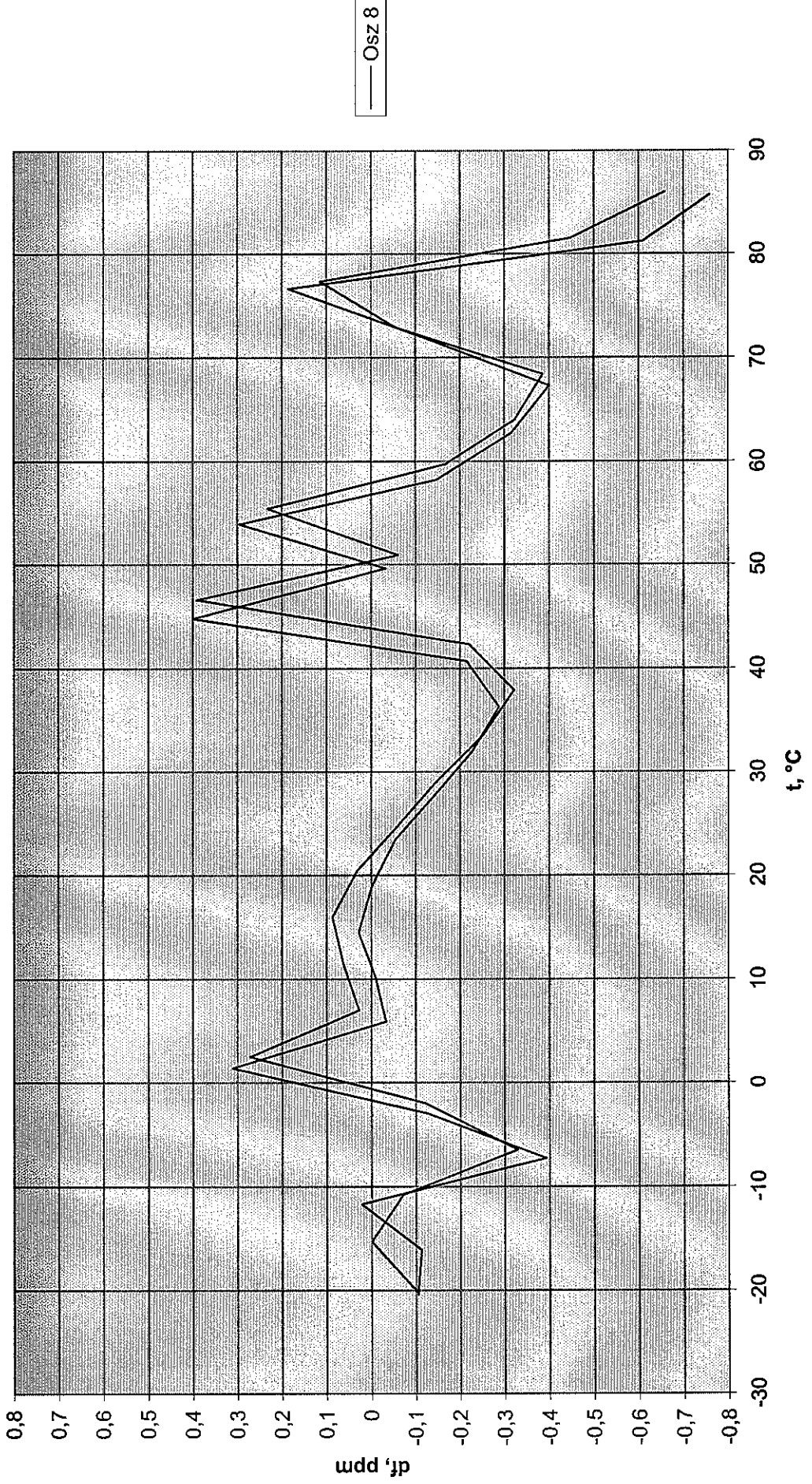
TK TCXO-S533-LF 20MHz



— Osz 7

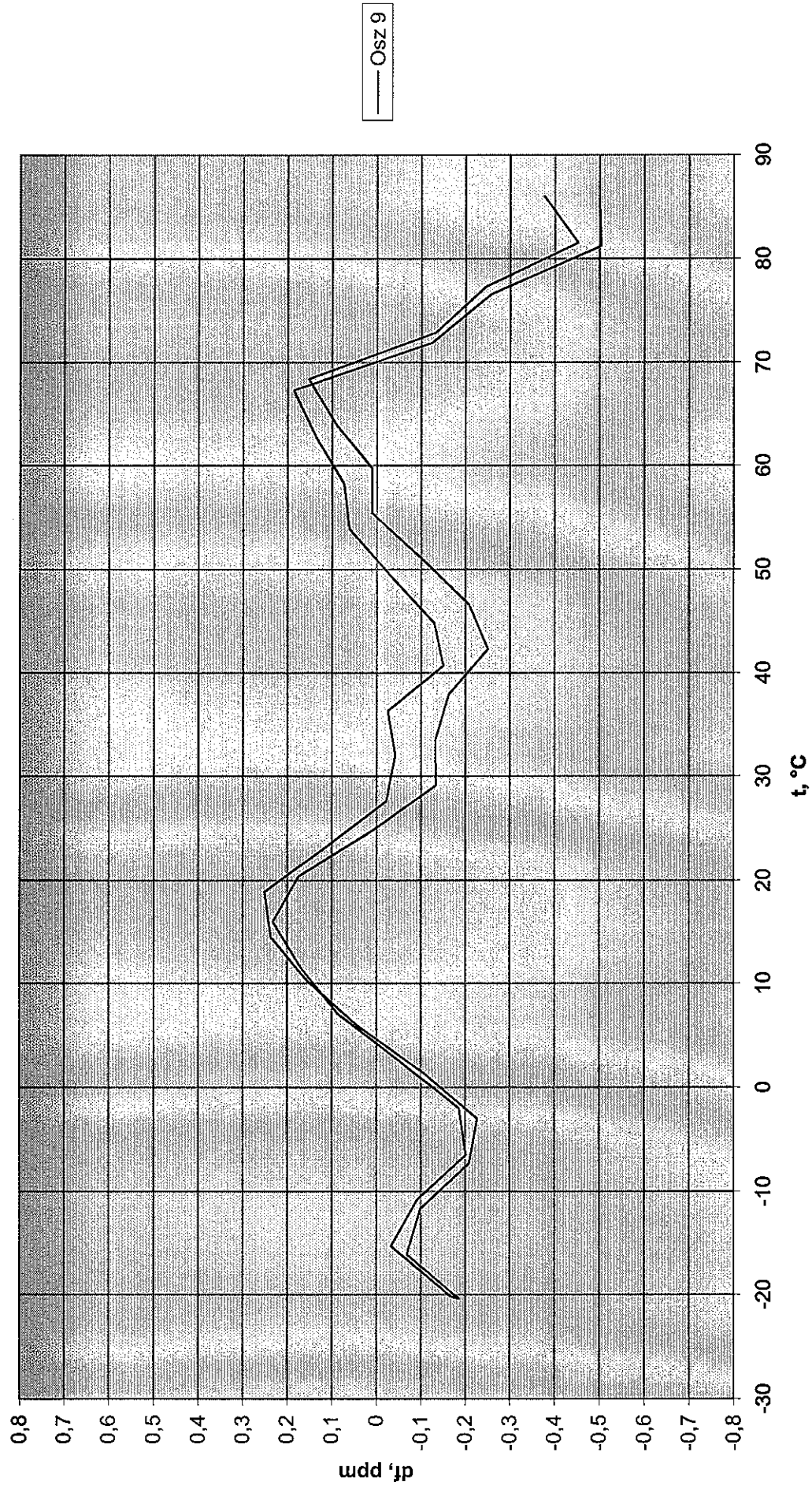


TK TCXO-S533-LF 20MHz





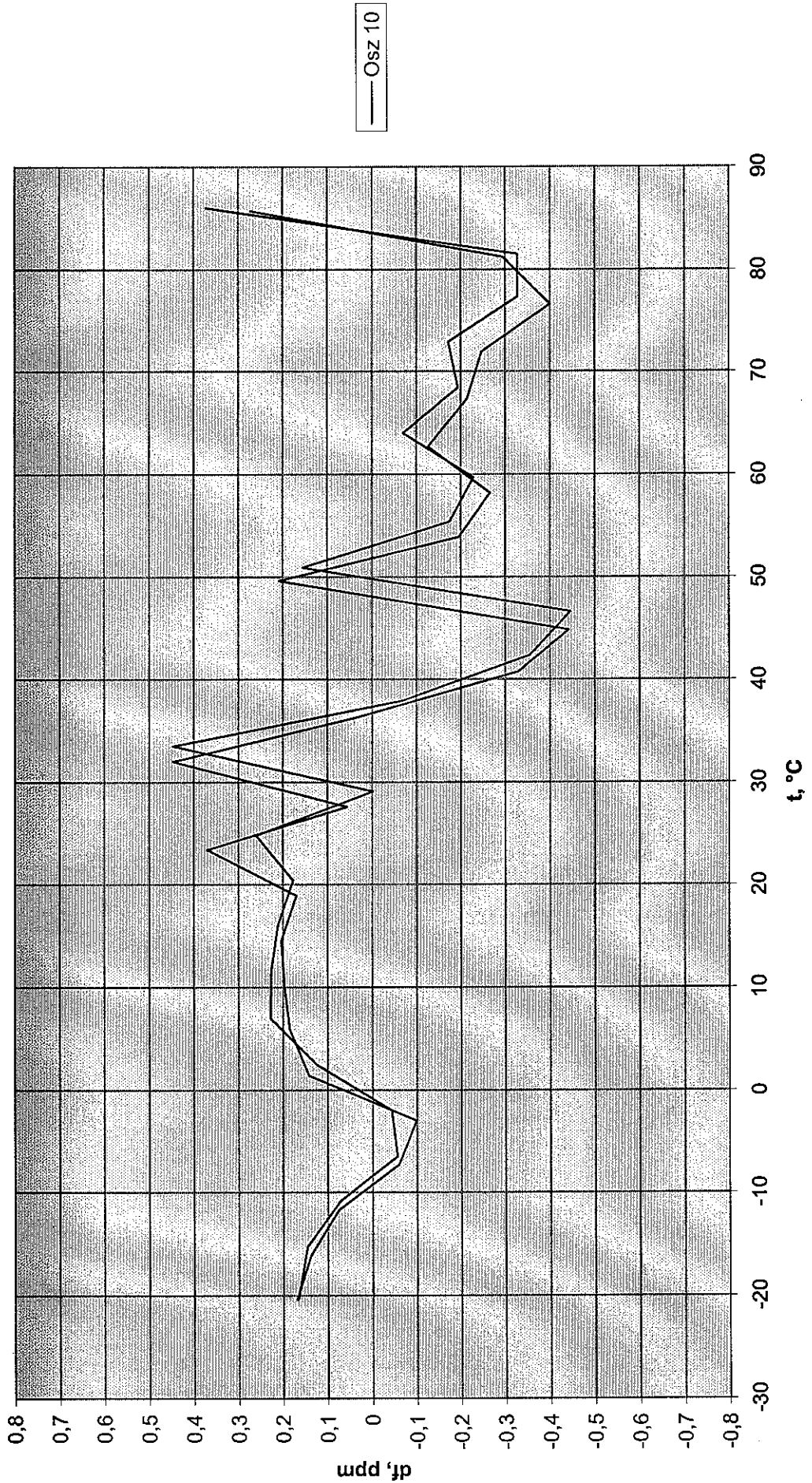
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Osz 9

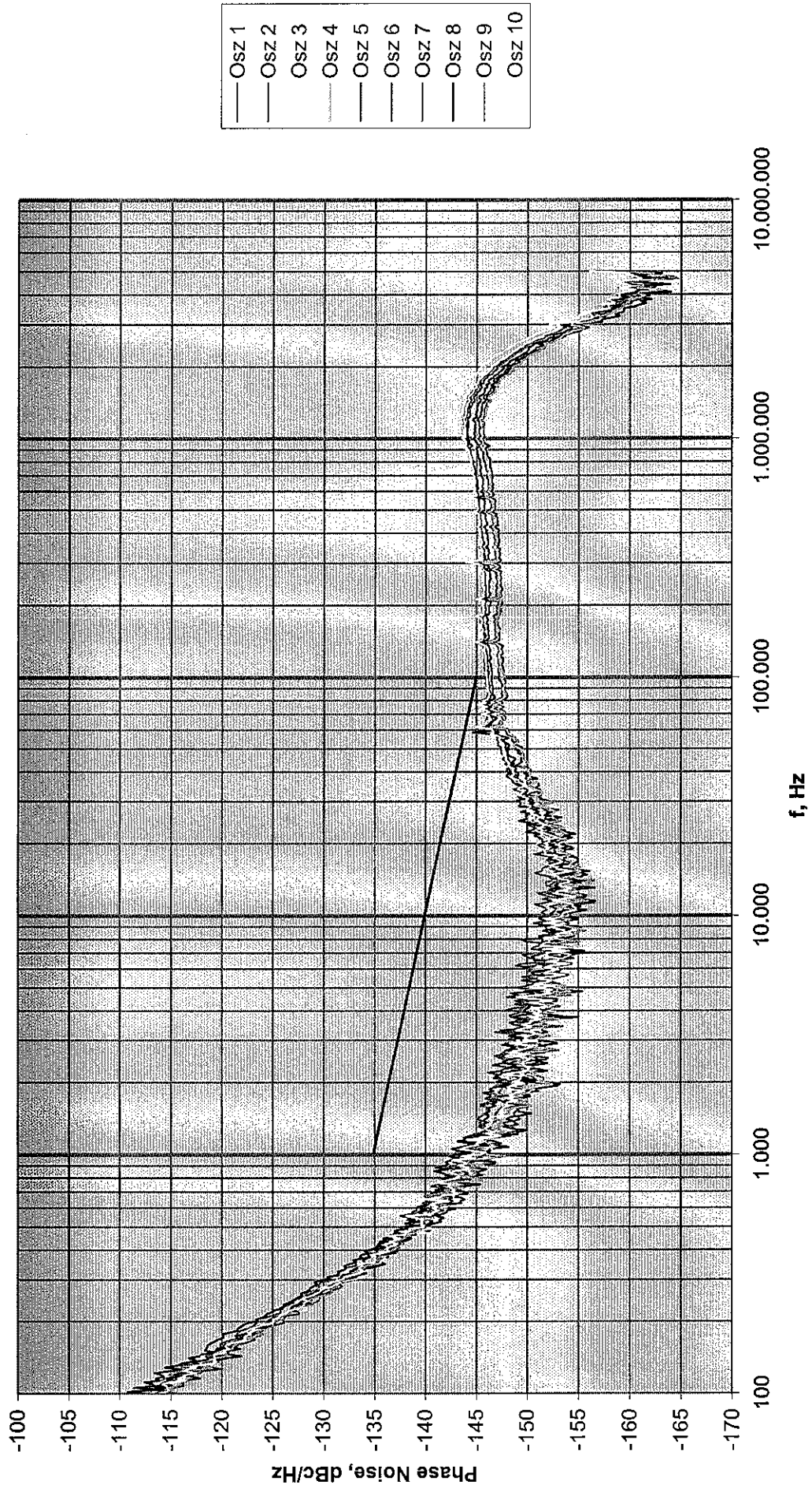


TK TCXO-S533-LF 20MHz





Phase Noise TCXO-S533-LF 20MHz



- OsZ 1
- OsZ 2
- OsZ 3
- OsZ 4
- OsZ 5
- OsZ 6
- OsZ 7
- OsZ 8
- OsZ 9
- OsZ 10