



	Part #	Standards											Packaging				
		Telcordia (Bellcore)					ITU-T			ANSI				ETSI			
		GR-1244-CORE			GR-253-CORE SONET Internal Clock		G.813			T1.101		T1.105					
	Stratum 3	Stratum 4E	Stratum 4	Stratum 3	SONET Minimum Clock (SMC)	Option 1 (SDH)	Option 2	I.431	Stratum 3	Stratum 4E	Stratum4	SMC	T1.403	TBR4	TBR12	TBR13	
DS1/E1	MT9040			•				•		•				•	•	•	48 pin SSOP
	MT9041		•	•				•		•			•	•	•	•	28 pin PLCC
	MT9042	•	•	•				•	•	•	•		•	•	•	•	28 pin PLCC
	MT9043		•	•				•		•	•		•	•	•	•	48 pin SSOP
	MT9044	•	•	•			•	•	•	•	•		•	•	•	•	44 pin PLCC, MQFP
	MT9045	•	•	•			•		•	•	•		•	•	•	•	48 pin SSOP
	MT9046		•	•					•	•	•		•	•	•	•	48 pin SSOP
	ZL30409		•	•					•	•	•		•	•	•	•	48 pin SSOP
	ZL30462		•	•			•*		•	•	•		•	•	•	•	40 pin SMT DIL
SONET SDH	MT90401	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	80 pin LQFP
	ZL30402	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	80 pin LQFP
	ZL30407	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	80 pin LQFP

*see Data Sheet for exceptions

Evaluation Boards

MEB9043/45	Demonstration Board for MT9040/43/45/46
MEB90401	Demonstration Board for MT90401
ZLE30402	Demonstration Board for ZL30402
ZLE30407	Demonstration Board for ZL30407

Clocks for North American synchronized networks, Timing Requirements summary as per Telcordia/Bellcore

GR-1244-CORE: Timing Requirements for DS1 Clocks

Stratum Level	Free-Run Accuracy	Holdover Stability	Pull-in/Hold-in Range	Wander Filtering	Phase Transient
1	$\pm 1 \times 10^{-11}$	N/A	N/A	N/A	N/A
2	± 0.016 ppm	$(\pm 1 \times 10^{-10}) / \text{day}$	± 0.016 ppm	1 mHz	MTIE ≤ 150 ns
3E	± 4.6 ppm	± 0.01 ppm for the first 24 h	± 4.6 ppm	1 mHz	MTIE ≤ 150 ns
3	± 4.6 ppm	± 0.37 ppm for the first 24 h	± 4.6 ppm	3 Hz	MTIE ≤ 1 μ s
4E	± 32 ppm	N/A	± 32 ppm	No	MTIE ≤ 1 μ s
4	± 32 ppm	N/A	± 32 ppm	No	No requirement

GR-253-CORE: Timing Requirement for SONET Clocks

Stratum Level	Free-Run Accuracy	Holdover Stability	Pull-in/Hold-in Range	Wander Filtering	Phase Transient
3	± 4.6 ppm	± 0.37 ppm for the first 24 h	± 4.6 ppm	0.1 Hz	MTIE ≤ 1 μ s
SMC	± 20 ppm	± 4.6 ppm for the first 24 h	± 20 ppm	0.1 Hz	MTIE ≤ 1 μ s

Clocks for European synchronized networks, Timing Requirements summary as per ITU-Telecommunication

ITU-T G.811: Timing requirements of primary reference clocks

Clock Type	Free-Run Accuracy	Holdover (Initial Offset)	Pull-in/Hold-in Range	Wander Filtering	Phase Transient (Short-term)	Phase Transient (Rearrangement)
PRC	$+1 \times 10^{-11}$	N/A	N/A	N/A	N/A	N/A

ITU-T G.812: Timing requirements of slave clocks suitable for Node Clocks for SDH and PSTN

Clock Type	Free-Run Accuracy	Holdover (Initial Offset)	Pull-in/Hold-in Range	Wander Filtering	Phase Transient (Short-term)	Phase Transient (Rearrangement)
I	N/A @ 2048kHz	(5×10^{-10})	0.01 ppm	0.003 Hz	MTIE < 240 ns	MTIE < 240 ns
II	0.016 ppm @ 1544kHz	< 0.016 ppm	0.016 ppm	0.001 Hz	MTIE < 182 ns	MTIE < 1 μ s
III	4.6 ppm @ 1544kHz	(0.001 ppm)	4.6 ppm	0.001 Hz	MTIE < 182 ns	MTIE < 1 μ s
IV	4.6 ppm @ 1544kHz	(0.05 ppm)	4.6 ppm	3Hz	MTIE < 1 μ s	MTIE < 1 μ s
V	N/A @ 1544 & 2048kHz	(5×10^{-10})	Not Defined	0.1Hz	MTIE < 240 ns	MTIE < 1 μ s
VI	N/A @ 2048kHz	(0.01 ppm)	Not Defined	0.1Hz	MTIE < 240 ns	MTIE < 1 μ s

ITU-T G.813: Timing characteristics for SDH Equipment Slave Clocks (SEC)

Clock Type	Free-Run Accuracy	Holdover (Initial Offset)	Pull-in/Hold-in Range	Wander Filtering	Phase Transient (Short-term)	Phase Transient (Rearrangement)
Option 1	4.6 ppm @ 2048kHz	(0.05 ppm)	4.6 ppm	1 to 10 Hz	MTIE < 1 μ s	MTIE < 1 μ s
Option 2	20 ppm @ 1544kHz	(0.05 ppm)	20 ppm	0.1 Hz	MTIE < 1 μ s	No Requirement