3D HOLOGRAPHIC OPTICAL MEMORY VS MAGNETIC PERPENDICULAR DRIVE

	3 D Volume FeDRIVE	**2 D Area HARDDISK**
DRIVE COST	$ 750 when in production	$ 500
MEDIA TYPE	Ferroelectric Perovskite	Ferromagnetic
RECORDING TYPE	UV Photon QV Field Poling	BH - magnetic polarity
BIT DENSITIES/ sq. in.	400 Terabits and higher	400 Mbits to 45 Gbits
TRACK DENSITY	>700,000 tpi	70,000 tpi
BIT PER CUBIC CENTIMETER	> 40,000 Tbits/cu.cm.	50 Tbits/sq.cm.
NONVOLATILITY	Yes	Yes
HEAD/MEDIA HEIGHT	1 to 15 millimeters	.6 micron (pseudo contact)
DESTRUCTIVE READOUT	No	No
NEED TO WRITE BACK	No	No
CELL AREA RATIO	2 -3	>100
READ TIME RATIO	160 psec	5 millisec
WRITE TIME RATIO	160 psec	5 millisec
NUMBER OF PERMISSIBLE READ	Infinite	Infinite
NUMBER OF PERMISSIBLE REWRITE	Infinite	Infinite
DATA RETENTION WITHOUT POWER	>100 year	10 year
NEED OF DRIVE UNIT	Yes	Yes
ALTITUDE REQUIREMENT	None	15 k ft.
NUCLEAR RADIATION / EMF DAMAGE	No	Yes
COSMIC RADIATION DAMAGE	No	Yes
COATING PROCESS	MOCVD/	RF magnetron
COST PER BYTE	$ .00005 Gigabyte	$ .30 Gigabyte
SALES MARGIN PER Gigabyte	$ .00050 Gigabyte	$ 0.03 Gigabyte
GIGABYTE		
PARTICLE SIZE	5 nanometers	100 angstrom
DATA TRANSFER RATE	10 Tera bit/sec and up	250 M bit/sec 4ns
TEMPERATURE RANGE	media to 350 f	165 f
OF MEDIA		
HEAD TYPE	Semiconductor laser	Mr and Gmr and Tmr
	MOS fet floating gate	single element inductive
	Optical transistor	spin valve GMR
RECORDING PHYSICS	electrostatic NLO crystal	electromagnetic /phase
BIT STORAGE PHYSICS	**3D volume holographic**	**2D area spinning**
	Atomic / Molecular Switch	electrons
COATING THICKNESS	2000 angstroms	3 microinch
PARTICLE CHARGE	250 microvolt	500 microvolt
DISK ROTATION RPM	not dependent	15,000
MAXIMUM		
RANDOM WRITE/READ PATTERN	Bit/Byte/Word	Bit/Byte/Word
TECHNOLOGY BASE	NO Prior World Technology	Hard Disk Drives
SHRINKAGE	0.0 %	.0.0 %
READING METHOD	Vertical Interference	Perpendicular Recording
LASER TECHNOLOGY	Solid State	NONE
WRITE FAILURE PERFORMANCE	None	None
MAXIMUM LAYER DENSITY	> 1000 molecule layers	1 layers
MECHANICAL WRITE COMPONENT	None	None
RANDOM READ SEEK TIMES	6 to 13 ms	6 to 13 ms
LENSES AND FILTERS	1 lens	None
TRACK ALIGNMENT	Closed Loop Optical Servo	Closed Loop Servo
SYMETRICAL WRITE / READ	YES	YES
PATENT INFRINGEMENT	NONE	NONE
POSSIBLE		

3D HOLOGRAPHIC OPTICAL MEMORY VS LUCENT INPHASE HOLOGRAPHIC DRIVE

	3 D Volume Atomic Drive	3 **D Volume Holographic Drive**
DRIVE COST	$ 750 when in production	$ 15,000 when in production
DISK COST	$ 45 – 90 mm 100 Terabytes	$ 45 - 130 mm 300 Gigabytes
DISK CAPACITY COMPARISON	1 FeDisk	50 InPhase disks = 1 FeDisk
MEDIA TYPE	Ferroelectric Perovskite	Plastic Ferroelectric Polymer (LiNbO3)
RECORDING TYPE	UV Photon QV Field Poling	Red/Green Laser Spectral Hole Burning
BIT DENSITIES/ sq. in.	400 Terabits and higher	32 Gbits
TRACK DENSITY	>700,000 tpi	70,000 tpi
BIT PER CUBIC CENTIMETER	> 40,000 Tbits/cu.cm.	32 Gbits/sq.cm.
NONVOLATILITY	Yes	Yes
HEAD/MEDIA HEIGHT	1 to 15 millimeters	Near Field
DESTRUCTIVE READOUT	No	No
NEED TO WRITE BACK	No	No
CELL AREA RATIO	2 -3	25 mm x 25mm x 200 microns
READ TIME RATIO	160 psec	5 millisec
WRITE TIME RATIO	160 psec	2.5 millisec
NUMBER OF PERMISSIBLE READ	Infinite	Infinite
NUMBER OF PERMISSIBLE REWRITE	Infinite	NONE
DATA RETENTION WITHOUT POWER	>100 year	10 year (Acrylate Oligomer out gassing)
NEED OF DRIVE UNIT	Yes	Yes
ALTITUDE REQUIREMENT	None	15 k ft.
NUCLEAR RADIATION / EMF DAMAGE	No	Yes
COSMIC RADIATION DAMAGE	No	Yes
COATING PROCESS	MOCVD/	RF magnetron
COST PER BYTE	$ .00005 Gigabyte	$ .50 Gigabyte
SALES MARGIN PER Gigabyte	$ .00050 Gigabyte	$ 0.03 Gigabyte
GIGABYTE		
PARTICLE SIZE	5 nanometers	100 nanometers
DATA TRANSFER RATE	10 Tera bit/sec and up	235 Mbits/sec write, 117 Mbits/sec read
TEMPERATURE RANGE	media to 350 f	165 f
OF MEDIA		
HEAD TYPE	Semiconductor laser	SLM CMOS camera assembly
	MOS fet floating gate	100 mw green laser
	Optical transistor	52 mw blue laser
RECORDING PHYSICS	electrostatic NLO crystal	plastic photopolymer
BIT STORAGE PHYSICS	**3D volume holographic**	**3D volume holographic**
	Atomic / Molecular Switch	Photo Ionization in Plastic
COATING THICKNESS	10 to 100 mm	3 mm
PARTICLE CHARGE	250 microvolt	1,000 microvolt
DISK ROTATION RPM	not dependent	15,000
MAXIMUM		
RANDOM WRITE/READ PATTERN	Bit/Byte/Word	SLM Page Silk-screened
TECHNOLOGY BASE	NO Prior World Technology	CD/DVD Worm Disk
DIGITAL DATA PAGE	150,000	3,000
SHRINKAGE	0.0 %	.3 to .1 % due to plastic encapsulated
READING METHOD	Vertical Interference	Multiplexed Layered Interference
LASER TECHNOLOGY	Solid State	Solid State
WRITE FAILURE PERFORMANCE	None	Data Overlap Problems
MAXIMUM LAYER DENSITY	> 1000 molecule layers	9 layers
MECHANICAL WRITE COMPONENT	None	Many Mechanical Shutters
RANDOM READ SEEK TIMES	6 to 13 ms	Slow, no numbers published
LENSES AND FILTERS	1 lens	> 24 lenses/filters and 17 um mirrors
TRACK ALIGNMENT	Closed Loop Optical Servo	Servo marks and mechanical alignment
SYMETRICAL WRITE / READ	YES	NO
MARKET FOCUS	Magnetic Drive Market	CD/DVD/Blu-Ray/HD-DVD
PATENT INFRINGEMENT	NONE	YES, very likely with Colossal in near future.
POSSIBLE		