

**Reference Ellipsoids
and
Geodetic Datum Transformation Parameters (Local to WGS-
84)
From
NIMA 8350.2 4 July 1977
and
MADTRAN 1 October 1996**

• **Reference Ellipsoids**

Ellipsoid	Semi-major axis	1/flattening
International 1924	6378388	297
GRS 80	6378137	298.257222101
WGS 72	6378135	298.26
WGS 84	6378137	298.257223563

• **Geodetic Datum Transformation Parameters (Local to WGS-84)**

d = delta in meters; e = error estimate in meters; #S = number of satellite measurement stations

Datum	Ellipsoid	dX	dY	dZ	Region of use	eX	eY	eZ	#S
European 1950	International 1924	-104	-101	-140	Cyprus	15	15	15	4
European 1950	International 1924	-130	-117	-151	Egypt	6	8	8	14
European 1950	International 1924	-86	-96	-120	England; Channel Islands; Scotland; Shetland Islands	3	3	3	40
European 1950	International 1924	-86	-96	-120	England; Ireland; Scotland;	3	3	3	47

					Shetland Islands				
European 1950	International 1924	-87	-95	-120	Finland; Norway	3	5	3	20
European 1950	International 1924	-84	-95	-130	Greece	25	25	25	2
European 1950	International 1924	-117	-132	-164	Iran	9	12	11	27
European 1950	International 1924	-97	-103	-120	Italy (Sardinia)	25	25	25	2
European 1950	International 1924	-97	-88	-135	Italy (Sicily)	20	20	20	3
European 1950	International 1924	-107	-88	-149	Malta	25	25	25	1
European 1950	International 1924	-87	-98	-121	MEAN FOR Austria; Belgium; Denmark; Finland; France; W Germany; Gibraltar; Greece; Italy; Luxembourg; Netherlands; Norway; Portugal; Spain; Sweden; Switzerland	3	8	5	85
European 1950	International 1924	-87	-96	-120	MEAN FOR Austria; Denmark; France; W Germany; Netherlands; Switzerland	3	3	3	52
European 1950	International 1924	-103	-106	-141	MEAN FOR Iraq; Israel; Jordan; Lebanon; Kuwait; Saudi Arabia; Syria	-1	-1	-1	0
European 1950	International 1924	-84	-107	-120	Portugal; Spain	5	6	3	18
European 1950	International 1924	-112	-77	-145	Tunisia	25	25	25	4
European 1979	International	-86	-98	-119	MEAN FOR	3	3	3	22

	1924				Austria; Finland; Netherlands; Norway; Spain; Sweden; Switzerland				
Rome 1940	International 1924	-225	-65	9	Italy (Sardinia)	25	25	25	1
WGS 1972	WGS 72	0	0	0	Global Definition	-1	-1	-1	0
WGS 1984	WGS 84	0	0	0	Global Definition	-1	-1	-1	0