

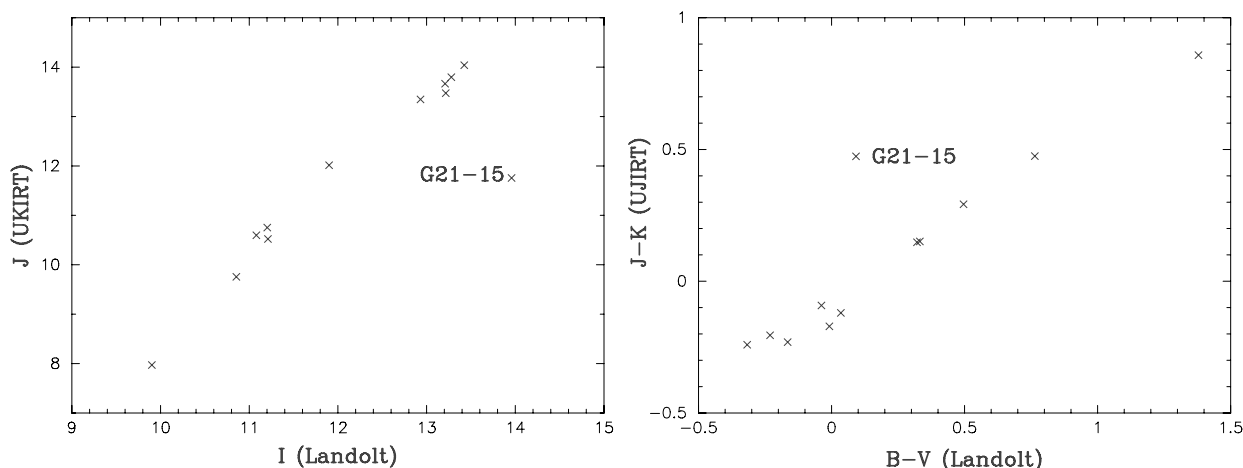
Infrared Standard Star lists available at the ING

This note provides a brief description of the two sets of UKIRT infrared standard stars available for use with the Isaac Newton Group telescopes at the Roque de Los Muchachos Observatory on the island of La Palma. Lists of the tables of standards are also given. This version refers to CMS generation 3 of SYSTEM.CAT for the Alpha TCS

Star Positions : All star positions given in these tables are accurate to 1 arcsecond. The positions have been selected from the Hipparcos catalogue, the Carlsberg Meridian catalogue, the FK5, PPM or measured from Palomar Sky survey plates. They are available from the system catalogue by typing the name given in the Ing Name column. This name is formed, as in previous ING technical notes, according to the IAU standard, using the 1950 coordinates of the star.

Previous Tables : The original list, which provided the magnitudes, had some errors in the positions. It was stated that the positions were all 1950.0, but three of the stars had positions for 2000.0. These were BS 1637, BS 1869, BS 2228. BS 4689 had a negative sign omitted from the declination.

FS35/G21-15 : I believe this star is not the Giclas star 21-15, but a star about 40 arcseconds south. The position given in this technical note, which agrees with the other sources, is for the southern star. Two diagrams are given showing comparisons of the colour and magnitude from the Landolt publication with those of the UKIRT values.



References

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Bright Infra-Red Standards referred to equinox J2000.0

ING Name	α <i>h m s</i>	δ <i>° ' "</i>	μ_{α} <i>s/yr</i>	μ_{δ} <i>"/yr</i>	J	H	K	L	L'	mv	ST	Name	Note
IR0000+355	00 02 46.03	+35 48 55.7	+0.0011	-0.0002	7.082	6.993	6.962	6.94	6.96	7.5	A0	HD 225023	3
IR0004-077	00 06 43.4	-07 32 13	-0.048	-1.68	8.378	7.781	7.447	7.04	7.04	15.6	M5	G158 - 27	5
IR0008-157	00 11 15.86	-15 28 04.7	-0.0058	-0.269	3.964	3.689	3.636	3.60	3.60	4.9	F7V	BS 33	3
IR0013+039	00 15 57.32	+04 15 03.8	+0.0015	-0.018	7.060	7.051	7.040	7.05	7.04	7.1	A0	HD 1160	2
IR0028-438	00 31 18.49	-43 36 23.0	-0.0006	-0.004	7.178	7.093	7.067	7.04	7.04	7.5	A2	HD 2811	3
IR0031+201	00 33 39.52	+20 26 01.5	0.0	+0.002	7.263	7.125	7.093	7.06	7.06	7.9	A3	HD 3029	2
IR0106+353	01 09 43.93	+35 37 13.9	+0.0146	-0.114	-0.908	-1.703	-1.853	-2.00	-1.98	2.1	M0III	BS 337	1
IR0221+563	02 25 16.03	+56 36 35.4	0.0000	+0.007	5.587	5.499	5.443	5.37	5.33	6.2	B2Iae	BS 696	2
IR0225+082	02 28 09.54	+08 27 36.2	+0.0027	-0.009	4.374	4.390	4.390	4.40	4.41	4.3	B9III	BS 718	4
IR0229-012	02 32 09.41	-01 02 05.7	-0.0016	-0.032	3.748	3.218	3.121	3.04	3.04	5.5	gG3	BS 739	2
IR0229-154	02 32 05.24	-15 14 40.6	-0.0048	-0.120	3.879	3.623	3.585	3.56	3.56	4.8	F4IV	BS 740	1
IR0238+009	02 40 42.87	+01 11 55.2	+0.0188	+0.231	7.305	6.663	6.539	6.47	6.46	9.5	M0	GL 105.5	3
IR0242+045	02 45 20.91	+04 42 41.7	+0.0047	-0.042	5.502	5.384	5.353	5.38	5.38	6.0	gF0	BS 816	2
IR0300+382	03 03 31.94	+38 24 36.0	+0.0001	-0.012	7.130	7.135	7.140	7.15	7.14	7.1	A0	HD 18881	2
IR0308-392	03 10 42.81	-39 03 05.6	-0.0017	+0.010	6.727	6.662	6.642	6.62	6.62	7.0	A2	HD 19904	3
IR0310+045	03 13 23.0	+04 46 30	+0.118	+0.12	8.816	8.187	7.857	7.52	7.52	15.2	F8	G77 - 31	5
IR0336+026	03 38 55.10	+02 45 48.6	+0.0016	-0.020	7.196	7.190	7.185	7.20	7.19	7.1	A0	HD 22686	3
IR0341+241	03 44 48.18	+24 17 21.4	+0.0006	-0.051	5.520	5.500	5.510	5.60	5.64	5.5	B7IV	BS 1140	4
IR0433+164	04 35 55.24	+16 30 33.4	+0.0044	-0.190	-1.848	-2.614	-2.783	-2.97	-2.89	0.9	K5III	BS 1457	1
IR0447+068	04 49 50.41	+06 57 40.5	+0.0313	+0.012	2.353	2.117	2.095	2.07	2.07	3.2	F6V	BS 1543	1
IR0448+055	04 51 12.36	+05 36 18.3	-0.0001	+0.001	4.029	4.087	4.138	4.18	4.18	3.7	B2III	BS 1552	1
IR0503+411	05 06 30.89	+41 14 04.2	+0.0026	-0.068	3.518	3.646	3.677	3.71	3.74	3.2	B7V	BS 1641	1
IR0502+515	05 06 40.64	+51 35 51.9	-0.0031	-0.173	4.312	4.204	4.153	4.11	4.14	5.0	F0V	BS 1637	2
IR0512-082	05 14 32.27	-08 12 06.0	0.0000	-0.001	0.240	0.241	0.211	0.13	0.09	0.1	B8Iae	BS 1713	1
IR0512+459	05 16 41.35	+45 59 52.9	+0.0073	-0.425	-1.334	-1.717	-1.802	-1.87	-1.85	0.1	G4III	BS 1708	1
IR0516+016	05 19 17.15	+01 42 15.7	+0.0010	-0.047	8.934	8.670	8.596	8.65	8.65	10.1	F8	SAO 112626	4
IR0532+476	05 36 15.96	+47 42 55.0	+0.0014	-0.020	5.532	5.454	5.393	5.36	5.39	6.2	dF0	BS 1869	3
IR0545-382	05 47 22.19	-38 13 51.3	0.0000	-0.007	7.572	7.551	7.536	7.53	7.53	7.6	A0	HD 38921	3
IR0555+018	05 58 13.52	+01 51 23.0	0.0	-0.01	6.555	6.473	6.452	6.43	6.43	7.2	A0	HD 40355	3
IR0613+464	06 17 34.65	+46 25 26.2	-0.0042	+0.011	6.012	5.943	5.892	5.84	5.88	6.5	F0V	BS 2228	3
IR0621+435	06 24 46.60	+43 32 54.4	-0.0003	-0.022	7.075	7.041	7.041	7.04	7.03	7.1	A0	HD 44612	2
IR0642-166	06 45 08.87	-16 42 58.0	-0.0385	-1.205	-1.300	-1.319	-1.320	-1.35	-1.36	-1.5	A1V	BS 2491	1
IR0652+000	06 54 42.5	-00 03 08	+0.0029	-0.184	5.750	4.857	4.606	4.43	4.43	9.5	?	BD +00 1694	5
IR0712+473	07 15 50.13	+47 14 24.0	+0.0029	-0.184	4.475	4.180	4.126	4.08	4.08	5.6	G0V	BS 2721	1
IR0736+053	07 39 18.11	+05 13 30.1	-0.0476	-1.023	-0.437	-0.564	-0.646	-0.66	-0.66	0.4	F5IV	BS 2943	1

Bright Infra-Red Standards referred to equinox J2000.0 (contd)

ING Name	α <i>h m s</i>	δ <i>° ' "</i>	μ_{α} <i>s/yr</i>	μ_{δ} <i>"/yr</i>	<i>J</i>	<i>H</i>	<i>K</i>	<i>L</i>	<i>L'</i>	<i>m_v</i>	ST	Name	Note
IR0742+281	07 45 18.95	+28 01 34.3	-0.0474	-0.046	-0.523	-0.975	-1.050	-1.15	-1.17	1-1	K0IIb	BS 2990	1
IR0823-037	08 25 39.63	-03 54 23.2	-0.0044	+0.023	3.920	3.919	3.940	3.94	3.92	3-9	A0V	BS 3314	1
IR0845-396	08 47 22.00	-39 47 58.7	-0.0012	+0.023	7.329	7.296	7.281	7.26	7-5	7-5	A0	HD 75223	2
IR0859-012	09 01 38.01	-01 28 34.8	-0.0011	+0.013	7.111	7.052	7.031	7.00	7-06	7-4	A2	HD 77281	3
IR0926-071	09 28 53.33	-07 22 16.0	-0.0009	-0.70	8.483	7.881	7.658	7.41	7-36	12-1	M3.5	GL 347 A	2
IR0945+458	09 48 44.64	+43 39 55.6	-0.0026	-0.030	7.592	7.549	7.538	7.55	7-54	7-8	A2	HD 84800	3
IR0947+592	09 50 59.37	+59 02 19.4	-0.0380	-0.151	3.162	3.005	2.983	2.98	2-94	3-8	F2IV	BS 3888	1
IR0949-146	09 51 28.69	-14 50 47.8	+0.0013	-0.022	2.617	2.136	2.050	1.98	1-98	4-1	G7III	BS 3903	3
IR1009-034	10 12 17.68	-03 44 44.7	-0.010	-0.23	5.992	5.310	5.106	4.93	4-89	9-3	M3	V 569	2
IR1019+417	10 22 19.74	+41 29 58.3	-0.0073	+0.034	0.132	-0.654	-0.803	-0.94	-0-96	3-0	M0III	BS 4069	1
IR1022-099	10 25 10.83	-10 13 43.4	-0.0462	+0.116	6.939	6.275	6.061	5.87	5-87	10-2	M1.5	GL 390	2
IR1054+074	10 56 29.1	+07 00 54	-0.239	-2.50	7.143	6.469	6.099	5.69	5-69	13-5	M6	GL 406	5
IR1111+083	11 14 01.83	+08 03 38.4	+0.0029	-0.100	3.879	3.299	3.202	3.14	3-14	5-8	K3III	BS 4358	2
IR1137-388	11 40 13.66	-39 08 47.7	-0.0026	-0.020	7.018	6.890	6.848	6.81	6-81	7-6	A2	HD 101452	2
IR1145+010	11 47 44.40	+00 48 16.4	+0.0404	-1.219	6.532	5.935	5.646	5.34	5-26	11-6	dM4.5	Y 2730	3
IR1150+380	11 52 58.77	+37 43 07.4	+0.3374	-5.813	4.957	4.466	4.400	4.35	4-38	6-4	G8V	BS 4550	1
IR1206+389	12 09 27.80	+38 37 54.5	-0.0027	-0.060	6.821	6.719	6.687	6.64	6-65	6-9	A2	HD 105601	2
IR1215+018	12 17 57.55	+01 34 31.0	-0.0018	-0.004	7.380	7.337	7.316	7.30	7-34	7-6	A2	HD 106965	2
IR1217+003	12 19 54.36	-00 40 00.5	-0.0042	-0.018	3.810	3.781	3.781	3.79	3-79	3-9	A2IV	BS 4689	1
IR1301-203	13 03 46.09	-20 35 00.4	+0.0102	+0.006	4.604	4.290	4.266	4-266	4-266	5-6	F7V	BS 4935	2
IR1309+281	13 11 52.40	+27 52 41.4	-0.0604	+0.882	3.194	2.929	2.886	2.88	2-88	4-3	G0V	BS 4983	1
IR1413+194	14 15 39.68	+19 10 56.7	-0.0771	-1.998	-2.200	-2.878	-2.976	-3.09	-3-05	0-0	KIIIb	BS 5340	1
IR1432+299	14 34 40.82	+29 44 42.5	+0.0145	+0.132	3.723	3.522	3.489	3.48	3-49	4-5	F2V	BS 5447	1
IR1440+369	14 42 39.55	+36 45 24.4	+0.0025	-0.007	6.985	6.942	6.921	6.91	6-93	7-2	A2	HD 129653	2
IR1441-022	14 43 46.46	-02 30 20.0	-0.0016	-0.023	6.826	6.724	6.692	6.67	6-68	7-2	A2	HD 129655	2
IR1444-397	14 47 46.96	-39 55 34.8	-0.0027	-0.010	6.856	6.846	6.835	6.81	6-81	6-9	A0	HD 130163	2
IR1452+031	14 54 54.38	+02 59 24.3	-0.0022	-0.007	5.926	5.026	4.825	4.64	4-64	10-8	M0	BD +03 2954	4
IR1514-091	15 17 00.42	-09 22 58.5	-0.0065	-0.019	2.759	2.789	2.799	2.799	2-85	2-6	B8V	BS 5685	1
IR1519+245	15 21 34.54	+24 20 36.1	-0.0026	-0.009	7.155	7.146	7.135	7.14	7-14	7-2	A0	HD 136754	2
IR1522+016	15 25 01.31	+01 30 34.8	+0.0003	-0.005	5.280	4.454	4.263	4.08	4-19	8-6	K2	BD +02 2957	2
IR1618+464	16 19 44.44	+46 18 48.2	-0.0011	+0.040	4.192	4.257	4.298	4.35	4-35	3-9	A9III	BS 6092	1
IR1618-254	16 21 11.32	-25 35 34.2	-0.0008	-0.021	2.491	2.442	2.421	2.43	2-42	2-9	B2II*	BS 6084	1
IR1623-244	16 26 09.4	-24 34 12	7.804	7.001	6.543	7.001	6.543	6.25	6-25	?	?	S - R.3	5
IR1623-242	16 26 34.2	-24 23 28	9.007	7.344	6.378	7.344	6.378	5.71	5-71	?	?	Oph S1	5
IR1626+007	16 28 33.97	+00 39 54.3	0.0	-0.062	2.898	2.184	2.036	1.86	1-86	7-3	K4III	BS 6136	4

Table I

Bright Infra-Red Standards referred to equinox J2000.0 (contd)

IRNG Name	α <i>h m s</i>	δ <i>° ' "</i>	μ_{α} <i>s/yr</i>	μ_{δ} <i>"/yr</i>	<i>J</i>	<i>H</i>	<i>K</i>	<i>L</i>	<i>L'</i>	<i>mv</i>	ST	Name	Note
IR1628-165	16 31 08.38	-16 36 45.9	-0.0032	-0.0037	2.767	2.334	2.269	2.19	2.22	4.3	G8IIIa	BS 6147	2
IR1712+144	17 14 38.86	+14 23 25.2	-0.0005	+0.0033	-2.276	-3.110	-3.351	-3.70	-3.66	3.6	M5Ib	BS 6406	3
IR1746+399	17 47 58.54	+39 58 50.5	-0.0008	+0.120	7.223	7.141	7.112	7.09	7.14	7.7	A0	HD 162208	4
IR1745-017	17 48 19.23	-01 48 30.0	+0.0001	-0.008	7.172	7.059	7.023	6.99	7.01	8.3	A2	HD 161903	4
IR1745-381	17 48 57.95	-38 07 07.6	+0.0007	-0.015	7.620	7.620	7.615	7.6	7.01	7.6	A0	HD 161743	2
IR1756+301	17 58 30.15	+30 11 21.4	-0.0001	+0.002	3.470	3.252	3.210	3.16	3.18	4.4	F2II	BS 6707	2
IR1846-238	18 49 49.38	-23 50 10.4	+0.0473	-0.192	6.297	5.680	5.416	5.12	5.03	11.0	dM4.5e	Y 4338	2
IR1852-227	18 55 07.15	-22 40 16.6	+0.0078	-0.020	2.739	2.120	2.033	1.91	6.00	5.1	K3II	BS 7120	2
IR1909+028	19 12 14.65	+02 53 10.7	+0.1189	-0.525	7.105	6.557	6.319	6.05	6.00	11.2	dM4	GL 748	2
IR1954+349	19 56 18.38	+35 05 00.3	-0.0026	-0.027	2.199	1.716	1.640	1.51	1.56	3.9	K0III	BS 7615	1
IR2017-129	20 20 39.83	-12 45 33.0	+0.0011	-0.020	4.825	4.859	4.859	4.86	4.86	4.8	B9.5V	BS 7773	4
IR2054-106	20 56 46.46	-10 26 54.8	-0.013	-1.12	7.832	7.185	6.946	6.70	6.69	11.6	dM4	GL 811.1	2
IR2110+024	21 12 45.32	+02 38 33.8	-0.0018	-0.017	6.696	6.657	6.626	6.60	6.61	7.0	A2	HD 201941	2
IR2115+391	21 17 24.95	+39 23 40.9	+0.0001	-0.003	3.886	3.838	3.797	3.73	3.73	4.2	B9Iab	BS 8143	1
IR2121+398	21 23 35.53	+40 01 07.1	+0.0029	+0.008	6.926	6.887	6.861	6.84	6.84	7.2	A0	HD 203856	2
IR2135-412	21 38 41.47	-41 02 52.2	+0.0018	+0.003	7.775	7.688	7.657	7.64	7.74	8.0	A3	HD 205772	3
IR2221+549	22 23 42.27	+55 12 25.2	+0.0021	+0.003	7.933	7.766	7.734	7.73	7.74	8.6	F0	SAO 34401	2
IR2222+492	22 24 30.98	+49 28 35.0	-0.0012	+0.002	4.305	4.267	4.235	4.23	4.22	4.6	B9Iab	BS 8541	2
IR2225+044	22 27 51.53	+04 41 44.6	+0.0055	-0.308	2.956	2.378	2.312	2.25	2.24	4.8	K0III	BS 8551	2
IR2250-145	22 53 16.73	-14 15 48.9	+0.064	-0.62	5.980	5.344	5.066	4.80	4.74	10.3	dM5	Y 5546	2

Notes to Tables I and II, indicating source of positions

1. FK5 catalogue.
2. Carlsberg Meridian Circle Catalogue
3. Hipparcos Catalogue.
4. PPM.
5. Measured with Coradograph.
6. APM catalogue

Faint Infrared Standards referred to equinox J2000.0

Ing Name	α $^{\circ}$ $'$ $''$ $^{\circ}$ $'$ $''$	δ $^{\circ}$ $'$ $''$ $^{\circ}$ $'$ $''$	μ_{α} $''/yr$	μ_{δ} $''/yr$	J	$J-K$	$H-K$	Other Names	note
IR0031-124	00 33 54.5	-12 07 57	+0.011	-0.17	12.967 (0.021)	0.462 (0.011)	0.081 (0.012)	G158-100, FS1	5 b
IR0052+004	00 55 09.9	+00 43 13			10.466 (0.003)	0.247 (0.003)	0.038 (0.003)	SA 92 342, FS2	5 a
IR0101+039	01 04 21.7	+04 13 37	+0.001	-0.04	12.822 (0.007)	-0.222 (0.011)	-0.097 (0.007)	Feige 11, FS3	2 a,b
IR0152+004	01 54 37.8	+00 43 01			10.264 (0.005)	0.292 (0.003)	0.040 (0.007)	SA 93 317, FS4	5 a
IR0152-070	01 54 34.6	-06 46 00			12.342 (0.006)	-0.007 (0.004)	-0.002 (0.004)	Feige 16, FS5	2 a,b
IR0227+050	02 30 16.6	+05 15 51	+0.005	-0.03	13.374 (0.015)	-0.135 (0.014)	-0.069 (0.012)	Feige 22, FS6	2 a,b
IR0254+001	02 57 21.2	+00 18 38	-0.001	-0.01	10.940 (0.005)	0.165 (0.012)	0.037 (0.010)	SA 94 242, FS7	2 a
IR0255+000	02 57 46.9	+00 16 03			8.313 (0.006)	0.766 (0.002)	0.129 (0.004)	SA 94 251, FS8	5 a
IR0255+009	02 58 13.4	+01 10 55			8.266 (0.006)	0.884 (0.003)	0.158 (0.005)	SA 94 702, FS9	5 a
IR0346-011	03 48 50.0	-00 58 32	+0.002	-0.15	14.919 (0.072)	-0.170 (0.077)	-0.049 (0.060)	GD 50, FS10	5 b
IR0450-003	04 52 58.9	-00 14 41			11.278 (0.018)	0.076 (0.025)	0.016 (0.019)	SA 96 83, FS11	2 a
IR0549+158	05 52 27.6	+15 53 13	+0.006	-0.19	13.898 (0.003)	-0.217 (0.014)	-0.091 (0.018)	GD 71, FS12	5 a
IR0554+000	05 57 07.5	+00 01 11			10.135 (0.003)	0.382 (0.002)	0.047 (0.005)	SA 97 249, FS13	5 a
IR0721-004	07 24 14.4	-00 33 04			14.261 (0.012)	-0.153 (0.005)	-0.079 (0.020)	Rubin 149, FS14	5 b
IR0848+119	08 51 05.8	+11 43 47			12.360 (0.021)	0.418 (0.008)	0.060 (0.007)	M67 I 48, FS15	6 c
IR0848+120	08 51 15.0	+11 49 21			12.631 (0.008)	0.340 (0.006)	0.038 (0.005)	M67 IV 8, FS16	6 c
IR0848+121	08 51 19.7	+11 52 10			12.270 (0.007)	0.411 (0.007)	0.073 (0.003)	M67 IV 27, FS17	6 c
IR0851-004	08 53 35.4	-00 36 42			10.522 (0.008)	0.292 (0.003)	0.031 (0.003)	SA 100 280, FS18	5 a
IR1031-114	10 33 42.8	-11 41 38	-0.021	-0.06	13.796 (0.025)	-0.231 (0.021)	-0.142 (0.047)	G162-66, FS19	5 a,b
IR1105-048	11 08 00.0	-05 09 26	-0.003	-0.43	13.473 (0.017)	-0.120 (0.015)	-0.069 (0.012)	G163-50, FS20	2 a,b
IR1134+300	11 37 05.2	+29 47 58	-0.012	-0.01	13.132 (0.004)	-0.184 (0.033)	-0.101 (0.037)	GD 140, FS21	2 d
IR1254+223	12 57 02.3	+22 01 54	-0.001	-0.15	14.240 (0.016)	-0.223 (0.010)	-0.078 (0.024)	GD 153, FS33	2 d
IR1339+287	13 41 43.6	+28 29 51			12.374 (0.000)	0.623 (0.004)	0.072 (0.018)	M3 193, FS23	6 d
IR1437+002	14 40 07.0	+00 01 45			10.753 (0.008)	0.151 (0.006)	0.019 (0.004)	SA 106 1024, FS24	5 a
IR1535+004	15 38 33.3	+00 14 20			9.756 (0.017)	0.475 (0.003)	0.070 (0.005)	SA 107 1006, FS25	5 a
IR1634-004	16 37 00.6	-00 34 39			7.972 (0.009)	0.858 (0.004)	0.155 (0.006)	SA 108 475, FS26	5 a
IR1638+364	16 40 41.6	+36 21 12			13.123 (0.018)	0.371 (0.013)	0.058 (0.014)	M13 A14, FS27	6 d
IR1741-003	17 44 06.8	-00 24 57			10.597 (0.016)	0.148 (0.010)	0.047 (0.005)	SA 109 71, FS28	5 a
IR1824+040**	18 27 13.5	+04 03 10			11.757 (0.017)	0.474 (0.008)	0.089 (0.005)	G21-15**, FS35	5 b
IR2039-202	20 42 34.7	-20 04 36	+0.023	-0.09	12.989 (0.011)	-0.170 (0.008)	-0.070 (0.009)	EG141, FS34	2 d
IR2149+021	21 52 25.4	+02 23 20	+0.002	-0.21	13.346 (0.024)	-0.171 (0.011)	-0.075 (0.012)	G93-48, FS29	2 a,b
IR2239+009	22 41 44.7	+01 12 37			12.015 (0.020)	-0.092 (0.013)	-0.036 (0.005)	SA 114 750, FS30	5 a
IR2309+105	23 12 21.6	+10 47 04	+0.010	-0.02	14.039 (0.010)	-0.241 (0.02)	-0.120 (0.017)	GD 246, FS31	2 a,b
IR2313-021	23 16 12.4	-01 50 35			13.664 (0.012)	-0.205 (0.011)	-0.088 (0.015)	Feige 108, FS32	2 a,b

G21-15**,FS35 see note in text

Notes to Table II, indicating source of identifications

a: Landolt 1983 *AJ*, **88**,439.b: Turnshek *etal* 1990 *AJ*, **99**,1243.c: Eggen and Sandage *ApJ*, **140**, 130.

d: Private comm.