

# Some 2015 Measurements of Wide and Faint Double Stars Compared with Visual Observations

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**Abstract:** A backlog of astrometry and photometry measurements made in 2015 for comparison with visual observations is reported here with the intention of providing recent precise measurements for the given objects

## Report

Visual observations often pose questions when comparing the impressions with the parameters listed in the Washington Double Star catalog and often questions arise during session planning. To countercheck such impressions, I made measurements based on images made with a remote telescope. In most cases the

measurement results confirmed the need for updating the current WDS catalog data, but in some cases the data made evident that visual impressions can sometimes be very misleading.

The WDS catalog data from the end of 2015 for the studied objects is listed in Table 1.

The measurement results are given in Table 2 with the Notes column providing additional information

Table 1: WDS catalog values for the selected objects intended for comparison with visual observation

WDS ID	Name		RA	Dec	Sep	M1	M2	PA	Con
20197+3743	ES 2505	AB	20:19:42.582	+37:43:16.797	8.3	8.65	12.1	247	Cyg
20257+3745	FOX 36	AB	20:25:46.230	+37:46:08.198	2.6	11.5	12	325	Cyg
20208+3748	SEI1095	AB	20:20:50.361	+37:48:07.701	24.7	11.63	12.13	63	Cyg
20216+3725	SEI1100	AB	20:21:38.680	+37:25:15.097	7.2	10.66	12.2	286	Cyg
20216+3725	SEI1100	AC	20:21:38.680	+37:25:15.097	15.4	10.66	12.5	129	Cyg
20310+2036	BU3 63	AB	20:30:58.097	+20:36:21.603	6.6	6.18	12	81	Del
20310+2036	BU 363	AC	20:30:58.097	+20:36:21.603	54.1	6.18	13	206	Del
20526+0517	GCB 75	AB	20:52:34.580	+05:18:26.001	3.4	12	12.4	106	Del
20244+1935	STF2679	AC	20:24:22.589	+19:34:30.003	39.2	7.88	11.56	151	Del
20435+1953	STF2721	AB	20:43:29.802	+19:52:52.199	2.5	7.8	9.9	22	Del
05107+1630	HJ 3268	AB	05:10:41.780	+16:30:43.698	10.1	9.78	11.3	272	Tau
05119+1645	HJ 3269	AB	05:11:53.009	+16:44:30.797	20.1	8.7	10.78	61	Tau
05247+2009	J 145	AB	05:24:45.940	+20:08:58.502	2.7	9.4	9.4	348	Tau
05499+2259	POU 789	AB	05:49:53.620	+22:58:47.600	12.9	8.99	10.7	251	Tau
03474+2355	STF 450	AB	03:47:24.410	+23:54:52.802	6.3	7.29	9.4	263	Tau
05275+2004	BRT2325	AB	05:27:28.830	+20:03:52.903	3.8	10.7	11.3	134	Tau
19385+1715	BU 1471	AB	19:38:27.479	+17:15:26.003	12.4	7.51	11.86	332	Sge
19401+1801	J 121	AB	19:40:05.779	+18:00:50.201	29.8	4.37	13.2	180	Sge
19155+2721	BRT3339	AB	19:15:30.631	+27:20:57.502	3.7	10.7	12.4	48	Lyr
19173+2702	BRT3340	AB	19:17:17.762	+27:01:39.502	4.8	11.9	12.7	61	Lyr
19088+3419	POP 30	AB	19:08:45.922	+34:18:55.904	2.1	9.2	9.7	314	Lyr
18000+5316	A 1886	AB	17:59:58.929	+53:16:16.300	4.7	9.4	10.5	341	Dra
17511+5523	HO 71	AB	17:50:57.763	+55:23:17.900	3.8	9.2	9.6	227	Dra
17452+5157	STF2225	AB	17:45:10.073	+51:56:55.897	5.5	9	11.9	338	Dra
17452+5157	STF2225	CD	17:44:47.572	+51:55:17.198	8.9	10.2	10.56	298	Dra
17027+5952	STI813	AB	17:02:39.048	+59:52:07.794	11	10.41	11.1	67	Dra

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about the used images and references to visual observation. In Table 2 RA and Dec are the coordinates based on plate solving with UCAC4 reference stars in the 10.5 to 14.5mag range. Sep is separation calculated as

$$Sep = \sqrt{[(RA_2 - RA_1)\cos(dec_1)]^2 + (dec_2 - dec_1)^2}$$

in radians. Err\_Sep is calculated as

$$Err\_Sep = \sqrt{dRA^2 + dDec^2}$$

with  $dRA$  and  $dDec$  as average RA and Dec plate solving errors. PA is calculated as

$$PA = \arctan\left[\frac{(RA_2 - RA_1)\cos(Dec_1)}{Dec_2 - Dec_1}\right]$$

in radians depending on quadrant. Err\_PA is the error estimation for PA calculated as

$$Err\_PA = \arctan(Err\_Sep / Sep)$$

in degrees assuming the worst case that Err\_Sep points in the right angle to the direction of the separation means perpendicular to the separation vector.

Mag is the photometry result based on UCAC4 reference stars with Vmags between magnitudes 10.5 and 14.5. Results for stars significantly brighter than 10.5 mag are for this reason not reliable and therefore not listed. Err\_Mag is calculated as

$$Err\_Mag = \sqrt{dV_{mag}^2 + [2.5\log_{10}(1 + 1/SNR)]^2}$$

with  $dV_{mag}$  as the average Vmag error over all used reference stars and SNR is the signal to noise ratio for the given star.

Date is the Bessel epoch in 2015 and N is the number of images (usually with one second exposure time) used for the reported values. iT in the Notes column indicates the telescope used with number of images and exposure time given.

### Telescope Magnitude Resolution Limit Determination

Additionally a few wide multiples (BU 298, BAR 1 and SMR 33) were used to determine the current telescope magnitude resolution limit for visual observation sessions. For this purpose images and measurements were made to simply provide reliable magnitudes.

The measurement results are given in Table 3 with the Notes column providing additional information about the used images and references to visual observation and current end of 2015 WDS catalog data. Column headings are the same as described above for the

Table 2 headings.

Specifications of the used iTelescope equipment are as follows:

iT24: 610mm CDK with 3962mm focal length. CCD: FLI-PL09000. Resolution 0.62 arcsec/pixel. V-filter. No transformation coefficients available. Located in Auberry, California. Elevation 1405m

### Astrometry Quality Control:

A few of the listed objects were selected by random for the purpose of quality control by comparison with URAT1 coordinates (considered the currently most precise available even if preliminary) if available for both components with the results listed below in Table 4.

All checked astrometry results were within the given error range estimation confirmed by comparison with the URAT1 coordinates. Comparison of measured magnitudes with URAT Vmags were only possible for a smaller number of objects with several results outside the given error range estimation but only by a very small margin.

### Acknowledgements

The following tools and resources have been used for this research:

- Washington Double Star Catalog
- iTelescope
- AAVSO VPhot
- AAVSO APASS
- UCAC4 catalog via the University of Heidelberg website and directly from USNO DVD
- Aladin Sky Atlas v8.0
- SIMBAD, Vizier
- 2MASS All Sky Catalog
- URAT1 Survey (preliminary)
- AstroPlanner v2.2
- MaxIm DL6 v6.08
- Astrometrica v4.8.2.405

### References

- Buchheim, Robert – 2008, CCD Double-Star Measurements at Altimira Observatory in 2007, Journal of Double Star Observations, Vol. 4 No. 1 Page 28

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Table 2. Photometry and strometry results for the given objects.

WDS ID	Name	RA	Dec	dRA	dDec	Sep	Err Sep	PA	Err PA	Mag	Err Mag	SNR	dVmag	Date	N	Notes
20197+3743	ES 2505	A 20 19 42.595	37 43 17.03	0.09	0.08	8.307	0.120	246.895	0.830	-	-	-	0.07	2015.765	5	1
		B 20 19 41.951	37 43 13.77							14.531	0.097	15.61				
20257+3745	FOX 36	A 20 25 46.251	37 46 08.51	0.19	0.16	2.769	0.248	321.931	5.126	11.342	0.121	68.72	0.12	2015.886	1	2
		B 20 25 46.107	37 46 10.69							11.804	0.122	52.12				
20208+3748	SEI1095	A 20 20 50.356	37 48 07.79	0.13	0.13	24.662	0.184	62.938	0.427	11.557	0.042	91.44	0.04	2015.765	5	3
		B 20 20 52.209	37 48 19.01							12.097	0.043	69.61				
20216+3725	SEI1100	A 20 21 38.683	37 25 15.15	0.12	0.11	7.224	0.163	286.319	1.291	10.524	0.051	145.87	0.05	2015.765	5	4
		B 20 21 38.101	37 25 17.18							11.537	0.051	90.73				
20216+3725	SEI1100	A 20 21 38.683	37 25 15.15	0.12	0.11	15.374	0.163	128.783	0.607	10.524	0.051	145.87	0.05	2015.765	5	5
		C 20 21 39.689	37 25 05.52							11.842	0.051	90.73				
20310+2036	BU 363	A 20 30 58.267	20 36 23.06	0.14	0.15	5.719	0.205	87.795	2.055	-	-	-	0.15	2015.716	1	6
		B 20 30 58.674	20 36 23.28							12.255	0.170	12.95				
20310+2036	BU 363	A 20 30 58.267	20 36 23.06	0.14	0.15	54.714	0.205	206.536	0.215	-	-	-	0.15	2015.716	1	7
		C 20 30 56.526	20 35 34.11							13.580	0.154	31.22				
20526+0517	GCB 75	A 20 52 34.579	05 18 26.26	0.15	0.16	3.260	0.219	101.323	3.849	12.722	0.124	34.08	0.12	2015.683	1	8
		B 20 52 34.793	05 18 25.62							13.739	0.141	14.27				
20244+1935	STF2679	A 20 24 22.580	19 34 29.56	0.15	0.14	38.510	0.205	149.791	0.305	-	-	-	0.07	2015.716	1	9
		C 20 24 23.951	19 33 56.28							11.579	0.071	78.75				
20435+1953	STF2721	A 20 43 29.763	19 52 52.03	0.17	0.14	2.566	0.220	21.951	4.905	-	-	-	0.09	2015.716	1	10
		B 20 43 29.831	19 52 54.41							10.090	0.092	61.17				
05107+1630	HJ 3268	A 05 10 41.762	16 30 44.26	0.16	0.16	10.038	0.226	269.772	1.291	-	-	-	0.14	2015.963	1	11
		B 05 10 41.064	16 30 44.22							11.140	0.141	71.77				

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Table 2 (conclusion). Photometry andstrometry results for the given objects.

WDS ID	Name	RA	Dec	dRA	dDec	Sep	Err Sep	PA	Err PA	Mag	Err Mag	SNR	dVmag	Date	N	Notes
05119+1645	HJ 3269	A 05 11 53.087	16 44 29.54	0.14	0.12	19.983	0.184	60.434	0.529	-	-	-	0.11	2015.963	1	12
		B 05 11 54.297	16 44 39.40							11.142	0.111	62.44				
05247+2009	J 145	A 05 24 45.998	20 08 55.66	0.20	0.20	2.293	0.283	346.506	7.031	10.921	0.122	43.68	0.12	2015.963	1	13
		B 05 24 45.960	20 08 57.89							11.967	0.132	19.00				
05499+2259	POU 789	A 05 49 53.601	22 58 47.50	0.17	0.16	12.655	0.233	251.097	1.057	-	-	-	0.11	2015.963	1	14
		B 05 49 52.734	22 58 43.40							10.905	0.111	84.24				
03474+2355	STF 450	A 03 47 24.428	23 54 52.19	0.19	0.13	6.215	0.230	261.300	2.122	-	-	-	0.11	2015.963	1	15
		B 03 47 23.980	23 54 51.25							9.822	0.112	57.01				
05275+2004	BRT2325	A 05 27 28.838	20 03 52.76	0.19	0.26	3.441	0.322	127.402	5.347	10.601	0.163	32.70	0.16	2015.965	1	16
		B 05 27 29.032	20 03 50.67							11.475	0.174	15.35				
19385+1715	BU 1471	A 19 38 27.500	17 15 25.15	0.21	0.18	12.968	0.277	332.857	1.222	-	-	-	0.11	2015.765	5	17
		B 19 38 27.087	17 15 36.69							12.047	0.115	32.95				
19401+1801	J 121	A 19 40 05.837	18 00 48.80	0.20	0.16	28.900	0.256	180.085	0.508	-	-	-	0.12	2015.768	1	18
		B 19 40 05.834	18 00 19.90							12.951	0.136	16.60				
19155+2721	BRT3339	A 19 15 30.628	27 20 57.18	0.14	0.14	3.683	0.198	45.748	3.077	12.202	0.151	67.04	0.15	2015.754	5	19
		B 19 15 30.826	27 20 59.75							13.119	0.152	39.37				
19173+2702	BRT3340	A 19 17 17.764	27 01 39.33	0.14	0.15	4.913	0.205	59.550	2.391	11.633	0.151	67.55	0.15	2015.754	5	20
		B 19 17 18.081	27 01 41.82							12.338	0.151	52.68				
19088+3419	POP 30	A 19 08 45.942	34 18 56.06	0.17	0.16	1.890	0.233	312.213	7.041	11.845	0.192	40.77	0.19	2015.765	5	21
		B 19 08 45.829	34 18 57.33							12.012	0.192	40.16				
18000+5316	A 1886	A 17 59 58.907	53 16 16.43	0.12	0.11	4.709	0.163	340.528	1.980	-	-	-	0.06	2015.710	1	22
		B 17 59 58.732	53 16 20.87							11.235	0.061	96.37				
17511+5523	HO 71	A 17 50 58.116	55 23 20.77	0.17	0.16	4.131	0.233	230.283	3.234	11.479	0.101	75.16	0.10	2015.710	1	23
		B 17 50 57.743	55 23 18.13							11.998	0.102	49.18				
17452+5157	STF2225	A 17 45 10.081	51 56 56.31	0.13	0.15	5.477	0.198	338.616	2.076	-	-	-	0.05	2015.710	1	24
		B 17 45 09.865	51 57 01.41							11.932	0.054	53.16				
17452+5157	STF2225	C 17 44 47.593	51 55 17.59	0.13	0.15	8.607	0.198	295.461	1.321	10.264	0.050	169.54	0.05	2015.710	1	25
		D 17 44 46.753	51 55 21.29							10.592	0.051	133.26				
17452+5157	B 9005	C 17 44 47.593	51 55 17.59	0.13	0.15	65.088	0.198	302.467	0.175	10.264	0.050	169.54	0.05	2015.710	1	26
		E 17 44 41.657	51 55 52.53							13.077	0.056	42.28				
17027+5952	STI 813	A 17 02 39.057	59 52 07.50	0.13	0.11	11.137	0.170	65.604	0.876	10.230	0.060	145.52	0.06	2015.710	1	27
		B 17 02 40.404	59 52 12.10							12.035	0.062	69.15				

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#### Notes to Table 2.

1. iT24 stack 5x3s. SNR B<20. Visual observation suggested B far fainter than 12.1mag, confirmed
2. iT24 1x3s. Touching to overlapping star disks. Visual observation suggested A and B a tad brighter than listed, confirmed
3. iT24 stack 5x3s. Visual observation suggested B somewhat fainter, not confirmed by this measurement
4. iT24 stack 5x3s. Visual observation suggested B brighter than listed, confirmed
5. iT24 stack 5x3s. Visual observation suggested C brighter than listed, confirmed
6. iT24 1x3s. SNR for B<20. Visual observation suggested B far fainter than 10mag (old WDS August 2013 value in my session plan, meanwhile corrected to estimated 12). But Sep and PA also quite different
7. iT24 1x3s. Zero digit WDS mag for C suggested check
8. iT24 1x3s. SNR for B<20. WDS mags of 12/12.4 suggested check for good reason. No visual observation
9. iT24 1x3s. Visual observation suggested C far brighter than 12.3mag (old WDS August 2013 value in my session plan, meanwhile corrected to 11.56 confirmed by measurement)
10. iT24 1x3s. Visual observation suggested B far fainter than 9.9mag – not supported by this measurement but overlapping star disks might make B probably appear brighter than it really is
11. iT24 1x3s. Visual observation suggested B a bit brighter than 11.3, confirmed
12. iT24 1x3s. Visual observation suggested B fainter than 10.6 (WDS August 2013 value, meanwhile changed to 10.78), confirmed
13. iT24 1x3s. Visual observation suggested A and B far fainter than 9.4mag, confirmed
14. iT24 1x3s. Single digit WDS magnitude for B suggested check
15. iT24 1x3s. Touching star disks. Visual impression of B being reddish and fainter than currently listed and also than measured here
16. iT24 1x3s. SNR for B<20. Visual observation suggests B a bit fainter than 11.3mag, confirmed
17. iT24 stack 5x3s. Visual observation suggested B being fainter than 11.86mag – not really confirmed by this measurement, may be a tad
18. iT24 1x3s. SNR for B<20. Single digit WDS magnitude for B suggested a check
19. iT24 stack 5x3s. Visual observation suggested A much fainter than WDS 10.7mag. Confirmed by measurement
20. iT24 stack 5x3s. Visual impression A and B a tad brighter than WDS listed, confirmed
21. iT24 stack 5x3s. Heavily overlapping star disks - so this measurement is not very reliable. But the visual impression that this double is far fainter than WDS 9.2/9.7mag is certainly confirmed
22. iT24 1x3s. Visual observation suggested B being fainter than WDS 10.5 confirmed by measurement
23. iT24 1x3s. Visual observation suggested A and B being far fainter than WDS 9.2/9.6, confirmed
24. iT24 1x3s. Single digit WDS 11.9mag suggested check
25. iT24 1x3s. Visual observation suggested D being brighter than WDS 10.56mag, but this was not confirmed
26. iT24 1x3s. Part of STF 2225. WDS data confirmed
27. iT24 1x3s. Visual observation suggested B being fainter than WDS 11.1mag, confirmed

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Table 3. Photometry and Astrometry Results for Objects Selected for Telescope Magnitude Resolution Limit Determination

WDS ID	Name	RA	Dec	dRA	dDec	Sep	Err Sep	PA	Err PA	Mag	Err Mag	SNR	dVmag	Date	N	Notes
20396+1555	$\alpha$ Del BU 298	A 20 39 38.364	15 54 43.16	0.17	0.16	35.461	0.233	232.759	0.377	-	-	-	0.10	2015.716	1	1
		B 20 39 36.407	15 54 21.70							13.717	0.109	24.15				
20396+1555	HJ 1554	A 20 39 38.364	15 54 43.16	0.17	0.16	48.276	0.233	277.762	0.277	-	-	-	0.10	2015.716	1	2
		C 20 39 35.048	15 54 49.68							11.977	0.101	63.80				
20396+1555	BU 298	A 20 39 38.364	15 54 43.16	0.17	0.16	45.377	0.233	159.706	0.295	-	-	-	0.10	2015.716	1	3
		D 20 39 39.455	15 54 00.60							12.517	0.102	50.02				
20396+1555	BU 298	A 20 39 38.364	15 54 43.16	0.17	0.16	57.245	0.233	303.505	0.234	-	-	-	0.10	2015.716	1	4
		E 20 39 35.055	15 55 14.76							13.540	0.108	25.87				
20396+1555	BU 298	A 20 39 38.364	15 54 43.16	0.17	0.16	72.217	0.233	117.664	0.185	-	-	-	0.10	2015.716	1	5
		F 20 39 42.798	15 54 09.63							11.818	0.101	71.15				
01097+3537	$\beta$ And BAR 1	A 01 09 44.155	35 37 12.73	0.13	0.15	108.365	0.198	276.209	0.105	-	-	-	0.09	2015.940	1	6
		C 01 09 35.320	35 37 24.45							13.272	0.109	17.26				
01097+3537	BAR 1	A 01 09 44.155	35 37 12.73	0.13	0.15	65.920	0.198	149.400	0.173	-	-	-	0.09	2015.940	1	7
		D 01 09 46.907	35 36 15.99							11.917	0.094	39.43				
01097+3537	BAR 1	A 01 09 44.155	35 37 12.73	0.13	0.15	155.244	0.198	303.294	0.073	-	-	-	0.09	2015.940	1	8
		E 01 09 33.513	35 38 37.95							11.942	0.094	40.35				
01097+3537	BAR 1	A 01 09 44.155	35 37 12.73	0.13	0.15	141.806	0.198	81.079	0.080	-	-	-	0.09	2015.940	1	9
		F 01 09 55.644	35 37 34.72							11.608	0.093	46.30				
01097+3537	BAR 1	A 01 09 44.155	35 37 12.73	0.13	0.15	205.210	0.198	214.838	0.055	-	-	-	0.09	2015.940	1	10
		G 01 09 34.541	35 34 24.30							12.233	0.095	35.34				
01097+3537	BAR 1	A 01 09 44.155	35 37 12.73	0.13	0.15	231.197	0.198	224.476	0.049	-	-	-	0.09	2015.940	1	11
		H 01 09 30.871	35 34 27.76							11.087	0.092	61.46				
01097+3537	BAR 1	A 01 09 44.155	35 37 12.73	0.13	0.15	335.157	0.198	294.307	0.034	-	-	-	0.09	2015.940	1	12
		I 01 09 19.105	35 39 30.69							11.862	0.094	41.45				
18369+3846	Vega SMR 33	A 18 36 56.604	38 47 05.08	0.13	0.19	221.284	0.230	85.064	0.060	-	-	-	0.11	2015.754	5	13
		P 18 37 15.459	38 47 24.12							12.548	0.113	38.42				
18369+3846	SMR 33	A 18 36 56.604	38 47 05.08	0.13	0.19	167.577	0.230	120.214	0.079	-	-	-	0.11	2015.754	5	14
		Q 18 37 08.989	38 45 40.75							13.406	0.116	28.44				
18369+3846	SMR 33	A 18 36 56.604	38 47 05.08	0.13	0.19	180.481	0.230	264.841	0.073	-	-	-	0.11	2015.754	5	15
		R 18 36 41.231	38 46 48.85							13.217	0.115	32.52				
18369+3846	SMR 33	A 18 36 56.604	38 47 05.08	0.13	0.19	220.794	0.230	246.070	0.060	-	-	-	0.11	2015.754	5	16
		T 18 36 39.344	38 45 35.52							12.876	0.113	38.73				

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Notes to Table 3.

1. iT24 1x3s image taken for TML check. Sep and PA according to WDS values, Mag B about 0.3mag fainter than WDS listed
2. iT24 1x3s image taken for TML check. Part of BU298. Visual observation suggested C fainter than listed, not confirmed
3. iT24 1x3s image taken for TML check. Sep and PA according to WDS values, Mag D about 0.4mag brighter than listed
4. iT24 1x3s image taken for TML check. Sep and PA according to WDS values, Mag E about 0.9mag fainter than listed
5. iT24 1x3s image taken for TML check. Sep and PA according to WDS values, Mag F about 1.1mag fainter than listed
6. iT24 1x3s taken for TML check. SNR for C<20. C about 0.3mag fainter than listed
7. iT24 1x3s taken for TML check. WDS mag for D about confirmed
8. iT24 1x3s taken for TML check. WDS mag for E confirmed
9. iT24 1x3s taken for TML check. WDS mag for F confirmed
10. iT24 1x3s taken for TML check. G about 0.3mag fainter than listed
11. iT24 1x3s taken for TML check. C about 0.3mag fainter than listed
12. iT24 1x3s taken for TML check. WDS mag for I about confirmed
13. iT24 stack 5x3s taken for TML check. P about 0.5mag fainter than listed
14. iT24 stack 5x3s taken for TML check. Q about 1.4mag fainter than listed
15. iT24 stack 5x3s taken for TML check. R about 1.2mag fainter than listed
16. iT24 stack 5x3s taken for TML check. T about 0.3mag fainter than listed

*Table 4: Quality control of measurements by comparison with URAT1*

WDS ID	Name		RA	Dec	Sep	✓	PA	✓	Mag	✓	Date	Notes
20208+3748	SEI1095	A	20 20 50.363	37 48 07.729	24.670	Yes	62.733	Yes	11.633	No	2013.658 2013.677	"No" for M1 with small margin of 0.034
		B	20 20 52.213	37 48 19.031					12.125	Yes		
05275+2004	BRT2325	A	05 27 28.840	20 03 51.861	3.423	Yes	132.316	Yes	10.443	Yes	2013.890 2014.044	Vmag not available for B in URAT1
		B	05 27 29.020	20 03 49.556					na	-		
18000+5316	A 1886	A	17 59 58.913	53 16 16.315	4.700	Yes	340.223	Yes	9.471	-	2013.668 2013.898	Vmag not available for B in URAT1, A not measured
		B	17 59 58.736	53 16 20.738					na	-		
17452+5157	B 9005	A	17 44 47.583	51 55 17.412	65.349	Yes	302.524	Yes	na	-	2013.628 2013.897	"No" for M2 with small margin of 0.003. Vmag for A not available in URAT1
		B	17 44 41.627	51 55 52.547					13.018	No		
17027+5952	STI 813	A	17 02 39.047	59 52 07.516	11.028	Yes	66.433	Yes	10.148	No	2013.668 2013.898	"No" for M1 with small margin of 0.022. Vmag for B not available in URAT1
		B	17 02 40.390	59 52 11.925					na	-		