

C221A Correlation Report

General information

- Session info: <http://www3.mpifr-bonn.mpg.de/div/vlbi/globalmm/>
- Station feedback: https://www3.mpifr-bonn.mpg.de/div/vlbi/globalmm/sessions/apr22/feedback_apr22.asc
- ALMA and LMT did not observe
- Mopra 86 GHz is linear polarized. Similarly, Yebeas was inadvertently linear polarized for nearly the entire track.
- Release v1 is a release of all projects, without PolConvert of ML010A baselines to Mopra (nor to Yebeas).
- Release v2 adds ML0101A 3mm with Mopra polarization converted to circular not with PolSolve+PolConvert (failed) but rather with QWP_ROTATE.py and a fixed 45 deg rotation and a fixed Mopra "RCP-LCP" offset taken from one calibrator scan

Status

what	date
Started v1 correlation of 3mm	22 Nov 2022
Started v1 correlation of 7mm	24 Nov 2022
Packaging of v1 finished. Mopra in ML010A *not* polconverted for v1, neither was Yebeas.	12 Dec 2022
Release v1 distributed to PIs	20 Dec 2022
Started trials for ML010A with PolSolve+PolConvert and QWP_ROTATE.py to convert Mopra	09 Jan 2022
Packaging of v2 ML0101A finished with Mopra converted to linear	06 Feb 2022

Fringes

Station	Code	Fringes	Plots	Comments
Ef		yes, 3mm No0128 50s SNR~200 Ef-On		
Nn		yes		
On		yes, 3mm No0128 50s SNR~200 Ef-On		
Mh		yes, 3mm No0048 100s SNR~15 Mh-On		
Ys		yes, 3mm No0209 30s SNR~90 On-Ys		most scans linear pol
Pv		no		
Gl		yes, 3mm No0136 Gl-Nn		freq setup shifted from C211

Station	Code	Fringes	Plots	Comments
Kt		yes, 3mm No0030 50s SNR~250 Kt-Ky, no Ku fringe		
Ky		yes, 3mm No0030 50s SNR~250 Kt-Ky		
Ku		yes, 3mm No0159 20s SNR~200 Ku-Ky		most of track no Ku fringes, only during No0155-No0181
VLBA		yes, intra VLBA and to Nn Ef		
VLBA_OV		yes		unexpected fringes despite observing log noting rx warm and several maintenance outages while working on the cryo
VLBA_NL		no		unexpected, no fringes yet no issues noted in observing log; in some sense the opposite of the case of OV
VLBA_PT		no		expected, observing log indicates Pt had major hardware failures
Mp		yes, 3mm No0235 Mp-Kt		linear pol at Mp - PolConvert!
ATCA		yes, 3mm No0235, At-Mp (circ x lin), At-Kt , No00229 Kp-Kt-Ky-At-Mp		No0235 ATCA refant W45
KVN-EU-VLBA-Aus		yes, arrays tied using Nn Kp Ky At		

Notes

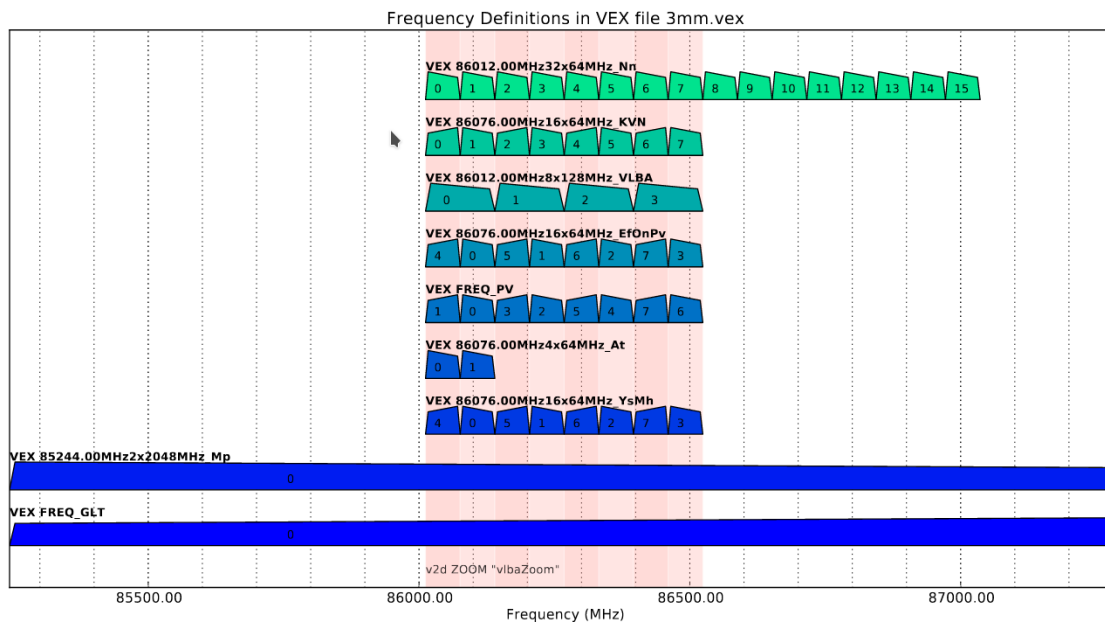
- PV joined late due to bad weather. The first scans were bad due to a setup problem. First good scan is 091-1415 No0265. Looks like the 3rd-last scan for PV, i.e. PV lost for most of this track.
- YS had technical problems in the beginning of c221a which were fixed after 091-0800 No0179. Missing quarter waves plates were inserted later. First good scan is 091-1415 No0265, the 3rd-last scan for YS.
- YS inadvertent linear-pol scans were not labeled as X,Y during correlation, but if PolConvert is indicated, could carry out relabeling on the existing visibility data prior to a PolConvert pass
- KU lacks fringes for the most of the track except for scans No0155-No0181
- Mopra is linear polarized (need PolConvert!) and had a different recording setup than scheduled, 2 x 2048 MHz at 85244.0 MHz USB.

- Mopra 20 scans of data lost at MPIfR due to VDIF conversion running while BeeGFS migration was ongoing, unfortunately no backup on transfer server
- Atca had a non-standard setup, 4 x 64 MHz USB at 86012.0 MHz and 86076.0 MHz
- Severe OpenMPI software issue, all of the 7 scans that have ≥ 15 stations fail OpenMPI MPI_Init() with "num local peers failed". Fails also with a simple MPI Hello World program launched with the same mpi machinesfile. The MPI_Init() strangle succeeds when the machinesfile is first sorted alphabetically i.e. the exactly same nodes are used, merely started in different order. To correlate the 7 scans, had to reduce the nr of stations by dropping those stations that had bad data (Pv, Ys, Pt, La).
- GLT, Slack #c221, 01 Apr ~ 13 UT: "we observed M87 instead for scan 429, 435, 441, 446 as M87 has been low elevation", ~16 UT "GLT resumed the observations from scan 458. No snow, no problem so far."
- GLT, EHT 2022 obslog, scan 641 on 2013+370 and all later scans lost due to power outage

Frequency Setup

Mopra and GLT recorded wideband 2048 MHz, but did not have common scans in track A.

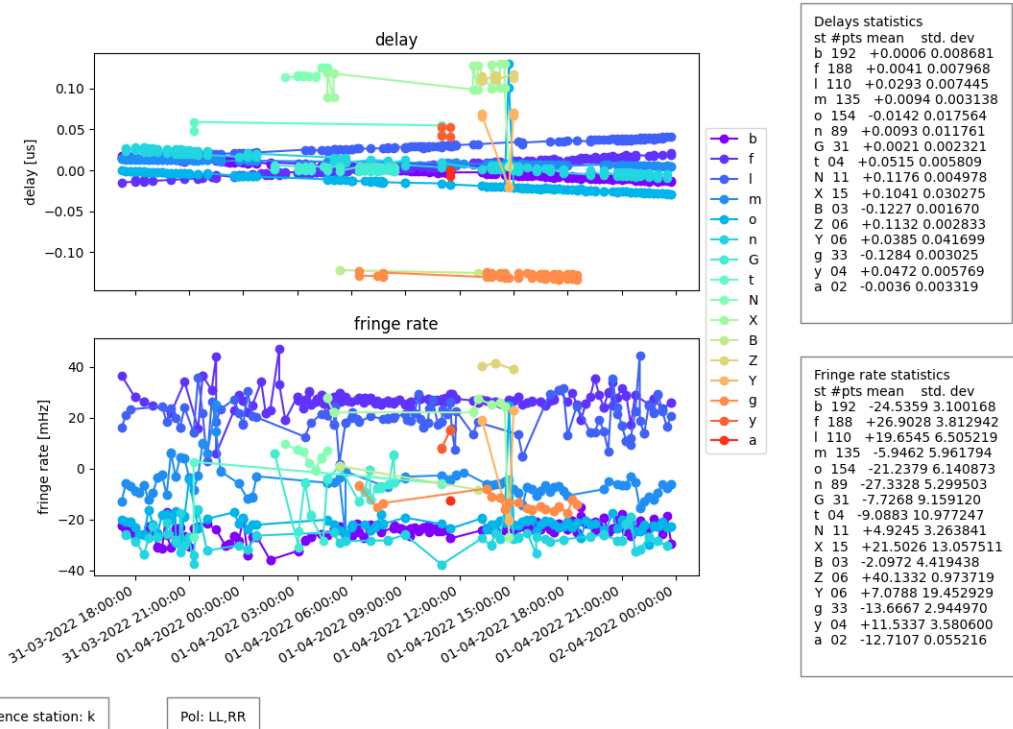
NOEMA recorded 1024 MHz of which 512 MHz are common with the majority of the GMVA array. Another 512 MHz are common only with GLT (38 scans Nn-Gl) and nominally with Mopra (but 0 scans Nn-Mp). These extra 512 MHz on Nn-Gl were *not* included in DiFX correlation.



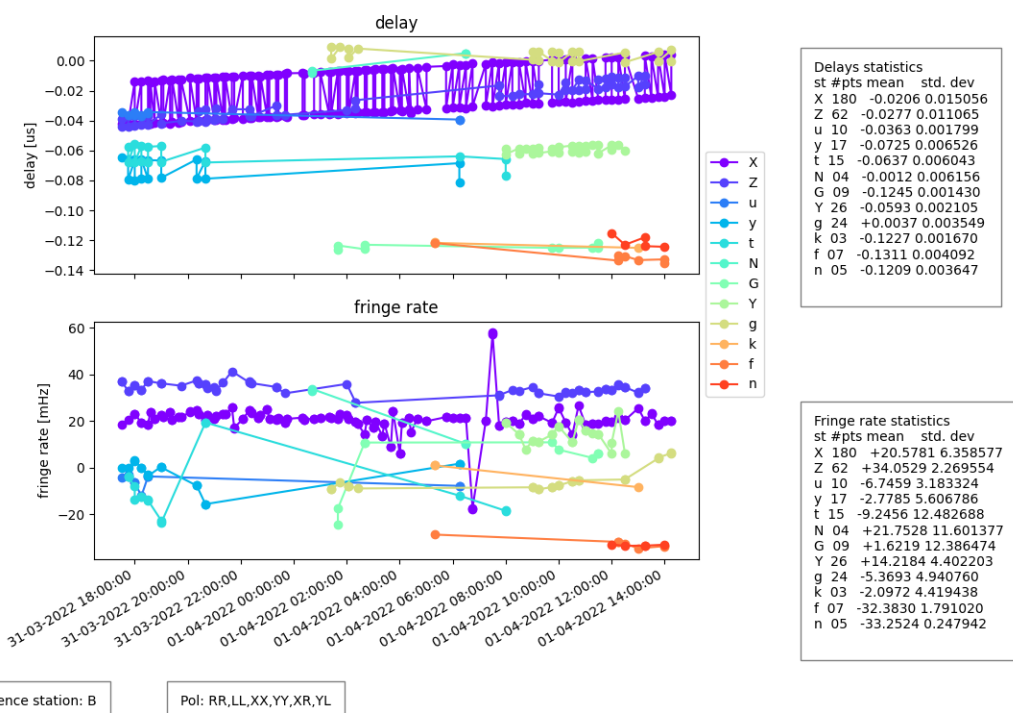
Post-Correlation checks

3mm Residuals

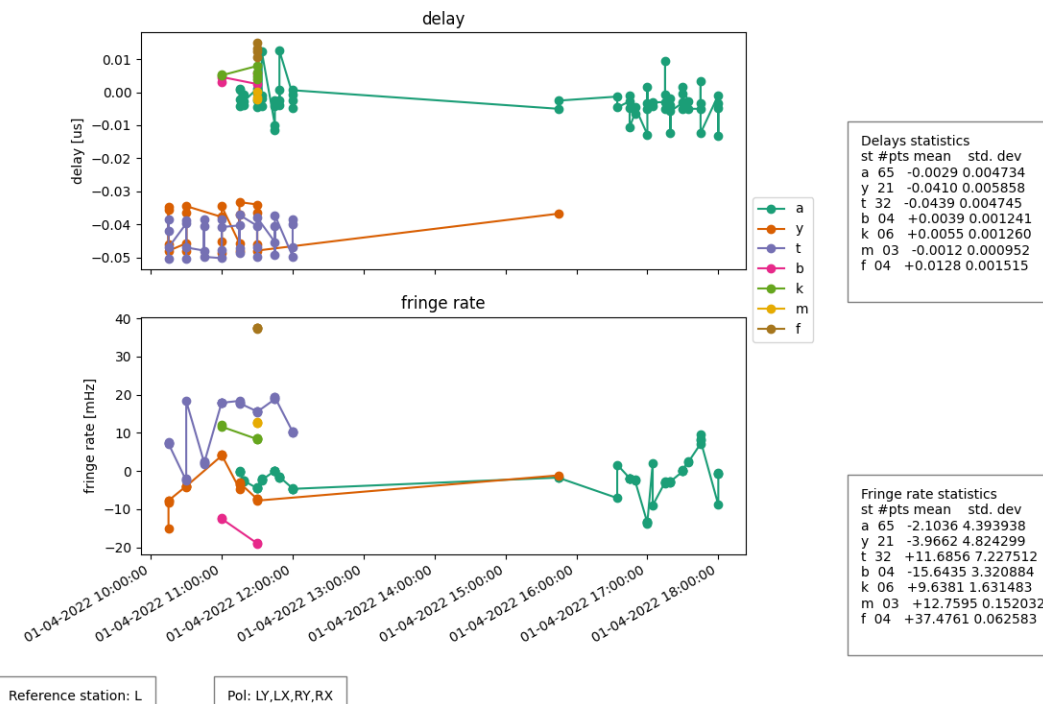
Residuals relative to Kitt Peak



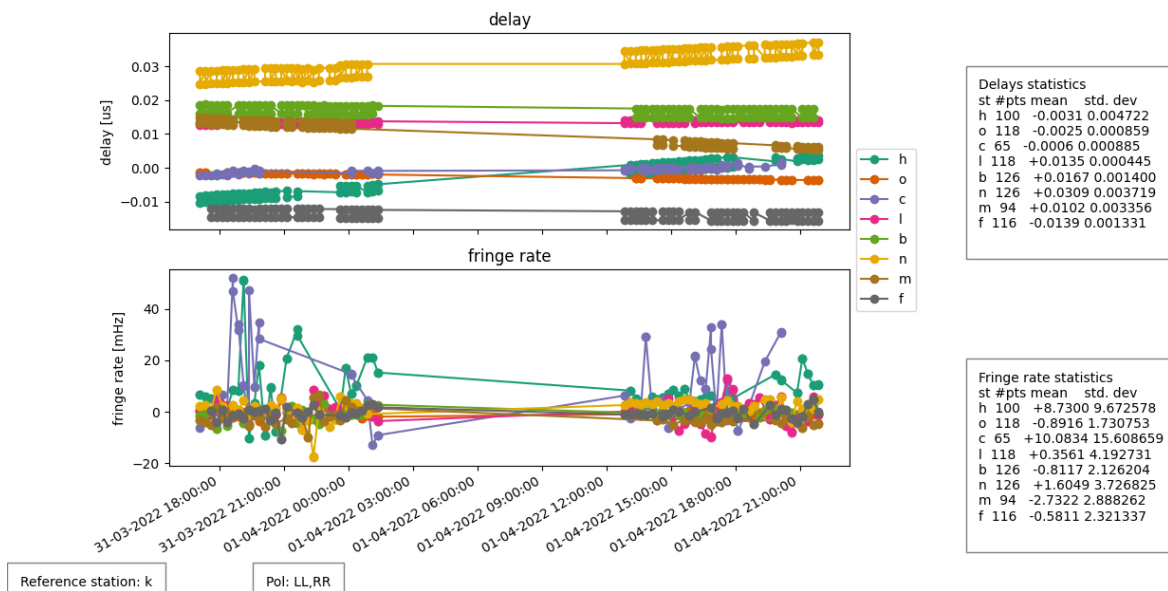
Residuals relative to Effelsberg



Residuals relative to Mopra



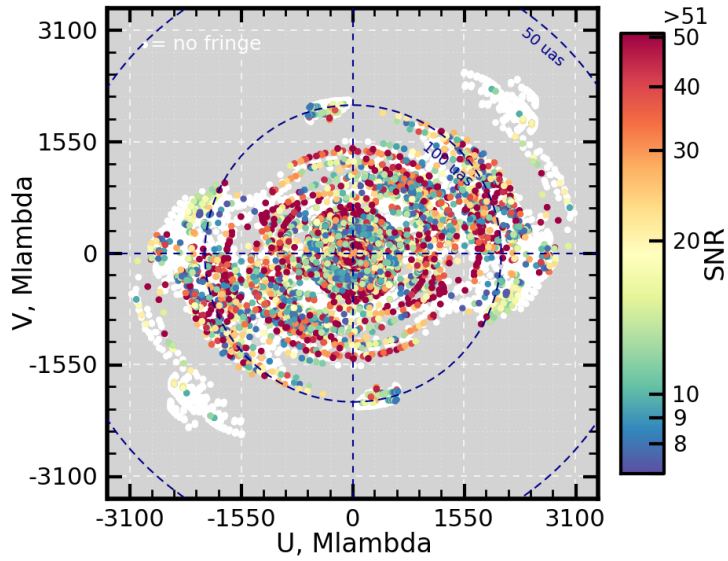
7mm Residuals



Detections

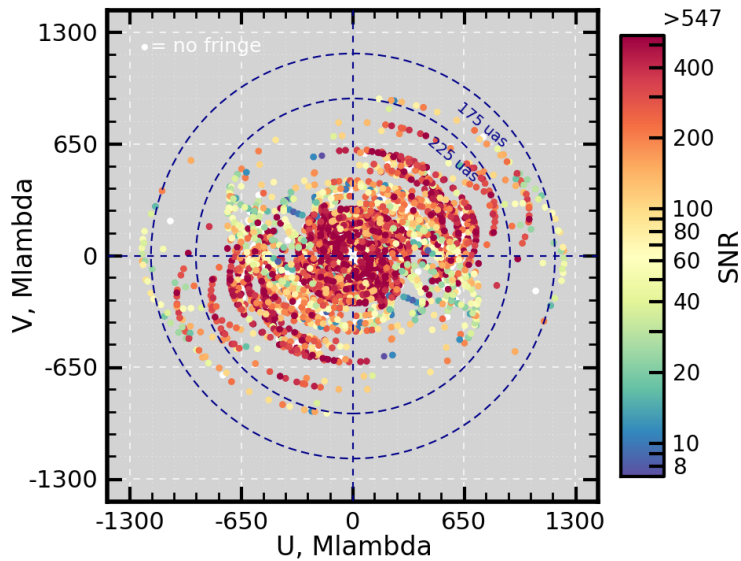
3mm

UV cov.: all sources, all antennas, all pols.



7mm

UV cov.: all sources, all antennas, all pols.



FITS completeness (plist)

3mm

Note that this FITS-IDI -based list does not show ML010A scans since they contain mixed circular-linear baselines due to Mopra, and this is not supported by FITS-IDI.

				NL	FD	PT	LA	KP	OV	BR	MK	EF	ON	YS	PV	NN
MH	KY	KU	KT	GL	GB											
c221a_1000	No0001		BLLAC	86ghz	o	o	o	o	o	o	o	.	.	.	.	.
c221a_1001	No0003		3C454.3	86ghz	o	o	o	o	o	o	o	.	.	.	.	.

c221a_1002	No0005	BLLAC	86ghz	o	o	o	o	o	o	o	o	.	.	.	.	.
c221a_1004	No0008	3C454.3	86ghz	o	o	o	o	o	o	o	o	.	.	.	.	.
c221a_1006	No0011	BLLAC	86ghz	o	o	o	o	o	o	o	o	.	.	.	.	.
c221a_1008	No0014	3C454.3	86ghz	o	o	o	o	o	o	o	o	.	.	.	.	.
c221a_1010	No0017	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1013	No0021	3C454.3	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1015	No0024	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1018	No0028	3C454.3	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1021	No0032	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1024	No0036	3C454.3	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1025	No0038	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1028	No0042	3C454.3	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1031	No0046	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1034	No0050	3C454.3	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1035	No0052	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1038	No0056	3C454.3	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1041	No0060	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1044	No0064	3C454.3	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1045	No0066	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1048	No0070	3C454.3	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1051	No0074	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1054	No0078	3C454.3	86ghz	.	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1055	No0080	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1058	No0084	BLLAC	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1061	No0088	3C84	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.

c221a_1064	No0092	0420-014	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1065	No0095	3C84	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1067	No0098	0420-014	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1070	No0102	3C84	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1073	No0107	0420-014	86ghz	o	o	x	o	o	o	o	o	.	.	.	.	.
c221a_1109	No0155	2013+370	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1112	No0158	2013+370	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1113	No0159	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1113	No0159	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1116	No0163	2013+370	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1119	No0166	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1119	No0166	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1122	No0170	2013+370	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1123	No0171	2013+370	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1126	No0174	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1126	No0174	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1129	No0178	2013+370	86ghz	.	.	.	.	.	.	.	.	o	o	o	.	o
c221a_1132	No0181	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1132	No0181	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1133	No0182	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1133	No0182	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1136	No0186	2013+370	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1139	No0190	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1139	No0190	BLLAC	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o
c221a_1142	No0194	2013+370	86ghz	.	.	.	.	.	.	.	.	o	o	o	x	o

o . . . o o																			
c221a_1143	No0195	2013+370	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	x	o		
o . . . o o																			
c221a_1146	No0198	2013+370	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	x	o		
o . . . o o																			
c221a_1149	No0202	2013+370	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	x	o		
o . . . o o																			
c221a_1152	No0205	2013+370	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	x	o		
o . . . o o																			
c221a_1155	No0209	BLLAC	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	x	o		
o . . . o o																			
c221a_1155	No0209	BLLAC	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	x	o		
o . . . o o																			
c221a_1158	No0213	2013+370	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	x	o		
o . . . o o																			
c221a_1161	No0216	2013+370	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	x	o		
o . . . o o																			
c221a_1164	No0220	BLLAC	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o o																			
c221a_1164	No0220	BLLAC	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o o																			
c221a_1167	No0224	2013+370	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o o																			
c221a_1170	No0227	2013+370	86ghz	o	.	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o o																			
c221a_1173	No0231	BLLAC	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o o																			
c221a_1173	No0231	BLLAC	86ghz	.	.	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o o																			
c221a_1176	No0234	2013+370	86ghz	o	.	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o .																			
c221a_1179	No0237	2013+370	86ghz	o	o	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o .																			
c221a_1181	No0239	BLLAC	86ghz	o	o	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o .																			
c221a_1181	No0239	BLLAC	86ghz	o	o	.	.	.	.	.	.	.	o	o	o	o	o		
o . . . o .																			
c221a_1183	No0241	2013+370	86ghz	o	o	x	o	o	.	.	.	.	o	o	o	o	o		
o . . . x .																			
c221a_1186	No0245	2013+370	86ghz	o	o	x	o	o	.	.	.	.	o	o	o	o	o		
o . . . x .																			
c221a_1189	No0249	BLLAC	86ghz	o	o	.	.	o	o	o	.	.	o	o	o	.	o		
o . . . o .																			
c221a_1189	No0249	BLLAC	86ghz	o	o	.	.	o	o	o	.	.	o	o	o	.	o		
o . . . o .																			
c221a_1192	No0253	2013+370	86ghz	o	o	.	.	o	o	o	o	o	o	o	o	.	o		
o . . . o .																			
c221a_1195	No0257	2013+370	86ghz	o	o	.	.	o	o	o	o	o	o	o	o	.	o		
o . . . o .																			
c221a_1198	No0261	BLLAC	86ghz	o	o	.	.	o	o	o	o	o	o	o	o	.	o		

o . . . o .	c221a_1198	No0261	BLLAC	86ghz	o	o	.	.	o	o	o	o	o	o	o	o	.	o
o . . . o .	c221a_1201	No0265	2013+370	86ghz	o	o	.	.	o	o	o	o	o	o	o	o	o	o
o . . . o .	c221a_1204	No0269	2013+370	86ghz	o	o	.	.	o	o	o	o	o	o	o	o	o	o
o . . . o .	c221a_1207	No0273	2013+370	86ghz	x	x	.	.	x	x	04	x	x	x	x	.	.	
x . . . x .	c221a_1210	No0277	BLLAC	86ghz	o	o	.	.	o	o	o	o	o	o	o	o	o	o
o . . . o .	c221a_1210	No0277	BLLAC	86ghz	o	o	.	.	o	o	o	o	o	o	o	o	o	o
o . . . o .	c221a_1213	No0281	2013+370	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1216	No0285	3C454.3	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1216	No0285	3C454.3	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1219	No0289	2013+370	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1222	No0293	2013+370	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1225	No0297	BLLAC	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1225	No0297	BLLAC	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1228	No0301	2013+370	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1230	No0305	2013+370	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1233	No0309	3C454.3	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1233	No0309	3C454.3	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1236	No0313	2013+370	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1239	No0317	2013+370	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1242	No0321	BLLAC	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1242	No0321	BLLAC	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.
. . . . o .	c221a_1245	No0325	2013+370	86ghz	o	o	o	o	o	o	o	o	90	.	.	.	.	.
. . . . o .	c221a_1248	No0329	2013+370	86ghz	o	o	o	o	o	o	o	o	x	.	.	.	.	.
. . . . o .	c221a_1251	No0333	3C454.3	86ghz	o	o	o	o	o	o	o	o	x	.	.	.	.	.
. . . . o .	c221a_1251	No0333	3C454.3	86ghz	o	o	o	o	o	o	o	o	x	.	.	.	.	.

.	o .																		
c221a_1252	No0335	2013+370	86ghz	o	o	o	o	o	o	o	o	x	.	.	.	.	.	.	.
.	x .																		
c221a_1253	No0337	2013+370	86ghz	o	o	o	o	o	o	o	o	x	.	.	.	.	.	.	.
.	x .																		
c221a_1254	No0339	BLLAC	86ghz	o	o	o	o	o	o	o	o	x	.	.	.	.	.	.	.
.	x .																		
c221a_1254	No0339	BLLAC	86ghz	o	o	o	o	o	o	o	o	x	.	.	.	.	.	.	.
.	x .																		
c221a_1255	No0341	2013+370	86ghz	o	o	o	o	o	o	o	o	x	.	.	.	.	.	.	.
.	x .																		
c221a_1256	No0343	2013+370	86ghz	o	o	o	o	o	o	o	o	x	.	.	.	.	.	.	.
.	x .																		
c221a_1257	No0345	3C454.3	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1257	No0345	3C454.3	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1258	No0347	2013+370	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1259	No0349	2013+370	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1260	No0351	BLLAC	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1260	No0351	BLLAC	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1261	No0353	3C454.3	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1261	No0353	3C454.3	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1262	No0355	BLLAC	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1263	No0357	BLLAC	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1264	No0359	BLLAC	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.	x .																		
c221a_1265	No0361	0420-014	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.																		
c221a_1266	No0362	3C84	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.																		
c221a_1267	No0363	0420-014	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.																		
c221a_1268	No0364	3C84	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.																		
c221a_1269	No0365	0420-014	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.																		
c221a_1270	No0366	3C84	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.																		
c221a_1271	No0367	0420-014	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.
.																		
c221a_1272	No0368	3C84	86ghz	o	o	o	o	o	o	o	o	o	.	.	.	.	.	.	.

.

3mm ml010a

The polconverted v2 release of ML010A

EF	ON	YS	PV	NN	MH	KY	KU	KT	GL	GB	AA	LM	AT	MP	HS	NL	FD	PT	LA	KP	OV	BR	MK	HN	SC
							No0007		1156+295		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0010		1156+295		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0013		1156+295		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0016		1156+295		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0019		1156+295		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0020		M87		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0023		M87		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0026		1156+295		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0027		M87		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0030		3C273		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0031		M87		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0034		3C273		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0035		M87		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0040		3C273		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0041		M87		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0044		3C273		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0045		M87		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0048		3C273		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	66	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0049		M87		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	o	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0054		3C273		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.	.
							No0055		M87		86ghz	.	.	.	.	.	.	.	.	.	.	.	.	.	.

o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0058	3C273	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0059	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0062	3C279	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0063	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0068	3C273	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0069	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0072	3C273	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0073	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0076	3C273	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0077	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0082	3C273	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0083	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0086	3C279	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0087	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0088	3C84	86ghz	o	o	x	o	o	o	o	o	o	.	.
.
						No0090	3C273	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	.	.	.	.	.	.	.	.	.	.
						No0091	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	o	.	.	.	.	.	.	.	.	.	.
						No0095	3C84	86ghz	o	o	x	o	o	o	o	o	.	.	
.
						No0100	3C273	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	88	x	o	o	.	.	.	.	x	x	.	.	.	.	.	.	.	.
						No0101	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	o	x	x	.	.	.	.	.	.	.	.
						No0102	3C84	86ghz	o	o	x	o	o	o	o	o	.	.	
.
						No0105	3C273	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	x	x	.	.	.	.	.	.	.	.
						No0106	M87	86ghz	.	.	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	o	x	x	.	.	.	.	.	.	.	.
						No0109	1156+295	86ghz	.	o	x	o	o	o	o	.	.	.	.
.
						No0111	3C273	86ghz	o	.	.	.	.	.	.	.	.	.	.

o	o	o	x	o	o	x	x	x
						No0112		M87	86ghz	o	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	o	x	x	x	.	.	.	.	.	.	.
						No0113	1156+295	86ghz	.	o	x	o	o	o	o	.	.	.	.
.	
						No0116		3C273	86ghz	o	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	o	x	x	.	.	.	.	.	.	.
						No0117		M87	86ghz	o	.	.	.	.	.	.	.	.	.
o	o	o	x	o	o	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0118	1156+295	86ghz	.	o	x	o	o	o	o	.	.	.	.
.	
						No0120		3C273	86ghz	o	o	x	o	o	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	o	x	x	.	.	.	.	.	.	.
						No0121		M87	86ghz	o	o	x	o	o	.	.	.	.	.
o	o	97	x	o	97	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0122		3C273	86ghz	o	o	x	o	o	.	.	.	.	.
o	o	o	x	o	o	.	.	.	.	o	x	x	.	.	.	.	.	.	.
						No0123		M87	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	o	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0125		3C273	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	o	.	.	.	.	o	x	x	.	.	.	.	.	.	.
						No0126		M87	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	o	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0128		3C279	86ghz	o	o	.	.	.	.	.	.	.	.
o	o	o	x	o	.	.	.	.	.	o	x	x	.	.	.	.	.	.	.
						No0129		M87	86ghz	o	o	.	.	.	.	.	.	.	.
o	o	o	x	o	.	.	.	.	.	o	x	x	.	.	.	.	.	.	.
						No0130		3C273	86ghz	.	.	x	o	o	o	o	.	.	.	
.	.	.	.	.	o	.	.	.	o	.	.	.	.	.	.	.	.	.	.
						No0131		M87	86ghz	.	.	x	o	o	o	o	.	.	.	
.	.	.	.	.	o	.	.	.	o	.	.	.	.	.	.	.	.	.	.
						No0132		3C273	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	o	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0133		M87	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	o	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0135		3C273	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	o	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0136		M87	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	o	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0137		3C273	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	.	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0138		M87	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	o	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0140		3C273	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	.	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0141		M87	86ghz	o	o	x	o	o	o	o	.	.	.	
o	o	o	x	o	o	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0143	1156+295	86ghz	o	o	x	o	o	o	o	.	.	.	.
o	o	o	x	o	.	.	.	.	o	o	x	x	.	.	.	.	.	.	.
						No0144		M87	86ghz	o	o	x	o	o	o	o	.	.	.	

○ ○ ○ x ○ ○ ○ x x . . .	No0145	1156+295	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
○ ○ ○ x ○ ○ ○ x x . . .	No0146	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
○ ○ ○ x ○ ○ ○ x x . . .	No0148	1156+295	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
○ ○ ○ x ○ ○ ○ x x . . .	No0149	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x ○ ○ ○ x x . . .	No0150	1156+295	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
○ . ○ x ○ ○ ○ x x . . .	No0151	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. . ○ x ○ ○ x x . . .	No0153	3C279	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0154	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x	No0156	3C273	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0157	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0161	3C273	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0162	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0164	3C273	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0165	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0168	3C273	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0169	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0172	3C273	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0173	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0176	3C273	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0177	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x	No0179	3C279	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0180	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0184	3C273	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0185	M87	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .
. ○ ○ x x . . .	No0187	3C273	86ghz	○ ○ x ○ ○ ○ ○ ○ ○ . .

.			x																
	No0188	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.			x																
	No0191	1156+295	86ghz	o	o	x	o	o	o	o	o	.	.						
.			x																
	No0192	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.			x																
QWP_CORR_c221a_1144	No0196	3C273	86ghz	o	o	x	o	o	o	o	o	.	.						
.			x o o .																
	No0197	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.			x																
QWP_CORR_c221a_1147	No0199	3C273	86ghz	o	o	x	o	o	o	o	o	.	.						
.			x o o .																
QWP_CORR_c221a_1148	No0200	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.			x o o .																
QWP_CORR_c221a_1150	No0203	3C273	86ghz	o	o	x	o	o	o	o	o	.	.						
.			x o o .																
QWP_CORR_c221a_1151	No0204	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.	46	o	o .																
QWP_CORR_c221a_1153	No0206	3C273	86ghz	o	o	x	o	o	o	o	o	.	.						
.			x o o .																
QWP_CORR_c221a_1154	No0207	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.	o	o	o .																
QWP_CORR_c221a_1156	No0210	3C273	86ghz	o	o	x	o	o	o	o	o	.	.						
.	o	o	o .																
QWP_CORR_c221a_1157	No0211	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.	o	o	o .																
QWP_CORR_c221a_1159	No0214	3C273	86ghz	o	o	x	o	o	o	o	o	.	.						
.	o	o	o .																
QWP_CORR_c221a_1160	No0215	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.	93	o	o .																
QWP_CORR_c221a_1162	No0217	3C273	86ghz	o	o	x	o	o	o	o	o	.	.						
.	x	o	o .																
QWP_CORR_c221a_1163	No0218	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.	o	o	o .																
QWP_CORR_c221a_1165	No0221	1156+295	86ghz	o	o	x	o	o	o	o	o	.	.						
.	o	o	o .																
QWP_CORR_c221a_1166	No0222	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.	40	o	o .																
QWP_CORR_c221a_1168	No0225	3C273	86ghz	o	o	x	o	o	o	o	o	.	.						
.	44	o	o .																
QWP_CORR_c221a_1169	No0226	M87	86ghz	o	o	x	o	o	o	o	o	.	.						
.	o	o	o .																
QWP_CORR_c221a_1171	No0228	3C279	86ghz	.	o	x	o	o	o	o	o	.	.						
.	66	o	o .																
QWP_CORR_c221a_1172	No0229	M87	86ghz	.	o	x	o	o	o	o	o	.	.						
.	o	o	o .																
QWP_CORR_c221a_1174	No0232	3C273	86ghz	o	o	x	o	o	o	o	o	.	.						
.	x	o	o .																
QWP_CORR_c221a_1175	No0233	M87	86ghz	o	o	x	o	o	o	o	o	.	.						

. x o o o o .	QWP_CORR_c221a_1177	No0235	3C273	86ghz	.	o	x	o	o	o	o	o	.	.
. x o o o o .	QWP_CORR_c221a_1178	No0236	M87	86ghz	.	o	x	o	o	o	o	o	.	.
. 60 o o o o .	QWP_CORR_c221a_1180	No0238	M87	86ghz	.	.	x	o	o	o	o	o	.	.
. x o o o o .	QWP_CORR_c221a_1182	No0240	M87	86ghz	.	.	x	o	o	o	o	o	.	.
. 70 o o o o .	QWP_CORR_c221a_1184	No0243	3C273	86ghz	.	.	.	.	.	o	o	o	.	.
. x o o o o .	QWP_CORR_c221a_1185	No0244	M87	86ghz	.	.	.	.	.	o	o	o	.	.
. 20 o o o o .	QWP_CORR_c221a_1187	No0247	3C273	86ghz	.	.	.	.	.	o	o	o	.	.
. 44 o o o o .	QWP_CORR_c221a_1188	No0248	M87	86ghz	.	.	.	.	.	o	o	o	.	.
. x o o o o .	QWP_CORR_c221a_1190	No0251	3C273	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o o .	QWP_CORR_c221a_1191	No0252	M87	86ghz	.	.	.	.	.	.	.	.	.	.
. 86 o o o o .	QWP_CORR_c221a_1193	No0255	3C273	86ghz	.	.	.	.	.	.	.	.	.	.
. 44 o o o o .	QWP_CORR_c221a_1194	No0256	M87	86ghz	.	.	.	.	.	.	.	.	.	.
. x o o o o .	QWP_CORR_c221a_1196	No0259	3C273	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o o .	QWP_CORR_c221a_1197	No0260	M87	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o o .	QWP_CORR_c221a_1199	No0263	3C273	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o o .	QWP_CORR_c221a_1200	No0264	M87	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o o .		No0267	3C273	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o x .		No0268	M87	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o x .		No0271	3C279	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o x .		No0272	M87	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o x .	QWP_CORR_c221a_1208	No0275	3C273	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o o .	QWP_CORR_c221a_1209	No0276	M87	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o o .		No0279	3C273	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o x .		No0280	M87	86ghz	.	.	.	.	.	.	.	.	.	.
. o o o o x .		No0283	3C273	86ghz	.	.	.	.	.	.	.	.	.	.

c221a_1042	No0274	2013+370	43ghz	o	o	o	o	o	o	o	o	o
c221a_1043	No0278	BLLAC	43ghz	o	o	o	o	o	o	o	o	o
c221a_1044	No0282	2013+370	43ghz	o	o	o	o	o	o	o	o	o
c221a_1045	No0286	3C454.3	43ghz	o	o	o	o	o	o	o	o	o
c221a_1046	No0290	2013+370	43ghz	o	o	o	o	o	o	o	o	o
c221a_1047	No0294	2013+370	43ghz	o	o	o	o	o	o	o	o	o
c221a_1048	No0298	BLLAC	43ghz	o	o	o	o	o	o	o	o	o
c221a_1049	No0302	2013+370	43ghz	o	o	o	o	o	o	o	o	o
c221a_1050	No0306	2013+370	43ghz	o	o	o	o	o	o	o	o	o
c221a_1051	No0310	3C454.3	43ghz	o	o	o	o	o	o	o	o	o
c221a_1052	No0314	2013+370	43ghz	o	o	o	o	o	o	o	o	o
c221a_1053	No0318	2013+370	43ghz	o	o	o	o	o	o	o	o	o
c221a_1054	No0322	BLLAC	43ghz	o	o	o	o	o	o	o	o	o
c221a_1055	No0326	2013+370	43ghz	o	o	o	o	o	o	x	x	o
c221a_1056	No0330	2013+370	43ghz	o	o	o	o	o	o	x	x	o
c221a_1057	No0334	3C454.3	43ghz	o	o	o	o	o	o	x	x	o
c221a_1058	No0336	2013+370	43ghz	o	o	o	o	o	o	x	x	.
c221a_1059	No0338	2013+370	43ghz	o	o	o	o	o	o	x	x	.
c221a_1060	No0340	BLLAC	43ghz	o	o	o	o	o	o	x	x	o
c221a_1061	No0342	2013+370	43ghz	o	o	o	o	o	o	x	x	.
c221a_1062	No0344	2013+370	43ghz	o	o	o	o	o	o	o	o	.
c221a_1063	No0346	3C454.3	43ghz	o	o	o	o	o	o	o	o	o
c221a_1064	No0348	2013+370	43ghz	o	o	o	o	o	o	o	.	.
c221a_1065	No0350	2013+370	43ghz	o	o	o	o	o	o	o	.	.
c221a_1066	No0352	BLLAC	43ghz	o	o	o	o	o	o	o	o	.
c221a_1067	No0354	3C454.3	43ghz	o	o	o	o	o	o	o	o	.
c221a_1068	No0356	BLLAC	43ghz	o	o	o	o	o	o	o	o	.
c221a_1069	No0358	BLLAC	43ghz	o	o	o	o	o	o	o	o	.
c221a_1070	No0360	BLLAC	43ghz	o	o	o	o	o	o	o	o	.