

5.2.2.3 NAC FM PRF LOCATION DEPENDENCE CALIBRATION RESULTS

As reported in Reference 5.2.2.3-1

Reference 5.2.2.3-1 - IOM 388-PAG-CCA98-12, "NAC FM Calibration Results: PRF Location Dependence", C. Avis, April 22, 1998

Reference 5.2.2.3-2 - IOM 388-PAG-CCA98-5, "NAC FM Calibration Results: Point Response Function", C. Avis, March 11, 1998 - See Section 5.2.2.1

5.2.2.3.1 INTRODUCTION

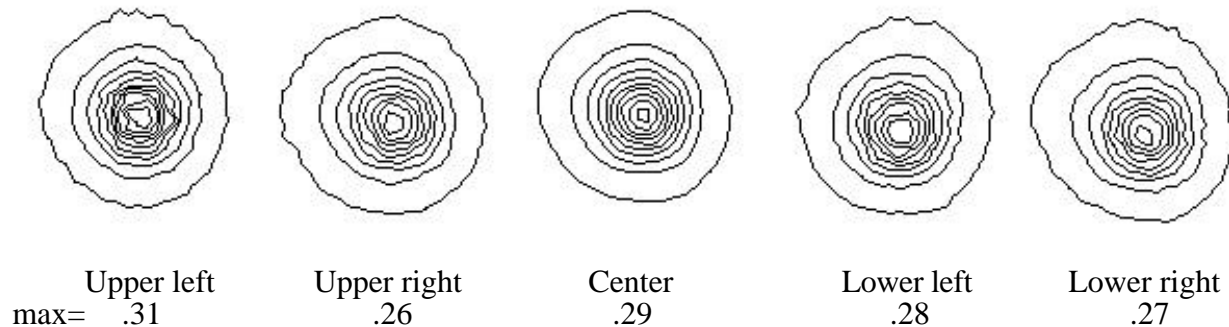
The Flight Model thermal/vacuum testing included the acquisition of images taken of simulated point sources. This memo reports on the use of those images to characterize the Point Response Function (PRF) dependence upon the intrapixel location of the centroid. The point response may differ when the centroid of a point image falls:

- in the center of a pixel
- at the edge between two horizontally-adjacent pixels
- at the edge between two vertically-adjacent pixels
- at the corner between four pixels

This analysis used selected point images from selected images from the Point Response tests described in Reference 5.2.2.3-2. See that report for more details.

5.2.2.3.2 METHOD

The available set of points was searched to find points whose centroids fell within 0.09 pixels of the above desired locations. The resulting small set of data was then processed normally except for the presentation of the results. Recall from Reference 5.2.2.3-2 that the CL1/CL2 +5° C appeared as illustrated below.

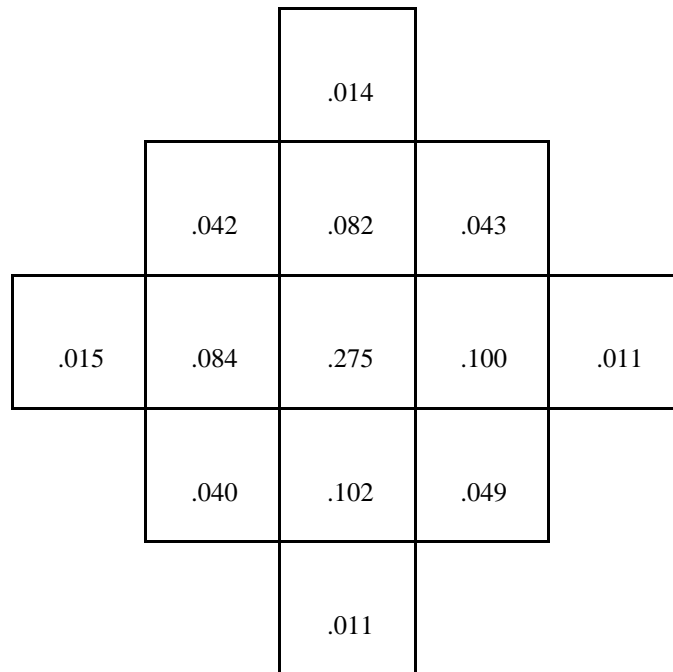


5.2.2.3.3 RESULTS

The plots and contours shown in Reference 5.2.2.3-2 are not appropriate for this restricted data. Therefore, the responses of the pixels surrounding the centroid are presented numerically below. This makes it easier, also, to judge the symmetry of the response.

In the illustrations below, the squares represent pixels surrounding the centroid location. The centroid location is always at the center of the illustration. Inside the squares are the values of the mean normalized response accumulated from all points which met the selection criteria. The typical standard deviation of values is 0.02. These results are for the +5° C CL1/CL2 case only.

Using points whose centroids fell near the center of pixels (357 points used).



Using points whose centroids fell near a corner between 4 pixels (444 points used).

.013	.032	.033	.010
.036	.134	.148	.028
.032	.152	.186	.029
.009	.026	.028	.010

Using points whose centroids fell near the center of horizontal edge between two pixels (499 points used).

	.021	.038	.021	
.014	.072	.179	.078	.010
.012	.068	.227	.086	.010
	.017	.031	.020	

Using points whose centroids fell near the center of vertical edge between two pixels (499 points used).

	.013	.013	
.023	.070	.071	.018
.040	.185	.219	.032
.019	.077	.086	.019
	.009	.011	

5.2.2.3.4 CONCLUSIONS

1. This analysis shows an asymmetry in the response of the pixels near the centroid in general favoring the lower right pixels. The point images are slightly asymmetric (see contours above), so equal response of neighboring pixels is not to be expected.

image	day	eventtime	observation	filters	temp	image	day	eventtime	observation	filters	temp
118821	135	0:48:30.0	POINT_RESPONSE_299	CL1 /CL2	-9.0	118991	135	17:36:35.0	POINT_RESPONSE_303	CL1 /CL2	-9.0
118822	135	0:49:46.0	POINT_RESPONSE_299	CL1 /CL2	-9.0	118993	135	17:42:36.0	POINT_RESPONSE_303	CL1 /CL2	-9.0
118823	135	0:51:26.0	POINT_RESPONSE_299	CL1 /CL2	-9.0	118994	135	17:45:7.0	POINT_RESPONSE_303	CL1 /CL2	-9.0
118824	135	0:52:43.0	POINT_RESPONSE_299	CL1 /CL2	-9.0	118995	135	17:47:35.0	POINT_RESPONSE_303	CL1 /CL2	-9.0
118825	135	0:54:17.0	POINT_RESPONSE_299	CL1 /CL2	-9.0	118996	135	17:50:4.0	POINT_RESPONSE_303	CL1 /CL2	-9.0
118826	135	0:56:8.0	POINT_RESPONSE_299	CL1 /CL2	-9.0	119003	135	18:8:12.0	POINT_RESPONSE_304	BL1 /CL2	-9.0
118837	135	1:51:11.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119004	135	18:11:6.0	POINT_RESPONSE_304	BL1 /CL2	-9.0
118838	135	1:52:22.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119005	135	18:21:20.0	POINT_RESPONSE_304	BL1 /CL2	-9.0
118839	135	1:54:2.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119006	135	18:23:56.0	POINT_RESPONSE_304	BL1 /CL2	-9.0
118840	135	1:55:42.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119007	135	18:28:6.0	POINT_RESPONSE_304	BL1 /CL2	-9.0
118841	135	1:57:47.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119008	135	18:30:46.0	POINT_RESPONSE_304	BL1 /CL2	-9.0
118842	135	2:0:9.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119009	135	18:33:4.0	POINT_RESPONSE_304	BL1 /CL2	-9.0
118843	135	2:4:13.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119010	135	18:35:29.0	POINT_RESPONSE_304	BL1 /CL2	-9.0
118845	135	2:31:39.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119017	135	18:51:23.0	POINT_RESPONSE_305	CL1 /IR3	-9.0
118846	135	2:49:36.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119018	135	18:54:10.0	POINT_RESPONSE_305	CL1 /IR3	-9.0
118847	135	3:7:33.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119019	135	19:0:17.0	POINT_RESPONSE_305	CL1 /IR3	-9.0
118848	135	3:25:31.0	POINT_RESPONSE_300	CL1 /MT3	-9.0	119020	135	19:2:41.0	POINT_RESPONSE_305	CL1 /IR3	-9.0
118868	135	5:37:3.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119021	135	19:5:0.0	POINT_RESPONSE_305	CL1 /IR3	-9.0
118869	135	5:38:13.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119022	135	19:7:13.0	POINT_RESPONSE_305	CL1 /IR3	-9.0
118870	135	5:39:38.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119023	135	19:9:27.0	POINT_RESPONSE_305	CL1 /IR3	-9.0
118871	135	5:41:12.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119024	135	19:11:52.0	POINT_RESPONSE_305	CL1 /IR3	-9.0
118872	135	5:43:41.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119025	135	19:19:18.0	POINT_RESPONSE_306	CL1 /CB3	-9.0
118873	135	5:47:48.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119026	135	19:22:38.0	POINT_RESPONSE_306	CL1 /CB3	-9.0
118874	135	5:57:13.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119027	135	19:24:56.0	POINT_RESPONSE_306	CL1 /CB3	-9.0
118876	135	6:24:48.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119028	135	19:27:12.0	POINT_RESPONSE_306	CL1 /CB3	-9.0
118877	135	6:42:45.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119030	135	19:31:16.0	POINT_RESPONSE_306	CL1 /CB3	-9.0
118879	135	7:9:11.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119031	135	19:33:31.0	POINT_RESPONSE_306	CL1 /CB3	-9.0
118880	135	7:30:17.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119032	135	19:35:55.0	POINT_RESPONSE_306	CL1 /CB3	-9.0
118882	135	8:12:40.0	POINT_RESPONSE_302	IRP0 /MT3	-9.0	119033	135	19:38:8.0	POINT_RESPONSE_306	CL1 /CB3	-9.0
118883	135	8:25:6.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119034	135	19:41:14.0	POINT_RESPONSE_307	CL1 /MT1	-9.0
118884	135	8:26:8.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119035	135	19:43:43.0	POINT_RESPONSE_307	CL1 /MT1	-9.0
118885	135	8:27:18.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119036	135	19:57:7.0	POINT_RESPONSE_307	CL1 /MT1	-9.0
118886	135	8:28:49.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119037	135	19:59:19.0	POINT_RESPONSE_307	CL1 /MT1	-9.0
118887	135	8:30:23.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119038	135	20:1:36.0	POINT_RESPONSE_307	CL1 /MT1	-9.0
118888	135	8:32:52.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119039	135	20:3:59.0	POINT_RESPONSE_307	CL1 /MT1	-9.0
118889	135	8:35:55.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119040	135	20:6:12.0	POINT_RESPONSE_307	CL1 /MT1	-9.0
118890	135	8:41:4.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119041	135	20:8:38.0	POINT_RESPONSE_307	CL1 /MT1	-9.0
118893	135	9:44:35.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119042	135	20:11:46.0	POINT_RESPONSE_308	IRP0 /CB3	-9.0
118894	135	10:2:33.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119043	135	20:14:42.0	POINT_RESPONSE_308	IRP0 /CB3	-9.0
118895	135	10:20:30.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119044	135	20:19:18.0	POINT_RESPONSE_308	IRP0 /CB3	-9.0
118897	135	10:48:43.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119045	135	20:21:40.0	POINT_RESPONSE_308	IRP0 /CB3	-9.0
118898	135	10:58:10.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119046	135	20:29:1.0	POINT_RESPONSE_308	IRP0 /CB3	-9.0
118899	135	11:19:17.0	POINT_RESPONSE_301	IR4 /CL2	-9.0	119047	135	20:32:8.0	POINT_RESPONSE_308	IRP0 /CB3	-9.0
118908	135	17:27:35.0	POINT_RESPONSE_303	CL1 /CL2	-9.0	119048	135	20:34:21.0	POINT_RESPONSE_308	IRP0 /CB3	-9.0
118909	135	17:31:14.0	POINT_RESPONSE_303	CL1 /CL2	-9.0	119049	135	20:36:39.0	POINT_RESPONSE_308	IRP0 /CB3	-9.0
118990	135	17:33:56.0	POINT_RESPONSE_303	CL1 /CL2	-9.0						