increased power is observed in DBS traces in Figure 177 - Figure 178 for triple LNB Sat101 and Figure 181 - Figure 182 for double LNB Sat119. A comparison of these Figures with those of site 3, Figure 37 - Figure 38and Figure 41 - Figure 42, reveal that considerably greater presence of MDS transmission can be observed at site 16 for the identical DBS antenna configuration and MDS EIRP.

One of the lessons learned up to this point of testing was that Dish Network double LNB antenna seems more susceptible to MDS transmission. One reason for this may be the particularly vulnerable test configuration at Albuquerque, but another reasonable conclusion may be the lateral dimension of this dish antenna with double LNB when compared to triple LNB and single LNB dish antennas. As a result, it was decide to put greater emphasis on testing Dish Network double LNB antenna at least at this site. Figure 183 through Figure 196 show the result for double LNB Sat119 at MDS EIRP of 40, 37, and 34 dBm. As shown in Figure 193 - Figure 194, the presence of MDS transmission can be noted at the MDS EIRP of 34 dBm.

Site 24 data includes double LNB Sat119 at MDS EIRP of 30 and 44 dBm. The data for this site are shown in Figure 355 through Figure 364. As shown in Figure 357 - Figure 358, the presence of MDS can be marginally detected in the DBS traces at 30 dBm level. However, as shown in Figure 361 - Figure 362, the presence of MDS transmission at 44 dBm is virtually undetectable in the DBS traces with aid of a mitigation technique, which is shown in Figure 364.

This mitigation technique was also tried at site 26 for double LNB Sat110, and again for double LNB Sat119 both at MDS EIRP of 44 dBm. As shown in Figure 369- Figure 376, MDS transmission is undetectable in the DBS traces with this mitigation technique. The remaining data for this site includes double LNB Sat110, double LNB Sat119, and triple LNB Sat 101 for MDS EIRP of 30 dBm *without any mitigation technique*. Results for these test scenarios are shown in Figure 377 - Figure 390. Examination of these plots indicates that MDS transmission can not be detected for both double LNB Sat110 and triple LNB Sat 101, however, with respect to double LNB Sat119, minute presence of MDS signal can still be detected albeit at exceedingly low levels. It should be noted that more results regarding all tests are provided in Table 3 and Table 4.

Site 30 data includes single LNB Sat101 at MDS EIRP of 30 and 27 dBm. The results for this as shown in Figure 469 - Figure 476 indicate that the MDS transmission at 27 dBm cannot be detected in the DBS traces.

Finally, site 33, the last site associated with the original location of site 3, includes data from double LNB Sat110, double LNB Sat119, triple LNB Sat 101, and single LNB Sat101 all at MDS EIRP of 27 dBm. Site 33 further includes data from single LNB Sat101 at MDS EIRP of 30 and 33 dBm. Examination of these plots indicates that MDS transmission at EIRP of 27 dBm is not detectable in the DBS traces. Moreover, with respect to single LNB Sat101, MDS transmission at EIRP of 30 is virtually undetectable in the DBS traces.

At site 4, breakdown of one of the LNAs prevented collection of data from the calibrated test set associated with MDS horizontal polarization, as such the data for this site is incomplete. Even so, the results of the data collected are shown in Figure 45 - Figure 48, with the DBS traces from Triple LNB Sat101 shown in Figure 46 - Figure 47. As shown in these Figures MDS transmission at EIRP of approximately 44 dBm is not detectable in the DBS traces.

Site 32 is a site very near site 4 and a complete set of data was collected from this site. The data for this site include double LNB Sat110, double LNB Sat119, and triple LNB Sat101 all at MDS EIRP of 30 dBm, as well as triple LNB Sat101 at MDS EIRP of 33 dBm. The results for this site are shown in Figure 503 - Figure 528. Examinations of the results indicate that MDS transmission at EIRP of either 30 dBm or 33 dBm are not detectable in the DBS traces.

At 3.73 km, site 13A is the nearest test site to MDS transmitter. This site includes data from triple LNB Sat101, double LNB Sat119, double LNB Sat110, and single LNB Sat101 all at MDS EIRP of 44 dBm. The results for this site are shown in Figure 129 - Figure 146. MDS signal received by the calibrated test sets are quite irregular in this site as compared to most other sites. This is due to the radiation pattern of MDS antenna where the cross polarization transmission is comparable or even stronger than the co-polarization transmission. Analysis of the DBS data indicate that in spite of close proximity to the MDS transmitter, the power received at this site cannot be detected in any of the DBS traces.

Some of other sites that show this type of unbalanced pattern from MDS transmitter are sites 14 and 11, which are also close to the transmitter. Site 14 data includes triple LNB Sat101, double LNB Sat110, double LNB Sat119, and triple LNB Sat119, all at MDS EIRP of 44 dBm. Examination of the results for these scenarios, as shown in Figure 147 - Figure 163, indicate that some residual of MDS transmission can be detected in the DBS traces. Particularly notable is the result for triple LNB Sat119, which shows (Figure 161 - Figure 162) somewhat of a strong presence of the MDS transmission. However, this result is significantly lower than that of

double LNB Sat119 in site 3, which shows the strongest presence of MDS transmission at this power level, as discussed above.

The results for site 11 are shown in Figure 105 - Figure 114, which includes data from triple LNB Sat101, and double LNB Sat110 at MDS EIRP of 44 dBm. No significant presence of MDS can be detected in the DBS traces for this site.

At around 37 km, sites 12 and 17 are the farthest test sites to the MDS transmitter, but still along the main beam of the MDS antenna. The results for site 12 are shown in Figure 115 - Figure 128, which includes data from triple LNB Sat101, double LNB Sat110, and double LNB Sat119, all at MDS EIRP of 44 dBm. The presence of MDS transmission can be moderately observed in the DBS traces of double LNB Sat119, and marginally observed in the other two scenarios.

The results for site 17 are shown in Figure 197 - Figure 214, which includes data from triple LNB Sat101 and double LNB Sat119 at MDS EIRP of 44 and 38 dBm. At 38 dBm, MDS presence is nearly undetectable in both triple LNB Sat101 and double LNB Sat119 traces, while at 44 dBm, MDS transmission is clearly present in the double LNB Sat119 traces and just marginally observable in the triple LNB Sat101 traces.

In reviewing some of the other test sites, it is noted that the presence of MDS transmission can be marginally observed in DBS traces at sites 8, 19, 20, 22, and 24, while at sites 5 and 8 this presence is at somewhat stronger level. However, in comparison to some of other more sensitive sites, such as, for example site 3, these sites will not rank as particularly significant. Even so, the data from these sites is important in that it provides a more complete picture of over all impact of MDS transmission on the reception of DBS signal.

For example, consider the results for site 20, as shown in Figure 263 - Figure 288, the data for this site includes triple LNB Sat101, double LNB Sat110, and double LNB Sat119 all at both MDS EIRP of 34 and 37 dBm. As shown in Figure 269 and Figure 270, presence of MDS transmission can be observed at EIRP of 37 dBm, while in Figure 281 and Figure 282 at MDS EIRP of 34 dBm MDS presence is not detected. As discussed below, this type of information can be used to draw some conclusions regarding threshold of MDS PFD based on ensemble behavior of the data.

Figure 13 shows the relative change in IRD verses the average MDS PFD for the data in Table 3. This Figure also shows third order polynomial fit to the data, and its' 95 percentile

prediction bounds. The x intercept of the polynomial fit is at –137.17 dBW/m²/4kHz, which is in line with the some of the results of site 3 and the various revisit measurement of this site.

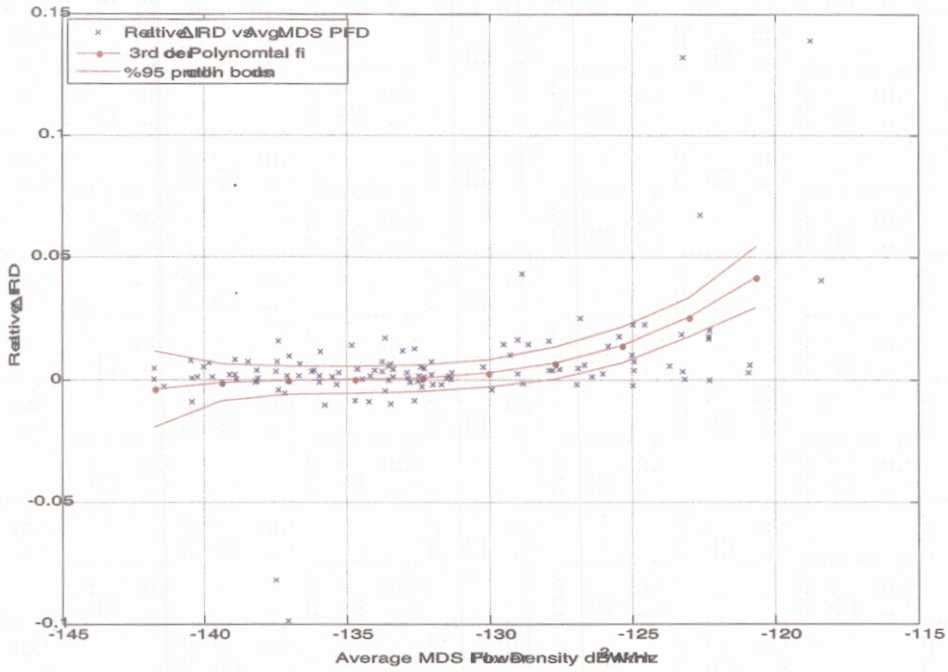

Figure 13 Relative ΔIRD vs. Average MDS Power Flux Density (PFD)

Figure 14 shows the average of $\Delta(C/N)_L$ and $\Delta(C/N)_R$ verses the average MDS PFD for the data in Table 4. Similar to Figure 13, this Figure also shows third order polynomial fit to the data, and its' 95 percentile prediction bounds. However, the x intercept of the polynomial fit is now at –139.97 dBW/m²/4kHz, which is close to lowest MDS PFD.

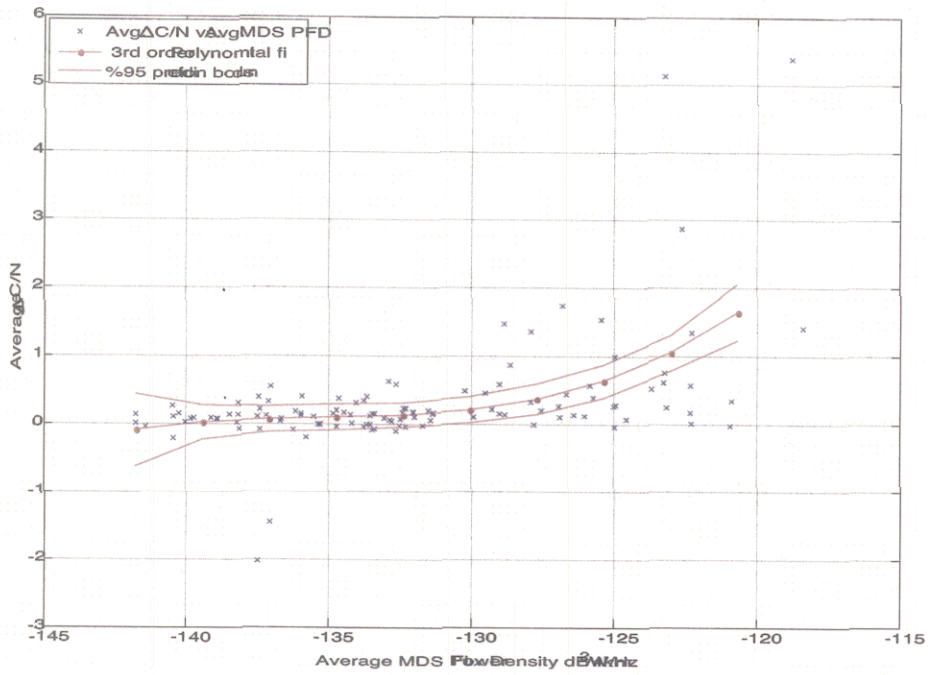

Figure 14 ΔC/N vs. Average MDS Power Flux Density (PFD)

9 Conclusions

The DBS signals in the presence of MDS transmission were examined at 33 sites using three separate DBS antenna types for DBS satellites at 101°, 110°, and 119° in the urban environment of Albuquerque, New Mexico. This examination included the evaluation of DBS signals under various MDS transmit power level ranging from the EIRP 43.7 dBm to 27 dBm per linear polarization. Nearly 750 spectrum analyzer data files and 250 SAT-9520 data files have been processed and evaluated for this report.

During the data collection phase, a number of test sites were identified to be more sensitive than some of other test sites, and as a result, more data were collected at those sites. A particularly import test site was site 3 which was visited on six separate occasion under various MDS transmit power levels. The reason for this sensitivity is that this location was at center of the transmit beam, and at the same time, it presented a DBS look angle that was especially vulnerable to MDS transmission. In particular, when the double LNB dish antenna is configured for reception of signals for satellites 110°, and 119° then the LNBs also have a line sight to the MDS transmitter that is not offered protection by the antenna's dish.

Between power flux density (PFD) of –137 dBW/m^2/4kHz and –141 dBW/m^2/4kHz, presence of the MDS can no longer be detected in the DBS traces for the most vulnerable location (i.e. the location associated with of sites 3, 16, 24, 26, 30, and 30). Moreover, based on the polynomial fit to ΔIRD data in Table 3, the PFD threshold for detection is at approximately –137.17 dBW/m^2/4kHz, while the polynomial fit to ΔC/N of the spectrum analyzer data in Table 4 provides a PFD threshold for detection of approximately –139.97 dBW/m^2/4kHz.

With respect to the Equivalent Power Flux Density (EPFD), the current detection thresholds can be converted to EPFD based on the worst-case analysis. Assuming that the dish antenna does not provide any protection against MDS transmission and forgoing the interference factor, then for a dish antenna of 34 dBi gain the EPFD is –171.1 dBW/m^2/4kHz, corresponding to detection threshold of approximately –137.17 dBW/m^2/4kHz. This is quite consistent with the MVDDS limit for this region of the country.

The associated EIRP of the detection threshold can be determined by looking at Table 3 or Table 4. The EIRP value associate with the detection threshold of –137.17 dBW/m^2/4kHz based on these tables is approximately 30 dBm, while the EIRP value based on FSPL model is 27 dBm. In general, each system can have different detection threshold and even the deployment of the same system at a new site may have a different detection threshold depending on the specific conditions of each deployment such as, for example, tower height and transmit antenna orientation. This lends much credence to the MDSA assertion that site engineering is an essential part of their system design.

What became obvious throughout the testing was the lack of complaints at any power level despite both DBS companies being notified well in advance of the testing and notifications placed in the major local newspapers alerting DBS customers to potential interference problems. The system preformed as MDSA had described.

Over the last 5 years, ACS' principals have as much experience with MVDDS systems and testing as anyone in the telecommunications field outside of MDS America. ACS' Chief Scientist has tested three MVDDS systems in both the US and Europe. Preparing for these tests has led to many long hours working through an understanding of all of the issues involved in the building of MVDDS systems in various areas and regions of the world.

MDSA presented ACS with a commercial system ready for deployment to customers in the Albuquerque area. This system was described to ACS by MDSA as a MVDDS system that

could potentially provide High speed Internet bandwidth and/or Wireless Cable television to thousands of viewers in the testing area. It is the opinion of ACS that this system would co-exist with DBS installations in the area with no meaningful interference to any of the existing DBS subscribers.

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBm/m^2	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Avg. IRD	Δ IRD	S.D. IRD	Avg. C/N	Δ C/N	S.D. C/N	Avg. Pre-BER	S.D. Pre-BER	No. of samples	ConditionWeather
5-Sep	2	ON	43.7	-58.09	-125.87	101	TRP	93.00	1.28	0.44	12.51	0.31	0.12	1.18E-04	6.44E-06	113	PC
5-Sep	2	OFF	43.7			101	TRP	94.28		0.55	12.82		0.14	8.68E-05	5.38E-06	105	PC
5-Sep	2	ON	43.7	-59.05	-126.83	119	DBL	99.80	2.57	1.13	11.98	0.43	0.13	1.66E-04	1.35E-04	112	PC
5-Sep	2	OFF	43.7			119	DBL	102.37		0.49	12.41		0.09	9.51E-04	3.13E-03	113	PC
5-Sep	2	ON	43.7	-58.90	-126.68	101	SNG	95.04	0.61	0.41	13.07	0.23	0.15	6.77E-05	4.32E-06	113	PC
5-Sep	2	OFF	43.7			101	SNG	95.66		0.48	13.30		0.15	5.61E-05	5.25E-06	111	PC
6-Sep	3	ON	43.7	-55.50	-123.28	101	TRP	91.66	1.73	0.80	12.20	0.43	0.14	1.92E-04	1.06E-05	113	CLR
6-Sep	3	OFF	43.7			101	TRP	93.39		0.54	12.62		0.10	1.14E-04	5.72E-06	112	CLR
6-Sep	3	ON	43.7	-55.49	-123.27	119	DBL	89.46	13.62	1.18	10.75	1.80	0.12	9.01E-04	5.35E-04	112	CLR
6-Sep	3	OFF	43.7			119	DBL	103.08		0.52	12.55		0.10	1.55E-03	3.96E-03	113	CLR
6-Sep	4	ON	43.7	-58.26	-126.04	101	TRP	93.41	0.26	0.55	12.62	0.05	0.11	9.39E-05	4.19E-06	95	CLR
6-Sep	4	OFF	43.7			101	TRP	93.66		0.62	12.67		0.12	8.39E-05	3.46E-06	112	CLR
8-Sep	5	ON	43.7	-54.53	-122.31	119	DBL	101.19	2.09	0.87	12.18	0.41	0.14	1.68E-04	1.04E-04	113	CLR
8-Sep	5	OFF	43.7			119	DBL	103.27		0.72	12.59		0.13	8.95E-04	2.93E-03	113	CLR
8-Sep	5	ON	43.7	-54.58	-122.36	101	TRP	93.12	1.66	0.47	12.55	0.43	0.12	1.26E-04	5.77E-06	113	CLR
8-Sep	5	OFF	43.7			101	TRP	94.79		0.47	12.98		0.16	8.29E-05	3.38E-06	113	CLR
8-Sep	6	ON	43.7	-60.03	-127.81	101	TRP	94.51	0.36	0.54	12.88	0.10	0.13	8.16E-05	3.37E-06	112	CLR
8-Sep	6	OFF	43.7			101	TRP	94.874		0.45	12.98		0.16	7.61E-05	3.26E-06	113	CLR
8-Sep	6	ON	43.7	-59.78	-127.56	110	DBL	100.96	0.43	0.43	12.12	0.10	0.08	4.56E-04	1.82E-04	113	CLR
8-Sep	6	OFF	43.7			110	DBL	101.39		0.51	12.22		0.08	2.93E-04	1.89E-04	113	CLR
8-Sep	7	ON	43.7	-59.18	-126.96	101	TRP	94.45	-0.18	0.57	12.85	-0.04	0.13	8.31E-05	3.65E-06	113	CLR
8-Sep	7	OFF	43.7			101	TRP	94.27		0.60	12.81		0.12	8.18E-05	2.97E-06	112	CLR
8-Sep	7	ON	43.7	-59.14	-126.92	101	TRP	91.12	0.46	0.60	12.07	0.10	0.11	2.36E-04	8.07E-06	113	CLR
8-Sep	7	OFF	43.7			101	TRP	91.58		0.58	12.17		0.11	2.12E-04	9.38E-06	113	CLR
9-Sep	8	ON	43.7	-57.96	-125.74	101	TRP										CLR
9-Sep	8	OFF	43.7			101	TRP	93.83		0.64	12.71		0.11	5.99E-04	2.27E-03	111	CLR
9-Sep	9	ON	43.7	-58.66	-126.44	101	TRP	93.86	0.12	0.57	12.71	0.04	0.10	8.95E-05	4.09E-06	107	CLR
9-Sep	9	OFF	43.7			101	TRP	93.98		0.69	12.75		0.14	8.49E-05	5.20E-06	112	CLR
9-Sep	9	ON	43.7	-53.19	-120.97	110	DBL	101.15	0.32	0.49	12.16	0.07	0.09	5.83E-05	2.41E-06	109	CLR

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBm/m^2	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Avg. IRD	Δ IRD	S.D. IRD	Avg. C/N	Δ C/N	S.D. C/N	Avg. Pre-BER	S.D. Pre-BER	No. of samples	Condition\Weather
9-Sep	9	OFF	43.7			110	DBL	101.47		0.54	12.22		0.08	5.31E-05	2.46E-06	109	CLR
9-Sep	10	ON	43.7	-57.25	-125.03	101	TRP	93.05	0.98	0.45	12.52	0.24	0.12	1.24E-03	3.34E-03	105	CLR
9-Sep	10	OFF	43.7			101	TRP	94.03		0.62	12.76		0.15	8.32E-05	3.36E-06	113	CLR
9-Sep	10	ON	43.7	-57.20	-124.98	119	DBL	103.24	-0.24	0.45	12.59	-0.05	0.08	1.10E-05	7.73E-07	113	CLR
9-Sep	10	OFF	43.7			119	DBL	103.00		0.44	12.53		0.09	1.37E-05	7.25E-06	113	CLR
0-Sep	11	ON	43.7	-63.76	-131.54	101	TRP	93.84	0.10	0.62	12.72	0.00	0.13	1.45E-03	3.56E-03	113	CLR
0-Sep	11	OFF	43.7			101	TRP	93.94		0.56	12.73		0.1	8.28E-05	4.43E-06	98	CLR
0-Sep	11	ON	43.7	-63.60	-131.38	110	DBL	101.45	0.05	0.53	12.22	0.01	0.09	4.69E-05	1.54E-06	112	CLR
0-Sep	11	OFF	43.7			110	DBL	101.50		0.55	12.24		0.09	2.62E-04	1.07E-04	113	CLR
0-Sep	12	ON	43.7	-61.73	-129.51	101	TRP	92.94	1.37	0.51	12.50	0.35	0.15	1.29E-04	1.19E-05	90	CLR
0-Sep	12	OFF	43.7			101	TRP	94.31		0.71	12.85		0.18	8.47E-05	6.60E-06	112	CLR
0-Sep	12	ON	43.7	-61.52	-129.30	110	DBL	101.03	1.04	0.85	12.16	0.19	0.13	1.87E-04	1.92E-04	113	CLR
0-Sep	12	OFF	43.7			110	DBL	102.06		0.62	12.35		0.12	6.69E-05	9.67E-05	113	CLR
0-Sep	12	ON	43.7	-61.11	-128.89	119	DBL	96.45	4.38	1.11	11.55	0.57	0.12	4.92E-04	2.09E-04	113	CLR
0-Sep	12	OFF	43.7			119	DBL	100.83		0.71	12.11		0.1	1.34E-03	3.78E-03	113	CLR
5-Sep	13A	ON	43.7	-63.95	-131.73	101	TRP	93.79	-0.14	0.65	12.71	-0.03	0.12	1.01E-04	4.45E-06	111	CLR
5-Sep	13A	OFF	43.7			101	TRP	93.65		0.61	12.68		0.11	1.11E-04	4.70E-06	112	CLR
5-Sep	13A	ON	43.7	-65.72	-133.50	119	DBL	103.05	-1.00	0.44	12.55	-0.21	0.08	7.00E-06	4.84E-07	112	CLR
5-Sep	13A	OFF	43.7			119	DBL	102.06		0.54	12.34		0.1	1.43E-04	4.29E-04	108	CLR
5-Sep	13A	ON	43.7	-65.65	-133.43	110	DBL	100.20	0.12	0.80	12.02	0.01	0.08	3.67E-04	2.14E-04	113	CLR
5-Sep	13A	OFF	43.7			110	DBL	100.33		0.75	12.03		0.08	4.29E-04	1.31E-04	113	CLR
5-Sep	13A	ON	43.7	-65.79	-133.57	101	SNG	95.43	0.02	0.53	13.24	-0.02	0.13	5.66E-05	2.44E-06	111	CLR
5-Sep	13A	OFF	43.7			101	SNG	95.45		0.53	13.22		0.16	5.76E-04	1.17E-03	113	CLR
2-Sep	14	ON	43.7	-57.17	-124.95	101	TRP	93.76	0.72	0.62	12.70	0.18	0.12	1.06E-04	5.94E-06	100	OC
2-Sep	14	OFF	43.7			101	TRP	94.49		0.54	12.88		0.15	9.00E-05	4.30E-06	113	OC
2-Sep	14	ON	43.7	-56.78	-124.56	110	DBL	99.25	2.29	0.89	11.92	0.31	0.1	5.91E-04	1.46E-04	113	OC
2-Sep	14	OFF	43.7			110	DBL	101.54		0.71	12.23		0.14	8.46E-05	7.96E-05	113	OC
2-Sep	14	ON	43.7	-57.19	-124.97	119	DBL	101.80	0.41	0.40	12.28	0.09	0.06	1.55E-05	8.66E-07	113	OC
2-Sep	14	OFF	43.7			119	DBL	102.20		0.55	12.38		0.1	2.97E-05	3.48E-05	113	OC

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBm/m^2	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Avg. IRD	Δ IRD	S.D. IRD	Avg. C/N	Δ C/N	S.D. C/N	Avg. Pre-BER	S.D. Pre-BER	No. of samples	ConditionWeather
22-Sep	14	ON	43.7	-57.22	-125.00	119	TRP	93.02	2.16	0.82	11.14	0.27	0.12	5.61E-04	3.28E-04	111	OC
22-Sep	14	OFF	43.7			119	TRP	95.18		1.40	11.41		0.15	6.14E-04	2.12E-04	113	OC
22-Sep	15	ON	43.7	-55.93	-123.71	101	DBL	94.82	0.54	0.62	12.99	0.21	0.19	7.25E-05	6.15E-06	113	OC
22-Sep	15	OFF	43.7			101	DBL	95.36		0.57	13.20		0.18	5.42E-05	5.13E-06	113	OC
22-Sep	15	ON	43.7	-55.49	-123.27	110	DBL	98.78	0.35	0.84	11.85	0.06	0.12	1.13E-04	1.73E-05	113	OC
22-Sep	15	OFF	43.7			110	DBL	99.12		0.93	11.91		0.11	4.47E-04	2.86E-04	113	OC
23-Sep	16	ON	43.7	-50.62	-118.40	101	TRP	90.21	3.81	0.96	11.90	0.86	0.19	2.03E-04	1.43E-05	113	OC
23-Sep	16	OFF	43.7			101	TRP	94.02		0.67	12.76		0.15	8.68E-04	2.82E-03	113	OC
23-Sep	16	ON	43.7	-51.02	-118.80	119	DBL	87.75	14.21	0.81	10.58	1.75	0.08	2.02E-03	2.71E-03	113	MC
23-Sep	16	OFF	43.7			119	DBL	101.96		0.57	12.33		0.1	9.95E-05	5.47E-04	106	MC
3-Sep	16	ON	40	-54.88	-122.66	119	DBL	95.22	6.88	1.39	11.42	0.93	0.15	1.48E-03	3.03E-03	113	PC
3-Sep	16	OFF	40			119	DBL	102.10		0.68	12.35		0.12	7.43E-05	2.99E-05	113	PC
3-Sep	16	ON	37	-57.70	-125.48	119	DBL	100.65	1.80	0.73	12.08	0.34	0.1	3.42E-04	1.82E-03	113	PC
3-Sep	16	OFF	37			119	DBL	102.45		0.67	12.42		0.13	7.86E-05	5.98E-05	113	PC
3-Sep	16	ON	34	-60.89	-128.67	119	DBL	100.47	1.51	0.97	12.07	0.26	0.12	1.92E-04	9.31E-05	112	MC
3-Sep	16	OFF	34			119	DBL	101.98		0.65	12.33		0.12	8.28E-05	3.52E-05	113	MC
3-Sep	17	ON	38	-66.27	-134.05	119	DBL	101.38	0.42	0.65	12.20	0.09	0.12	1.48E-04	8.66E-05	113	OC
3-Sep	17	OFF	38			119	DBL	101.79		0.66	12.29		0.13	1.37E-04	4.09E-04	113	OC
3-Sep	17	ON	43.7	-60.15	-127.93	119	DBL	100.13	1.63	0.83	12.02	0.28	0.09	4.93E-05	1.90E-06	112	OC
3-Sep	17	OFF	43.7			119	DBL	101.77		0.63	12.30		0.12	7.91E-04	2.69E-03	112	OC
3-Sep	17	ON	38	-66.42	-134.20	101	TRP	94.31	0.17	0.58	12.83	0.04	0.14	8.03E-05	3.01E-06	113	PC
3-Sep	17	OFF	38			101	TRP	94.48		0.60	12.87		0.15	7.77E-05	2.99E-06	113	PC
3-Sep	17	ON	44	-60.16	-127.94	101	TRP	94.03	0.36	0.70	12.76	0.10	0.15	9.42E-05	3.34E-06	109	PC
3-Sep	17	OFF	44			101	TRP	94.39		0.63	12.85		0.15	8.01E-05	2.92E-06	113	PC
5-Sep	18	ON	37	-65.10	-132.88	101	SNG	95.51	0.10	0.54	13.26	0.03	0.13	4.46E-05	3.03E-06	110	CLR
5-Sep	18	OFF	37			101	SNG	95.61		0.49	13.29		0.1	4.15E-05	2.52E-06	111	CLR
-Sep	18	ON	37	-64.65	-132.43	101	TRP	94.04	0.52	0.60	12.76	0.14	0.12	7.29E-05	2.89E-06	111	CLR
-Sep	18	OFF	37			101	TRP	94.56		0.58	12.90		0.16	1.64E-03	3.92E-03	113	CLR
-Sep	18	ON	37	-64.89	-132.67	110	DBL	102.21	-0.83	0.49	12.37	-0.16	0.09	3.52E-05	8.30E-07	113	CLR

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBm/m^2	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Avg. IRD	Δ IRD	S.D. IRD	Avg. C/N	Δ C/N	S.D. C/N	Avg. Pre-BER	S.D. Pre-BER	No. of samples	ConditionWeather
25-Sep	18	OFF	37			110	DBL	101.38		0.49	12.21		0.08	8.78E-04	3.01E-03	113	CLR
25-Sep	18	ON	37	-64.90	-132.68	119	DBL	101.54	1.34	0.58	12.24	0.27	0.12	1.36E-04	9.84E-05	113	CLR
25-Sep	18	OFF	37			119	DBL	102.88		0.50	12.51		0.09	1.35E-05	7.47E-07	113	CLR
26-Sep	19	ON	34	-64.74	-132.52	101	TRP	92.00	0.17	0.71	12.26	0.03	0.13	1.13E-03	3.18E-03	112	PC
26-Sep	19	OFF	34			101	TRP	92.17		0.56	12.29		0.1	1.26E-04	4.95E-06	94	PC
26-Sep	19	ON	33	-65.90	-133.68	110	DBL	99.72	-0.43	1.01	11.96	-0.05	0.12	5.63E-04	2.12E-03	110	PC
26-Sep	19	OFF	33			110	DBL	99.29		1.09	11.92		0.13	9.45E-04	2.66E-03	113	PC
26-Sep	19	ON	34	-64.56	-132.34	110	DBL	98.35	0.14	0.48	11.81	0.02	0.08	6.43E-04	5.31E-05	113	PC
26-Sep	19	OFF	34			110	DBL	98.49		0.61	11.83		0.09	6.03E-04	1.52E-04	113	PC
26-Sep	19	ON	37	-62.17	-129.95	110	DBL	98.39	-0.37	0.71	11.80	-0.06	0.11	2.93E-04	2.99E-04	113	CLR
26-Sep	19	OFF	37			110	DBL	98.01		0.47	11.74		0.08	6.74E-04	1.57E-04	94	CLR
26-Sep	19	ON	33	-65.72	-133.50	119	DBL	100.73	0.69	0.92	12.11	0.10	0.13	6.50E-04	2.39E-03	113	PC
26-Sep	19	OFF	33			119	DBL	101.42		0.55	12.21		0.1	8.81E-05	4.41E-05	112	PC
26-Sep	19	ON	34	-64.62	-132.40	119	DBL	101.54	-0.27	0.54	12.24	-0.05	0.08	2.39E-05	2.58E-05	111	PC
26-Sep	19	OFF	34			119	DBL	101.27		0.78	12.19		0.12	1.18E-04	8.17E-05	113	PC
26-Sep	19	ON	37	-62.47	-130.25	119	DBL	101.53	0.55	0.52	12.24	0.11	0.09	1.81E-05	1.83E-06	113	PC
26-Sep	19	OFF	37			119	DBL	102.08		0.28	12.34		0.07	1.37E-05	8.37E-07	112	PC
27-Sep	20	ON	34	-64.28	-132.06	101	TRP	92.84	0.22	0.51	12.43	0.09	0.13	1.30E-04	6.37E-06	113	CLR
27-Sep	20	OFF	34			101	TRP	93.06		0.41	12.52		0.11	1.17E-04	5.72E-06	94	CLR
27-Sep	20	ON	37	-61.08	-128.86	101	TRP	91.90	-0.12	0.76	12.23	-0.02	0.13	1.49E-04	6.55E-06	107	CLR
27-Sep	20	OFF	37			101	TRP	91.78		0.87	12.21		0.17	1.56E-04	1.66E-05	113	CLR
27-Sep	20	ON	34	-64.25	-132.03	110	DBL	98.64	-0.19	0.63	11.85	-0.03	0.1	5.97E-04	1.65E-04	113	CLR
27-Sep	20	OFF	34			110	DBL	98.45		0.52	11.82		0.08	5.80E-04	2.10E-04	113	CLR
27-Sep	20	ON	37	-61.25	-129.03	110	DBL	97.93	0.24	0.47	11.71	0.06	0.09	6.47E-04	2.61E-04	113	CLR
27-Sep	20	OFF	37			110	DBL	98.17		0.48	11.77		0.09	7.01E-04	4.72E-05	113	CLR
27-Sep	20	ON	34	-64.28	-132.06	119	DBL	98.34	0.76	0.68	11.80	0.10	0.11	2.66E-04	1.12E-04	113	CLR
27-Sep	20	OFF	34			119	DBL	99.11		0.94	11.90		0.11	2.05E-04	1.26E-04	113	CLR
27-Sep	20	ON	37	-61.27	-129.05	119	DBL	98.88	1.65	0.61	11.88	0.18	0.07	4.17E-05	5.08E-05	112	CLR
27-Sep	20	OFF	37			119	DBL	100.53		0.73	12.06		0.09	2.02E-05	8.39E-07	113	CLR

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBm/m^2	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Avg. IRD	Δ IRD	S.D. IRD	Avg. C/N	Δ C/N	S.D. C/N	Avg. Pre-BER	S.D. Pre-BER	No. of samples	Condition Weather
27-Sep	21	ON	33	-67.61	-135.39	101	DBL	95.61	-0.15	0.49	13.29	-0.05	0.11	1.37E-04	3.04E-04	109	PC
27-Sep	21	OFF	33			101	DBL	95.46		0.50	13.24		0.13	5.21E-05	1.12E-04	113	PC
27-Sep	21	ON	34	-66.71	-134.49	101	DBL	95.57	0.04	0.50	13.28	0.00	0.09	3.58E-05	1.44E-06	93	OC
27-Sep	21	OFF	34			101	DBL	95.61		0.49	13.28		0.09	3.57E-05	1.66E-06	98	OC
7-Sep	21	ON	37	-63.68	-131.46	101	DBL	95.48	0.19	0.50	13.25	0.05	0.11	3.67E-05	1.85E-06	112	OC
7-Sep	21	OFF	37			101	DBL	95.66		0.47	13.31		0.11	3.43E-05	1.69E-06	112	OC
7-Sep	21	ON	33	-67.51	-135.29	110	DBL	90.37	0.27	0.89	10.84	0.03	0.09	2.06E-03	1.16E-04	113	PC
7-Sep	21	OFF	33			110	DBL	90.65		1.03	10.86		0.1	2.04E-03	1.30E-04	112	PC
7-Sep	21	ON	34	-66.46	-134.24	110	DBL	91.01	-0.80	1.39	10.90	-0.08	0.14	1.53E-03	1.89E-03	113	OC
7-Sep	21	OFF	34			110	DBL	90.21		0.98	10.82		0.1	2.13E-03	1.71E-04	113	OC
7-Sep	21	ON	37	-63.56	-131.34	110	DBL	89.33	0.30	0.92	10.73	0.03	0.09	2.38E-03	1.97E-04	113	OC
7-Sep	21	OFF	37			110	DBL	89.63		1.01	10.76		0.1	2.73E-03	2.06E-03	112	OC
8-Sep	22	ON	33	-67.09	-134.87	110	DBL	98.42	1.42	0.58	11.82	0.16	0.09	5.92E-04	1.51E-04	113	CLR
8-Sep	22	OFF	33			110	DBL	99.84		0.91	11.98		0.1	6.75E-05	1.51E-06	113	CLR
8-Sep	22	ON	34	-66.02	-133.80	110	DBL	99.73	0.35	0.92	11.97	0.04	0.1	4.27E-04	1.61E-04	113	CLR
8-Sep	22	OFF	34			110	DBL	100.08		0.87	12.01		0.09	4.20E-04	1.38E-04	113	CLR
8-Sep	22	ON	33	-66.90	-134.68	119	DBL	97.69	0.45	0.72	11.69	0.07	0.1	2.91E-04	1.26E-04	113	CLR
8-Sep	22	OFF	33			119	DBL	98.14		0.48	11.76		0.1	2.85E-04	1.06E-04	113	CLR
8-Sep	22	ON	34	-65.90	-133.68	119	DBL	97.57	1.71	0.85	11.68	0.24	0.12	1.95E-03	4.02E-03	113	CLR
8-Sep	22	OFF	34			119	DBL	99.27		0.80	11.92		0.09	3.07E-05	8.43E-07	113	CLR
8-Sep	23	ON	32	-66.98	-134.76	110	DBL	100.59	-0.01	0.64	12.07	0.00	0.08	4.05E-04	5.17E-05	113	CLR
8-Sep	23	OFF	32			110	DBL	100.58		0.73	12.07		0.09	3.64E-04	1.20E-04	113	CLR
8-Sep	23	ON	33	-65.80	-133.58	110	DBL	98.67	0.58	0.57	11.86	0.07	0.08	5.64E-04	1.26E-04	113	CLR
8-Sep	23	OFF	33			110	DBL	99.26		0.77	11.92		0.08	5.26E-04	5.93E-05	113	CLR
8-Sep	23	ON	34	-64.77	-132.55	110	DBL	100.37	-0.04	0.73	12.04	0.00	0.08	5.89E-05	1.31E-06	113	CLR
8-Sep	23	OFF	34			110	DBL	100.34		0.79	12.04		0.08	5.76E-05	8.96E-07	113	CLR
8-Sep	23	ON	33	-66.04	-133.82	119	DBL	100.90	0.75	0.81	12.13	0.13	0.12	1.36E-04	8.04E-05	113	CLR
8-Sep	23	OFF	33			119	DBL	101.65		0.56	12.26		0.11	9.12E-05	6.46E-05	113	CLR
8-Sep	23	ON	34	-65.14	-132.92	119	DBL	101.12	0.30	0.85	12.17	0.04	0.14	8.61E-05	7.97E-05	113	CLR

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBm/m^2	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Avg. IRD	Δ IRD	S.D. IRD	Avg. C/N	Δ C/N	S.D. C/N	Avg. Pre-BER	S.D. Pre-BER	No. of samples	ConditionWeather
8-Sep	23	OFF	34			119	DBL	101.43		0.55	12.21		0.11	1.34E-04	8.12E-05	113	CLR
8-Sep	24	ON	30	-69.26	-137.04	119	DBL	100.36	0.99	0.93	12.05	0.15	0.11	1.54E-04	8.18E-05	112	CLR
8-Sep	24	OFF	30			119	DBL	101.35		0.61	12.20		0.1	1.05E-04	6.91E-05	113	CLR
8-Sep	24	ON	44	-55.39	-123.17	119	DBL	100.94	0.06	0.51	12.13	0.02	0.1	7.81E-05	8.67E-05	112	CLR
8-Sep	24	OFF	44			119	DBL	101.01		0.76	12.15		0.12	1.23E-04	5.81E-05	113	CLR
9-Sep	25	ON	44	-53.13	-120.91	110	DBL	101.04	0.64	0.71	12.15	0.12	0.11	1.41E-04	1.16E-04	112	CLR
9-Sep	25	OFF	44			110	DBL	101.67		0.67	12.27		0.13	1.42E-04	3.63E-05	113	CLR
9-Sep	26	ON	44	-54.52	-122.30	110	DBL	104.26	0.01	0.48	12.79	0.01	0.09	1.08E-05	6.37E-07	113	CLR
9-Sep	26	OFF	44			110	DBL	104.27		0.49	12.80		0.09	1.41E-03	3.72E-03	113	CLR
9-Sep	26	ON	44	-54.56	-122.34	119	DBL	98.98	1.67	0.90	11.89	0.19	0.11	2.50E-04	1.25E-04	113	CLR
9-Sep	26	OFF	44			119	DBL	100.65		0.68	12.08		0.08	2.26E-05	1.24E-06	113	CLR
9-Sep	26	ON	30	-68.48	-136.26	110	DBL	103.89	0.37	0.57	12.71	0.07	0.1	6.03E-05	2.83E-05	113	CLR
9-Sep	26	OFF	30			110	DBL	104.27		0.60	12.78		0.1	7.10E-05	4.69E-05	113	CLR
9-Sep	26	ON	30	-68.18	-135.96	119	DBL	98.29	1.16	0.62	11.78	0.16	0.11	2.55E-04	1.19E-04	113	CLR
9-Sep	26	OFF	30			119	DBL	99.45		0.94	11.94		0.1	1.31E-03	3.53E-03	112	CLR
9-Sep	26	ON	30	-68.01	-135.79	101	TRP	101.89	-1.00	0.43	12.31	-0.20	0.07	3.68E-05	1.34E-06	113	CLR
9-Sep	26	OFF	30			101	TRP	100.89		0.47	12.11		0.08	2.60E-04	8.53E-05	113	CLR
-Oct	27	ON	37	-65.03	-132.81	110	DBL	102.20	-0.08	0.57	12.38	-0.01	0.1	1.80E-03	4.21E-03	113	CLR
-Oct	27	OFF	37			110	DBL	102.13		0.59	12.37		0.1	8.32E-05	9.75E-05	112	CLR
-Oct	27	ON	37	-65.28	-133.06	119	DBL	98.87	1.21	0.86	11.87	0.14	0.1	2.00E-04	5.65E-05	112	CLR
-Oct	27	OFF	37			119	DBL	100.08		0.89	12.01		0.09	7.51E-05	1.03E-04	111	CLR
-Oct	27	ON	33	-69.40	-137.18	110	DBL	102.38	-0.52	0.54	12.43	-0.12	0.09	2.50E-05	8.38E-07	112	CLR
-Oct	27	OFF	33			110	DBL	101.86		0.65	12.31		0.12	2.17E-03	4.67E-03	113	CLR
-Oct	27	ON	33	-69.63	-137.41	119	DBL	97.42	1.59	0.90	11.65	0.24	0.11	3.62E-04	1.45E-04	113	OC
-Oct	27	OFF	33			119	DBL	99.01		0.70	11.89		0.08	4.79E-05	1.88E-06	113	OC
-Oct	27	ON	33	-69.73	-137.51	101	TRP	93.12	0.32	0.40	12.55	0.08	0.12	1.16E-04	5.29E-06	113	CLR
-Oct	27	OFF	33			101	TRP	93.44		0.57	12.64		0.11	1.09E-04	4.65E-06	101	CLR
-Oct	27	ON	37	-65.64	-133.42	101	TRP	93.04	0.40	0.48	12.51	0.11	0.12	1.95E-03	4.09E-03	113	OC
-Oct	27	OFF	37			101	TRP	93.43		0.56	12.62		0.12	1.06E-04	5.08E-06	112	OC

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBm/m^2	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Avg. IRD	Δ IRD	S.D. IRD	Avg. C/N	Δ C/N	S.D. C/N	Avg. Pre-BER	S.D. Pre-BER	No. of samples	ConditionWeather
2-Oct	28	ON	33	-68.21	-135.99	110	DBL	102.37	-0.10	0.59	12.41	-0.02	0.11	1.47E-04	6.83E-05	113	PC
2-Oct	28	OFF	33			110	DBL	102.27		0.55	12.39		0.1	1.79E-04	5.38E-05	113	PC
2-Oct	28	ON	33	-68.21	-135.99	119	DBL	101.78	0.19	0.58	12.29	0.04	0.11	1.76E-03	4.22E-03	111	PC
2-Oct	28	OFF	33			119	DBL	101.97		0.43	12.32		0.08	1.20E-05	4.01E-07	113	PC
2-Oct	28	ON	30	-71.17	-138.95	110	DBL	102.50	0.87	0.52	12.43	0.18	0.09	1.84E-04	4.23E-05	113	PC
2-Oct	28	OFF	30			110	DBL	103.36		0.48	12.61		0.08	1.53E-05	7.49E-07	113	PC
2-Oct	28	ON	30	-71.11	-138.89	119	DBL	101.11	0.06	0.58	12.15	0.01	0.1	1.13E-04	5.04E-05	113	PC
2-Oct	28	OFF	30			119	DBL	101.17		0.62	12.16		0.12	1.84E-03	4.17E-03	113	PC
3-Oct	28	ON	33	-68.39	-136.17	101	TRP	100.73	0.39	0.68	12.09	0.07	0.09	6.29E-05	1.00E-06	113	OC
3-Oct	28	OFF	33			101	TRP	101.13		0.38	12.16		0.08	5.47E-05	1.01E-06	112	OC
3-Oct	28	ON	30	-71.33	-139.11	101	TRP	100.63	0.23	0.66	12.07	0.05	0.08	6.34E-05	9.83E-07	113	OC
3-Oct	28	OFF	30			101	TRP	100.86		0.68	12.12		0.1	1.47E-04	1.32E-04	113	OC
3-Oct	29	ON	33	-69.30	-137.08	101	TRP	93.10	-8.36	0.73	12.52	-1.54	0.17	1.12E-04	1.84E-05	112	PC
3-Oct	29	OFF	33			101	TRP	84.73		1.96	10.98		0.31	4.82E-04	1.00E-04	94	PC
3-Oct	29	ON	30	-72.68	-140.46	101	TRP	93.57	-0.81	0.58	12.65	-0.19	0.11	8.95E-05	4.25E-06	112	PC
3-Oct	29	OFF	30			101	TRP	92.76		1.09	12.46		0.24	1.76E-03	3.91E-03	111	PC
3-Oct	29	ON	33	-69.67	-137.45	110	DBL	101.62	0.78	0.99	12.27	0.14	0.17	1.16E-03	3.39E-03	113	OC
3-Oct	29	OFF	33			110	DBL	102.40		0.54	12.41		0.09	1.77E-03	3.87E-03	110	OC
3-Oct	29	ON	33	-69.72	-137.50	119	DBL	100.03	-7.58	0.87	12.00	-0.93	0.09	1.55E-04	7.47E-05	112	MC
3-Oct	29	OFF	33			119	DBL	92.44		1.64	11.07		0.2	4.93E-04	2.73E-04	113	MC
3-Oct	29	ON	30	-72.68	-140.46	110	DBL	102.04	0.12	0.36	12.35	0.02	0.07	2.80E-05	4.86E-07	113	MC
3-Oct	29	OFF	30			110	DBL	102.16		0.45	12.37		0.08	2.70E-05	8.90E-07	113	MC
3-Oct	29	ON	30	-72.69	-140.47	119	DBL	100.64	0.79	0.90	12.09	0.11	0.12	1.92E-03	4.23E-03	113	PC
3-Oct	29	OFF	30			119	DBL	101.43		0.60	12.20		0.12	9.20E-05	1.02E-04	113	PC
-Oct	30	ON	30	-69.35	-137.13	101	SNG	100.99	0.17	0.69	12.14	0.02	0.1	7.74E-05	9.05E-05	113	CLR
-Oct	30	OFF	30			101	SNG	101.16		0.46	12.16		0.09	2.30E-04	5.92E-05	113	CLR
-Oct	30	ON	27	-72.25	-140.03	101	SNG	100.90	0.53	0.41	12.11	0.12	0.08	2.74E-04	6.12E-05	113	CLR
-Oct	30	OFF	27			101	SNG	101.42		0.64	12.23		0.11	9.74E-05	8.59E-05	113	CLR
-Oct	31	ON	27	-70.42	-138.20	110	DBL	102.46	-0.11	0.60	12.43	-0.03	0.11	1.42E-04	5.48E-05	113	PC

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBm/m^2	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Avg. IRD	Δ IRD	S.D. IRD	Avg. C/N	Δ C/N	S.D. C/N	Avg. Pre-BER	S.D. Pre-BER	No. of samples	Condition Weather
4-Oct	31	OFF	27			110	DBL	102.35		0.61	12.39		0.11	1.48E-04	5.88E-05	113	PC
4-Oct	31	ON	27	-70.70	-138.48	119	DBL	99.30	0.73	1.00	11.93	0.08	0.1	2.03E-04	1.04E-04	113	PC
4-Oct	31	OFF	27			119	DBL	100.04		1.10	12.01		0.13	1.26E-04	1.16E-04	113	PC
4-Oct	31	ON	30	-73.64	-141.42	110	DBL	102.74	-0.28	0.62	12.48	-0.06	0.12	7.07E-05	6.41E-05	113	PC
4-Oct	31	OFF	30			110	DBL	102.46		0.64	12.42		0.12	1.40E-04	5.45E-05	112	PC
4-Oct	31	ON	30	-73.99	-141.77	119	DBL	99.41	0.47	1.02	11.93	0.06	0.12	2.11E-04	1.25E-04	113	PC
4-Oct	31	OFF	30			119	DBL	99.88		0.94	11.99		0.11	1.57E-03	3.75E-03	112	PC
4-Oct	31	ON	30	-74.00	-141.78	101	TRP	93.42	0.04	0.55	12.63	0.01	0.12	9.45E-05	3.26E-06	112	PC
4-Oct	31	OFF	30			101	TRP	93.47		0.61	12.63		0.12	1.92E-03	4.10E-03	113	PC
4-Oct	31	ON	33	-71.15	-138.93	101	TRP	93.29	0.20	0.51	12.60	0.03	0.13	1.93E-03	4.10E-03	113	PC
4-Oct	31	OFF	33			101	TRP	93.49		0.57	12.63		0.12	9.01E-05	3.21E-06	113	PC
4-Oct	32	ON	33	-69.64	-137.42	110	DBL	102.80	-0.42	0.65	12.49	-0.08	0.12	6.24E-04	1.32E-03	95	PC
4-Oct	32	OFF	33			110	DBL	102.38		0.58	12.41		0.11	2.73E-03	4.28E-03	100	PC
4-Oct	32	ON	33	-68.87	-136.65	119	DBL	97.90	0.68	0.79	11.73	0.10	0.11	3.05E-03	4.52E-03	96	PC
4-Oct	32	OFF	33			119	DBL	98.57		0.76	11.83		0.11	2.17E-04	4.23E-04	107	PC
4-Oct	32	ON	30	-72.48	-140.26	110	DBL	102.53	0.15	0.63	12.44	0.02	0.11	3.49E-04	7.17E-04	109	PC
4-Oct	32	OFF	30			110	DBL	102.68		0.59	12.46		0.11	1.12E-04	4.29E-05	113	PC
4-Oct	32	ON	30	-72.07	-139.85	119	DBL	97.97	0.70	0.82	11.74	0.11	0.12	2.09E-03	4.28E-03	113	PC
4-Oct	32	OFF	30			119	DBL	98.68		0.80	11.85		0.11	1.32E-04	1.40E-04	111	PC
4-Oct	32	ON	30	-71.95	-139.73	101	TRP	93.37	0.12	0.50	12.61	0.03	0.12	8.25E-05	2.94E-06	113	PC
4-Oct	32	OFF	30			101	TRP	93.49		0.54	12.64		0.12	8.00E-05	3.10E-06	108	PC
4-Oct	32	ON	33	-68.91	-136.69	101	TRP	93.34	0.15	0.61	12.61	0.02	0.13	1.92E-03	4.10E-03	113	PC
4-Oct	32	OFF	33			101	TRP	93.49		0.56	12.64		0.11	8.30E-05	3.65E-06	94	PC
5-Oct	33	ON	27	-66.98	-134.76	110	DBL	104.56	-0.87	0.55	12.84	-0.17	0.08	7.99E-06	2.71E-07	113	MC
5-Oct	33	OFF	27			110	DBL	103.69		0.57	12.67		0.1	7.08E-05	2.12E-05	113	MC
5-Oct	33	ON	27	-70.40	-138.18	119	DBL	101.78	0.42	0.51	12.29	0.09	0.09	1.86E-03	4.26E-03	113	MC
5-Oct	33	OFF	27			119	DBL	102.20		0.47	12.38		0.08	9.38E-06	4.66E-07	113	MC
5-Oct	33	ON	27	-70.37	-138.15	101	TRP	93.08	0.07	0.45	12.52	0.02	0.12	1.01E-04	6.66E-06	97	MC
5-Oct	33	OFF	27			101	TRP	93.15		0.47	12.54		0.13	1.93E-03	4.10E-03	112	MC

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBm/m^2	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Avg. IRD	Δ IRD	S.D. IRD	Avg. C/N	Δ C/N	S.D. C/N	Avg. Pre-BER	S.D. Pre-BER	No. of samples	ConditionWeather
5-Oct	33	ON	27	-70.41	-138.19	101	SNG	95.04	-0.02	0.42	13.08	0.00	0.16	5.83E-04	1.21E-03	113	MC
5-Oct	33	OFF	27			101	SNG	95.02		0.48	13.07		0.16	4.27E-05	2.46E-06	113	MC
5-Oct	33	ON	30	-67.76	-135.54	101	SNG	94.95	0.12	0.47	13.03	0.06	0.17	4.48E-05	2.93E-06	94	MC
5-Oct	33	OFF	30			101	SNG	95.06		0.48	13.09		0.16	4.33E-05	2.84E-06	94	MC
5-Oct	33	ON	33	-64.55	-132.33	101	SNG	94.56	0.45	0.53	12.91	0.19	0.15	5.27E-05	3.24E-06	113	MC
5-Oct	33	OFF	33			101	SNG	95.01		0.40	13.09		0.15	4.25E-05	2.75E-06	94	MC

LR – Clear PC – Partly Cloudy MC – Mostly Cloudy OC - Overcast

Table 3 Sat 9520 Data

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Sat 9520 Avg. C/N	Sat 9520 Δ C/N	SA (C/N) Left	Δ C/N left	SA (C/N) Right	Δ C/N Right	Weather Condition
15-Sep	2	ON	43.7	-125.87	101	TRP	12.51	0.31	11.07	0.31	10.90	0.27	PC
15-Sep	2	OFF	43.7		101	TRP	12.82		11.38		11.16		PC
15-Sep	2	ON	43.7	-126.83	119	DBL	11.98	0.43	12.53	1.02	12.80	0.72	PC
15-Sep	2	OFF	43.7		119	DBL	12.41		13.56		13.52		PC
15-Sep	2	ON	43.7	-126.68	101	SNG	13.07	0.23	11.5	0.28	11.09	0.17	PC
15-Sep	2	OFF	43.7		101	SNG	13.30		11.74		11.26		PC
16-Sep	3	ON	43.7	-123.28	101	TRP	12.20	0.43	11.03	0.35	10.59	0.27	CLR
16-Sep	3	OFF	43.7		101	TRP	12.62		11.38		10.86		CLR
16-Sep	3	ON	43.7	-123.27	119	DBL	10.75	1.80	10.95	2.60	11.01	2.53	CLR
16-Sep	3	OFF	43.7		119	DBL	12.55		13.54		13.54		CLR
16-Sep	4	ON	43.7	-126.04	101	TRP	12.62	0.05	11.43	0.07	10.81	0.05	CLR
16-Sep	4	OFF	43.7		101	TRP	12.67		11.51		10.86		CLR
18-Sep	5	ON	43.7	-122.31	119	DBL	12.18	0.41	13.05	0.66	12.99	0.69	CLR
18-Sep	5	OFF	43.7		119	DBL	12.59		13.71		13.68		CLR
18-Sep	5	ON	43.7	-122.36	101	TRP	12.55	0.43	11.14	0.46	10.76	0.12	CLR
18-Sep	5	OFF	43.7		101	TRP	12.98		11.60		10.88		CLR
18-Sep	6	ON	43.7	-127.81	101	TRP	12.88	0.10	11.38	0.02	10.60	-0.02	CLR
18-Sep	6	OFF	43.7		101	TRP	12.98		11.4		10.58		CLR
18-Sep	6	ON	43.7	-127.56	110	DBL	12.12	0.10	9.86	0.06	10.41	0.14	CLR
18-Sep	6	OFF	43.7		110	DBL	12.22		9.92		10.55		CLR
18-Sep	7	ON	43.7	-126.96	101	TRP	12.85	-0.04	11.43	0.10	12.04	0.16	CLR
18-Sep	7	OFF	43.7		101	TRP	12.81		11.53		12.20		CLR
18-Sep	7	ON	43.7	-126.92	101	TRP	12.07	0.10	11.45	0.06	10.66	0.05	CLR
18-Sep	7	OFF	43.7		101	TRP	12.17		11.51		10.71		CLR
19-Sep	8	ON	43.7	-125.74	101	TRP			11.28	0.18	10.64	0.22	CLR
19-Sep	8	OFF	43.7		101	TRP	12.71		11.46		10.86		CLR
19-Sep	9	ON	43.7	-126.44	101	TRP	12.71	0.04	11.25	0.10	10.92	0.03	CLR
19-Sep	9	OFF	43.7		101	TRP	12.75		11.35		10.96		CLR
19-Sep	9	ON	43.7	-120.97	110	DBL	12.16	0.07	9.86	-0.03	9.91	0.01	CLR
19-Sep	9	OFF	43.7		110	DBL	12.22		9.83		9.92		CLR
19-Sep	10	ON	43.7	-125.03	101	TRP	12.52	0.24	11.3	0.16	10.61	0.10	CLR
19-Sep	10	OFF	43.7		101	TRP	12.76		11.5		10.71		CLR
19-Sep	10	ON	43.7	-124.98	119	DBL	12.59	-0.05	13.9	-0.09	13.20	0.06	CLR
19-Sep	10	OFF	43.7		119	DBL	12.53		13.8		13.26		CLR
20-Sep	11	ON	43.7	-131.54	101	TRP	12.72	0.00	11.1	0.12	11.00	0.08	CLR
20-Sep	11	OFF	43.7		101	TRP	12.73		11.2		11.08		CLR
20-Sep	11	ON	43.7	-131.38	110	DBL	12.22	0.01	9.9	0.09	9.97	0.07	CLR
20-Sep	11	OFF	43.7		110	DBL	12.24		9.99		10.04		CLR
20-Sep	12	ON	43.7	-129.51	101	TRP	12.50	0.35	11.2	0.26	10.38	0.19	CLR
20-Sep	12	OFF	43.7		101	TRP	12.85		11.4		10.57		CLR
20-Sep	12	ON	43.7	-129.30	110	DBL	12.16	0.19	9.96	0.12	10.11	0.09	CLR
20-Sep	12	OFF	43.7		110	DBL	12.35		10.1		10.20		CLR
20-Sep	12	ON	43.7	-128.89	119	DBL	11.55	0.57	12.3	0.78	12.39	0.69	CLR
20-Sep	12	OFF	43.7		119	DBL	12.11		13		13.08		CLR
25-Sep	13A	ON	43.7	-131.73	101	TRP	12.71	-0.03	11.1	-0	11.10	-0.02	CLR

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Sat 9520 Avg. C/N	Sat 9520 Δ C/N	SA (C/N) Left	Δ C/N left	SA (C/N) Right	Δ C/N Right	Weather Condition
25-Sep	13A	OFF	43.7		101	TRP	12.68		11.1		11.08		CLR
25-Sep	13A	ON	43.7	-133.50	119	DBL	12.55	-0.21	13.6	-0.04	13.61	-0.04	CLR
25-Sep	13A	OFF	43.7		119	DBL	12.34		13.5		13.58		CLR
25-Sep	13A	ON	43.7	-133.43	110	DBL	12.02	0.01	9.92	-0.04	10.06	-0.02	CLR
25-Sep	13A	OFF	43.7		110	DBL	12.03		9.88		10.04		CLR
25-Sep	13A	ON	43.7	-133.57	101	SNG	13.24	-0.02	11.4	0.06	11.20	-0.06	CLR
25-Sep	13A	OFF	43.7		101	SNG	13.22		11.5		11.14		CLR
22-Sep	14	ON	43.7	-124.95	101	TRP	12.70	0.18	11.3	0.07	10.85	0.21	OC
22-Sep	14	OFF	43.7		101	TRP	12.88		11.3		11.07		OC
22-Sep	14	ON	43.7	-124.56	110	DBL	11.92	0.31	9.95	0.06	10.05	0.01	OC
22-Sep	14	OFF	43.7		110	DBL	12.23		10		10.05		OC
22-Sep	14	ON	43.7	-124.97	119	DBL	12.28	0.09	13.3	0.18	13.29	0.11	OC
22-Sep	14	OFF	43.7		119	DBL	12.38		13.4		13.40		OC
22-Sep	14	ON	43.7	-125.00	119	TRP	11.14	0.27	11.2	0.67	11.30	0.33	OC
22-Sep	14	OFF	43.7		119	TRP	11.41		11.8		11.64		OC
22-Sep	15	ON	43.7	-123.71	101	DBL	12.99	0.21	11.5	0.31	10.65	0.20	OC
22-Sep	15	OFF	43.7		101	DBL	13.20		11.8		10.85		OC
22-Sep	15	ON	43.7	-123.27	110	DBL	11.85	0.06	9.29	0.41	10.07	0.35	OC
22-Sep	15	OFF	43.7		110	DBL	11.91		9.7		10.41		OC
23-Sep	16	ON	43.7	-118.40	101	TRP	11.90	0.86	10.5	0.74	10.26	0.68	OC
23-Sep	16	OFF	43.7		101	TRP	12.76		11.3		10.94		OC
23-Sep	16	ON	43.7	-118.80	119	DBL	10.58	1.75	10.6	2.9	11.01	2.50	MC
23-Sep	16	OFF	43.7		119	DBL	12.33		13.5		13.51		MC
23-Sep	16	ON	40	-122.66	119	DBL	11.42	0.93	11.9	1.54	12.18	1.33	PC
23-Sep	16	OFF	40		119	DBL	12.35		13.5		13.51		PC
23-Sep	16	ON	37	-125.48	119	DBL	12.08	0.34	12.7	0.81	12.89	0.72	PC
23-Sep	16	OFF	37		119	DBL	12.42		13.5		13.61		PC
23-Sep	16	ON	34	-128.67	119	DBL	12.07	0.26	13.1	0.52	13.16	0.35	MC
23-Sep	16	OFF	34		119	DBL	12.33		13.6		13.52		MC
23-Sep	17	ON	38	-134.05	119	DBL	12.20	0.09	13.3	0.17	13.30	0.15	OC
23-Sep	17	OFF	38		119	DBL	12.29		13.5		13.45		OC
23-Sep	17	ON	43.7	-127.93	119	DBL	12.02	0.28	12.7	0.75	12.83	0.61	OC
23-Sep	17	OFF	43.7		119	DBL	12.30		13.5		13.44		OC
23-Sep	17	ON	38	-134.20	101	TRP	12.83	0.04	11.5	0.06	10.70	-0.04	PC
23-Sep	17	OFF	38		101	TRP	12.87		11.6		10.67		PC
23-Sep	17	ON	44	-127.94	101	TRP	12.76	0.10	11.4	0.17	10.56	0.16	PC
23-Sep	17	OFF	44		101	TRP	12.85		11.5		10.72		PC
25-Sep	18	ON	37	-132.88	101	SNG	13.26	0.03	11.6	0.05	11.15	0.02	CLR
25-Sep	18	OFF	37		101	SNG	13.29		11.6		11.17		CLR
25-Sep	18	ON	37	-132.43	101	TRP	12.76	0.14	11.4	0.07	10.99	0.10	CLR
25-Sep	18	OFF	37		101	TRP	12.90		11.4		11.09		CLR
25-Sep	18	ON	37	-132.67	110	DBL	12.37	-0.16	10	-0.03	10.11	-0.07	CLR
25-Sep	18	OFF	37		110	DBL	12.21		9.97		10.04		CLR
25-Sep	18	ON	37	-132.68	119	DBL	12.24	0.27	13.2	0.34	13.35	0.25	CLR
25-Sep	18	OFF	37		119	DBL	12.51		13.5		13.60		CLR

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Sat 9520 Avg. C/N	Sat 9520 Δ C/N	SA (C/N) Left	Δ C/N left	SA (C/N) Right	Δ C/N Right	Weather Condition
26-Sep	19	ON	34	-132.52	101	TRP	12.26	0.03	11.2	0.02	10.54	0.06	PC
26-Sep	19	OFF	34		101	TRP	12.29		11.2		10.60		PC
26-Sep	19	ON	33	-133.68	110	DBL	11.96	-0.05	9.88	0.01	10.07	-0.01	PC
26-Sep	19	OFF	33		110	DBL	11.92		9.89		10.06		PC
26-Sep	19	ON	34	-132.34	110	DBL	11.81	0.02	9.93	-0.03	10.13	0.00	PC
26-Sep	19	OFF	34		110	DBL	11.83		9.9		10.13		PC
26-Sep	19	ON	37	-129.95	110	DBL	11.80	-0.06	9.89	0.07	9.95	0.04	CLR
26-Sep	19	OFF	37		110	DBL	11.74		9.96		9.99		CLR
26-Sep	19	ON	33	-133.50	119	DBL	12.11	0.10	13.5	0.12	13.59	0.04	PC
26-Sep	19	OFF	33		119	DBL	12.21		13.6		13.63		PC
26-Sep	19	ON	34	-132.40	119	DBL	12.24	-0.05	13.4	0.15	13.55	0.08	PC
26-Sep	19	OFF	34		119	DBL	12.19		13.6		13.63		PC
26-Sep	19	ON	37	-130.25	119	DBL	12.24	0.11	13.4	0.2	13.43	0.29	PC
26-Sep	19	OFF	37		119	DBL	12.34		13.6		13.72		PC
27-Sep	20	ON	34	-132.06	101	TRP	12.43	0.09	11.3	0.11	10.69	0.06	CLR
27-Sep	20	OFF	34		101	TRP	12.52		11.5		10.76		CLR
27-Sep	20	ON	37	-128.86	101	TRP	12.23	-0.02	11.3	0	10.61	0.13	CLR
27-Sep	20	OFF	37		101	TRP	12.21		11.3		10.75		CLR
27-Sep	20	ON	34	-132.03	110	DBL	11.85	-0.03	9.95	0.03	10.04	0.09	CLR
27-Sep	20	OFF	34		110	DBL	11.82		9.98		10.13		CLR
27-Sep	20	ON	37	-129.03	110	DBL	11.71	0.06	9.98	0.05	10.02	0.11	CLR
27-Sep	20	OFF	37		110	DBL	11.77		10		10.14		CLR
27-Sep	20	ON	34	-132.06	119	DBL	11.80	0.10	13.1	0.11	13.19	0.08	CLR
27-Sep	20	OFF	34		119	DBL	11.90		13.2		13.26		CLR
27-Sep	20	ON	37	-129.05	119	DBL	11.88	0.18	13	0.34	13.08	0.25	CLR
27-Sep	20	OFF	37		119	DBL	12.06		13.3		13.32		CLR
27-Sep	21	ON	33	-135.39	101	DBL	13.29	-0.05	12	-0.05	10.92	0.05	PC
27-Sep	21	OFF	33		101	DBL	13.24		11.9		10.97		PC
27-Sep	21	ON	34	-134.49	101	DBL	13.28	0.00	12	0.07	10.92	0.11	OC
27-Sep	21	OFF	34		101	DBL	13.28		12.1		11.03		OC
27-Sep	21	ON	37	-131.46	101	DBL	13.25	0.05	11.9	0.02	10.97	0.04	OC
27-Sep	21	OFF	37		101	DBL	13.31		12		11.01		OC
27-Sep	21	ON	33	-135.29	110	DBL	10.84	0.03	9.04	-0.01	9.68	0.02	PC
27-Sep	21	OFF	33		110	DBL	10.86		9.02		9.70		PC
27-Sep	21	ON	34	-134.24	110	DBL	10.90	-0.08	8.97	0.03	9.63	0.12	OC
27-Sep	21	OFF	34		110	DBL	10.82		9		9.75		OC
27-Sep	21	ON	37	-131.34	110	DBL	10.73	0.03	8.9	0.09	9.58	0.07	OC
27-Sep	21	OFF	37		110	DBL	10.76		8.99		9.66		OC
28-Sep	22	ON	33	-134.87	110	DBL	11.82	0.16	9.85	0.05	10.01	0.10	CLR
28-Sep	22	OFF	33		110	DBL	11.98		9.89		10.11		CLR
28-Sep	22	ON	34	-133.80	110	DBL	11.97	0.04	9.97	0	10.20	-0.03	CLR
28-Sep	22	OFF	34		110	DBL	12.01		9.97		10.17		CLR
28-Sep	22	ON	33	-134.68	119	DBL	11.69	0.07	12.8	0.16	12.86	0.22	CLR
28-Sep	22	OFF	33		119	DBL	11.76		13		13.07		CLR
28-Sep	22	ON	34	-133.68	119	DBL	11.68	0.24	12.8	0.21	12.86	0.21	CLR

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Sat 9520 Avg. C/N	Sat 9520 Δ C/N	SA (C/N) Left	Δ C/N left	SA (C/N) Right	Δ C/N Right	Weather Condition
28-Sep	22	OFF	34		119	DBL	11.92		13		13.06		CLR
28-Sep	23	ON	32	-134.76	110	DBL	12.07	0.00	9.94	-0.01	10.16	-0.02	CLR
28-Sep	23	OFF	32		110	DBL	12.07		9.94		10.14		CLR
28-Sep	23	ON	33	-133.58	110	DBL	11.86	0.07	9.89	0.1	9.98	0.03	CLR
28-Sep	23	OFF	33		110	DBL	11.92		9.98		10.01		CLR
28-Sep	23	ON	34	-132.55	110	DBL	12.04	0.00	9.83	0.01	10.07	-0.03	CLR
28-Sep	23	OFF	34		110	DBL	12.04		9.85		10.04		CLR
28-Sep	23	ON	33	-133.82	119	DBL	12.13	0.13	13.4	0.2	13.46	0.14	CLR
28-Sep	23	OFF	33		119	DBL	12.26		13.6		13.61		CLR
28-Sep	23	ON	34	-132.92	119	DBL	12.17	0.04	13.3	0.33	13.35	0.30	CLR
28-Sep	23	OFF	34		119	DBL	12.21		13.6		13.66		CLR
28-Sep	24	ON	30	-137.04	119	DBL	12.05	0.15	13.2	0.25	13.32	0.30	CLR
28-Sep	24	OFF	30		119	DBL	12.20		13.5		13.62		CLR
28-Sep	24	ON	44	-123.17	119	DBL	12.13	0.02	13.3	0.23	13.51	0.02	CLR
28-Sep	24	OFF	44		119	DBL	12.15		13.5		13.53		CLR
29-Sep	25	ON	44	-120.91	110	DBL	12.15	0.12	10.5	0.24	10.44	0.11	CLR
29-Sep	25	OFF	44		110	DBL	12.27		10.7		10.55		CLR
29-Sep	26	ON	44	-122.30	110	DBL	12.79	0.01	11.1	-0	10.92	0.01	CLR
29-Sep	26	OFF	44		110	DBL	12.80		11.1		10.93		CLR
29-Sep	26	ON	44	-122.34	119	DBL	11.89	0.19	13.1	0.04	13.06	0.13	CLR
29-Sep	26	OFF	44		119	DBL	12.08		13.1		13.19		CLR
29-Sep	26	ON	30	-136.26	110	DBL	12.71	0.07	11.1	-0.07	11.04	0.00	CLR
29-Sep	26	OFF	30		110	DBL	12.78		11		11.04		CLR
29-Sep	26	ON	30	-135.96	119	DBL	11.78	0.16	12.8	0.24	12.96	0.18	CLR
29-Sep	26	OFF	30		119	DBL	11.94		13		13.14		CLR
29-Sep	26	ON	30	-135.79	101	TRP	12.31	-0.20	10.6	-0.09	11.16	-0.09	CLR
29-Sep	26	OFF	30		101	TRP	12.11		10.5		11.07		CLR
2-Oct	27	ON	37	-132.81	110	DBL	12.38	-0.01	10.7	0.04	10.47	0.01	CLR
2-Oct	27	OFF	37		110	DBL	12.37		10.7		10.48		CLR
2-Oct	27	ON	37	-133.06	119	DBL	11.87	0.14	12.9	0.06	13.02	0.03	CLR
2-Oct	27	OFF	37		119	DBL	12.01		13		13.05		CLR
2-Oct	27	ON	33	-137.18	110	DBL	12.43	-0.12	10.6	0.11	10.43	0.02	CLR
2-Oct	27	OFF	33		110	DBL	12.31		10.7		10.44		CLR
2-Oct	27	ON	33	-137.41	119	DBL	11.65	0.24	12.7	0.11	12.78	0.11	OC
2-Oct	27	OFF	33		119	DBL	11.89		12.9		12.89		OC
2-Oct	27	ON	33	-137.51	101	TRP	12.55	0.08	11.2	0.05	10.67	0.05	CLR
2-Oct	27	OFF	33		101	TRP	12.64		11.3		10.73		CLR
2-Oct	27	ON	37	-133.42	101	TRP	12.51	0.11	11.1	0.11	10.69	0.04	OC
2-Oct	27	OFF	37		101	TRP	12.62		11.2		10.73		OC
2-Oct	28	ON	33	-135.99	110	DBL	12.41	-0.02	11	0.06	10.73	0.10	PC
2-Oct	28	OFF	33		110	DBL	12.39		11.1		10.83		PC
2-Oct	28	ON	33	-135.99	119	DBL	12.29	0.04	13.6	0.09	13.52	0.04	PC
2-Oct	28	OFF	33		119	DBL	12.32		13.7		13.56		PC
2-Oct	28	ON	30	-138.95	110	DBL	12.43	0.18	11.1	-0.01	10.83	0.09	PC
2-Oct	28	OFF	30		110	DBL	12.61		11		10.92		PC

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Sat 9520 Avg. C/N	Sat 9520 Δ C/N	SA (C/N) Left	Δ C/N left	SA (C/N) Right	Δ C/N Right	Weather Condition
2-Oct	28	ON	30	-138.89	119	DBL	12.15	0.01	13.6	0.01	13.44	0.07	PC
2-Oct	28	OFF	30		119	DBL	12.16		13.6		13.51		PC
3-Oct	28	ON	33	-136.17	101	TRP	12.09	0.07	10.4	0.08	10.65	0.11	OC
3-Oct	28	OFF	33		101	TRP	12.16		10.4		10.76		OC
3-Oct	28	ON	30	-139.11	101	TRP	12.07	0.05	10.3	0.05	10.66	0.04	OC
3-Oct	28	OFF	30		101	TRP	12.12		10.4		10.70		OC
3-Oct	29	ON	33	-137.08	101	TRP	12.52	-1.54	11.1	-0.78	11.00	-0.67	PC
3-Oct	29	OFF	33		101	TRP	10.98		10.3		10.33		PC
3-Oct	29	ON	30	-140.46	101	TRP	12.65	-0.19	11.2	-0.14	11.13	-0.07	PC
3-Oct	29	OFF	30		101	TRP	12.46		11		11.05		PC
3-Oct	29	ON	33	-137.45	110	DBL	12.27	0.14	10.7	0.19	10.37	0.21	OC
3-Oct	29	OFF	33		110	DBL	12.41		10.9		10.57		OC
3-Oct	29	ON	33	-137.50	119	DBL	12.00	-0.93	13.4	-1.06	13.16	-0.97	MC
3-Oct	29	OFF	33		119	DBL	11.07		12.3		12.19		MC
3-Oct	29	ON	30	-140.46	110	DBL	12.35	0.02	10.9	0.08	10.57	0.03	MC
3-Oct	29	OFF	30		110	DBL	12.37		11		10.61		MC
3-Oct	29	ON	30	-140.47	119	DBL	12.09	0.11	13.5	0.18	13.34	0.10	PC
3-Oct	29	OFF	30		119	DBL	12.20		13.7		13.44		PC
3-Oct	30	ON	30	-137.13	101	SNG	12.14	0.02	10.5	0.15	10.37	0.17	CLR
3-Oct	30	OFF	30		101	SNG	12.16		10.7		10.54		CLR
3-Oct	30	ON	27	-140.03	101	SNG	12.11	0.12	10.7	-0	10.52	0.04	CLR
3-Oct	30	OFF	27		101	SNG	12.23		10.6		10.56		CLR
4-Oct	31	ON	27	-138.20	110	DBL	12.43	-0.03	10.8	0.07	10.52	-0.05	PC
4-Oct	31	OFF	27		110	DBL	12.39		10.9		10.48		PC
4-Oct	31	ON	27	-138.48	119	DBL	11.93	0.08	13.2	0.03	12.99	0.11	PC
4-Oct	31	OFF	27		119	DBL	12.01		13.2		13.10		PC
4-Oct	31	ON	30	-141.42	110	DBL	12.48	-0.06	10.9	-0.04	10.40	0.00	PC
4-Oct	31	OFF	30		110	DBL	12.42		10.9		10.40		PC
4-Oct	31	ON	30	-141.77	119	DBL	11.93	0.06	13.2	0.05	13.01	0.09	PC
4-Oct	31	OFF	30		119	DBL	11.99		13.2		13.10		PC
4-Oct	31	ON	30	-141.78	101	TRP	12.63	0.01	11.5	-0.06	10.66	0.07	PC
4-Oct	31	OFF	30		101	TRP	12.63		11.4		10.73		PC
4-Oct	31	ON	33	-138.93	101	TRP	12.60	0.03	11.4	0.01	10.72	0.07	PC
4-Oct	31	OFF	33		101	TRP	12.63		11.4		10.79		PC
4-Oct	32	ON	33	-137.42	110	DBL	12.49	-0.08	11	-0.01	10.74	-0.07	PC
4-Oct	32	OFF	33		110	DBL	12.41		11		10.67		PC
4-Oct	32	ON	33	-136.65	119	DBL	11.73	0.10	13	-0.01	12.89	0.08	PC
4-Oct	32	OFF	33		119	DBL	11.83		13		12.97		PC
4-Oct	32	ON	30	-140.26	110	DBL	12.44	0.02	11.1	0.06	10.83	0.10	PC
4-Oct	32	OFF	30		110	DBL	12.46		11.2		10.93		PC
4-Oct	32	ON	30	-139.85	119	DBL	11.74	0.11	13	0.06	12.94	0.02	PC
4-Oct	32	OFF	30		119	DBL	11.85		13		12.96		PC
4-Oct	32	ON	30	-139.73	101	TRP	12.61	0.03	11.5	0.11	10.83	-0.02	PC
4-Oct	32	OFF	30		101	TRP	12.64		11.6		10.81		PC
4-Oct	32	ON	33	-136.69	101	TRP	12.61	0.02	11.5	0.03	10.78	0.03	PC

Date	Site	MDS TX State	MDS TX Power (dBm)	Avg. MDS PFD dBW/m^2 /4kHz	Sat.	DBS RX Ant.	Sat 9520 Avg. C/N	Sat 9520 Δ C/N	SA (C/N) Left	Δ C/N left	SA (C/N) Right	Δ C/N Right	Weather Condition
4-Oct	32	OFF	33		101	TRP	12.64		11.5		10.81		PC
5-Oct	33	ON	27	-134.76	110	DBL	12.84	-0.17	11.2	0.09	10.92	0.12	MC
5-Oct	33	OFF	27		110	DBL	12.67		11.3		11.04		MC
5-Oct	33	ON	27	-138.18	119	DBL	12.29	0.09	13.5	0.15	13.44	0.16	MC
5-Oct	33	OFF	27		119	DBL	12.38		13.7		13.60		MC
5-Oct	33	ON	27	-138.15	101	TRP	12.52	0.02	11.4	-0.07	10.64	0.00	MC
5-Oct	33	OFF	27		101	TRP	12.54		11.3		10.64		MC
5-Oct	33	ON	27	-138.19	101	SNG	13.08	0.00	11.7	0.09	10.80	0.05	MC
5-Oct	33	OFF	27		101	SNG	13.07		11.8		10.86		MC
5-Oct	33	ON	30	-135.54	101	SNG	13.03	0.06	11.7	0.05	10.79	0.05	MC
5-Oct	33	OFF	30		101	SNG	13.09		11.8		10.84		MC
5-Oct	33	ON	33	-132.33	101	SNG	12.91	0.19	11.6	0.13	10.73	0.10	MC
5-Oct	33	OFF	33		101	SNG	13.09		11.8		10.84		MC
CLR – Clear		PC – Partly Cloudy			MC – Mostly Cloudy				OC - Overcast				

Table 4 SA - Sat9520 C/N comparison table

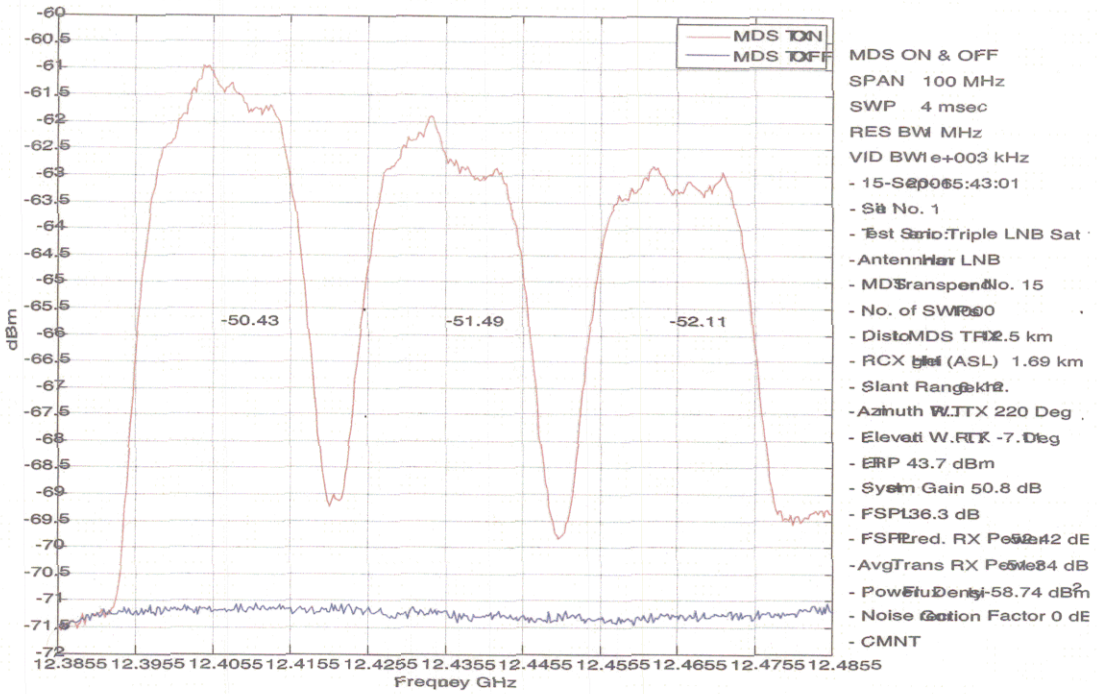

Figure 15 Site 1 MDS VPOL - Triple LNB Sat101 MDS TX 43.7 dBm

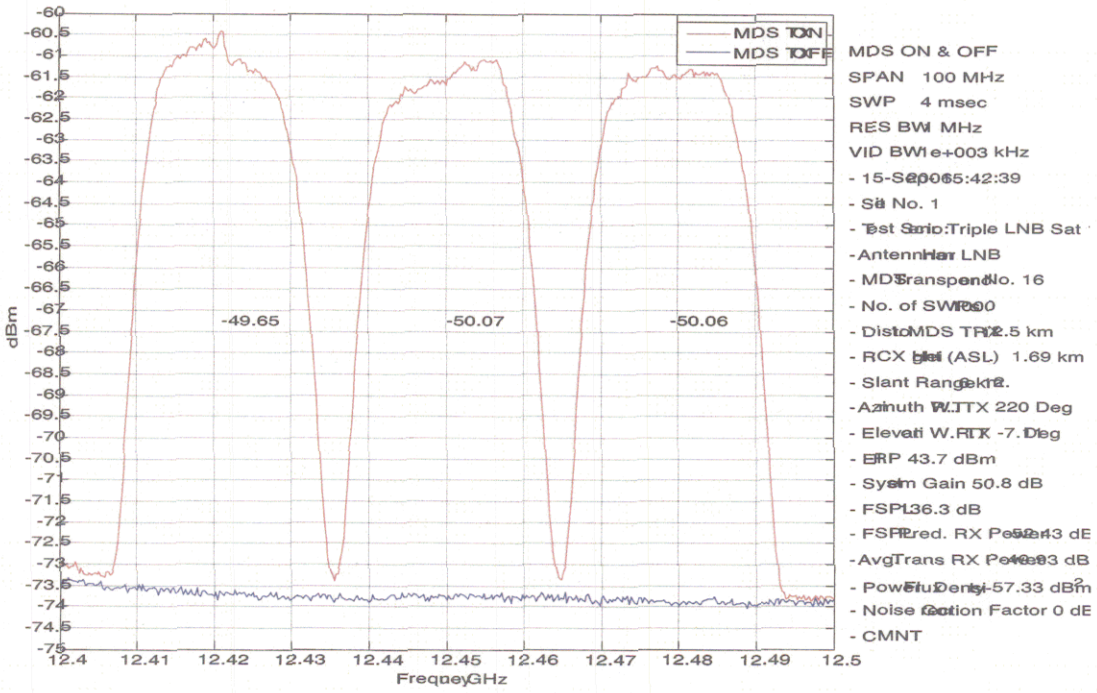

Figure 16 Site 1 MDS HPOL - Triple LNB Sat101 MDS TX 43.7 dBm

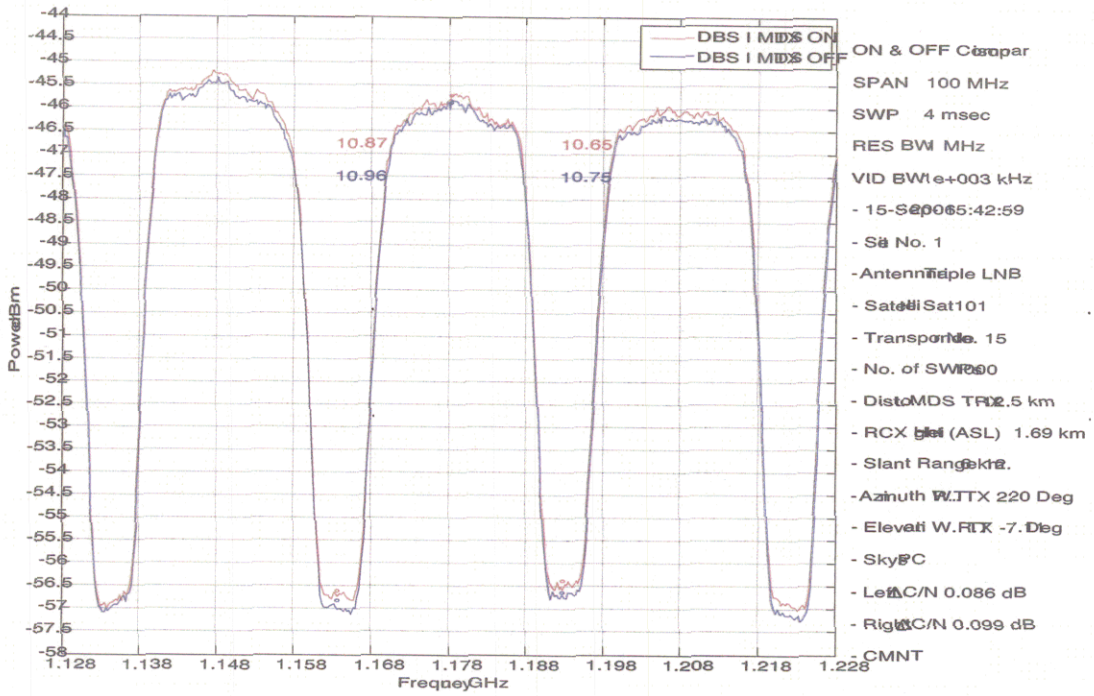

Figure 17 Site 1 DBS signal - Triple LNB Sat101 MDS TX 43.7 dBm

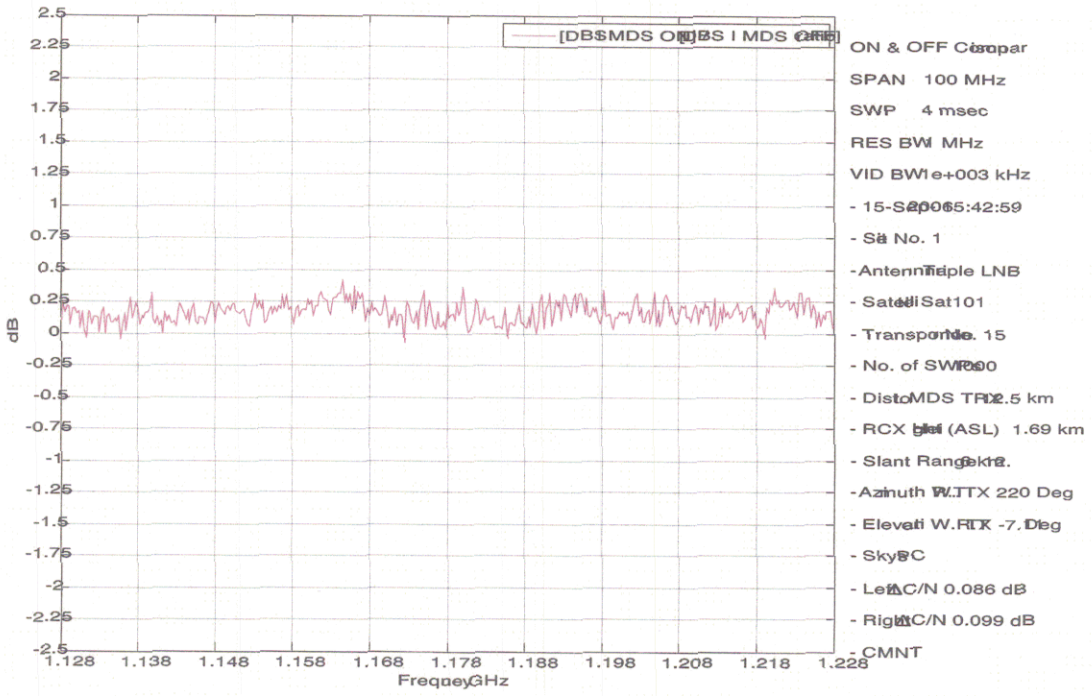

Figure 18 Site 1 DBS signal ON/OFF ratio – Triple LNB Sat101 MDS TX 43.7 dBm

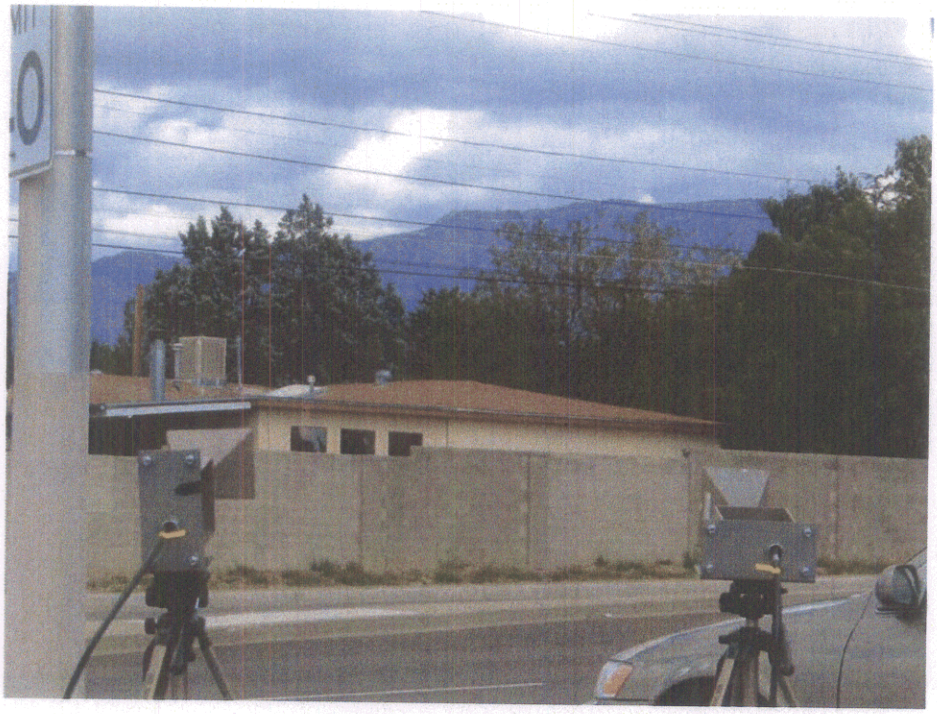

Figure 19 Site 1 Horn Antenna view

Figure 20 Site 1 DBS antenna relative configuration