APPENDIX A: ANTENNA COUPLING DATA SUMMARY TABLES

Coupling data is summarized using the following convention: Anum1, num2 = S (dB), where num1 = antenna element connected to port 1, num2 = antenna element connected to port 2.

Table A-1.Vertical Antenna Coupling Summary

Measurement	**File#**	**Disk#**	**S_{21} @ CF**				**Comments**
			Amp(dB)	±	**Phase°**	±	
Cable(1,2)							
Cal1-thru	00	1	-0.5		-0.7		
A1,2	01		-31.5		-58		
A1,3	02		-52.5		102.7		
A1,4			-51.4		146.3		
A1,5	03		-53.4		162		
A1,6	04		-57.8		146		
A1,7	05		-54		133		
A1,8	06		-54		147		
A1,9	00	2	-56		153		
A1,10	01		-57		169		
A1,11	02		-62		-178		
A1,12	03		-78		92		
A1,13	04		-67		146		
A1,14	05		-65	5	76		
A1,15	06		-70	7.5			
A1,16	00	3	-70	10	-175		
A1,2	01		-31.5	0.2	-58		Repeat
A1,3	02		-52	0.5	105		Repeat
A1,4	03		-51	0.5	150		Repeat
A1,5	04		-53	1	164		Repeat
A1,6	05		-58	2	147		Repeat
A1,7	06		-60	5	132		Repeat
Cable(2,3)							
Cal2-thru	00	4	0.1	0	-0.1	0	
A2,3	01		-32	0.15	-54	6	
A2,4	02		-50	1.5	105	15	
A2,5	03		-50	2	150	15	
A2,6	04		-53	2			
A2,7	05		-58	4	180	50	
A2,8	06		-57	3	130	20	
A2,9	00	5	-56	1.5	140	20	
A2,10	01		-57	1.5	0	30	0 indicates phase
A2,11	02		-58	4	0	301	crosses 0,180°
A2,12	03		-65	10	0	50	boundary

A2,13	04		-65	10	0	50	
A2,14	05		-70	10	0	100	
A2,15	06		-75	15	0	50	
A2,16	00	6	-66	2	0	50	
Cable(3,4)							
Cal3-thru	01						
A3,4	02		-31.7	0.1	54	6	
A3,5	03		-49.5	1	110	10	
A3,6	04		-50	2	145	10	
A3,7	05		-53	2	155	15	
A3,8	06		-57	1	140	15	
A3,9	00	7	-56	1.5	130	20	
A3,10	01		56	3	140	30	
A3,11	02		56	4	0	25	
A3,12	03		60	8	0	25	
A3,13	04		-58	5	0	25	
A3,14	05		-70	10	0	25	
A3,15	06		-66	5	0		
A3,16	00	8	-66	6	0		
Cable(4,5)							
Cal4-thru	01		0.01	0.002	0.07	0.01	
A4,5	02		-32	0.3	-54	6	
A4,6	03		-49.5	1.5	105	15	
A4,7	04		-49.5	0.75	145	10	
A4,8	05		-52	1	160	20	
A4,9	06		-57	2.5	150	20	
A4,10	00	9	-56	4	140	30	
A4,11	01		-54	3	0		
A4,12	02		-58	4	0		
A4,13	03		-55	2	0		
A4,14	04		-62	3	0		
A4,15	05		-62	3	0		
A4,16	06		-65	10	0		
Cable(5,6)							
Cal5-thru	00	10	0.005		-0.759		Bad data
Cal6-thru	01		0.025		-0.0206		
A5,6	02		-32	0.15	-56	5	
A5,7	03		-49	0.4	105	10	
A5,8	04		-50	1	145	12	
A5,9	05		-52	2	0		
A5,10	06		-58	3	0		
A5,11	07		-53	3	140	15	
A5,12	00	11	-54	4	150	25	
A5,13	01		-51	2	0		
A5,14	02		-58	2	0		
A5,15	03		-60	4	0		

A5,16	04		-67	6	0		
Cable(6,7)							
Cal7-thru	05						
A6,7	06		-31.9	0.1	-56	4	
A6,8	00	12	-50	2	105	10	
A6,9	01		-50	2	150	16	
A6,10	02		-52	2	0		
A6,11	03		-56	4	150	25	
A6,12	04		-58	4	130	25	
A6,13	05		-53	1.5	140	20	
A6,14	06		-56	1.5	0		
A6,15	00	13	-60	4	0		
A6,16	01		-63	5	0		
A7,8	02		-32	0.2	-54	5	Use cable 6, 7
A7,9	03		-47	2	110	15	
A7,10	04		-48	1.5	140	15	
A7,11	05		-50	1.5	150	20	
A7,12	06		-54	2	150	20	
A7,13	00	14	-55	1	140	15	
A7,14	01		-55	1.5	140	25	
A7,15	02		-56	3	0		
A7,16	03		-60	5	0		
A8,9	04		-31.9	0.2	-54	6	
A8,10	05		-50	1	110	10	
A8,11	06		-50	1	140	12	
A8,12	00	15	-51	0.75	160	15	
A8,13	01		-57	1.5	150	20	
A8,14	02		-56	2.5	140	30	
A8,15	03		-56	2.5	140	30	
A8,16	04		-58	2.5	0		
A9,10	05		-32	0.15	-56	6	
A9,11	06		-49	0.5	105	10	
A9,12	00	16	-49	0.75	145	15	
A9,13	01		-52	1.5	160	20	
A9,14	02		-58	3	0		
A9,15	03		-58	3	140	30	
A9,16	04		-56	3	140	30	
Cable(10,11)							
Cal8-thru	05						
A10,11	06		-31.9	0.15	-54	4	
A10,12	00	17	-50	1.25	105	15	
A10,13	01		-50	1.5	140	20	
A10,14	02		-53	2.5	0		
A10,15	03		-55	4	0		

A10,16	04		-58	4	140	25	
A11,12	05		-31.8	0.2	-54	5	Use cable 10, 11
A11,13	06		-50	2	110	15	
A11,14	00	18	-50	2	140	20	
A11,15	01		-53	2	0		
A11,16	02		-60	4	0		
A12,13	03		-32	0.25	-52	5	Use cable 10, 11
A12,14	04		-48.5	2	110	15	
A12,15	05		-50	2	140	15	
A12,16	06		-53	2	0		
A13,14	00	19	-31.9	0.25	-56	5	Use cable 10, 11
A13,15	01		-50	1.25	105	10	
A13,16	02		-51	1.5	145	15	
A14,15	03		-31.9	0.2	-56	5	Use cable 10, 11
A14,16	04		-52	1.5	95	13	
A15,16	05		-31.4	0.2	-56	5	Use cable 10,11

Table A-2. Horizontal Antenna Coupling Summary

Measurement	**File#**	**Disk#**	**S_{21} @ CF**				**Comments**
			Amp(dB)	±	**Phase°**	±	
Cable(1,2)							
Cal1-thru	00	20	0	0.005	-0.100	0.020	
A1,2	01		-22.8	0.15	170	6	
A1,3	02		-31.8	0.4	170	8	
A1,4	03		-37.0	6	0		
A1,5	04		-42.2	0.6	0		
A1,6	05		-45.6	0.5	0		
A1,7	06		-48.5	1.5	0		
A1,8	00	21	-50	2	0		
A1,9	01		-54	2	0		
A1,10	02		-56	3	0		
A1,11	03		-56	4	0		
A1,12	04		-58	2	0		
A1,13	05		-60	1	0		
A1,14	06		-65	7.5	0		
A1,15	00	22	-70	20	0		
A1,16	01		-65	10	0		
Cable(1,2)							
Cal2-thru	02		-0.35	0.0	0.74		

A2,3	03		-22.6	0.2	166	6	
A2,4	04		-31.4	0.4	170	6	
A2,5	05		-37	0.4	0		
A2,6	06		-42	1	0		
A2,7	00	23	-45	1.5	0		
A2,8	01		-48	2	0		
A2,9	02		-50	2.5	0		
A2,10	03		-52	2.5	0		
A2,11	04		-54	2	0		
A2,12	05		-56	1	0		
A2,13	06		-56	2	0		
A2,14	00	24	-60	10	0		
A2,15	01		-70	15	0		
A2,16	02		-70	12	0		
Cable(1,2)							
Cal3-thru	03		-0.35	0.0	3.9	0.020	
A3,4	04		-22.4	0.1	170	6	
A3,5	05		-31.4	0.2	170	8	
A3,6	06		-37	0.1	170	10	
A3,7	00	25	-42	1.3	0		
A3,8	01		-45	1.5	0		
A3,9	02		-48	2	0		
A3,10	03		-50	2	0		
A3,11	04		-52	0.1	0		
A3,12	05		-54	2	0		
A3,13	06		-56	4	0		
A3,14	00	26	-60	10	0		
A3,15	01		-70	12.5	0		
A3,16	02		-70	17	0		
Cable(1,2)							
Cal4-thru	03		-0.7	0	.66		
A4,5	04		-22.6	0.2	168	6	
A4,6	05		-31.4	0.4	170	10	
A4,7	06		-37	0.5	0		
A4,8	00	27	-41	1	0		
A4,9	01		-45.5	1	0		
A4,10	02		-48	1	0		
A4,11	03		-50	1	0		
A4,12	04		-52	2	0		
A4,13	05		-54	5	0		
A4,14	06		-60	7.5	0		
A4,15	00	28	-60	7.5	0		
A4,16	01				0		
Cable(1,2)							
Cal5-thru	02		-0.05	0	-0.0206	0	
A5,6	03		-22.6	0	164	6	

A5,7	04		-31.4	0.2	165	10	
A5,8	05		-37	0.4	0		
A5,9	06		-41	0.4	0		
A5,10	00	29	-45	0.4	0		
A5,11	01		-48	1	0		
A5,12	02		-50	2	0		
A5,13	03		-52	4	0		
A5,14	04		-56	4	0		
A5,15	05		-58	5	0		
A5,16	06		-58	5	0		
Cable(1,2)							
Cal7-thru	00	30	-0.08	0	0.439	0	
A6,7	01		-22.5	0.2	0.166	6	
A6,8	02		-31.5	0.3	170	5	
A6,9	03		-37	0.3	0		
A6,10	04		-42	0.7	0		
A6,11	05		-45	1.5	0		
A6,12	06		-48	2	0		
A6,13	00	31	-50	2.5	0		
A6,14	01		-52	2.5	0		
A6,15	02		-54	3	0		
A6,16	03		-57	2	0		
Cable(1,2)							
Cal8-thru	04		-0.01	0	-1.4	0	
A7,8	05		-22.6	0.1	168	6	
A7,9	06		-31.6	0.4	170	8	
A7,10	00	32	-37	0.5	0		
A7,11	01		-42	0.5	0		
A7,12	02		-45	1.5	0		
A7,13	03		-47	2	0		
A7,14	04		-50	2	0		
A7,15	05		-52	1.5	0		
A7,16	06		-55	0.75	0		
Cable(1,2)							
Cal9-thru	00	33	-0.07	-3.2	0		
A8,9	01		-22.5	0.2	170	6	
A8,10	02		-31.5	0.5	170	10	
A8,11	03		-37	1	0		
A8,12	04		-42	1	0		
A8,13	05		-45	1.5	0		
A8,14	06		-48	1.5	0		
A8,15	00	34	-50	1	0		
A8,16	01		-52	0.4	0		
Cable(1,2)							
Cal10-thru	02		-0.09	0	-1.7	0	

A9,10	03		-22.6	0.2	162	6	
A9,11	04		-31.4	0.4	165	10	
A9,12	05		-37	0.5	0		
A9,13	06		-41.5	0.75	0		
A9,14	00	35	-45	0.5	0		
A9,15	01		-47.9	0	0		
A9,16	02		-50.5	0.75	0		
Cable(1,2)							
Cal11-thru	03		-0.1	0	-1.8	0	
A10,11	04		-22.6	0.15	166	6	
A10,12	05		-31.4	0.5	170	9	
A10,13	06		-37	0.4	0		
A10,14	00	36	-41.8	0.2	0		
A10,15	01		-45.5	0.1	0		
A10,16	02		-48.5	0.1	0		
Cable(1,2)							
Cal12-thru	03		-0.1	0	-1.64	0	
A11,12	04		-22.5	0.1	168	6	
A11,13	05		-31.4	0.2	170	7.5	
A11,14	06		-37	0.4	0		
A11,15	00	37	-42	1	0		
A11,16	01		-46	1	0		
Cable1,2							
Cal13-thru			-0.11	0	-2.8		
A12,13	02		-22.6	0.1	164	6	
A12,14	03		-31.5	0.2	165	8	
A12,15	04		-37.2	0.5	0		
A12,16	05		-42.5	0.1	0		
Cable(1,2)							
Cal13-thru			-0.1	.700			
A13,14	06		-22.6	0.2	164	4	
A13,15	00	38	-31.6	0.4	165	10	
A13,16	01		-37.6	0.6	0		
Cable(1,2)							
Cal15-thru			-0.1	0	-4.9	0	
A14,15	02		-22.6	0.15	162	6	
A14,16	00	39	-32	0.4	165	10	0
Cable(1,2)							
Cal16-thru			-0.12	0	-1.76	0	
A15,16	01		-22.9	0.1	164	6	

APPENDIX B: ANTENNA ELEMENT CALIBRATION SUMMARY TABLES

Table B-1. E/H Co-polarized and Cross-polarized Antenna Scans for Element L01

File	Type	Description
ITS01	E/H co/cross scan data	Element L01
ITS01b	E/H co/cross scan data	Repeat after 2 hours
ITS01c	E/H co polarized	Bore-sight Freq. Scan

Table B-2. Summary of E and H Scan Co-polarized Antenna Element Calibration Data. Bore-sight Gain and Phase at 2300 MHz for Each Element and Range Calibration Files

Bore-sight Gain and Phase			Antenna Element Calibration Data				
Ant file	v phase (deg)	h phase[1] (deg)	v amp (dB)	h amp (dB)	Δv phase[2] (deg)	Δh phase[2] (deg)	Δ v amp[2] (dB)
04/04/2001							
sacal1**							
L01cal1	-52		7.52				
L01	-51.9	127.7	7.51		0.1		-0.01
L02	-53.9	-54.5	7.47		-1.9		-0.05
L03	-53.6	-53.9	7.47		-1.6		-0.05
L04	-52.2	-52.9	7.48		-0.2		-0.04
L05	-53.2	-53.4	7.49		-1.2		-0.03
L01cal2	-52.41		7.46		-0.41		-0.06
sacal2[3]							
04/05/2001							
sacal3[3]	0		16.5				
L01cal2	-74.61		7.6				
L06	-77.4	102.9	7.63	7.61	-2.79		0.03
L07	-75.2	104.5	7.53	7.53	-0.59		-0.07
L08	-74.1	105.9	7.66	7.63	0.51		0.06
L09	-74.7	105.1	7.6	7.61	-0.09		0
L10	-74.63	105.3	7.58	7.57	-0.02		-0.02
L11	-75.21	104.6	7.55	7.56	-0.6		-0.05
L12	-74.09	105.6	7.5	7.49	0.52		-0.1
L01cal4	-73.89		7.56		0.72		-0.04
L13	-73.97	106	7.54	7.53	0.64		-0.06
L14	-75.4	104.3	7.61	7.61	-0.79		0.01
L15	-74.3	105.6	7.52	7.5	0.31		-0.08
L16	-74.1	105.5	7.56	7.56	0.51		-0.04
L17	-75.1	104.72	7.51	7.5	-0.49		-0.09
L18	-74.9	104.81	7.51	7.54	-0.29		-0.09
L19	-74.7	105.4	7.42	7.41	-0.09		-0.18
L20	-74.4	105.6	7.51	7.52	0.21		-0.09

L01cal5	-67.58		7.26		7.03	-0.34	
sacal4[3]	-4.65		16.45				
04/06/2001							
sacal5[3]							
L01cal6	-63.67			7.56			
L21	-64.28	115.51	7.54	7.56	-0.61		0
L22	-58.34	121.15	7.11	7.14	5.33		-0.42
L23	-56.86	123.2	7.09	7.09	6.81		-0.47
L24	-59.15	121.2	7.28	7.22	4.52		-0.34
L25	-54.86	125.2	6.94	6.95	8.81		-0.61
L26	-62.5	117.08	7.61	7.63	1.17		0.07
L27	-60.5	118.7	7.27	7.3	3.17		-0.26
L28	-62.97	116.9	7.53	7.56	0.7		0
L29	-64.69	115	7.52	7.58	-1.02		0.02
L30	-63.59	116.2	7.49	7.52	0.08		-0.04
L31		126.1		6.64			
L31r	-63.37	116.3	7.55	7.59	0.3		0.03
L01cal7	-62			7.55	1.67		-0.01
sacal6[3]							
04/09/2001							
sacal6[3]							
L01cal8	-66.52		7.64				
L32	-67.05	112.85	7.59	7.6	-0.53	-0.05	
L33	-67.36	112.34	7.59	7.61	-0.84	-0.05	
L34	-67.22	112.7	7.55	7.55	-0.7	-0.09	
L35	-66.78	112.9	7.56	7.58	-0.26	-0.08	
L22r	-67.83	112.4	7.54	7.54	-1.31	-0.1	
L23r	-65.36	114.64	7.56	7.58	1.16	-0.08	
L24r	-67.52	112.6	7.53	7.54	-1	-0.11	
L25r	-66.32	113.75	7.51	7.54	0.2	-0.13	
L26r	-66	113.66	7.56	7.56	0.52	-0.08	
L01CAL9	-64.63		7.53		1.89	-0.11	
sacal9[3]							

[1] h phase can be 180° out of phase due to misalignment of calibration horn and antenna test fixture.
[2] Δ phase and Δ amp data are relative to LO1 cal data from the beginning of the measurement set.
[3] range calibration data collected using the range calibrated standard gain horn.

APPENDIX C: DATA COLLECTION SUMMARY

Tables C-1 to C-4 summarize the data collected in this experiment.

Table C-1. Broadband Channel Sounder BLAST Data Files and Data Descriptions

Data Type	Date	Data File	Description
Calibration	5/30/02	377-380.xr	Diagonal TxCal Data, *i=j=1……16.*
Calibration	5/30/02	381-396.xr	RxCal Data, *i=1, j=1……16.*
16x16 BLAST	6/7	663.br	Vertical Polarized Antennas
16x16 BLAST	6/7	665.br	Repeat Vpol Test
1x16 BLAST	6/8	666.br	VPol, Tx=17, Rx=1-16
16x16 BLAST	6/8	667.br	Repeat Vpol Blast after disconnecting Tx cabling and moving Tx overnight.
16x16 BLAST	6/8	668.br	Repeat Vpol Blast after removing timing cable which was left on ground plane.
1x16 BLAST	6/13	672,673,674.br	HPol, Tx=17 Rx = all, repeat after computer malfunction.
1x16 BLAST	6/13	675-689.br	HPol, Tx=18,19…….32 Rx=all
16x16 BLAST	6/14	690,691.br	Repeat Hpol BLAST twice.
Keyhole Test	6/14	692.br	HPol, splitter feeds Rx A1 to all channels
1x16 BLAST	6/15	693-708.br	VPol Tx=17,18…..32
16x16 BLAST	6/15	710.br	VPol, transmitter cables reversed data does not repeat, discard.
Keyhole Test	6/15	711.br	VPol, splitter feeds Rx A1 to all channels.
16x16 BLAST	6/16	713.br	VPol repeat after cables reset.
16x16 BLAST	6/16	714.br	VPol repeat
16x16BLAST	6/18	715.br	VPol, repeat after the weekend because 6/16 data didn't match original VPol tests of made on 6/8.
16x16 BLAST	6/18	716.br	VPol repeat.
16x16 BLAST	6/21	718,719.br	Hpol, repeat.
16x16 BLAST	6/21	724.br	Hpol, Set Lo=153 MHz, IF=7MHz

Table C-2. Spectrum Analyzer (CW) Narrowband BLAST Data Files and Descriptions

Data Type	Date	Data File	Description
CW	6/6/02	cw_vpol.txt	VPol, Tx(17), Rx(1-16), P_{TX}=-11.8 dBm
CW	6/11/02	cw_hor.dat	HPol, Tx(17,18,25) Rx(1-16), P_{TX}= -11.8dBm
CW	6/21/02	cw_16x16_hor.dat	Hpol, Tx(1-16),Rx(1-16), P_{TX}= -10.0 dBm

Table C-3. Vector Network Analyzer Antenna Element Coupling Data Files and Descriptions

Data Type	**Date**	**Data File**	**Description**
Ant. Coupling	6/4,5,6	Disks 1-19	VPol, S Parameters, In=A1-A15,Out=A2-A16
Ant. Coupling	6/12/02	Disks 20-39	Hpol, S Parameters, In=A1-A15,Out=A2-A16
Component	3/12/02	Data01-10	Low Pass Filter, Power Divider
AGC Amp	6/29/02	Data01-55	AGC Amp Calibration Data

Table C-4. Anechoic Chamber Antenna Element Calibration Data Files and Descriptions

Data Type	**Date**	**Data Files**	**Description**
E/H Scans	3/1	ITS01,b,c	Antenna #1, E/H co/cross polarization data
E/H Scans	4/6	M-LOC Disk1	TAR Data, E/H, Antennas 1-19
E/H Scans	4/6	M-LOC Disk2	TAR Data, E/H, Antennas 20-35
Mfiles	4/6	Misc.	mfiles for reading and plotting TAR data

APPENDIX D: TRANSMITTER CALIBRATION DATA

Table D-1. Transmitter Power Levels Measured at Coupler and Used for TxCal Data

Transmitter	Power (dBm)
1	-40.44
2	-39.86
3	-40.42
4	-39.65
5	-40.63
6	-40.65
7	-40.87
8	-41.29
9	-40.14
10	-40.42
11	-42.19
12	-41.2
13	-40.53
14	-40.35
15	-41.11
16	-41.01

APPENDIX E: SOFTWARE DESCRIPTION

This section gives an overview of the software developed for the ordering and analysis of the BLAST data.

E.1 CalTx

CalTx is used to read the raw calibration data from 16 transmitter channels and assemble the diagonal elements of the 256-element system response matrix. Calibration data is recorded at 7 power levels for the 16 transmitter channels. These calibration signals are fed into the 16 MUX channels using the same transmit and receive antenna cables used during the BLAST field tests at the NIST OATS. Raw calibration data is stored in four separate data files. Each data file has four channels of data and 7 bursts of data corresponding to the 7 input power levels per channel. Each burst of data has 128 impulses spaced at 3 ms intervals. A total of four data files are needed to store the 16 channels of raw calibration data. Input to CalTx is the first of four sequential raw data file numbers. The program automatically reads the AGC gain phase table and applies these scaling factors to the raw data. Output is $Ctx_{i,j}(w,n)$, $i=j=1,2,3\ldots16,\ n=1,2\ldots7,$ the transmitter system response calibration file at 7 power levels.

E.2 CalRx

CalRx reads raw calibration data using all receiver channels and a single transmitter to calculate the first row of the 256-element system response matrix. The transmitter is connected to the receiver using transmit antenna cable 17 and receive antenna cable 1 connected with an N type barrel. Input power level corresponds to n=2 of the CalTx data. Raw data is stored in 16 separate files, 1 burst per file, 128 impulses per burst at 3 ms intervals. The program also reads the AGC gain phase tables and applies these scaling factors to the raw data. Output is $CRx_{i,j}(w), i=1, j=1,2,3\ldots16,$ the receiver system response matrix.

E.3 CalSys

CalSys reads the transmitter and receiver system response output files from CalRx and CalTx. CalSys then calculates the 256-element system response matrix for the transmitter receiver system. It also calculates *P_cal(16,7),* power calibration factors for all 16 transmitters so that raw data can be scaled to units of *dBm* or *dBm/Hz* if required. Input requirements are: the appropriate HTx.mat and HRx.mat output files from CalRx and CalTx, and the TxPower.txt data file containing the transmitter power levels for the 16 transmitters measured at the end of each transmit antenna cable. The program outputs $CSys_{ij}(w)$, the 256-element system response matrix.

E.4 Praw H_{ij}

Praw H_{ij} processes raw BLAST data files and calculates the 256-element **H** matrix for the BLAST radio channel. The raw data files are arrayed as described in section 7.1. All raw data are scaled by the AGC gain phase and then the 128 IF signals per receiver channel are averaged before down conversion and correlation processing which calculates the channel response *H(w)* for each of the 16 receiving antennas. *H(w)* is then translated to the time domain to separate $h(t)_{ij}$ into its 256 elements after time shifting each of the 16 transmitter signals received at each antenna element to zero phase and zero padding. $h(t)_{ij}$ is then translated back to the frequency domain where the system response is deconvolved using $CSys_{ij}(2)$. Assumptions here are linear phase and constant relative amplitude. By only using frequency 2 (first frequency above 0 at baseband) this avoids deconvolution near the nulls of the system response function and also effects due to local oscillator feed-through at the carrier frequency.

E.5 Praw 1x16

Praw 1x16 processes the raw data for 16 receive antennas when only one transmitter was operational. After arraying the data from the 16 receivers, one transmitter at a time, it follows the same processing algorithm as $PrawH_{ij}$ to calculate the **H** matrix of the 16x16 BLAST channel.