

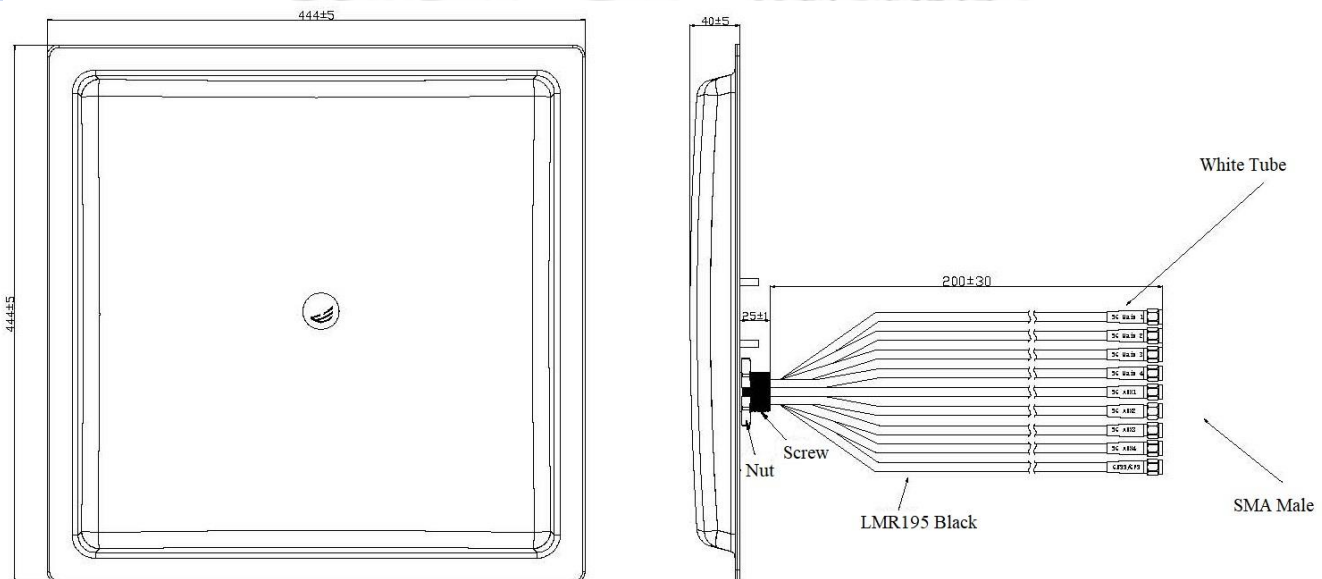


Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

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Schematic Picture



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Specifications

Item		Specifications
GNSS Antenna	Frequency	GPS L1/L2/L5/L-Band GLONASS G1/G2/G3 COMPASS B1/B2/B3 Galileo E1/L1/E2/E5a/E5b/E6 QZSS L1/L2/L5/L-Band
	Polarization	RHCP
	Axial Ratio	≤3dB
	V.S.W.R	≤1.5
	Peak Gain	≥5.5dBi
	Impedance	50Ω
	Phase Center Error	±2mm
	Horizontal coverage angle	360°
Antenna 1: 5G Main (5G ,4G ,WiFi7 , Bluetooth ,Zigbee, Bluetooth)	Frequency Range	530-8000MHz
	Polarization	Linear
	Gain	9.3dBi (Max)
	V.S.W.R	<2.5
	Efficiency	>50%
Antenna 2: 5G Main (5G ,4G ,WiFi7 , Bluetooth ,Zigbee, Bluetooth)	Frequency Range	530-8000MHz
	Polarization	Linear
	Gain	9.3dBi (Max)
	V.S.W.R	<2.5
	Efficiency	>50%
Antenna 3: 5G Main (5G ,4G ,WiFi7 , Bluetooth ,Zigbee, Bluetooth)	Frequency Range	530-8000MHz
	Polarization	Linear
	Gain	9.3dBi (Max)
	V.S.W.R	<2.5
	Efficiency	>50%
Antenna 4: 5G Main (5G ,4G ,WiFi7 , Bluetooth ,Zigbee, Bluetooth)	Frequency Range	530-8000MHz
	Polarization	Linear
	Gain	9.3dBi (Max)
	V.S.W.R	<2.5
	Efficiency	>50%

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Specifications

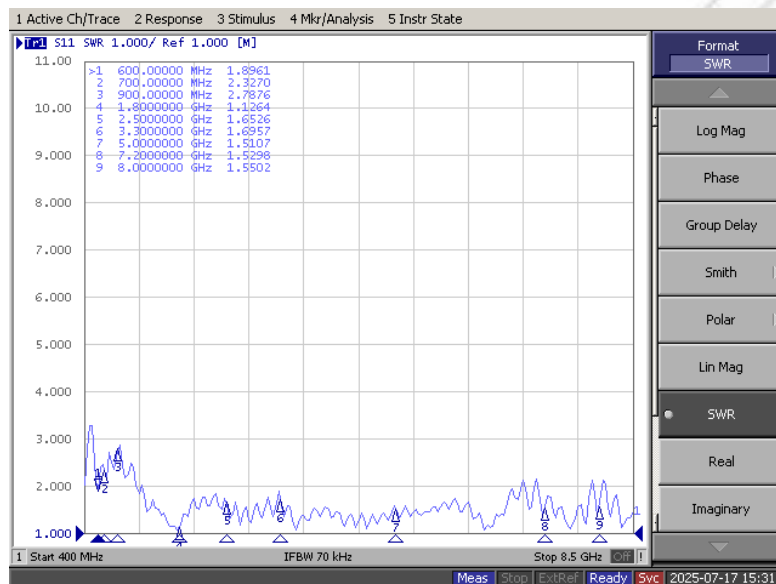
Item	Specifications
Antenna 5: 5G AUX (5G ,4G ,WiFi7 , Bluetooth ,Zigbee, Bluetooth)	Frequency Range
	600MHz-8000MHz
	Polarization
	Linear
	Gain
Antenna 6: 5G AUX (5G ,4G ,WiFi7 , Bluetooth ,Zigbee, Bluetooth)	Up to 7.6dBi
	V.S.W.R
	average 3.0
	Efficiency
	>50%
Antenna 7: 5G AUX (5G ,4G ,WiFi7 , Bluetooth ,Zigbee, Bluetooth)	Frequency Range
	600MHz-8000MHz
	Polarization
	Linear
	Gain
Antenna 8: 5G AUX (5G ,4G ,WiFi7 , Bluetooth ,Zigbee, Bluetooth)	Up to 7.6dBi
	V.S.W.R
	average 3.0
	Efficiency
	>50%
Mechanical	Frequency Range
	600MHz-8000MHz
	Polarization
	Linear
	Gain
Environmental	Up to 7.6dBi
	V.S.W.R
	average 3.0
	Efficiency
	>50%
Mechanical	Dimension
	444mm *444mm*65mm
	Connector Type
Environmental	SMA Male, TS9 Via 4 Adapters, RP- SMA Plug Via 4 Adapters
	Cable
	LMR240 equivalent 2 meters X 8
Environmental	Operating Temperature
	-40°C~+85°C
	Relative Humidity
	Up to 95%
	Vibration
Mechanical	10 to 55Hz with 1.5mm amplitude 2hours
	Ingress Protection
	IP65(exclude cable outlet)
Environmental	Environmentally Friendly
	ROHS Compliant

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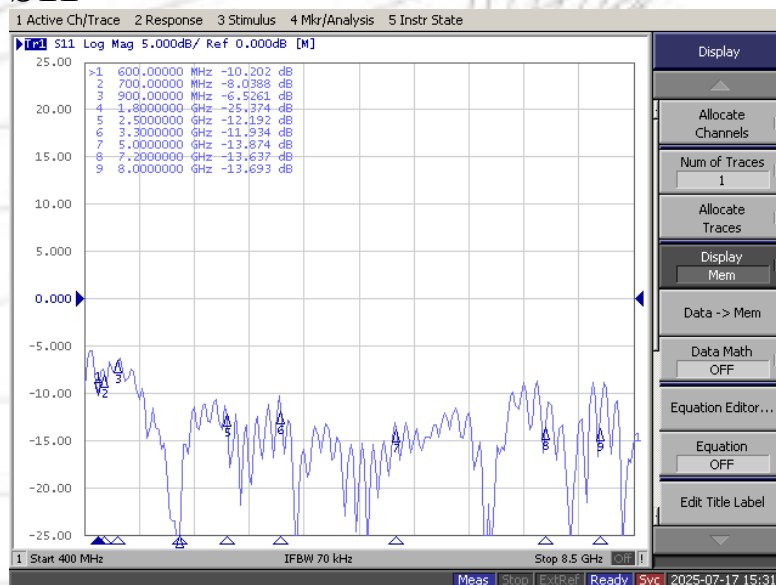
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Measured Reflection Coefficient 5G Main Port 1/ /Cable 1

VSWR



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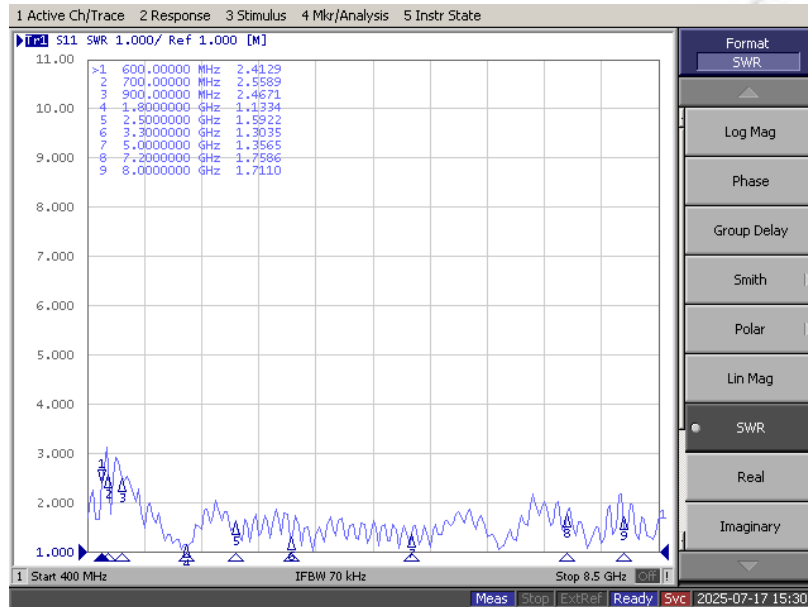


Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

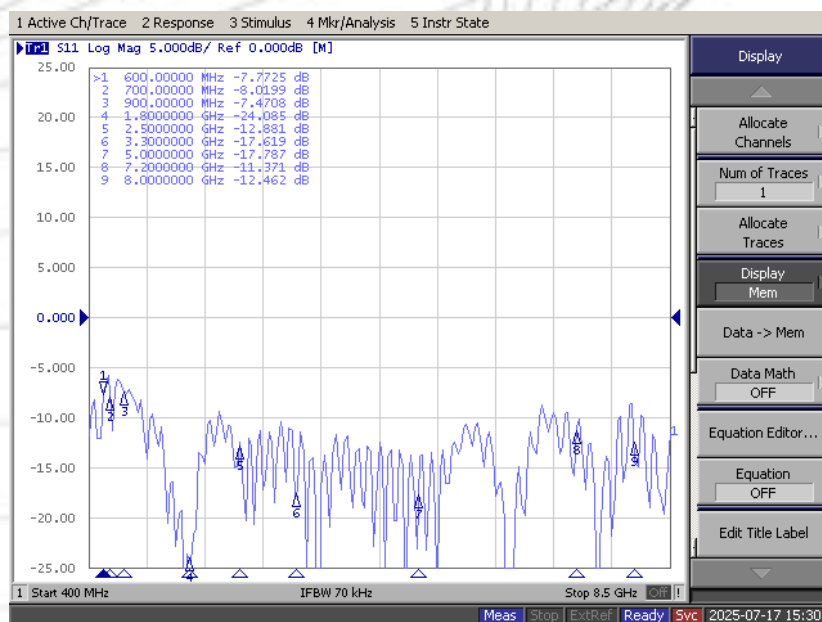
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Measured Reflection Coefficient 5G Main Port 2 /Cable 2

VSWR



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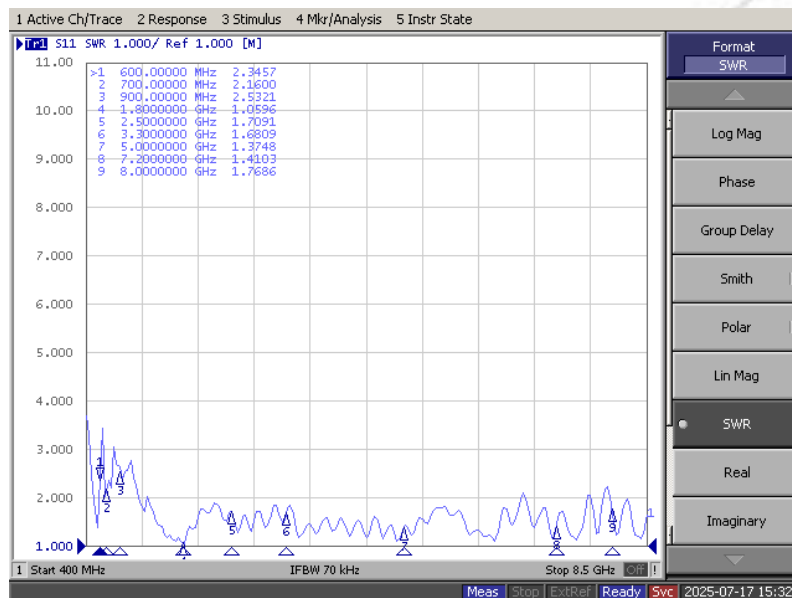
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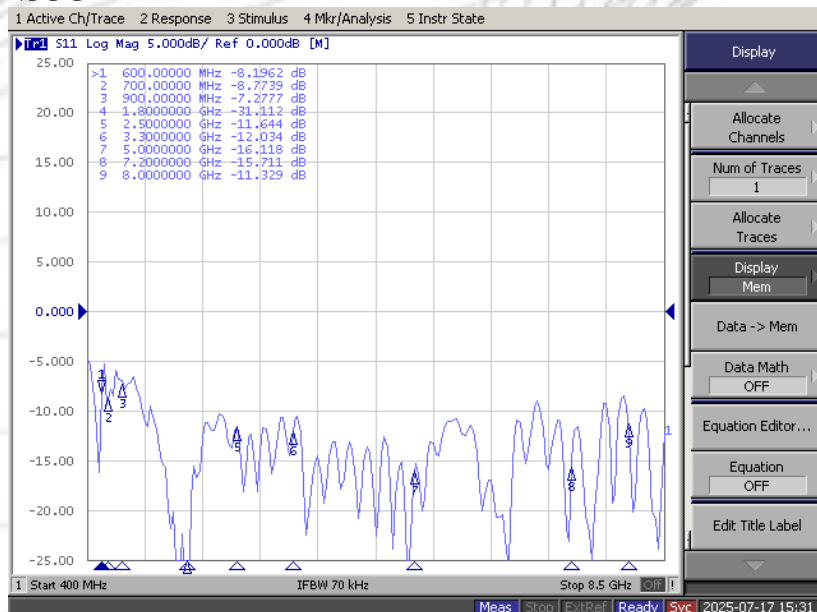
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Measured Reflection Coefficient 5G Main Port 3 /Cable 3

VSWR



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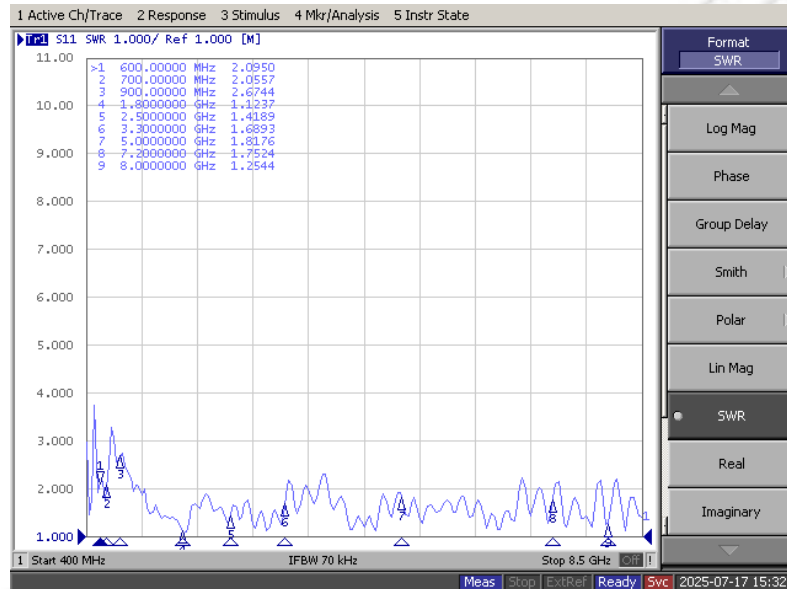


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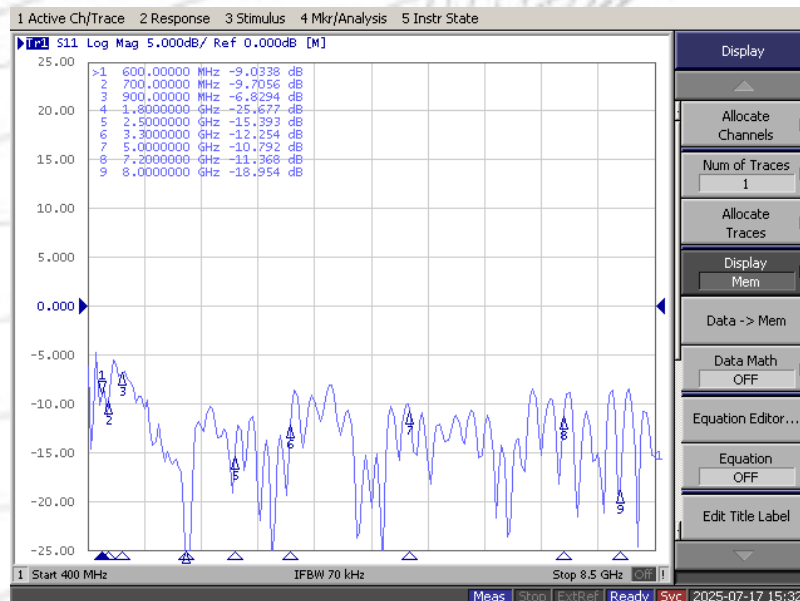
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Measured Reflection Coefficient 5G Main Port 4 /Cable 4

VSWR



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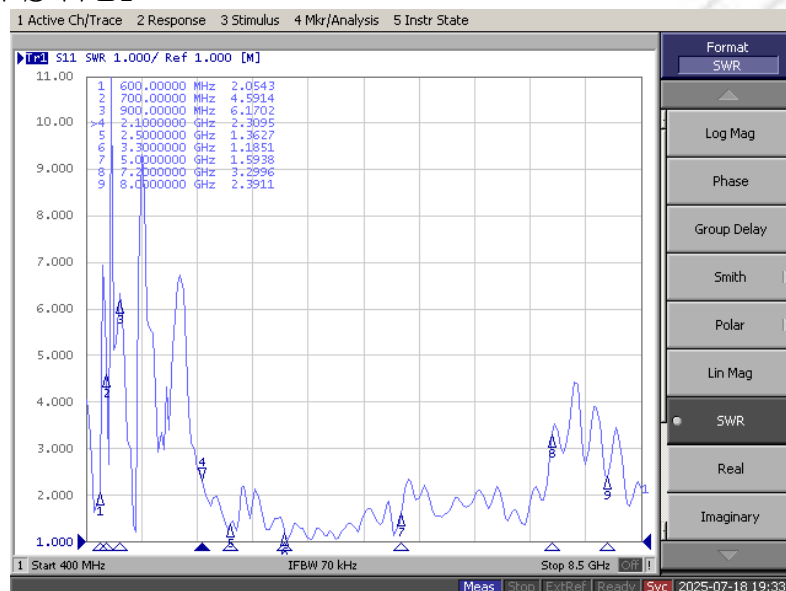


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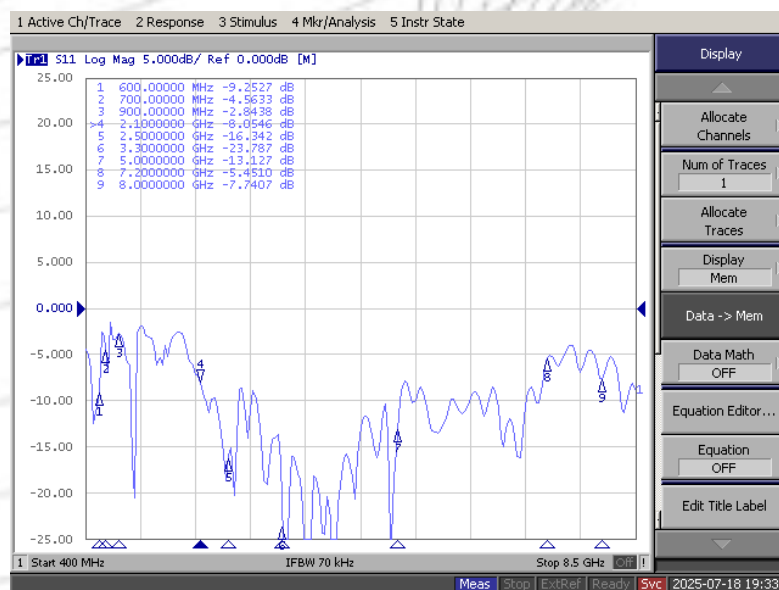
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Measured Reflection Coefficient 5G AUX Port 5 /Cable 5

VSWR



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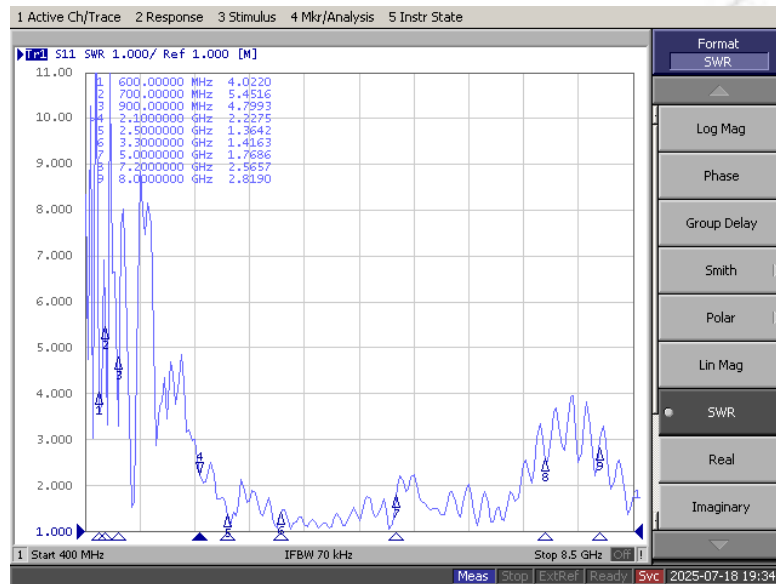


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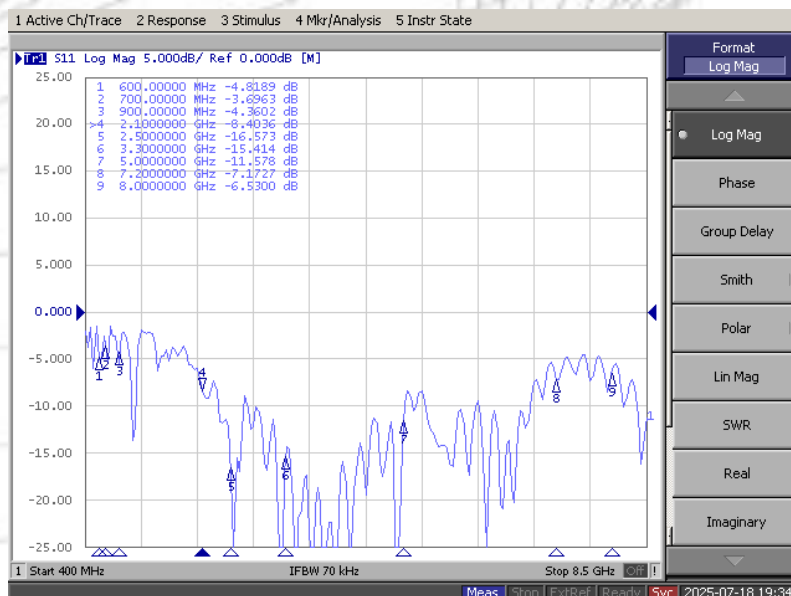
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Measured Reflection Coefficient 5G AUX Port 6 /Cable 6

VSWR



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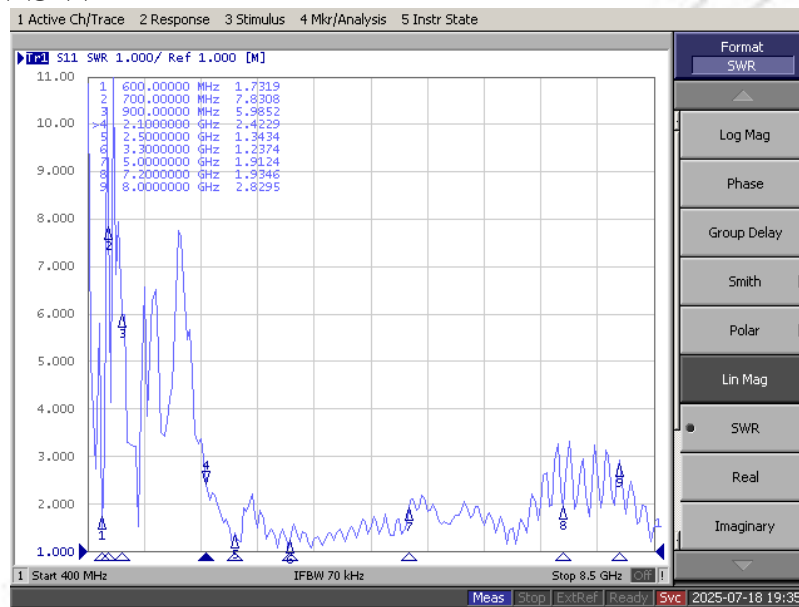


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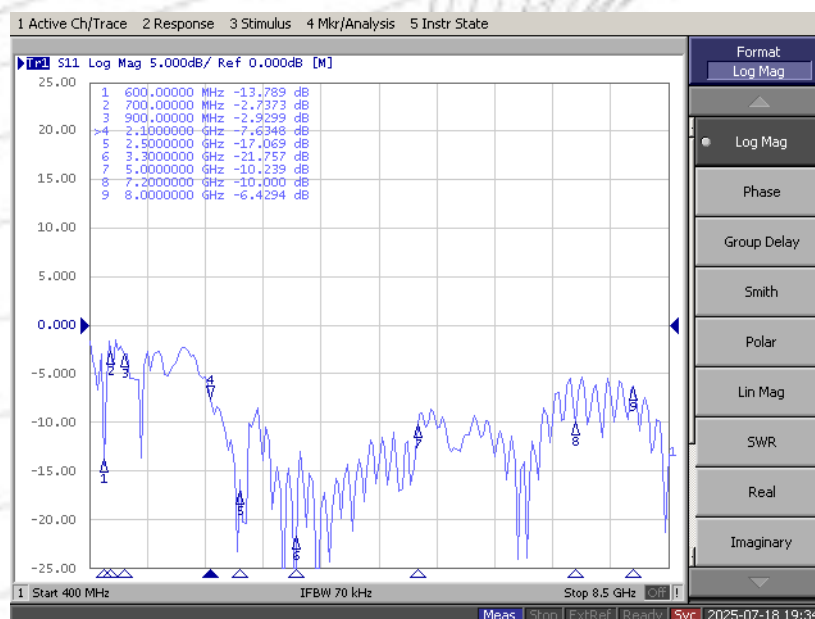
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Measured Reflection Coefficient 5G AUX Port 7 /Cable 7

VSWR



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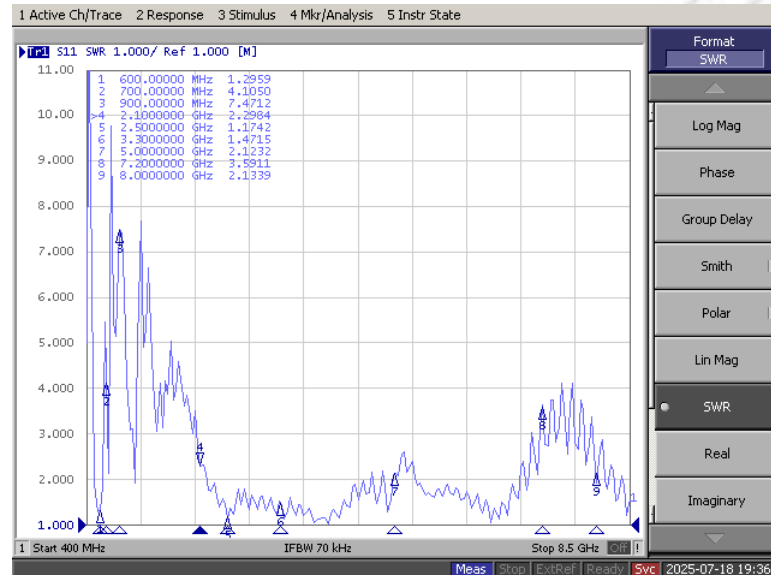


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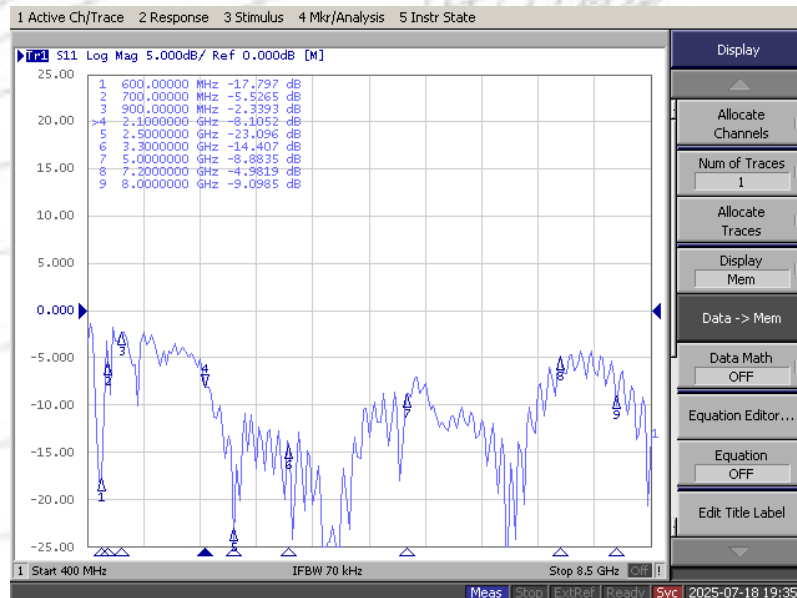
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Measured Reflection Coefficient 5G AUX Port 8/Cable 8

VSWR



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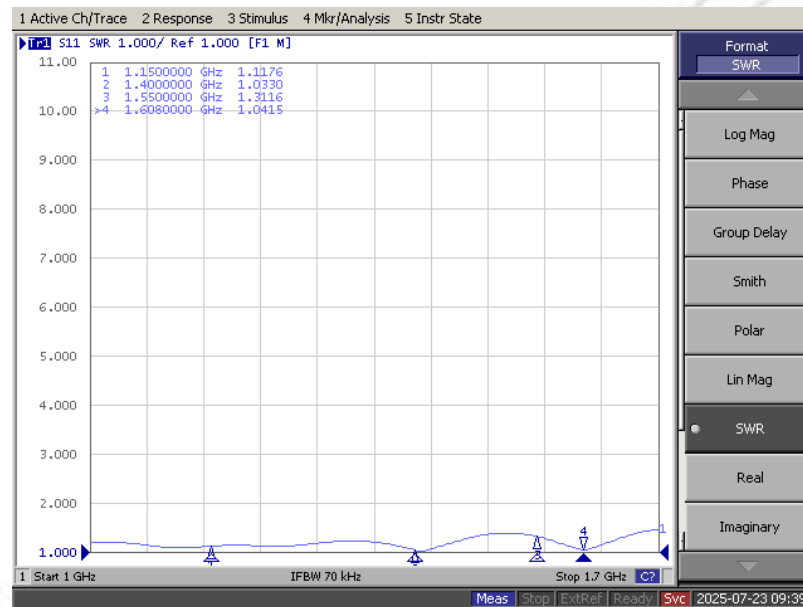


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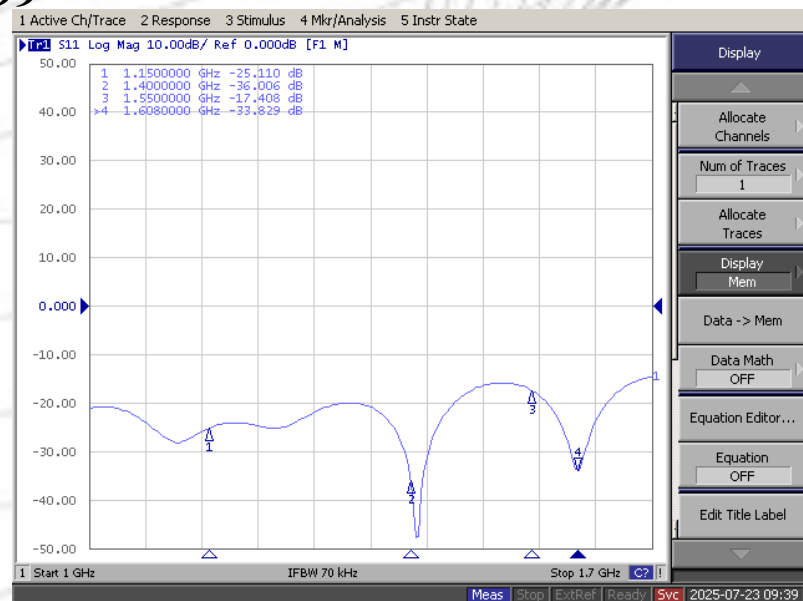
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Measured Reflection Coefficient GNSS Port 9/Cable 9

VSWR



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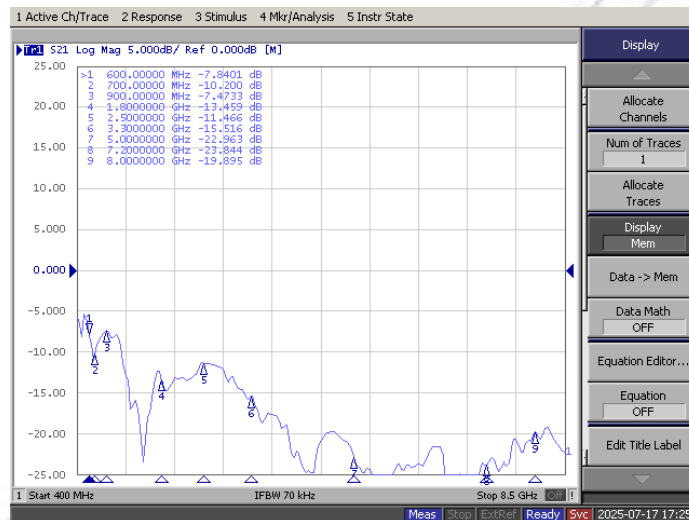
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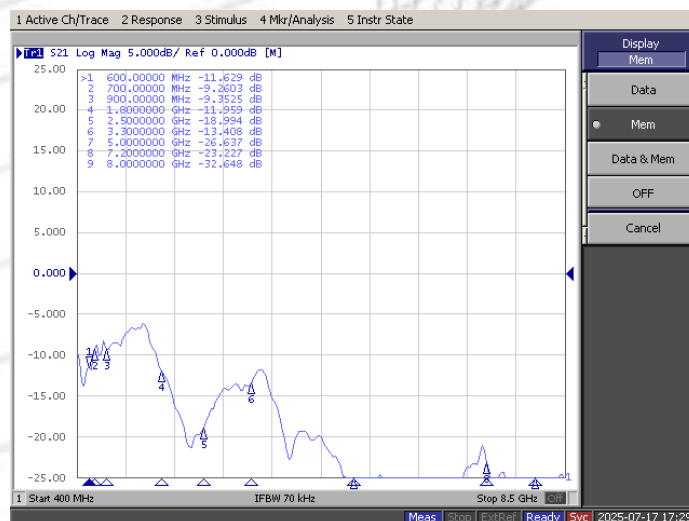
Isolation

Isolation between Antenna 1/Cable 1 to Other Antennas/Cables

S21



S31





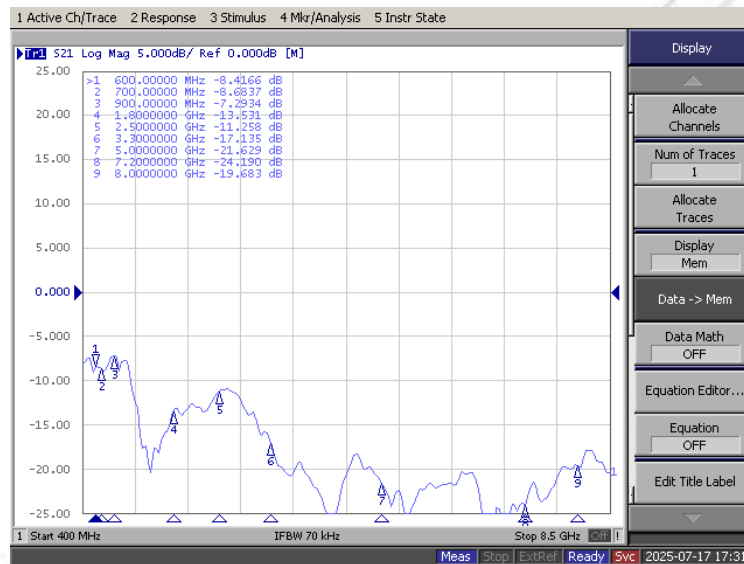
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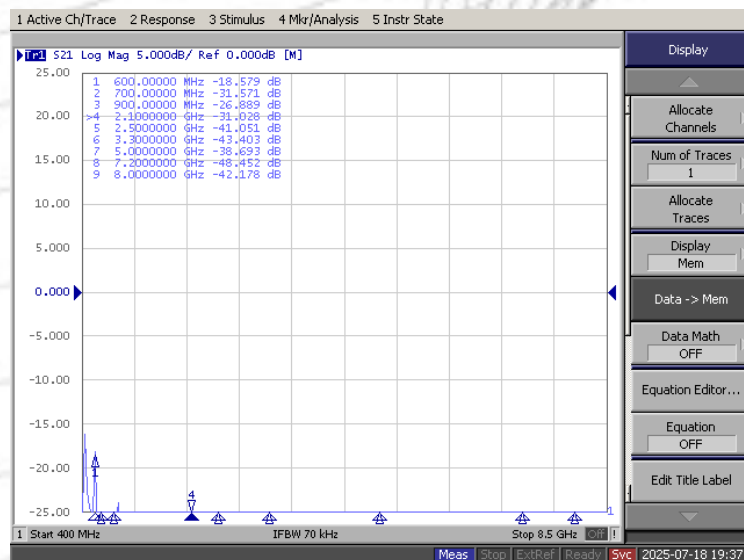
Isolation

Isolation between Antenna 1/Cable 1 to Other Antennas/Cables

S41



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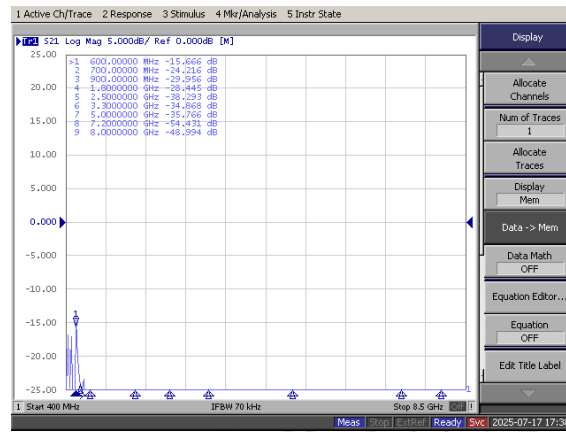
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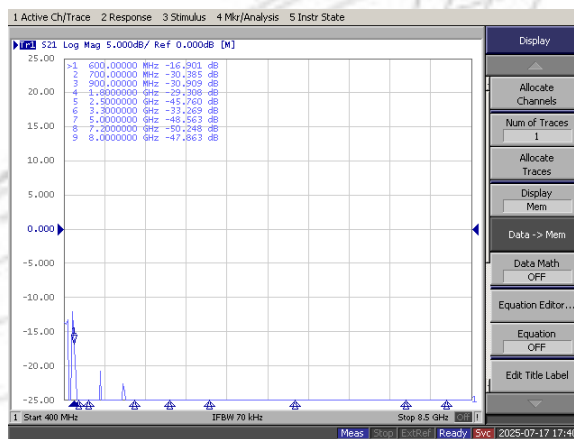
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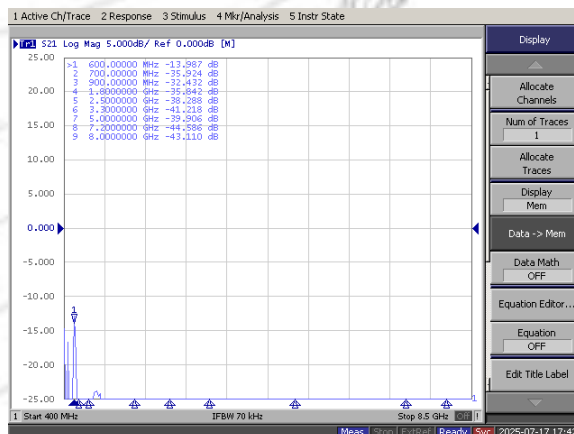
S61



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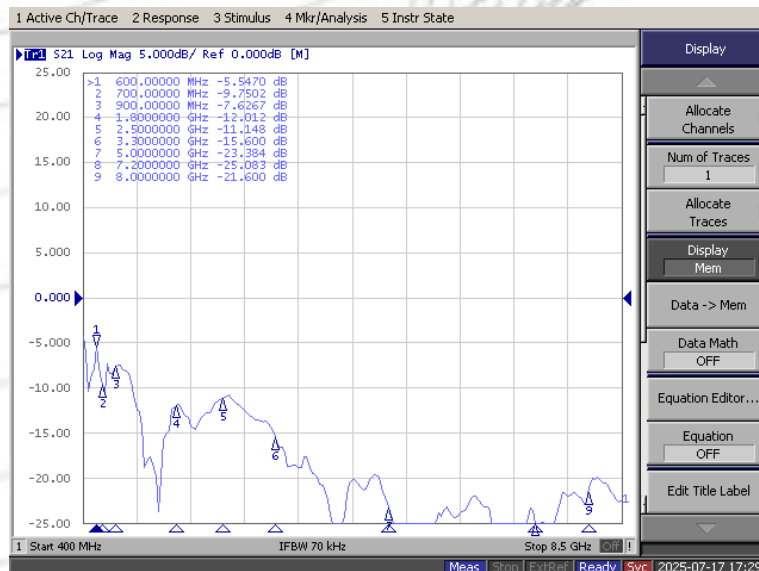
Isolation

Isolation between Antenna 2/Cable 2 to Other Antennas/Cables

S12



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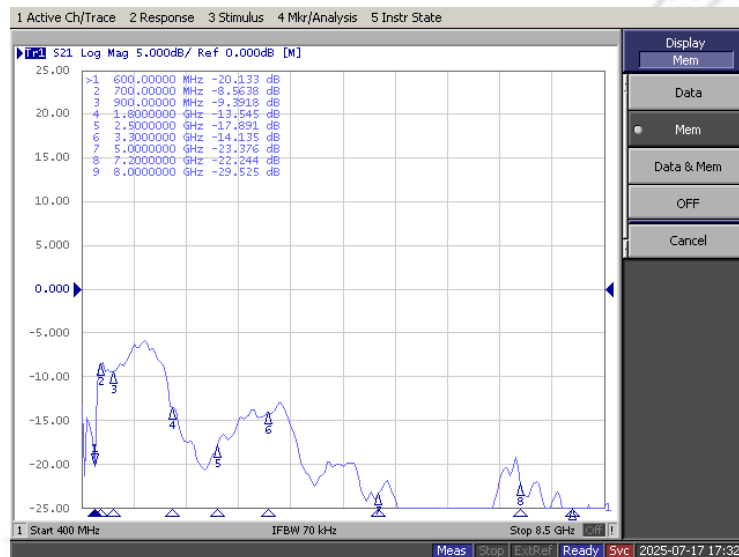
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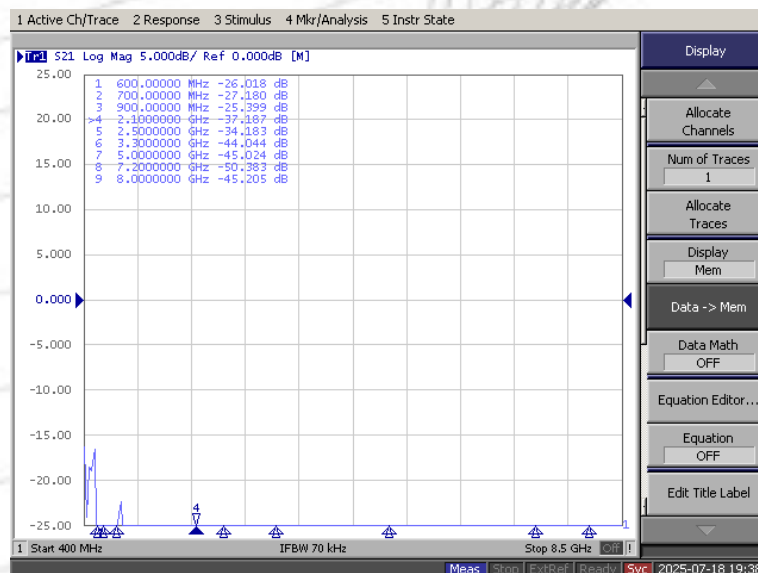
Isolation

Isolation between Antenna 2/Cable 2 to Other Antennas/Cables

S42



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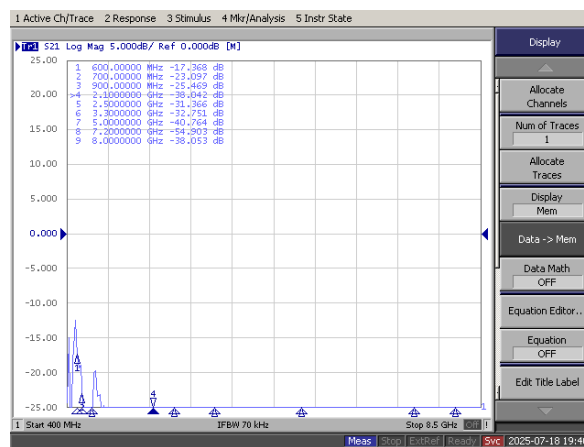
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Isolation

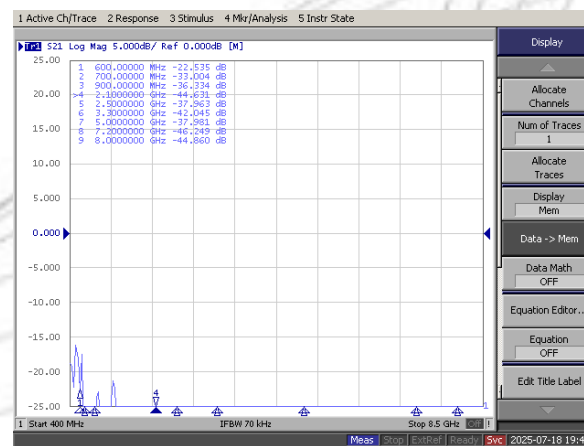
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Isolation between Antenna 2/Cable 2 to Other Antennas/Cables

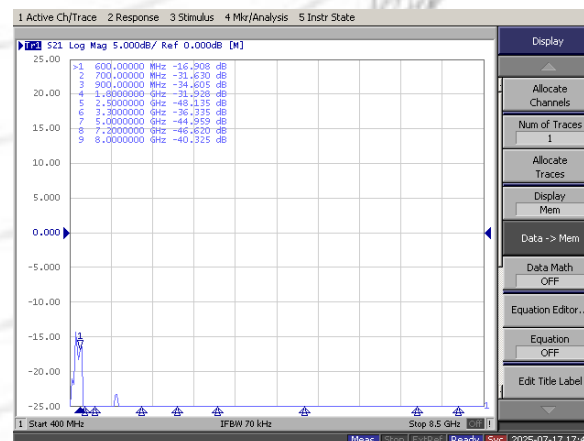
S62



S72



S82



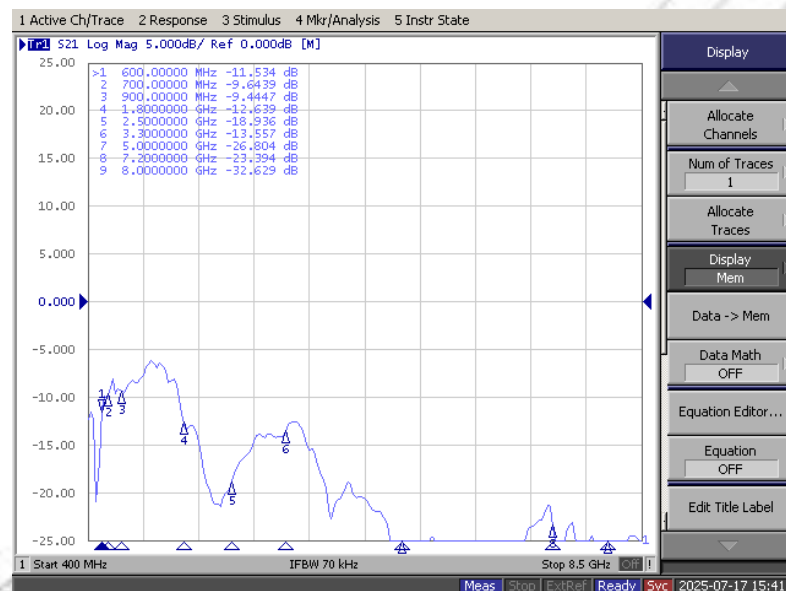
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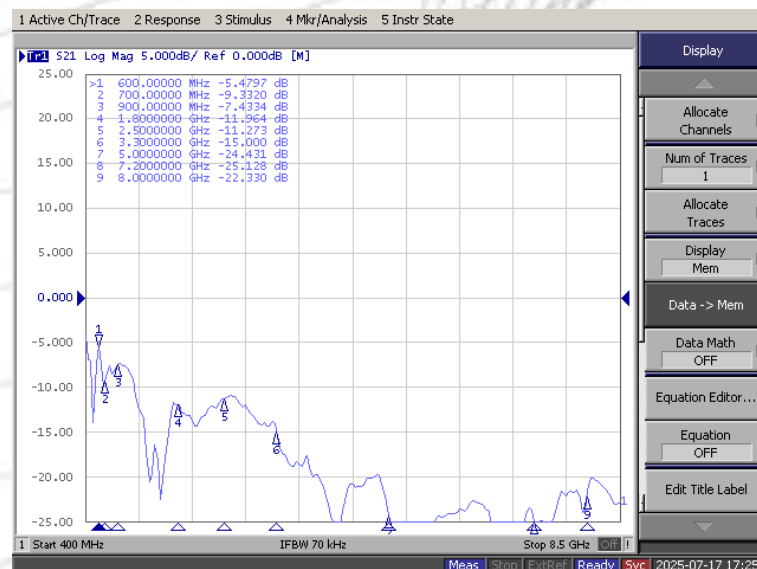
Isolation

Isolation between Antenna 3/Cable 3 to Other Antennas/Cables

S13



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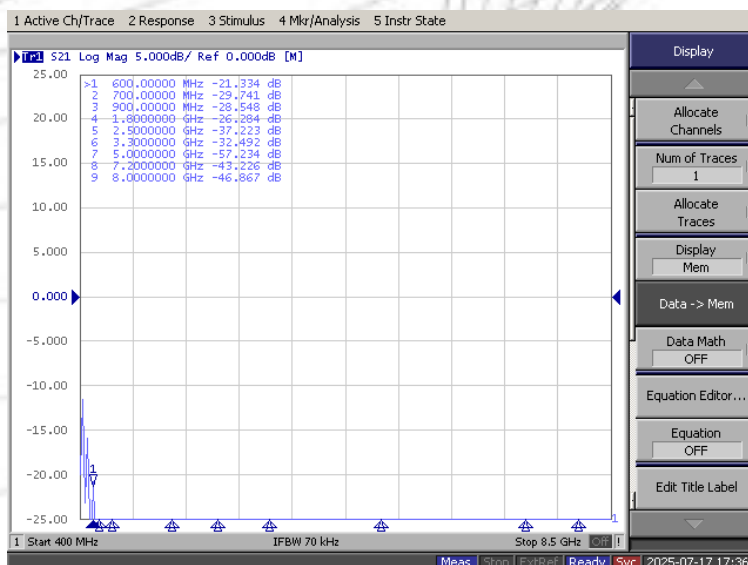
Isolation

Isolation between Antenna 3/Cable 3 to Other Antennas/Cables

S43



S53



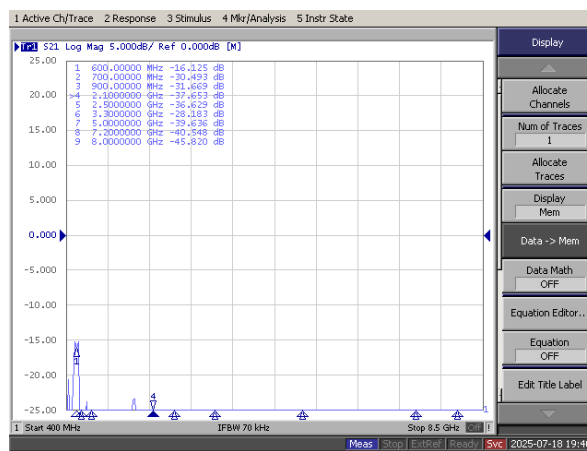
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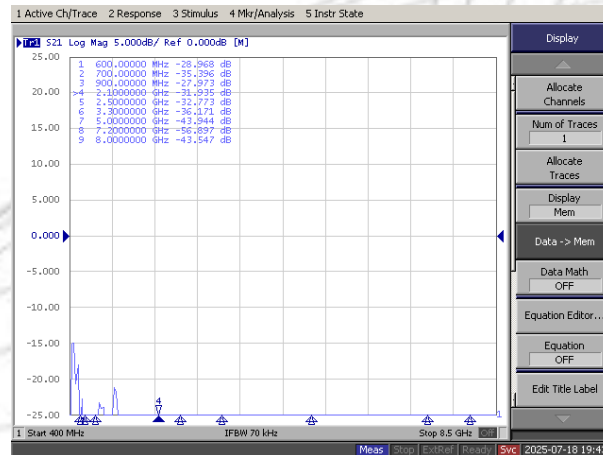
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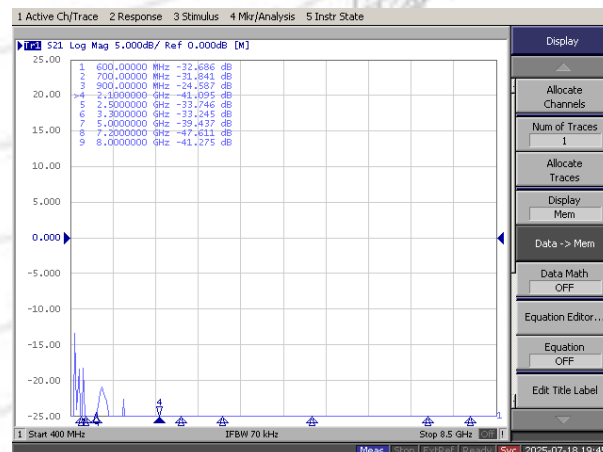
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S73



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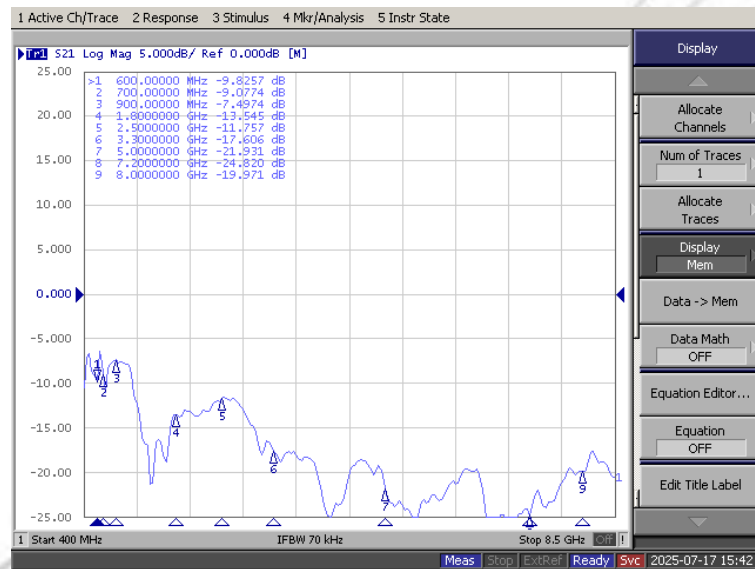
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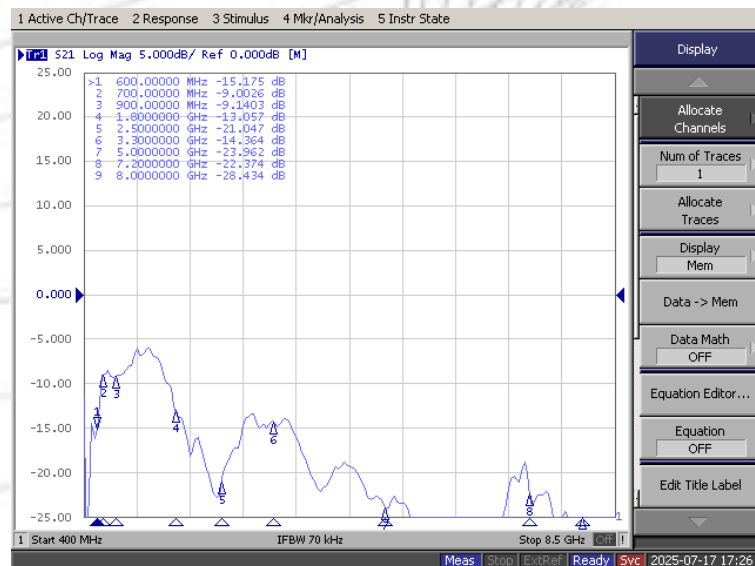
Isolation

Isolation between Antenna 4/Cable 4 to Other Antennas/Cables

S14



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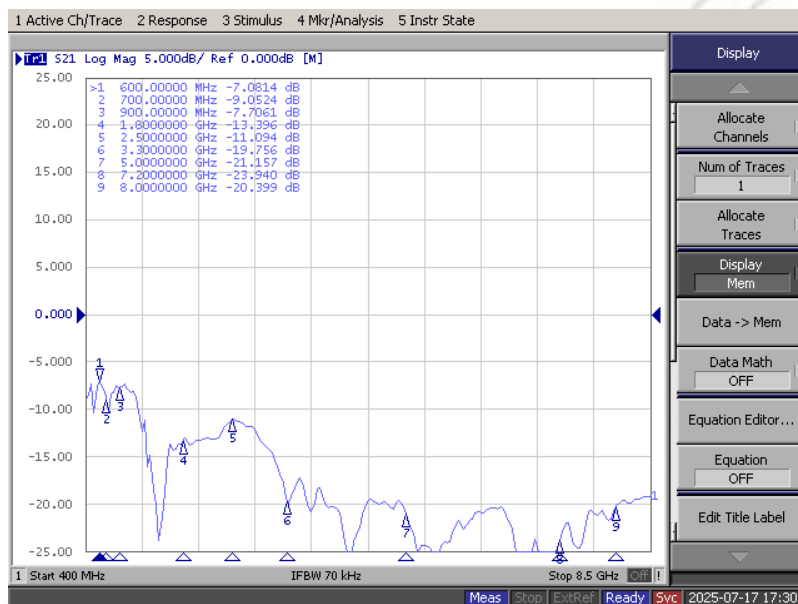
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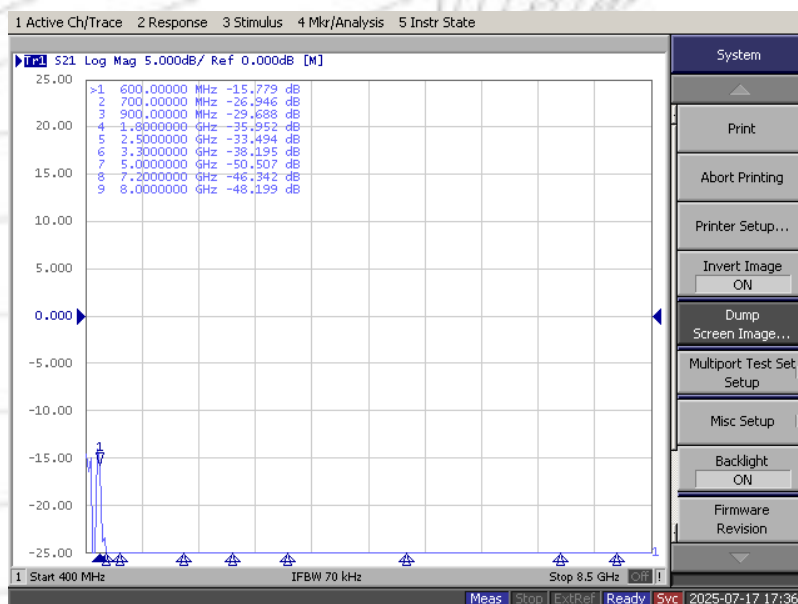
Isolation

Isolation between Antenna 4/Cable 4 to Other Antennas/Cables

S34



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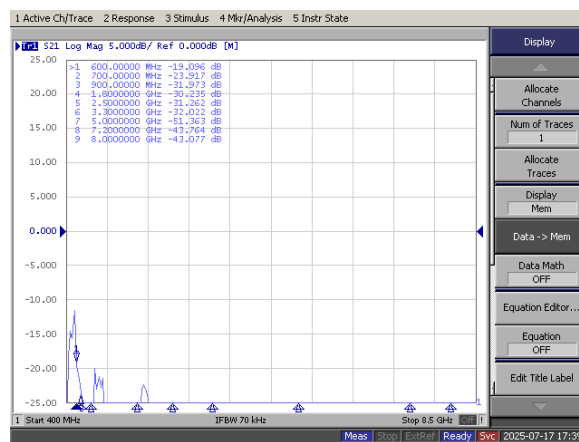
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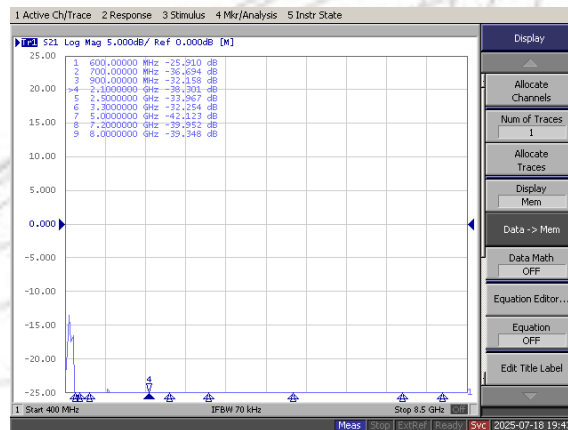
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Isolation between Antenna 4/Cable 4 to Other Antennas/Cables

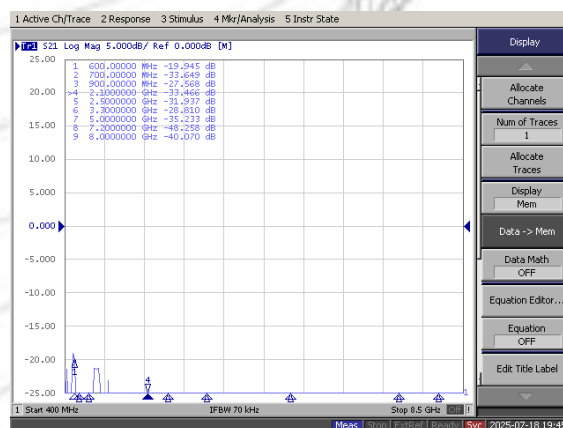
S64



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S84



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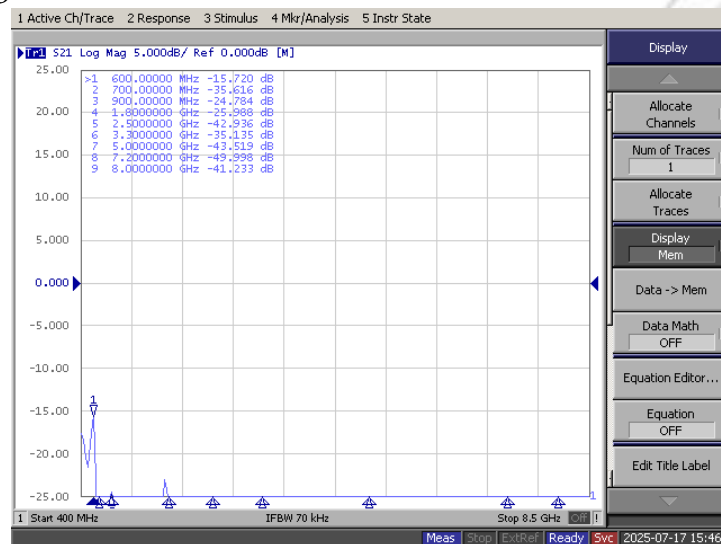
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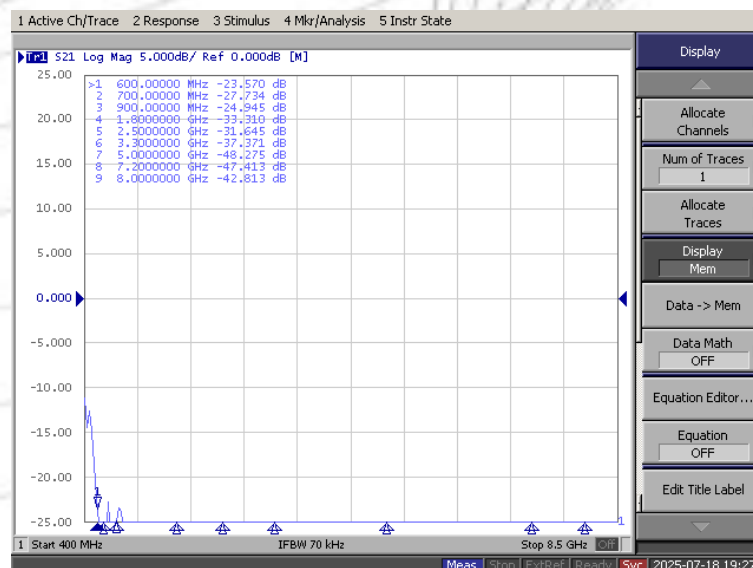
Isolation

Isolation between Antenna 5/Cable 5 to Other Antennas/Cables

S15



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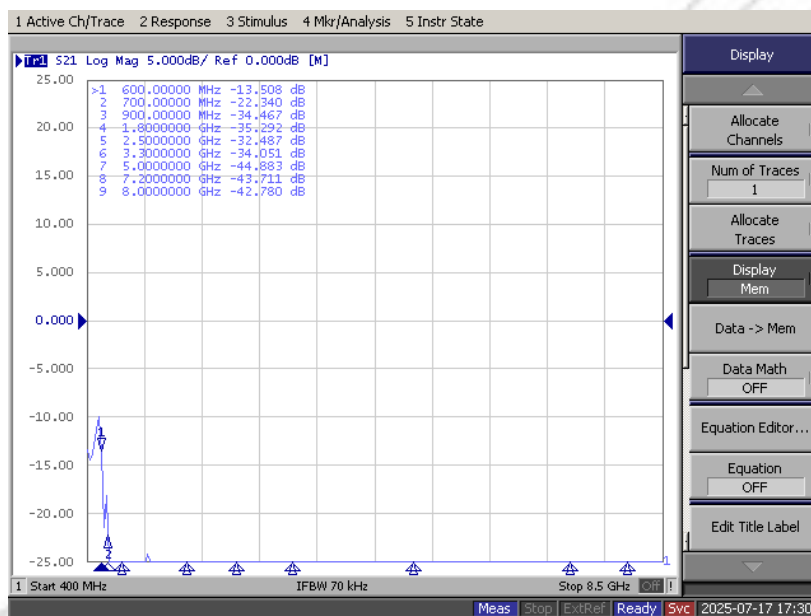
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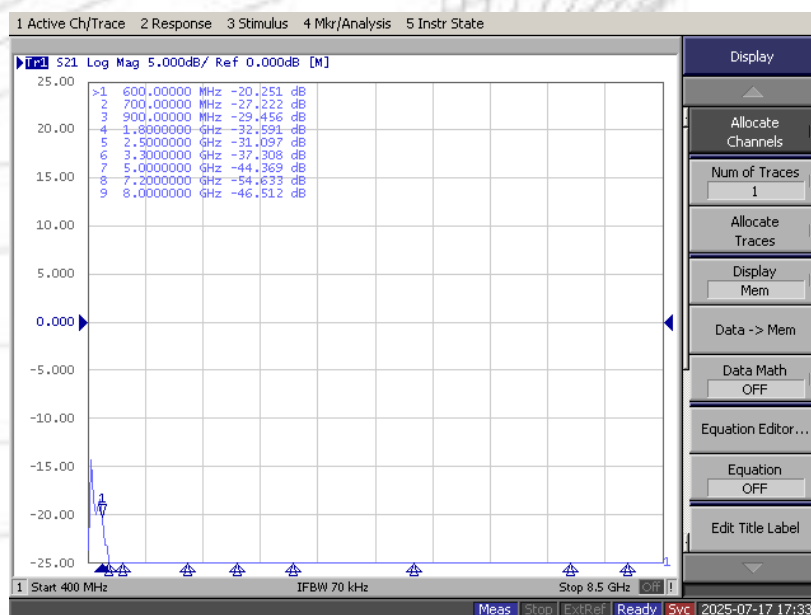
Isolation

Isolation between Antenna 5/Cable 5 to Other Antennas/Cables

S35



S45



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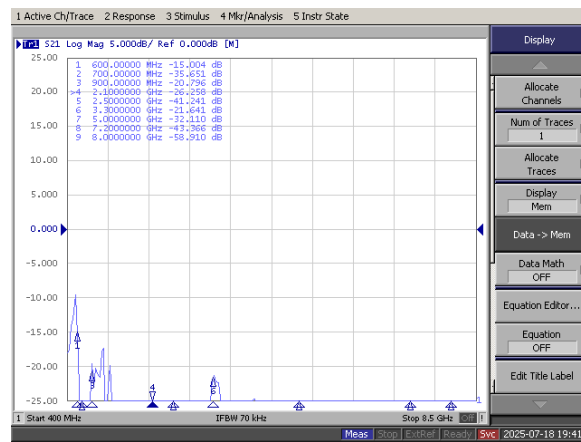
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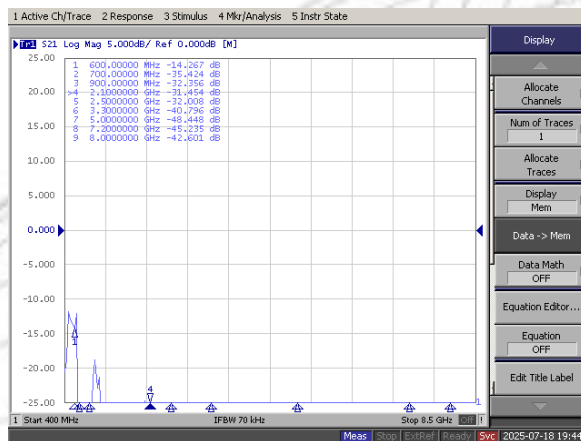
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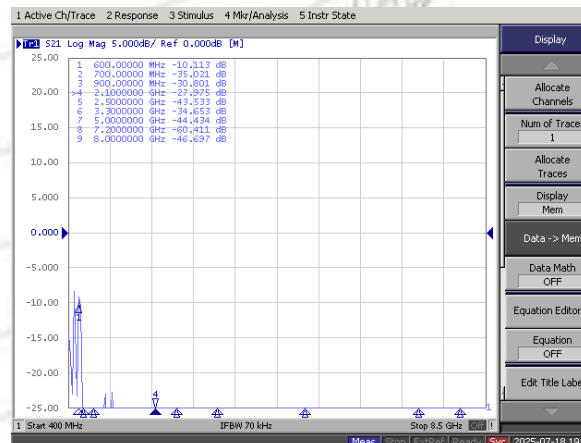
S65



S75



S85



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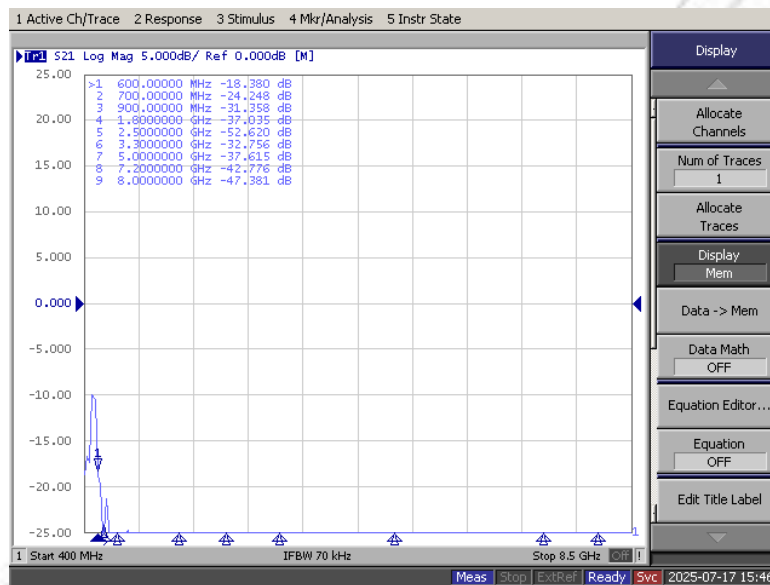
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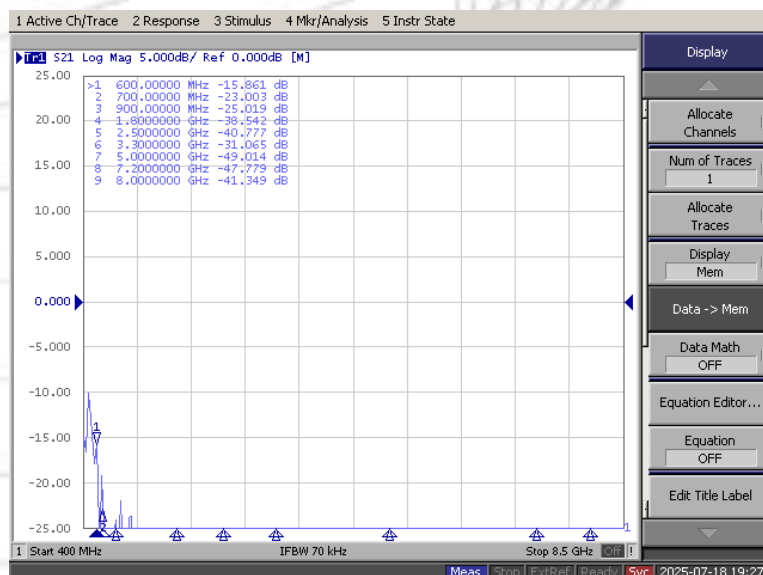
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Isolation between Antenna 6/Cable 6 to Other Antennas/Cables

S16



S26



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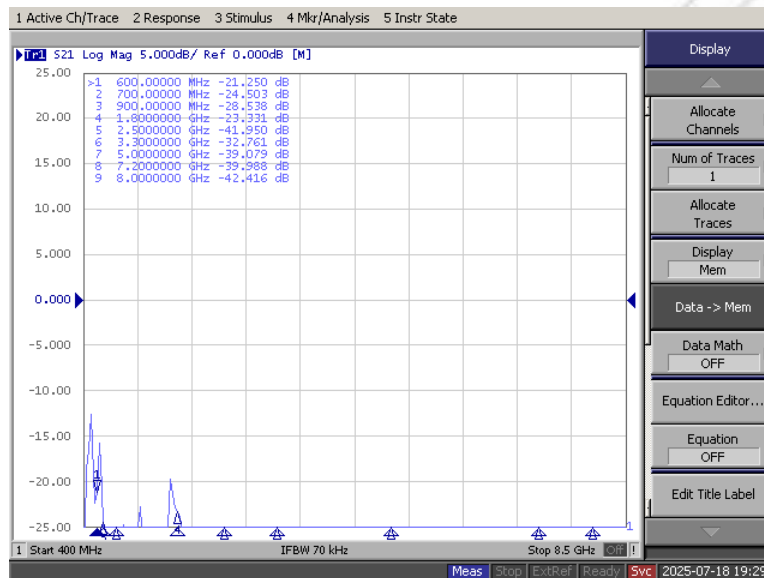
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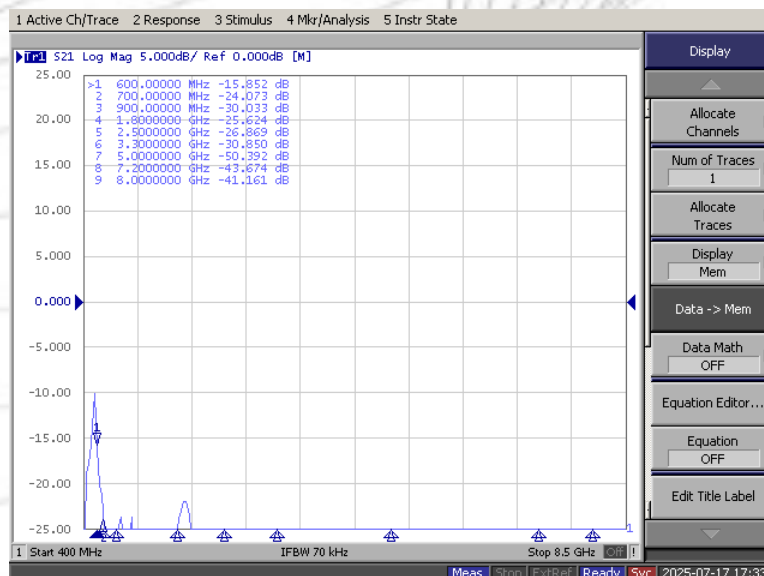
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Isolation between Antenna 6/Cable 6 to Other Antennas/Cables

S36



S46



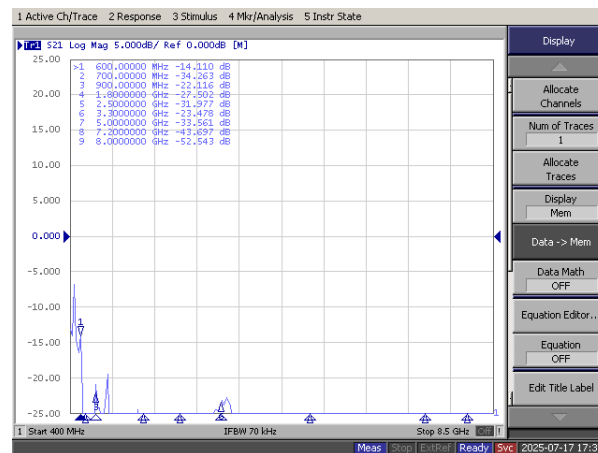
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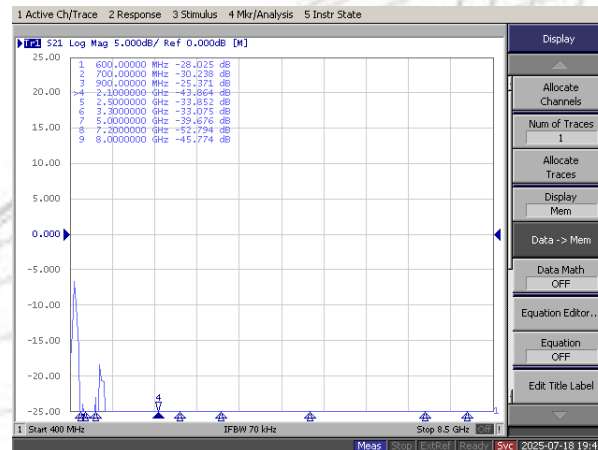
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Isolation between Antenna 6/Cable 6 to Other Antennas/Cables

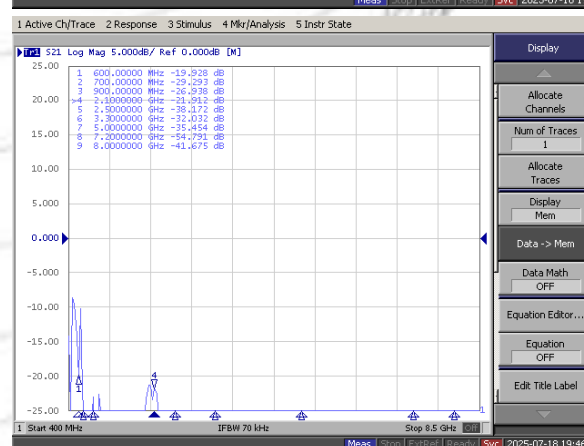
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S76



S86



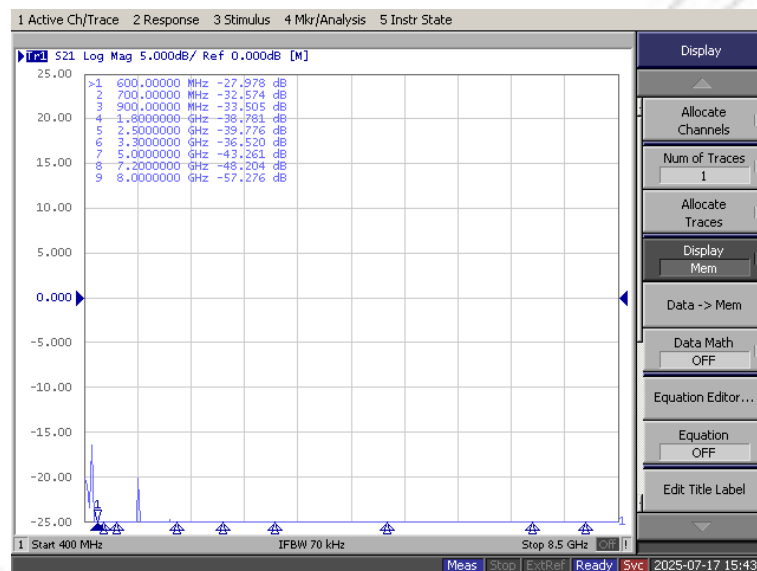
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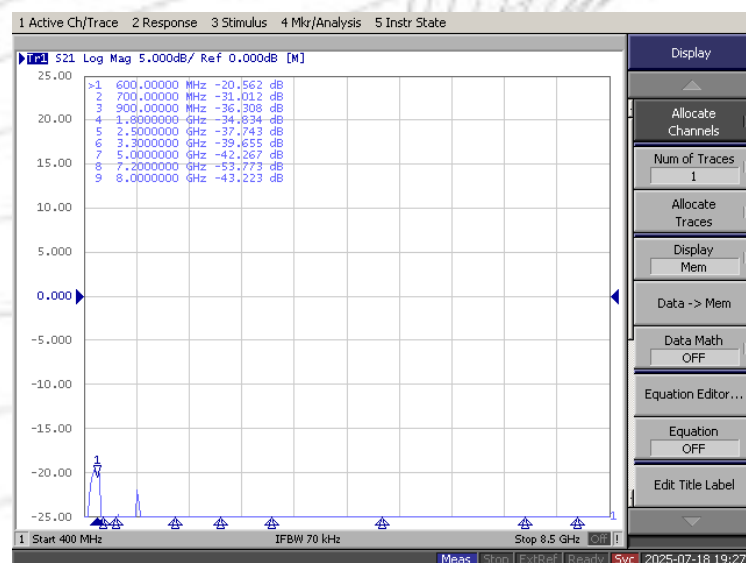
Isolation

Isolation between Antenna 7/Cable 7 to Other Antennas/Cables

S17



S27



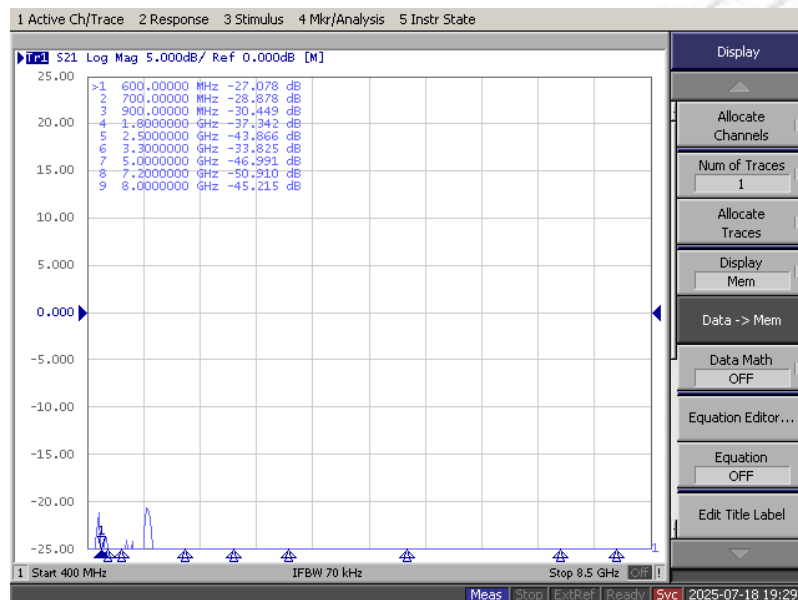
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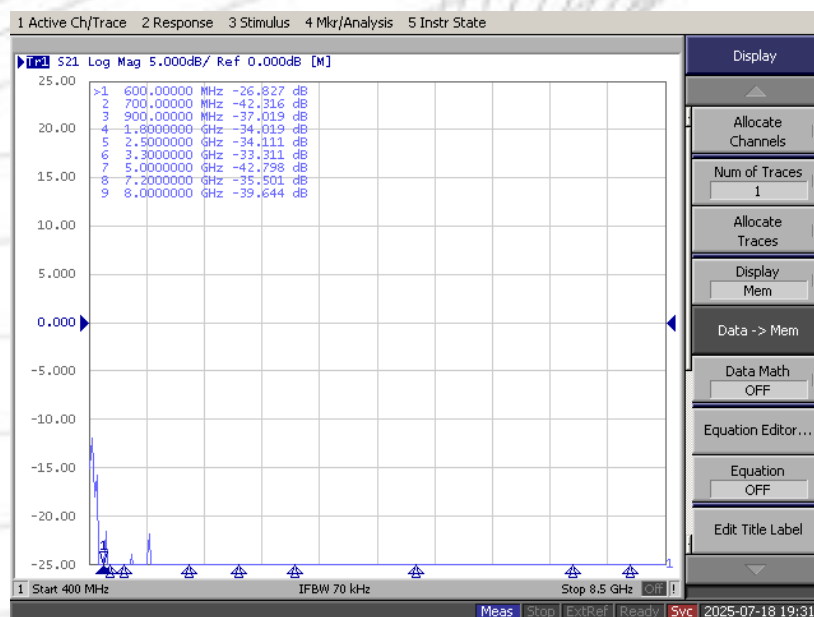
Isolation

Isolation between Antenna 7/Cable 7 to Other Antennas/Cables

S37



S47



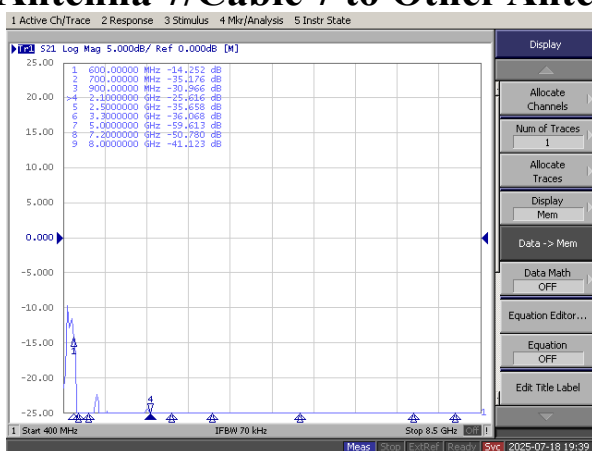
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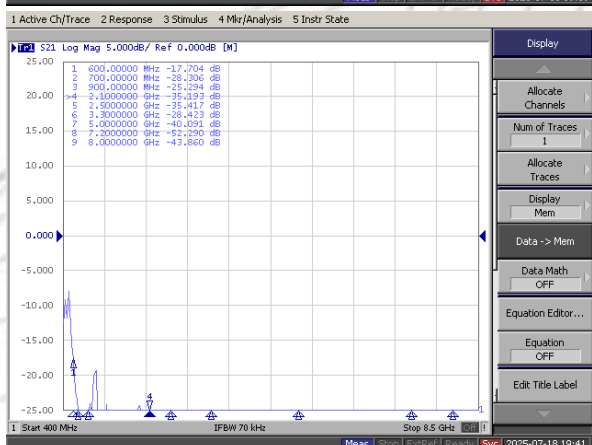
Isolation

Isolation between Antenna 7/Cable 7 to Other Antennas/Cables

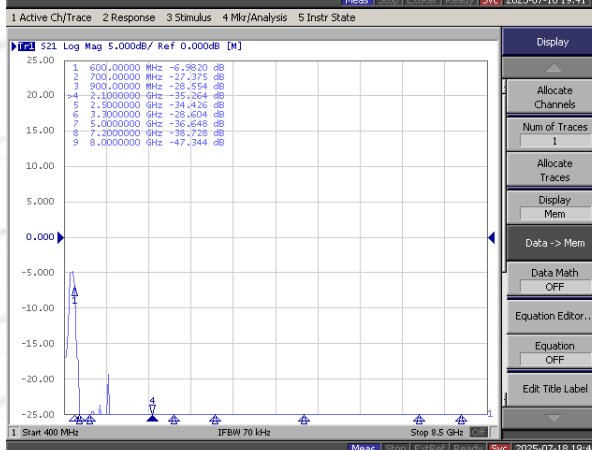
S57



S67



S87



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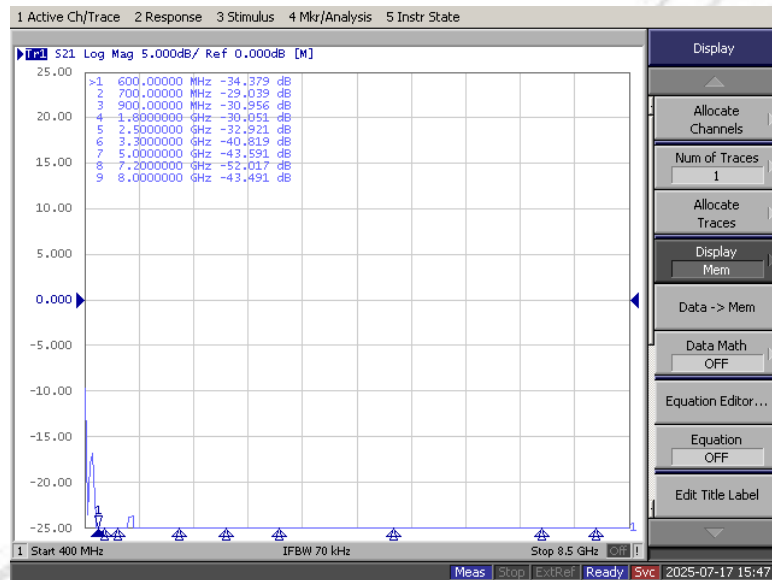
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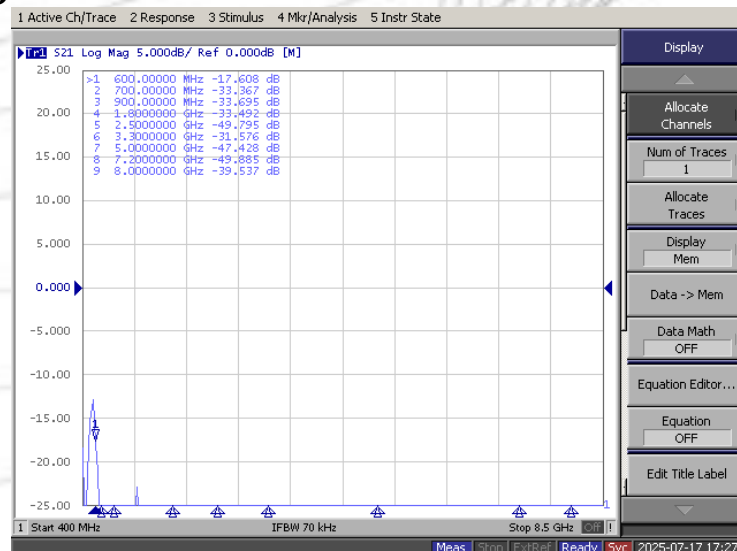
Isolation

Isolation between Antenna 8/Cable 8 to Other Antennas/Cables

S18



S28



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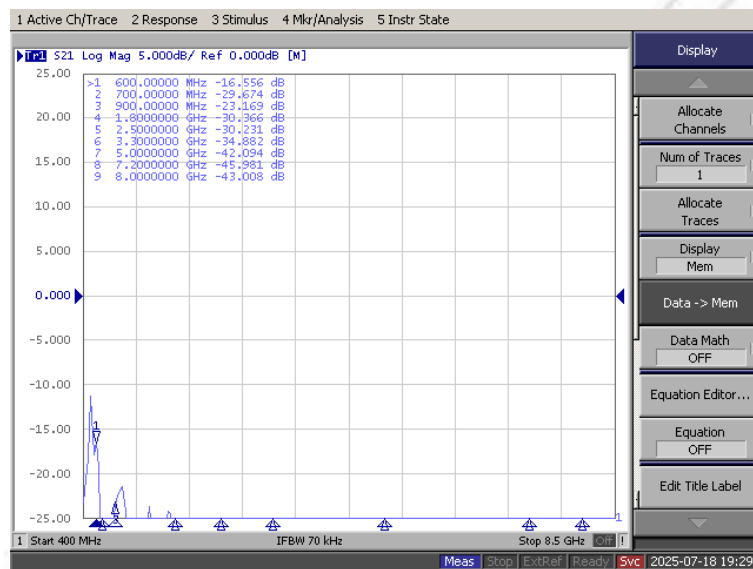
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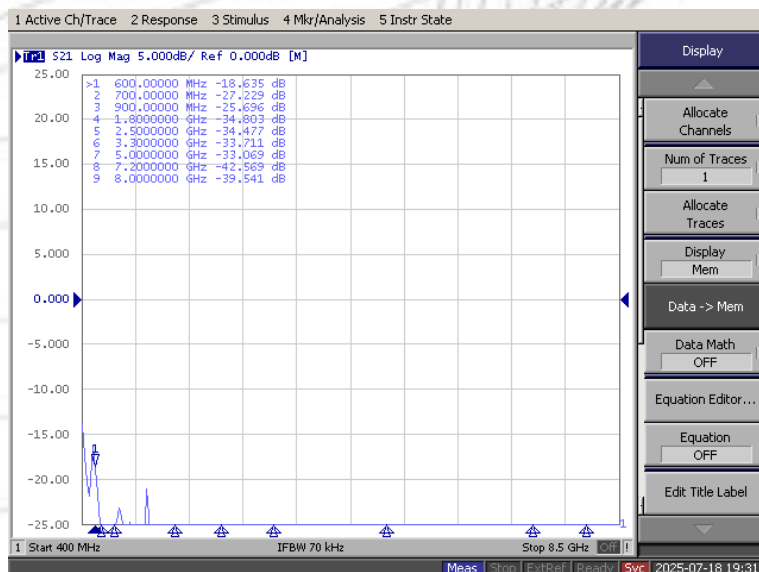
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Isolation between Antenna 8/Cable 8 to Other Antennas/Cables

S38



S48



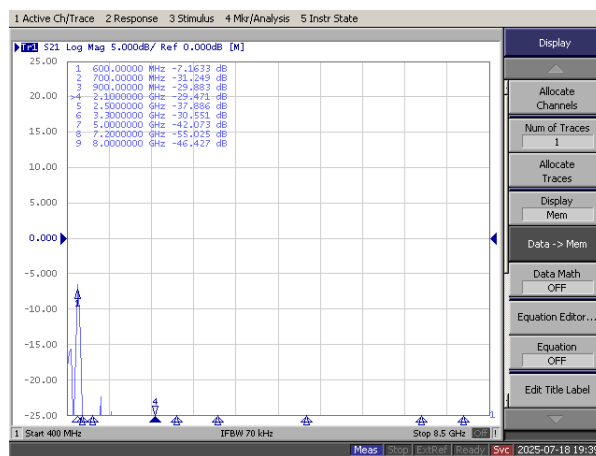
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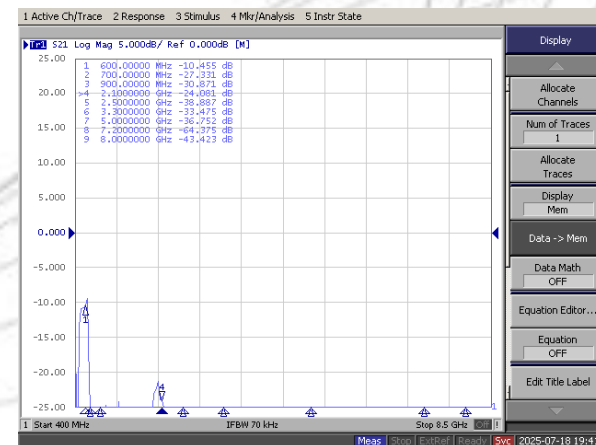
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Isolation between Antenna 8/Cable 8 to Other Antennas/Cables

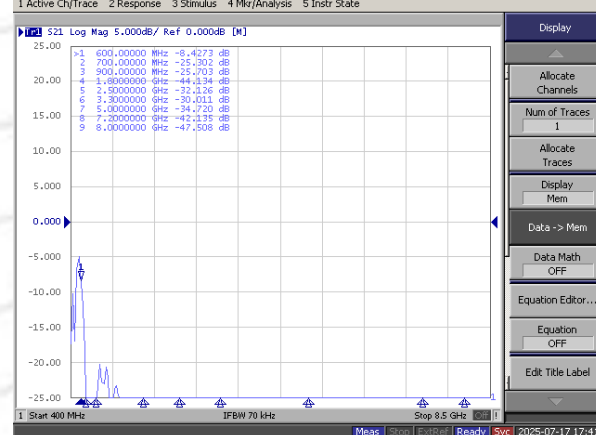
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S68



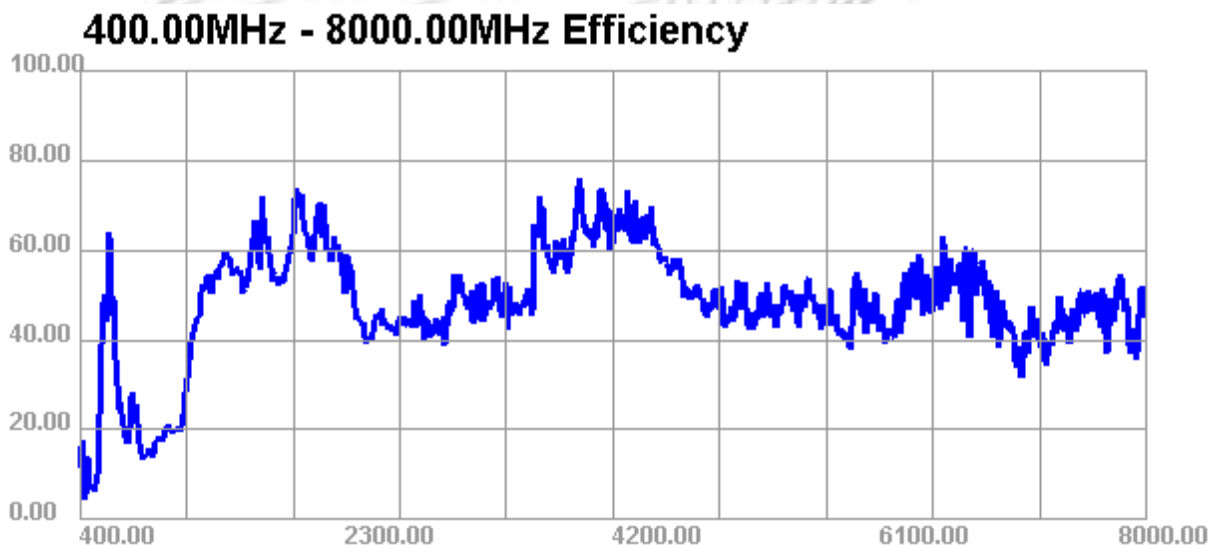
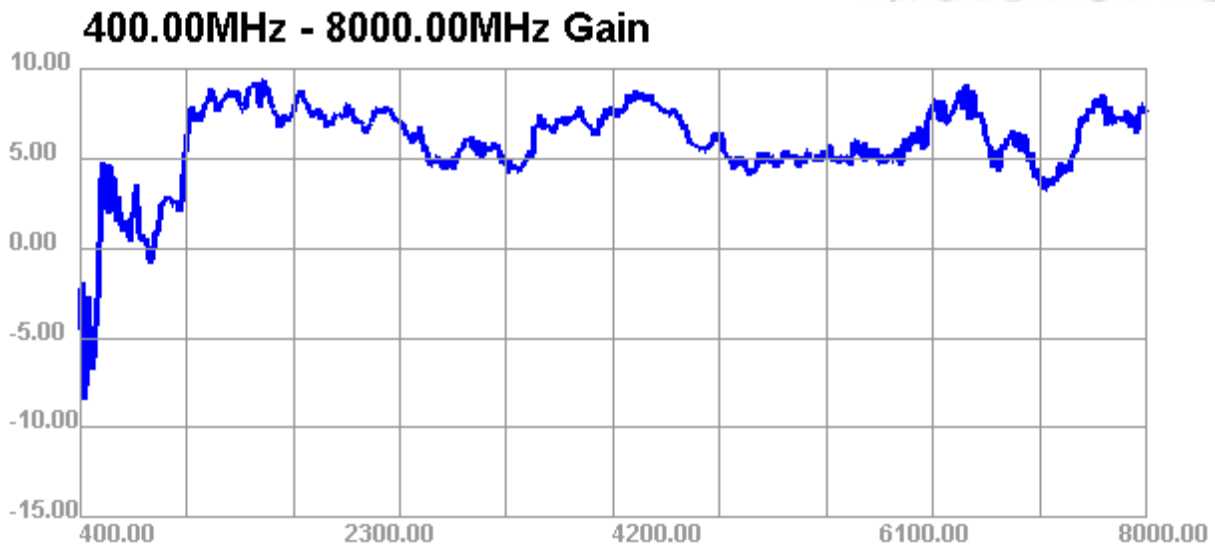
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Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

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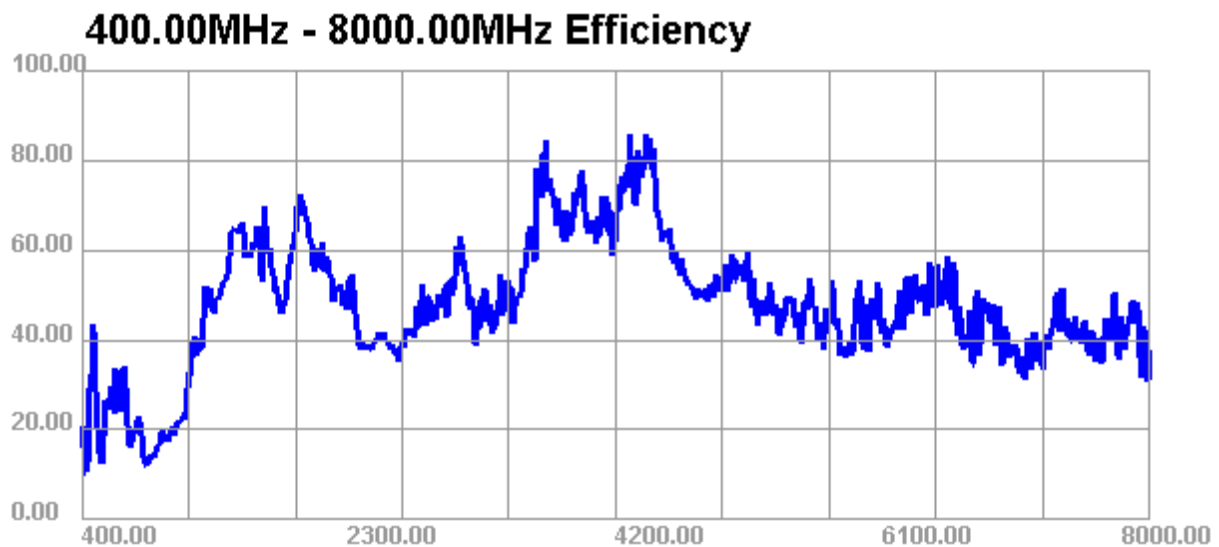
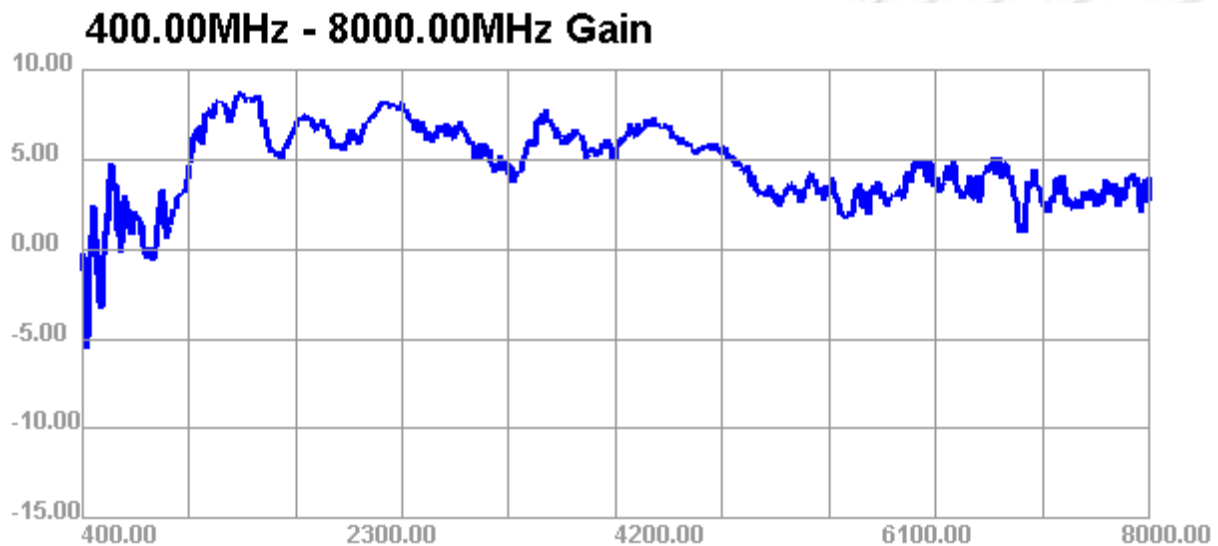
Measurement Gain Performance Antenna 1/Cable 1



Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

AN.8MIMO.600.8000.HP

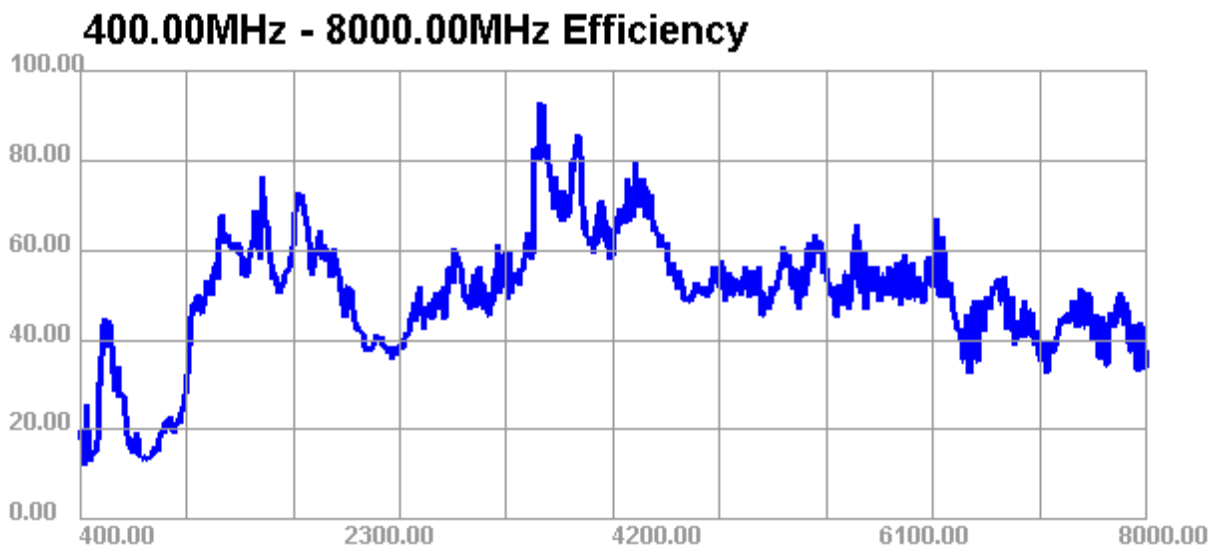
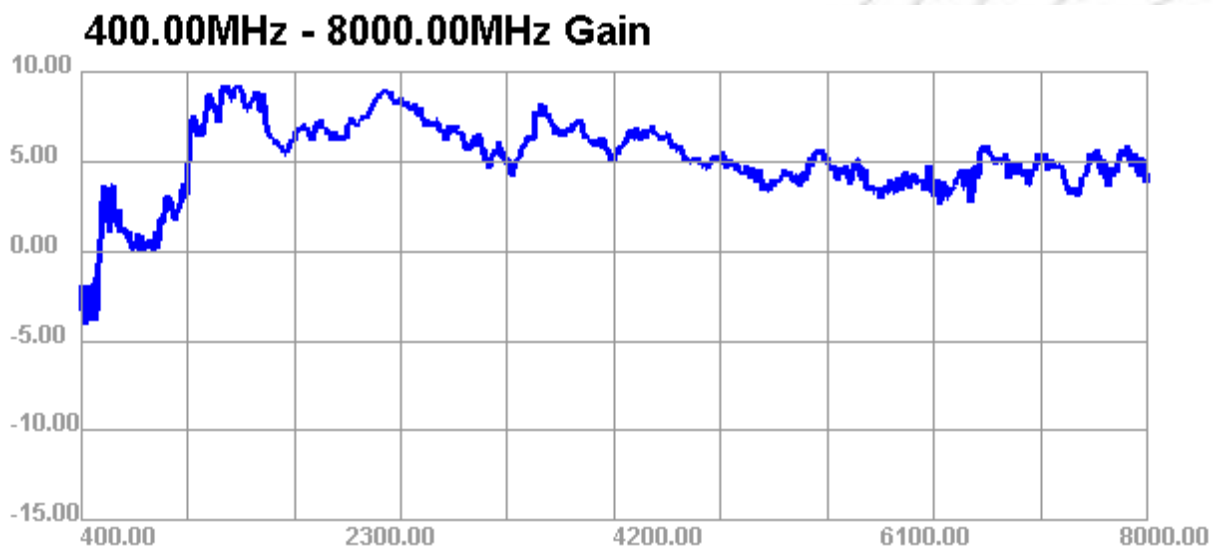
Measurement Gain Performance Antenna 2/Cable 2



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AN.8MIMO.600.8000.HP

Measurement Gain Performance Antenna 3/Cable 3

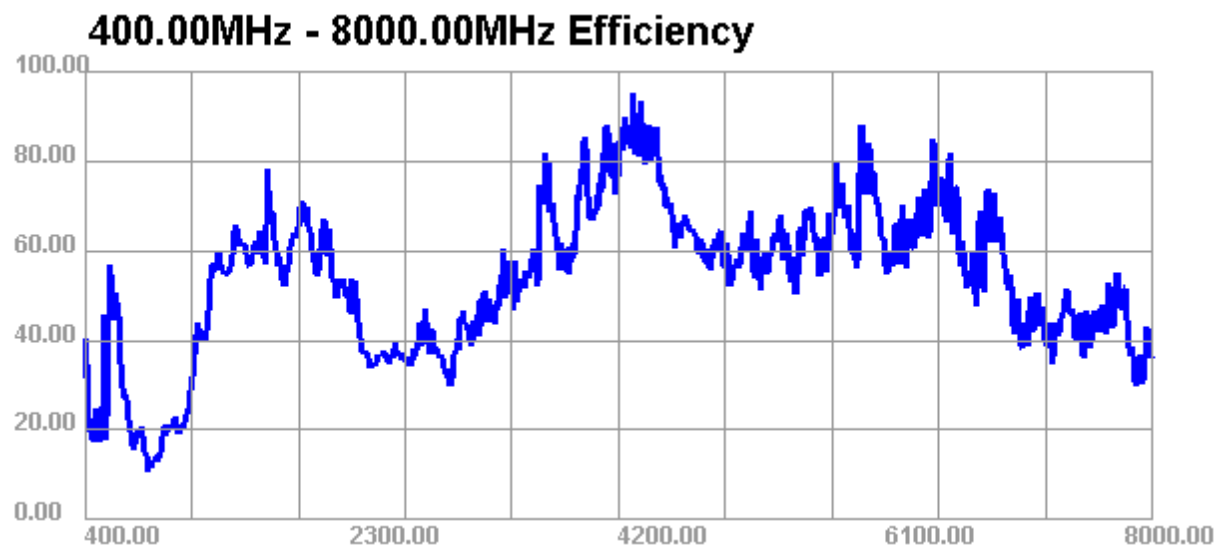
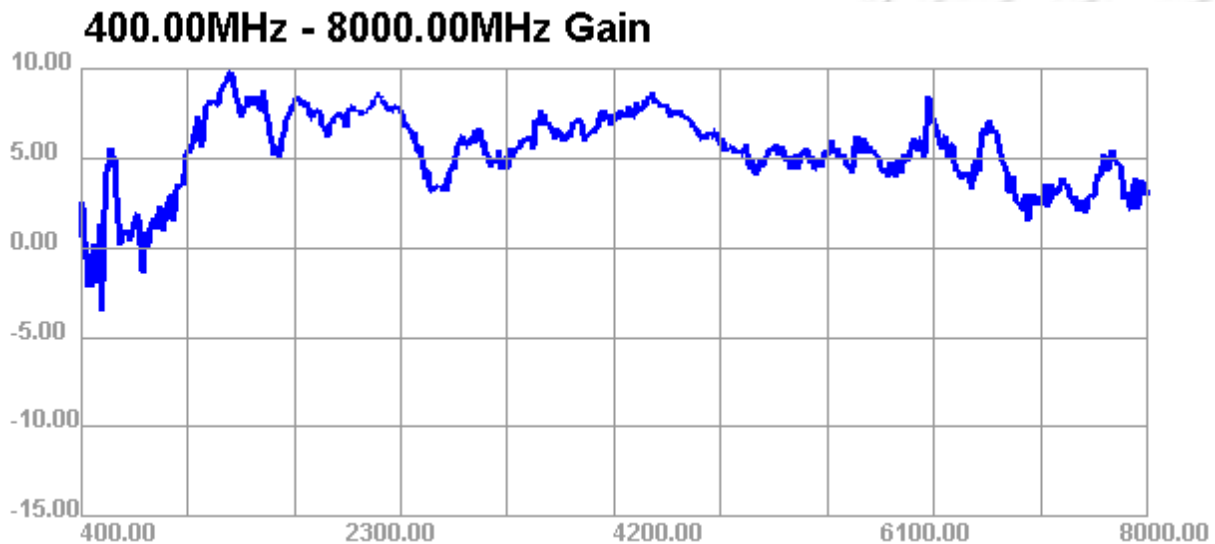




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Measurement Gain Performance Antenna 4/Cable 4



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Measurement Gain Performance Antenna 5/Cable 5

400.00MHz - 8000.00MHz Gain



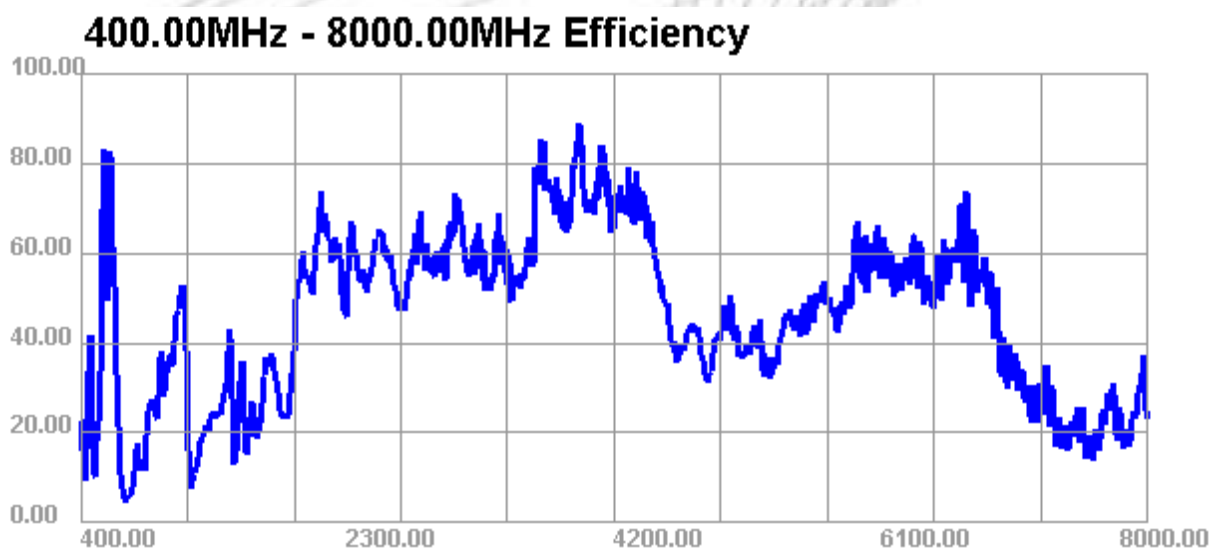
400.00MHz - 8000.00MHz Efficiency



Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

AN.8MIMO.600.8000.HP

Measurement Gain Performance Antenna 6/Cable 6

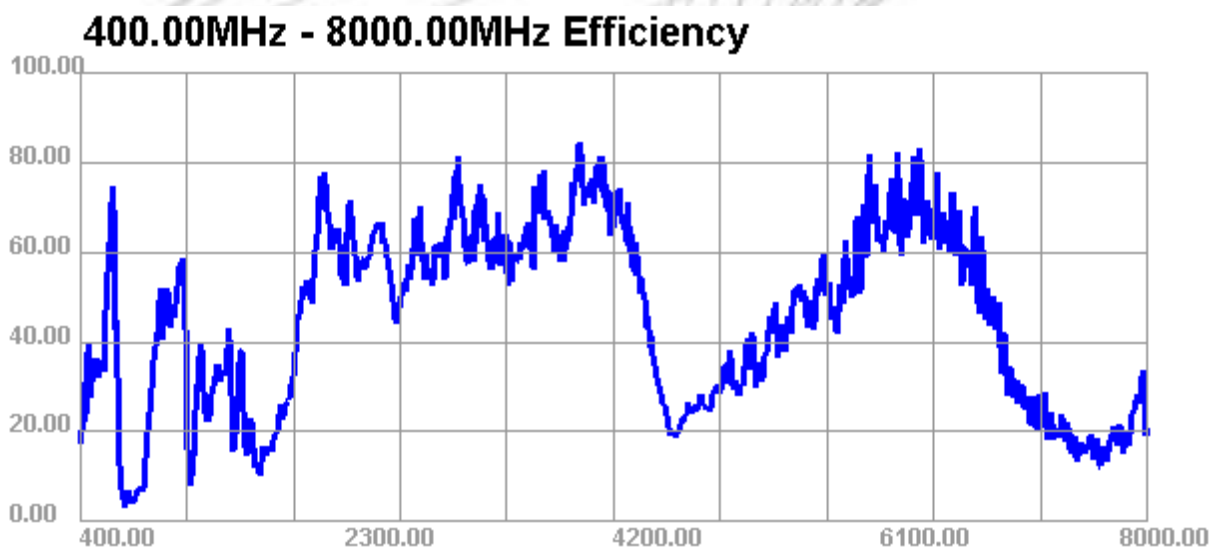




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AN.8MIMO.600.8000.HP

Measurement Gain Performance Antenna 7/Cable 7



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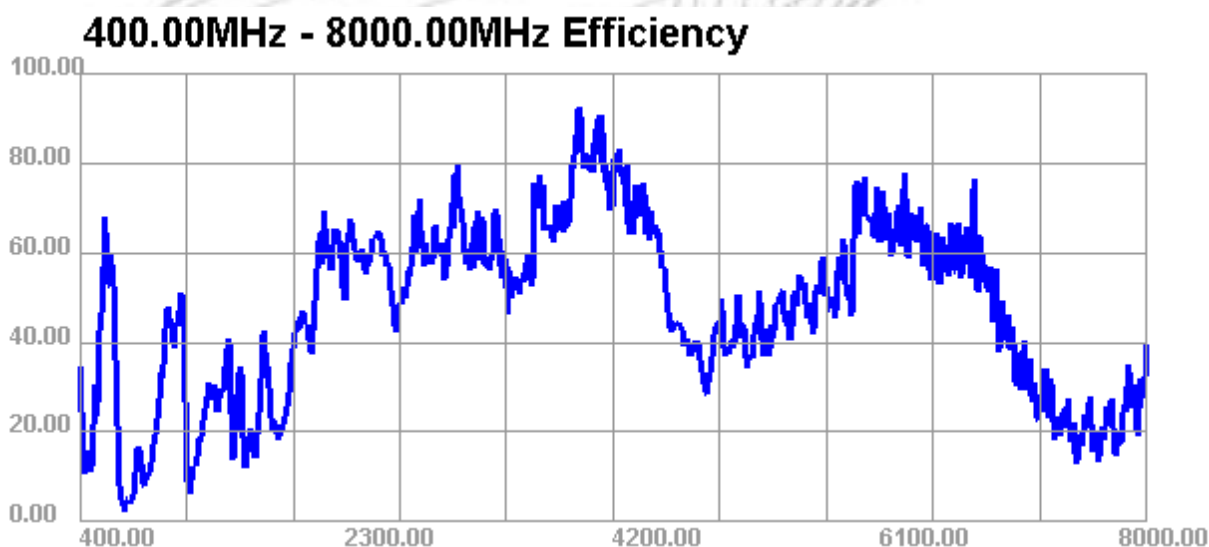
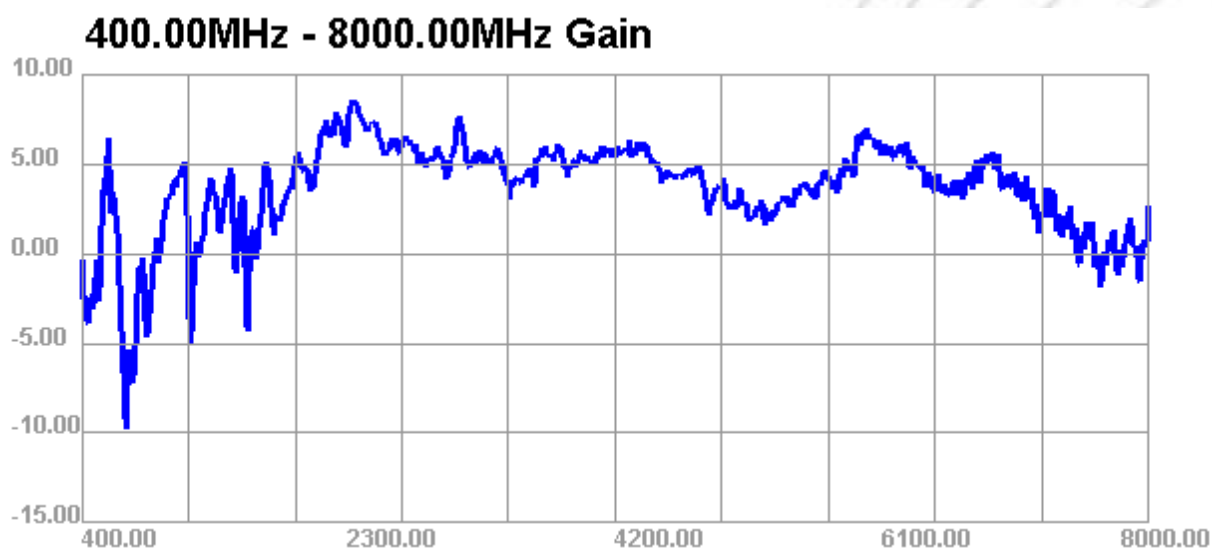
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Measurement Gain Performance Antenna 8/Cable 8



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AN.8MIMO.600.8000.HP

Appendix : Measured Gain Performances Table Antenna 1/Cable 1

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
500	6.42	-6.01
510	8.09	-4.65
520	8.39	-3.34
530	11.27	-2.44
540	22.93	0.04
550	30.17	3.01
560	48.16	4.72
570	46.48	3.24
580	50.02	2.2
590	44.14	4.35
600	45.98	1.89
610	64.1	4.64
620	57.13	4.47
630	45.49	3.81
640	49.55	3.99
650	37.01	2.46
660	34.19	1.55
670	29.42	2.9
680	24.59	2
690	25.82	2.01
700	22.77	1.01
710	21.09	0.96
720	19.26	1.44
730	17.71	1.58
740	16.72	1.28
750	17.93	0.73
760	22.44	0.37
770	28.53	1.95
780	25.89	1.92
790	24.44	2.45
800	25.75	3.53
810	21.72	2.46
820	19.42	1.16
830	14.43	0.55
840	14.35	0.78
850	13.53	0.36
860	14.54	0.54

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
870	14.14	0.57
880	14.48	0.31
890	15.99	-0.31
900	15.23	-0.79
910	15.14	-0.68
920	14.04	-0.27
930	15.55	0.34
940	17.34	0.99
950	17.57	0.75
1000	18.93	2.71
1050	19.87	2.76
1100	20.65	2.52
1150	27.73	5.13
1200	41.26	7.92
1250	44.91	7.29
1300	52.19	8.1
1350	53.58	8.49
1400	56.92	8.04
1450	58.71	8.53
1500	55.49	8.38
1550	54.17	7.85
1600	53.65	8.65
1650	66.64	9.26
1700	71.87	9.3
1750	59.08	8.39
1800	54.17	7.47
1850	53.04	7.24
1900	60	7.36
1950	72.68	8.54
2000	64.52	8.24
2050	57.46	7.38
2100	70.16	7.79
2150	64.24	6.99
2200	58.58	6.95
2250	58.99	7.34
2300	58.85	7.96
2350	50.3	7.29
2400	44.23	7.08
2450	39.85	6.62
2500	44.23	7.6
2550	46.8	7.78

Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

AN.8MIMO.600.8000.HP

Appendix : Measured Gain Performances Table Antenna 1/Cable 1

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
2600	42.43	7.74
2650	41.28	7.03
2700	44.42	6.97
2750	43.89	6.14
2800	42.95	6.01
2850	39.7	5.41
2900	43.23	4.91
2950	44.16	5.05
3000	38.71	4.33
3050	47.7	4.61
3100	53.99	5.34
3150	49.14	6.12
3200	43.67	5.52
3250	48.35	5.43
3300	47.94	5.56
3350	53.75	5.88
3400	48.62	5.21
3450	42.57	4.14
3500	48.4	4.51
3550	47.12	4.49
3600	47.54	5.03
3650	63.27	6.72
3700	69.17	7.24
3750	58.2	6.7
3800	60.58	6.94
3850	62.82	7.32
3900	58.83	7.23
3950	73.72	7.67
4000	65.66	7.05
4050	64.45	6.67
4100	69.17	6.84
4150	70.79	7.75
4200	61.63	7.39
4250	64.5	7.46
4300	73.19	8.52
4350	62.12	8.2

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
4000	65.66	7.05
4050	64.45	6.67
4100	69.17	6.84
4150	70.79	7.75
4200	61.63	7.39
4250	64.5	7.46
4300	73.19	8.52
4350	62.12	8.2
4400	66.11	8.61
4450	66.87	8.46
4500	62.53	8.12
4550	57.93	7.7
4600	54.69	7.41
4650	56.9	7.48
4700	49.46	6.6
4750	48.95	5.8
4800	52.36	5.67
4850	45.66	5.43
4900	47.39	5.79
4950	46.76	6.02
5000	42.84	5.23
5050	46.61	4.69
5100	50.25	4.86
5150	45.1	4.24
5200	42.35	4.16
5250	50.51	5.39
5300	52.72	5.35
5350	46.05	4.85
5400	45.92	4.74
5450	50.77	5.29
5500	48.62	5.16
5550	49.52	4.94
5600	49.58	5
5650	47.07	5.1
5700	48.07	5.46
5750	50.73	5.66
5800	42.06	4.89
5850	40.15	4.86
5900	42.38	5.12
5950	49.74	5.63
6000	41.34	4.85

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Appendix : Measured Gain Performances Table Antenna 1/Cable 1

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
6050	43.99	5.09
6100	41.61	4.64
6150	40.69	5
6200	40.61	4.91
6250	41.74	4.58
6300	46.61	5.36
6350	52.25	6.15
6400	51.14	6.16
6450	49.32	7.56
6500	56.65	8.19
6550	63.22	8.22
6600	58.21	7.46
6650	52.27	8.06
6700	49	8.17
6750	48.89	7.87
6800	52.88	7.42
6850	51.23	6.38
6900	40.59	4.53
6950	38.3	4.27
7000	42.66	5.84
7050	43.09	6.53
7100	35.73	6.09
7150	36.67	5.4
7200	40.82	3.98
7250	38.61	3.48
7300	38.94	3.82
7350	43.94	4.01
7400	43.67	4.25
7450	38.96	4.22
7500	42.15	5.37
7560	45.67	7.08
7600	49.25	7.73
7650	48.56	8.22
7700	45.67	8.01
7750	48.56	7.46
7800	52.49	7.36
7850	47.85	7.29
7900	41.33	7.32
7950	46.99	7.61
8000	44.67	7.78

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AN.8MIMO.600.8000.HP

Appendix : Measured Gain Performances Table Antenna 2/Cable 2

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
500	25.85	-5.88	0.25
510	20.95	-6.79	-1.04
520	16.34	-7.87	-2.79
530	13.59	-8.67	-3.15
540	12.48	-9.04	-3.32
550	14.33	-8.44	-1.69
560	23.2	-6.35	0.96
570	26.85	-5.71	0.85
580	24.81	-6.05	1.95
590	26.75	-5.73	1.61
600	24.48	-6.11	4.56
610	29.79	-5.26	4.8
620	28.13	-5.51	4.38
630	23.72	-6.25	3.22
640	33.84	-4.71	3.66
650	25.05	-6.01	1.05
660	28.05	-5.52	1.68
670	29.05	-5.37	0.6
680	24.15	-6.17	-0.2
690	33.31	-4.77	1.71
700	34.01	-4.68	3.01
710	30.22	-5.2	2.86
720	23.83	-6.23	2.08
730	18.96	-7.22	2.19
740	16.38	-7.86	1.08
750	15.94	-7.98	0.8
760	19.15	-7.18	0.87
770	20.01	-6.99	2.17
780	19.39	-7.12	1.96
790	20.37	-6.91	1.64
800	23.12	-6.36	1.81
810	21.93	-6.59	1.71
820	19.86	-7.02	0.8
830	17.62	-7.54	1.31
840	13.32	-8.76	0.06
850	12.12	-9.16	-0.39
860	12.02	-9.2	-0.45

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
870	12.37	-9.08	-0.33
880	14.33	-8.44	-0.12
890	14.48	-8.39	0.03
900	14.1	-8.51	-0.44
910	13.93	-8.56	-0.6
920	14.04	-8.53	-0.37
930	15.96	-7.97	0.69
940	16.38	-7.86	1.41
950	16.69	-7.77	2.05
1000	17.81	-7.49	0.58
1050	20.16	-6.95	2.23
1100	22.31	-6.51	3.07
1150	28.38	-5.47	3.62
1200	40.81	-3.89	6.52
1250	37.91	-4.21	5.95
1300	50.4	-2.98	7.73
1350	49.27	-3.07	8.17
1400	52.59	-2.79	8.13
1450	58.35	-2.34	7.05
1500	64.73	-1.89	8.41
1550	64.19	-1.93	8.51
1600	58.36	-2.34	8.3
1650	65.53	-1.84	8.58
1700	69.44	-1.58	7.21
1750	55.98	-2.52	5.37
1800	49.15	-3.08	5.15
1850	48.97	-3.1	5.58
1900	59.58	-2.25	6.41
1950	71.18	-1.48	7.19
2000	66.47	-1.77	7.34
2050	55.45	-2.56	6.7
2100	59.54	-2.25	6.97
2150	57.47	-2.41	6.68
2200	51.43	-2.89	5.82
2250	50.56	-2.96	5.68
2300	53.37	-2.73	6.54
2350	44.53	-3.51	5.98

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Appendix : Measured Gain Performances Table Antenna 2/Cable 2

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	39.84	-4	6.68
2450	38.25	-4.17	7.24
2500	39.91	-3.99	7.6
2550	41.88	-3.78	8.26
2600	38.33	-4.16	7.93
2650	35.44	-4.5	7.79
2700	40.64	-3.91	7.74
2750	42.04	-3.76	7.01
2800	42.65	-3.7	6.44
2850	43.35	-3.63	6.07
2900	47.65	-3.22	6.33
2950	49.82	-3.03	6.72
3000	44.97	-3.47	6.26
3050	54.31	-2.65	6.25
3100	61.62	-2.1	6.87
3150	49.19	-3.08	6.04
3200	38.57	-4.14	5.02
3250	49.63	-3.04	5.74
3300	48.2	-3.17	5.55
3350	46.14	-3.36	4.59
3400	50.22	-2.99	4.81
3450	43.87	-3.58	3.82
3500	49.99	-3.01	4.23
3550	55.04	-2.59	5.01
3600	59.86	-2.23	5.77
3650	75.43	-1.22	7.17

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
3700	84.37	-0.74	7.76
3750	73.54	-1.33	6.93
3800	67.51	-1.71	6.23
3850	68.8	-1.62	6.28
3900	67.11	-1.73	6.37
3950	76.83	-1.14	6.36
4000	66.24	-1.79	5.29
4050	66.07	-1.8	5.48
4150	70.75	-1.5	6.07
4200	61.94	-2.08	5.11
4250	72.51	-1.4	5.98
4300	85.72	-0.67	6.95
4350	71.04	-1.49	6.3
4400	80.91	-0.92	6.85
4450	80.07	-0.97	6.92
4500	68.96	-1.61	6.97
4550	64.1	-1.93	6.93
4600	59.06	-2.29	6.33
4650	55.55	-2.55	5.94
4700	52.77	-2.78	5.87
4750	51.21	-2.91	5.56
4800	50.73	-2.95	5.47
4850	48.63	-3.13	5.55
4900	50.5	-2.97	5.54
4950	50.6	-2.96	5.32
5000	50.85	-2.94	5.02
5050	53.31	-2.73	4.71
5100	55.36	-2.57	4.47
5150	54.24	-2.66	4.23

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Appendix : Measured Gain Performances Table Antenna 2/Cable 2

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
5200	46.64	-3.31	3.3
5250	47.08	-3.27	3.08
5300	52.86	-2.77	3.54
5350	46.51	-3.32	2.96
5400	44.2	-3.55	2.89
5450	49.22	-3.08	3.56
5500	45.25	-3.44	3.31
5550	48.8	-3.12	3.48
5600	47.07	-3.27	3.75
5650	41.86	-3.78	3.36
5700	47.18	-3.26	3.58
5750	49.63	-3.04	3.54
5800	36.37	-4.39	1.95
5850	36.73	-4.35	1.84
5900	43.08	-3.66	2.77
5950	43.44	-3.62	2.7
6000	37.4	-4.27	1.92
6050	45.45	-3.43	3.27
6100	43.37	-3.63	3.07
6150	41.01	-3.87	2.81
6200	42.43	-3.72	2.88
6250	42.3	-3.74	2.82
6300	45.97	-3.38	3.67
6350	48.73	-3.12	4.63
5200	46.64	-3.31	3.3
5250	47.08	-3.27	3.08
5300	52.86	-2.77	3.54
5350	46.51	-3.32	2.96

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
6600	56.53	-2.48	4.78
6650	47.25	-3.26	3.34
6700	38.65	-4.13	3.22
6750	34.61	-4.61	2.8
6800	40.09	-3.97	3.1
6850	48.54	-3.14	4.67
6900	41.77	-3.79	4.34
6950	34.39	-4.64	3.9
7000	36.02	-4.43	4.05
7050	39.17	-4.07	2.94
7100	35.19	-4.54	1.21
7150	34.04	-4.68	3.4
7200	35.27	-4.53	3.44
7250	37.07	-4.31	2.56
7300	42.9	-3.68	2.9
7350	43.29	-3.64	3.45
7400	41.61	-3.81	3.07
7450	40.06	-3.97	2.25
7500	40.07	-3.97	2.41
7550	42.11	-3.76	3.04
7600	40.98	-3.87	3.12
7650	36.96	-4.32	2.85
7700	41.36	-3.83	3.73
7750	50.51	-2.97	3.7
7800	45.14	-3.45	3.43
7850	43.63	-3.6	4.06
7900	43.73	-3.59	3.52
7950	36.84	-4.34	2.71
8000	37.9	-4.21	4.11

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Appendix : Measured Gain Performances Table Antenna 3/Cable 3

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
500	15.37	-8.13	-1.4
510	14.65	-8.34	-3.91
520	16.85	-7.73	-1.43
530	18.39	-7.35	-0.19
540	30.72	-5.13	0.57
550	30	-5.23	2.07
560	43.12	-3.65	3.62
570	43.57	-3.61	1.65
580	44.66	-3.5	2.3
590	42.22	-3.74	3.57
600	38.17	-4.18	1.05
610	44.39	-3.53	3.54
620	40.36	-3.94	3.61
630	37.6	-4.25	3.65
640	32.4	-4.89	2.13
650	28.65	-5.43	1.78
660	32.93	-4.82	1.35
670	34.32	-4.65	2.34
680	27.06	-5.68	1.04
690	28.06	-5.52	1.14
700	27.37	-5.63	1.36
710	27.84	-5.55	1.17
720	25.55	-5.93	1.24
730	20.98	-6.78	0.75
740	18.82	-7.25	1.16
750	16.44	-7.84	0.77
760	16.37	-7.86	0.1
770	15.61	-8.07	0.07
780	14.67	-8.33	0.12
790	16.22	-7.9	0.41
800	19.4	-7.12	0.6

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
810	18.44	-7.34	1.05
820	14.66	-8.34	-0.1
830	14.09	-8.51	0.91
840	13.53	-8.69	0.46
850	13.67	-8.64	0.04
860	14.05	-8.52	0.2
870	13.79	-8.6	0.42
880	13.71	-8.63	0.58
890	13.65	-8.65	0.68
900	14.01	-8.54	0.59
910	14.38	-8.42	0.08
920	15.27	-8.16	0.1
930	15.6	-8.07	0.99
940	16.53	-7.82	1.12
950	15.27	-8.16	0.14
1000	19.25	-7.16	2.21
1050	20.24	-6.94	2.23
1100	22.43	-6.49	2.46
1150	27.36	-5.63	2.92
1200	47.56	-3.23	7.52
1250	46.56	-3.32	6.83
1300	51.52	-2.88	8.35
1350	54.25	-2.66	7.96
1400	65.36	-1.85	8.47
1450	63.17	-2	9.09
1500	60.82	-2.16	9.05
1500	60.82	-2.16	9.05
1550	58.84	-2.3	8.77
1600	55.76	-2.54	8.04
1650	68.89	-1.62	8.96
1700	76.14	-1.18	8.73
1750	59.86	-2.23	6.39
1800	53.53	-2.71	5.95

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Appendix : Measured Gain Performances Table Antenna 3/Cable 3

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1850	52.42	-2.8	5.42
1900	57.46	-2.41	6.12
1950	72.78	-1.38	6.73
2000	67.57	-1.7	6.93
2050	54.54	-2.63	6.13
2100	61.53	-2.11	7.12
2150	60.09	-2.21	6.76
2200	58.23	-2.35	6.52
2250	53.46	-2.72	6.3
2300	51.73	-2.86	7
2350	45.95	-3.38	7.12
2400	41.95	-3.77	7.42
2450	37.78	-4.23	7.63
2500	39.31	-4.06	8.37
2500	39.31	-4.06	8.37
2550	40.86	-3.89	8.94
2600	38.64	-4.13	8.9
2650	37.8	-4.23	8.28
2700	38.01	-4.2	8.2
2750	41.95	-3.77	7.88
2800	45.07	-3.46	7.61
2850	42.52	-3.71	6.92
2900	48.26	-3.16	7.25
2950	49.76	-3.03	6.98
3000	44.62	-3.5	6.1
3050	54.48	-2.64	6.87
3100	56.53	-2.48	6.5
3150	49.34	-3.07	5.72
3200	47.59	-3.23	5.96
3250	56.41	-2.49	6.37

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
3300	48.32	-3.16	4.92
3350	52.71	-2.78	5.68
3400	54.75	-2.62	5.56
3450	48.94	-3.1	4.25
3500	54.99	-2.6	5.02
3500	54.99	-2.6	5.02
3550	55.38	-2.57	5.72
3600	59.58	-2.25	6.17
3650	79.8	-0.98	7.66
3700	92.45	-0.34	8.16
3750	78.28	-1.06	7.24
3800	72.31	-1.41	6.72
3850	73.15	-1.36	6.79
3900	72.8	-1.38	6.68
3950	85.73	-0.67	7.38
4000	66.73	-1.76	6.47
4050	62.87	-2.02	6.07
4100	67.22	-1.73	6.16
4150	66.57	-1.77	5.81
4200	58.8	-2.31	4.99
4250	65.51	-1.84	5.75
4300	75.89	-1.2	6.67
4350	68.99	-1.61	6.27
4400	75.55	-1.22	6.62
4450	71.06	-1.48	6.7
4500	65.14	-1.86	6.52
4500	65.14	-1.86	6.52
4550	61.37	-2.12	6.28
4600	54.35	-2.65	5.91
4650	52.81	-2.77	5.71
4700	49.43	-3.06	5.22
4750	48.59	-3.13	4.93
4800	52.73	-2.78	5.09
4850	49.81	-3.03	4.67
4900	52.54	-2.8	5.15
4950	52.19	-2.82	5.02
5000	48.72	-3.12	4.6

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Appendix : Measured Gain Performances Table Antenna 3/Cable 3

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
5050	50.08	-3	4.63
5100	51.39	-2.89	4.43
5150	54.26	-2.65	4.64
5200	55.08	-2.59	4.4
5250	49.11	-3.09	3.88
5300	48.13	-3.18	3.38
5350	50.68	-2.95	3.76
5400	55.81	-2.53	4.11
5450	59.07	-2.29	4.39
5500	54.53	-2.63	4.27
5500	54.53	-2.63	4.27
5550	56.51	-2.48	4.38
5600	60.84	-2.16	5.23
5650	60.68	-2.17	5.47
5700	54.61	-2.63	5.02
5750	49.82	-3.03	4.53
5800	47.55	-3.23	4.19
5850	54.75	-2.62	4.76
5900	52.63	-2.79	4.42
5950	55.35	-2.57	4.36
6000	46.78	-3.3	3.44
6050	51.07	-2.92	3.3
6100	48.66	-3.13	2.87
6150	50.1	-3	3.25
6200	49.49	-3.05	3.27
6250	47.73	-3.21	3.36
6300	48.84	-3.11	3.5
6350	49.31	-3.07	3.89
6400	49.47	-3.06	3.74
6450	58.36	-2.34	4.6

Passive Test For 400-8000			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
6500	67.13	-1.73	4
6500	67.13	-1.73	4
6550	62.93	-2.01	3.92
6600	52.74	-2.78	3.37
6650	42.51	-3.71	4.1
6700	35.46	-4.5	3.62
6750	33.46	-4.75	2.8
6800	35.38	-4.51	4.38
6850	45.76	-3.4	5.74
6900	51.58	-2.88	5.25
6950	52.07	-2.83	5.19
7000	49.13	-3.09	4.96
7050	43.02	-3.66	4.59
7100	40.93	-3.88	4.35
7150	41.19	-3.85	3.65
7200	38.98	-4.09	4.56
7250	35.37	-4.51	4.89
7300	33.92	-4.7	4.65
7350	38.52	-4.14	4.62
7400	44.15	-3.55	4.3
7450	43.78	-3.59	3.11
7500	43.98	-3.57	3.06
7500	43.98	-3.57	3.06
7550	47.47	-3.24	4.15
7600	48.48	-3.14	5.39
7650	41.43	-3.83	5.29
7700	38.25	-4.17	4.5
7750	45.5	-3.42	4.33
7800	49.19	-3.08	5.22
7850	46.16	-3.36	5.67
7900	40.7	-3.9	5.31
7950	39.21	-4.07	5.03
8000	37.97	-4.21	4.39

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Appendix : Measured Gain Performances Table Antenna 4/Cable 4

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
500	17.55	-2.03
510	17.91	-0.99
520	24.12	-0.65
530	25.81	-0.68
540	45.6	1.4
550	17.88	-3.49
560	28.31	-0.31
570	46.42	2.28
580	57.04	4.03
590	50.78	4.59
600	44.73	4.48
610	47.17	5.58
620	50.31	5.31
630	47.45	5.02
640	45.77	4.93
650	35.69	3.27
660	33.89	2.3
670	28.85	1.24
680	27.43	0.17
690	27.74	0.52
700	26.17	0.97
710	22.68	0.66
720	20.68	0.98
730	18.42	0.61
740	16.6	0.54
750	15.76	0.39
760	18.13	0.8
770	19.78	1.1
780	18.09	1.28
790	19.79	1.86
800	20.67	1.88
810	18.71	1.72
820	16.07	0.08

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
830	14.42	0.02
840	13.97	-1.45
850	10.84	0.29
860	11.51	0.88
870	11.59	0.34
880	13.02	0.08
890	13.71	0.8
900	13.94	1.36
910	13.94	1.52
920	13.11	1.47
930	14.21	1.26
940	15.44	1.05
950	18.17	1.7
1000	20.11	1.8
1050	20.93	1.56
1100	20.56	3.4
1150	28.23	5.14
1200	43.8	6
1250	39.62	5.99
1300	55.63	8.12
1350	60.22	8.1
1400	54.73	8.8
1450	58.66	9.61
1500	61.3	8.59
1500	61.3	8.59
1550	59.41	7.48
1600	59.86	8.47
1650	64.59	8.43
1700	78.13	8.71
1750	61.81	6.18
1800	54.97	5.26
1850	57.19	6.56
1900	62.91	7.7
1950	69.66	8.33
2000	64.36	8.01
2050	54.5	7.28

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Appendix : Measured Gain Performances Table Antenna 4/Cable 4

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
2100	67.13	7.63
2150	58.9	6.35
2200	50.25	7.11
2250	51.37	7.41
2300	53.65	7.48
2350	42.86	7.72
2400	37.65	7.49
2450	34.34	7.71
2500	36.37	8.36
2500	36.37	8.36
2550	36.74	8.27
2600	38.13	7.75
2650	37.08	7.85
2700	35.54	7.09
2750	36.79	6.35
2800	38.96	5.34
2850	37.14	3.85
2900	38.52	3.16
2950	35.16	3.4
3000	29.76	3.15
3050	40.13	4.67
3100	44.18	5.95
3150	38.9	5.67
3200	41.15	5.86
3250	50.8	6.49
3300	46.59	5.09
3350	51.66	5.03
3400	52.83	4.62
3450	47.09	4.47
3500	53.93	5.55
3500	53.93	5.55
3550	54.87	5.94
3600	55.29	5.88
3650	71.07	7.05
3700	79.81	7.5
3750	65.19	6.75

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
3800	58.96	6.49
3850	61.04	6.37
3900	65.29	6.63
3950	84.57	7.24
4000	69.48	6.32
4050	72.26	6.54
4100	82.54	7.28
4150	84.01	7.47
4200	76.53	7.05
4250	83.92	7.32
4300	94.91	7.85
4350	82.11	7.39
4400	85.03	7.9
4450	85.43	8.42
4500	76.66	8.2
4500	76.66	8.2
4550	69.24	7.76
4600	60.63	7.29
4650	65.46	7.63
4700	65.13	7.28
4750	63.24	6.99
4800	60.17	6.37
4850	55.48	6.02
4900	60.34	6.25
4950	56.33	5.88
5000	52.29	5.38
5050	57.55	5.55
5100	62.76	5.32
5150	60.6	5.06
5200	54.86	4.31

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Appendix : Measured Gain Performances Table Antenna 4/Cable 4

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
5250	55.73	4.63
5300	62.7	5.48
5350	68.18	5.81
5400	62.06	5.52
5450	57.59	4.95
5500	60.16	4.71
5500	60.16	4.71
5550	66.97	5.14
5600	61.91	4.75
5650	61.01	4.85
5700	68.4	5.39
5750	79.27	5.99
5800	69.72	5.04
5850	61.17	4.66
5900	56.29	4.41
5950	72.54	5.33
6000	72.47	5.29
6050	70.75	5.46
6100	56.6	4.47
6150	56.82	3.98
6200	56.95	3.96
6250	56.21	4.24
6300	60.6	5.06
6350	66.96	5.72
6400	67.91	5.57
6450	77.44	8.23
6500	75.75	6.53
6500	75.75	6.53
6550	79.5	6.18
6600	74.27	5.72
6650	62.1	4.34
6700	53.98	4.07

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
6750	47.94	3.32
6800	50.9	4.22
6850	63.32	6.39
6900	65.07	6.59
6950	57.05	5.41
7000	49.81	3.91
7050	44.17	3.21
7100	39.98	2.24
7150	41.89	1.49
7200	43.23	2.43
7250	38.93	2.37
7300	38.26	2.76
7350	44.59	3.02
7400	50.36	3.84
7450	40.6	2.78
7500	37.05	2.09
7500	37.05	2.09
7550	41.14	1.99
7600	46.16	2.98
7650	45.64	4.14
7700	48.28	4.88
7750	55.33	5.51
7800	51.82	4.64
7850	38.81	2.84
7900	34.08	3.09
7950	37.26	3.21
8000	36.67	3.32

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Appendix : Measured Gain Performances Table Antenna 5/Cable 5

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
500	36.69	2.43
510	35.25	2.55
520	38.87	2.06
530	37.39	2.31
540	48.51	2.74
550	65.61	2.87
560	78.23	3
570	64.54	2.02
580	62.23	3.17
590	66.69	3.29
600	52.04	2.33
610	55.76	2.1
620	72.25	2.93
630	65.09	3.52
640	46.74	2.48
650	29.51	0.44
660	20.42	-1.41
670	15.14	-3.19
680	7.9	-5.98
690	6.34	-6.11
700	4.96	-6.13
710	4.34	-6.98
720	3.68	-8.52
730	5.96	-4.83
740	7.37	-5.58
750	6	-7.18
760	7.74	-4.88
770	7.93	-4.15
780	7.44	-4.23
790	7.21	-4.73
800	7.76	-3.82
810	8.07	-2.95
820	7.55	-3.94

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
830	6.95	-4.68
840	6.07	-4.86
850	5.36	-5.1
860	7.86	-4.29
870	12.14	-2.55
880	16.68	-1.13
890	20.42	-0.59
900	24.75	0.44
910	26.95	1.04
920	30.13	1.93
930	32.01	2.31
940	32.57	2.41
950	30.89	3.06
1000	35.3	3.98
1050	40.49	5.35
1100	47.15	4.41
1150	22.87	0.77
1200	12.95	-0.02
1250	19.14	0.89
1300	33.31	2.68
1350	34.44	3.92
1400	43.85	4.8
1450	50.45	5.48
1500	27.78	2.23
1500	27.78	2.23
1550	33.28	3.04
1600	16.58	-0.45
1650	15.76	0.82
1700	20.58	0.9
1750	18.09	0.88
1800	15.45	-1.8
1850	17.26	-0.81
1900	24.54	0.1
1950	39.39	3.18
2000	47.15	4.24

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Appendix : Measured Gain Performances Table Antenna 5/Cable 5

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
2050	47.07	5.3
2100	62.68	7.24
2150	64.84	7.6
2200	65.06	7.55
2250	61.64	6.6
2300	59.74	5.82
2350	62.07	5.87
2400	56.34	5.61
2450	53.49	6.16
2500	59.81	6.65
2500	59.81	6.65
2550	58.31	6.4
2600	53.14	5.71
2650	44.17	6.49
2700	46.7	6.18
2750	55.74	5.46
2800	58.78	6.22
2850	51.78	5.44
2900	54.37	5.37
2950	53.33	4.85
3000	51.12	4.76
3050	64.85	5.33
3100	71.31	6.54
3150	59.03	6.41
3200	51.21	4.95
3250	68.56	6.6
3300	61.91	6.51
3350	66.44	5.86
3400	64.55	5.97
3450	54.66	6.1
3500	57.47	5.79
3500	57.47	5.79
3550	54.17	5.59
3600	60.37	5.64
3650	77.91	5.67
3700	84.53	6.13
3750	73.08	5.69

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
3800	69.78	5.12
3850	70.22	6.21
3900	73.38	6.8
3950	93.83	6.95
4000	80.06	6.36
4050	81.4	6.29
4100	89.29	7.04
4150	88.48	7.02
4200	79.27	6.36
4250	90.61	7.37
4300	98.56	7.61
4350	77.05	5.69
4400	83.16	6.35
4450	84.83	6.38
4500	77.77	5.37
4500	77.77	5.37
4550	68.59	4.36
4600	55.02	3.48
4650	51.53	4.33
4700	51.37	4.28
4750	51.72	4.42
4800	49.87	3.89
4850	38.21	3.06
4900	42.98	4.37
4950	46.33	4.88
5000	49.33	4.97
5050	57.27	5.04

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Appendix : Measured Gain Performances Table Antenna 5/Cable 5

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
5100	54.24	4.72
5150	45.7	3.71
5200	44.86	3.67
5250	50.95	4.29
5300	57.41	4.24
5350	54.35	3.63
5400	48.77	3.56
5450	49.58	4.06
5500	49.9	4.5
5500	49.9	4.5
5550	56.05	4.87
5600	58.31	4.49
5650	57.8	5.07
5700	53.71	4.9
5750	51.18	4.43
5800	49.96	4.24
5850	59.79	5.43
5900	64.18	5.94
5950	77.76	6.56
6000	69.12	5.65
6050	67.35	5.14
6100	59.15	3.47
6150	61.11	3.69
6200	62.8	4.2
6250	60.03	4.26
6300	61.18	4.29
6350	62.64	4.22
6400	67.25	4.56
6450	75.53	5.53
6500	83.11	5.83
6500	83.11	5.83
6550	79.83	5.2

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
6600	73.97	4.24
6650	76.12	4.77
6700	79.73	5.5
6750	77.82	5.9
6800	72.88	5.79
6850	74.86	6.05
6900	69.56	6.08
6950	59.16	5.45
7000	49	4.62
7050	41.2	4.09
7100	37.2	3.55
7150	34.35	2.67
7200	32.4	3
7250	30.44	3.54
7300	31.92	4.21
7350	35.35	4.68
7400	40.25	5.41
7450	32.07	4.34
7500	23.4	2.35
7500	23.4	2.35
7550	20.76	1.23
7600	22.79	1.36
7650	26.6	2.31
7700	32.66	3.79
7750	37.97	4.78
7800	33.61	4.31
7850	28.35	3.65
7900	29.16	4.02
7950	34.54	4.48
8000	33.92	4.43

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Appendix : Measured Gain Performances Table Antenna 6/Cable 6

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
500	10.24	-4.13
510	18.97	-1.53
520	18.54	-0.84
530	24.53	0.09
540	31.88	-0.2
550	56.25	2.66
560	82.98	3.84
570	68.82	2.32
580	63.66	2.37
590	49.62	0.69
600	71.91	3.28
610	82.82	3.59
620	75.87	2.93
630	52.72	0.93
640	53.38	2.03
650	34.86	0.08
660	30.26	-0.15
670	20.1	-0.26
680	11.52	-2.87
690	9.09	-3.49
700	7.17	-6.02
710	5.29	-7.88
720	4.41	-8.42
730	5.75	-6.57
740	6.34	-5.72
750	5.83	-5.44
760	6.85	-4.04
770	8.15	-3.85
780	10.72	-3.36
790	13.19	-2.72
800	17.74	-0.92

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
810	14.3	-2.11
820	11.75	-3.39
830	13.54	-2.12
840	11.61	-3.35
850	12.61	-3.51
860	11.91	-5.17
870	21.88	-0.5
880	24.78	0.18
890	26.08	1.19
900	27.25	1.45
910	25.96	0.67
920	26.17	1.75
930	23.54	2.16
940	23.36	2.34
950	25.92	1.86
1000	29.82	1.88
1050	34.69	2.15
1100	47.54	3.89
1150	42.15	4.55
1200	10.71	-1.86
1250	18.11	-0.06
1300	21.68	1.14
1350	23.05	2.29
1400	24	2.58
1450	37.6	3.93
1500	13.59	-0.53
1500	13.59	-0.53
1550	36.22	3.69
1600	20.91	1.42
1650	18.92	0.07
1700	32.68	3.01
1750	35.96	4.56
1800	30.39	3.21
1850	23.2	1.65
1900	31.23	2.71
1950	53.48	5.03
2000	54.82	6.3
2050	50.74	5.53

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Appendix : Measured Gain Performances Table Antenna 6/Cable 6

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
2100	67.52	6.91
2150	66.55	7.26
2200	62.56	7.65
2250	57.29	6.85
2300	54.27	6.5
2350	59.41	7.73
2400	54.49	7.38
2450	54.41	6.86
2500	63.07	7
2500	63.07	7
2550	64.16	6.09
2600	58.58	4.81
2650	51.24	4.99
2700	47.7	6.36
2750	54.69	5.87
2800	58.56	6.36
2850	56.1	5.05
2900	59.3	5.08
2950	59.18	5.08
3000	53.79	4.31
3050	66.36	5.87
3100	69.59	7.34
3150	56.98	6.67
3200	55.21	7.72
3250	62.86	7.26
3300	52.96	5.77
3350	61.19	6.53
3400	62.88	7.16
3450	49.07	5.27
3500	55.06	5.03
3500	55.06	5.03
3550	53.85	5.06
3600	58.98	5.09
3650	76.52	5.93
3700	84.91	6.3
3750	74.91	6.73
3800	72.99	6.3

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
3850	71.33	5.95
3900	72.92	6.38
3950	88.79	6.93
4000	71.74	5.73
4050	72.16	5.82
4100	79.7	6.02
4150	78.26	6.04
4200	65.7	4.94
4250	69.21	5.62
4300	79.17	6.11
4350	68.2	5.02
4400	73.55	4.75
4450	66.97	4.73
4500	58.09	4.6
4500	58.09	4.6
4550	49.91	3.43
4600	41.16	1.86
4650	36.47	2.16
4700	38.55	2.54
4750	42.89	3.15
4800	42.83	3.2
4850	32.66	2.43
4900	36.01	2.67
4950	40.66	3.23
5000	42.9	3.77
5050	40.96	3.4
5100	37.52	2.63
5150	39.52	2.43

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Appendix : Measured Gain Performances Table Antenna 6/Cable 6

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
5200	44.02	2.86
5250	38.57	2.01
5300	34.46	1.4
5350	34.94	1.11
5400	41.47	2.38
5450	47.32	3.39
5500	45.87	3.7
5500	45.87	3.7
5550	48.69	4.18
5600	50.53	4.47
5650	51.02	4.57
5700	49.62	4.74
5750	46.58	4.33
5800	43.4	4.04
5850	51.41	4.55
5900	55.02	4.01
5950	57.56	3.83
6000	51.06	3.53
6050	56.13	4.16
6100	54.24	3.98
6150	54.65	3.41
6200	51.38	3.3
6250	52.29	3.95
6300	54.63	4.38
6350	57.21	4.6
6400	53.37	4.45
6450	51.11	4.83
6500	59.92	5.5
6500	59.92	5.5
6550	62.96	5.8
6600	59.43	5.5
6650	59.16	5.87
6700	60.64	5.96

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
6750	55.88	5.09
6800	54.33	4.51
6850	54.82	3.91
6900	43.32	2.53
6950	33.11	1.4
7000	29.97	1.22
7050	33.15	1.54
7100	34.16	1.7
7150	30.42	1.8
7200	28.2	2.02
7250	26.42	3.02
7300	21.44	2.38
7350	16.95	1.41
7400	18.31	2.41
7450	21.46	3.62
7500	25.48	4.15
7500	25.48	4.15
7550	19.62	2.74
7600	15.24	1.29
7650	15.78	1.61
7700	21.95	2.72
7750	30.29	4.23
7800	25.4	3.03
7850	21.07	1.63
7900	24.82	2.05
7950	29.4	2.2
8000	23.14	0.04

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Appendix : Measured Gain Performances Table

Antenna 7/Cable 7

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
500	33.57	-0.1
510	35.33	0.47
520	36.25	0.65
530	32.18	-0.7
540	34.03	0.09
550	35.33	1.3
560	35.4	1.79
570	33.32	3.02
580	42.92	3.96
590	54.72	5.26
600	55.87	4.59
610	61.35	4.28
620	65.37	3.8
630	74.68	3.79
640	70.77	3.69
650	42.96	1.92
660	44.61	1.85
670	30.32	1.33
680	13.44	-2.43
690	9.9	-3.14
700	6.2	-5.49
710	4.9	-7.66
720	3.32	-7.92
730	5.72	-6.37
740	7.29	-6.24
750	5.28	-6.93
760	4.6	-6.52
770	3.86	-6.8
780	4.27	-5.82
790	4.84	-5.12
800	6.41	-4.29
810	6.91	-4.21

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
820	7.09	-3.67
830	7.74	-2.37
840	7.05	-2.32
850	6.85	-2.35
860	8.95	-2.5
870	15.69	0.12
880	20.19	1.43
890	22.13	1.89
900	25.73	2.31
910	29.7	3.11
920	32.73	3.76
930	39.46	3.96
940	39.26	3.39
950	40.44	2.82
1000	46.08	5.53
1050	46.63	5.82
1100	55.3	5.13
1150	47.71	3.39
1200	10.92	-1.3
1250	36.12	2.71
1300	22.81	1.81
1350	30.14	3.62
1400	31.34	2.48
1450	38.44	3.75
1500	17.03	-2.1
1500	17.03	-2.1
1550	38.08	3.21
1600	15.35	0.92
1650	12.09	0.06
1700	16.87	-0.98
1750	16.3	-0.57
1800	19.59	0.6
1850	23.4	2.19
1900	30.16	2.3
1950	45.65	4.95
2000	50.64	6.09
2050	48.37	5.94
2100	68.57	7.88
2150	74.47	8.21

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Appendix : Measured Gain Performances Table Antenna 7/Cable 7

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
2200	64.37	8.32
2250	60.35	6.95
2300	63.2	7.29
2350	61.31	6.74
2400	58.06	6.81
2450	58.58	6.43
2500	64.54	7.17
2500	64.54	7.17
2550	66.59	5.91
2600	56.19	6.08
2650	43.97	5.97
2700	52.76	5.11
2750	54.14	5
2800	59.31	5.22
2850	54.16	4.12
2900	56.15	3.79
2950	59.66	4.59
3000	53.91	5.2
3050	72.73	6.41
3100	75.13	6.14
3150	57.71	6.51
3200	57.8	5.58
3250	75.11	6.64
3300	62.56	6.14
3350	61.75	5.73
3400	63.07	6.18
3450	52.73	5.98
3500	60.23	6.65
3500	60.23	6.65
3550	60.57	6.58
3600	60.75	5.87
3650	71.75	6.74
3700	78.06	7.2
3750	67.75	6.03
3800	62.67	5.62
3850	64.64	6.13

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
3900	68.34	5.61
3950	83.62	6.51
4000	74.53	6.08
4050	76.56	6.37
4100	78.55	6.14
4150	75.31	5.69
4200	65.78	4.68
4250	68.24	5.15
4300	71.1	5.55
4350	55.67	4.78
4400	53.89	4.24
4450	43	3.45
4500	33.94	2.61
4500	33.94	2.61
4550	26.03	1.29
4600	19.53	1.18
4650	19.68	0.16
4700	22.61	1.43
4750	24.79	1.99
4800	26.3	2.36
4850	25.48	2.18
4900	27.24	2.19
4950	28.64	1.93
5000	30.75	2.49
5050	29.41	2.38
5100	30.05	3.1
5150	40.68	4.96
5200	37.17	4.6

Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

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Appendix : Measured Gain Performances Table Antenna 7/Cable 7

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
5250	31.18	3.74
5300	41.05	4.45
5350	48.68	4.77
5400	40.74	3.35
5450	43.34	3.38
5500	50	4.1
5500	50	4.1
5550	51.58	4.28
5600	49.28	3.79
5650	53.98	4.17
5700	53.14	4.49
5750	45.11	3.94
5800	45.73	4.48
5850	62.72	5.81
5900	50.01	5.01
5950	50.7	5.02
6000	58.53	5.13
6050	73.72	6.36
6100	64.27	5.32
6150	65.29	4.77
6200	64.07	4.2
6250	59.36	3.91
6300	65.1	4.51
6350	74.5	5.35
6400	67.22	4.72
6450	67.81	5.01
6500	77.83	5.33
6500	77.83	5.33
6550	68.82	4.57
6600	65.76	5.16
6650	66.78	5.67
6700	60.69	5.35
6750	52.77	4.9

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
6800	46.51	4.44
6850	47.49	4.48
6900	50.17	4.06
6950	41.1	2.69
7000	28.84	1.23
7050	27.56	1.03
7100	30.53	1.94
7150	26.46	2.05
7200	22.32	1.32
7250	20.73	0.82
7300	20.02	0.79
7350	20.73	0.83
7400	21.79	1.08
7450	15.78	0.06
7500	13.55	-0.66
7500	13.55	-0.66
7550	17.1	0.28
7600	19.45	0.78
7650	15.03	-0.51
7700	14.12	-1.37
7750	19.58	-1.02
7800	21.74	-0.79
7850	19.98	-0.89
7900	24.42	0.4
7950	27.02	0.7
8000	20.83	-0.43

Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

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Appendix : Measured Gain Performances Table Antenna 8/Cable 8

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
500	23.29	-1.15
510	30.55	-0.38
520	23.72	-2.61
530	27.9	-1.58
540	42.29	1.44
550	45.52	2.95
560	47.51	4.16
570	57.58	3.27
580	67.82	4.91
590	58.47	6.48
600	53.03	4.21
610	52.81	2.27
620	59.24	3.42
630	56.43	2.89
640	53.13	2.1
650	39.49	1.64
660	31.73	0.51
670	20.07	-2.07
680	9.05	-3.38
690	5.55	-6.56
700	4.43	-6.46
710	3.46	-9.13
720	2.48	-9.76
730	4.88	-5.54
740	4.88	-5.29
750	4.68	-6.21
760	4.23	-7.14
770	4.77	-6.72
780	5.91	-5.33
790	7.68	-3.91
800	12.75	-1.36
810	16.48	-0.77
820	16.88	-1.14

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
830	15.18	-0.25
840	12.55	-1.13
850	8.29	-3.3
860	8.32	-4.65
870	9.33	-4.38
880	10.79	-3.41
890	10.24	-2.83
900	11.53	-1.54
910	13.15	-0.51
920	15.7	-0.46
930	19.2	0.85
940	19.82	-0.38
950	22.01	-0.46
1000	37.08	2.8
1050	45.2	3.98
1100	43.8	4.24
1150	30.57	3.14
1200	10.93	-0.78
1250	18.51	0.63
1300	26.87	3.41
1350	30.18	3.27
1400	29.5	2.06
1450	38.35	4.32
1500	14.96	-1
1500	14.96	-1
1550	33.27	3.05
1600	16.9	0.21
1650	14.07	0.22
1700	40.65	4.77
1750	29.51	2.48
1800	20.89	2.09
1850	21.84	3.08
1900	33.32	3.88
1950	44.8	5.36
2000	44.12	4.81
2050	37.33	3.75
2100	60.86	6.43
2150	64.06	6.99

Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

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Appendix : Measured Gain Performances Table Antenna 8/Cable 8

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
2200	58.9	7.2
2250	61.54	7.03
2300	60.93	7.56
2350	62.38	8.43
2400	59.12	7.43
2450	57.88	7.22
2500	63.62	7.08
2500	63.62	7.08
2550	62.94	5.77
2600	57.59	6.2
2650	42.38	5.63
2700	51.33	6.62
2750	54.71	6.02
2800	60.11	5.02
2850	56.96	4.8
2900	60.04	5.42
2950	60.55	5.54
3000	53.78	4.18
3050	71	6.09
3100	72.4	7.28
3150	58.25	4.86
3200	56.6	5.08
3250	67.07	5.63
3300	56.87	5.06
3350	67.8	5.88
3400	60.67	4.91
3450	46.65	3.07
3500	54.75	4.2
3500	54.75	4.2
3550	53.92	4.34
3600	53.75	4.22
3650	71.93	5.21
3700	75.29	6.01
3750	66	5.25
3800	68.29	5.85
3850	71.57	4.92

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
3900	72.55	5.14
3950	91.7	5.63
4000	82.3	5.41
4050	81.76	5.26
4100	87.85	5.79
4150	79.47	5.92
4200	70.65	5.43
4250	79.4	5.63
4300	79.63	6.28
4350	66.58	5.76
4400	74.91	6.16
4450	68.74	5.4
4500	65.94	5.04
4500	65.94	5.04
4550	56.71	4.1
4600	43.46	4.33
4650	44.47	4.37
4700	39.32	4.34
4750	36.82	4.42
4800	40.45	4.82
4850	30.24	2.99
4900	35.63	3.22
4950	42.79	3.6
5000	37.24	2.63
5050	40.73	2.77
5100	45.55	3.14
5150	34.39	1.85
5200	40.01	2.36
5250	47.85	2.64
5300	38.69	2.07
5350	43.72	2.4
5400	51.4	3.26
5450	46.41	3.13
5500	48.1	3.39
5500	48.1	3.39

Maswell 9 in 1 8X8 MIMO Panel Antenna 530-8000MHz Cellular 5G 4G WiFi 7 WiFi 6E Bluetooth High Precision Survey GNSS

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Appendix : Measured Gain Performances Table Antenna 8/Cable 8

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
5550	52.96	3.98
5600	48.74	3.68
5650	52.81	3.98
5700	52.66	4.38
5750	47.56	3.67
5800	55.53	4.41
5850	60.01	5.08
5900	45.66	4.31
5950	64.22	6.04
6000	68.1	6.37
6050	64.81	6.27
6100	62.18	5.46
6150	65.28	5.74
6200	62.51	5.63
6250	61.45	5.49
6300	58.68	4.73
6350	63.4	5.01
6400	65.31	4.55
6450	58.37	3.9
6500	64.67	4.43
6500	64.67	4.43
6550	63.44	3.84
6600	60.12	3.69
6650	63.97	3.81
6700	62.02	3.93
6750	54.23	3.63
6800	51.17	3.95
6850	57.21	5.5
6900	48.36	4.95
6950	37.71	3.65

Passive Test For 400-8000		
Freq (MHz)	Effi (%)	Gain (dBi)
7000	44.06	4.22
7050	42.64	4.53
7100	31.57	3.36
7150	29.41	3.07
7200	30.77	2.74
7250	28.35	2.33
7300	23.34	2.03
7350	18.42	1.22
7400	24.71	1.95
7450	21.85	1.73
7500	13.12	-0.63
7500	13.12	-0.63
7550	20.27	1.29
7600	27.7	1.75
7650	15.4	-0.86
7700	18.63	-0.59
7750	27.67	1.35
7800	20.38	0.22
7850	24.68	1.16
7900	25.42	0.35
7950	26.52	-0.12
8000	39.55	2.77