

Attachment C

Antenna Beam Information, Patterns and Emission Designators

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Table 1. List of Emission Designators for Operational TT&C Communications System.

Orbit Altitude	UHF Downlink	S-Band Uplink	S-Band Downlink	X-Band Downlink
≥ 500 km	13K0F1D	100KG1D, 2M00G1D	86K0G1D, 750KG1D, 2M00G1D	9M30G1D, 10M0G1D
≥ 1000 km				
≥ 2000 km		100KG1D, 920KG1D	90K0G1D, 185KG1D, 550KG1D	4M40G1D
≥ 4000 km		640KG1D	40K0G1D, 130KG1D	4M00G1D
≥ 6000 km		400KG1D	22K0G1D, 80K0G1D	2M50G1D

Table 2. List of Emission Designators for Experimental Phased Array.

Orbit Altitude	S-Band Uplink	S-Band Downlink
≥ 500 km	1M70G1D, 5M00G1D	1M70G1D, 5M00G1D
≥ 4000 km	700KG1D	700KG1D
≥ 6000 km	400KG1D	400KG1D

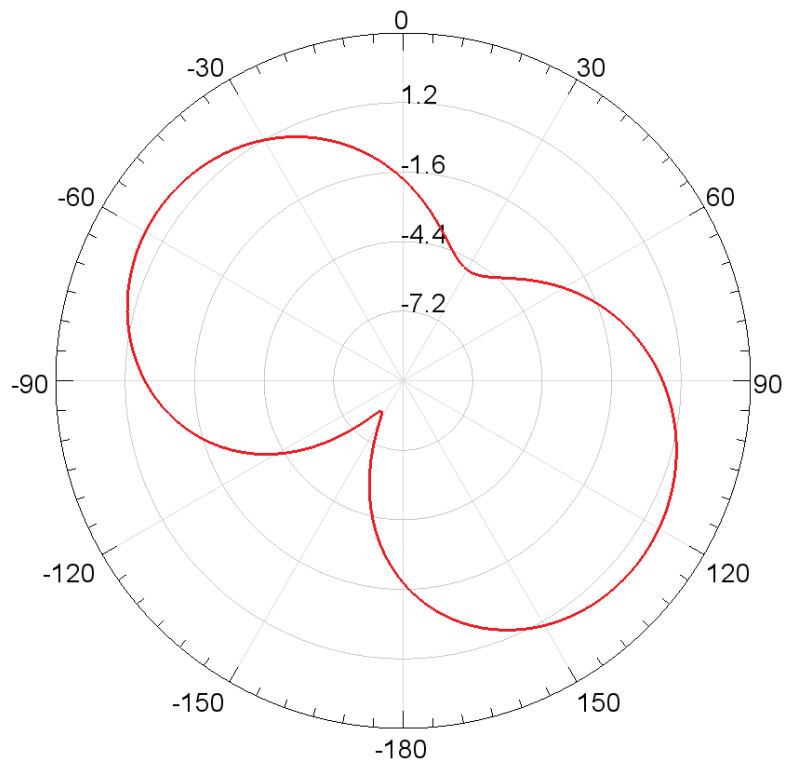
Table 3. List of Emission Designators for Experimental SDR.

Orbit Altitude	S-Band Uplink	S-Band Downlink	Ka-Band Uplink	Ka-Band Downlink
≥ 500 km	2M00G1D	2M00G1D	2M00G1D, 20M0G1D	2M00G1D, 20M0G1D
≥ 2000 km	850KG1D	850KG1D		
≥ 6000 km	200KG1D	200KG1D		

Table 3. UHF TT&C Downlink Antenna.

Model	Radiall MD24-021
Quantity	2
Purpose	Backup Telemetry Downlink
Frequency (MHz)	400.15 – 401 MHz
Peak Gain (dBi)	2.1 dBi
Half-power Beamwidth (deg)	110 deg, Omni-directional
Orientation	Nadir boresight
Polarization	Linear

Radiation Pattern (Phi = 0deg)



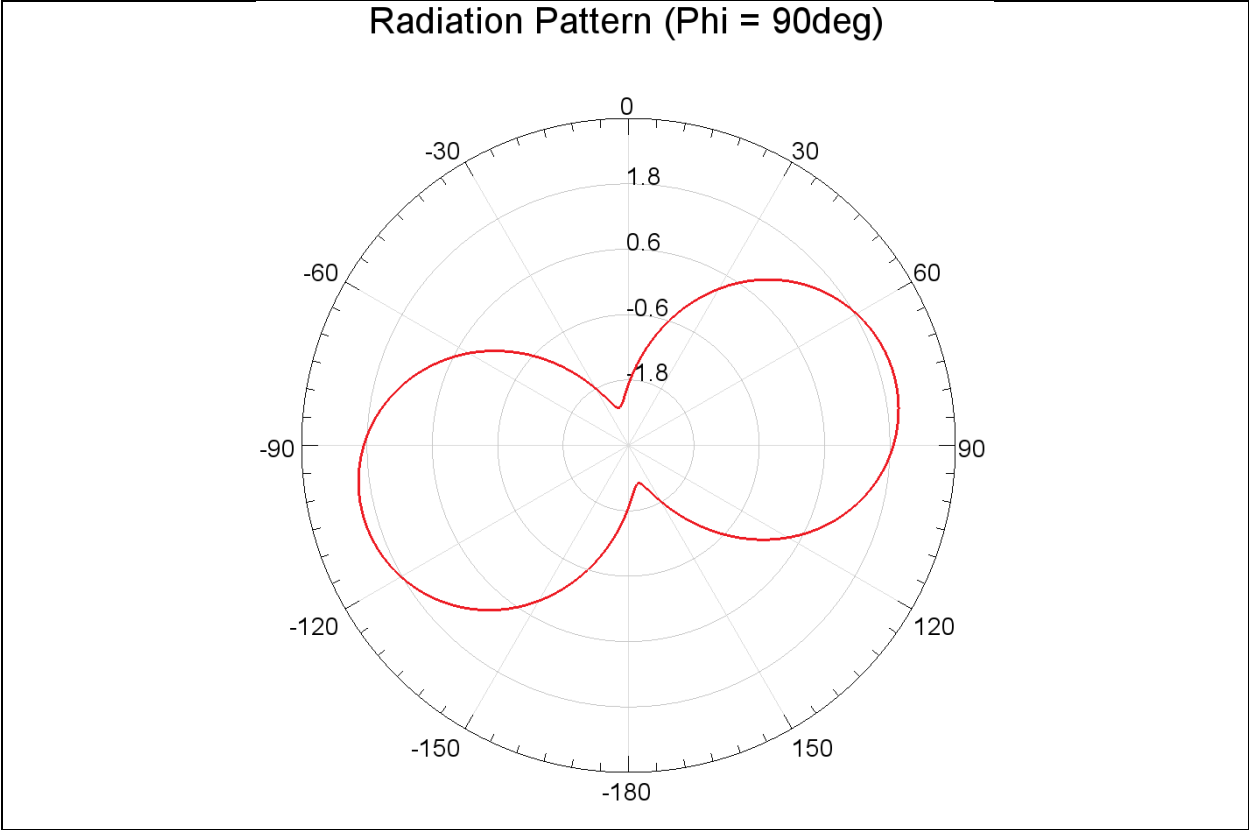
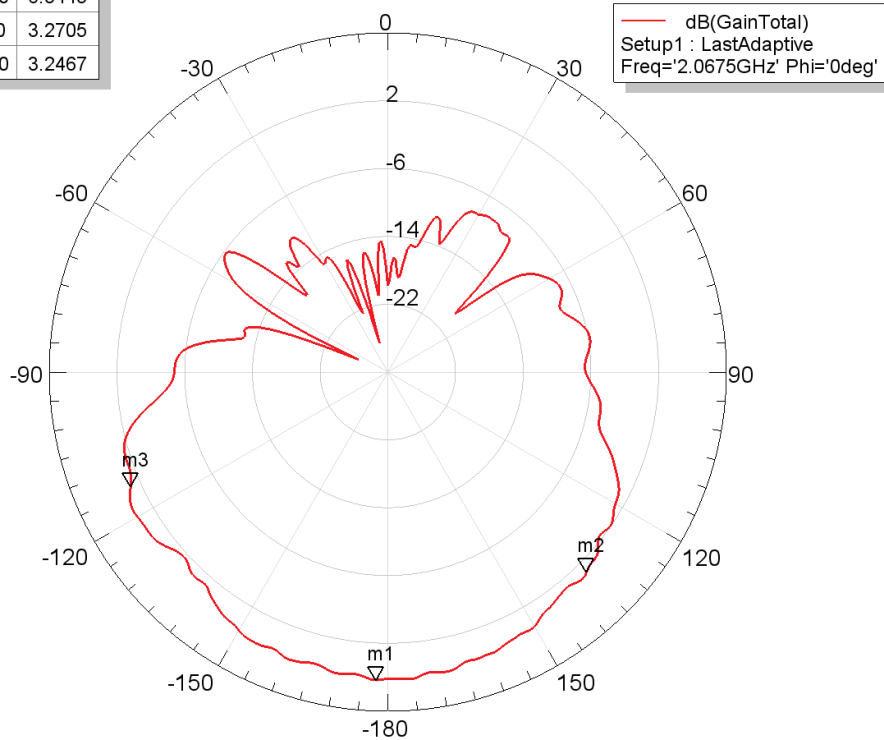


Table 4. S-Band TT&C Uplink and Downlink Antenna.

Model	PlaneWave PW2022-111	
Quantity	4	
Purpose	Primary TT&C Uplink	Primary TT&C Downlink
Frequency (MHz)	2025 – 2110 MHz	2200 – 2290 MHz
Peak Gain (dBi)	6.56 dBi	
Half-power Beamwidth (deg)	111 deg	
Orientation	Nadir boresight, Zenith boresight	
Polarization	RHCP	

Radiation Pattern (Phi = 0deg)

Name	Theta [deg]	Ang	Mag
m1	-178	-178.0000	6.3443
m2	135	135.0000	3.2705
m3	-114	-114.0000	3.2467



Radiation Pattern (Phi = 90deg)

Name	Theta [deg]	Ang	Mag
m1	171	171.0000	6.4402
m2	133	133.0000	3.3157
m3	-133	-133.0000	3.4037

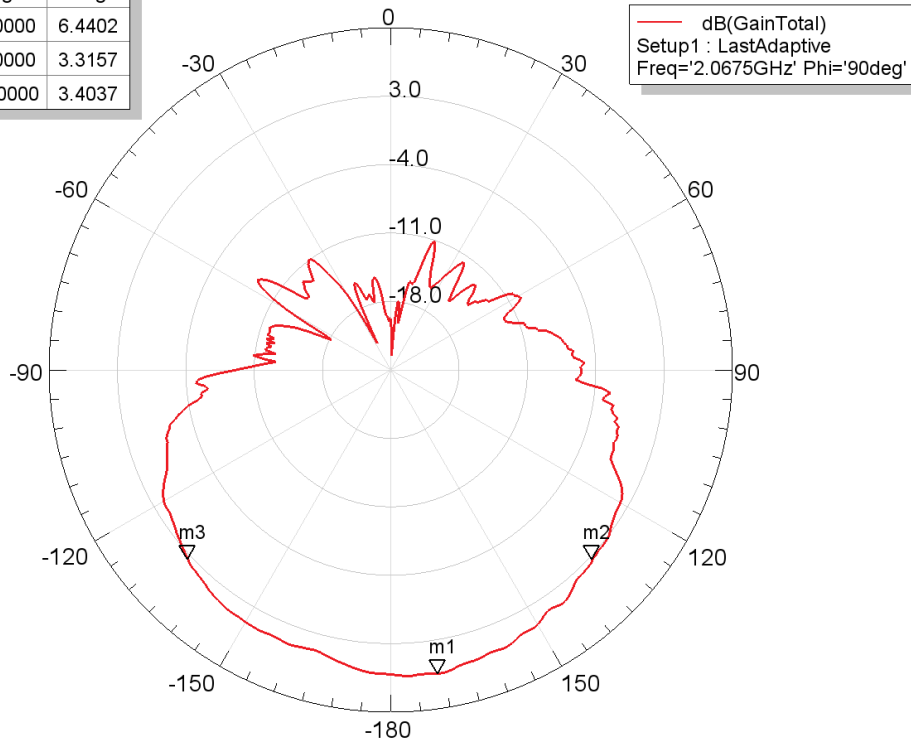
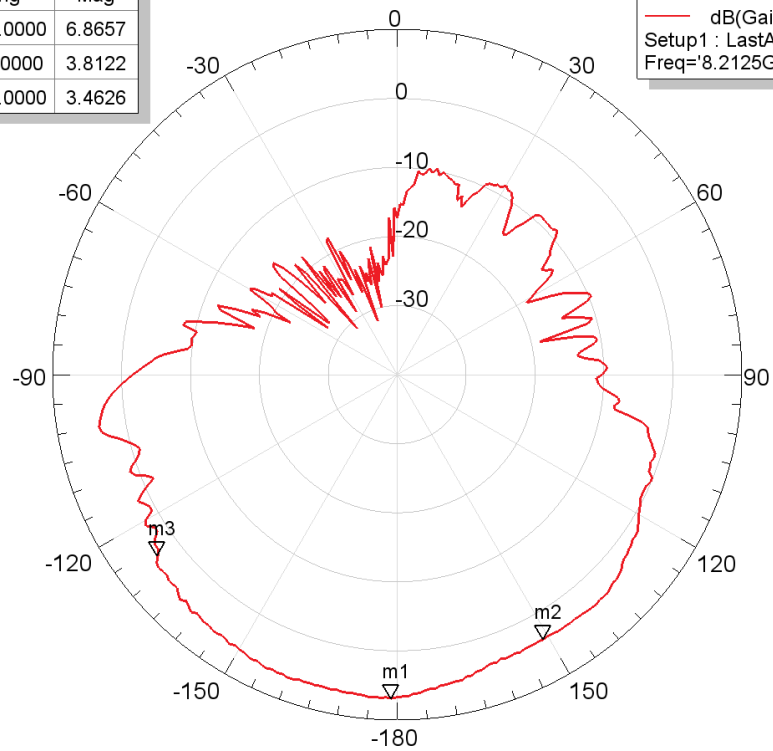


Table 5. X-Band TT&C Downlink Antenna.

Model	PlaneWave PW8282-100
Quantity	2
Purpose	Primary Data Downlink
Frequency (MHz)	8450 – 8500 MHz
Peak Gain (dBi)	8.12 dBi
Half-power Beamwidth (deg)	84 deg
Orientation	Nadir boresight
Polarization	RHCP

Radiation Pattern (Phi = 0deg)

Name	Theta [deg]	Ang	Mag
m1	-179	-179.0000	6.8657
m2	151	151.0000	3.8122
m3	-127.0000	-127.0000	3.4626



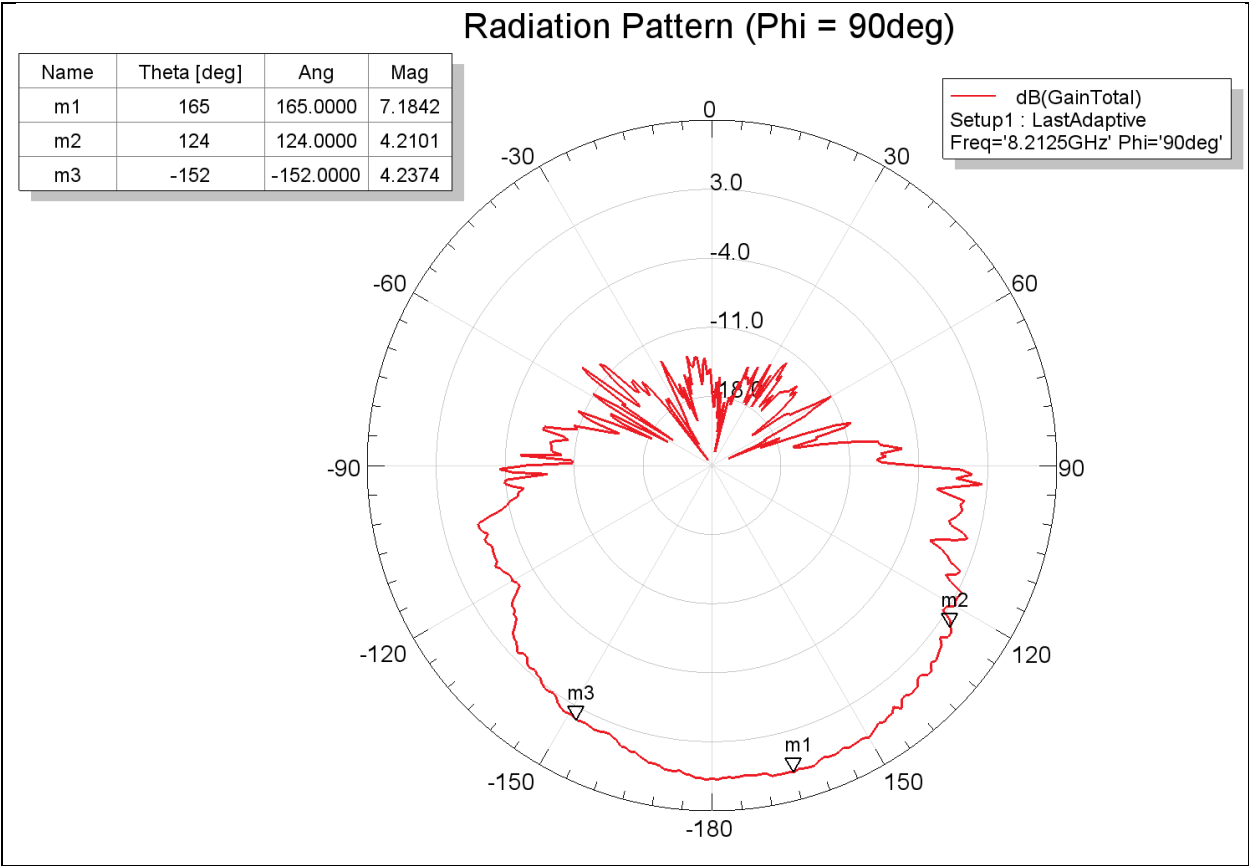


Table 6. Phased Array Uplink and Downlink Antenna.

Model	K2 Space BFA33	
Quantity	1	
Purpose	Experimental Uplink	Experimental Downlink
Frequency (MHz)	2025 – 2110 MHz	2200 – 2290 MHz
Peak Gain (dBi)	18.4 dBi	
Half-power Beamwidth (deg)	5.0 deg	
Orientation	Nadir boresight	
Polarization	RHCP, LHCP	

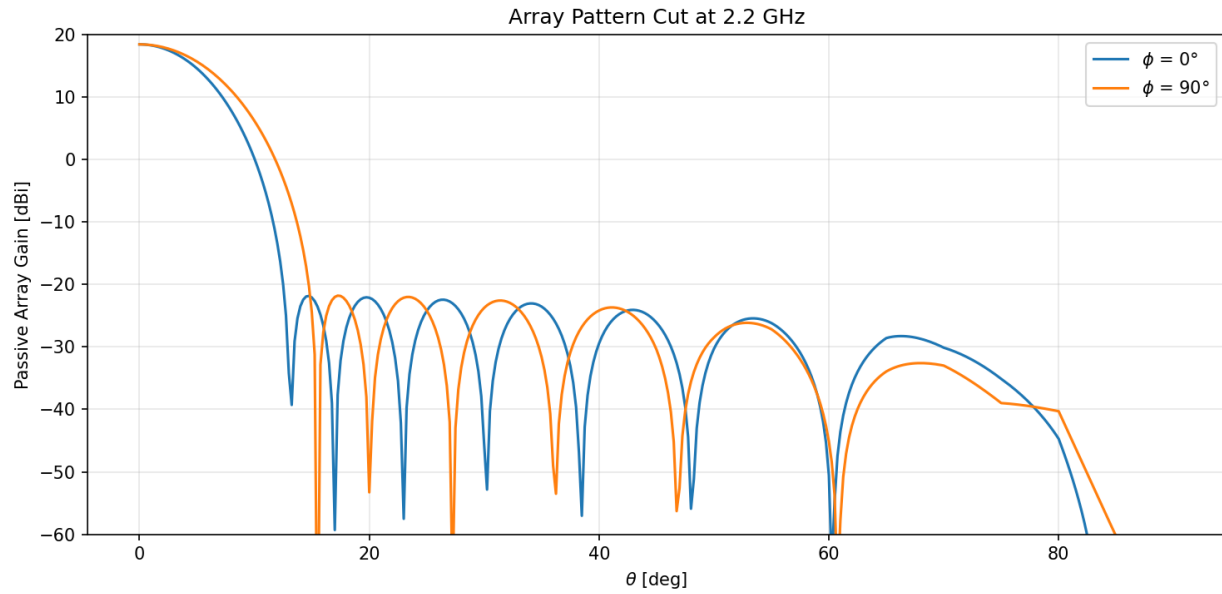
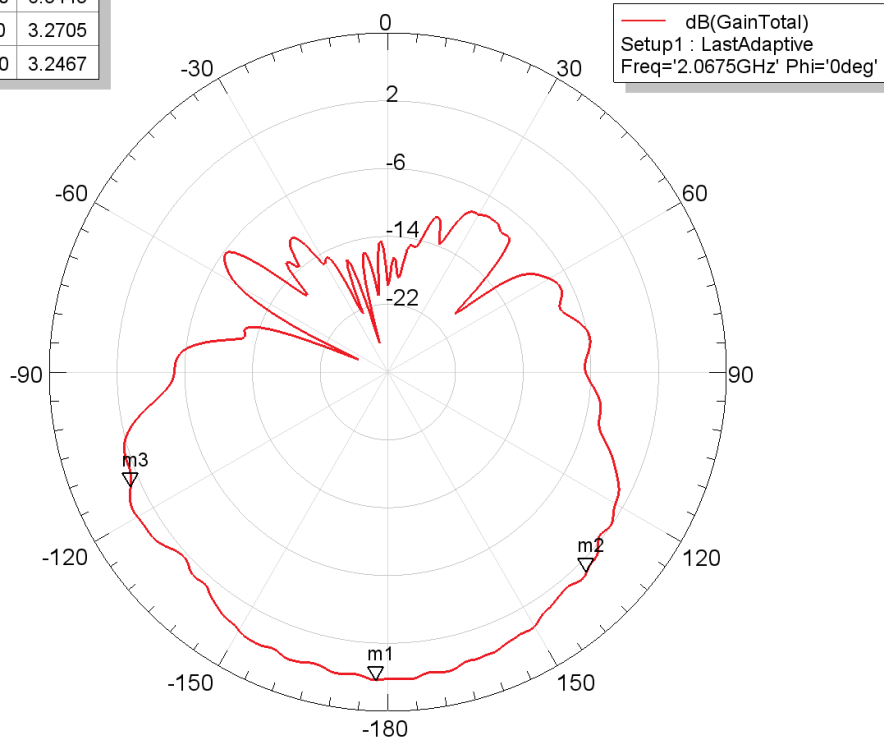


Table 7. SDR S-band Uplink and Downlink Antenna.

Model	PlaneWave PW2022-111	
Quantity	1	
Purpose	Experimental Uplink	Experimental Downlink
Frequency (MHz)	2025 – 2110 MHz	2200 – 2290 MHz
Peak Gain (dBi)	6.56 dBi	
Half-power Beamwidth (deg)	111 deg	
Orientation	Nadir boresight	
Polarization	RHCP	

Radiation Pattern (Phi = 0deg)

Name	Theta [deg]	Ang	Mag
m1	-178	-178.0000	6.3443
m2	135	135.0000	3.2705
m3	-114	-114.0000	3.2467



Radiation Pattern (Phi = 90deg)

Name	Theta [deg]	Ang	Mag
m1	171	171.0000	6.4402
m2	133	133.0000	3.3157
m3	-133	-133.0000	3.4037

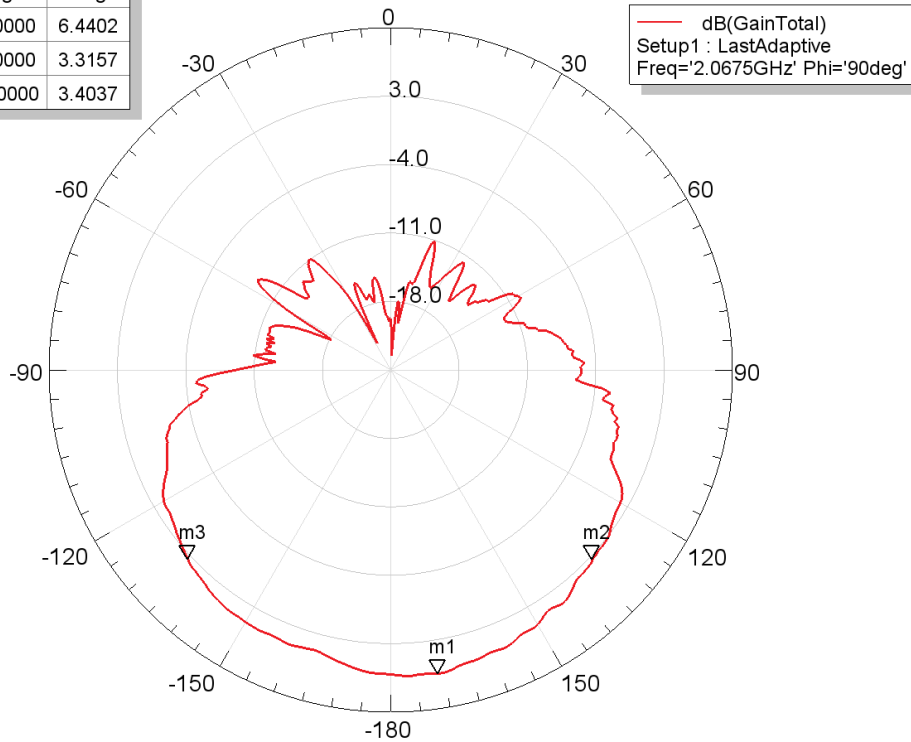
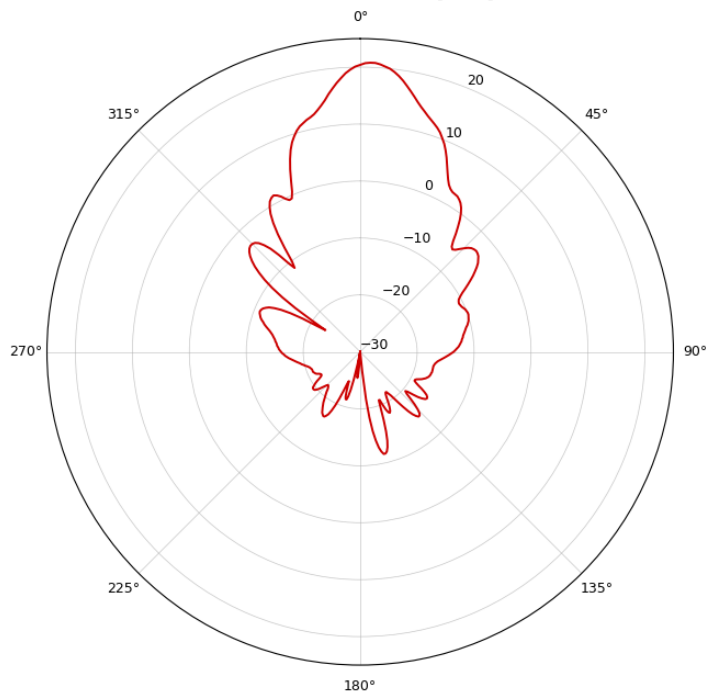


Table 8. SDR Ka-band Uplink and Downlink Antenna.

Model	Planewave PW3017-120	
Quantity	1	
Purpose	Experimental Uplink	Experimental Downlink
Frequency (MHz)	27.5 - 28.6 GHz	19.7 - 20.2 GHz
Peak Gain (dBi)	20	
Half-power Beamwidth (deg)	12	
Orientation	Nadir boresight	
Polarization	RHCP, LHCP	

Radiation Pattern ($\Phi = 0^\circ$)
19 GHz — GainRHCP [dBic]



Radiation Pattern ($\Phi = 0^\circ$)
27.75 GHz — GainRHCP [dBic]

