ATTACHMENT A

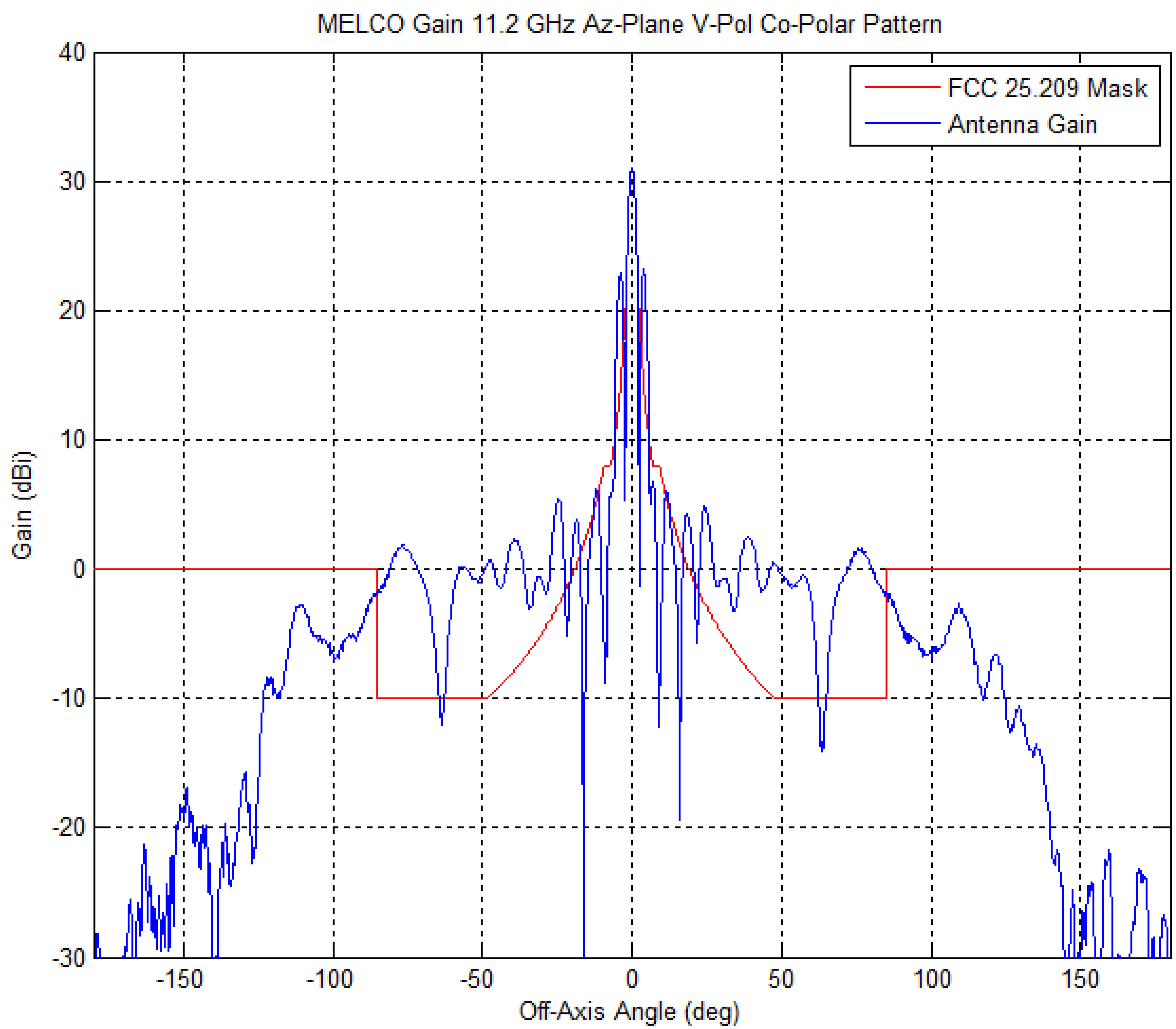


Fig. 1 MELCO Gain 11.2 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern

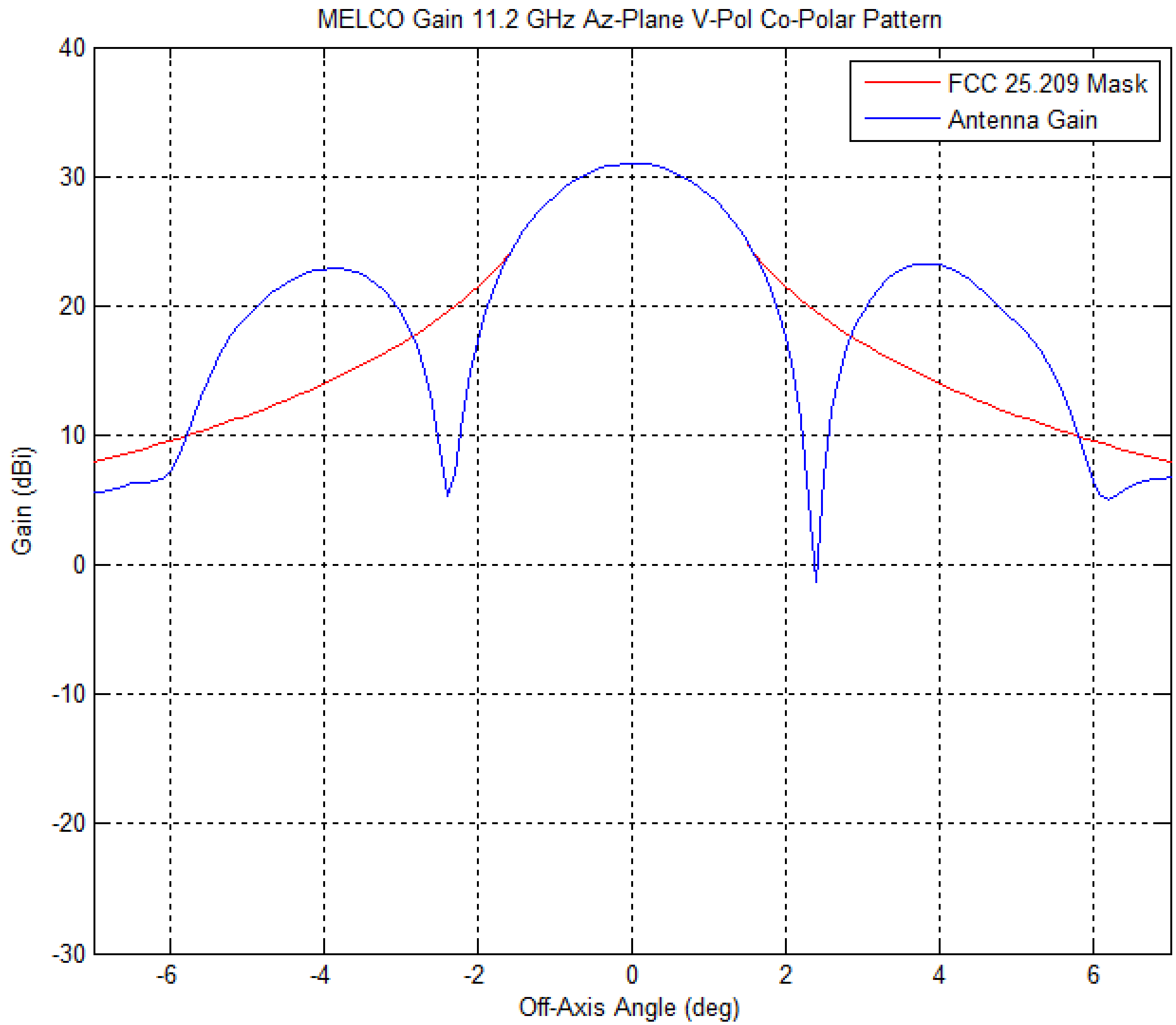


Fig. 2 MELCO Gain 11.2 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern (detail)

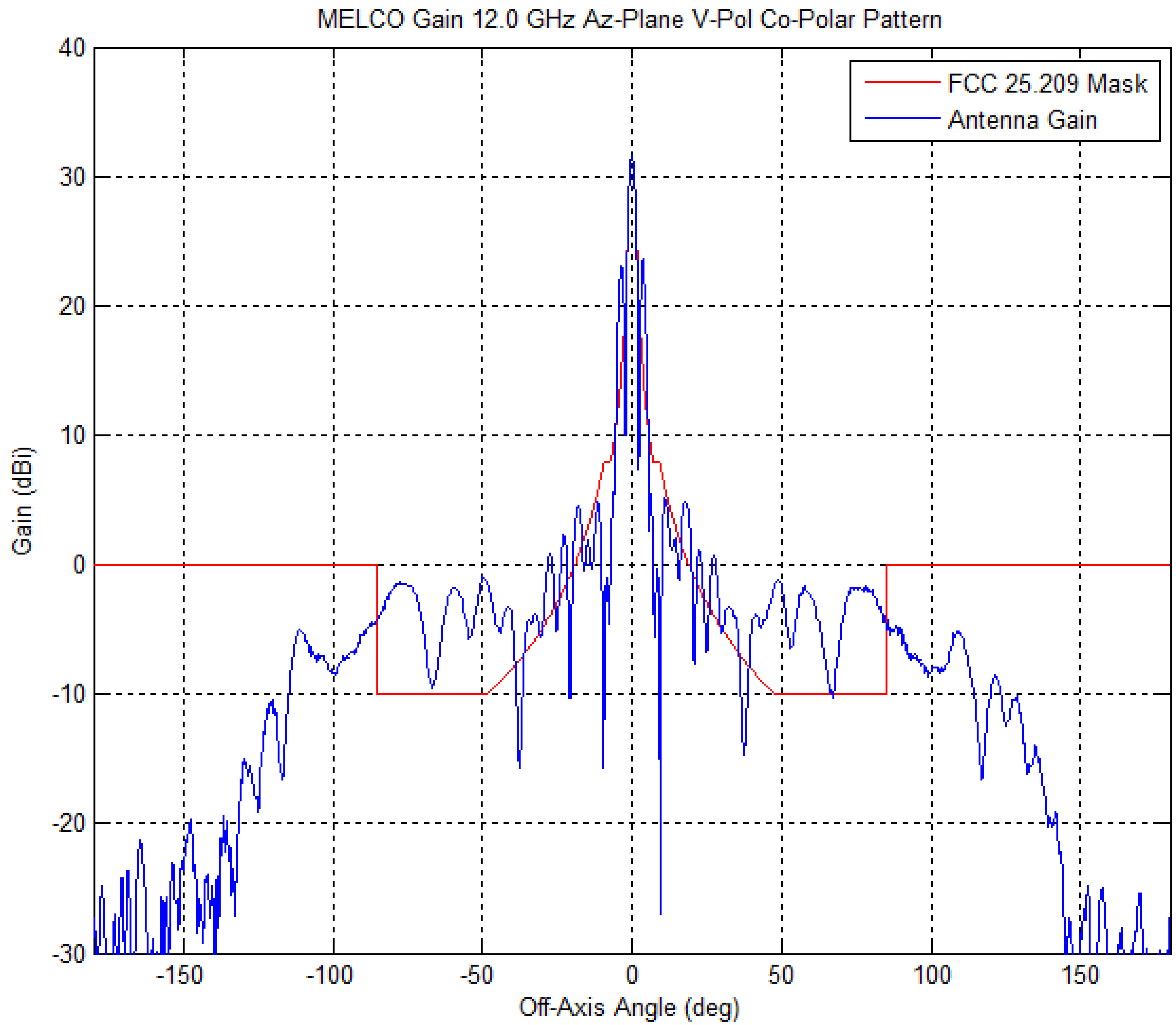


Fig. 3 MELCO Gain 12.0 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern

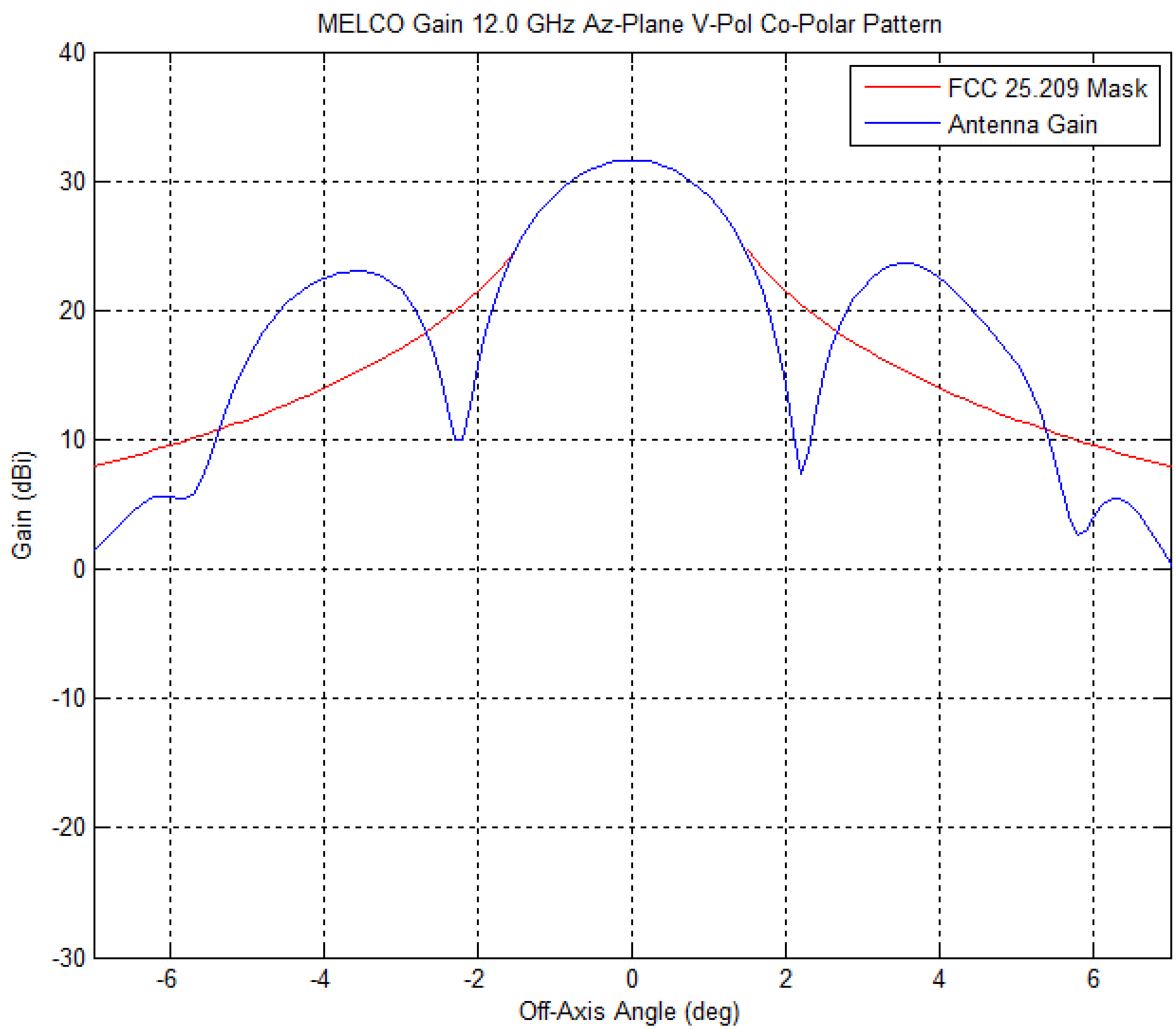


Fig. 4 MELCO Gain 12.0 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern (detail)

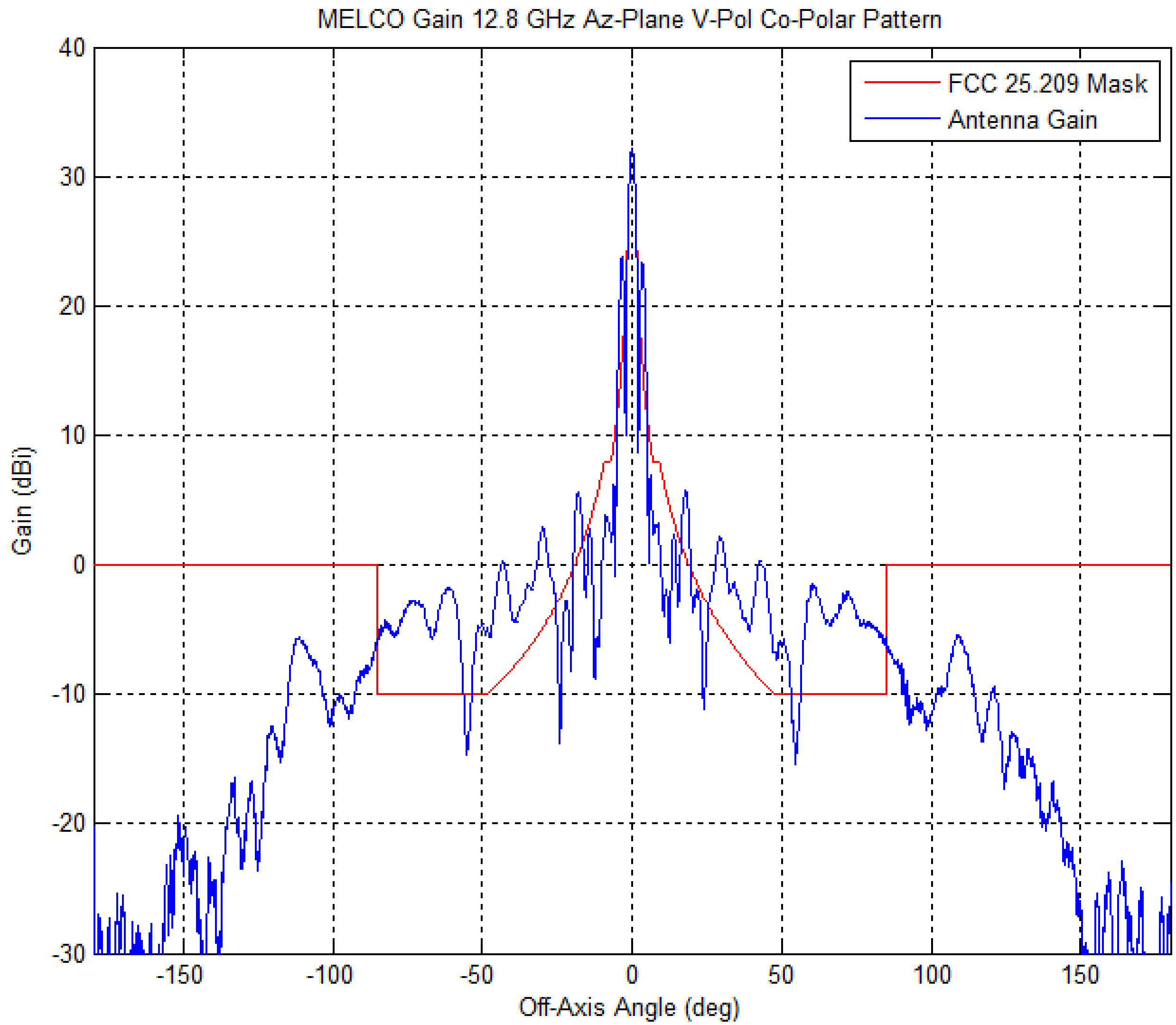


Fig. 5 MELCO Gain 12.8 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern

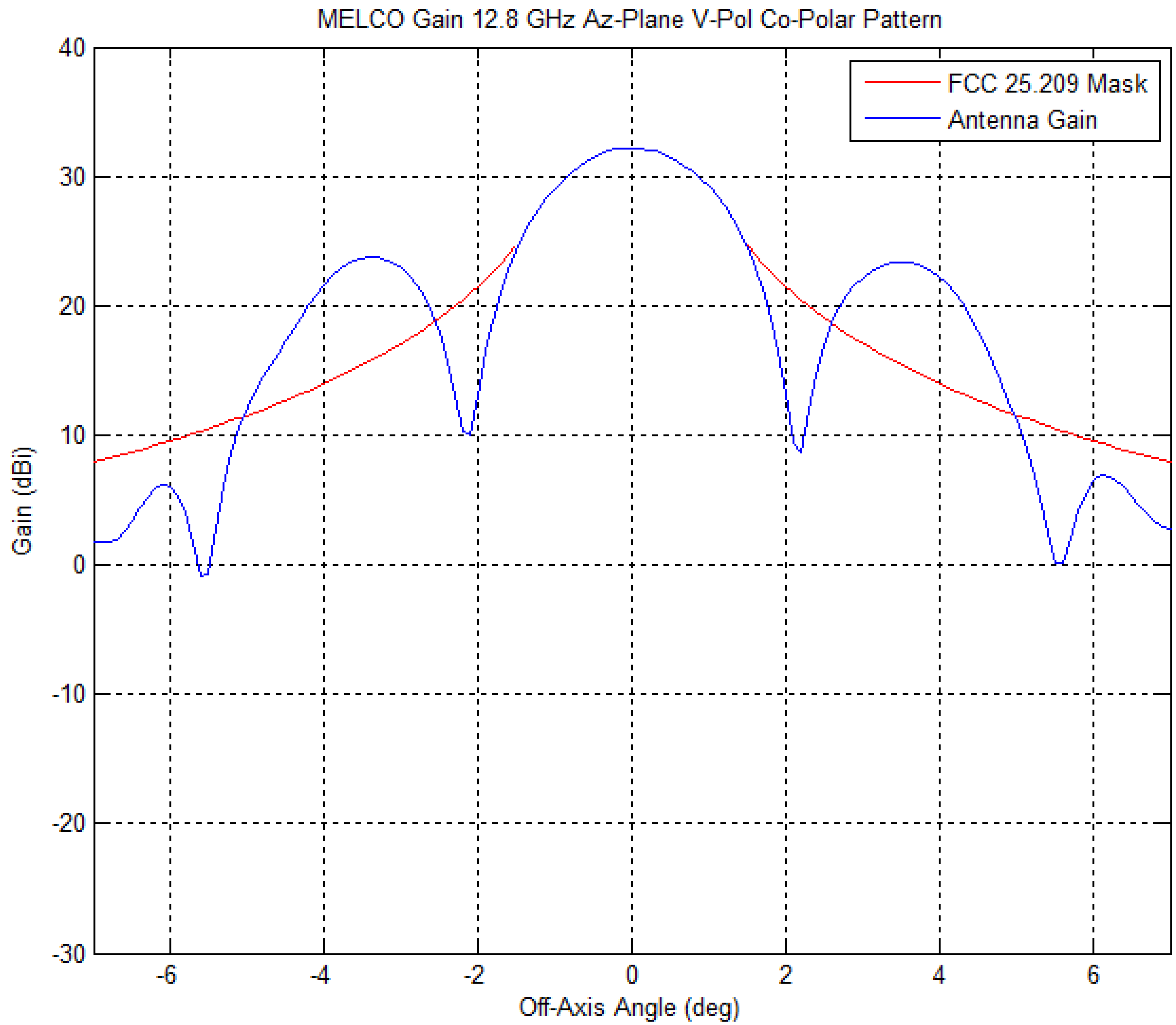


Fig. 6 MELCO Gain 12.8 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern (detail)

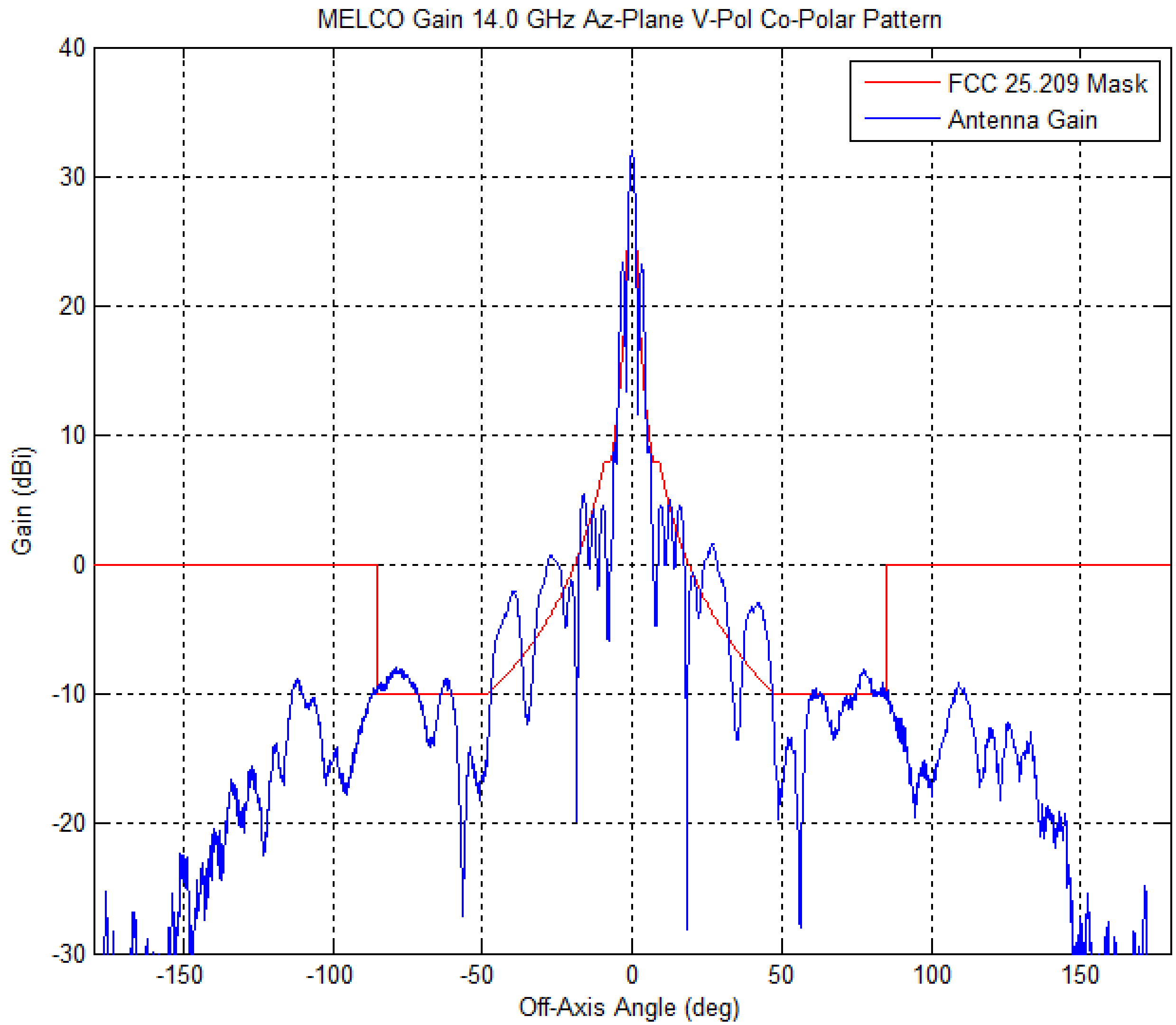


Fig. 7 MELCO Gain 14.0 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern

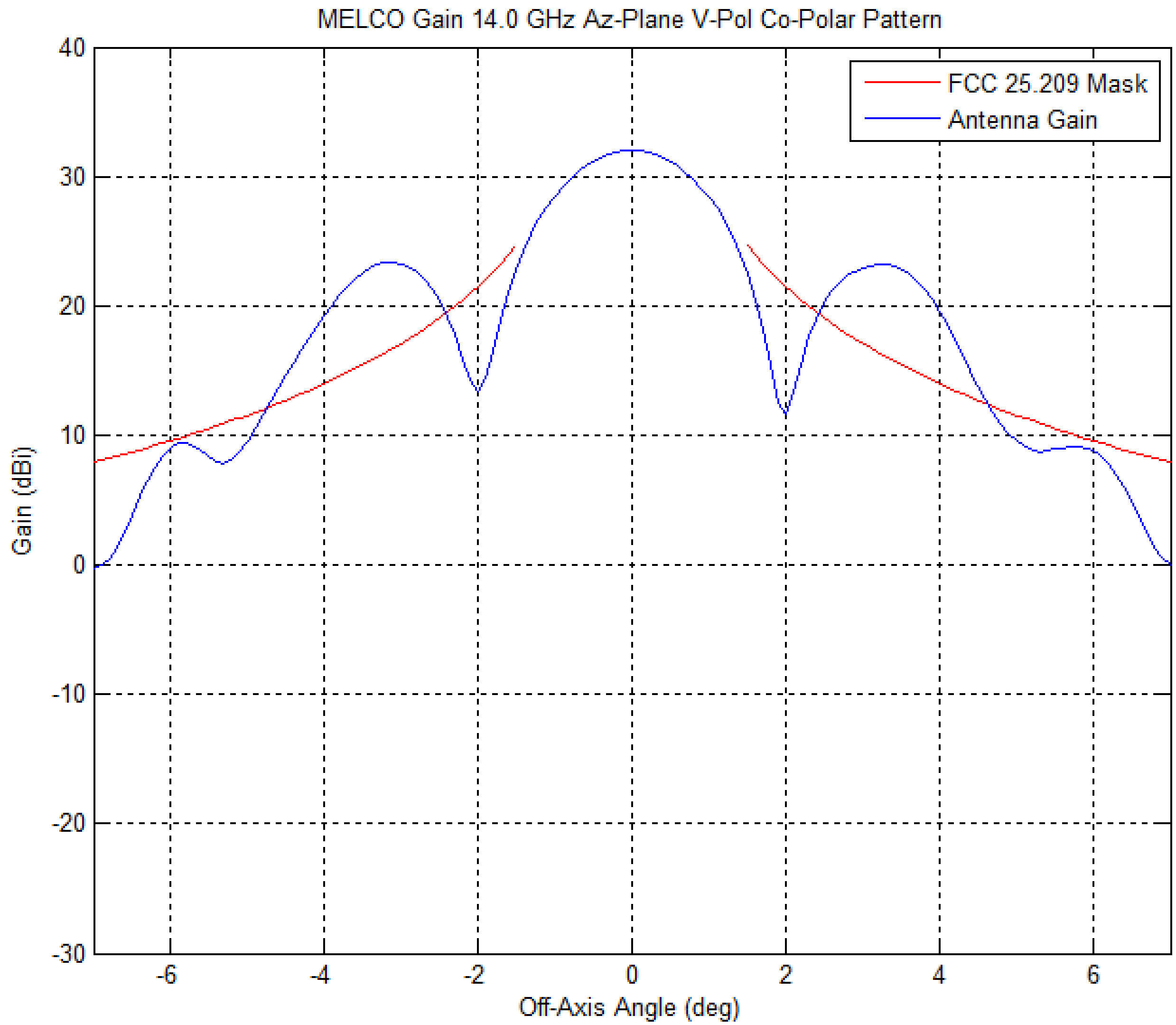


Fig. 8 MELCO Gain 14.0 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern (detail)

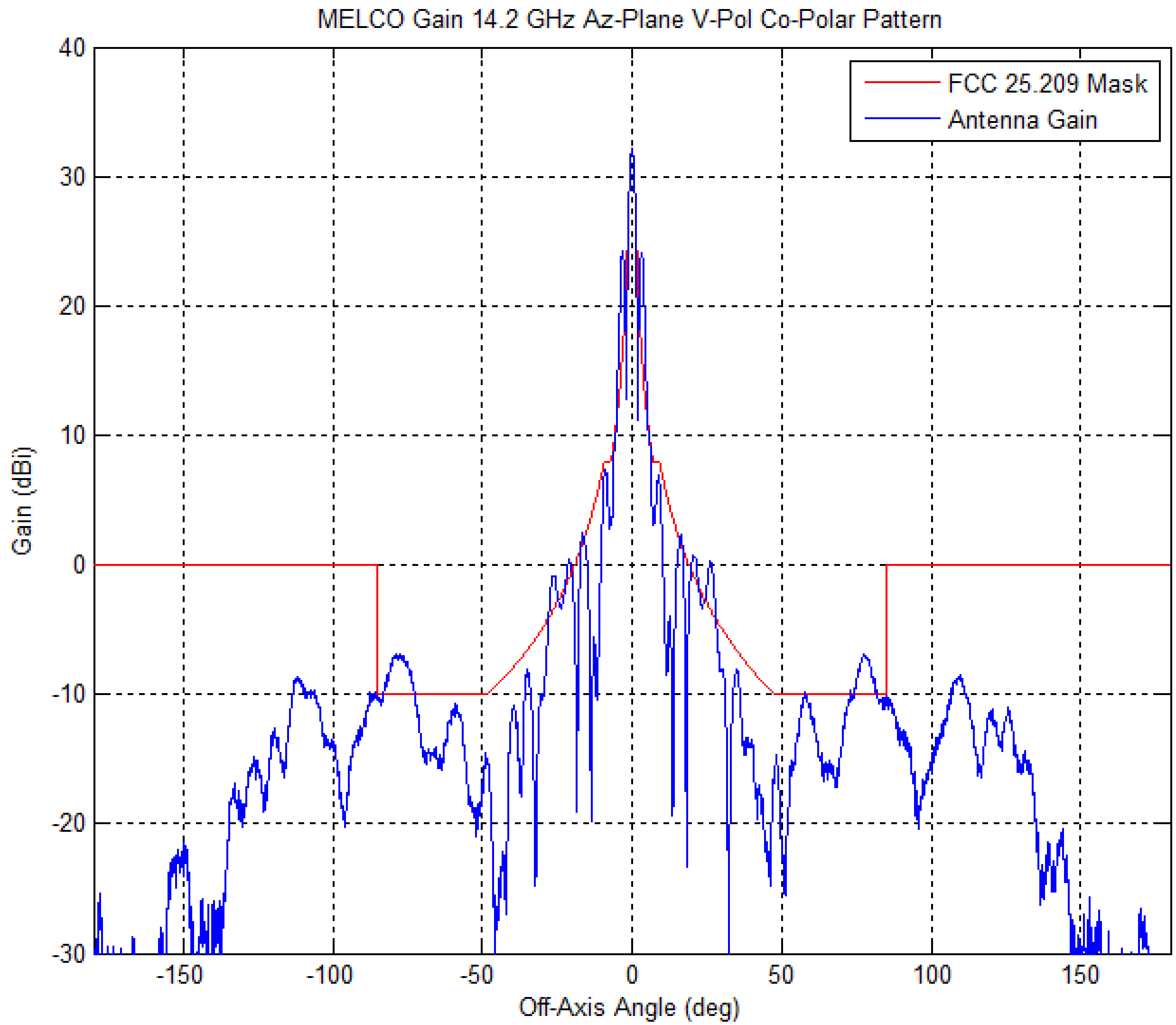


Fig. 9 MELCO Gain 14.2 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern

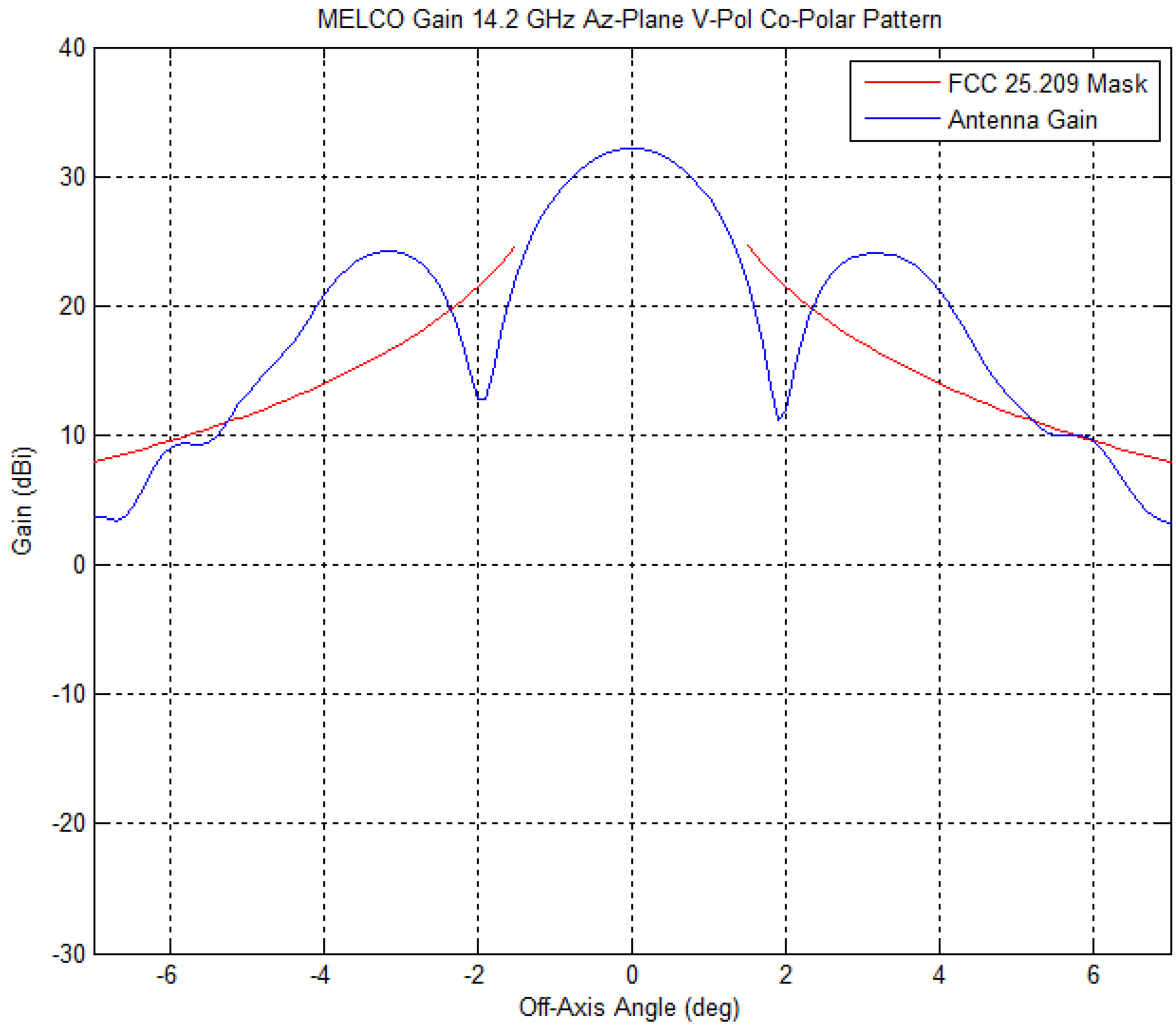


Fig. 10 MELCO Gain 14.2 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern (detail)

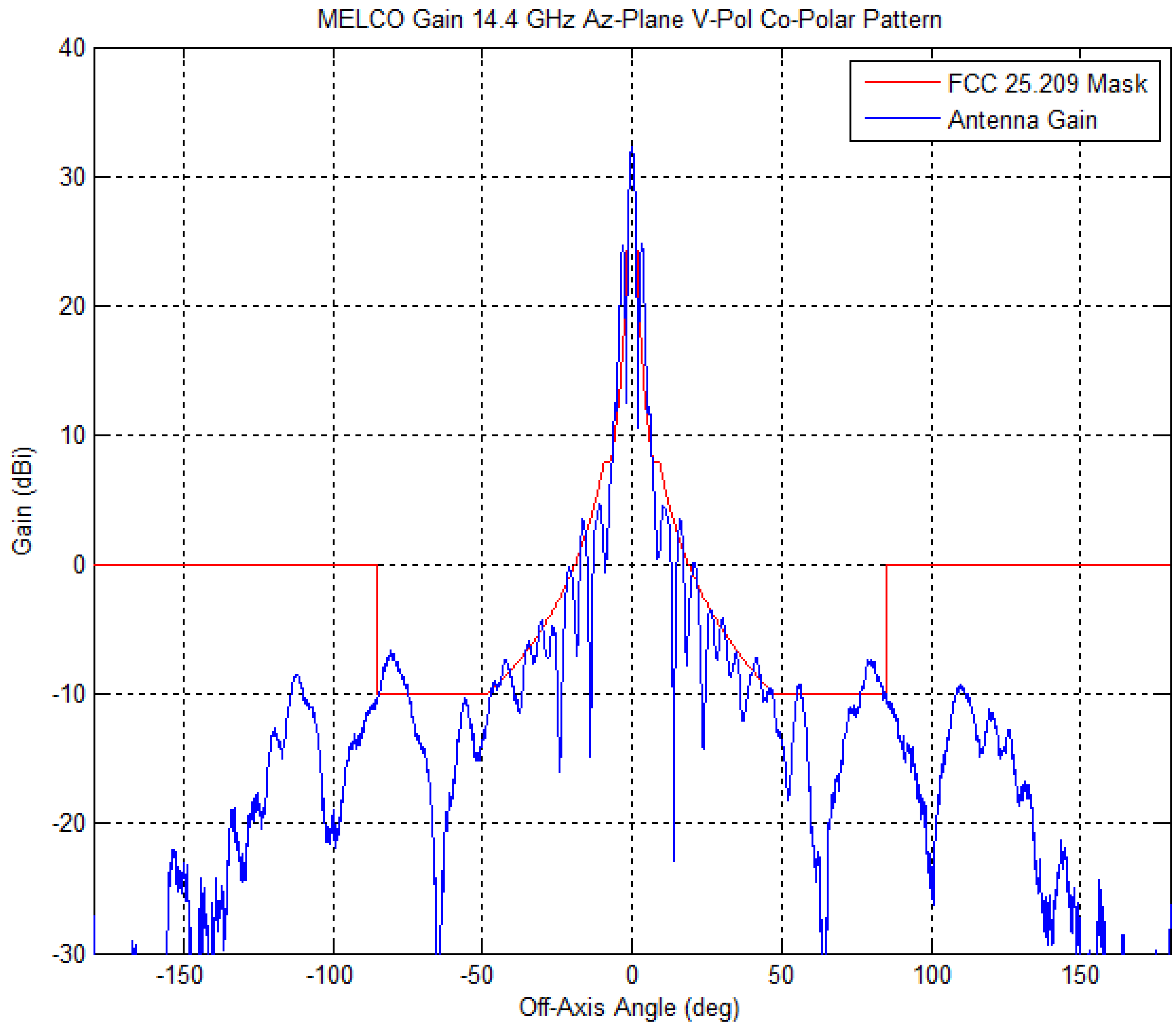


Fig. 11 MELCO Gain 14.4 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern

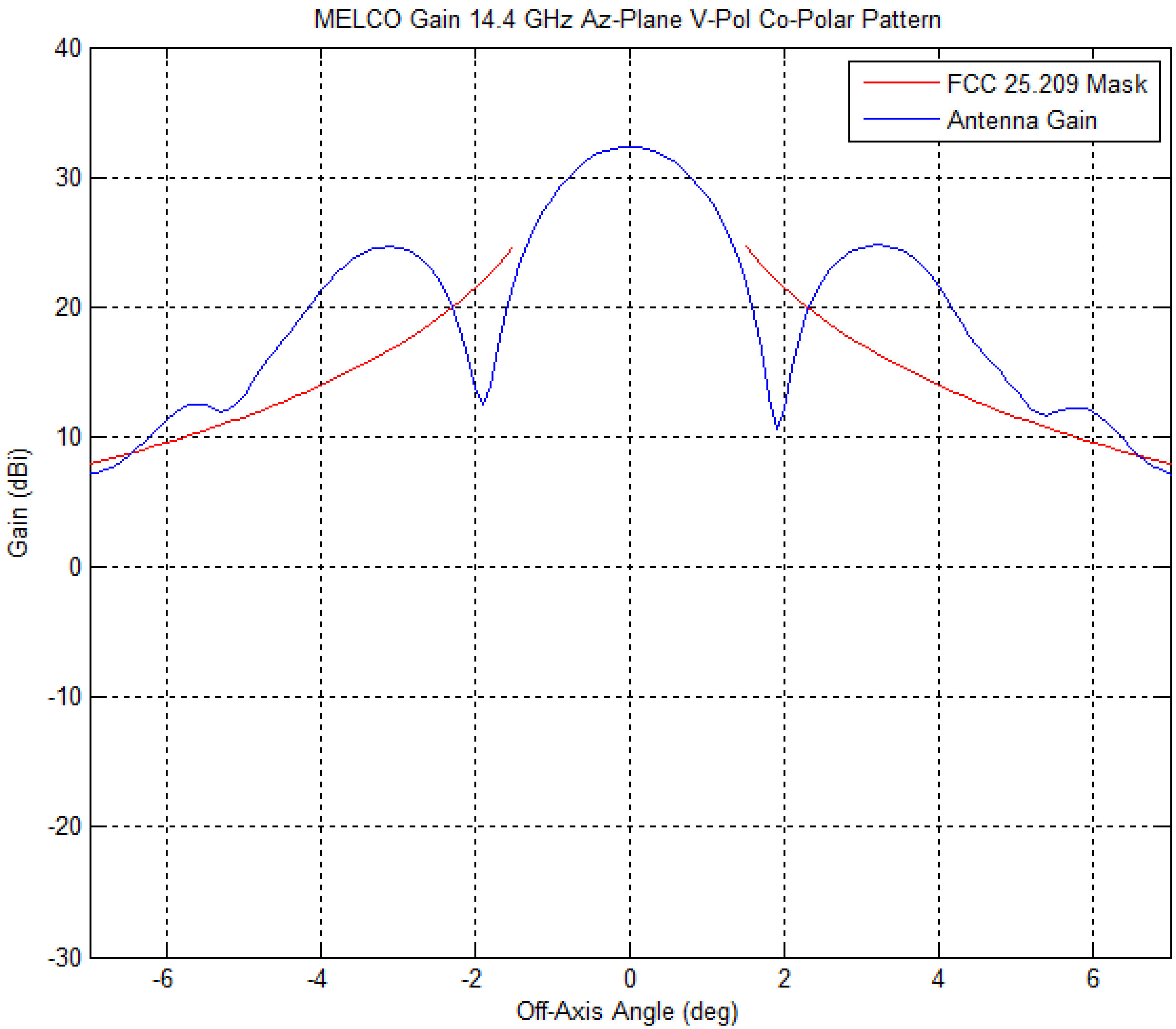
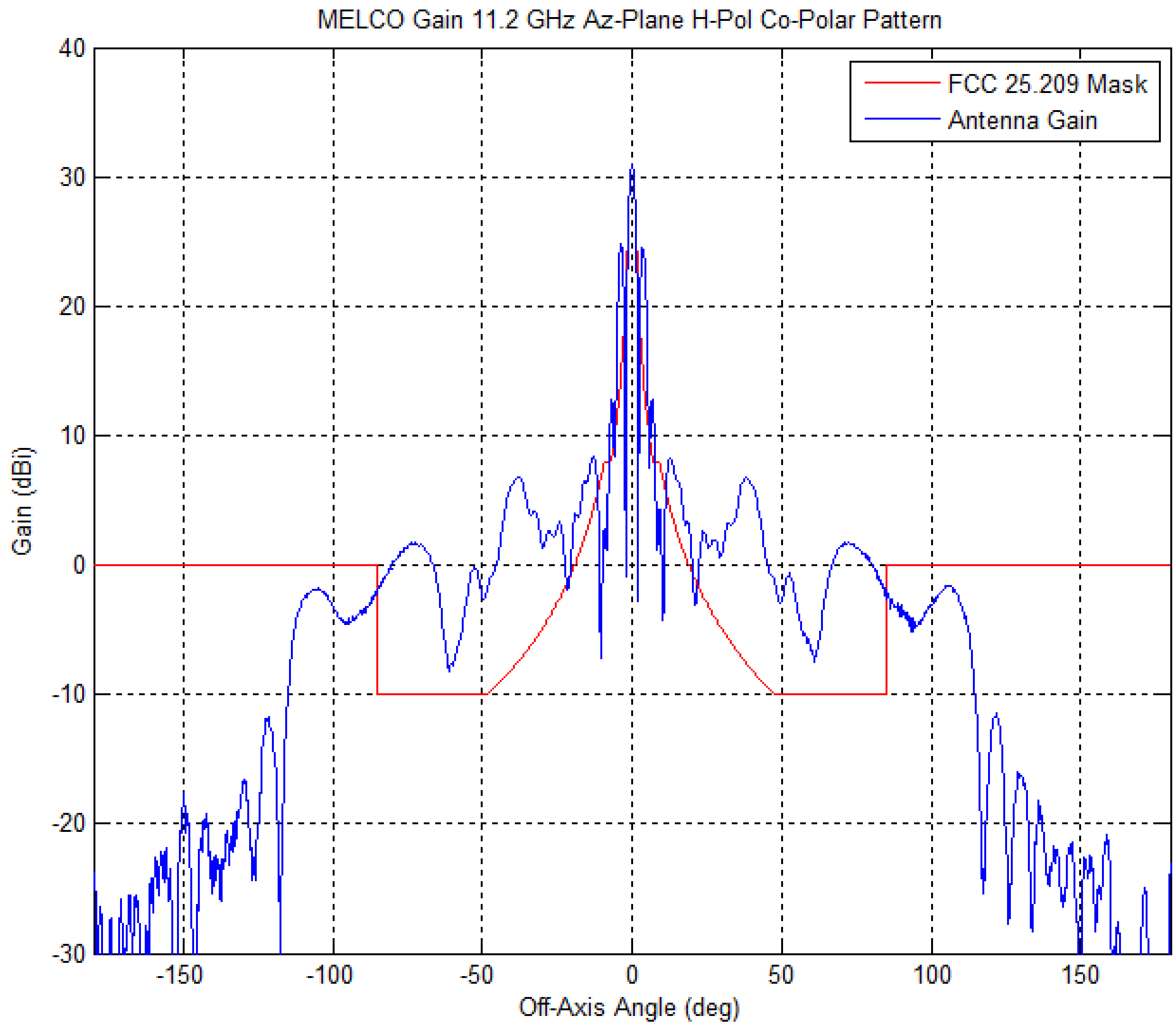


Fig. 12 MELCO Gain 14.4 GHz Azimuth-Plane Vertical-Polarization Co-Polar Pattern (detail)


MELCO Gain 11.2 GHz Az-Plane H-Pol Co-Polar Pattern
FCC 25.209 Mask
Antenna Gain
Gain (dBi)
Off-Axis Angle (deg)
40
30
20
10
0
-10
-20
-30
-150
-100
-50
0
50
100
150

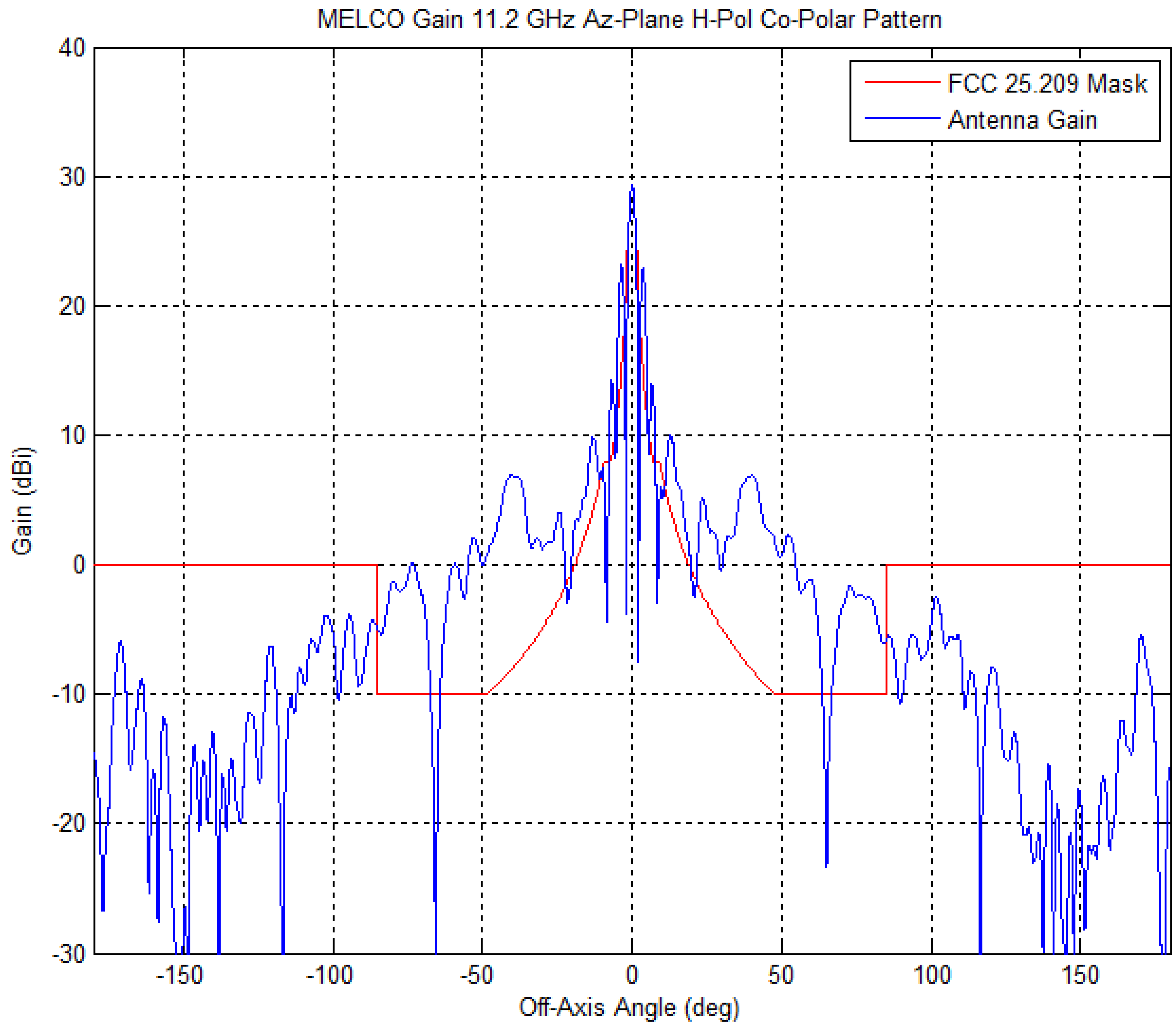


Fig. 13 MELCO Gain 11.2 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern

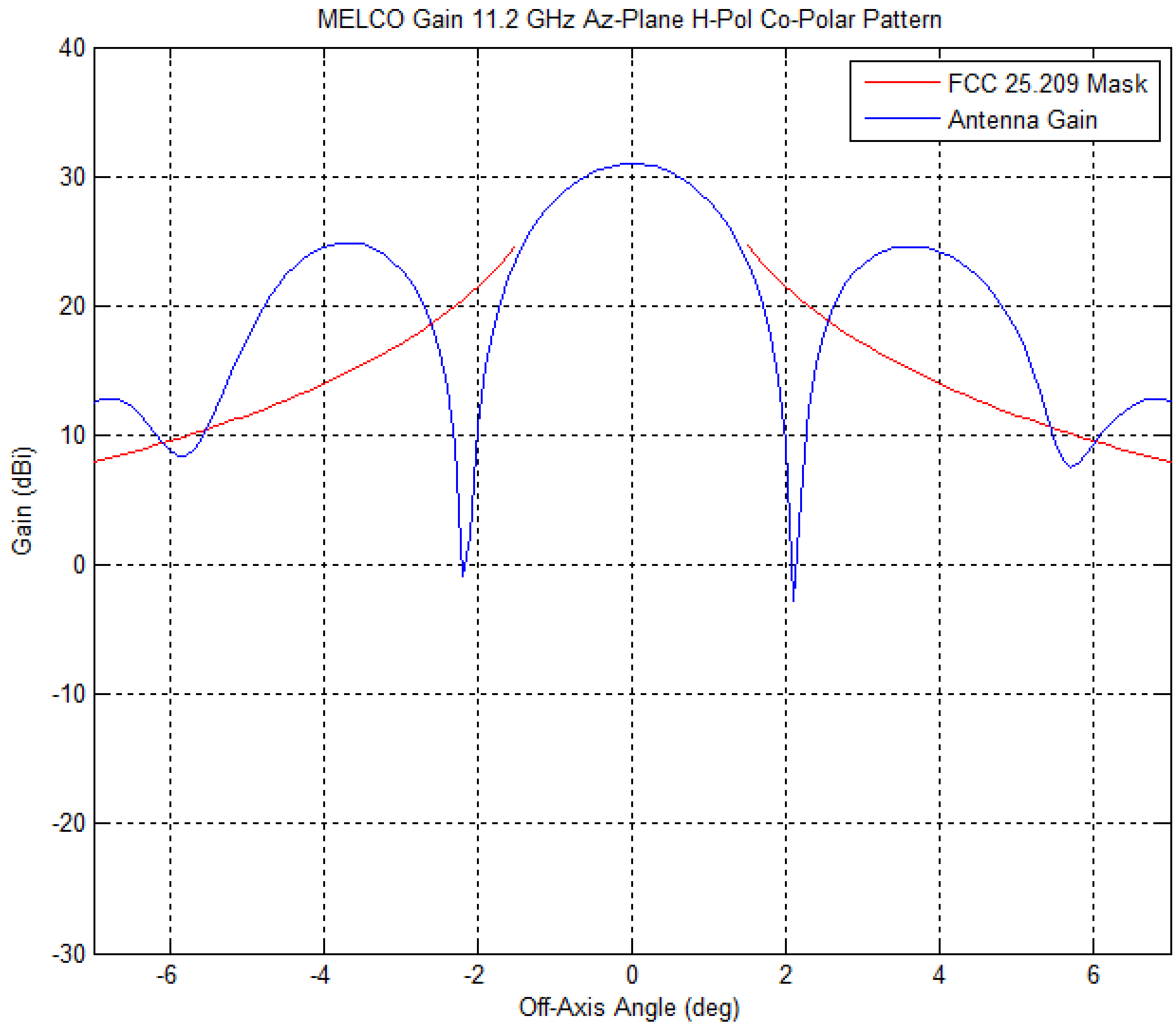


Fig. 14 MELCO Gain 11.2 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern (detail)

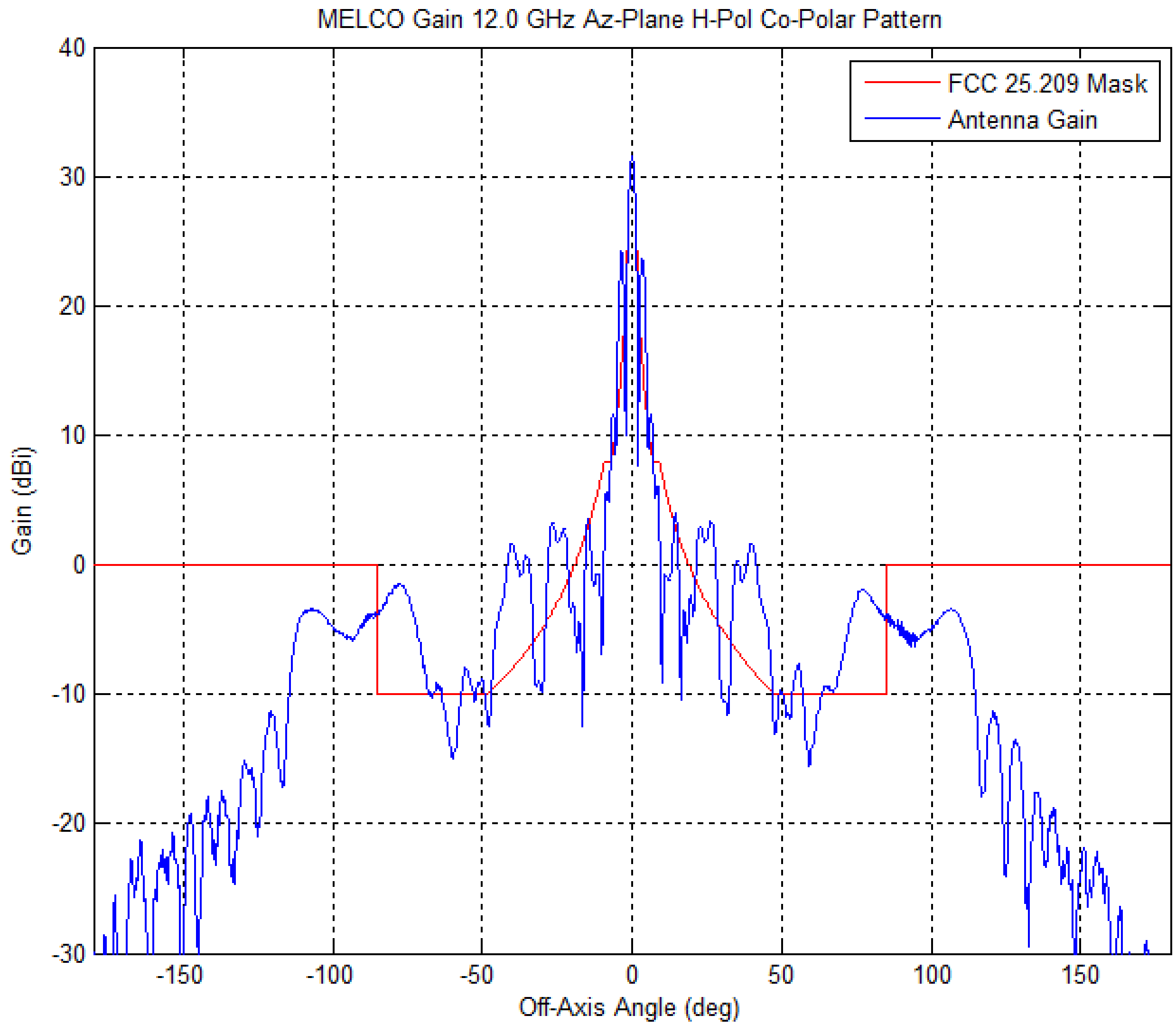


Fig. 15 MELCO Gain 12.0 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern

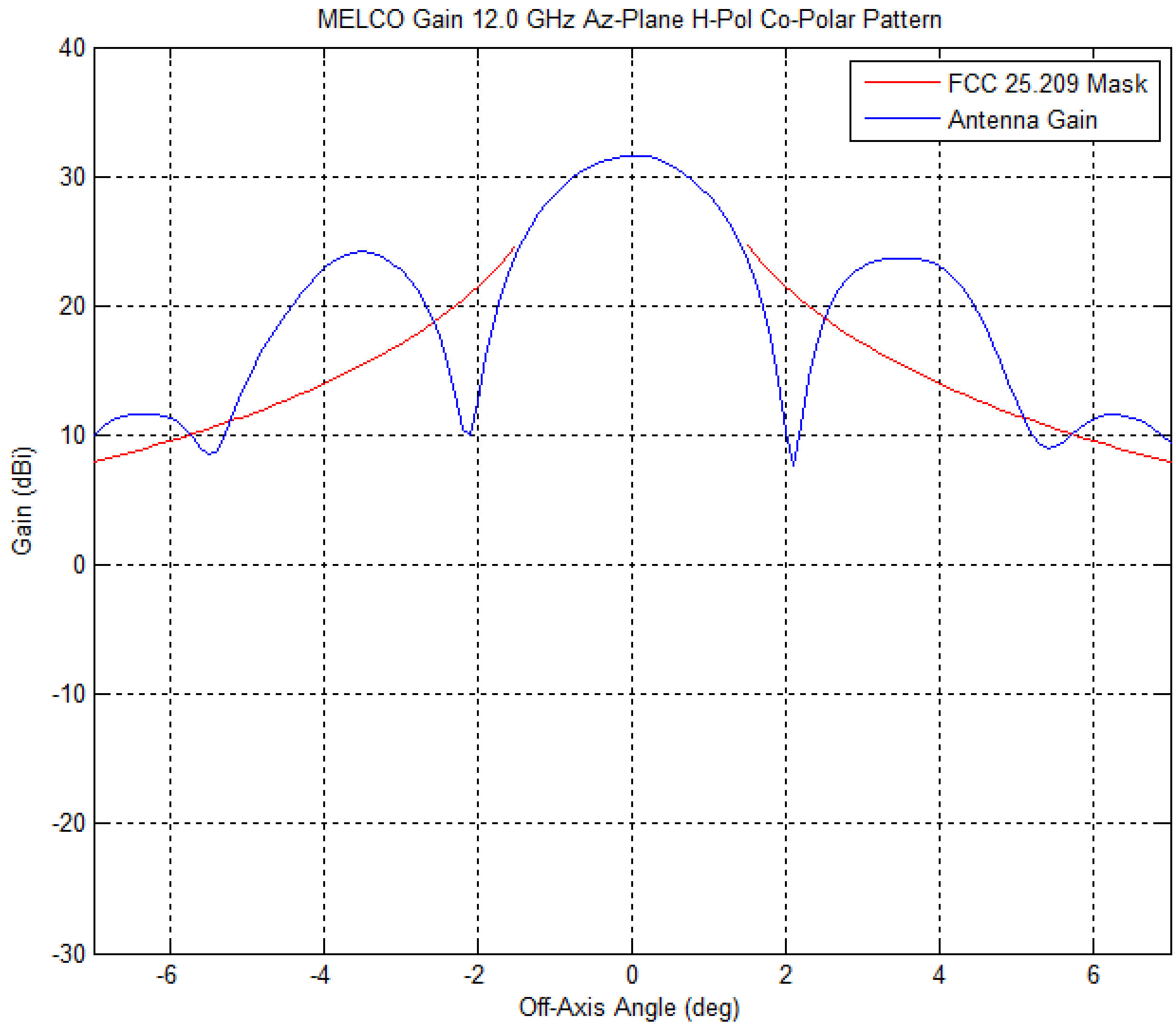


Fig. 16 MELCO Gain 12.0 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern (detail)

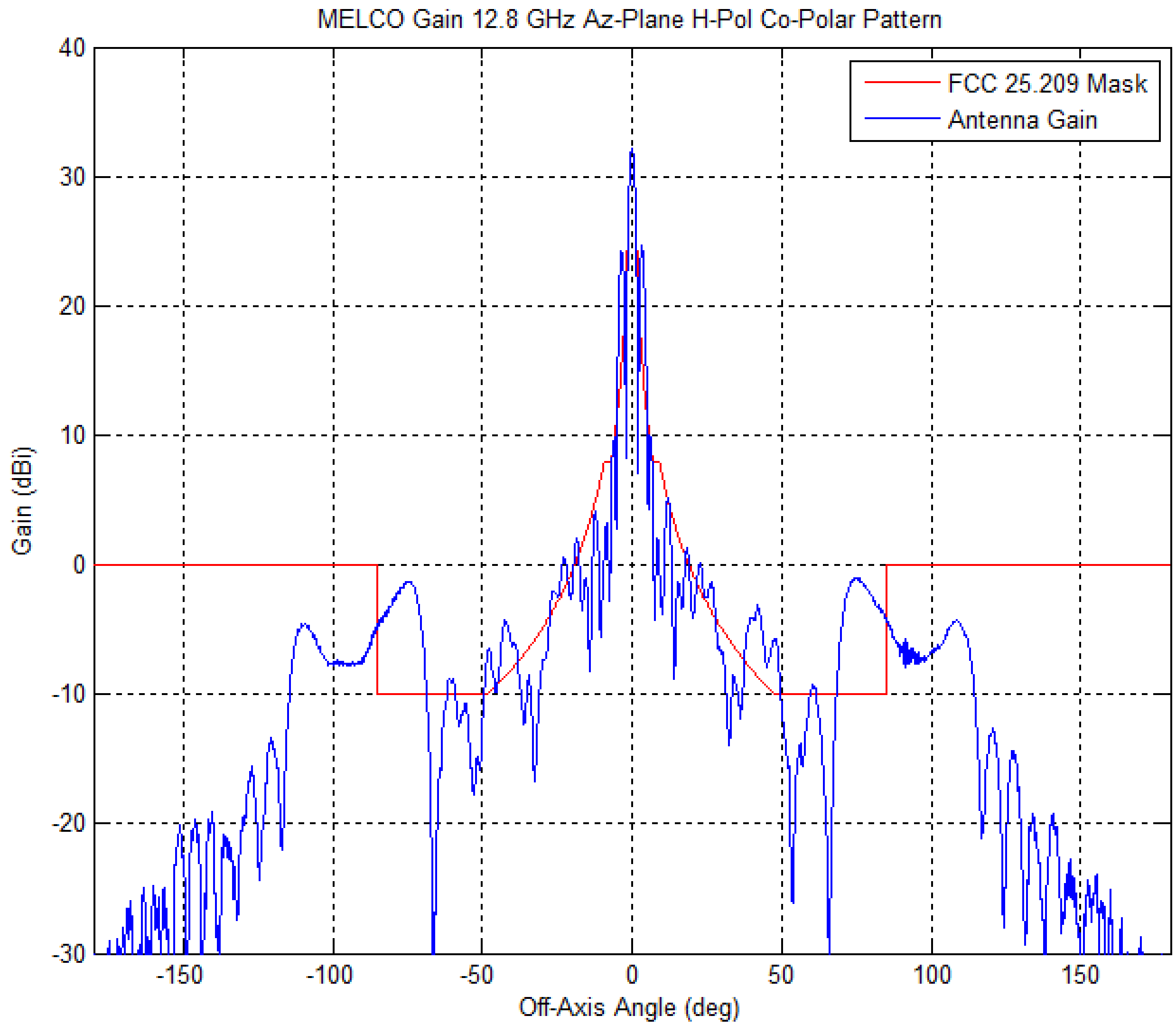


Fig. 17 MELCO Gain 12.8 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern

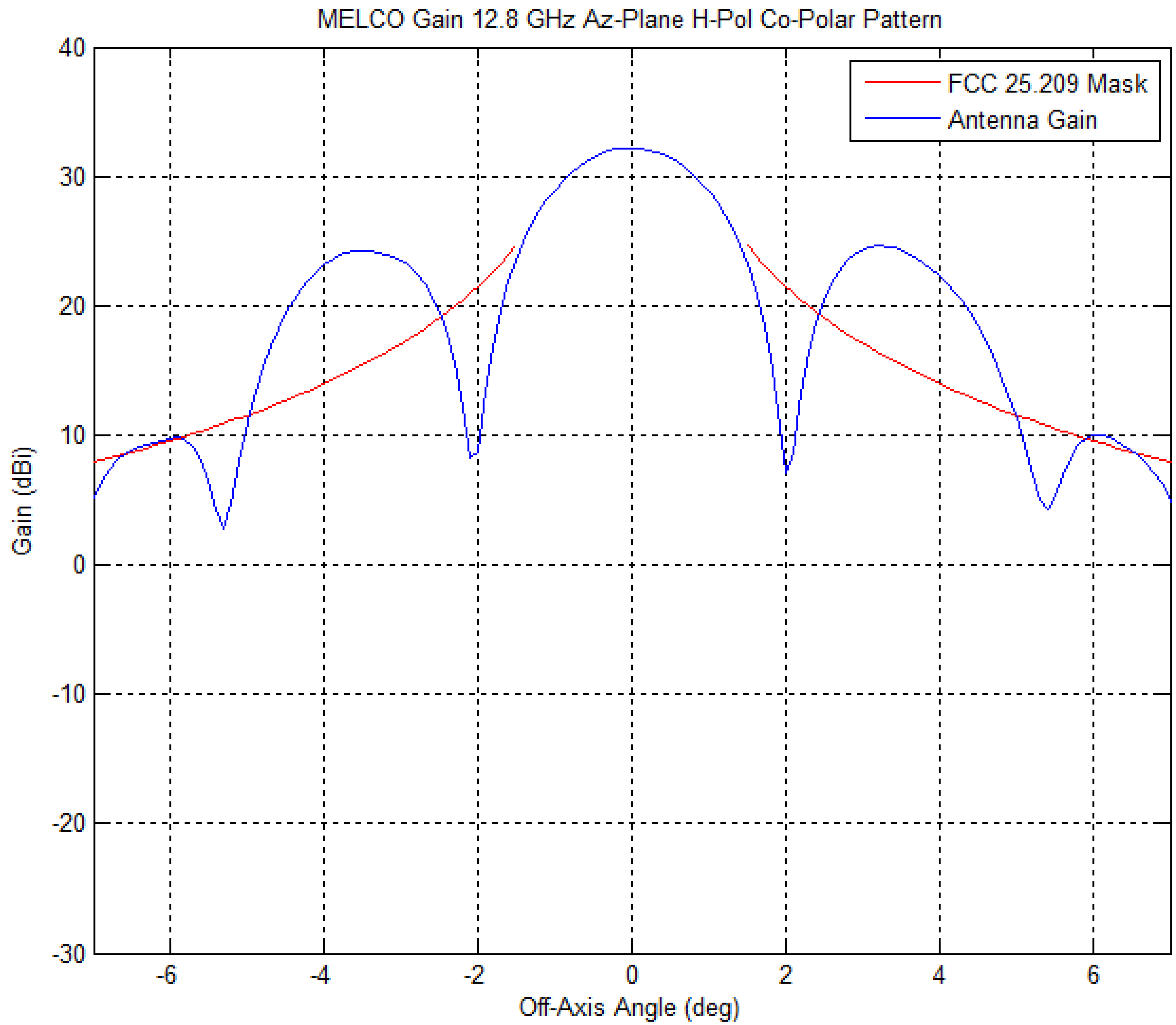


Fig. 18 MELCO Gain 12.8 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern (detail)

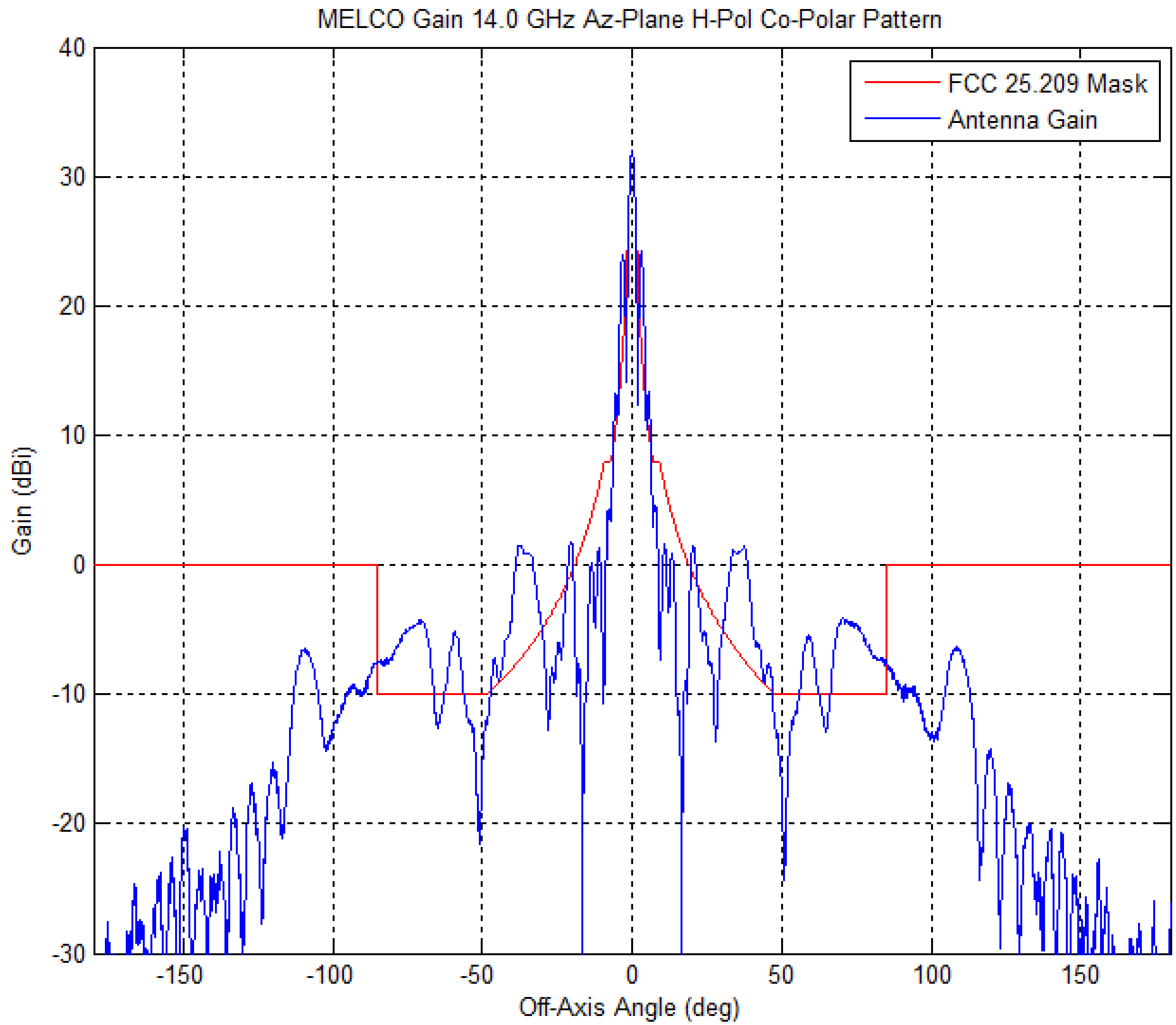


Fig. 19 MELCO Gain 14.0 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern

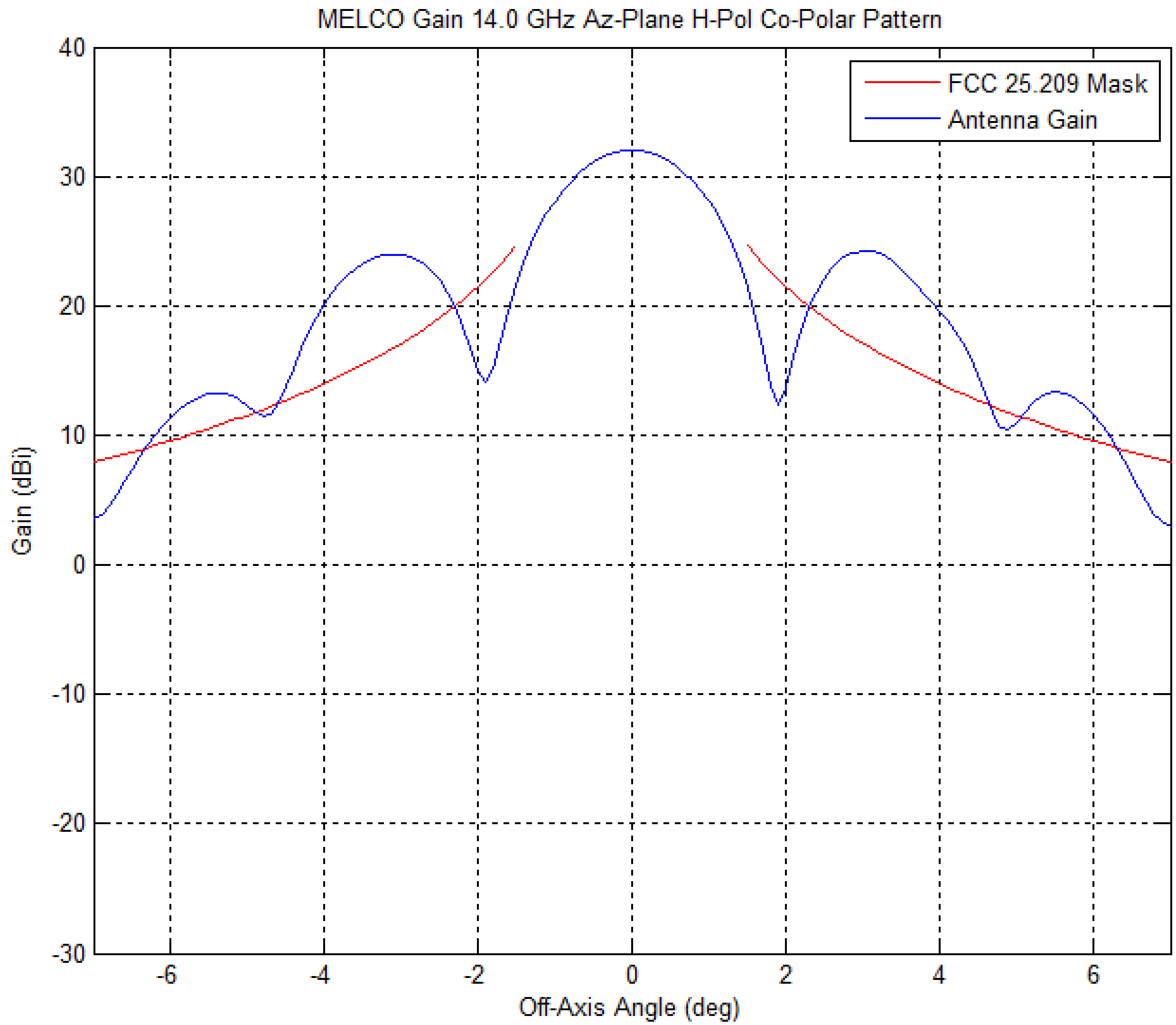


Fig. 20 MELCO Gain 14.0 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern (detail)

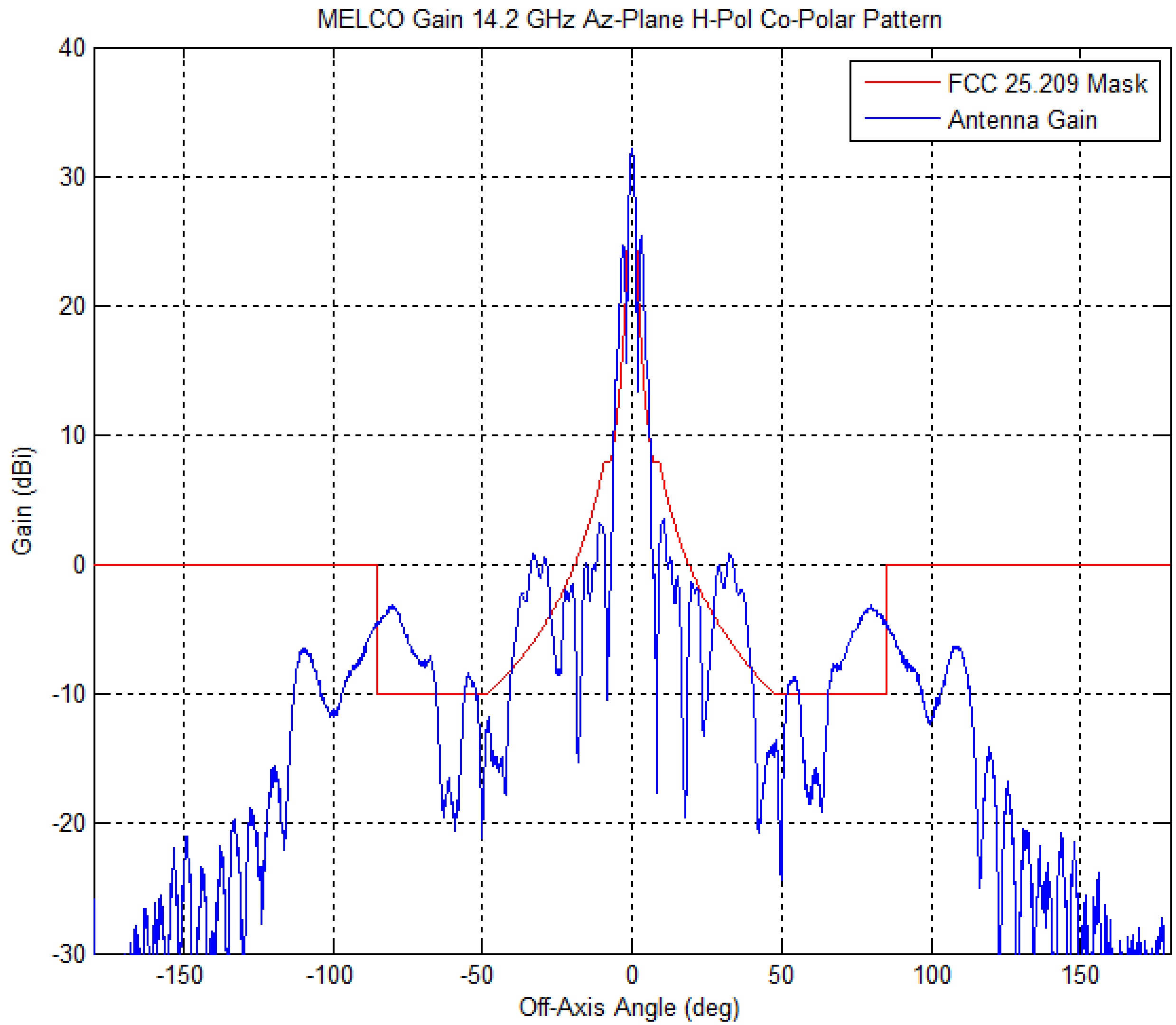


Fig. 21 MELCO Gain 14.2 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern

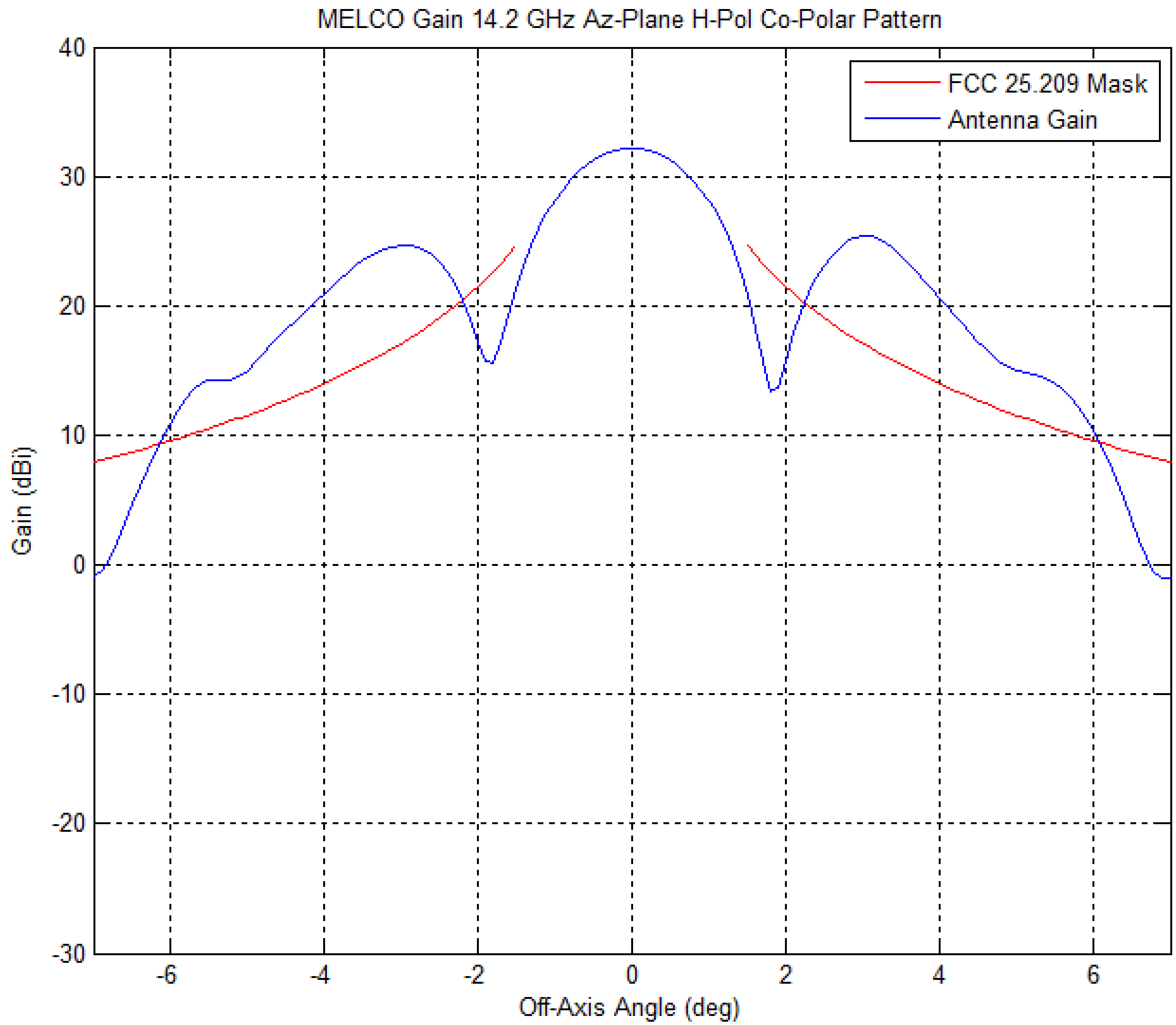


Fig. 22 MELCO Gain 14.2 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern (detail)

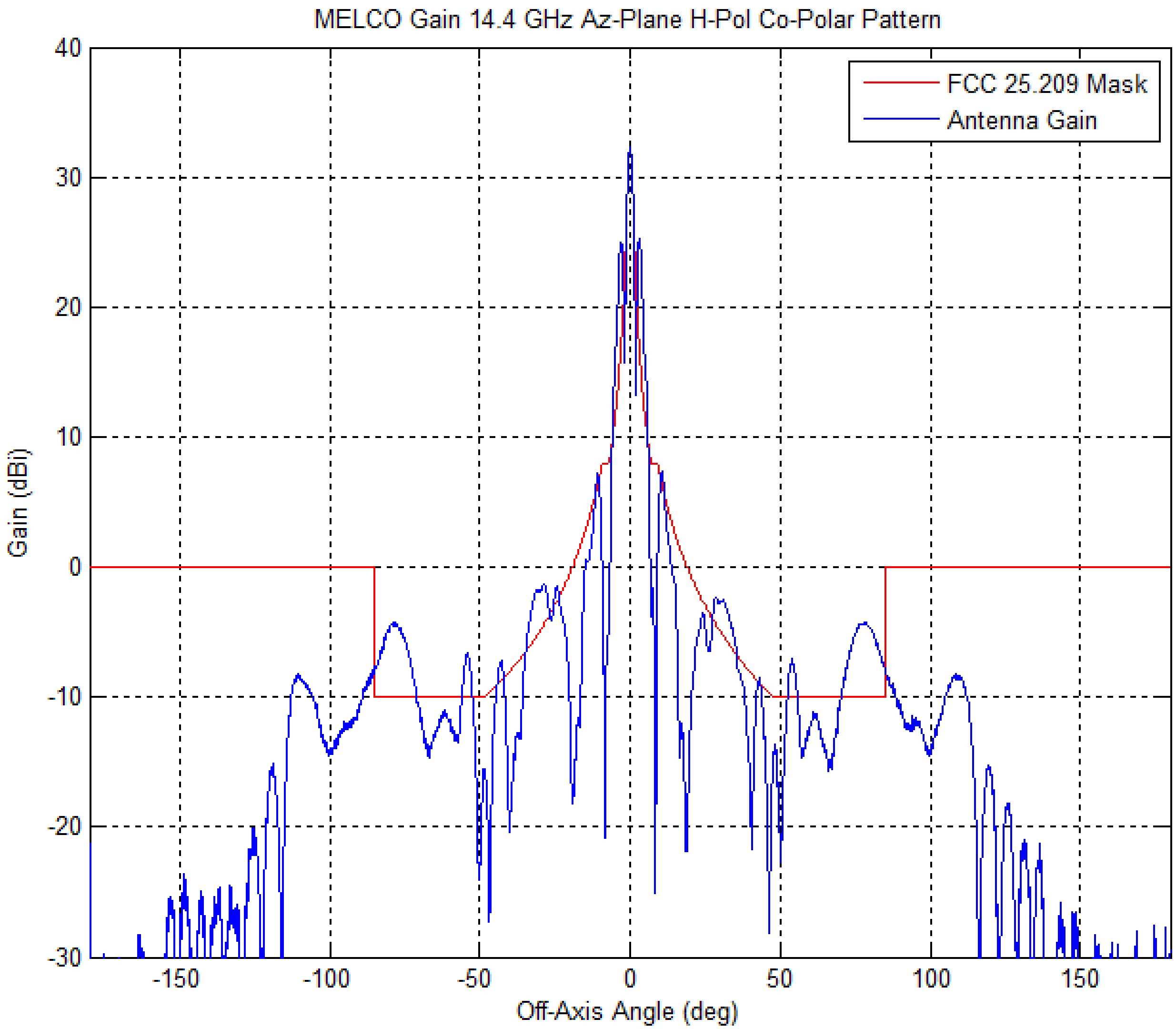


Fig. 23 MELCO Gain 14.4 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern

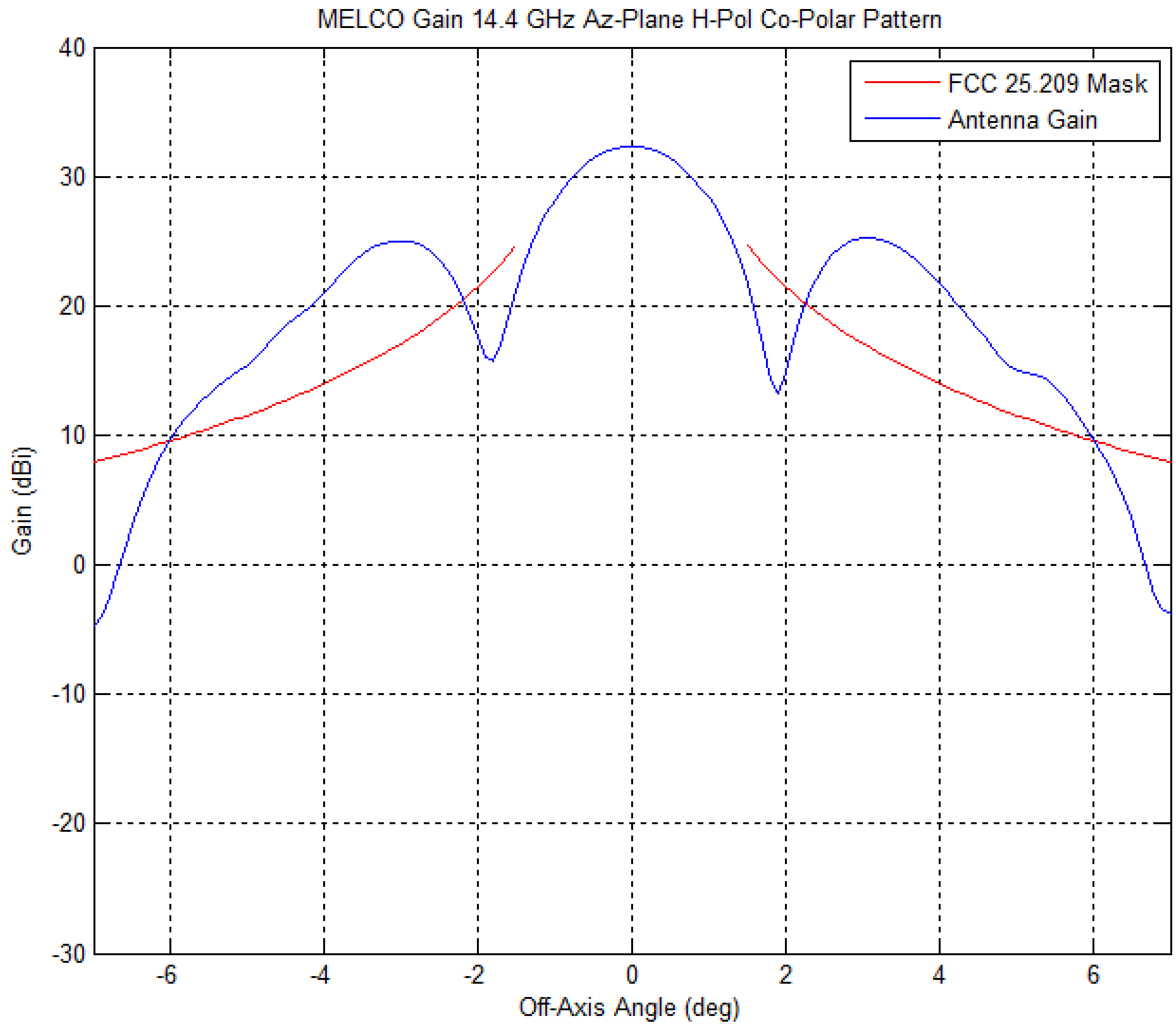


Fig. 24 MELCO Gain 14.4 GHz Azimuth-Plane Horizontal-Polarization Co-Polar Pattern (detail)

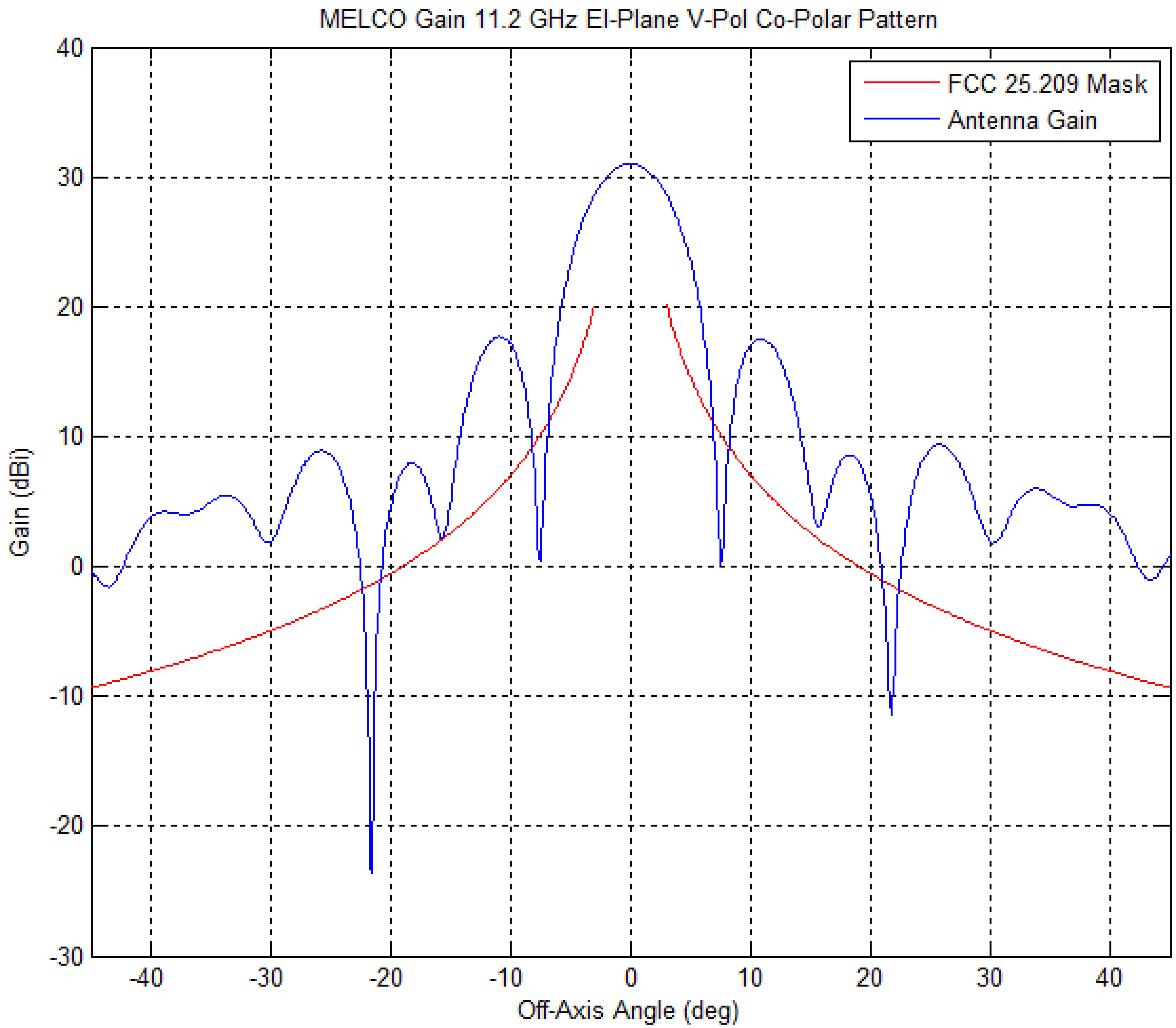


Fig. 25 MELCO Gain 11.2 GHz Elevation-Plane Vertical-Polarization Co-Polar Pattern

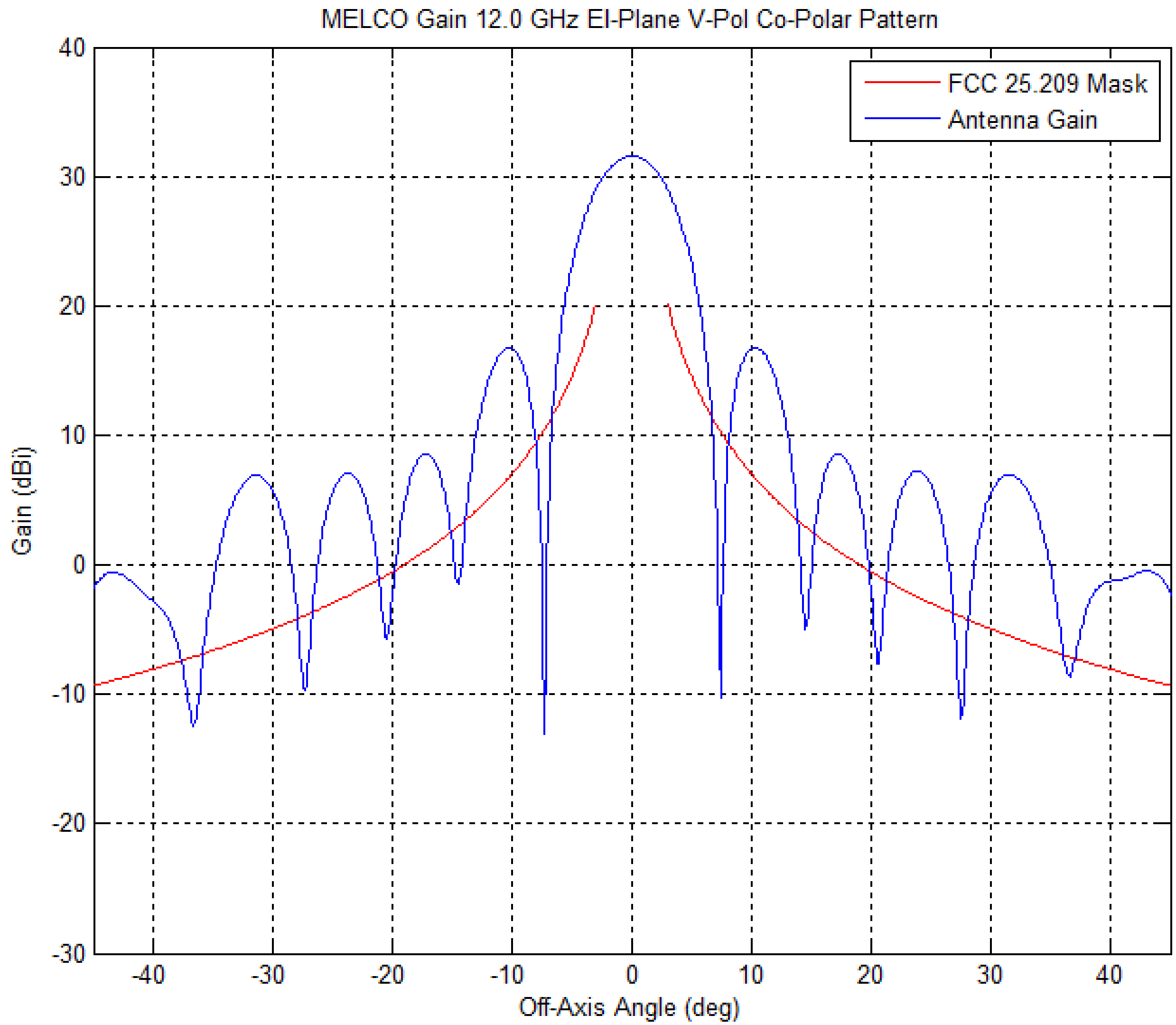


Fig. 26 MELCO Gain 12.0 GHz Elevation-Plane Vertical-Polarization Co-Polar Pattern

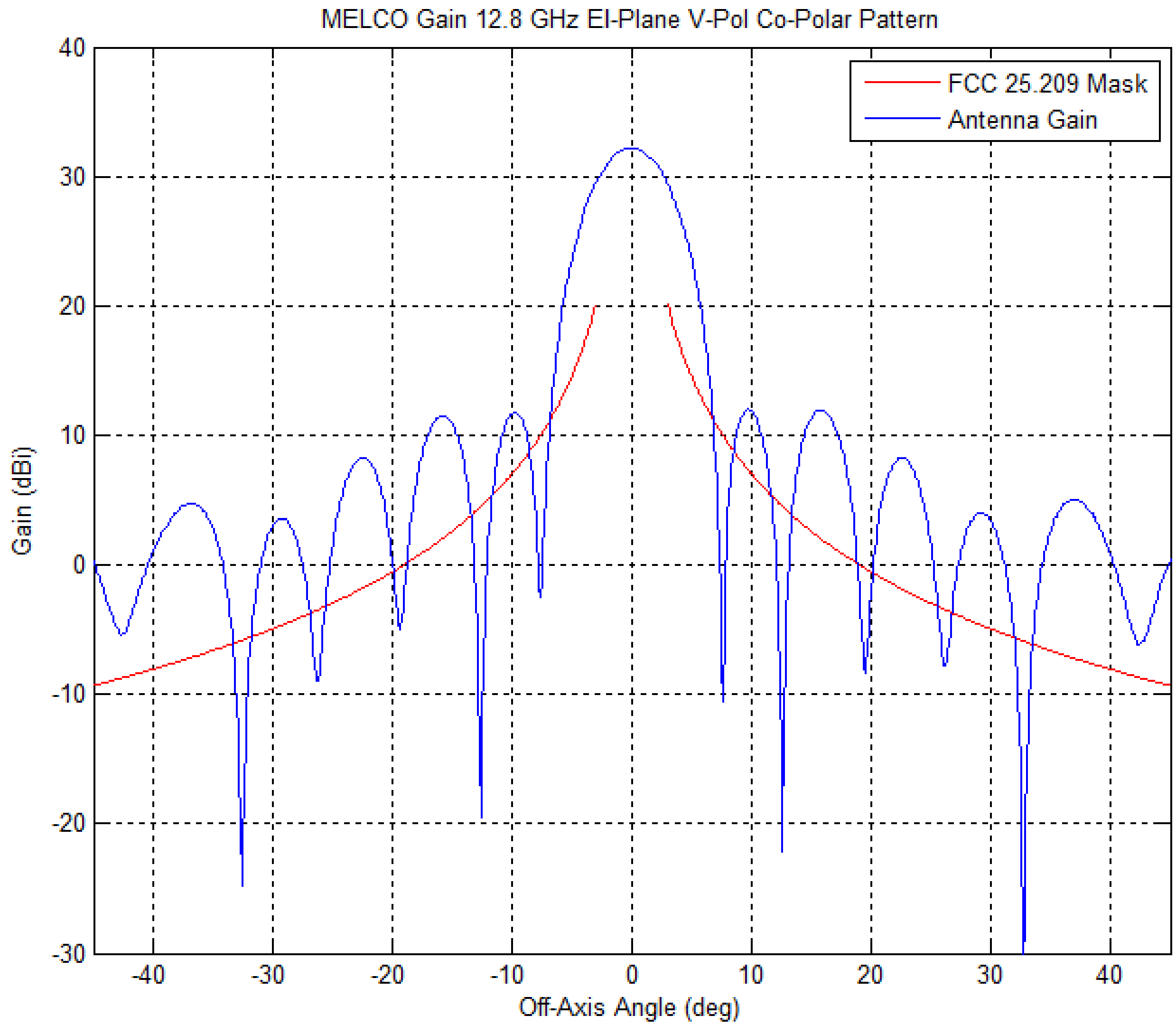


Fig. 27 MELCO Gain 12.8 GHz Elevation-Plane Vertical-Polarization Co-Polar Pattern

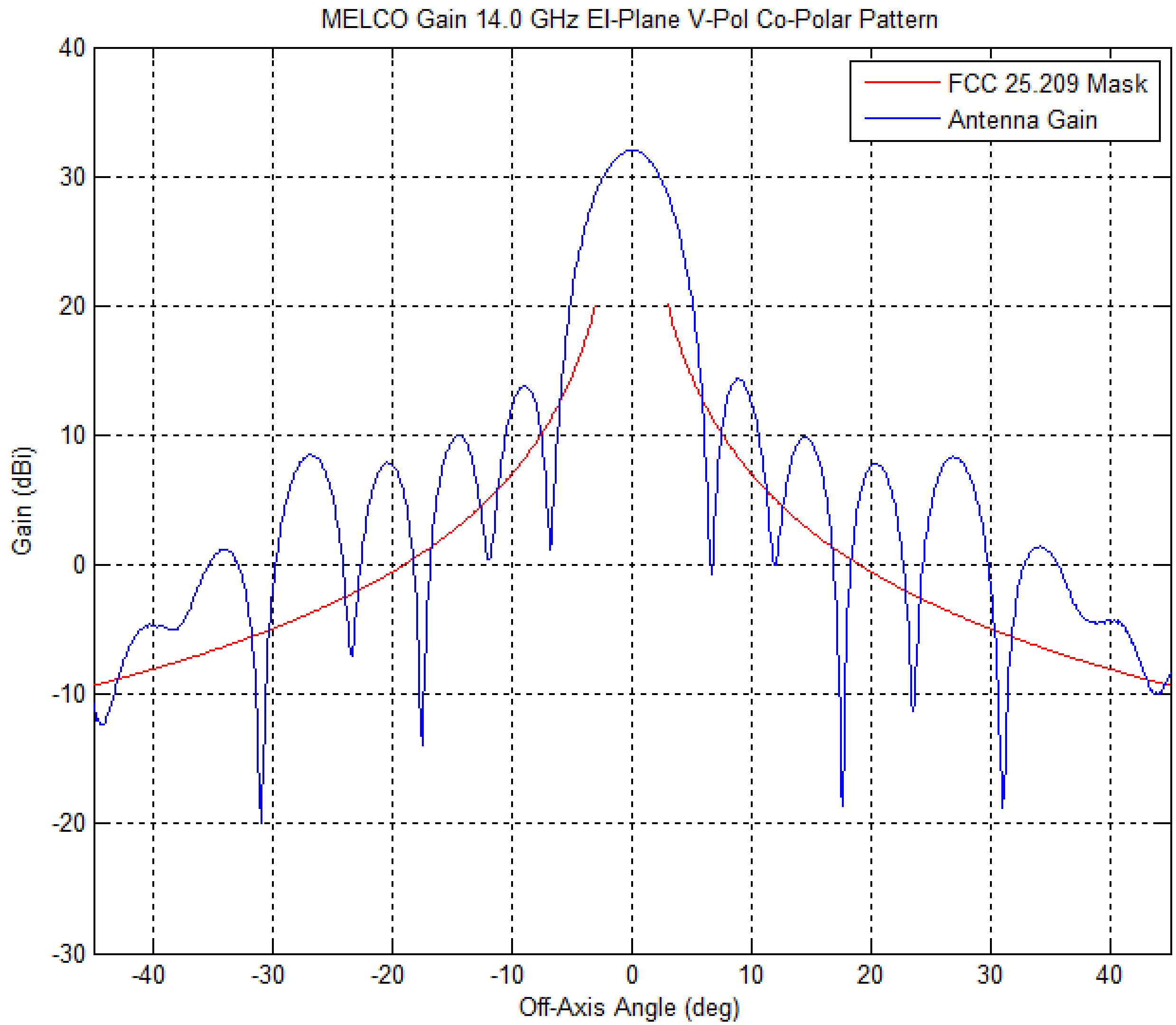


Fig. 28 MELCO Gain 14.0 GHz Elevation-Plane Vertical-Polarization Co-Polar Pattern

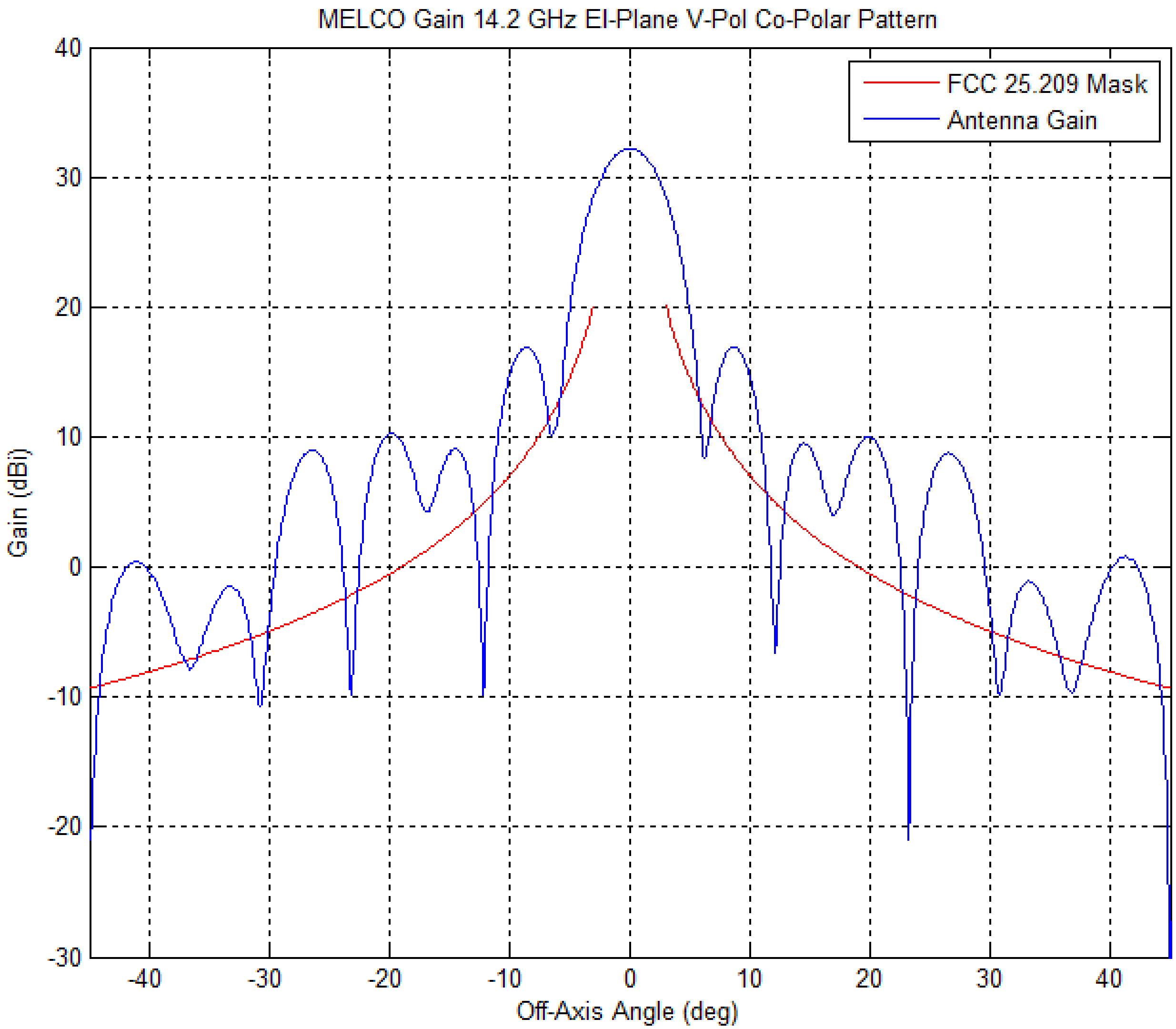


Fig. 29 MELCO Gain 14.2 GHz Elevation-Plane Vertical-Polarization Co-Polar Pattern

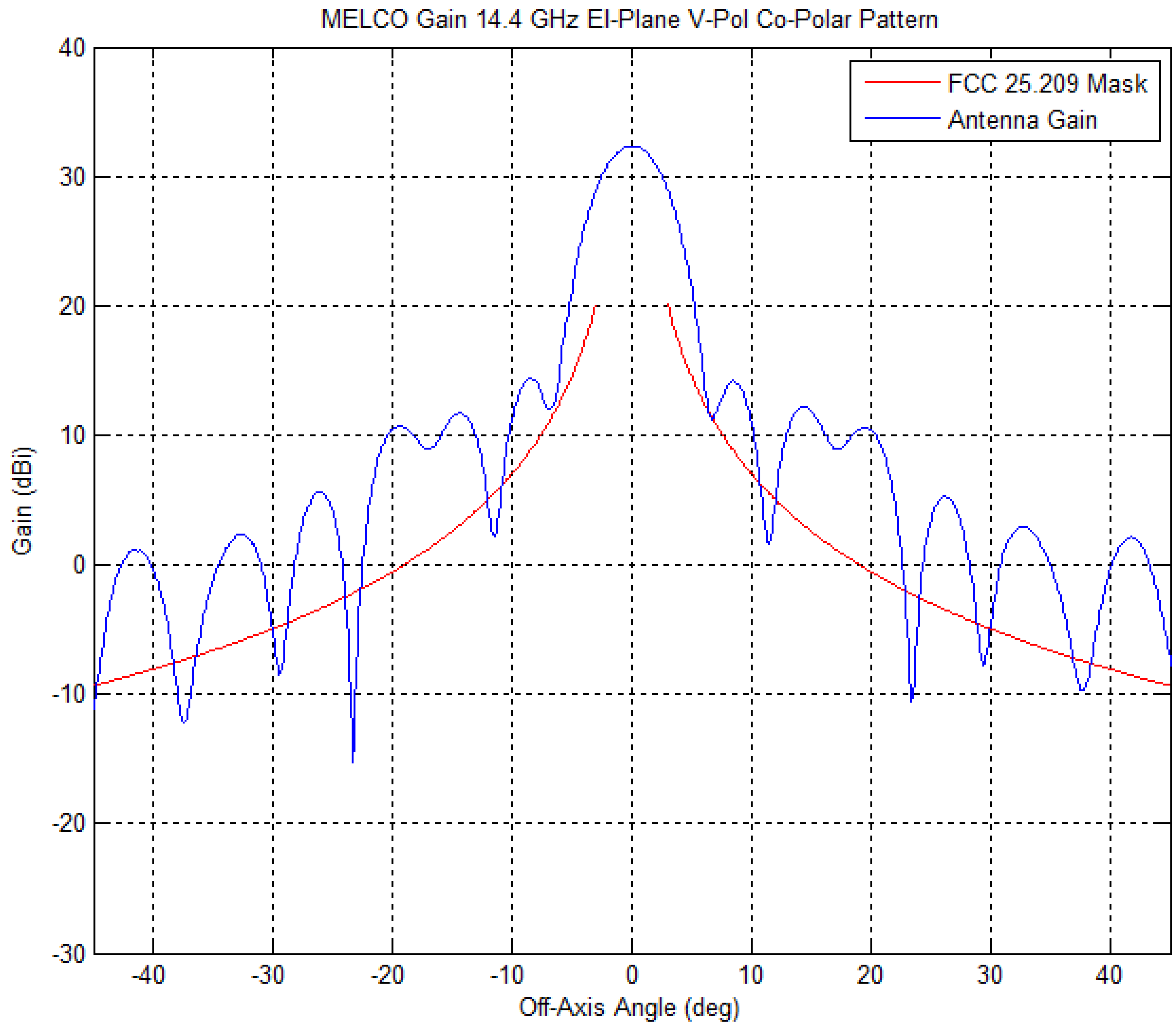


Fig. 30 MELCO Gain 14.4 GHz Elevation-Plane Vertical-Polarization Co-Polar Pattern

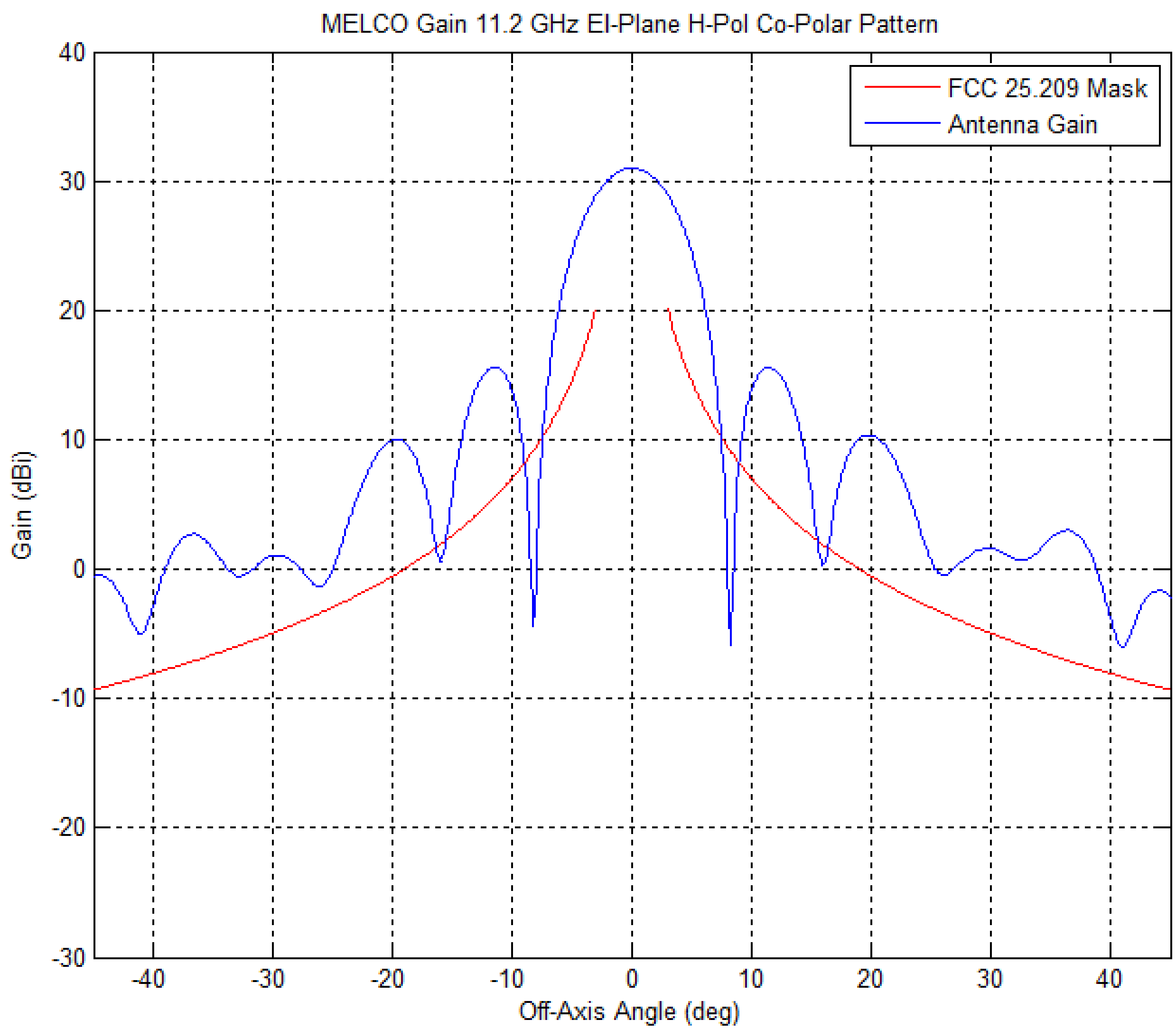


Fig. 31 MELCO Gain 11.2 GHz Elevation-Plane Horizontal-Polarization Co-Polar Pattern

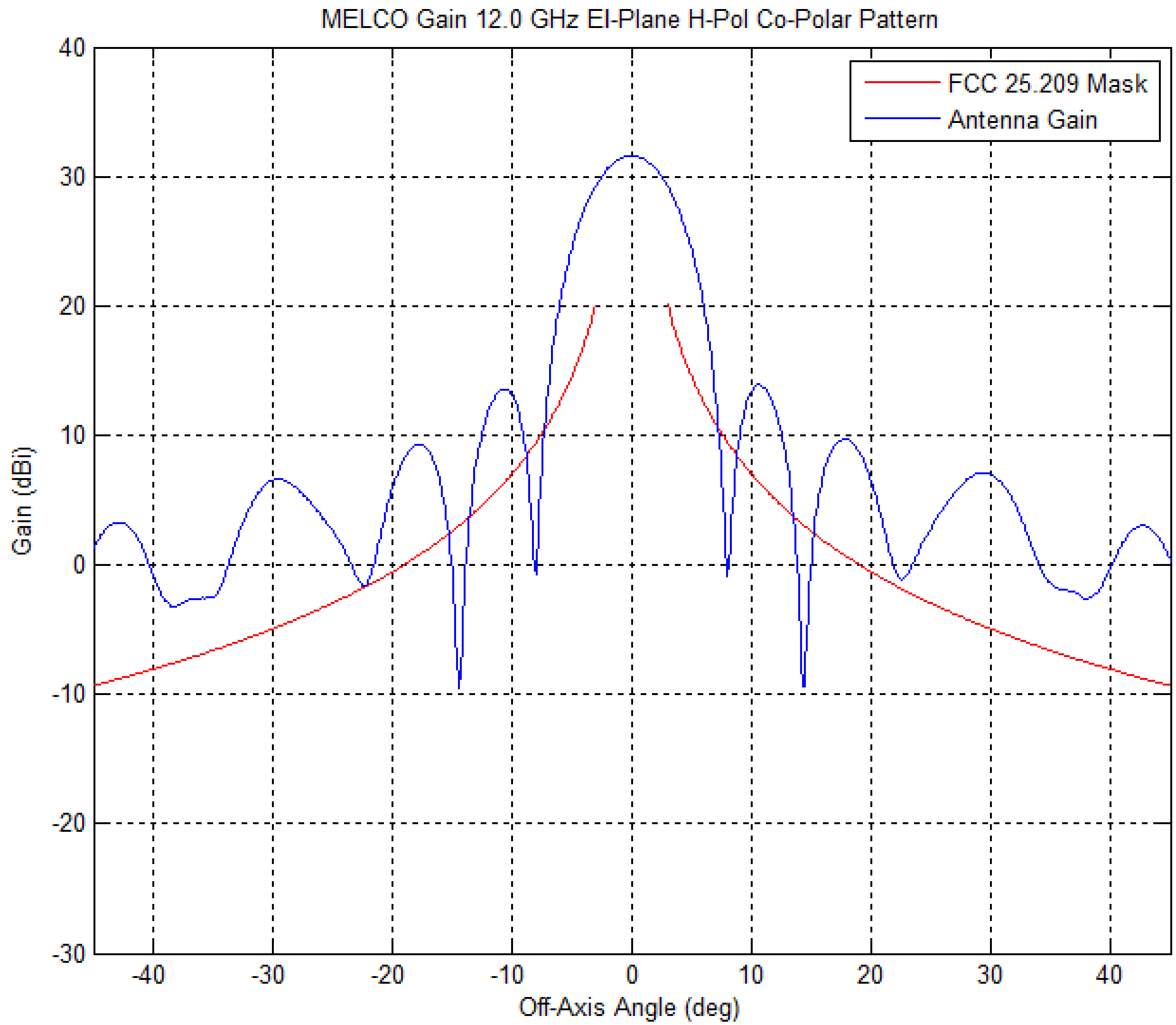


Fig. 32 MELCO Gain 12.0 GHz Elevation-Plane Horizontal-Polarization Co-Polar Pattern

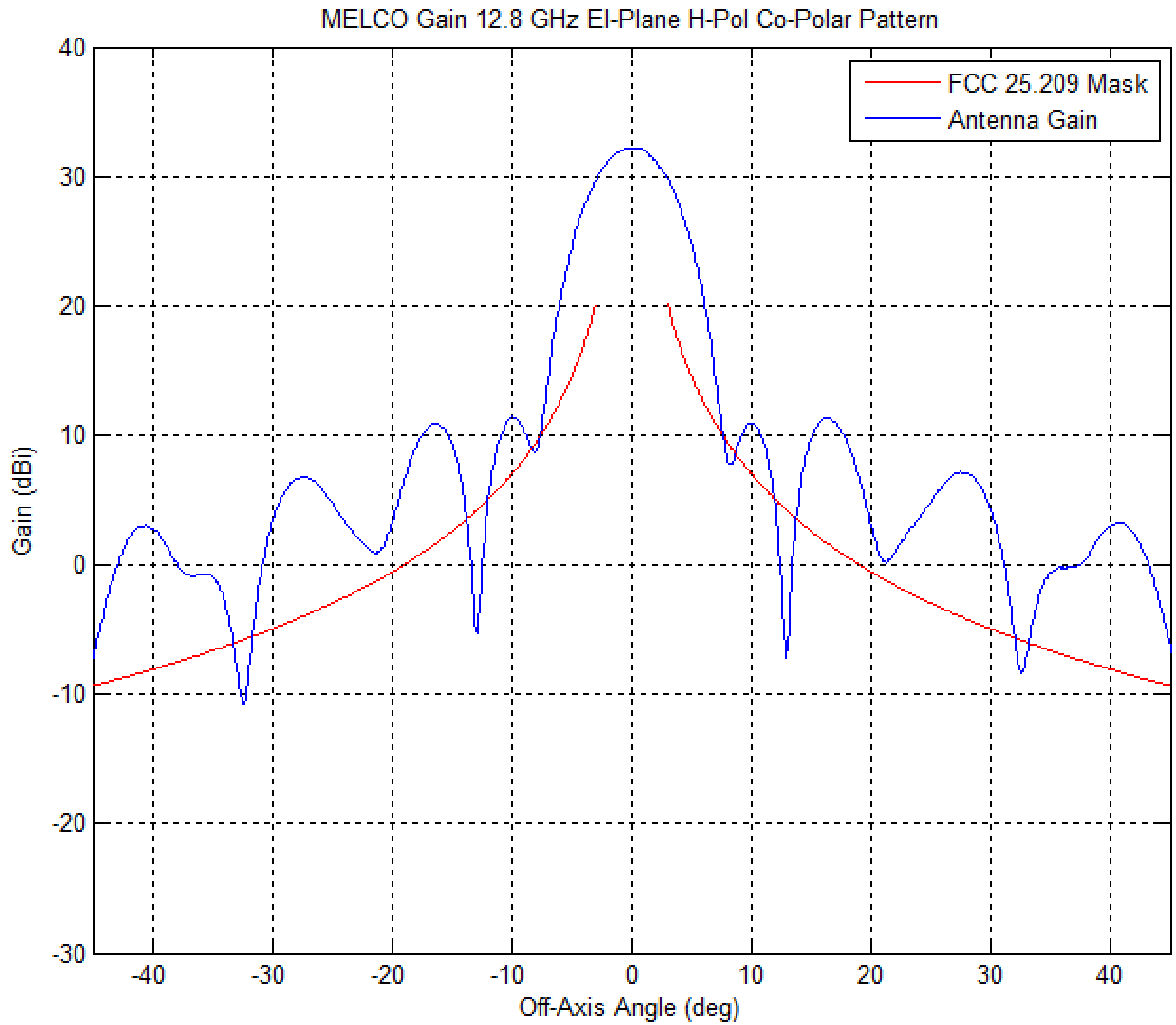


Fig. 33 MELCO Gain 12.8 GHz Elevation-Plane Horizontal-Polarization Co-Polar Pattern

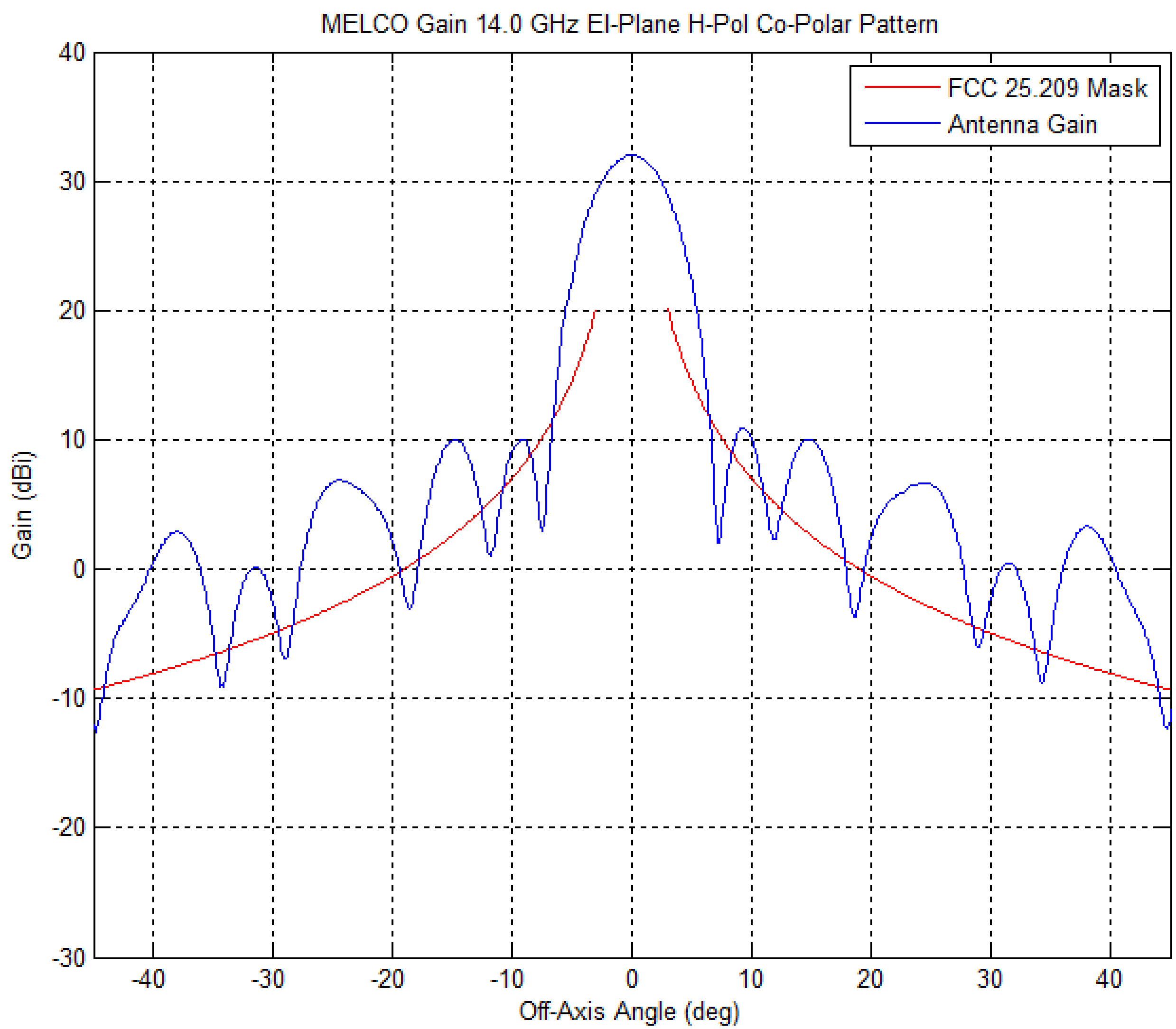


Fig. 34 MELCO Gain 14.0 GHz Elevation-Plane Horizontal-Polarization Co-Polar Pattern

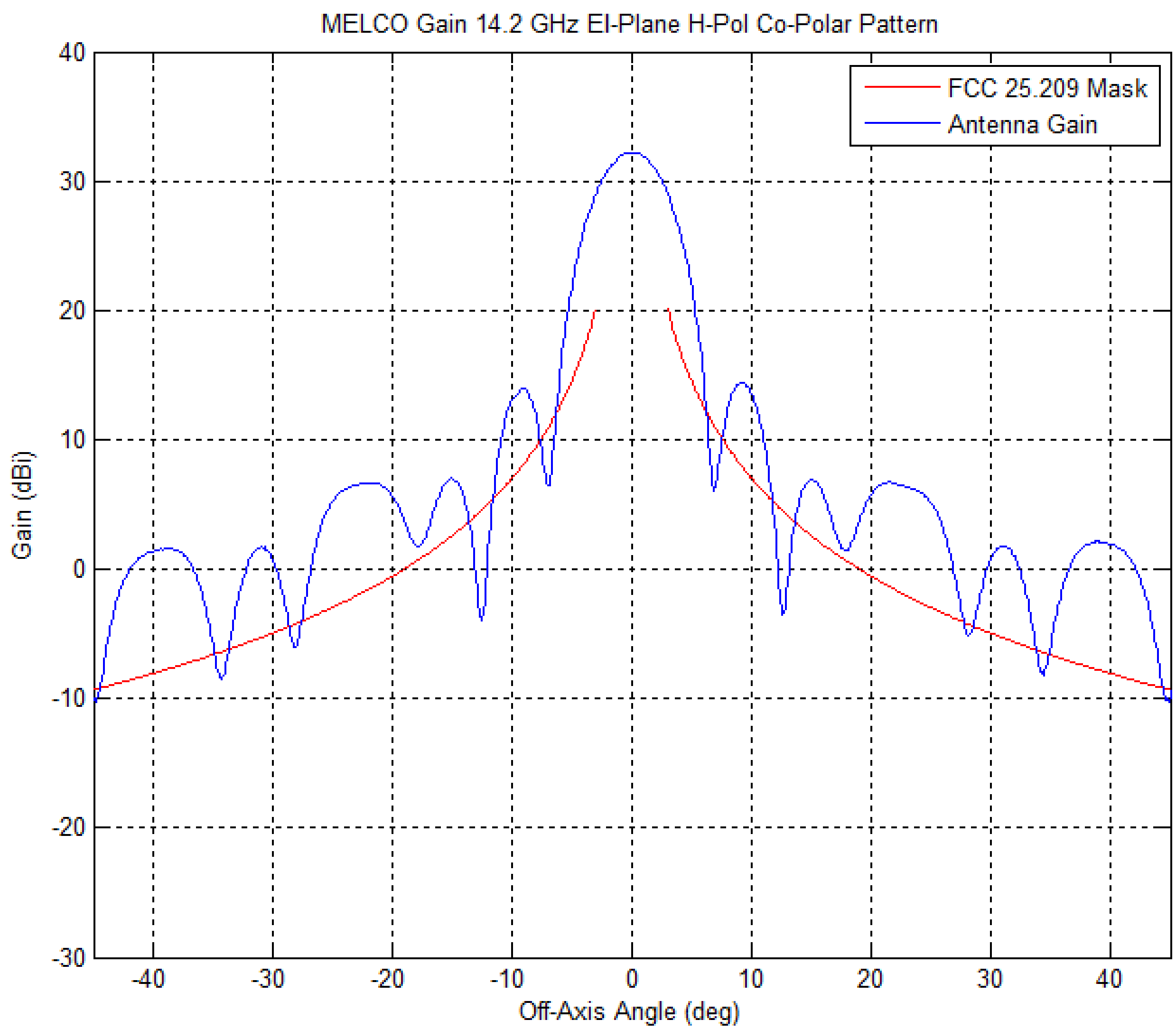


Fig. 35 MELCO Gain 14.2 GHz Elevation-Plane Horizontal-Polarization Co-Polar Pattern

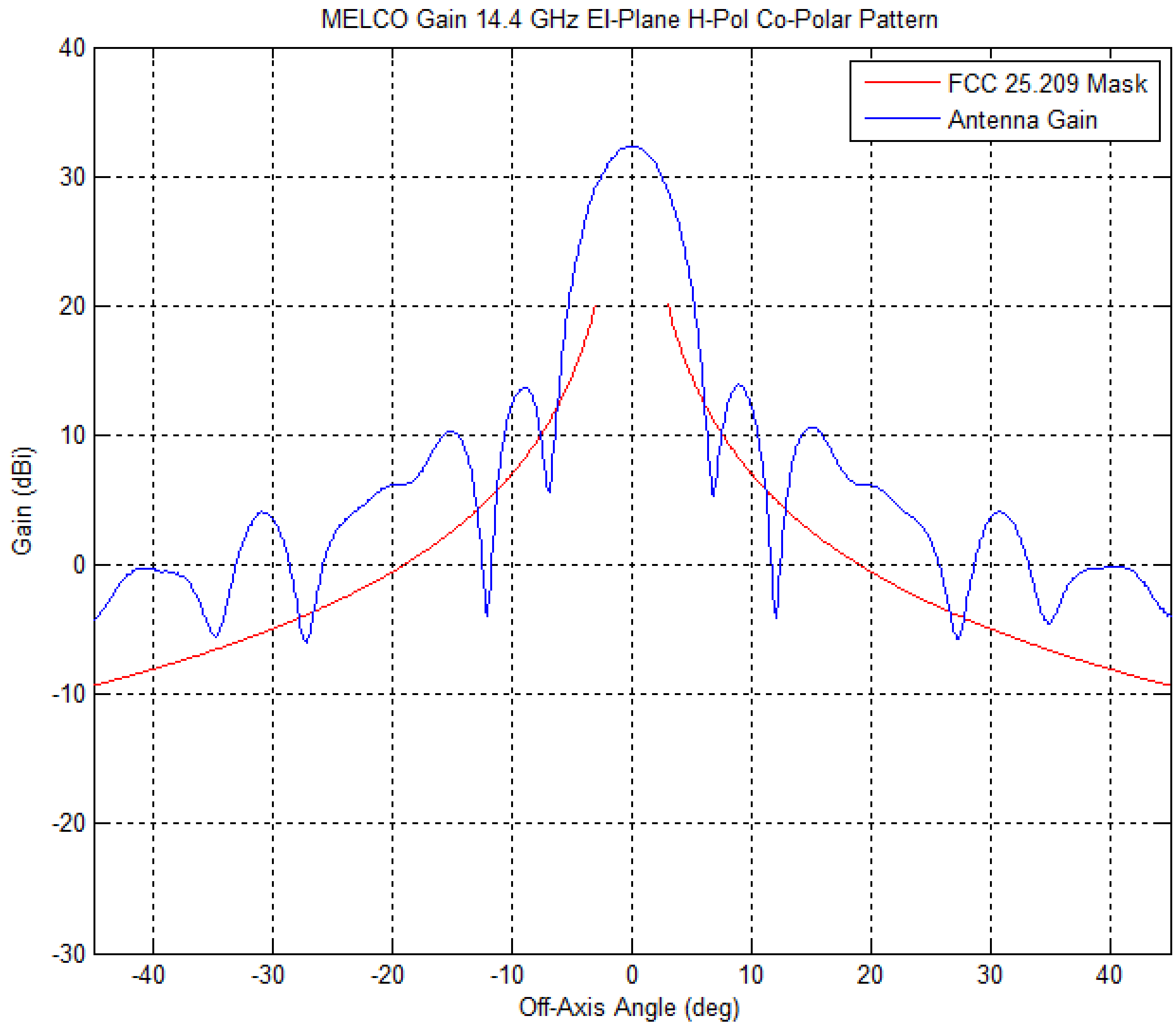


Fig. 36 MELCO Gain 14.4 GHz Elevation-Plane Horizontal-Polarization Co-Polar Pattern

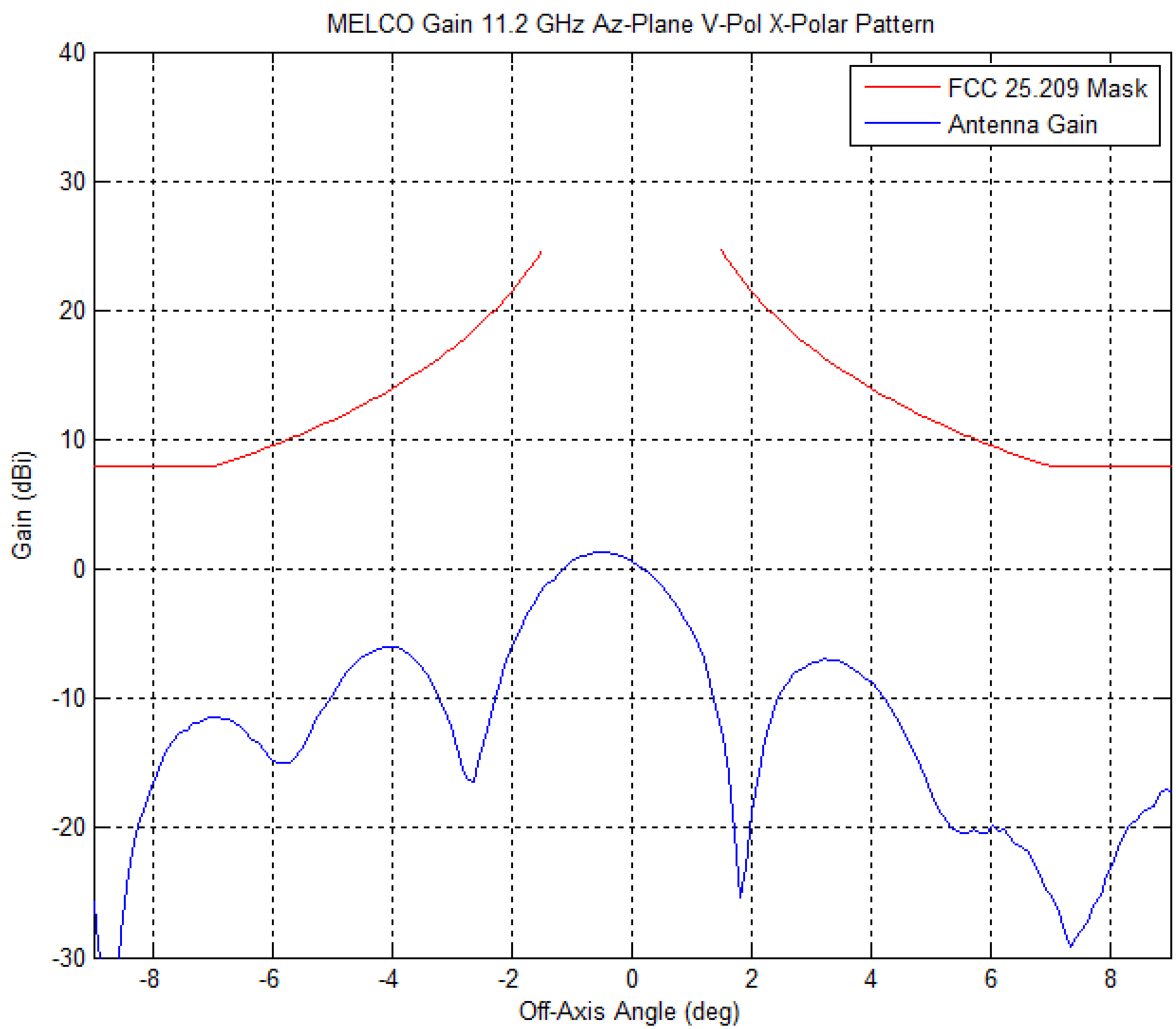


Fig. 37 MELCO Gain 11.2 GHz Azimuth-Plane Vertical-Polarization Cross-Polar Pattern

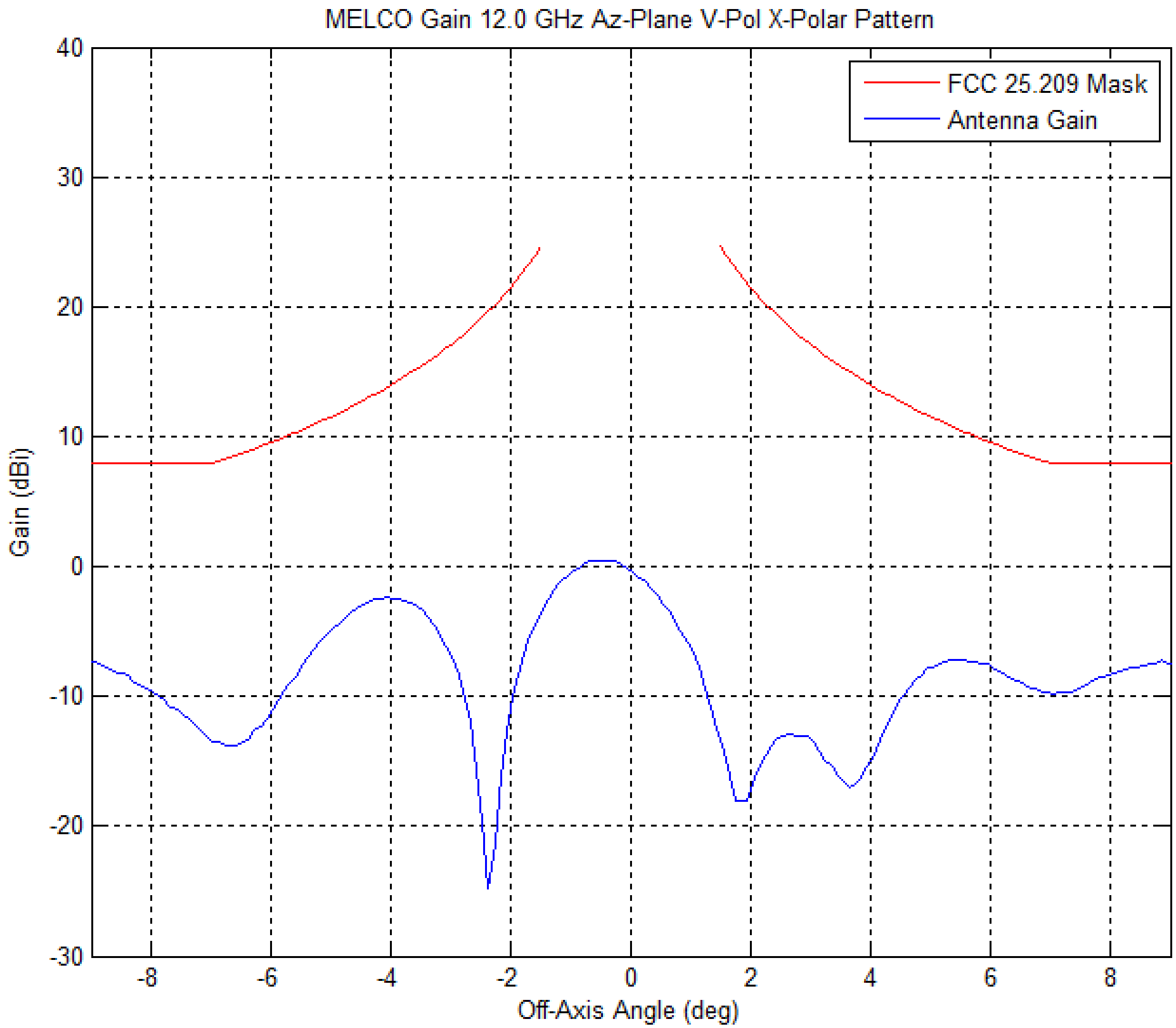


Fig. 38 MELCO Gain 12.0 GHz Azimuth-Plane Vertical-Polarization Cross-Polar Pattern

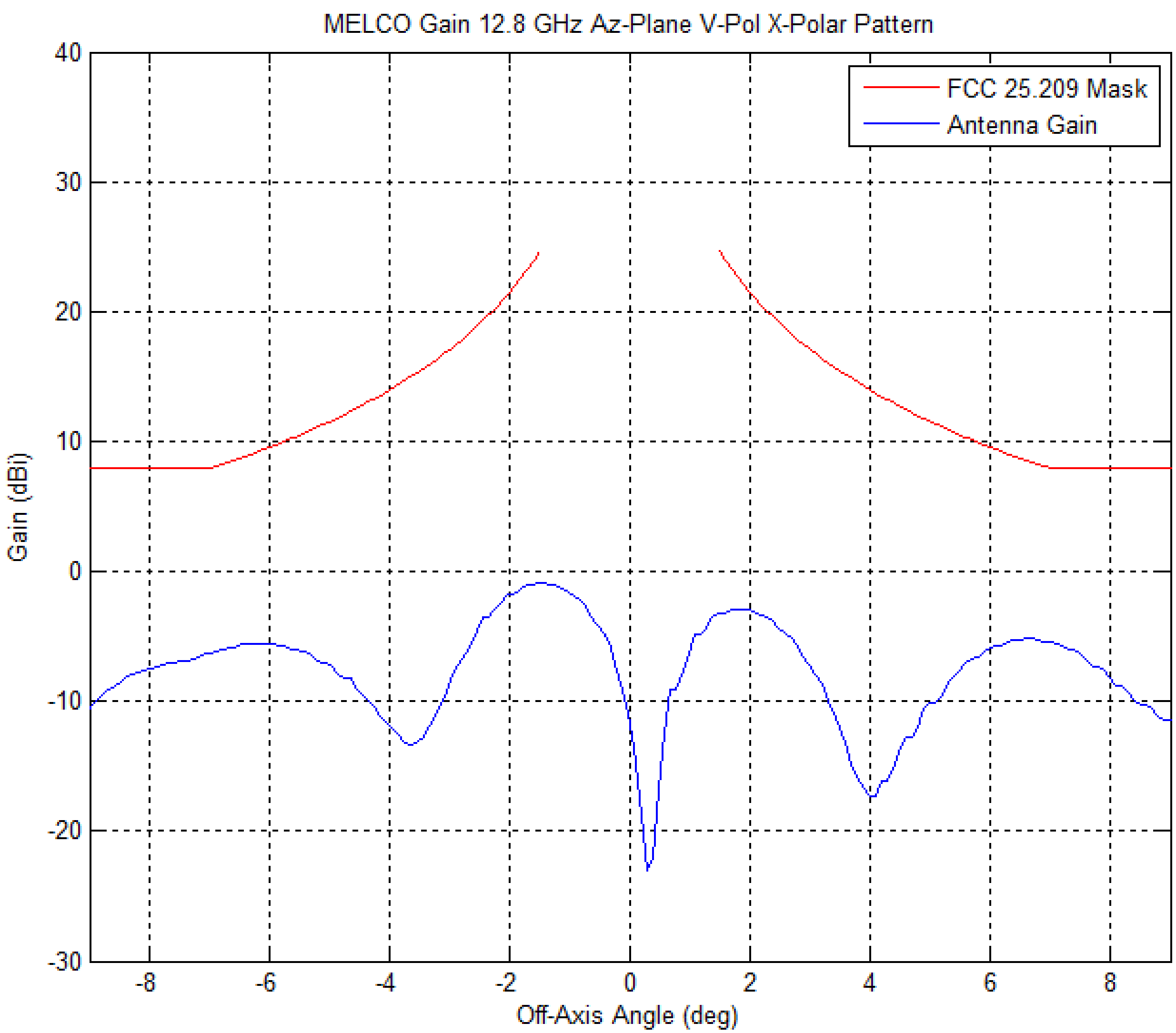


Fig. 39 MELCO Gain 12.8 GHz Azimuth-Plane Vertical-Polarization Cross-Polar Pattern

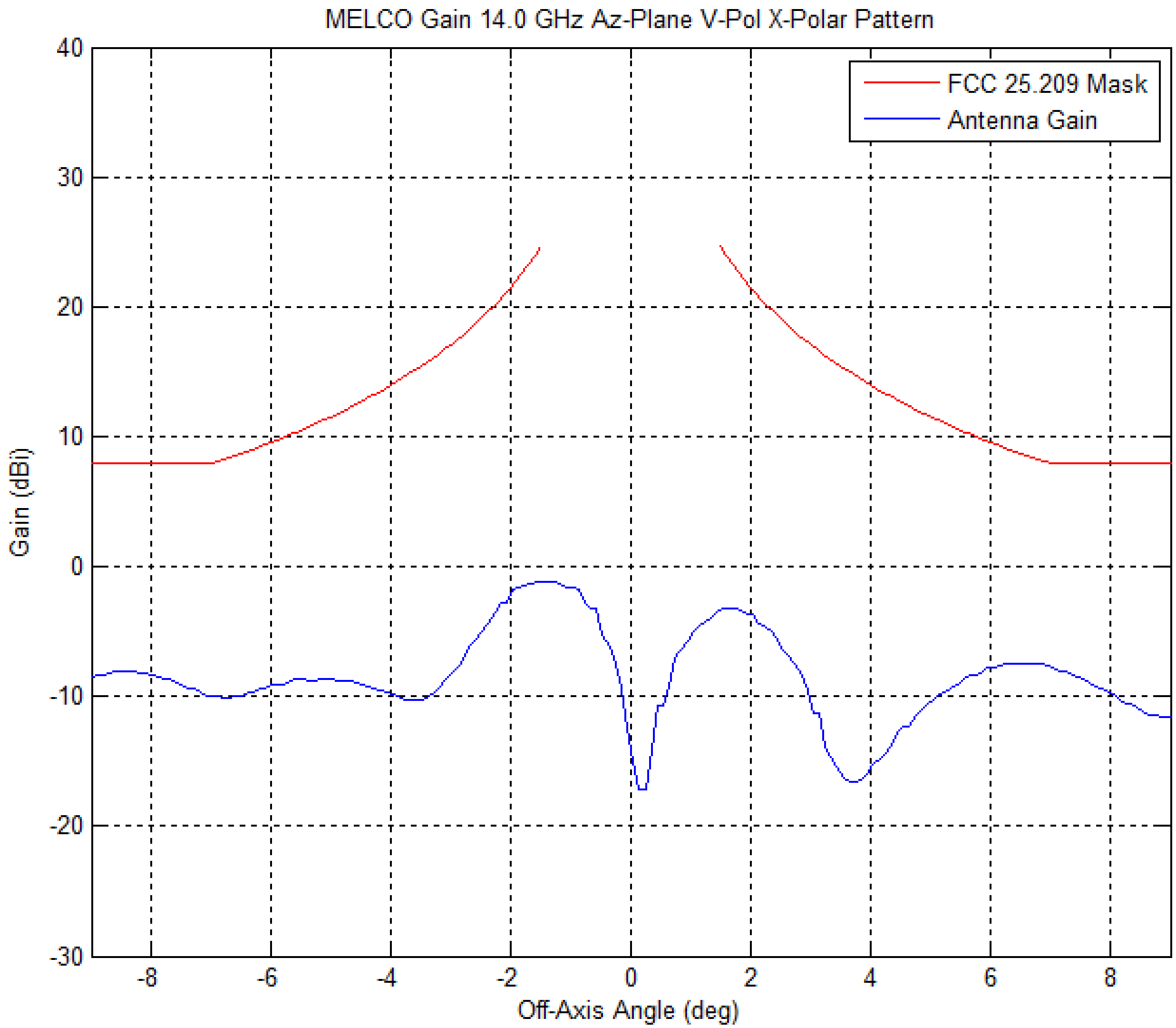


Fig. 40 MELCO Gain 14.0 GHz Azimuth-Plane Vertical-Polarization Cross-Polar Pattern

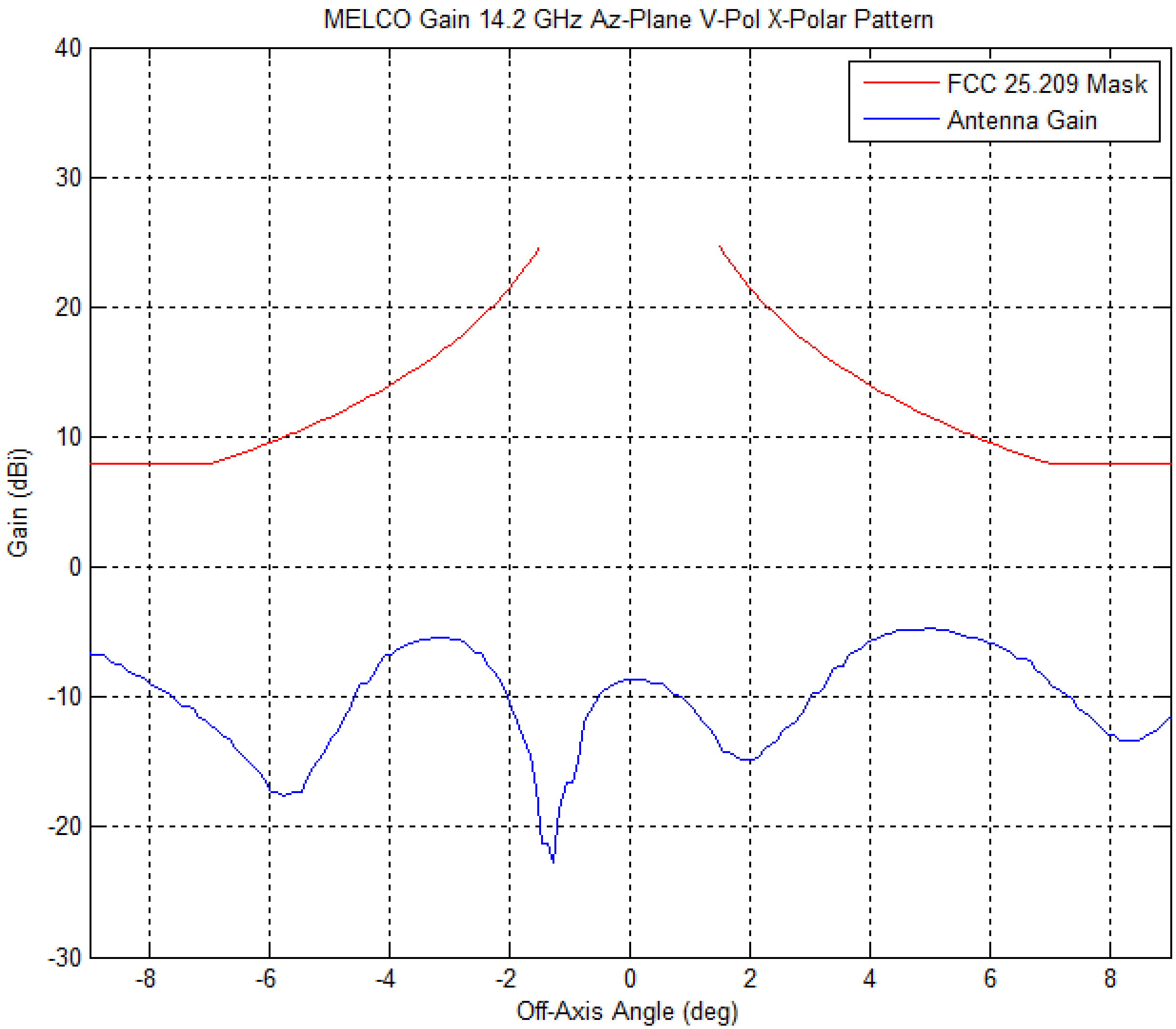


Fig. 41 MELCO Gain 14.2 GHz Azimuth-Plane Vertical-Polarization Cross-Polar Pattern

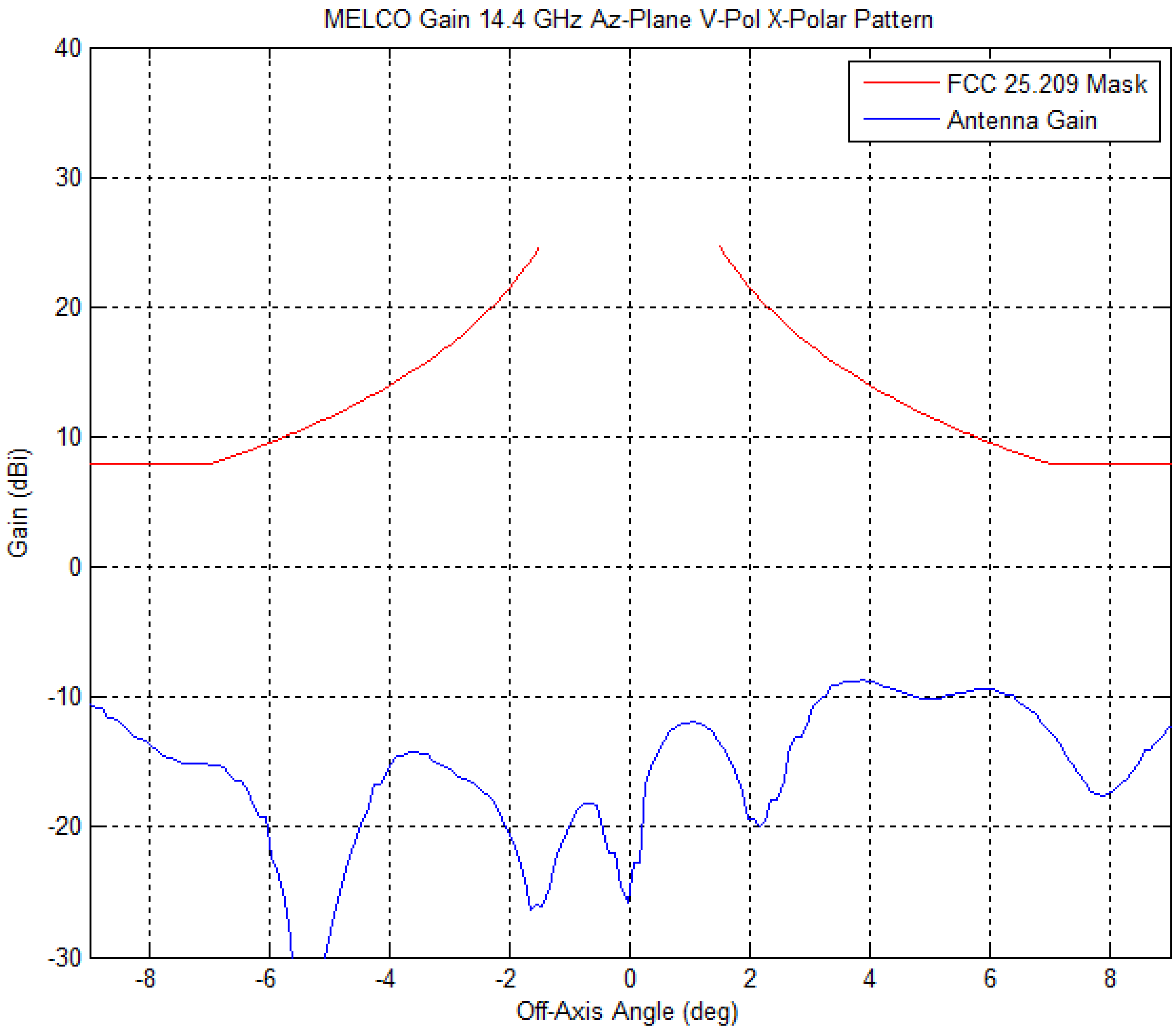


Fig. 42 MELCO Gain 14.4 GHz Azimuth-Plane Vertical-Polarization Cross-Polar Pattern

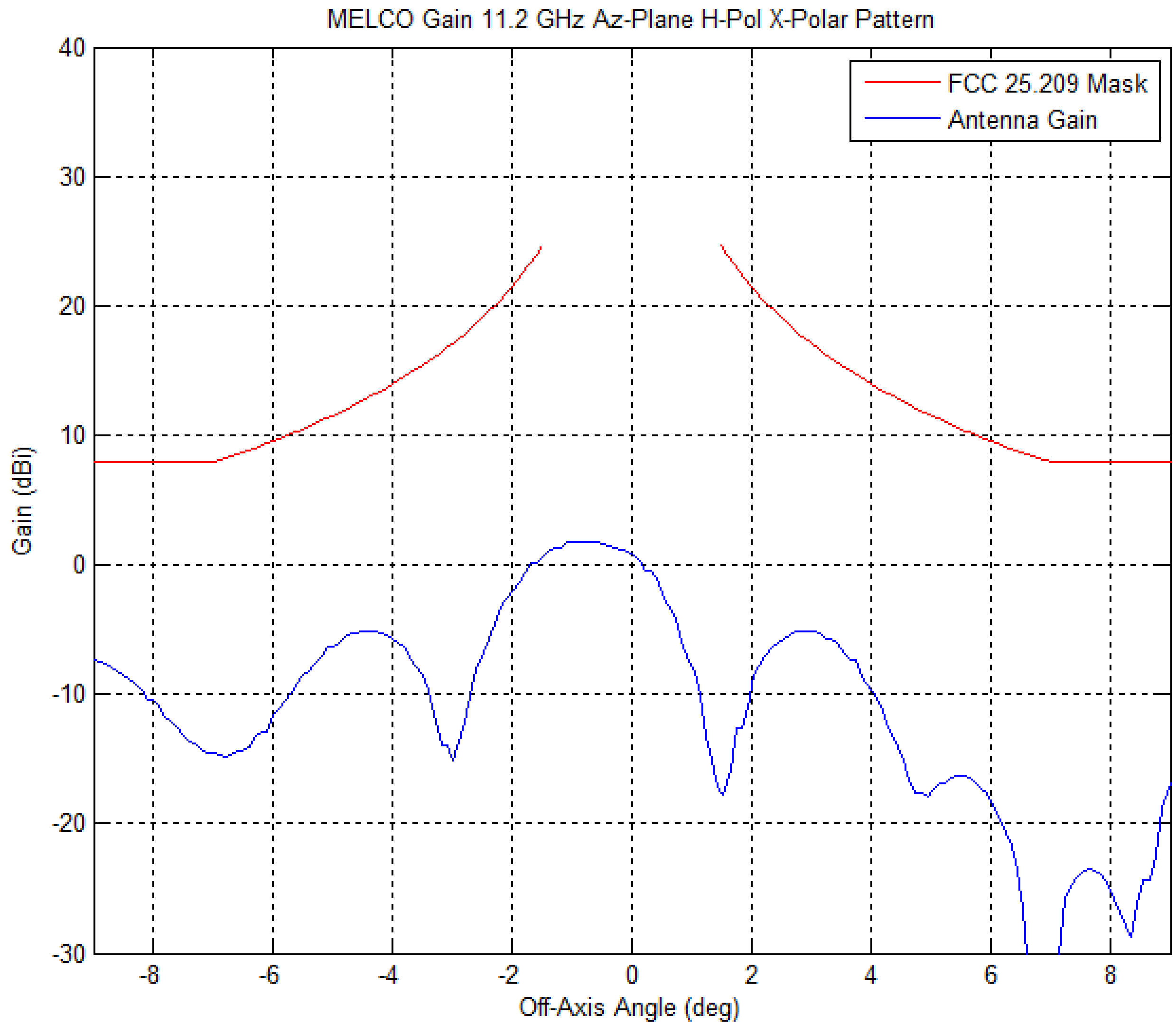


Fig. 43 MELCO Gain 11.2 GHz Azimuth-Plane Horizontal-Polarization Cross-Polar Pattern

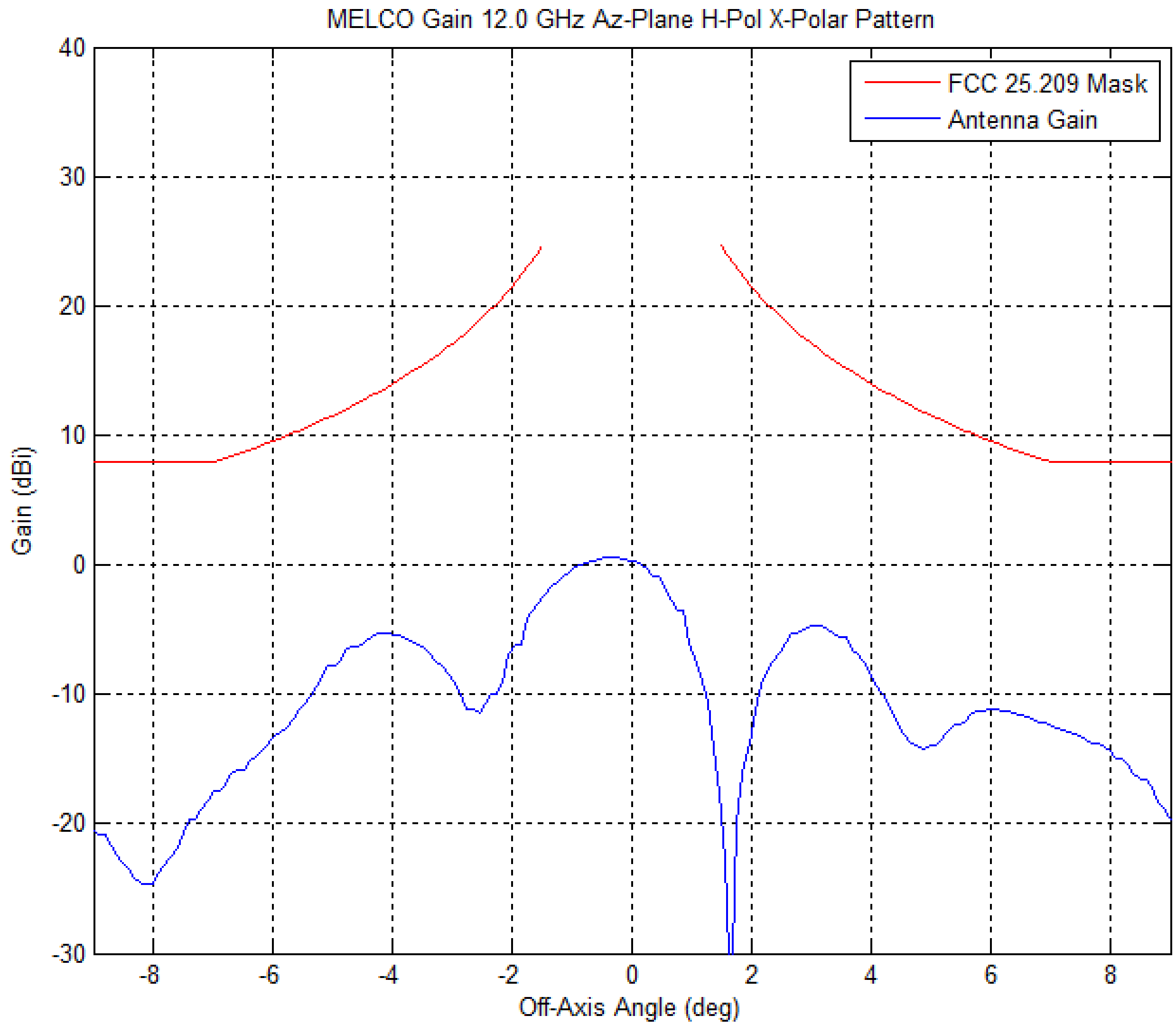


Fig. 44 MELCO Gain 12.0 GHz Azimuth-Plane Horizontal-Polarization Cross-Polar Pattern

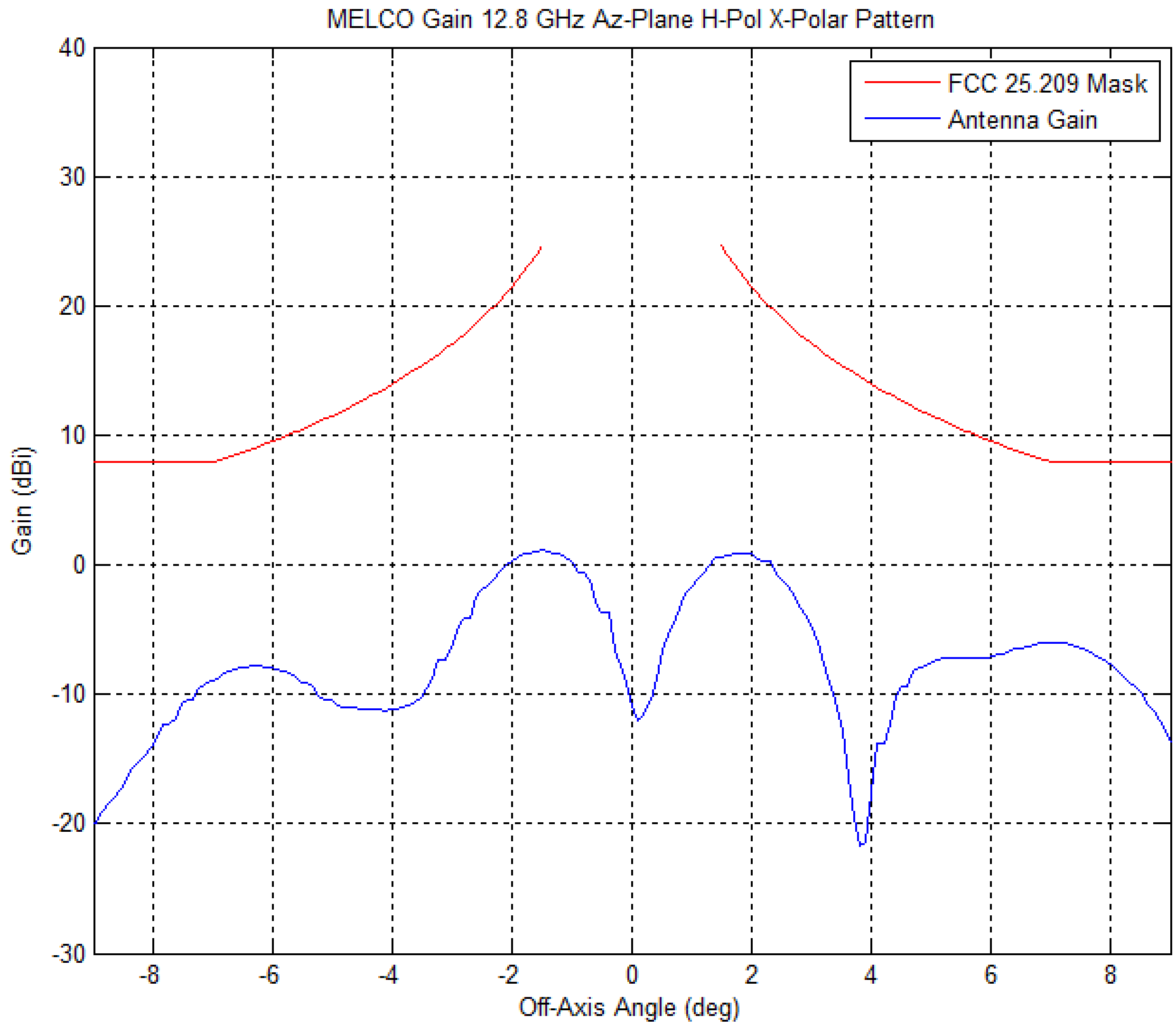


Fig. 45 MELCO Gain 12.8 GHz Azimuth-Plane Horizontal-Polarization Cross-Polar Pattern

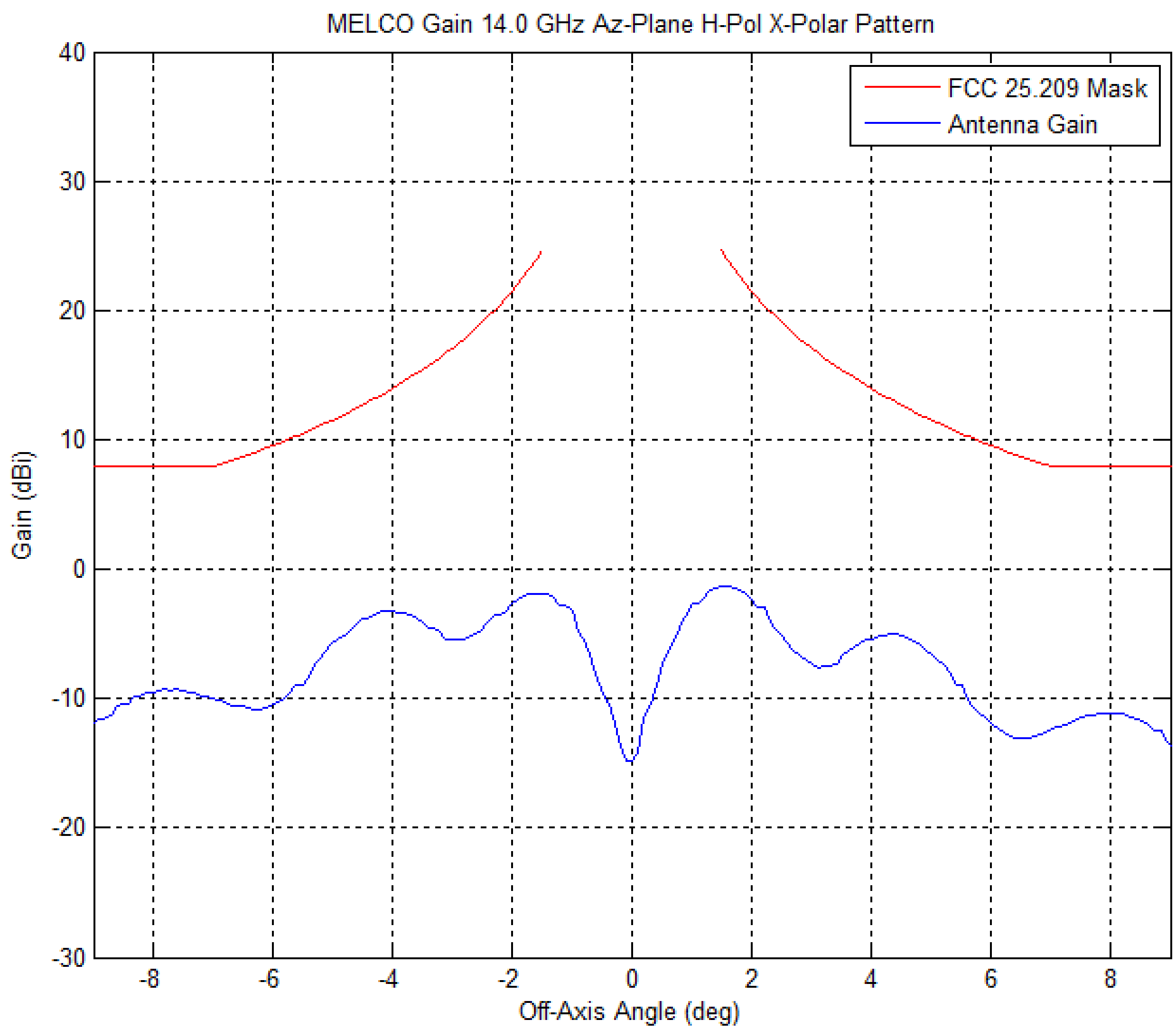


Fig. 46 MELCO Gain 14.0 GHz Azimuth-Plane Horizontal-Polarization Cross-Polar Pattern

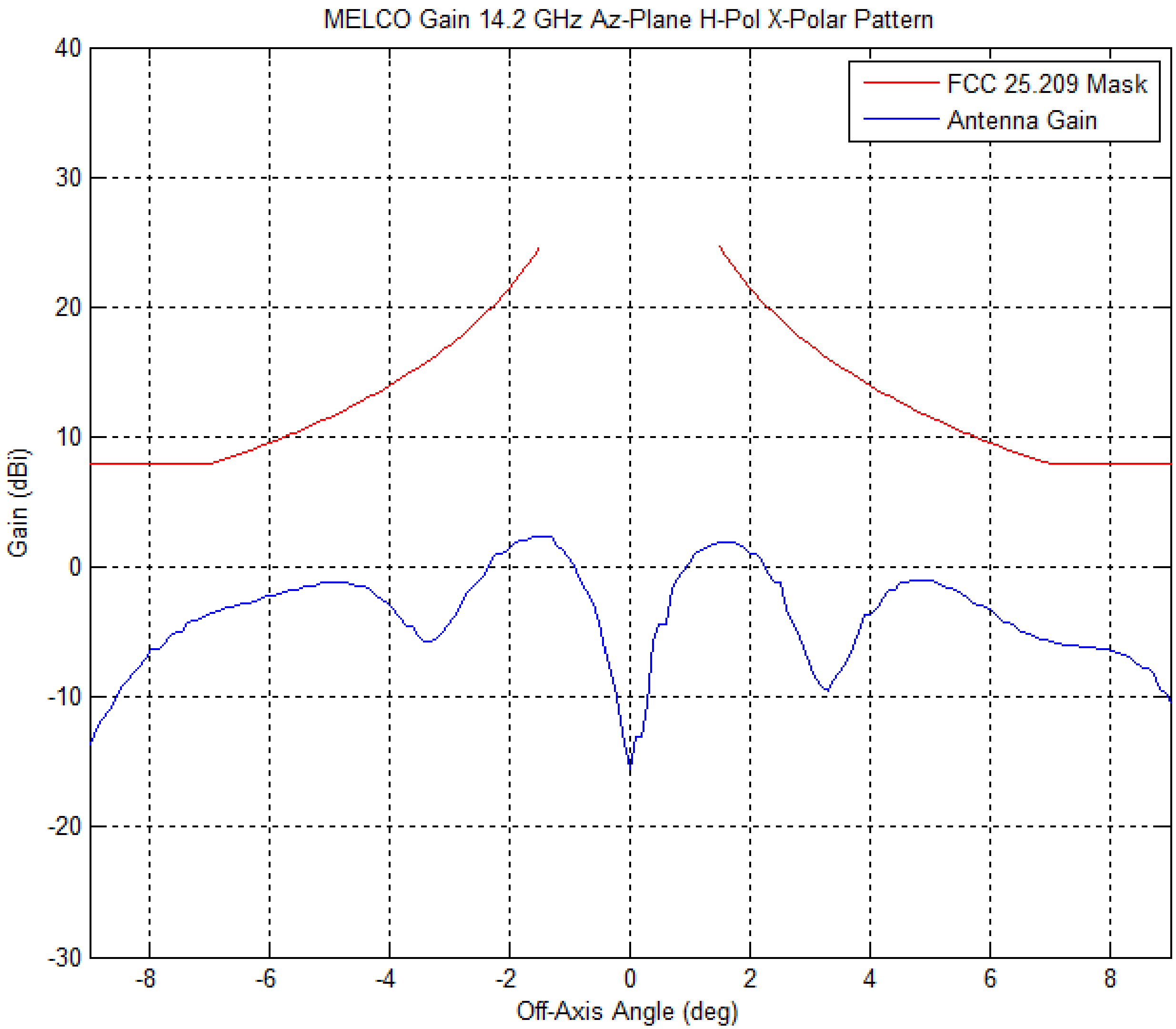


Fig. 47 MELCO Gain 14.2 GHz Azimuth-Plane Horizontal-Polarization Cross-Polar Pattern

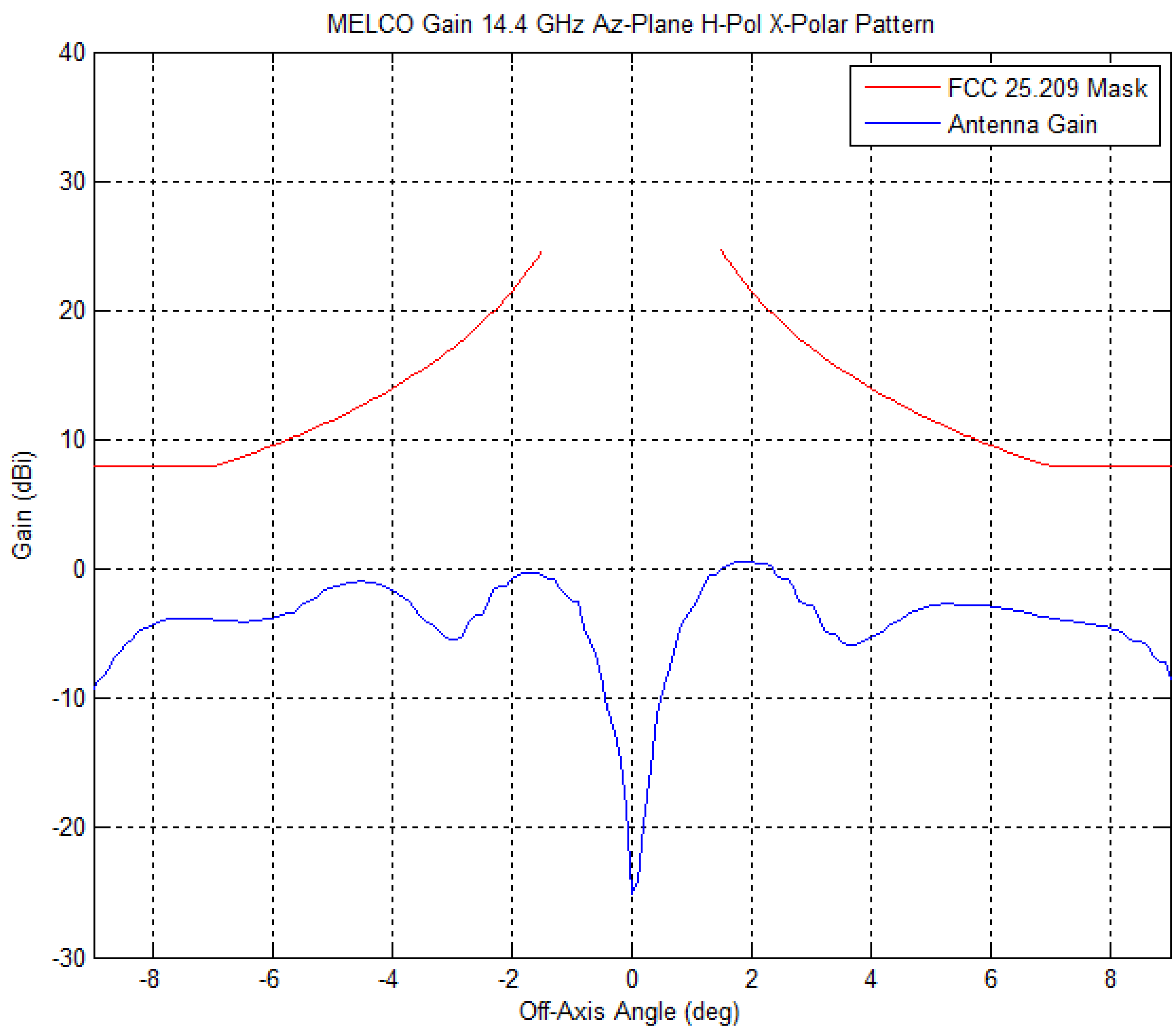


Fig. 48 MELCO Gain 14.4 GHz Azimuth-Plane Horizontal-Polarization Cross-Polar Pattern

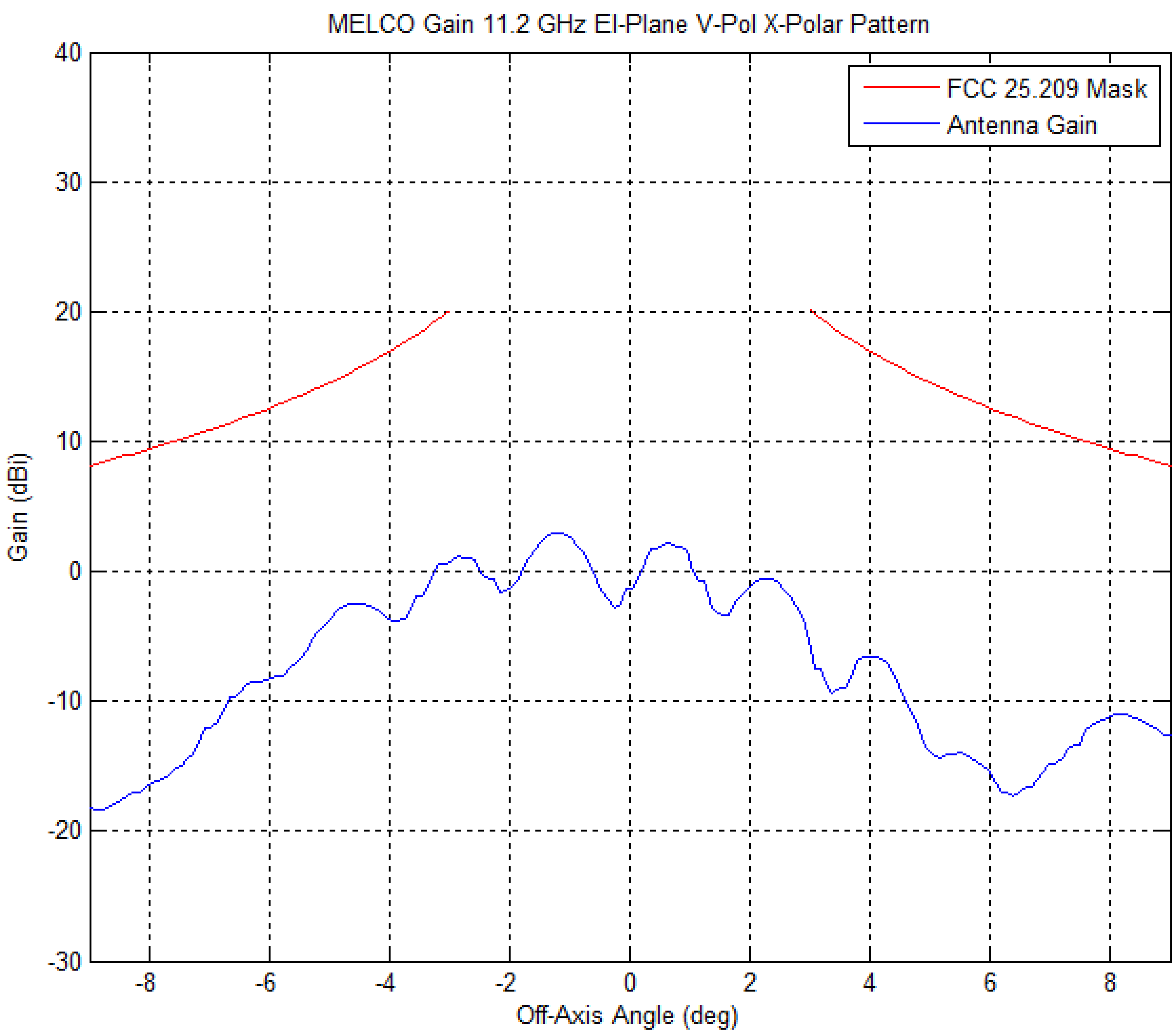


Fig. 49 MELCO Gain 11.2 GHz Elevation-Plane Vertical-Polarization Cross-Polar Pattern

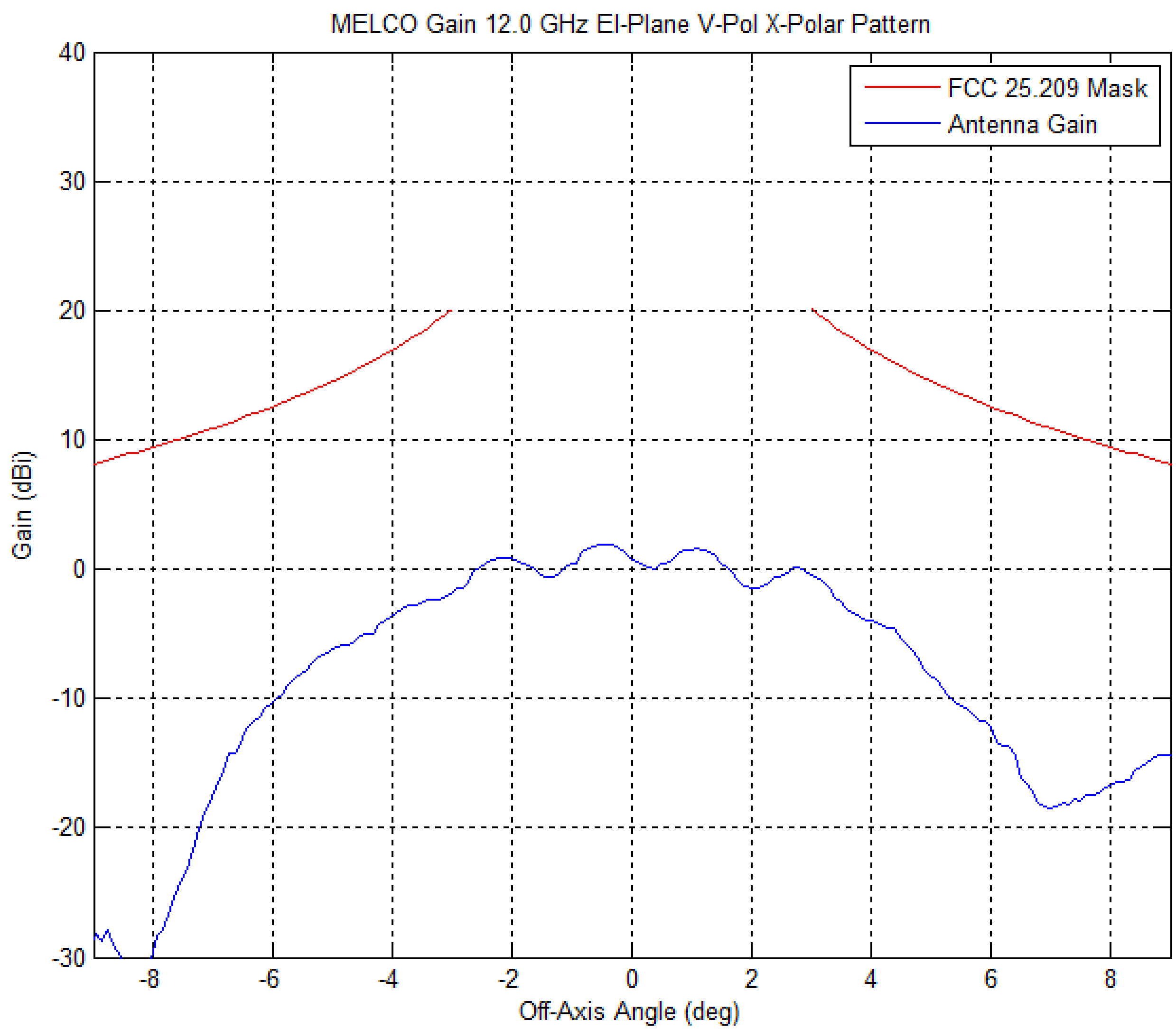


Fig. 50 MELCO Gain 12.0 GHz Elevation-Plane Vertical-Polarization Cross-Polar Pattern

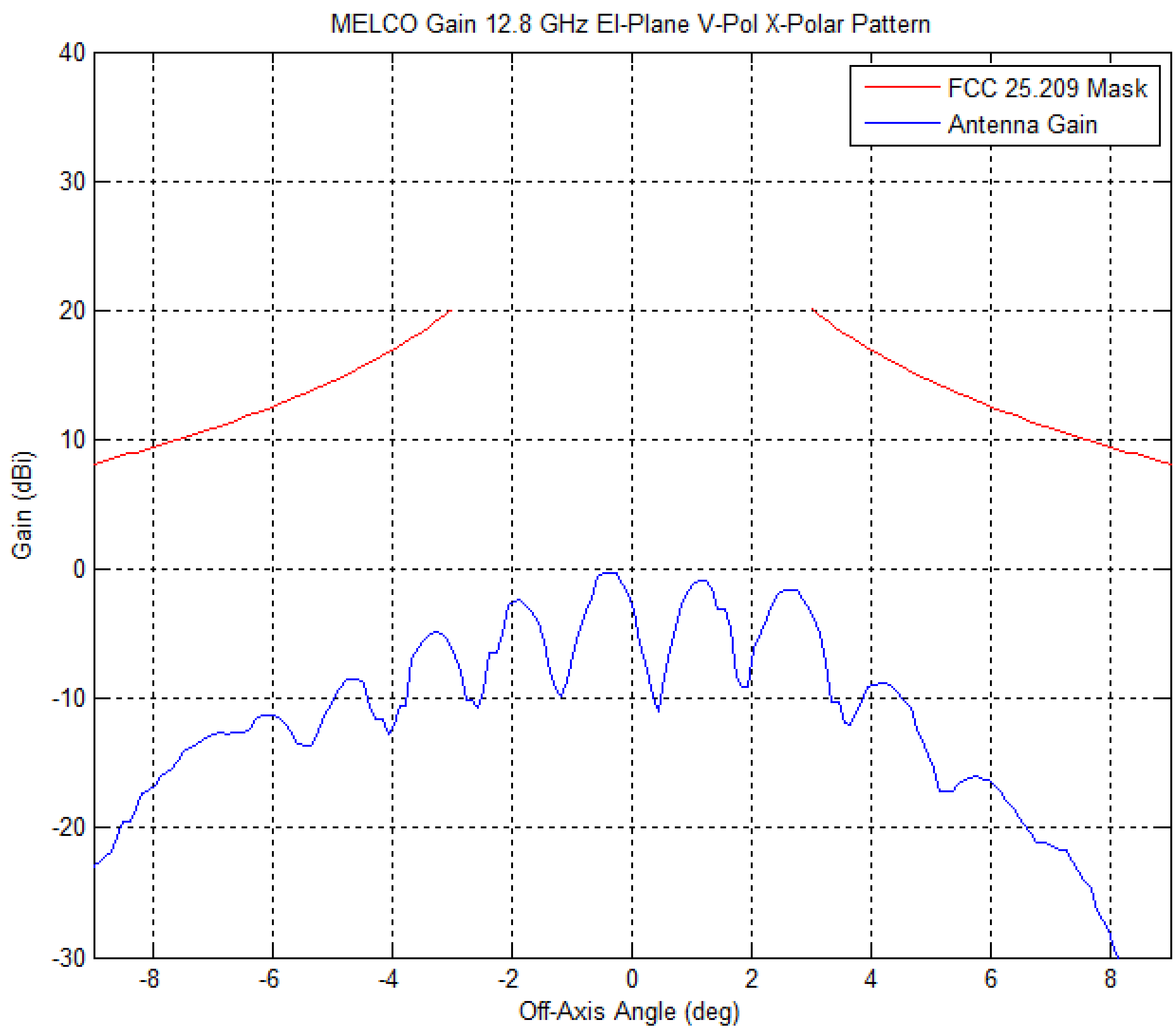


Fig. 51 MELCO Gain 12.8 GHz Elevation-Plane Vertical-Polarization Cross-Polar Pattern

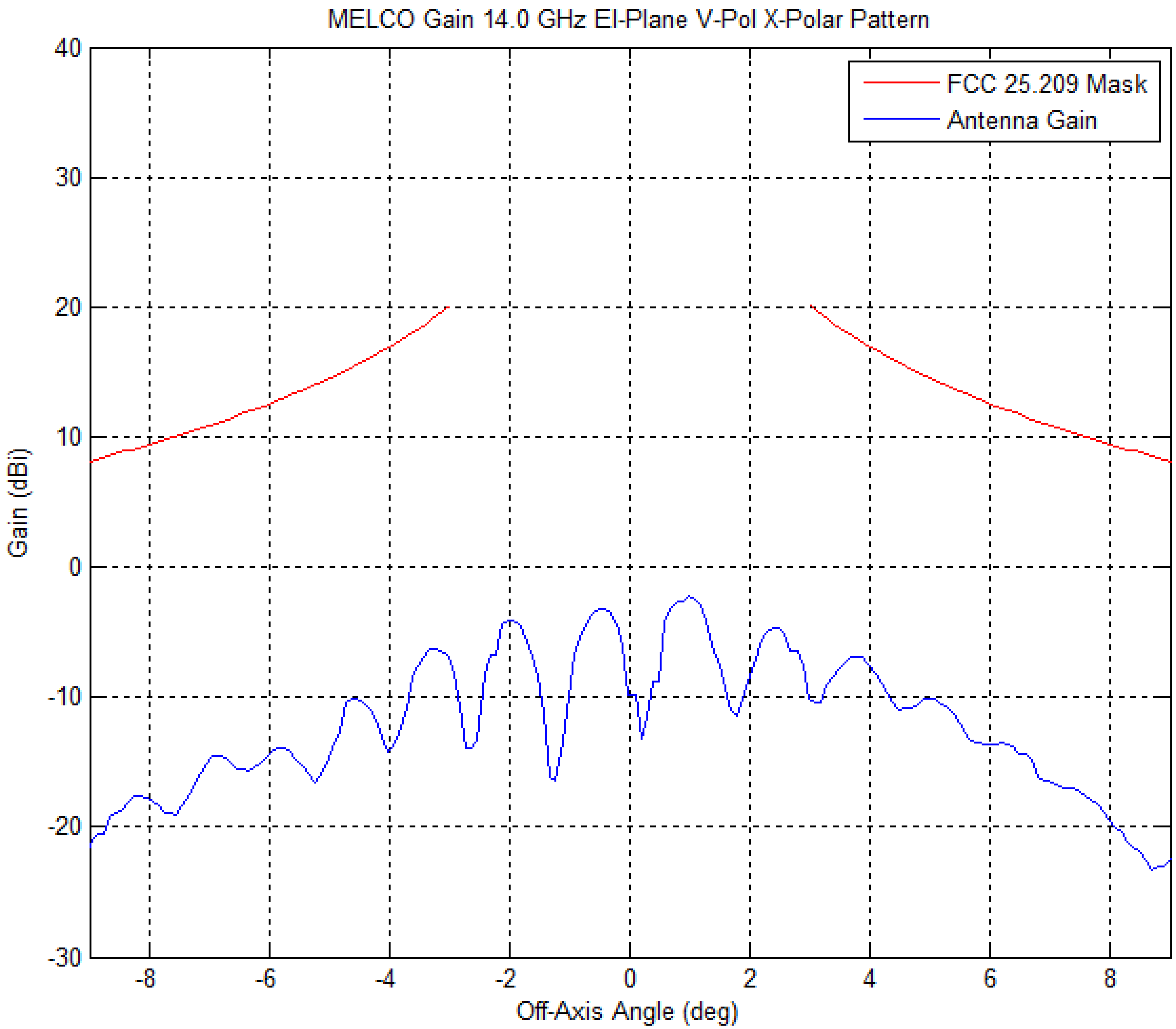


Fig. 52 MELCO Gain 14.0 GHz Elevation-Plane Vertical-Polarization Cross-Polar Pattern

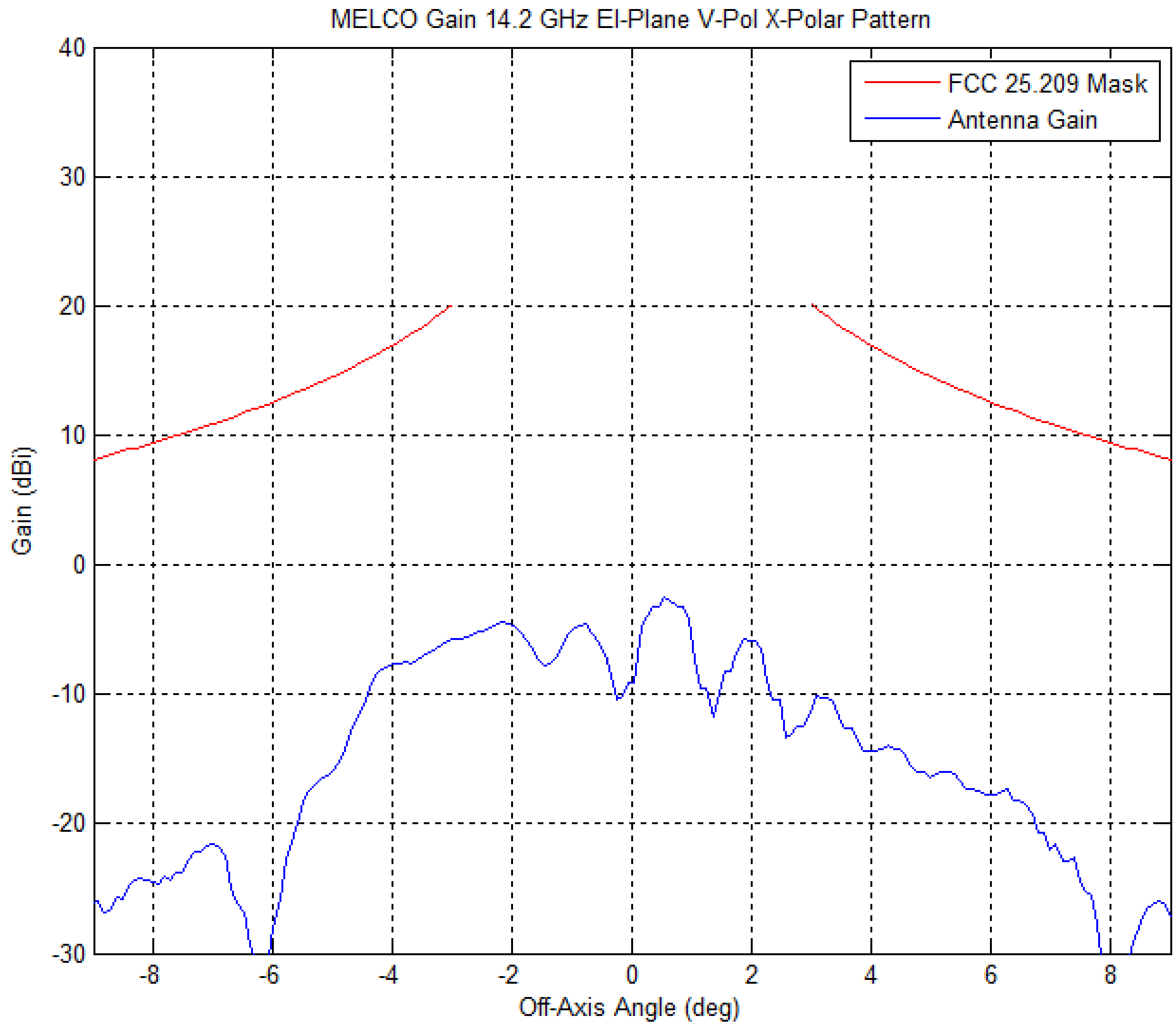


Fig. 53 MELCO Gain 14.2 GHz Elevation-Plane Vertical-Polarization Cross-Polar Pattern

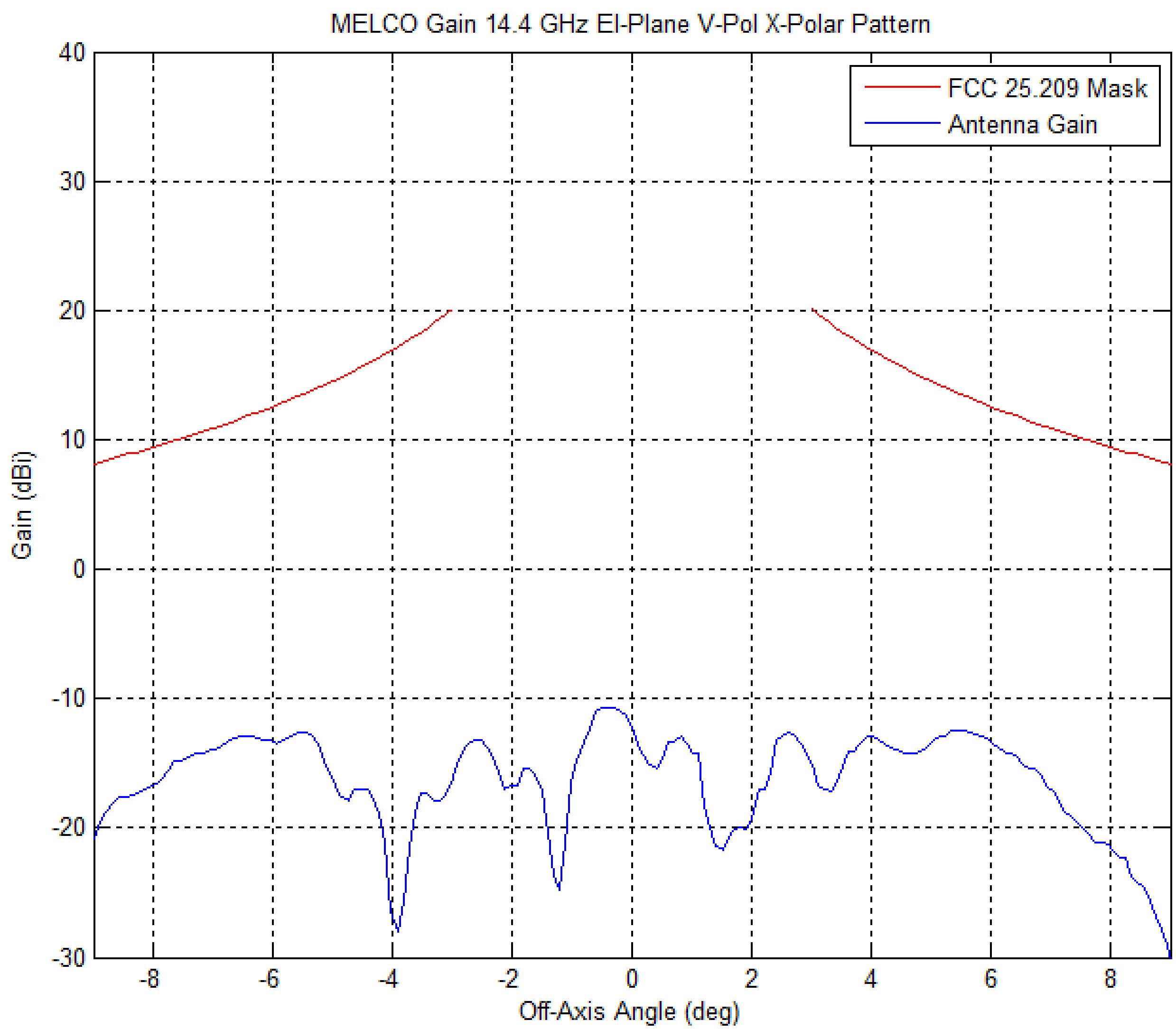


Fig. 54 MELCO Gain 14.4 GHz Elevation-Plane Vertical-Polarization Cross-Polar Pattern

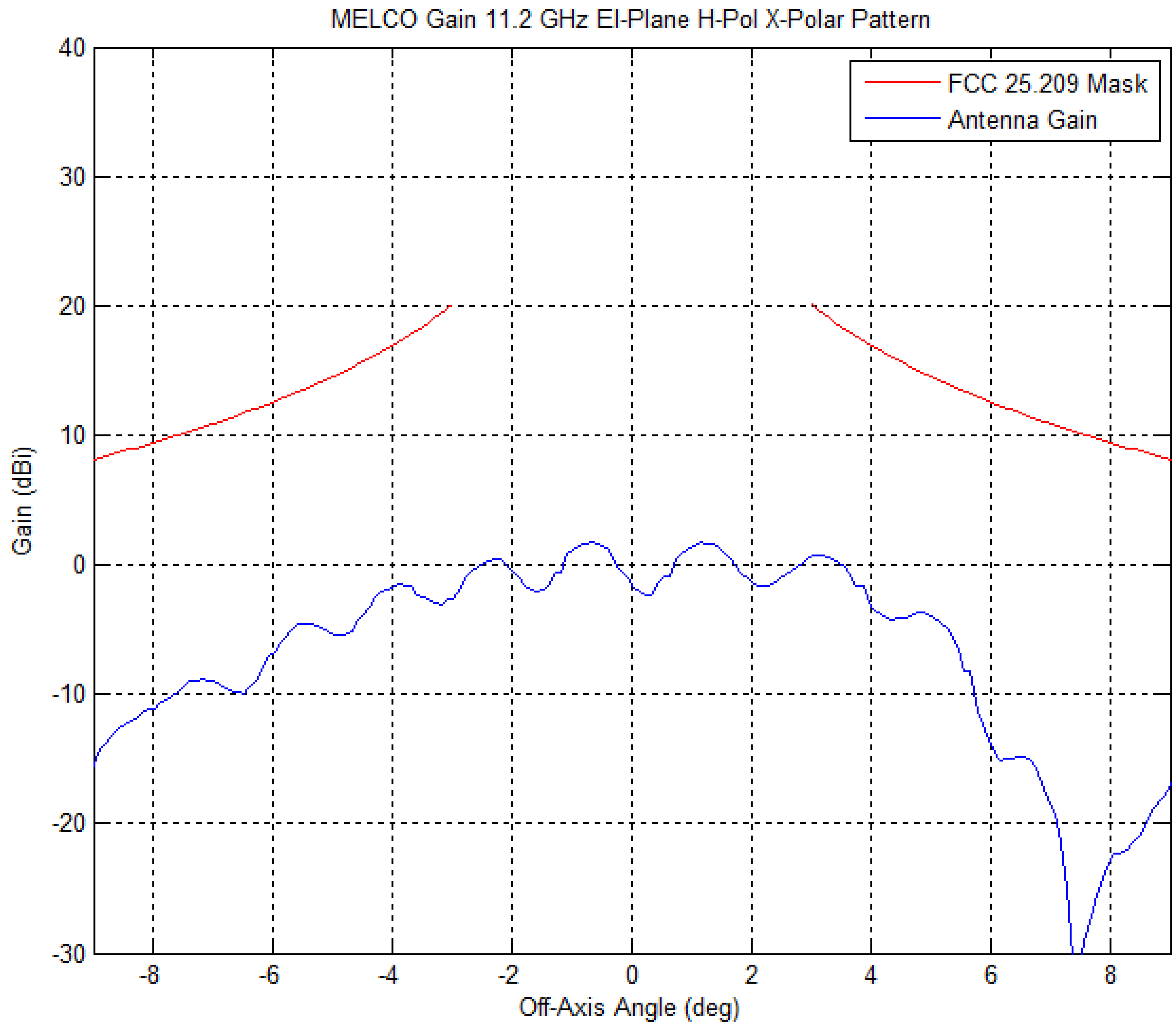


Fig. 55 MELCO Gain 11.2 GHz Elevation-Plane Horizontal-Polarization Cross-Polar Pattern

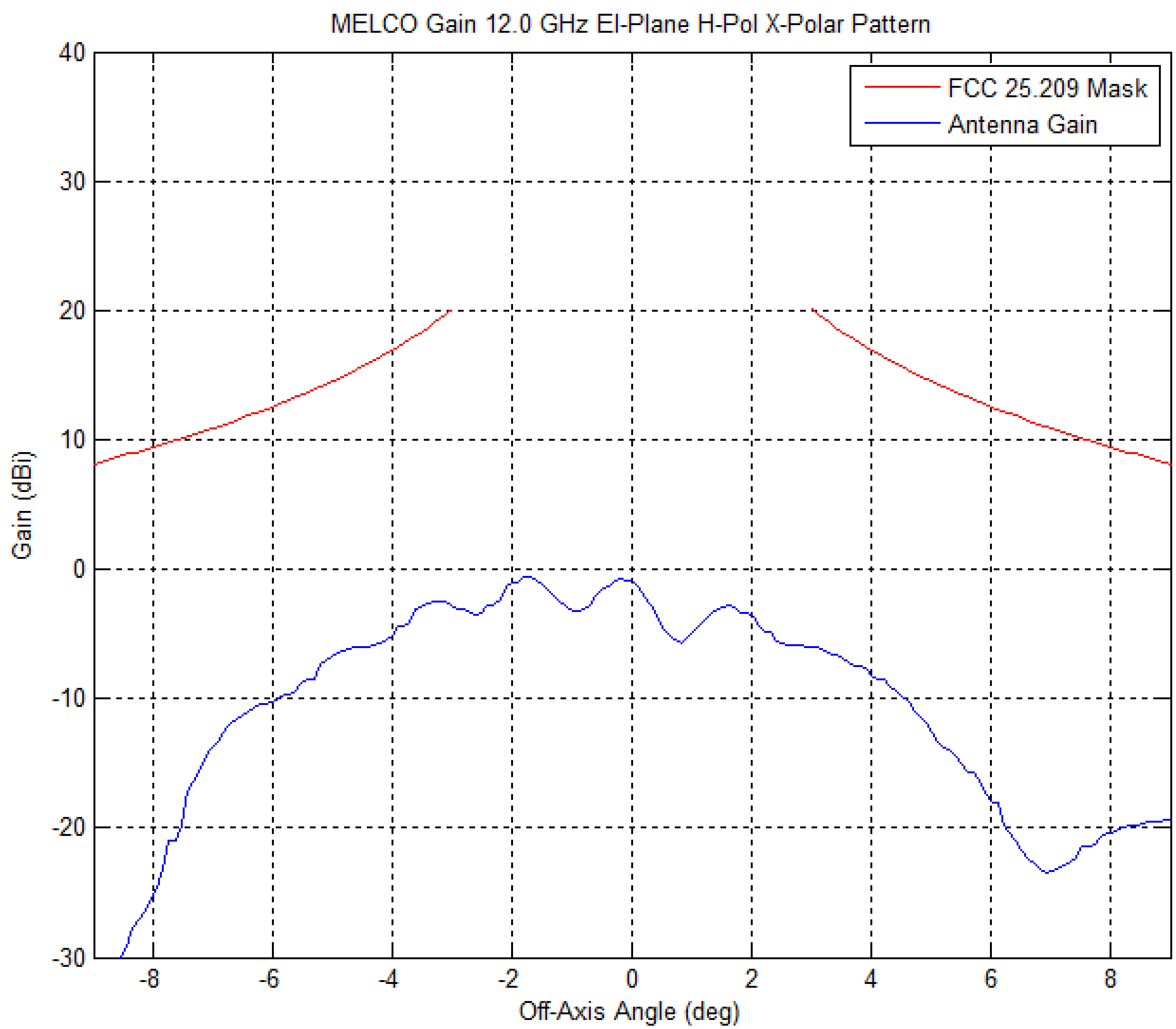


Fig. 56 MELCO Gain 12.0 GHz Elevation-Plane Horizontal-Polarization Cross-Polar Pattern

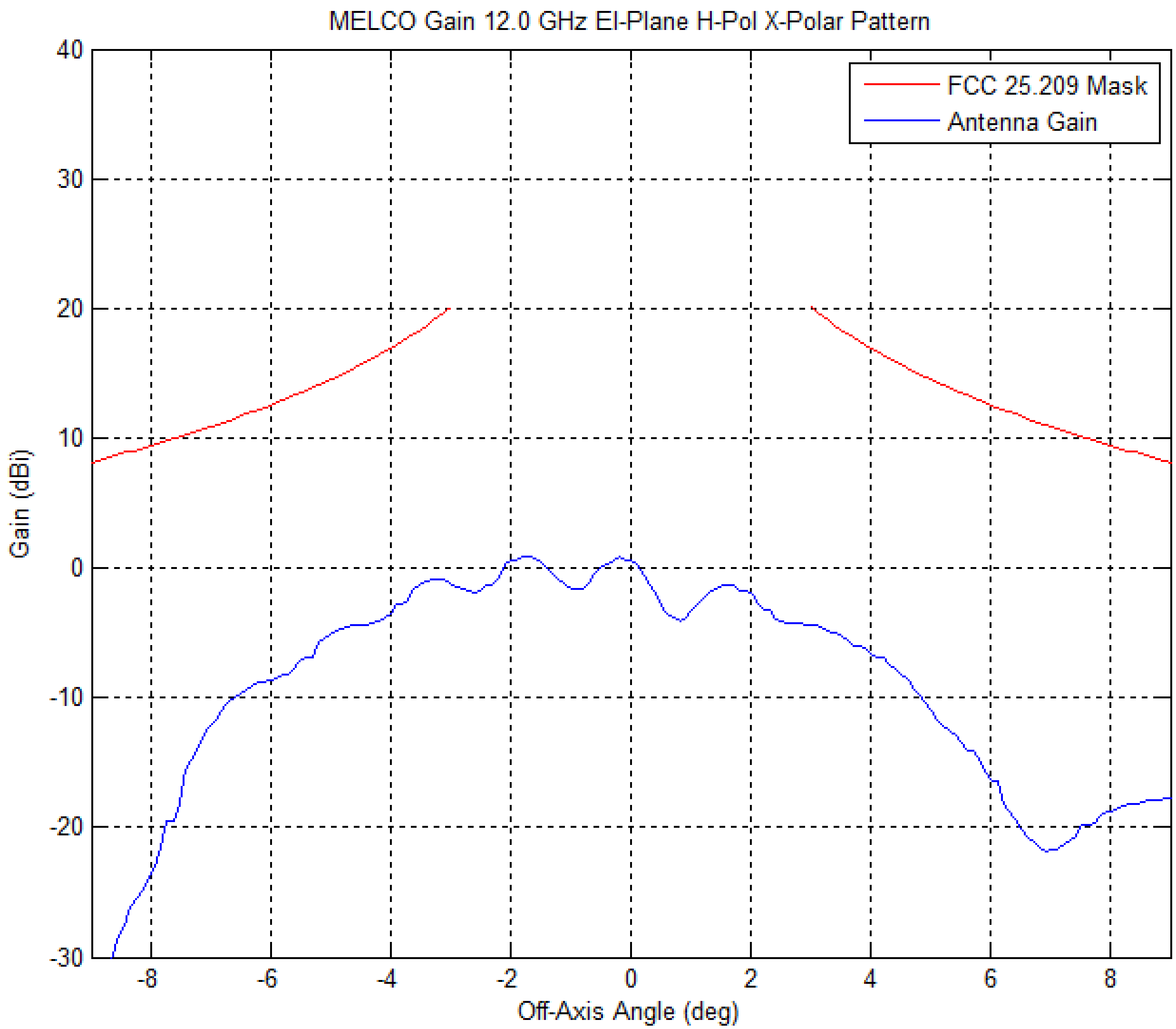


Fig. 57 MELCO Gain 12.8 GHz Elevation-Plane Horizontal-Polarization Cross-Polar Pattern

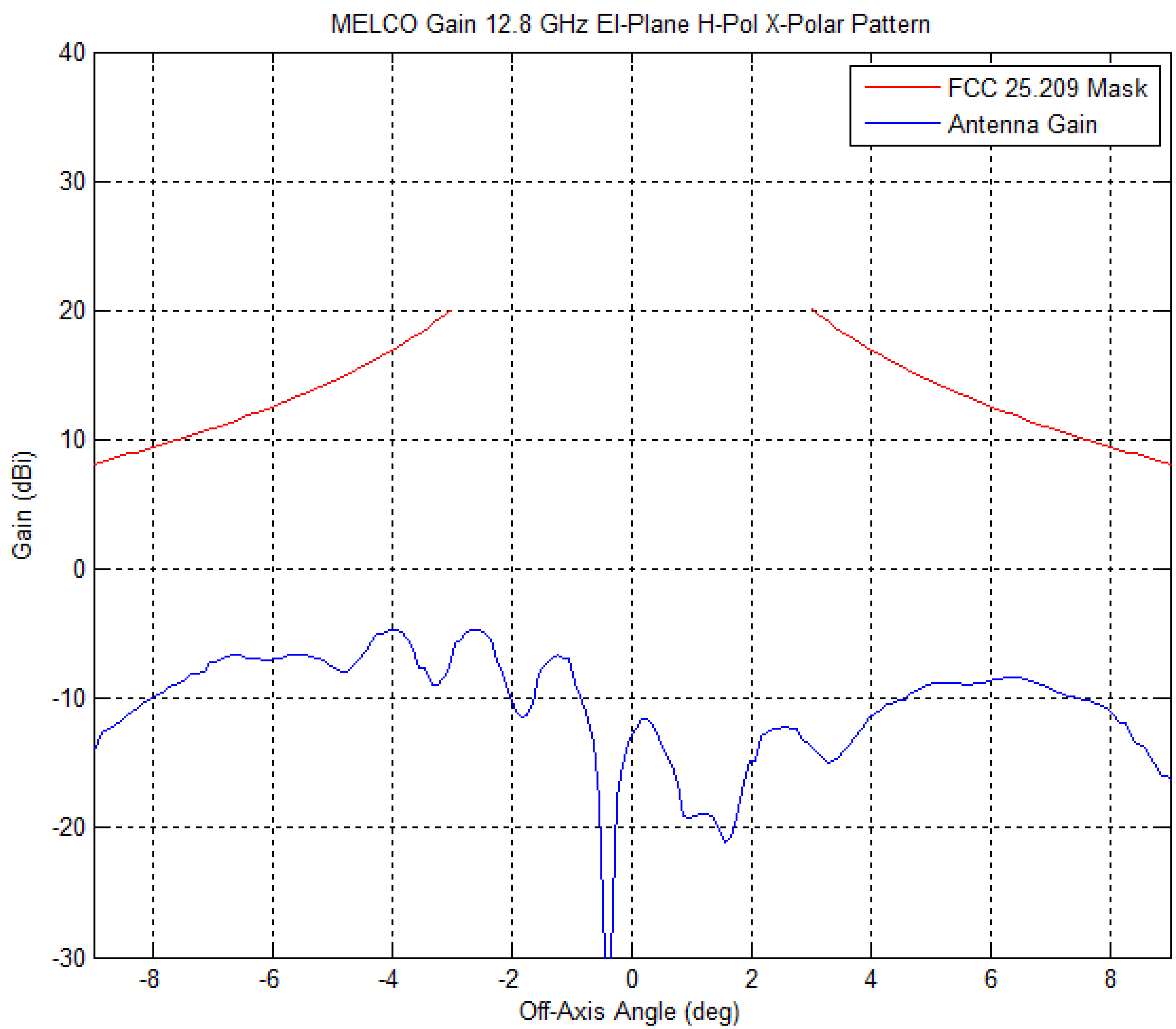


Fig. 58 MELCO Gain 14.0 GHz Elevation-Plane Horizontal-Polarization Cross-Polar Pattern

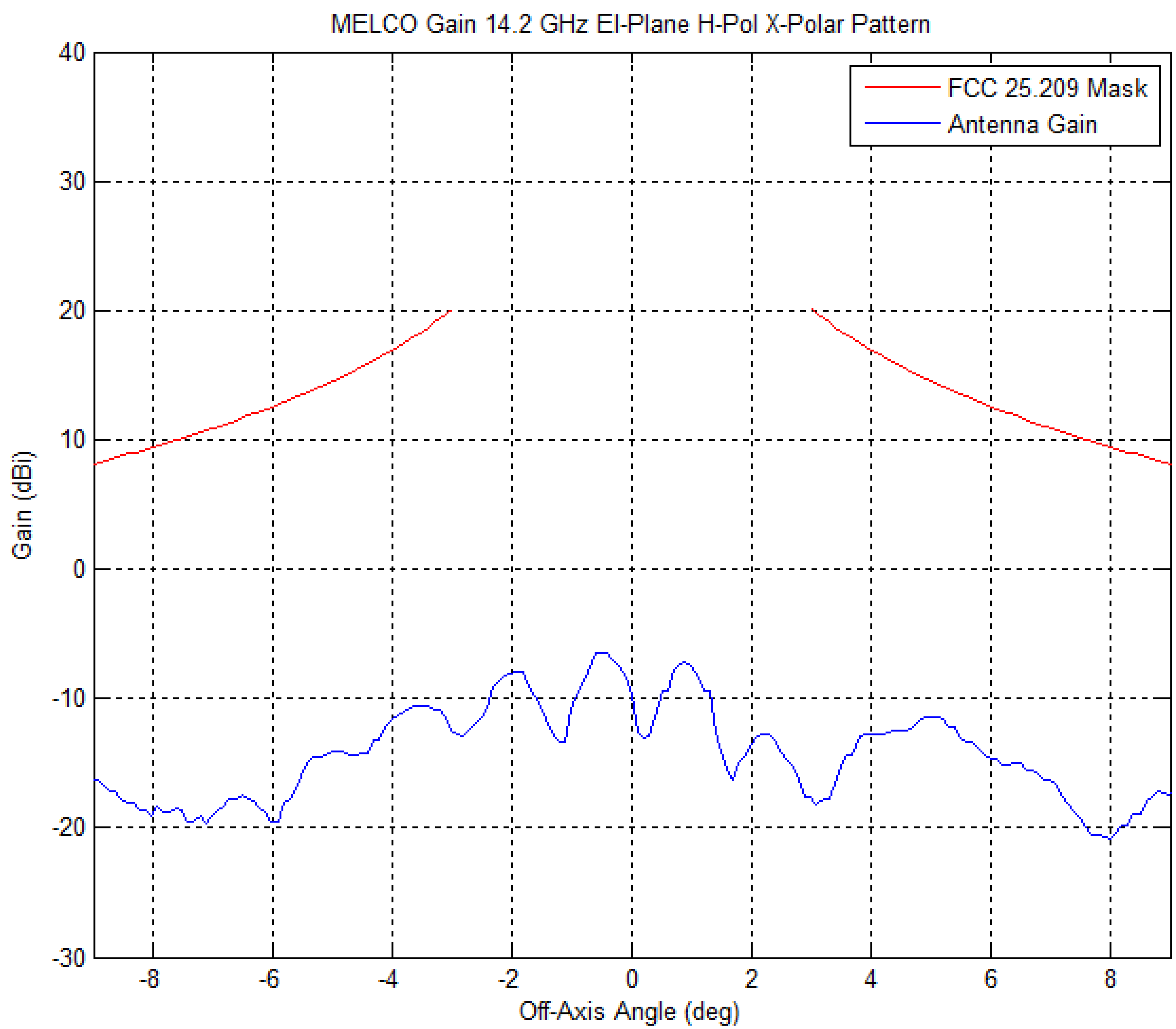


Fig. 59 MELCO Gain 14.2 GHz Elevation-Plane Horizontal-Polarization Cross-Polar Pattern

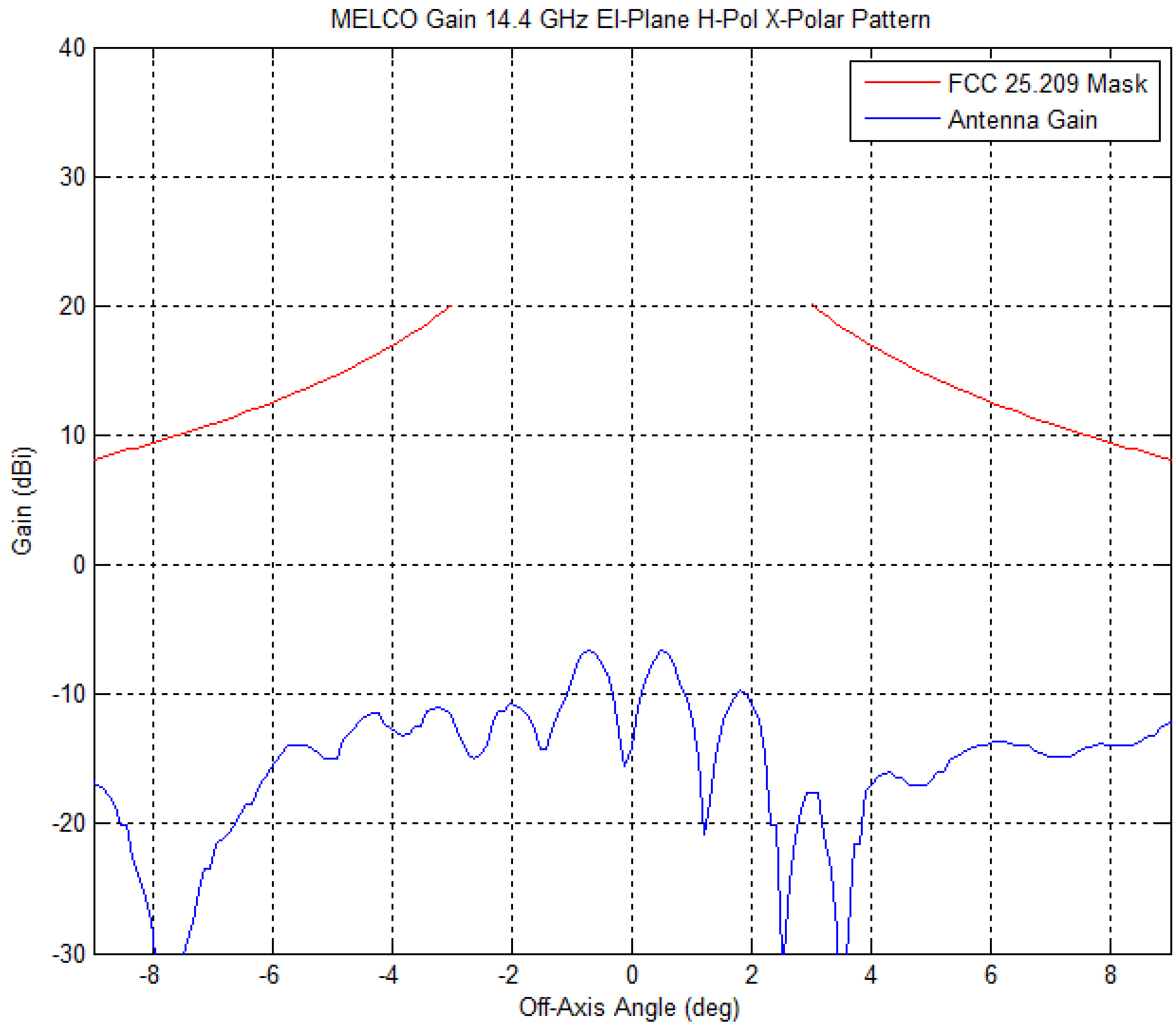


Fig. 60 MELCO Gain 14.4 GHz Elevation-Plane Horizontal-Polarization Cross-Polar Pattern

ATTACHMENT B

STATEMENT OF SATELLITE OPERATORS

Consistent with the coordination affidavits previously executed by Panasonic Avionics Corporation ("Panasonic"), Intelsat and SES Americom, Inc. dated December 16, 2009, the undersigned hereby affirm that: (i) they have received detailed technical information regarding Panasonic's eXConnect Ku-band aeronautical mobile-satellite service ("AMSS") system; (ii) they are aware that Panasonic has been conducting flight tests since January 2010 with eXConnect aircraft earth stations that are the subject of the pending AMSS application; (iii) no interference incidents have been experienced in connection with Panasonic's AMSS operations; and (iv) they do not object to Commission grant of the Panasonic AMSS application (File Nos. SES-LIC-201000805-00992 and SES-AMD-20100914-01163(Call Sign E100089)).

By Intelsat:

Jose Albuquerque — 12 November 2010

Jose Albuquerque
Senior Director, Spectrum Engineering
Intelsat

Date

By SES Americom:

Suzanne Malloy — November 12, 2010

Suzanne Malloy
Executive Director, International &
Regulatory Affairs
SES Americom

Date

STATEMENT OF SATELLITE OPERATOR

Consistent with the coordination affidavits previously executed by Panasonic Avionics Corporation ("Panasonic") and Telesat Canada ("Telesat") dated February 8, 2010, Telesat hereby affirms that: (i) it has received detailed technical information regarding Panasonic's eXConnect Ku-band aeronautical mobile-satellite service ("AMSS") system; (ii) Panasonic has informed Telesat that Panasonic has been conducting flight tests since January 2010 with eXConnect aircraft earth stations that are the subject of the pending AMSS application; (iii) Telesat has no reports of interference incidents experienced in connection with Panasonic's AMSS operations (iv) the Ku-band AMSS operations of Panasonic fall within the operating parameters coordinated with adjacent satellite operators within +/-6 degrees of Telstar 14 and at the present time there are no satellites with co-frequency, co-coverage operations within +/- 6 degrees of the Telstar 14 satellite and beam used by Panasonic; and (v) it does not object to Commission grant of the Panasonic AMSS application (File Nos. SES-LIC-201000805-00992 and SES-AMD-20100914-01163(Call Sign E100089)).

By Telesat Canada:

[signature] 12 November 2010

Robert Condurso
Director, Government and Regulatory Affairs

Date

ATTACHMENT C

Revised Link Budget

Forward Link Budget

eXconnect Terminal		
Antenna	MELCO	
G/T	9.3	dB/K
Hub Earth Station		
EIRP max	80	dBW
Signal		
Waveform	DVB-S2 ACM	
Modulation	QPSK	
Coding	0.3333	
Spread Factor	1	
Minimum Data Rate	3.6E+06	bps
Spectral Efficiency	0.61	bps/Hz
Noise Bandwidth	5.8E+06	Hz
Eb/No Threshold	1.3	dB
Uplink		
Frequency	14.250	dBW
Back off	22.9	dB
EIRP Spectral Density	25.5	dBW/4kHz
Slant Range	37761	km
Space Loss, Ls	207.1	dB
Pointing Loss, Lpnt	0.0	dB
Atmosphere / Weather Loss, La	2.2	dB
ASI Degradation	0.5	dB
Transponder G/T @ Hub	5.1	dB/K
C/No	81.0	dBHz
Satellite		
Flux Density	-107.7	dBW/m2
SFD @ Hub	-96.1	dBW/m2
Small Signal Gain (IBO/OBO)	2.3	dB
OBO	9.3	dB
Downlink		
Frequency	11.950	GHz
Transponder Sat. EIRP @ Beam Peak	51.4	dBW
Transponder Sat. EIRP @ Terminal	49.4	dBW
DL PSD Limit	13.0	dBW/4kHz
DL PSD @ Beam Peak	10.5	dBW/4kHz
Carrier EIRP @ Beam Peak	42.1	dBW
Carrier EIRP @ Terminal	40.1	dBW
Slant Range	37596	km
Space Loss, Ls	205.5	dB
Pointing Loss, Lpnt	0.3	dB
Atmosphere / Weather Loss, La	0.0	dB
ASI Degradation	4.2	dB
C/No	68.1	dBHz
End to End		
End to End C/No	67.9	dBHz
Fast Fade Margin	1.0	dB
End to End Eb/No	1.3	dB
Link Margin	0.0	dB

Return Link Budget

eXconnect Terminal		
Antenna	MELCO	
EIRP	47.2	dBW
Hub Earth Station		
G/T	31.5	dB/K
Signal		
Waveform	iDirect	
Modulation	BPSK	
Coding	0.431	
Spread Factor	4	
Minimum Data Rate	1.21E+05	bps
Spectral Efficiency	0.07	bps/Hz
Noise Bandwidth	1.67E+06	Hz
Eb/No Threshold	6.4	dB
Uplink		
Frequency	14.250	dBW
Back off	12.4	dB
EIRP Spectral Density	8.6	dBW/4kHz
Slant Range	37596	km
Space Loss, Ls	207.0	dB
Pointing Loss, Lpnt	0.4	dB
Atmosphere / Weather Loss, La	0.0	dB
ASI Degradation	0.5	dB
Transponder G/T @ Terminal	3.1	dB/K
C/No	58.5	dBHz
Satellite		
Flux Density	-128.1	dBW/m2
SFD @ Beam Edge	-94.1	dBW/m2
Small Signal Gain (IBO/OBO)	2.3	dB
OBO	31.7	dB
Downlink		
Frequency	11.950	GHz
Transponder Sat. EIRP @ Beam Peak	51.4	dBW
Transponder Sat. EIRP @ Hub	50.4	dBW
DL PSD Limit	13.0	dBW/4kHz
DL PSD @ Beam Peak	-6.6	dBW/4kHz
Carrier EIRP @ Beam Peak	19.7	dBW
Carrier EIRP @ Hub	18.7	dBW
Slant Range	37761	km
Space Loss, Ls	205.5	dB
Pointing Loss, Lpnt	0.0	dB
Atmosphere / Weather Loss, La	2.8	dB
ASI Degradation	0.5	dB
C/No	69.9	dBHz
End to End		
End to End C/No	58.2	dBHz
End to End Eb/No	7.4	dB
Link Margin	1.0	dB

ATTACHMENT D

Radiation Hazard Analysis for the MELCO Reflector

This report analyzes the non-ionizing radiation levels for the MELCO reflector antenna. This report is developed in accordance with the prediction methods contained in OET Bulletin No. 65, Evaluating Compliance with FCC Guidelines for Human Exposure to Radio Frequency Electromagnetic Fields, Edition 97-01.

Bulletin No. 65 specifies that there are two separate tiers of exposure limits that are dependant on the situation in which the exposure takes place and/or the status of the individuals who are subject to the exposure -- the General Population/ Uncontrolled Environment and the Controlled Environment, where the general population does not have access.

The maximum level of non-ionizing radiation to which individuals may be exposed is limited to a power density level of 5 milliwatts per square centimeter (5 mW/cm^2) averaged over any 6 minute period in a controlled environment, and the maximum level of non-ionizing radiation to which the general public is exposed is limited to a power density level of 1 milliwatt per square centimeter (1 mW/cm^2) averaged over any 30 minute period in a uncontrolled environment.

In the normal range of transmit powers for satellite antennas, the power densities at or around the antenna surface are expected to exceed safe levels. This area will not be accessible to the general public. Operators and technicians will receive training specifying this area as a high exposure area. Procedures will be established to ensure that all transmitters are turned off before this area may be accessed by operators, maintenance or other authorized personnel.

Near Field Exposure

The MELCO reflector antenna potentially exceeds MPE limits in the near field within the rectangular volume directly in front of the reflector (18.0 mW/cm^2). The output power of the antenna is computed as the maximum EIRP minus the transmit gain, 47.2 dBW – 32.2 dBi = 15 dBW or 32 watts. For this calculation, it was assumed that all 32 watts output power of the antenna is uniformly distributed across the surface area of the reflector.

The extent of the near field region is defined by the following

$$R_{nf} = D^2 /(4\lambda)$$

5.8 meters

Where D is the width of the antenna (0.65 meters)

The maximum power density in the Near Field can be determined by the following equation:

$S_{nf} = P_{SSPA} / A$

$22\ mW/cm^2$

Where A is the surface area of the panel and P is the power available from the SSPA. The surface area of the antenna is approximated as the width of the antenna times its height, which is a reasonable approximation given its shape.

In normal operation, this antenna is mounted on a rooftop with the main beam pointed toward the sky at a minimum elevation angle of 10 degrees when operated on the ground such that human exposure in the near field is not possible. Furthermore, normal TDMA operation uses a duty cycle of 10% or less, reducing maximum near field exposure by an order of magnitude to 2.2 mW/cm^2. Additionally, in normal operation, any blockage in the near field (human or otherwise) will cause the transmitter to be disabled within seconds as the system does not transmit unless it can receive the downlink carrier from the satellite. Therefore, prolonged exposure in the near field is not possible in normal operation.

Far Field Exposure (in main beam)

$R_{ff} = 0.60D^2 / \lambda$

13 m

$S_{ff} = P_{EIRP} / (4\pi R_{ff}^2)$

$2.5\ mW/cm^2$

At a distance of 13 meters, the power density of the MELCO reflector is 2.5 mW/cm^2, which exceeds the General Population/Uncontrolled Exposure (MPE) but is less than the controlled environment limit. The power density falls to the General Population / Uncontrolled Exposure (MPE) limit of 1 mW/cm^2 at 20.0 meters.

As noted previously, the antenna will be mounted on a building or vehicle rooftop with the main beam pointed to the sky at a minimum elevation angle of 10 degrees. In this case, maximum far field exposure to humans would be due to a sidelobe which is at least 16 dB below the main beam. At a distance of 13 meters, the exposure to humans would be less than 0.063 mW/cm^2.

Transition Region Exposure (in main beam)

The maximum exposure in the main beam is 5 mW/cm^2 at a distance of 12.1 m from the antenna. This assumes that PFD decreases linearly from 22 mW/cm^2 to 2.5 mW/cm^2 in this region between the near field and far field (5.8 m to 13 m from the antenna).

Exposure to personnel located below antenna height

The antenna will be mounted at a height above personnel. In this case, the worst case exposure is due to the first elevation sidelobe at a level of -16 dB. For the MELCO reflector antenna, the far field distance in the elevation plane is approximately 1.1 meters.

The 5 mW/cm^2 threshold is reached at a distance of 1.5 meters and the 1 mW/cm^2 threshold is reached at a distance of 3.2 m. Observing the safe radius distance noted above during transmit operations will ensure that the threshold will not be exceeded.

Table 1: Parameters Used for Determining PFD (MELCO reflector)

Antenna Width	25.6	in	0.65	m
Antenna Height	7.7	in	0.196	m
Antenna Surface Area			0.14258	m^2
Frequency			14250	MHz
Wavelength			0.021	m
Transmit Power			32	W
Antenna Gain			32.1	dBi
Antenna Gain			1622	
EIRP			47.2	dBW
Far Field Boundary (Azimuth)			13.0	m
Power Density at far field boundary (Azimuth)			2.5	mW/cm^2
Safe Far Field Distance (Azimuth)			20.0	m
Power Density			1.0	mW/cm^2
Near Field Distance (Azimuth)			5.0	m
Near Field Power Density (Azimuth)			22.7	mW/cm^2
Elevation sidelobe level			-16.0	dB
Far Field Boundary (Elevation)			1.1	m
Power Density at far field boundary (Elevation)			8.8	mW/cm^2
Safe Far Field Distance (Elevation)			1.5	m
Power Density			4.7	mW/cm^2
Safe Far Field Distance (Elevation)			3.2	m
Power Density			1.0	mW/cm^2

Conclusions

The radiation hazard can be divided into two cases: above the mounting plane of the antenna and below it. Different measures will be taken in each region to ensure that the exposure limits will not be exceeded.

The worse-case radiation hazards exist exists above the mounting plane of the antenna along the main beam axis. The antenna will be mounted on a building or vehicle rooftop so access to this region can be controlled and restricted to trained personnel so this case applies to personnel commissioning and testing the antenna. Transmit operations will only be conducted with a clear field of view towards the serving satellite so that the beam does not impose on any uncontrolled areas. By maintaining a safety radius of 20.0 meters in the boresight direction during transmit operations in this region, it can be guaranteed that the General Population/Uncontrolled Exposure limits will not be exceeded under any test conditions.

Below the mounting plane of the antenna radiation exposure can only occur through sidelobes, which are substantially attenuated. In this case, the safety radius where the General Population/Uncontrolled Exposure limits are satisfied is 3.2 meters in the worst case direction. The antenna will be mounted in such a way that the general population cannot approach to within the safety radius when below the plane of the antenna so that the General Population/Uncontrolled Exposure limits will not be exceeded under any test conditions.