Combined Antenna Module

APAMSJ-147

ESD Sensitive

RoHS/ RoHS II compliant

Ø 77.0mm x 12mm

MSL level: Not Applicable

FEATURES:

- Twin cable solution
- Cable 1 covering GSM850, GSM900, DCS, PCS, & UMTS
- Cable 2 covering GPS/GLONASS
- Peak Gain - 824 ~ 960MHz (1.5dBi), 1710 ~ 2170MHz (0.5dBi)
- VSWR – Low band 1.6:1, High band 2.4:1
- Impedance 50 Ohms
- Linear Polarization
- GNSS band 1592 ~ 1610MHz
- GNSS Gain 26dB (3V), 27dB (5V)
- Noise figure 1.2dB
- RHCP Polarization
- RoHS/RoHS II compliant

TYPICAL APPLICATIONS:

- GSM and Active GNSS
- Vehicle Tracking
- Vehicle window mount

STANDARD SPECIFICATIONS:

The APAMSJ-147 is an active GPS/GLONASS and passive cellular antenna with dual feeders. It has an adhesive mount for non-metallic surfaces, and is suited to window applications in vehicles.

Mobile (Cable 1)

Parameters	Min.	Typ.	Max.	Units	Note
Low Band	**850**		**900**	**MHz**	**AMPS / GSM**
Frequency	824		960	MHz	
VSWR		~1.6:1			
Return Loss		-12.7		dB	
Peak Gain		1.5		dBi	
Average Gain		-3.7		dB	
Efficiency		43		%	
High Band	**1700**		**2100**	**MHz**	**DCS/PCS/UMTS**
Frequency	1710		2170	MHz	
VSWR		2.4:1			
Return Loss		-7.7		dB	
Peak Gain		0.5		dBi	
Average Gain		-5.0		dB	
Efficiency		32		%	
Polarization Model	Linear				
Radiation Pattern	Omni-Directional				
Impedance		50		Ω	
Maximum Input Power		25		W	
Operating Temperature	-40		+85	˚C	

Navigation (Cable 2)

Parameters	Min.	Typ.	Max.	Units	Note
Receiving Frequency		1575.42		MHz	GPS
	1592.00		1610.00	MHz	GLONASS
Impedance		50		Ω	
VSWR			1.5:1		
Return Loss			-14	dB	
Polarization Model	RHCP				
Radiation Pattern	Hemispherical			mm	
Operating Temperature	-40		+85	˚C	

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Low Noise Amplifier (LNA)

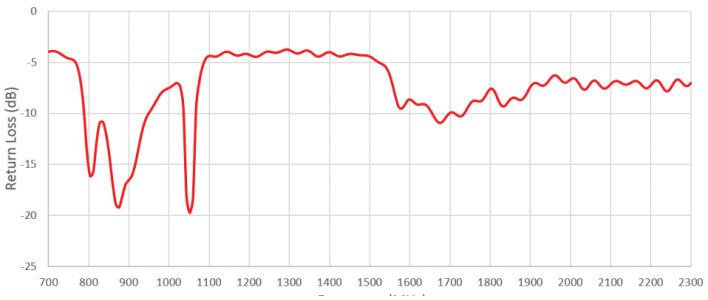
Parameters	Min.	Typ.	Max.	Units	Note
DC Voltage	2.7		5.5	V	
Gain			26	dB	at 3.0V
			27	dB	at 5.0V
Noise Figure			1.2	dB	
Current	15		25	mA	
Power Consumption	40		137	mW	
Operating Temperature	-40		+85	˚C	

Antenna Measurement Conditions:

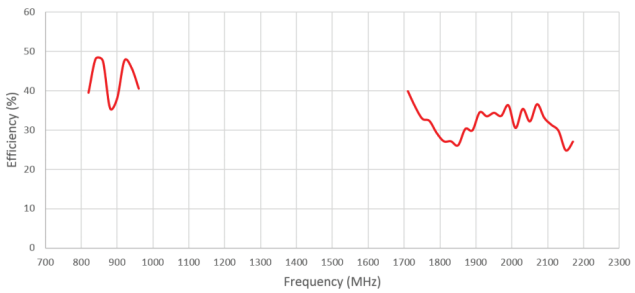
Antenna mounted on a 30 x 30 x 0.25 cm ABS Plate.
200 cm Cable Length (30 cm of RG174 + 170 cm of LMR195).
Measured in certified CTIA 3D anechoic chamber.

MEASUREMENTS

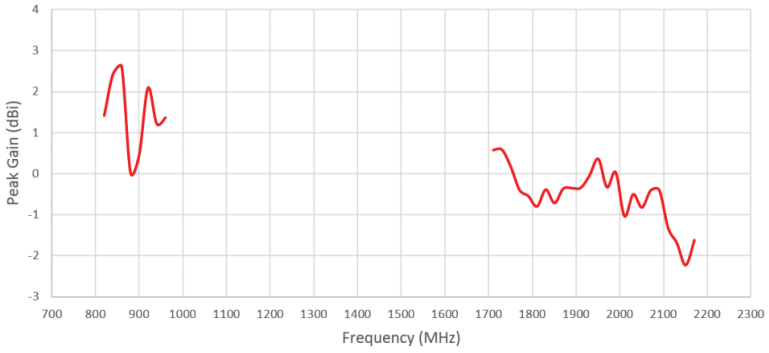
Return Loss



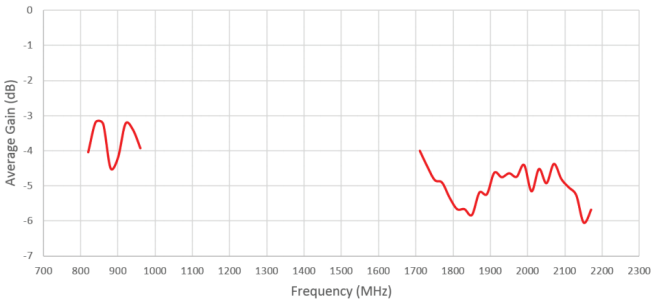
Efficiency



Peak Gain (dBi)



Average Gain (dB)



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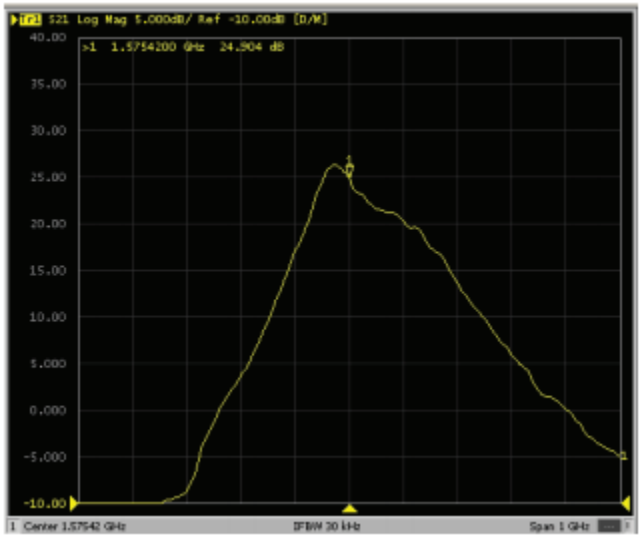
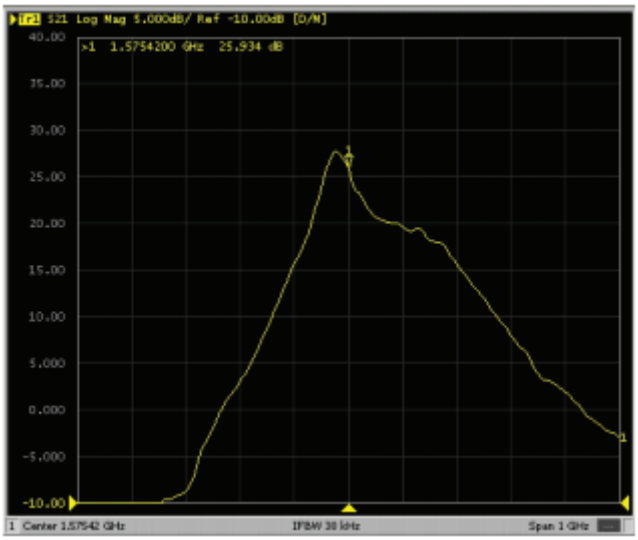
MEASUREMENTS

GNSS Log Mag - 1575.42MHz



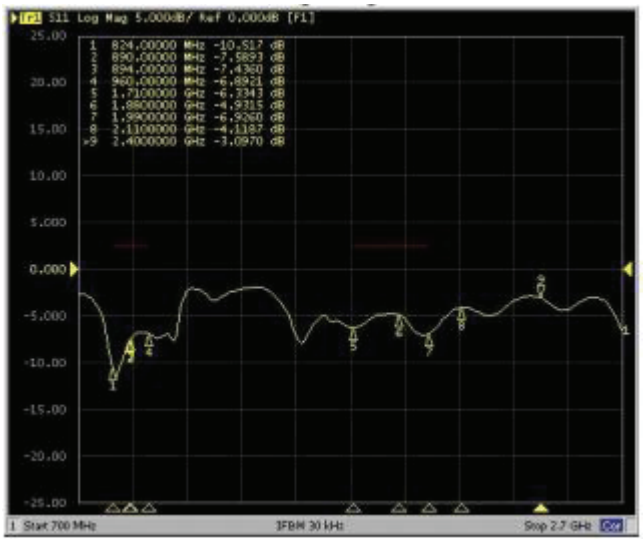
Gain at 5V



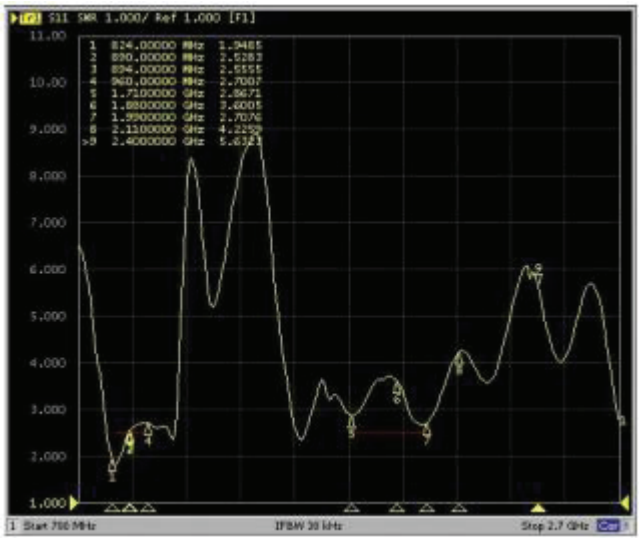
Gain at 3.0V

Note: Measurements made with Antenna mounted on 6mm thin glass with 30cm cable length (RG174).

GSM Responses



GSM S11 (Log Mag)



GSM S11 (VSWR)

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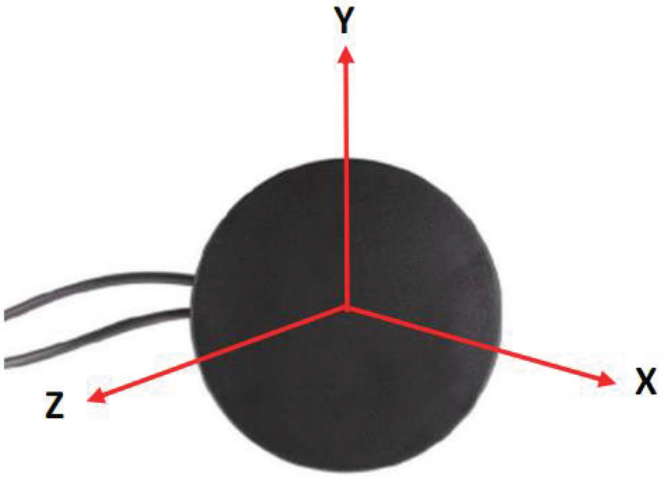
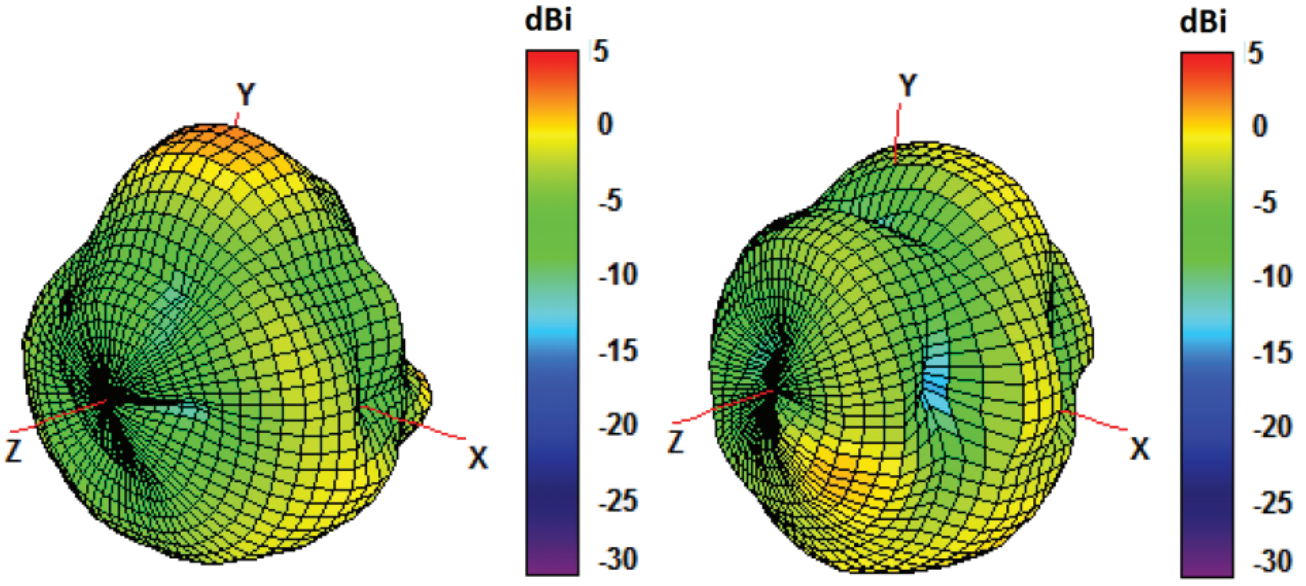
MEASUREMENTS

Radiation Patterns (Reference)



Radiation Pattern (850MHz & 940MHz)



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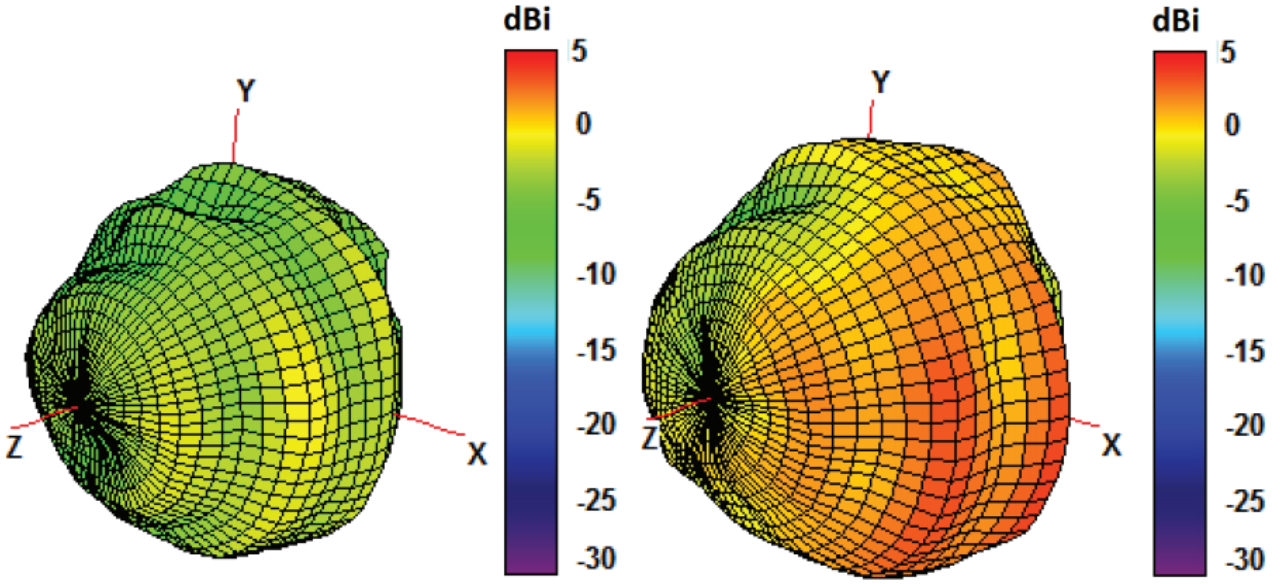
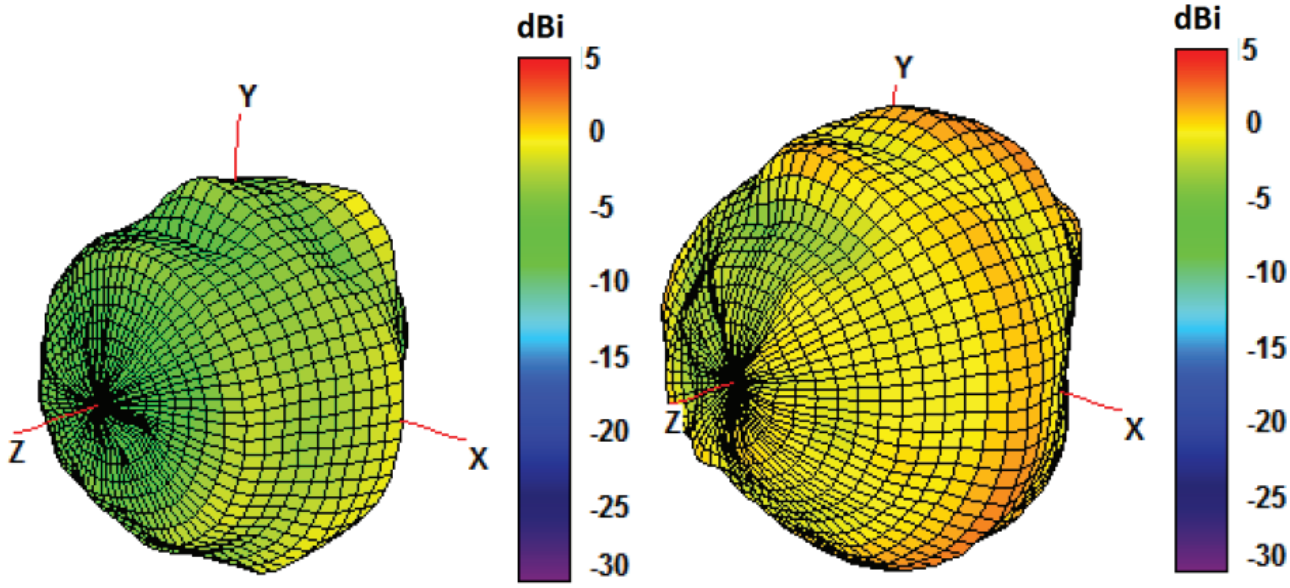
MEASUREMENTS

Radiation Patterns (1750MHz & 1850MHz)



Radiation Patterns (1950MHz & 2100MHz)



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