










Features & Applications:

-  Vehicle roof mount, directly on metal plane
-  2x2 MiMo Cellular 5G-FR1 (4G compatible)
-  3x3 MiMo WiFi, DSRC, V2X (WiFi-6E compatible)
-  Active GNSS L1+L2 with low noise 38dB amplifier
-  Cable length and connector type per request
-  Heavy and light vehicles
-  IoT, navigation, tracking

ELECTRICAL SPECIFICATIONS @ 25°C ¹

General Specifications – 5G FR1 + WiFi 6E

Antenna type	Nominal Impedance	Polarization	Radiation pattern	Power withstanding	DC Ground
Monopole ²	50Ω	Vertical / Linear	Omni	45W	No

5G FR1 Antennas: 617 – 5925MHz

Port	Frequency (MHz)	617-960	1710-2700	3300-4200	4400-5000	5150-5925
Port 1, 2	VSWR	3:1	2:1	2.5:1	2.5:1	2.5:1
	Avg. Peak Gain (dBi)	2.3	4.6	4.9	5.7	5.4
	Avg. Efficiency (%)	51	54	68	68	62
Isolation ³	Port 1-2 (dB)	10	25	30	40	45

WiFi 6E Antennas: 2400-2500 / 4900-7125MHz

Port	Frequency (MHz)	2400-2500	4900-7125
Port 1,2,3	VSWR	2:1	2:5
	Avg. Peak Gain (dBi)	6.0	4.7
	Avg. Efficiency (%)	62	76
Port – Port Isolation ³	Port 1-2 (dB)	10	20
	Port 1-3 (dB)	12	25
	Port 2-3 (dB)	15	30

Notes:

1. Storage Temperature: -40°C to 85°C
2. (5) Multi-Band Monopoles with built in ground plane, Independent from external ground plane
3. Minimum Isolation (dB)

GNSS Antenna L1 Band: 1561.098 +/- 2.046MHz, 1575.42 +/- 1.023MHz, 1602.5625 +/- 4MHz				
GNSS Antenna L2 Band: 1227.6 +/- 1.023MHz				
Frequency (MHz)	L1 Band		L2 Band	
VSWR	2:1		2:1	
Gain – Radiating Element (dBic)	2 +/- 1		4 +/- 1	
Polarization	LNA Gain (dB)	Noise Figure (dB)	Operating Voltage (V _{dc})	Current Consumption (mA)
RHCP	38 +/- 2	< 2.4	3.3 – 5.0	< 11
Frequency (MHz)	960	1710	2170	2400
Out of Band Rejection (dB)	> 65	> 60	> 65	> 65

MECHANICAL SPECIFICATIONS					
SKF5G62311DM					
Dimension (Length x Width x Height)	Housing Material	Color	Weight	Fixing System	Mounting Hole Diameter
178.3 x 52.5 x 62 mm (7.02 x 2.07 x 2.44 inch)	PC, UV Protected	Black	550g (1.22lbs)	Direct Mount	1.063" (27mm)
Wireless Technology	No. of Port	Cable Length	Cable Type	Connector Type	
5G FR1/ LTE	2	17ft (5.181m)	LMR195	SMA (Male)	
WiFi 6E	3	17ft (5.181m)	LMR195	RP-SMA Male	
GNSS L1	1	17ft (5.181m)	RG-174	SMA (Male)	

ENVIRONMENTAL SPECIFICATIONS			
SKF5G62311DM			
Operating Temperature	Ingress Protection	RoHS Compliant	
-40 / +85° C	IP67	Yes	

Dimensions: inches (mm) Unless otherwise specified, all tolerances are ±.010 (0.25mm)

Mechanical Drawing

SKF5G62311DM



Test Setup

General / Chamber Setup

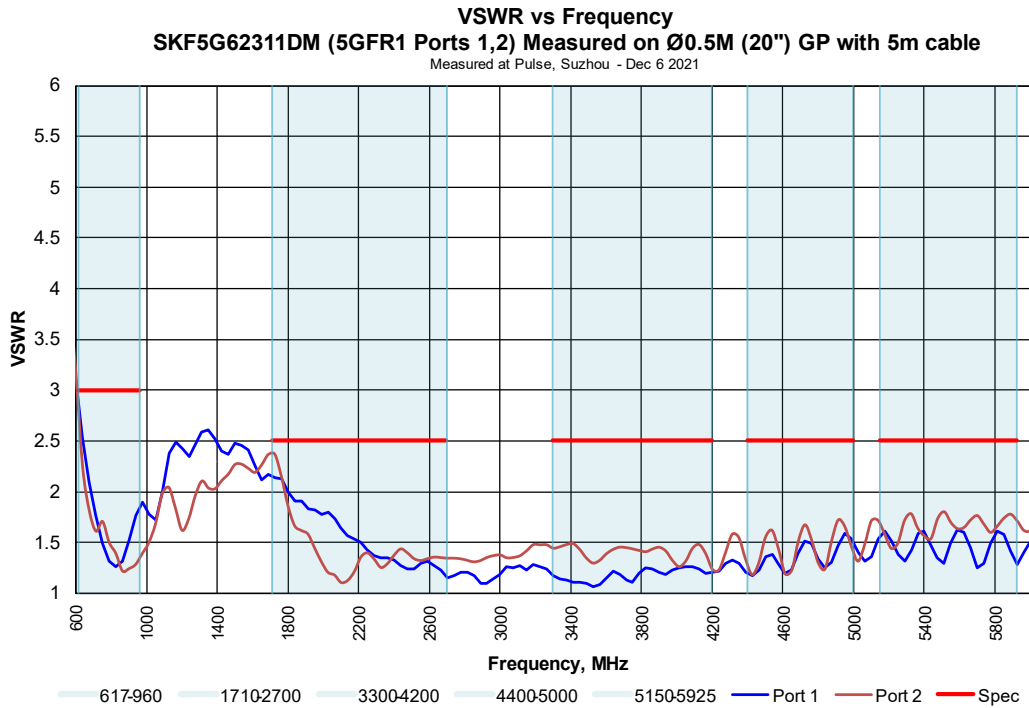
- All measurements done on \varnothing 500mm (20") round ground plane.
- S-parameters with 5m LMR 195 cable
- Gain and Efficiency with 0.5m LMR 195 cable
- Measured at Pulse, Suzhou





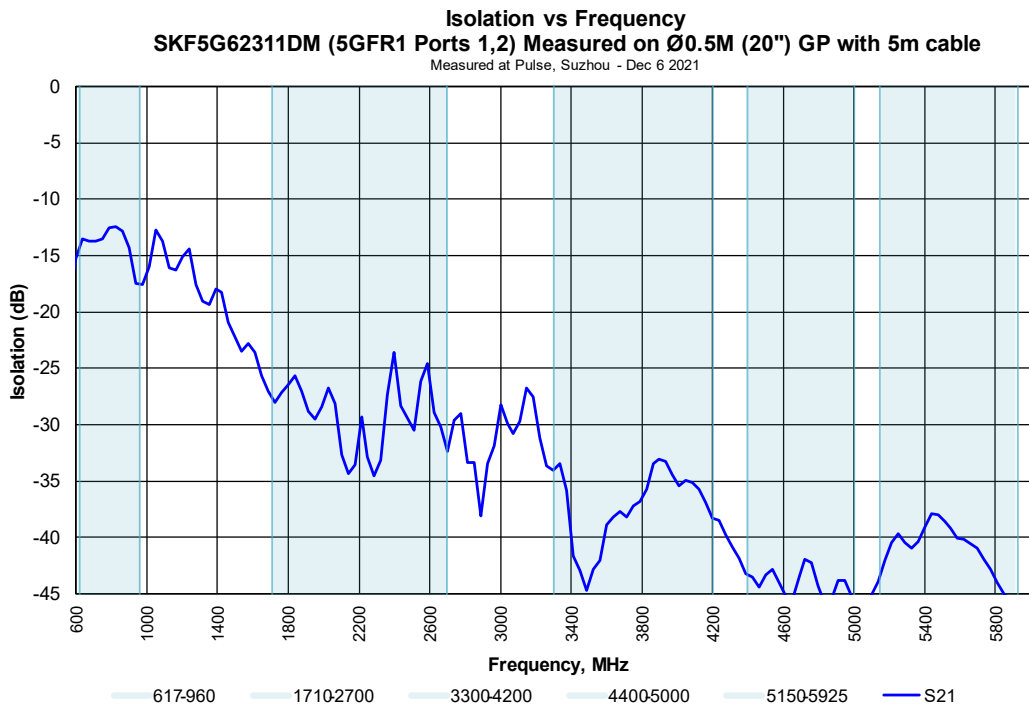
Charts-VSWR

5G FR1



Charts-Isolation

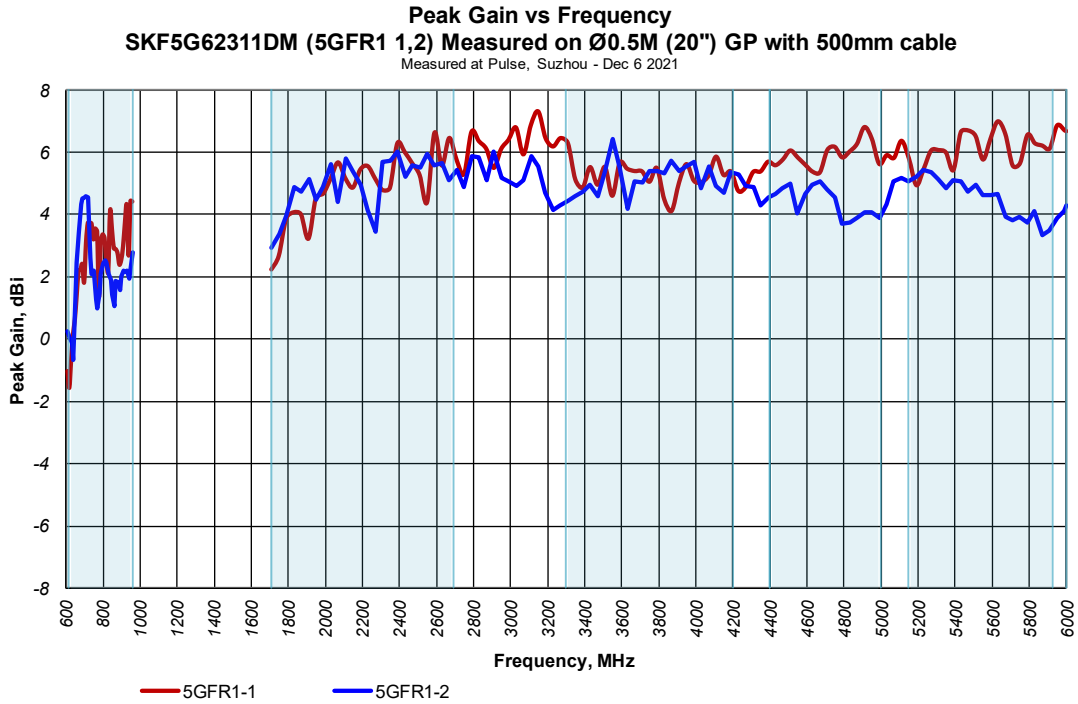
5G FR1





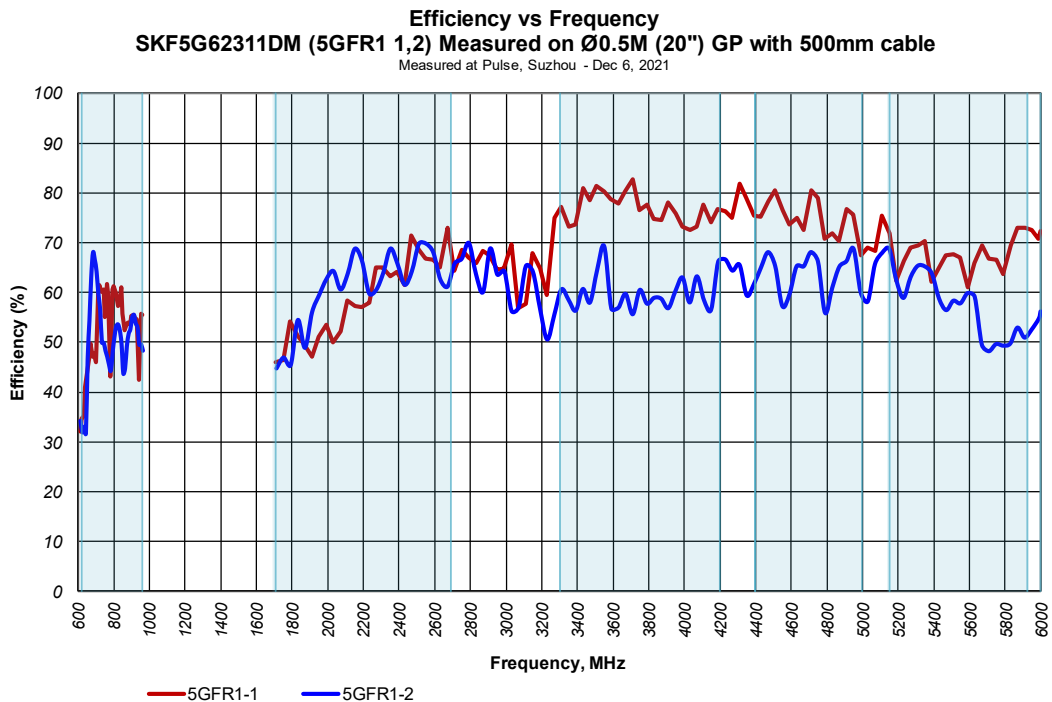
Charts-Peak Gain

5G FR1



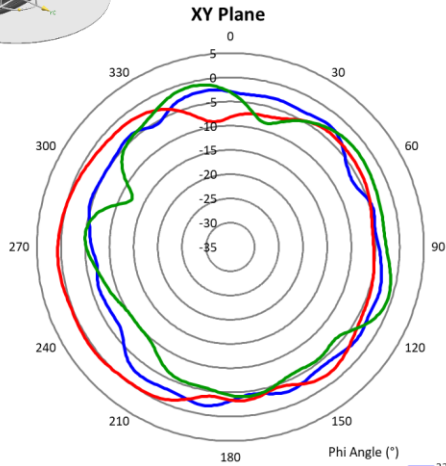
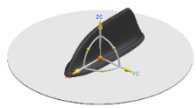
Charts- Peak Efficiency

5G FR1



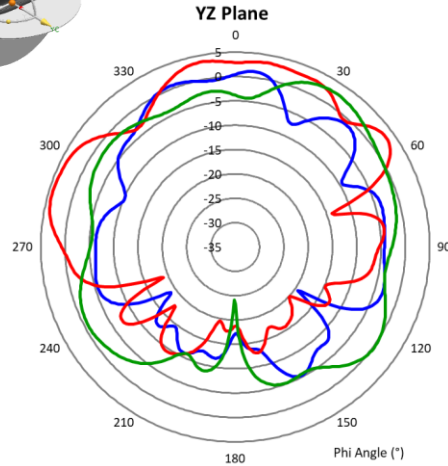
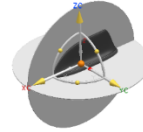
Radiation Pattern – 5G FR1 – Port 1 – XY & XZ Gain Plots

5G FR1 Port 1



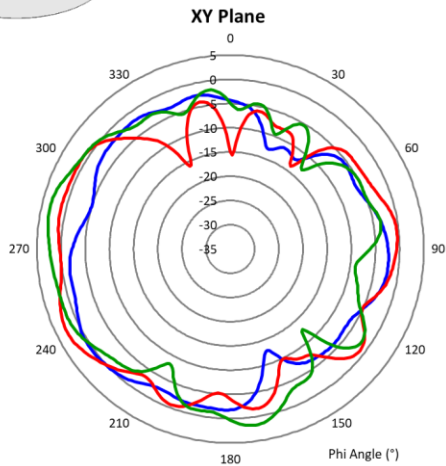
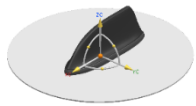
2230MHz
 Avg(dBi) = -3.89
 Peak(dBi) = -1.87
 Avg -3(deg) = 265.5
 3830MHz
 Avg (dBi) = -2.37
 Peak (dBi) = 0.75
 Avg -3 (deg) = 141.5
 800MHz
 Avg (dBi) = -4.38
 Peak (dBi) = -0.75
 Avg -3 (deg) = 121.5

— 2230MHz — 3830MHz — 800MHz



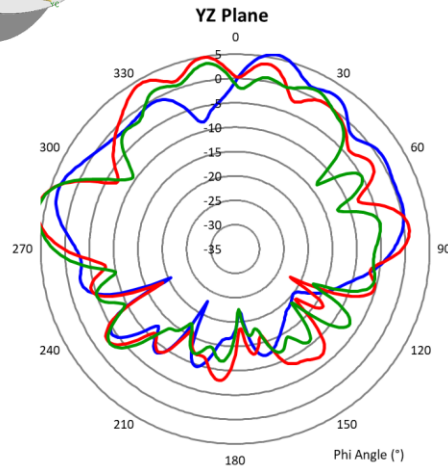
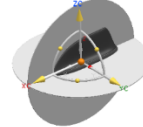
2230MHz
 Avg(dBi) = -4.56
 Peak(dBi) = 1.21
 Avg -3(deg) = 60.5
 3830MHz
 Avg (dBi) = -0.92
 Peak (dBi) = 4.20
 Avg -3 (deg) = 108.5
 800MHz
 Avg (dBi) = -2.10
 Peak (dBi) = 2.76
 Avg -3 (deg) = 57.5

— 2230MHz — 3830MHz — 800MHz



4710MHz
 Avg(dBi) = -3.38
 Peak(dBi) = 0.47
 Avg -3(deg) = 128.5
 5510MHz
 Avg (dBi) = -2.00
 Peak (dBi) = 2.84
 Avg -3 (deg) = 81.5
 6000MHz
 Avg (dBi) = -1.67
 Peak (dBi) = 3.30
 Avg -3 (deg) = 86.5

— 4710MHz — 5510MHz — 6000MHz



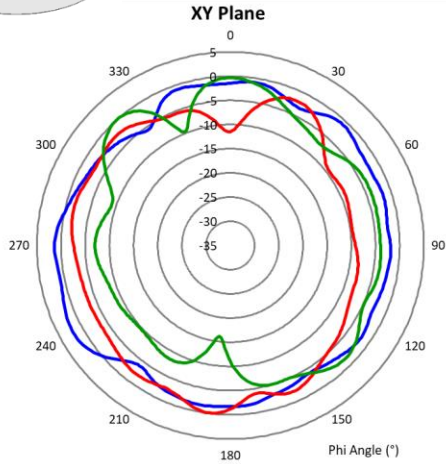
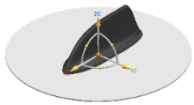
4710MHz
 Avg(dBi) = -1.62
 Peak(dBi) = 5.78
 Avg -3(deg) = 26.5
 5510MHz
 Avg (dBi) = -1.06
 Peak (dBi) = 6.47
 Avg -3 (deg) = 37.5
 6000MHz
 Avg (dBi) = -2.12
 Peak (dBi) = 6.32
 Avg -3 (deg) = 22.5

— 4710MHz — 5510MHz — 6000MHz



Radiation Pattern – 5G FR1 – Port 2 – XY & XZ Gain Plots

5G FR1 Port 2

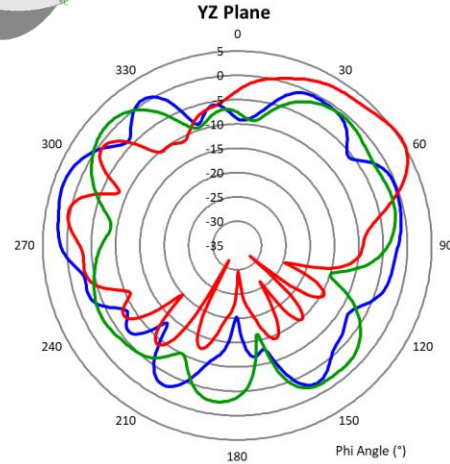
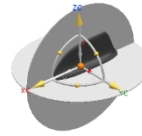


2230MHz
Avg(dBi) = -1.45
Peak(dBi) = 2.16
Avg -3(deg) = 58.5

3830MHz
Avg (dBi) = -3.97
Peak (dBi) = -0.12
Avg -3 (deg) = 144.5

800MHz
Avg (dBi) = -4.61
Peak (dBi) = 0.00
Avg -3 (deg) = 74.5

— 2230MHz — 3830MHz — 800MHz

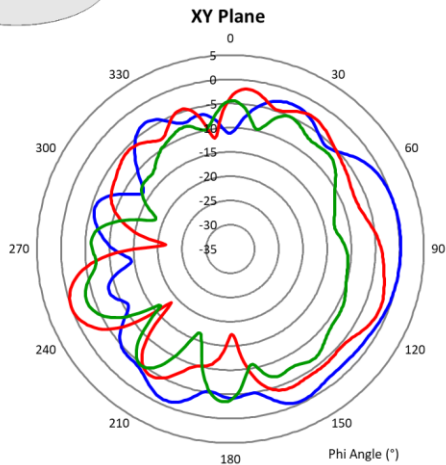
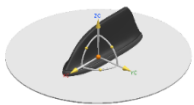


2230MHz
Avg(dBi) = -2.55
Peak(dBi) = 2.98
Avg -3(deg) = 46.5

3830MHz
Avg (dBi) = -2.58
Peak (dBi) = 5.30
Avg -3 (deg) = 42.5

800MHz
Avg (dBi) = -3.52
Peak (dBi) = 1.49
Avg -3 (deg) = 50.5

— 2230MHz — 3830MHz — 800MHz

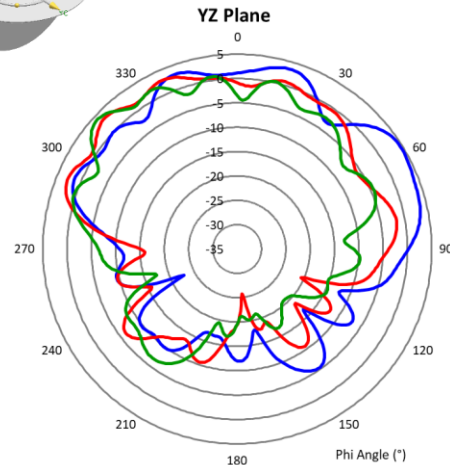
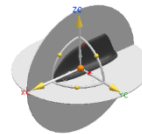


4710MHz
Avg(dBi) = -3.34
Peak(dBi) = 0.24
Avg -3(deg) = 135.5

5510MHz
Avg (dBi) = -4.96
Peak (dBi) = 0.00
Avg -3 (deg) = 62.5

6000MHz
Avg (dBi) = -7.87
Peak (dBi) = -3.44
Avg -3 (deg) = 76.5

— 4710MHz — 5510MHz — 6000MHz



4710MHz
Avg(dBi) = -1.08
Peak(dBi) = 4.63
Avg -3(deg) = 74.5

5510MHz
Avg (dBi) = -2.65
Peak (dBi) = 3.28
Avg -3 (deg) = 77.5

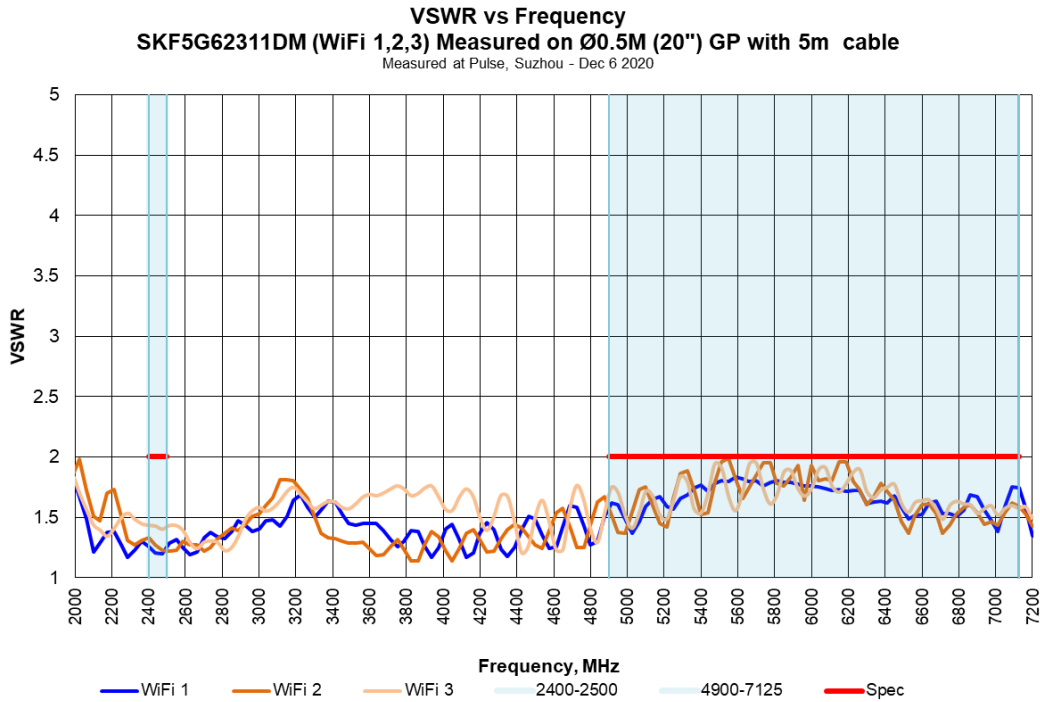
6000MHz
Avg (dBi) = -3.72
Peak (dBi) = 4.18
Avg -3 (deg) = 28.5

— 4710MHz — 5510MHz — 6000MHz



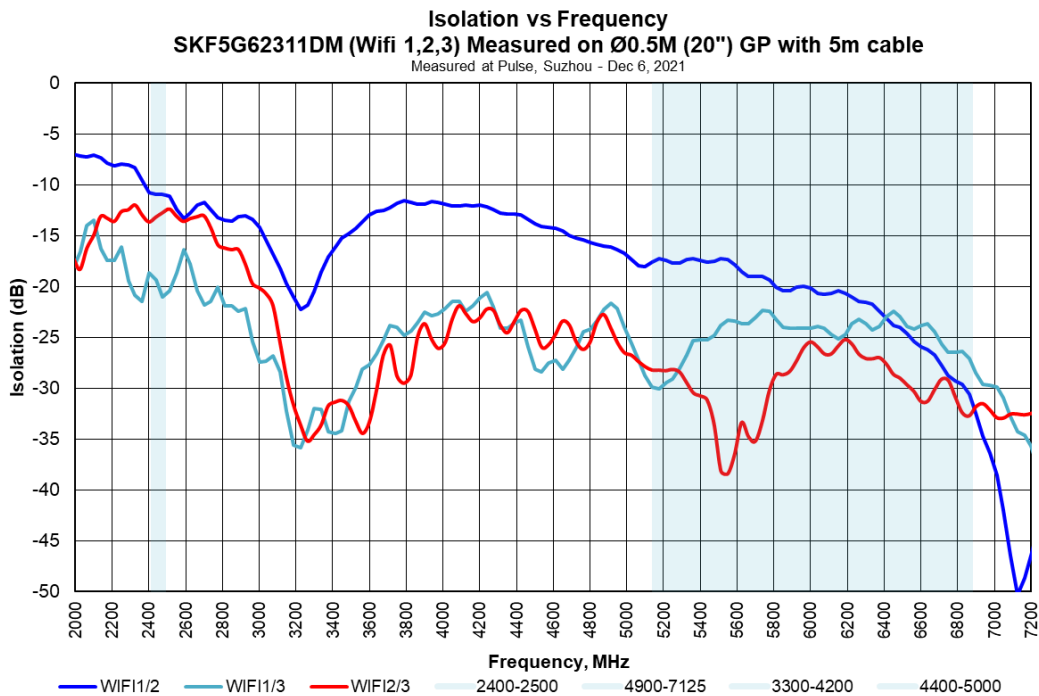
Charts-VSWR

WiFi 6E



Charts-Isolation

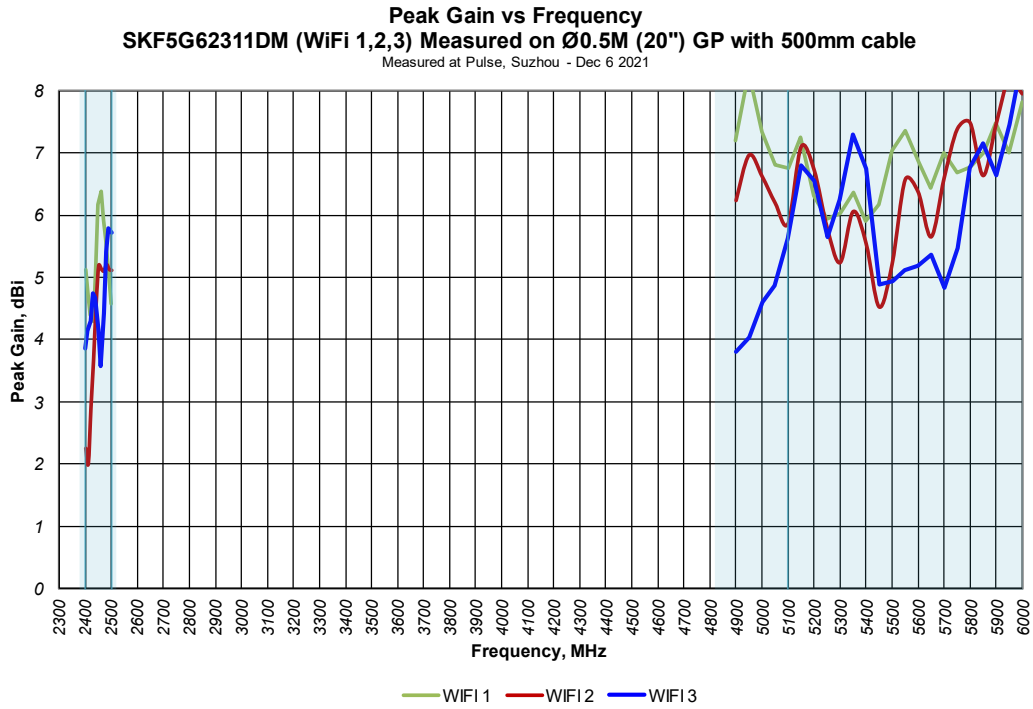
WiFi 6E





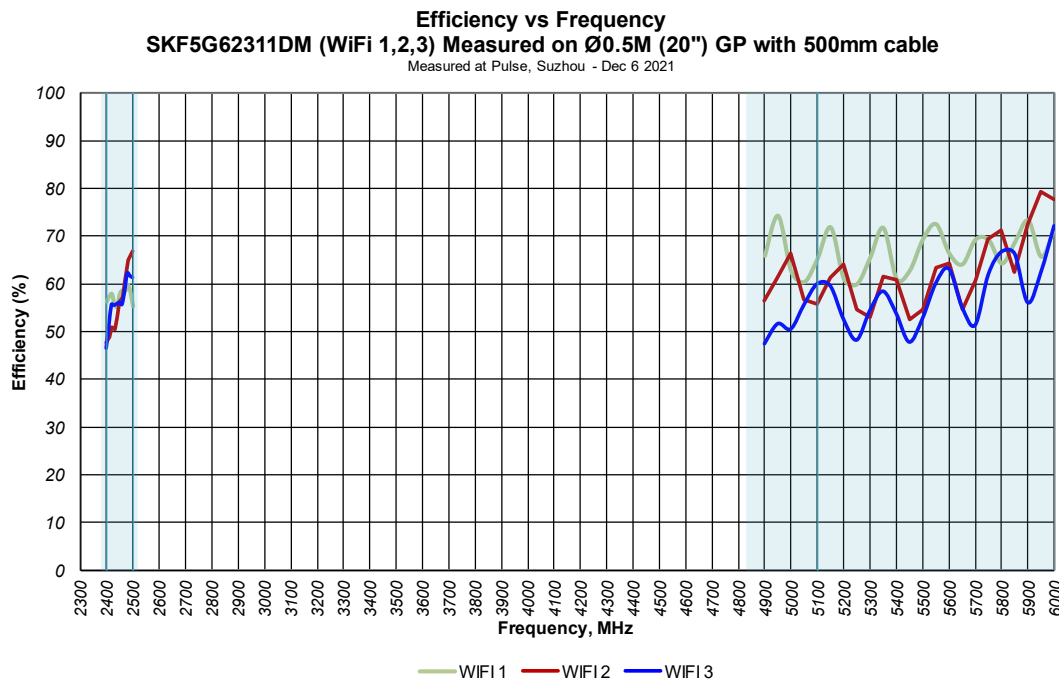
Charts-Peak Gain

WiFi 6E



Charts- Peak Efficiency

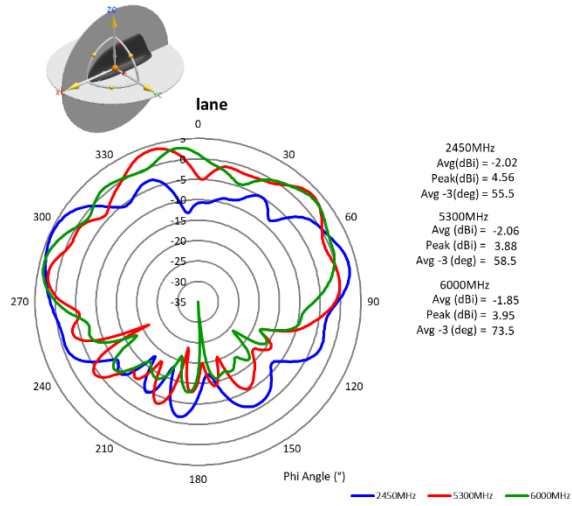
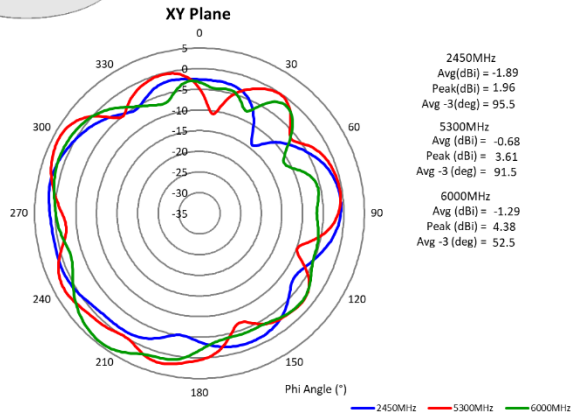
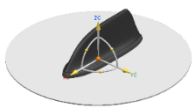
WiFi 6E





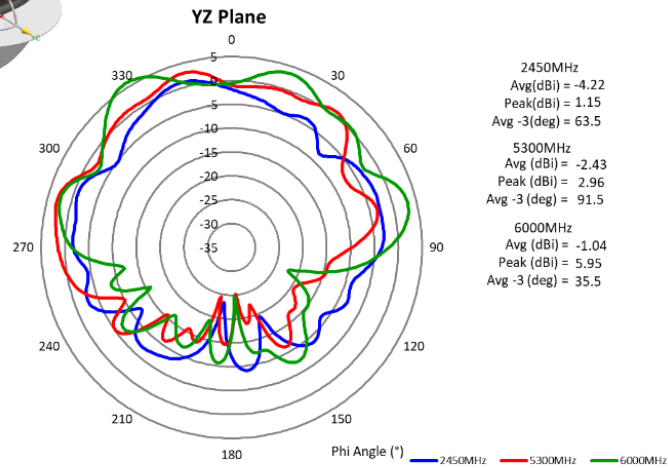
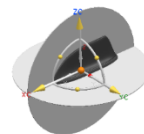
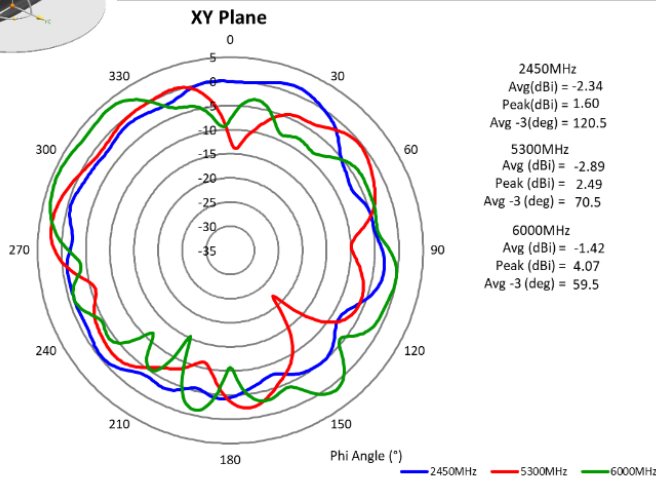
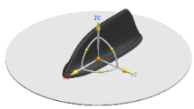
Radiation Pattern – WiFi 6E – Port 1 - XY & XZ Gain Plots

WiFi 6E Port 1



Radiation Pattern – WiFi 6E – Port 2 - XY & XZ Gain Plots

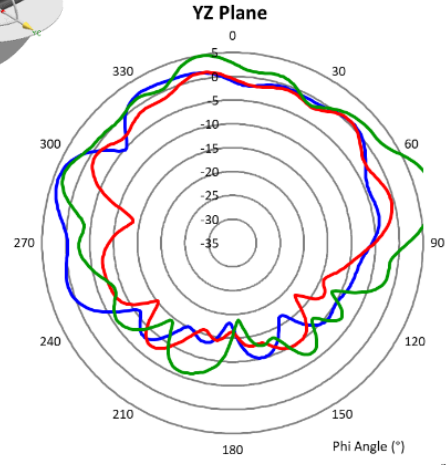
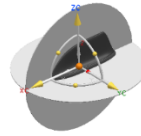
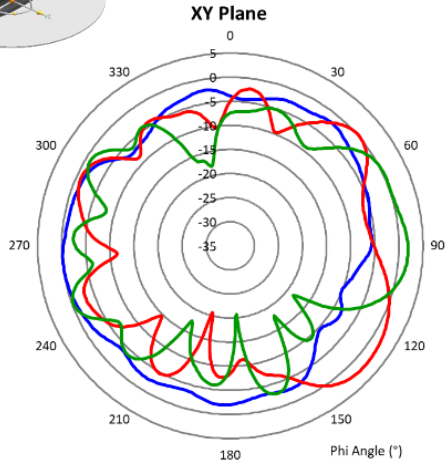
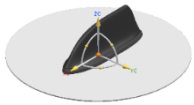
WiFi 6E Port 2





Radiation Pattern – WiFi 6E – Port 3 - XY & XZ Gain Plots

WiFi 6E Port 3



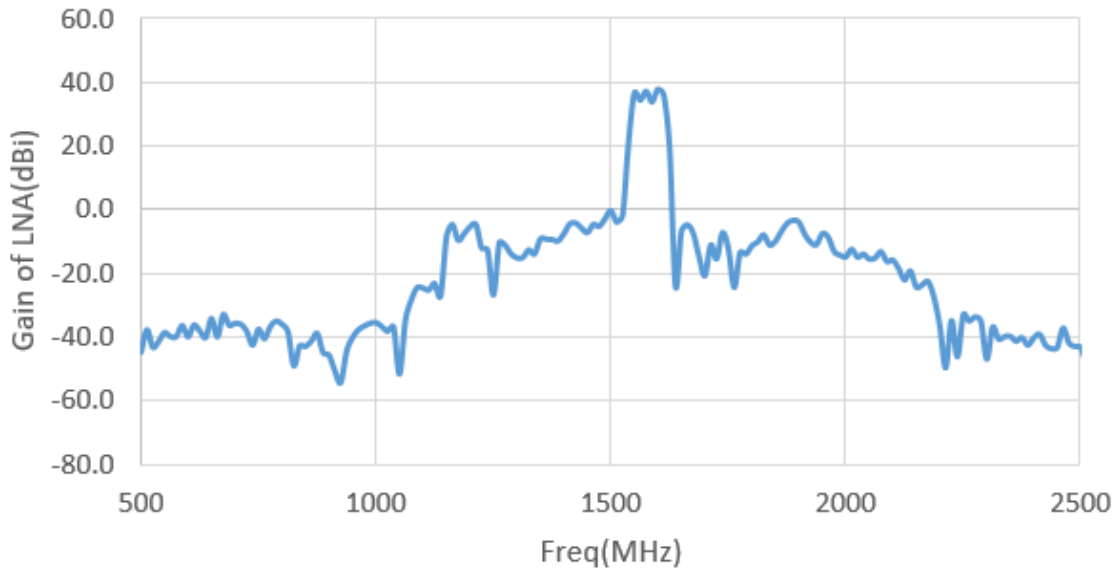
— 2450MHz — 5300MHz — 6000MHz

— 2450MHz — 5300MHz — 6000MHz



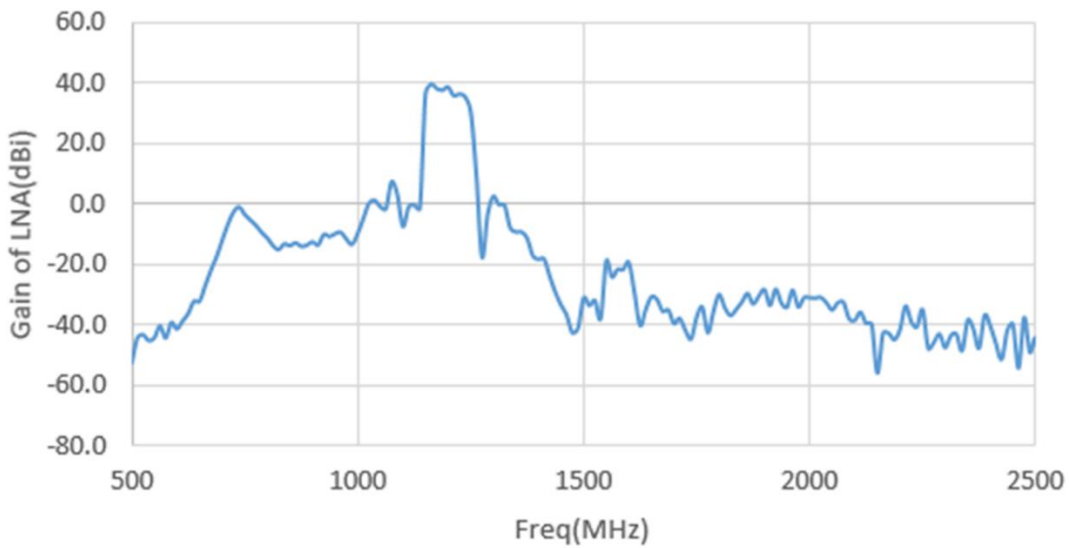
GNSS Antenna - LNA Gain

LNA gain and Out-of-band Rejection (L1)



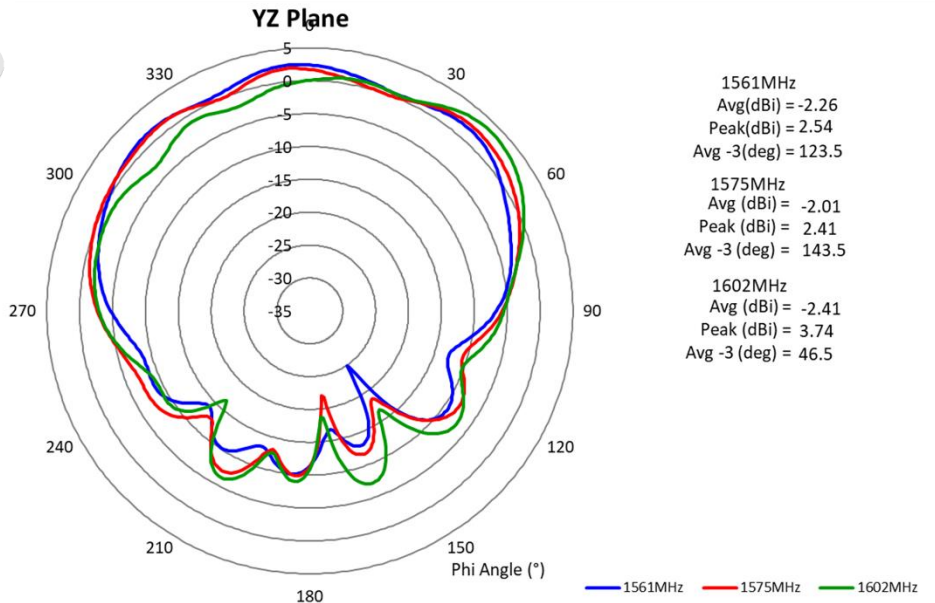
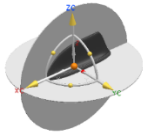
GNSS Antenna - LNA Gain

LNA gain and Out-of-band Rejection (L2)



GNSS Antenna - Radiation Pattern (YZ Plane) Plots

YZ Plane: Passive measurement with 15" cable (L1)



GNSS Antenna - LNA Gain and Radiation Pattern (YZ Plane) Plots

YZ Plane: Passive measurement with 15" cable (L2)

