



617-5000MHz North America Cellular, LTE, FR1 COMBINATION FPC ANTENNA

Part Number: L000836-XX

(see page 11 for details)

FEATURES & BENEFITS

- North America Cellular world band coverage 617-5000 MHz for 5G, LTE, NB-IoT and Cat-M
- Adhesive backing on the FPC simplifies mounting within the device
- FPC antenna assembly
- Different cable length and connector options available
- RoHS 2.0 Compliant, REACH Compliant

SPECIFICATIONS (Shown as L000836-02 : Others can vary with different cable lengths.)

Frequency Range (MHz)	617-894	1710-2200	2305-2360	2496-2690	3300-3800	3800-4200	4400-5000
VSWR	< 2.7:1	< 2.7:1	< 2.0:1	< 1.9:1	< 2.2:1	< 2.6:1	< 2.9:1
Average Efficiency	43 %	54 %	55 %	64 %	53 %	56%	48%
Peak Gain	0.6 dBi	3.1 dBi	3.4 dBi	3.0 dBi	2.7 dBi	3.4 dBi	3.6 dBi
Average Gain	-3.5 dBi	-2.7 dBi	-2.6 dBi	-2.0 dBi	-2.8 dBi	-2.5 dBi	-3.3 dBi
Power Handling	10 Watt cw						
Feed Point Impedance	50 ohms						
Polarization	Linear						
Size	100.0 mm x 15.0 mm x 0.15 mm (FPCB + adhesive) (with cable solder)						
Weight	< 2.0 g						
Mounting	Adhesive Tape						
Mating Connectors	MHF and MHF4L type, Refer to page 11						
Cable	1.13mm Dia., Refer to page 11						
Operating Temperature	-40 to +85°C						
Storage Temperature	-40 to +85°C						
Hazardous Materials	A certificate of conformance is available from the product page on TE website.						



Antenna RF Specifications with different cable assemblies

P/N Cable Length/ Connector/ Cable OD	RF DATA	Frequency Range (MHz)						
		617-894	1710-2200	2305-2360	2496-2690	3300-3800	3800-4200	4400-5000
L000836-01 50 mm MHF 1.13 mm	VSWR	< 2.2 :1	< 2.6 :1	< 2.5 :1	< 2.0 :1	< 2.5 :1	<2.6 :1	<2.5 :1
	Avg. Efficiency	49.3 %	54.25%	47.9 %	65.2 %	56 %	60.5 %	48.5 %
	Peak Gain (Max)	1.17 dBi	2.31 dBi	1.56 dBi	3.11 dBi	3.64 dBi	3.51 dBi	3.45 dBi
	Average Gain	-3.07 dB	-2.66 dBi	-3.2 dB	-1.9 dB	-2.5 dB	-2.2 dB	-3.2 dB
L000836-02 100 mm MHF 1.13 mm	VSWR	< 2.7 :1	< 2.7 :1	<2.0 :1	< 1.9 :1	< 2.2 :1	<2.6 :1	<2.9 :1
	Avg. Efficiency	43 %	54 %	55 %	64 %	53 %	56%	48%
	Peak Gain (Max)	0.6 dBi	3.1 dBi	3.4 dBi	3.0 dBi	2.7 dBi	3.4 dBi	3.6 dBi
	Average Gain	-3.5 dB	-2.7 dB	-2.6 dB	-2.0 dB	-2.8 dB	-2.5 dB	-3.3 dB
L000836-03 150 mm MHF 1.13 mm	VSWR	<2.65 :1	< 2.8 :1	<2.2 :1	< 2.0 :1	< 2.5 :1	<2.3 :1	<3.0 :1
	Avg. Efficiency	53.6 %	51.2 %	59.5 %	57.2 %	47.7 %	54.5 %	40.1 %
	Peak Gain (Max)	1.24 dBi	2.16 dBi	3.93 dBi	2.53 dBi	2.87 dBi	2.62 dBi	2.27 dBi
	Average Gain	-2.81 dB	-2.92 dB	-2.26 dB	-2.43 dB	-3.22 dB	-2.65 dB	-3.96 dB
L000836-04 200 mm MHF 1.13 mm	VSWR	< 1.8 :1	< 2.6 :1	< 2.2 :1	< 2.0 :1	< 2.6 :1	<2.4 :1	<2.2 :1
	Avg. Efficiency	54.6 %	50.7 %	55 %	53.3 %	45.9 %	52.7 %	41 %
	Peak Gain (Max)	1.37 dBi	2.51 dBi	2.74 dBi	3.01 dBi	2.61 dBi	2.91 dBi	3.63 dBi
	Average Gain	-2.67 dB	-2.96 dB	-2.6 dB	-2.75 dB	-3.39 dB	-2.79 dB	-3.98 dB

CABLE LOSS

OD 1.37mm (P/N: 2-2108921)							
Freq. Range (MHz)	617-960	1427-1517	1690-2400	2496-2690	3300-3800	3800-4200	4400-5000
Cable attenuation (dB/m)	< 1.9	<2.25	< 2.75	< 3.0	<3.5	< 3.8	< 4.0



Antenna RF Specifications with different cable assemblies

P/N Cable Length/ Connector/ Cable OD	RF DATA	Frequency Range (MHz)						
		617-894	1710-2200	2305-2360	2496-2690	3300-3800	3800-4200	4400-5000
L000836-05 250 mm MHF 1.13 mm	VSWR	< 2.2 :1	< 2.0 :1	< 2.2 :1	< 1.8 :1	< 2.1 :1	<2.1 :1	<2.7 :1
	Avg. Efficiency	44.7 %	51.4%	50.7 %	54.3 %	42.2 %	46.5 %	34.9 %
	Peak Gain (Max)	1.14 dBi	3.23 dBi	3.19 dBi	4.32 dBi	2.93 dBi	2.95 dBi	1.87 dBi
	Average Gain	-3.5 dB	-2.9 dB	-2.95 dB	-2.6 dB	-3.77 dB	-3.3 dB	-4.6 dB
L000836-06 300 mm MHF 1.13 mm	VSWR	< 2.5 :1	< 2.2 :1	<2.1 :1	< 1.8 :1	< 2.1 :1	<2.1 :1	<2.6 :1
	Avg. Efficiency	43.8 %	49.7 %	54.9 %	55.7 %	41.2 %	46.6%	33.5%
	Peak Gain (Max)	0.7 dBi	3 dBi	4.5 dBi	4.2 dBi	2.2 dBi	2.7 dBi	2.4 dBi
	Average Gain	-3.6dB	-3.0dB	-2.6dB	-2.5dB	-3.8dB	-3.3dB	-4.9dB
L000836-07 50 mm MHF4L 1.13 mm	VSWR	< 2.2 :1	< 2.6 :1	< 2.5 :1	< 2.0 :1	< 2.5 :1	<2.6 :1	<2.5 :1
	Avg. Efficiency	49.3 %	54.25%	47.9 %	65.2 %	56 %	60.5 %	48.5 %
	Peak Gain (Max)	1.17 dBi	2.31 dBi	1.56 dBi	3.11 dBi	3.64 dBi	3.51 dBi	3.45 dBi
	Average Gain	-3.07 dB	-2.66 dB	-3.2 dB	-1.9 dB	-2.5 dB	-2.2 dB	-3.2 dB
L000836-08 100 mm MHF4L 1.13 mm	VSWR	< 2.7 :1	< 2.7 :1	<2.0 :1	< 1.9 :1	< 2.2 :1	<2.6 :1	<2.9 :1
	Avg. Efficiency	43 %	54 %	55 %	64 %	53 %	56%	48%
	Peak Gain (Max)	0.6 dBi	3.1 dBi	3.4 dBi	3.0 dBi	2.7 dBi	3.4 dBi	3.6 dBi
	Average Gain	-3.5 dB	-2.7 dB	-2.6 dB	-2.0 dB	-2.8 dB	-2.5 dB	-3.3 dB

CABLE LOSS

OD 1.37mm (P/N: 2-2108921)							
Freq. Range (MHz)	617-960	1427-1517	1690-2400	2496-2690	3300-3800	3800-4200	4400-5000
Cable attenuation (dB/m)	< 1.9	<2.25	< 2.75	< 3.0	<3.5	< 3.8	< 4.0



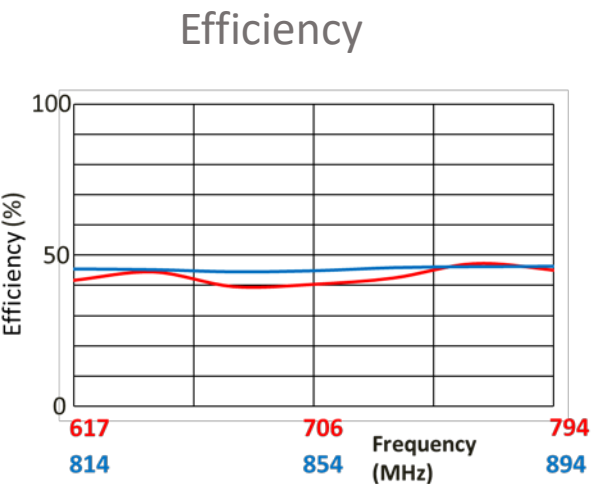
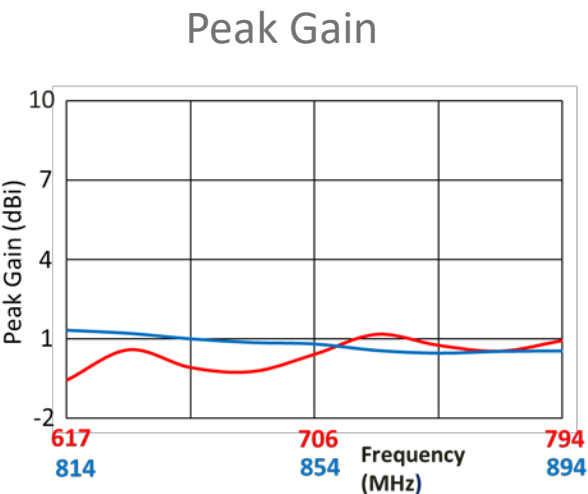
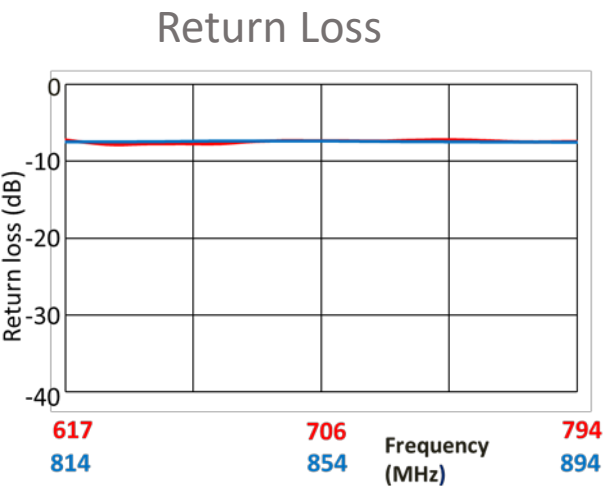
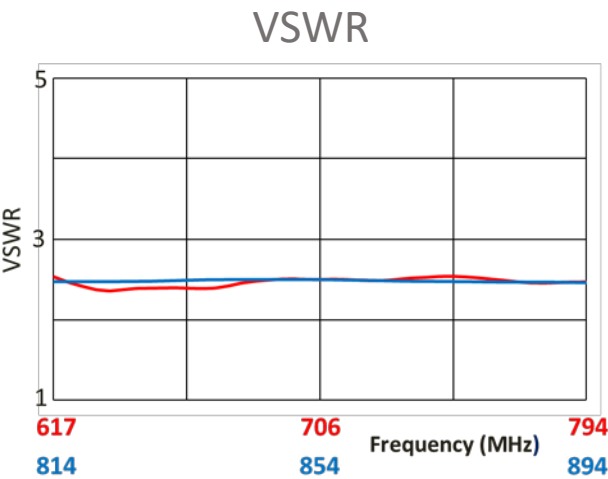
Antenna RF Specifications with different cable assemblies

P/N Cable Length/ Connector/ Cable OD	RF DATA	Frequency Range (MHz)						
		617-894	1710-2200	2305-2360	2496-2690	3300-3800	3800-4200	4400-5000
L000836-09 150 mm MHF4L 1.13 mm	VSWR	<2.65 :1	< 2.8 :1	<2.2 :1	< 2.0 :1	< 2.5 :1	<2.3 :1	<3.0 :1
	Avg. Efficiency	53.6 %	51.2 %	59.5 %	57.2 %	47.7 %	54.5 %	40.1 %
	Peak Gain (Max)	1.24 dBi	2.16 dBi	3.93 dBi	2.53 dBi	2.87 dBi	2.62 dBi	2.27 dBi
	Average Gain	-2.81 dB	-2.92 dB	-2.26 dB	-2.43 dB	-3.22 dB	-2.65 dB	-3.96 dB
L000836-10 200 mm MHF4L 1.13 mm	VSWR	< 1.8 :1	< 2.6 :1	< 2.2 :1	< 2.0 :1	< 2.6 :1	<2.4 :1	<2.2 :1
	Avg. Efficiency	54.6 %	50.7 %	55 %	53.3 %	45.9 %	52.7 %	41 %
	Peak Gain (Max)	1.37 dBi	2.51 dBi	2.74 dBi	3.01 dBi	2.61 dBi	2.91 dBi	3.63 dBi
	Average Gain	-2.67 dB	-2.96 dB	-2.6 dB	-2.75 dB	-3.39 dB	-2.79 dB	-3.98 dB
L000836-11 250 mm MHF4L 1.13 mm	VSWR	< 2.2 :1	< 2.0 :1	< 2.2 :1	< 1.8 :1	< 2.1 :1	<2.1 :1	<2.7 :1
	Avg. Efficiency	44.7 %	51.4%	50.7 %	54.3 %	42.2 %	46.5 %	34.9 %
	Peak Gain (Max)	1.14 dBi	3.23 dBi	3.19 dBi	4.32 dBi	2.93 dBi	2.95 dBi	1.87 dBi
	Average Gain	-3.5 dB	-2.9 dB	-2.95 dB	-2.6 dB	-3.77 dB	-3.3 dB	-4.6 dB
L000836-12 300 mm MHF4L 1.13 mm	VSWR	< 2.5 :1	< 2.2 :1	<2.1 :1	< 1.8 :1	< 2.1 :1	<2.1 :1	<2.6 :1
	Avg. Efficiency	43.8 %	49.7 %	54.9 %	55.7 %	41.2 %	46.6%	33.5%
	Peak Gain (Max)	0.7 dBi	3 dBi	4.5 dBi	4.2 dBi	2.2 dBi	2.7 dBi	2.4 dBi
	Average Gain	-3.6dB	-3.0dB	-2.6dB	-2.5dB	-3.8dB	-3.3dB	-4.9dB

CABLE LOSS

OD 1.13mm (P/N: 3-2108921)							
Freq. Range (MHz)	617-960	1427-1517	1690-2400	2496-2690	3300-3800	3800-4200	4400-5000
Cable attenuation (dB/m)	< 2.2	<2.9	< 3.69	< 4.0	<4.5	< 4.7	< 5.0

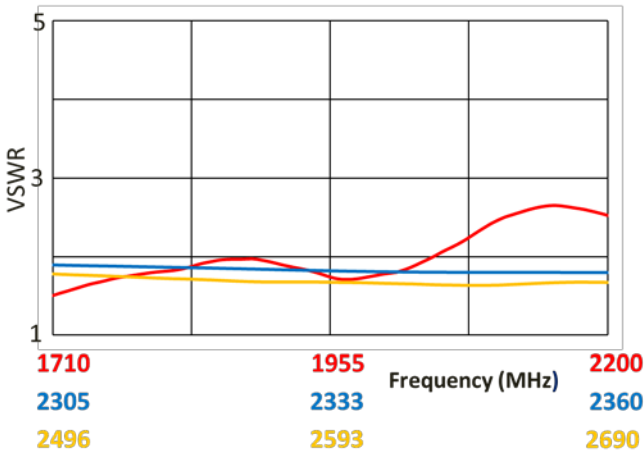
RF DATA (Shown as L000836-02 : Others can vary with different cable lengths.)



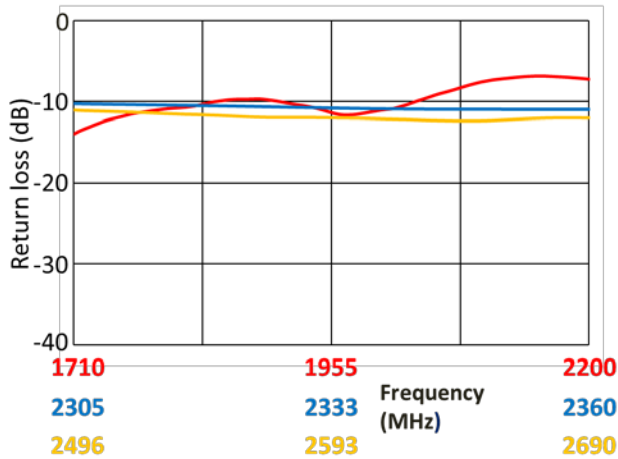
Data measured in free space and on 150 x 150 x 2.0 mm PC plastic

RF DATA (Shown as L000836-02 : Others can vary with different cable lengths.)

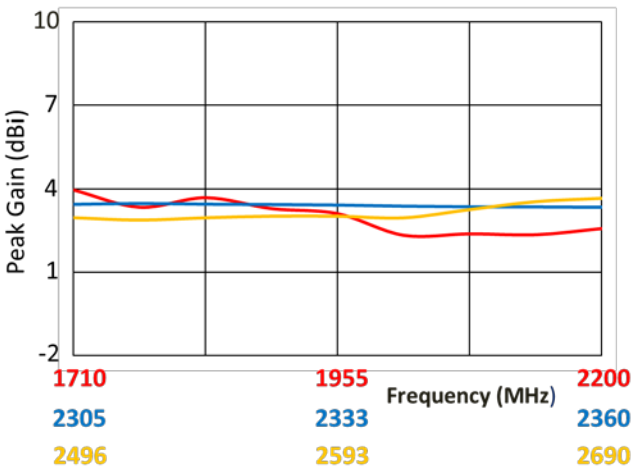
VSWR



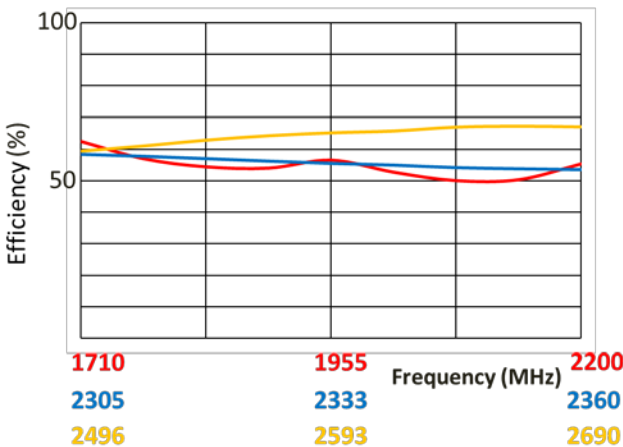
Return Loss



Peak Gain



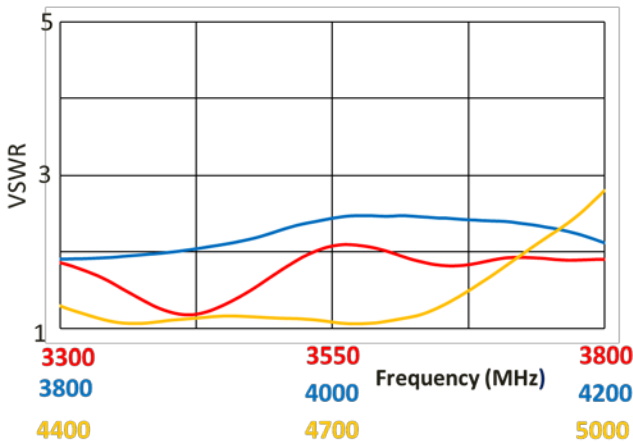
Efficiency



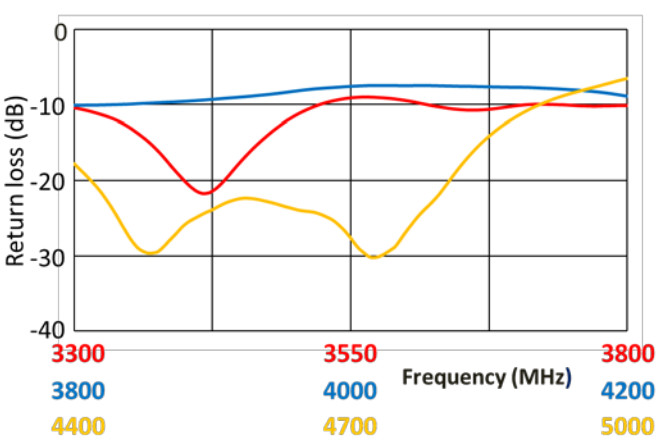
Data measured in free space and on 150 x 150 x 2.0 mm PC plastic

RF DATA (Shown as L000836-02 : Others can vary with different cable lengths.)

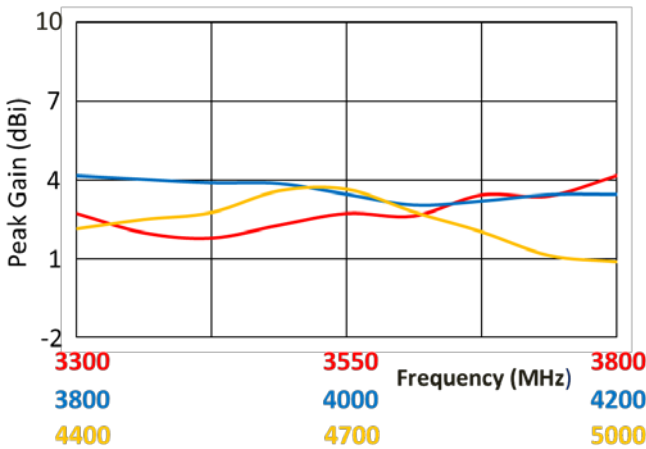
VSWR



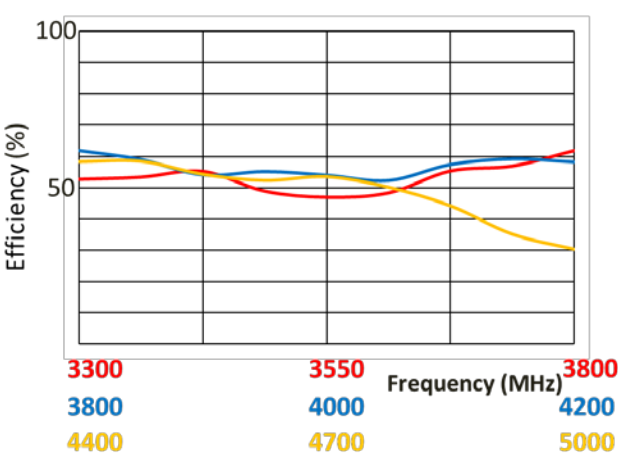
Return Loss



Peak Gain



Efficiency

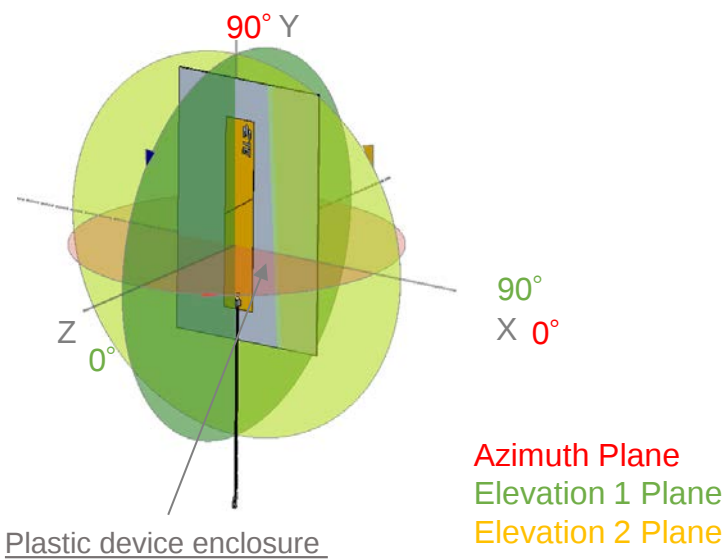


Data measured in free space and on 150 x 150 x 2.0 mm PC plastic

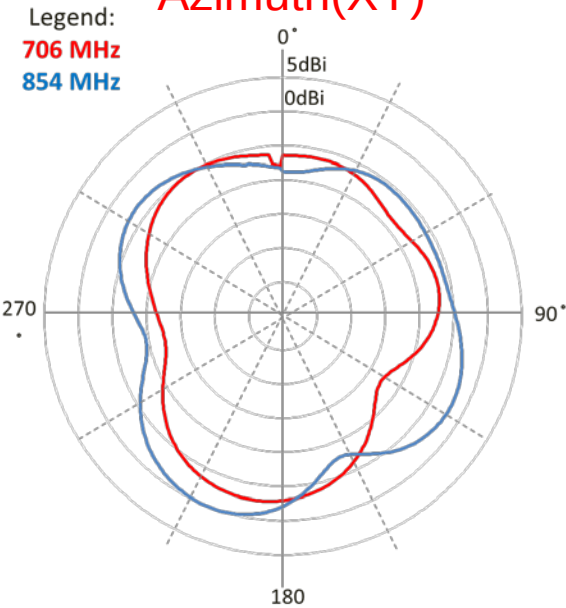
RADIATION PATTERN

(Shown as L000836-02 : Others can vary with different cable lengths.)

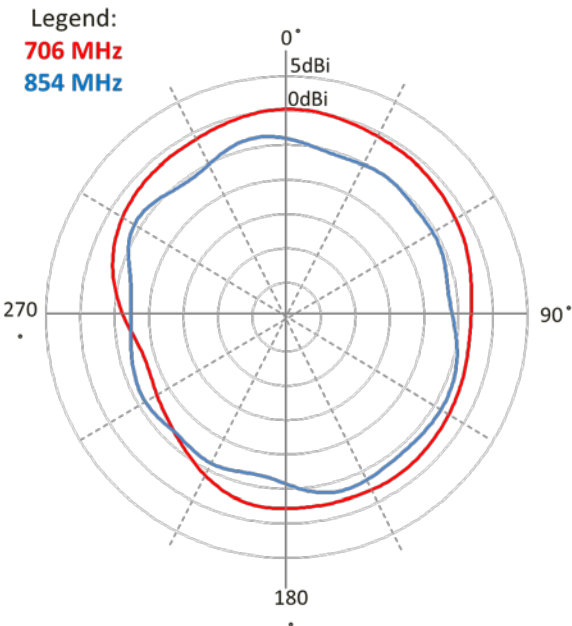
Test setup



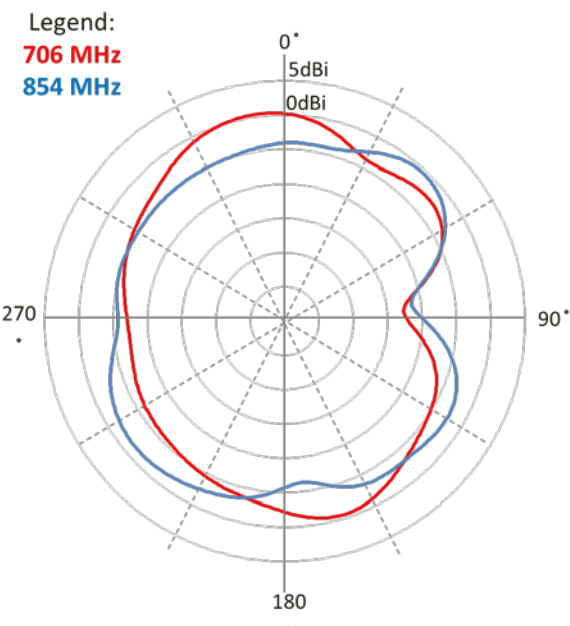
Azimuth(XY)



Elevation 1(XZ)



Elevation 2(YZ)

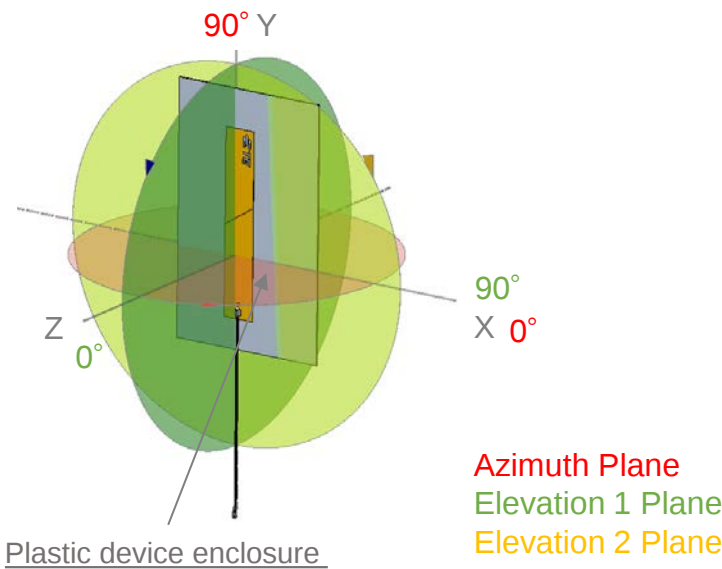


Data measured in free space and on 150 x 150 x 2.0 mm PC plastic

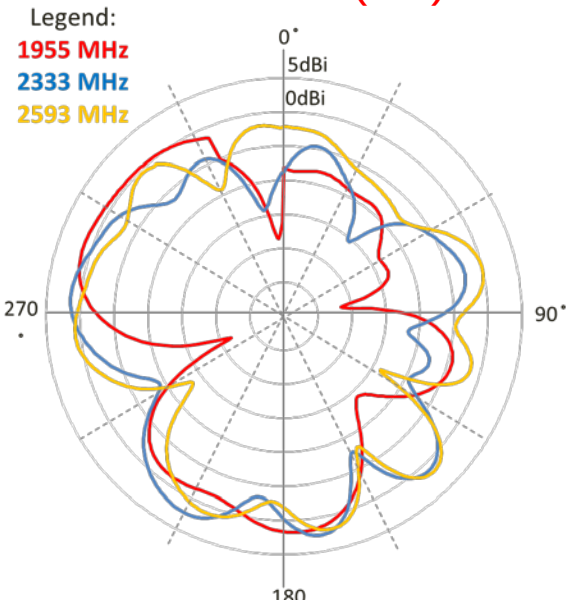
RADIATION PATTERN

(Shown as L000836-02 : Others can vary with different cable lengths.)

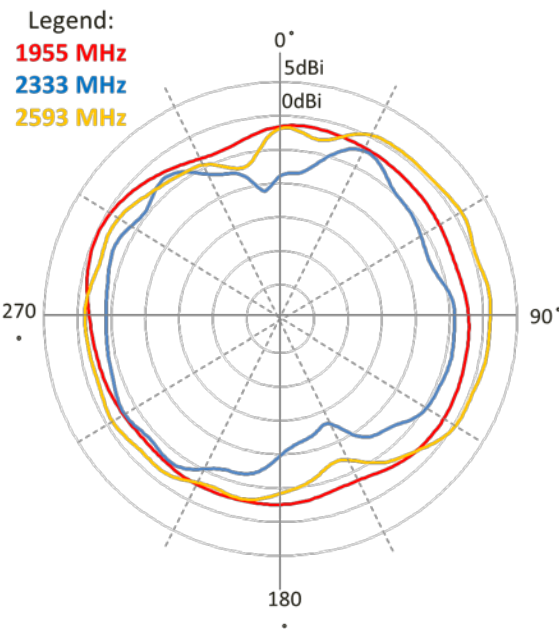
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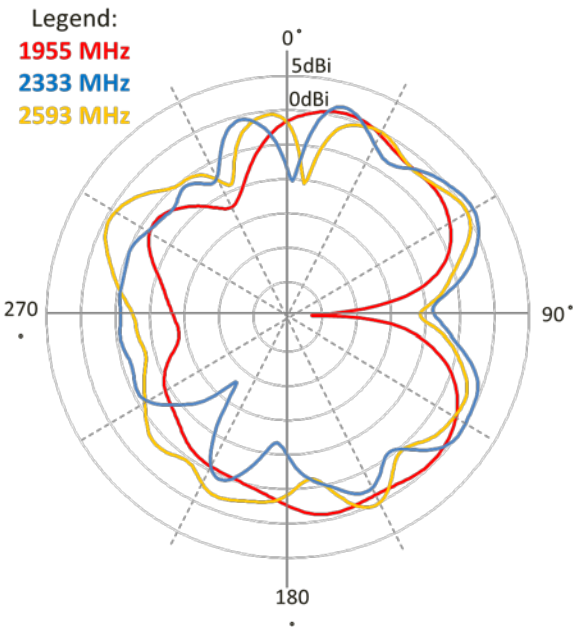
Azimuth(XY)



Elevation 1(XZ)



Elevation 2(YZ)

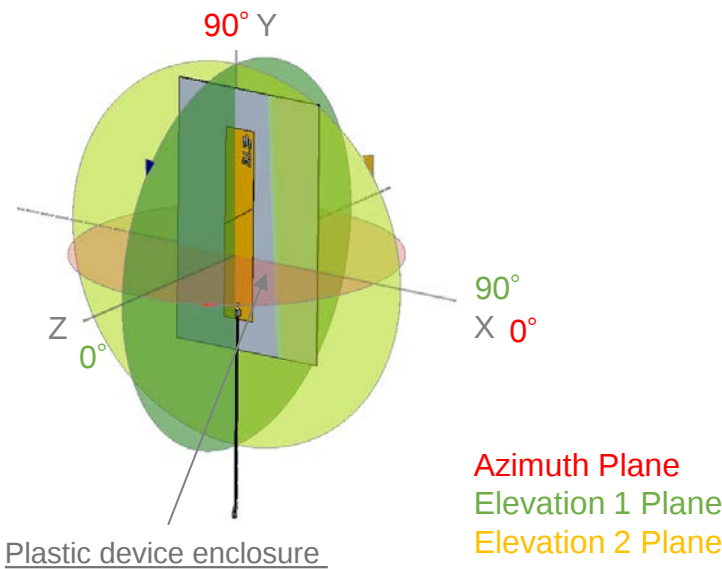


Data measured in free space and on 150 x 150 x 2.0 mm PC plastic

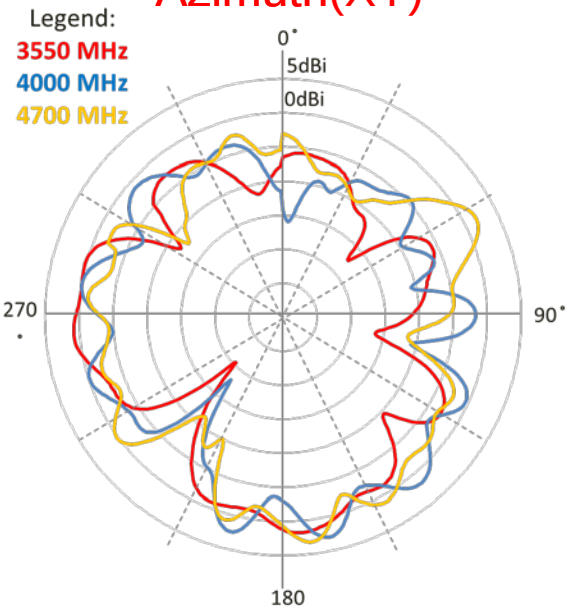
RADIATION PATTERN

(Shown as L000836-02 : Others can vary with different cable lengths.)

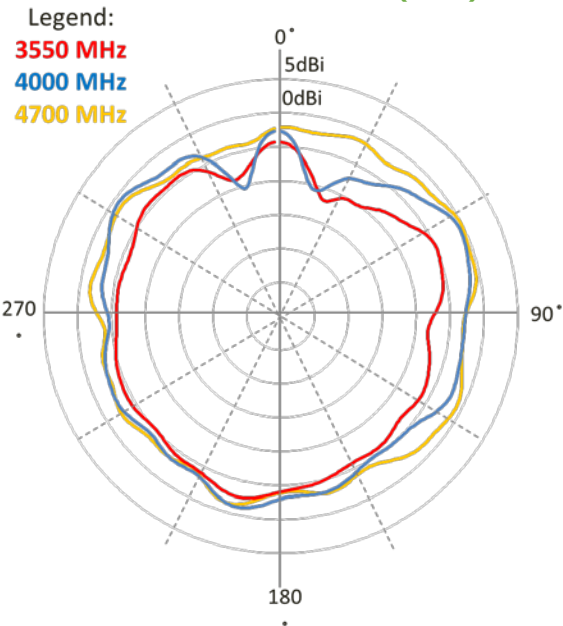
Test setup



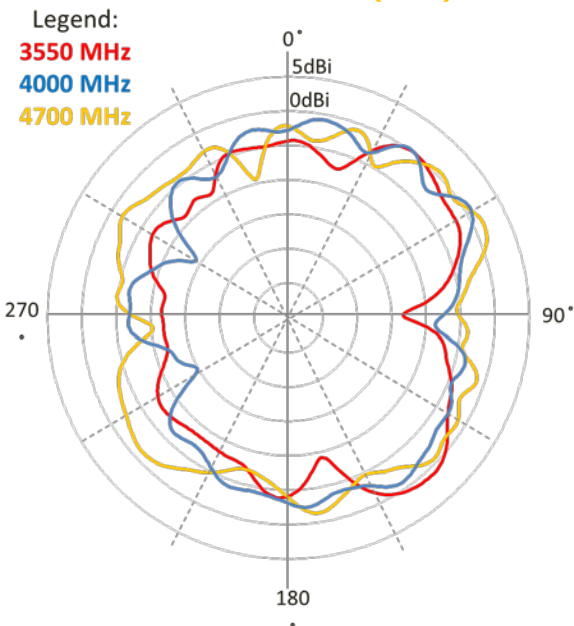
Azimuth(XY)



Elevation 1(XZ)

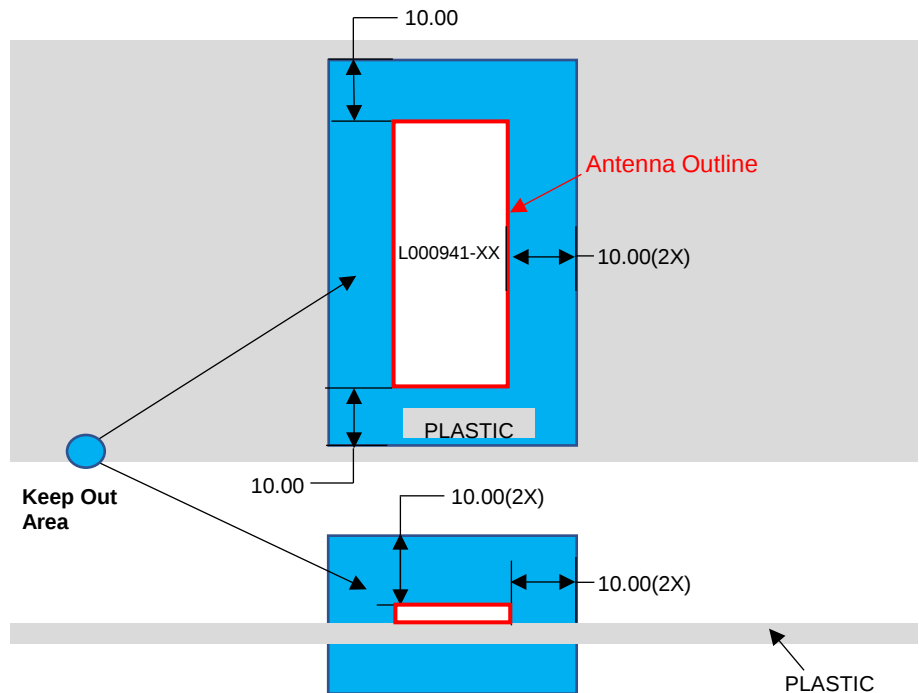


Elevation 2(YZ)



Data measured in free space and on 150 x 150 x 2.0 mm PC plastic

KEEP OUT AREA

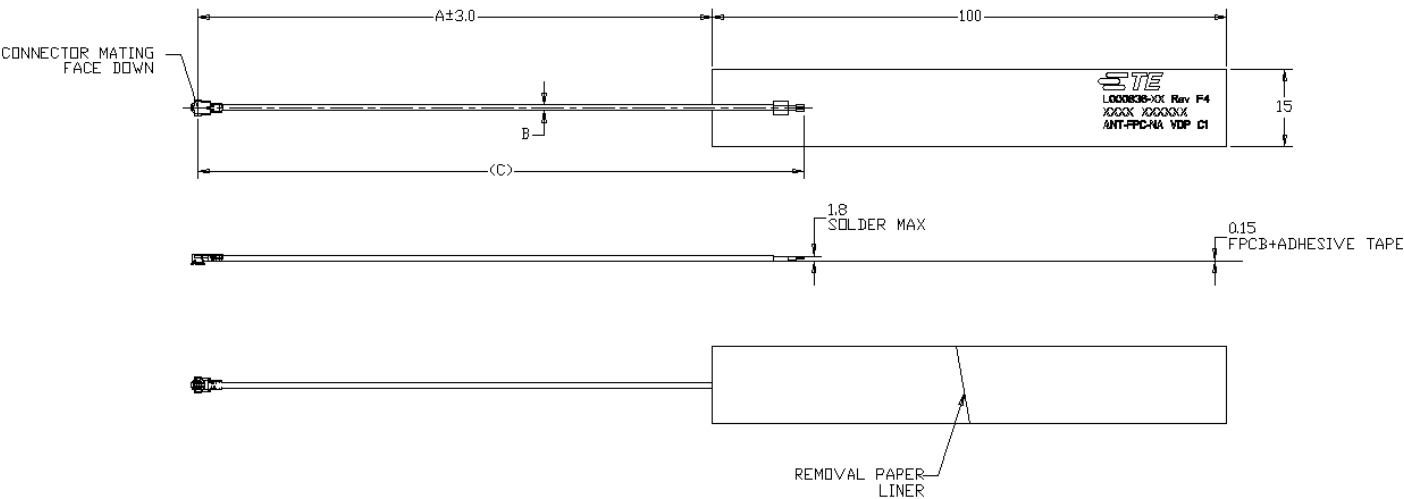


NOTES:1. Antenna designed to be mounted on plastic cover.
2. Area in blue above indicates Keep Out Area.
3. For more information please call TE.

Dimensions: mm
Diagram is not to scale

DIMENSIONS

(Refer to Page11 for dimension "A")

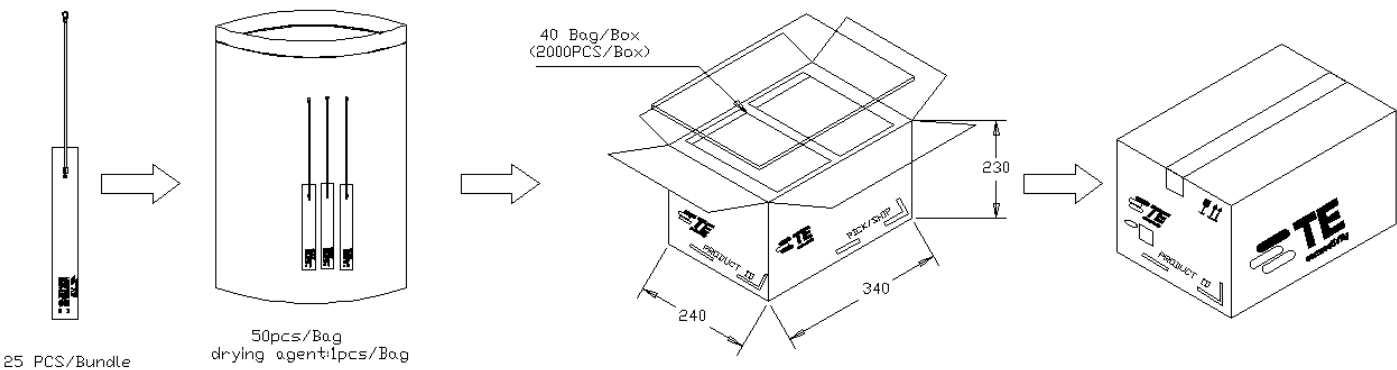


Dimensions: mm
Diagram is not to scale

MATING COMPONENTS TO PART NUMBERS AND DIMENSIONS

L000836-01	50.0	1.968	1.13	MHF-TYPE PLUG	RECEPTACLE (TE PN: 2337019-1)	
L000836-02	100.0	3.937	1.13	MHF-TYPE PLUG	RECEPTACLE (TE PN: 2337019-1)	
L000836-03	150.0	5.905	1.13	MHF-TYPE PLUG	RECEPTACLE (TE PN: 2337019-1)	
L000836-04	200.0	7.874	1.13	MHF-TYPE PLUG	RECEPTACLE (TE PN: 2337019-1)	
L000836-05	250.0	9.842	1.13	MHF-TYPE PLUG	RECEPTACLE (TE PN: 2337019-1)	
L000836-06	300.0	11.811	1.13	MHF-TYPE PLUG	RECEPTACLE (TE PN: 2337019-1)	
L000836-07	50.0	1.968	1.13	MHF4L-TYPE PLUG	RECEPTACLE (TE PN: 2334884-1)	
L000836-08	100.0	3.937	1.13	MHF4L-TYPE PLUG	RECEPTACLE (TE PN: 2334884-1)	
L000836-09	150.0	5.905	1.13	MHF4L-TYPE PLUG	RECEPTACLE (TE PN: 2334884-1)	
L000836-10	200.0	7.874	1.13	MHF4L-TYPE PLUG	RECEPTACLE (TE PN: 2334884-1)	
L000836-11	250.0	9.842	1.13	MHF4L-TYPE PLUG	RECEPTACLE (TE PN: 2334884-1)	
L000836-12	300.0	11.811	1.13	MHF4L-TYPE PLUG	RECEPTACLE (TE PN: 2334884-1)	
PART	MM	INCH	CABLE O.D (B)	CONNECTOR TYPE	PART NUMBER	IMAGE
NUMBER	CABLE LENGTH (A)			(ON CABLE)	MATING COMPONENTS	

PACKAGING



TE TECHNICAL SUPPORT CENTER

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Canada:	+1 (905) 475-6222
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