



FXP07.09.0100A

Specification

Part No.	FXP07.09.0100A
Product Name	Flexible PCB Penta Band GSM Antenna 100mm Ø1.13 cable Right angle MMCX connector
Feature	Very low profile Penta band GSM Adhesive tape for easy mounting RoHS compliant

1. Introduction

FXP.07 is a general version of stick-on flexible PCB GSM penta-band antenna. It is designed with a cellphone size ground plane so works the best with devices of

similar size or bigger. This low profile and conformable antenna can be easily fitted into any housing for plug-and-play application.

2. Specification

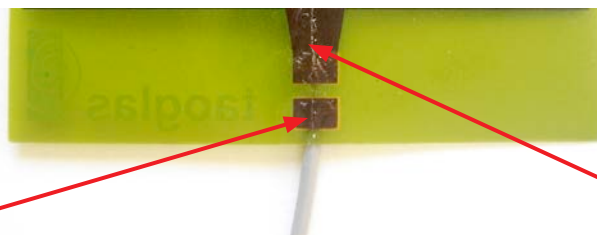
Communication System	Penta-Band Cellular				
	AMPS	GSM	DCS	PCS	UMTS
Frequency (MHz)	824~896	880~960	1710~1880	1850~1990	1710~2170
Efficiency (ground plane)	91%	83%	39%	21%	18%
Efficiency (free space)	13%	14%	49%	40%	29%
VSWR	1.06~7.3				
Impedance	50Ω				
Radiation Pattern	Omni-directional				
Polarization	Linear				
FPCB	41.0 x 24.0mm				
Connector	MMCX(M)RA				
Cable	Ø1.13				
Cable Length	100mm				
Adhesive Tape	3M 467				
Operation Temperature	-40°C~+85°C				
Storage Temperature	-40°C~+85°C				

3. Electrical Property

3.1 Mounting instructions and ground-plane connection



Peel back 3m paper. On the underside of the antenna is automotive grade 3m adhesive (glue) for sticking the FXP.07 directly to plastic (e.g. housing). The antenna can be curved around housing but should not be folded sharply



Ground connection - this small square pad at the bottom of the FXP.07 can be seen when paper is removed.

This should be connected to extra ground or metal to increase efficiency (e.g. allow pad to touch the side of a PCB like the picture above).

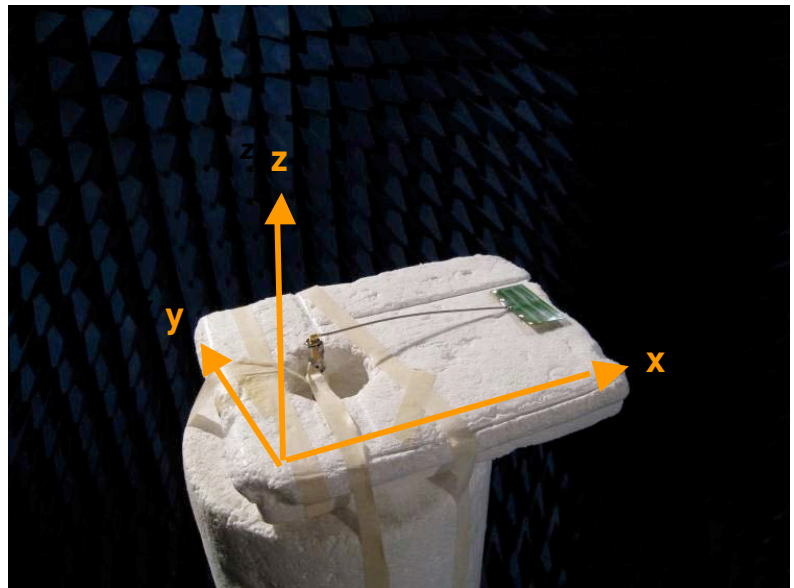
This is the antenna trace or signal feed and should be allowed to be free from the PCB and allowed to exist in free area on non metal area (plastic housing)

3. Electrical Property

3.2 Test Setup

FXP.07 was designed with a cell-phone size ground plane (110 x 45 mm). Tests were setup to demonstrate its RF properties with this ground plane, in free space and adhered to a plastic box to

simulate a typical application device. Satimo SG64 3D-chamber is used for radiation and efficiency test with 5% tolerance.

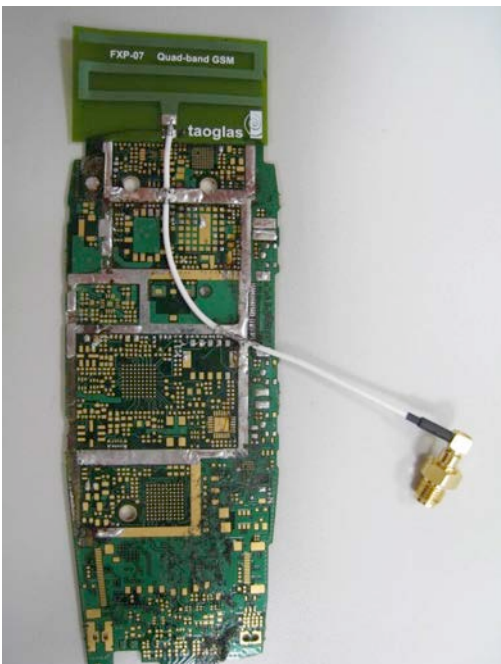


Satimo SG64 3D-chamber and antenna setup reference.

3.3 Test Setup

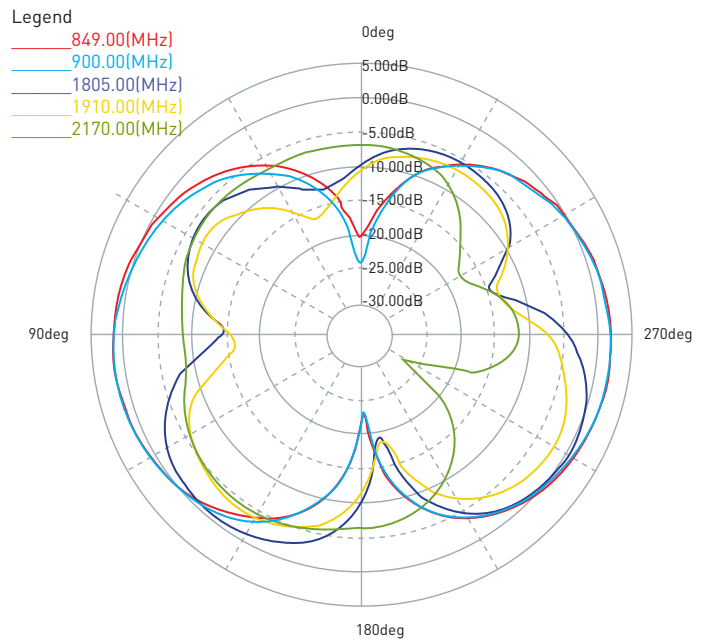
FXP.07 with original ground plane

x-y plane

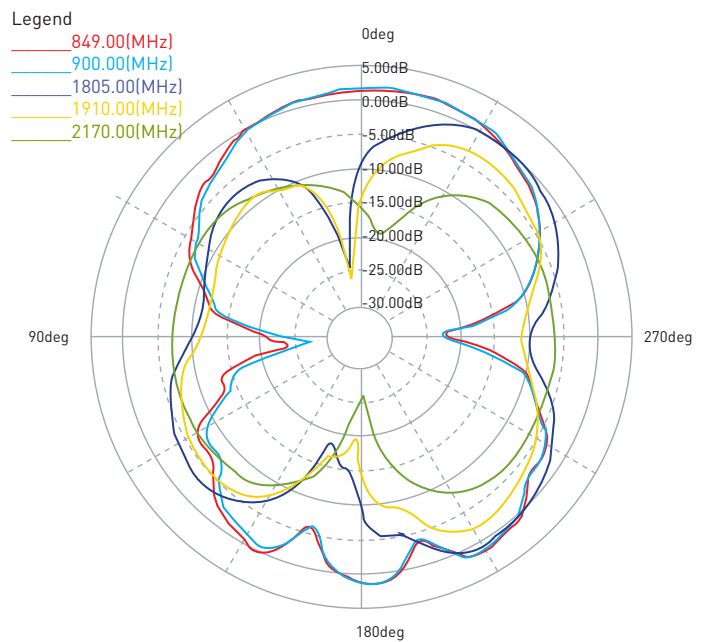


This ground plane is what FXP.07 is originally designed for. So the test result can be treated as a bench mark for this antenna.

x-y plane



x-z plane



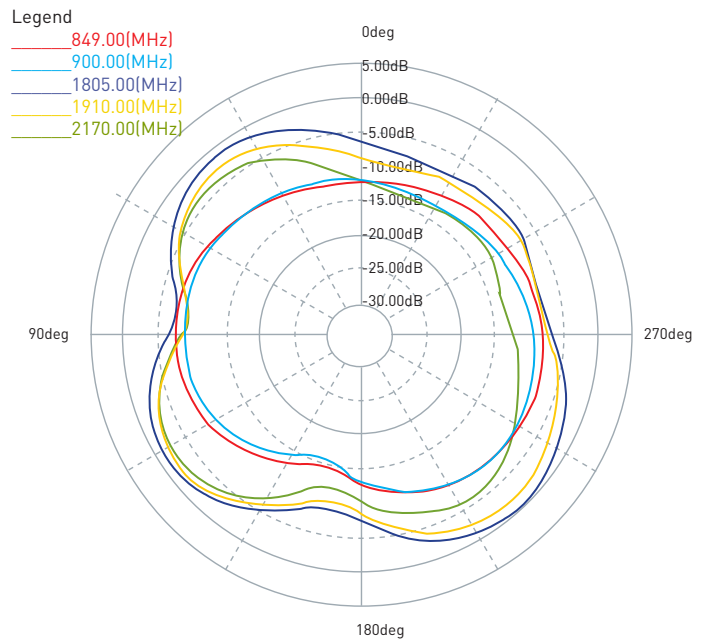
3.3 Test Setup

FXP.07 in free space

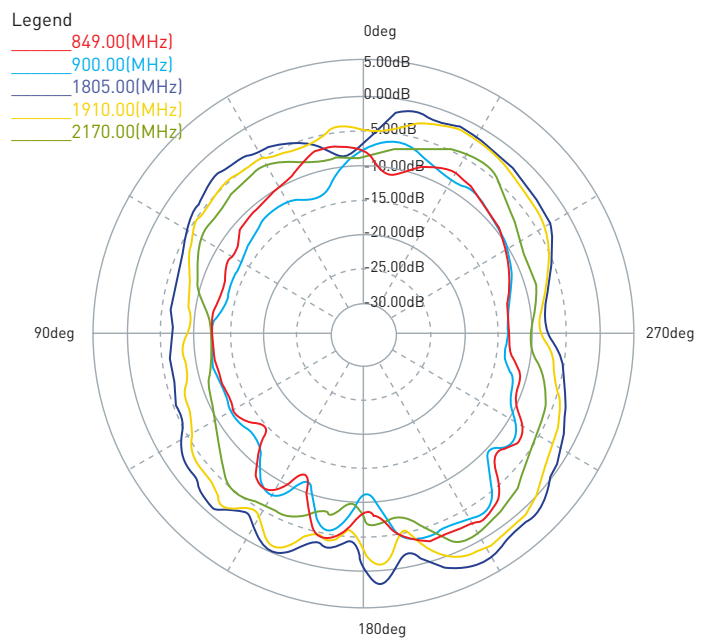


Miniature antenna needs a ground plane for radiation. FXP.07 tested with no ground plane present the extreme cases of the antenna performance.

x-y plane

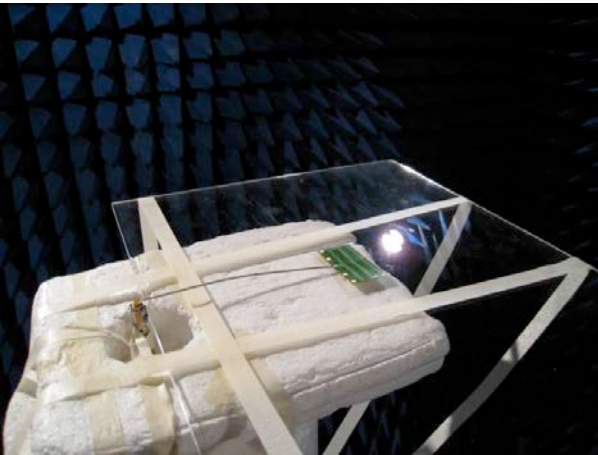


x-z plane



3.3 Test Setup

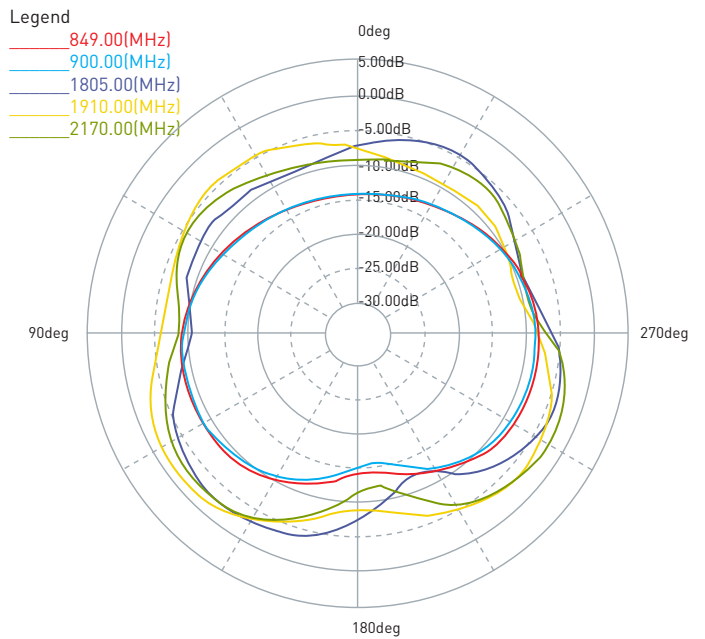
FXP.07 adhere on plastic



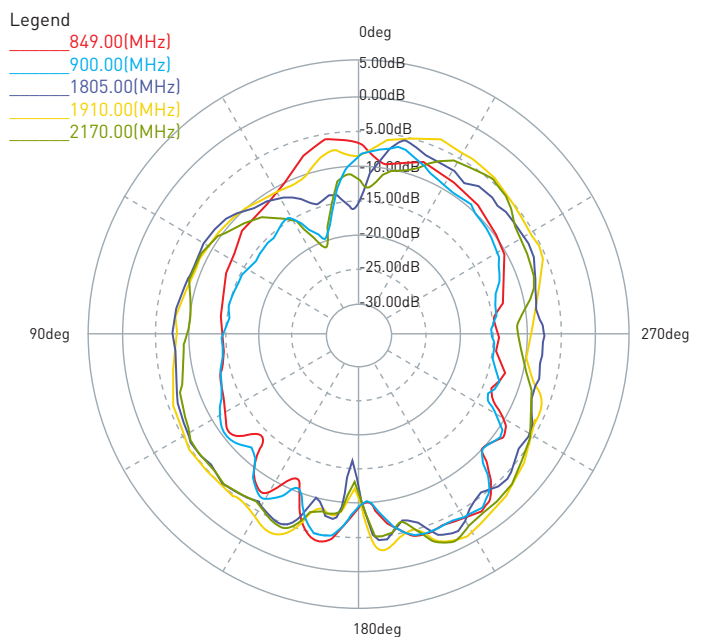
Majority of the GSM devices is made with plastic housing. This test demonstrate the effects of FXP.07 adhere on a piece of plastic.

Compare the result of FXP.07 in free space with and without adhering on a piece of plastic, the plastic mainly degrade the performance of GSM1850MHz band.

x-y plane

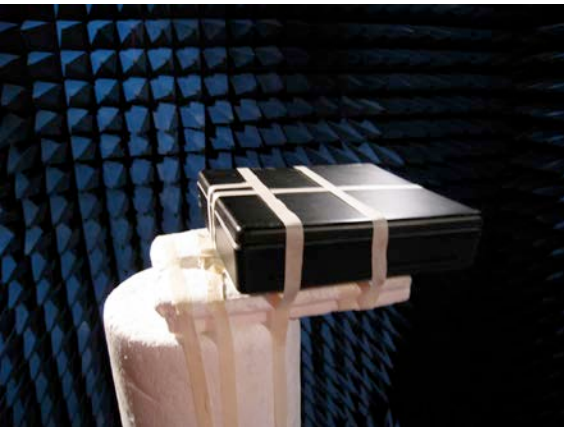


x-z plane



3.3 Test Setup

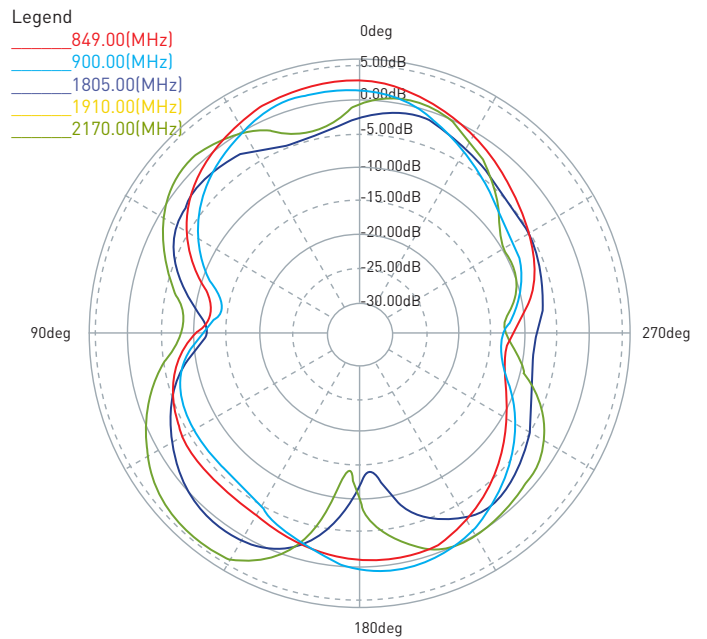
FXP.07 with the ground plane adhere on plastic box



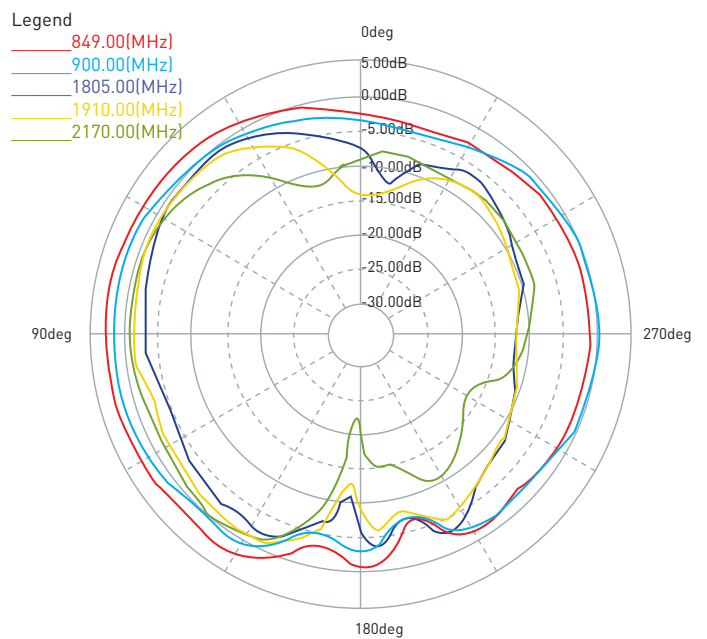
More often, FXP.07 is attached to a piece of ground plane and packed in a plastic box.

This test try to simulate a typical situation when FXP.07 is attached to a piece of PCB, with other piece in a device.

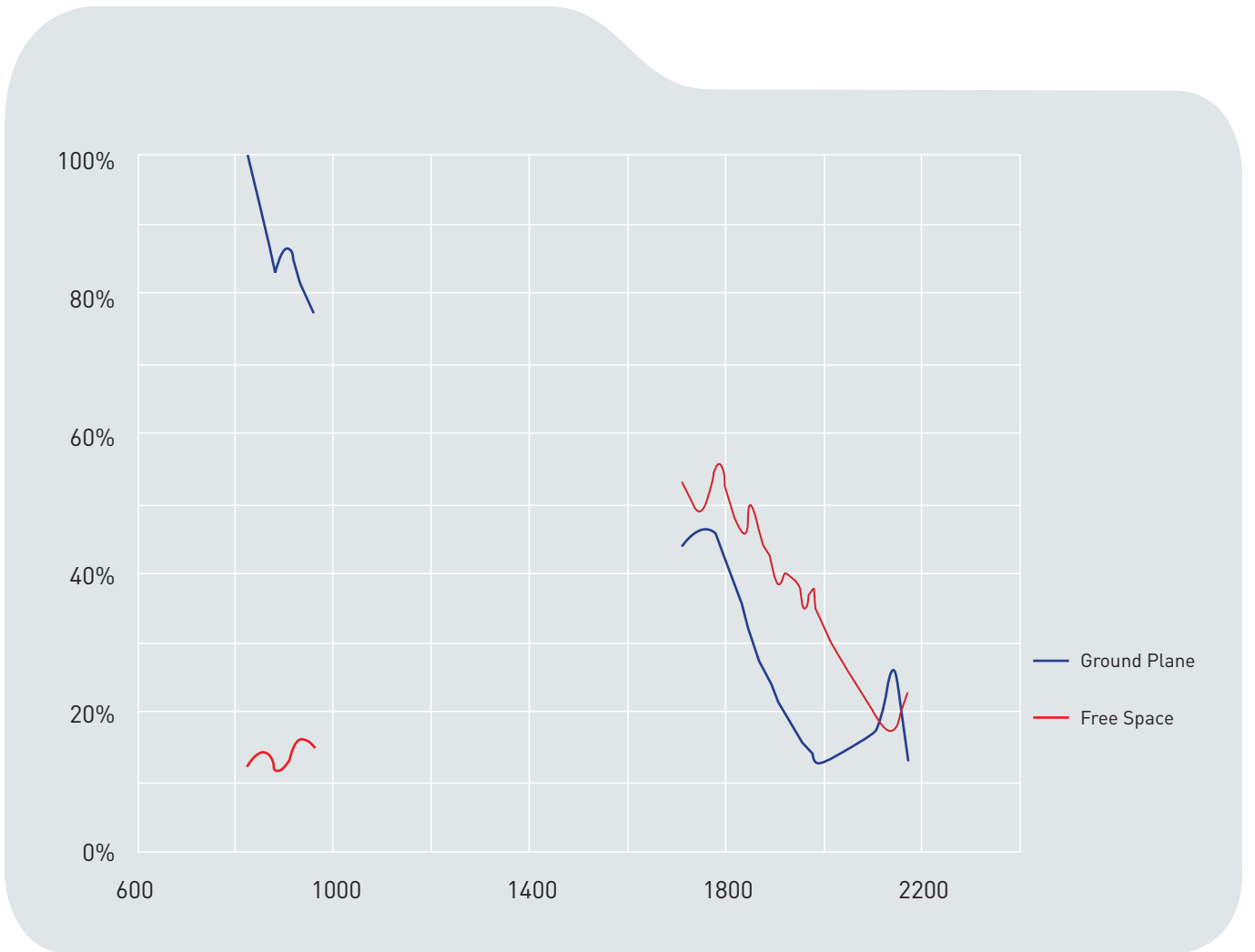
x-y plane



x-z plane

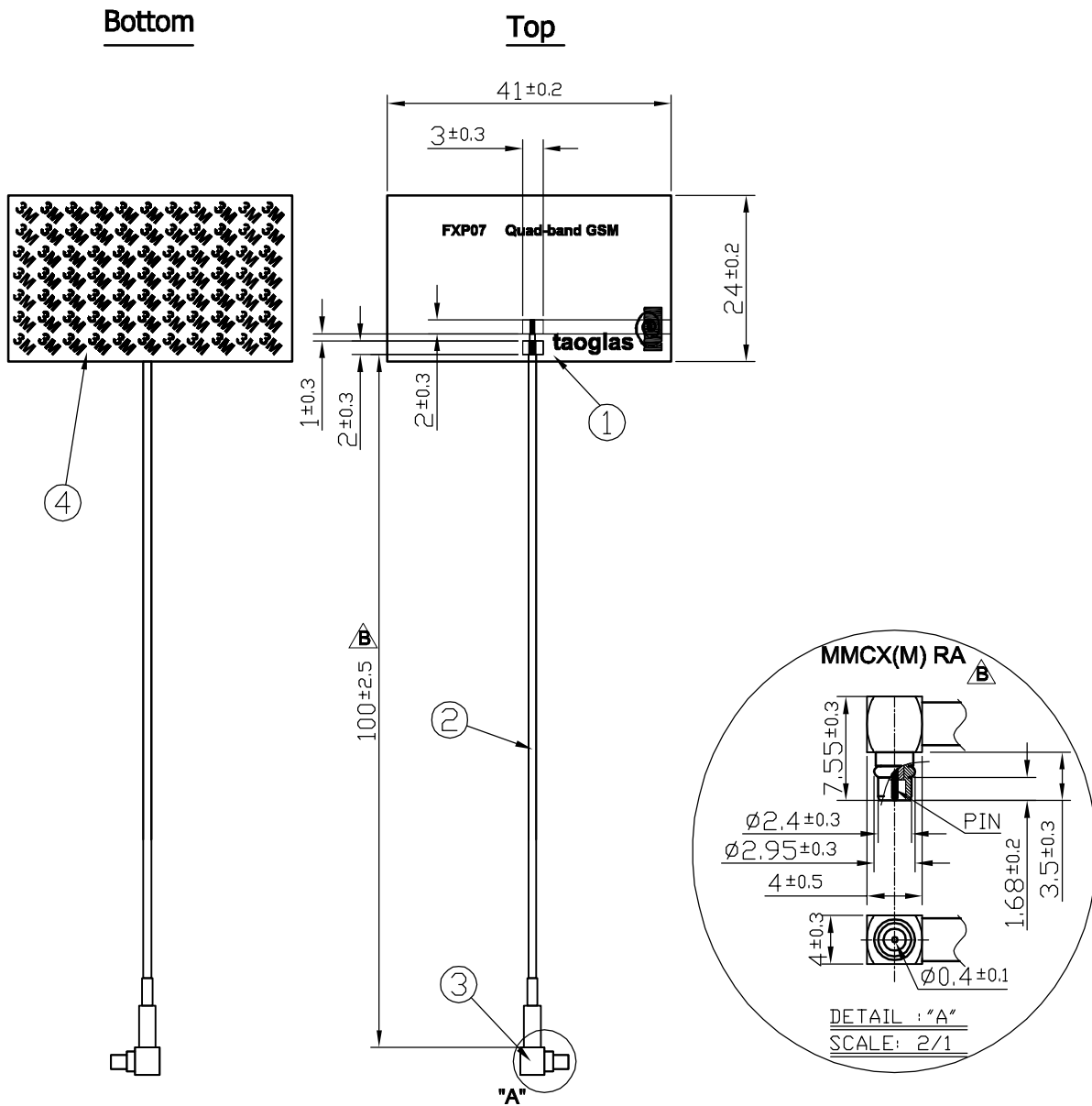


3.4 Efficiency



Miniature antennas couple to the ground plane for radiation so the efficiency of the antenna without a ground plane is largely degraded. These tests demonstrate the best performance (with the designed ground) and the worst performance (with no ground) possible of FXP.07. Adhere the antenna to a plastic changes the result, particularly in higher frequency bands.

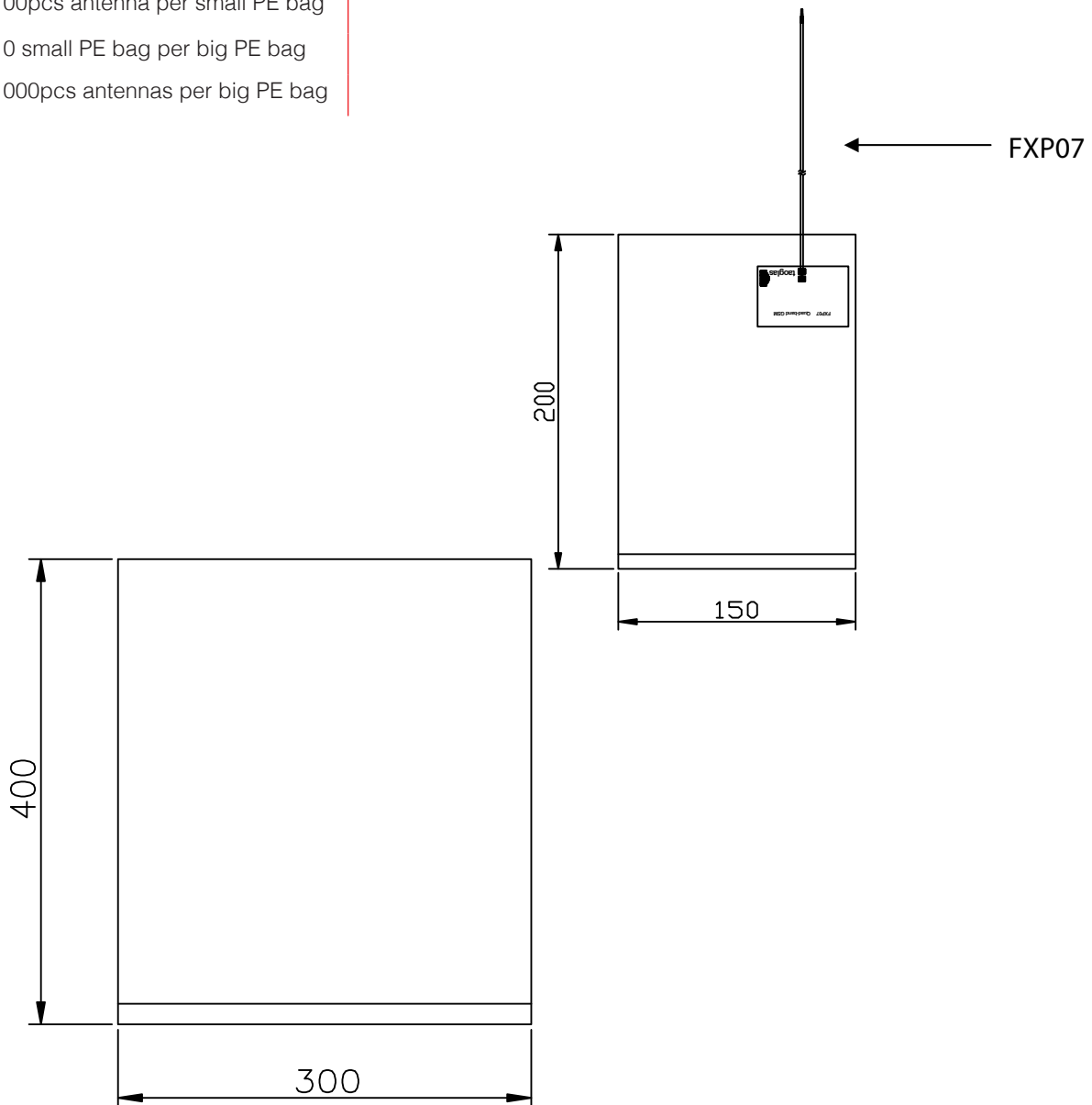
4. Mechanical Drawing



	Name	Material	Finish	QTY
1	FXP07 PCB	FPCB 0.1t	Green	1
2	1.13 Coaxial Cable	FEP	White	1
3	MMCX(M) R/A	Brass	Gold	1
4	Double-Sided Adhesive	3M 467	Brown Liner	1

5. Packaging

- 100pcs antenna per small PE bag
- 10 small PE bag per big PE bag
- 1000pcs antennas per big PE bag



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