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Title: SPECIFICATION G36 RFID ANTENNAS A1211 ETSI / A1212 FCC							
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OVERVIEW

G36 RFID antenna (A1211/A1212) is a PCB patch antenna that has two patches on a single 4-layer PCB board. Both CE and FCC versions have the same antenna structure. The only difference between the CE and FCC versions is the patch size (the CE version has slightly bigger patches than the FCC version). The prints on the PCB board have “FCC” or “CE” to identify the version. **Figure 1** shows a G36 antenna (CE version). The antenna has three ports: P1 for patch 1, P2 for patch 2, and P3 for two patches combined. P3 is terminated with a 50 Ohm resistor for when the antenna is connected to WTZ2000 RFID reader or Neo RFID reader. When the antenna is connected to the WTZ2000 reader or Neo RFID reader, P1 and P2 are combined as one TX and separated as two RX's.

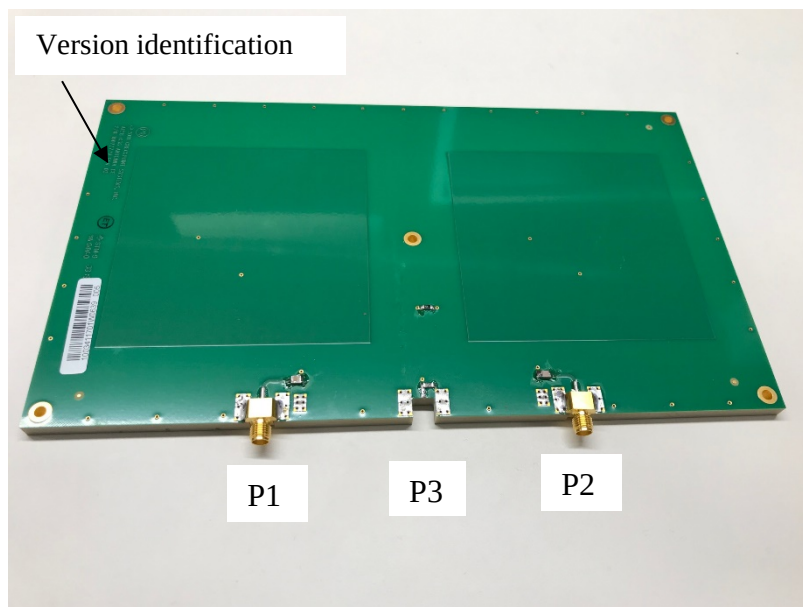


Figure 1: G36 PCB patch antenna

ANTENNA RADIATION PATTERNS

Both the CE and FCC versions have the same radiation pattern, with difference in frequency range (CE from 860MHz to 870MHz, and FCC from 902MHz to 928MHz). The antenna functions as one TX (P1 and P2 combined) and two RX's (P1 and P2 separate). **Figure 2** to **Figure 7** show the TX/RX radiation patterns in both 3D plot and 2D polar plot.

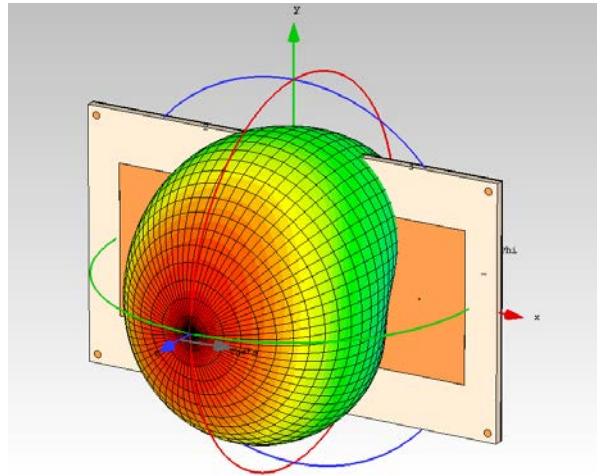


Figure 2: Radiation pattern of P1 and P2 combined as TX (3D plot)

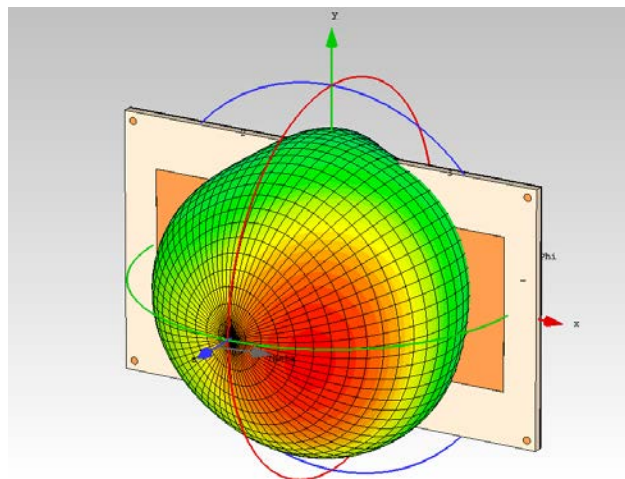


Figure 3: Radiation pattern of P1 as RX (3D plot).

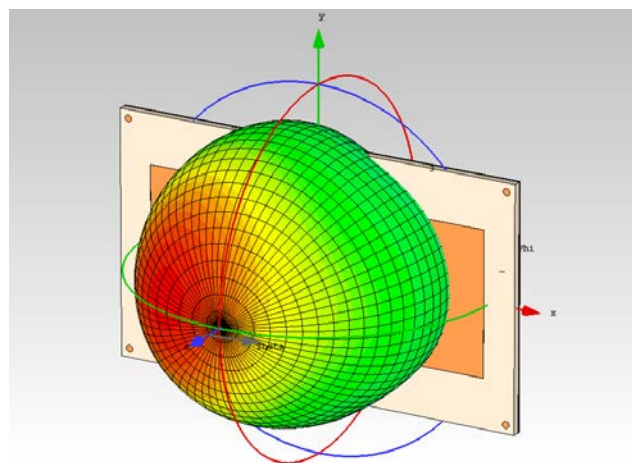


Figure 4: Radiation pattern of P2 as RX (3D plot)

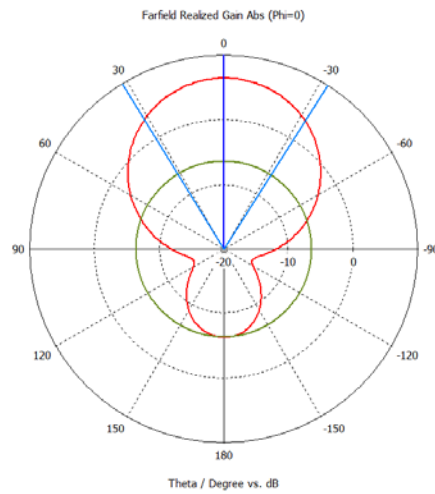


Figure 5: Radiation pattern of P1 and P2 combined as TX (polar plot)

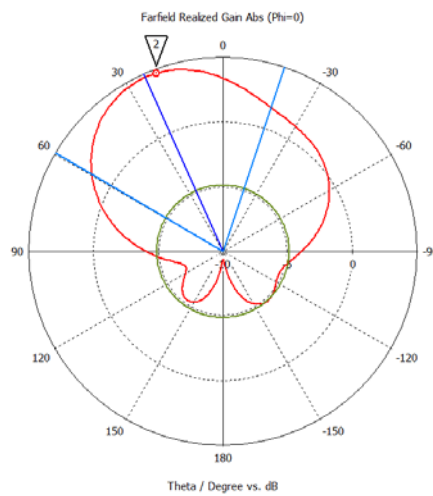


Figure 6: Radiation pattern of P1 as RX (polar plot)

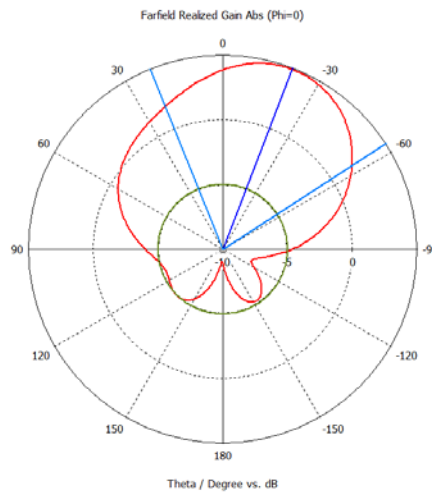


Figure 7: Radiation pattern of P2 as RX (polar plot)

ANTENNA SPECIFICATIONS

Table 1 shows the antenna spec for the P1 and P2 combined as TX, and **Table 2** shows the antenna spec for P1 and P2 separate as RX.

Table 1: G36 patch antenna specification (P1, P2 combined as TX)

Item	FCC version (A1212)	CE version (A1211)
Checkpoint PN	10034118 10034130 (Alternate - A1212A)	10034117 10034132 (Alternate – A1211A)
Checkpoint PN	10034118	10034117
Frequency range	902-928 MHz	860-870 MHz
Gain	6.5 dBic	6.3 dBic
Nominal impedance	50 Ohm	50 Ohm
Return loss	<-12 dB	<-12 dB
Half power beam width (HPBW)	95 degrees (along width) 65 degrees (along length)	95 degrees (along width) 65 degrees (along length)
Polarization	Circular	Circular
Axial ratio	<2 dB over entire half power beam width	<2 dB over entire half power beam width
Front to back ratio	>10 dB	>10 dB



TEST PROCEDURE G36 RFID ANTENNAS, A1211

CE / A1212 FCC

Dimensions	9.45 in L x 5.51 in x 0.28 in D (240 mm L x 140 mm W x 7 mm D)	9.45 in L x 5.51 in x 0.28 in D (240 mm L x 140 mm W x 7 mm D)
Unit Weight	0.81 lbs (0.37 kg)	0.81 lbs (0.37 kg)
Operating Temp	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Storage Temp	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Humidity	0% to 90% non-condensing	0% to 90% non-condensing
Connector	SMA female	SMA female

Table 2: G36 patch antenna specification (P1, P2 as RX)

Item	FCC version (A1212)	CE version (A1211)
Checkpoint PN	10034118 10034130 (Alternate - A1212A)	10034117 10034132 (Alternate – A1211A)
Frequency range	902-928 MHz	860-870 MHz
Gain	4.5 dBic	4.5 dBic
Nominal impedance	50 Ohm	50 Ohm
Return loss	<-13 dB	<-15 dB
Half power beam width (HPBW)	95 degrees (along width) 78 degrees (along length)	95 degrees (along width) 78 degrees (along length)
Polarization	Circular	Circular
Axial ratio	<2 dB over entire half power beam width	<2 dB over entire half power beam width
Front to back ratio	>10 dB	>10 dB
Dimensions	9.45 in L x 5.51 in x 0.28 in D (240 mm L x 140 mm W x 7 mm D)	9.45 in L x 5.51 in x 0.28 in D (240 mm L x 140 mm W x 7 mm D)
Unit Weight	0.81 lbs (0.37 kg)	0.81 lbs (0.37 kg)
Operating Temp	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)
Storage Temp	32°F to 104°F (0°C to 40°C)	32°F to 104°F (0°C to 40°C)



TEST PROCEDURE G36 RFID ANTENNAS, A1211

CE / A1212 FCC

Humidity	0% to 90% non-condensing	0% to 90% non-condensing
Connector	SMA female	SMA female