Raw Ground Truth Data - Altium Footprint Exports

This document contains the raw tab-delimited data exported from Altium for each example footprint. This data defines the exact pad positions, sizes, and properties that the AI extraction should produce.

EXAMPLE 1: RJ45 Connector (LPJG0926HENL)

Pad Data (filtered from full export)

```
Pad	MultiLayer	No Net	Free	-0.635	8.89	False	False	False	5	0.000	0.9
N/A	N/A	0	False	False	False	False	False	False	False	False	0.102	0.102	0.102	From Rule	False	Load
True	True	True	False	-2539.975	False	1146251546.592	Manual	Simple	Round	1.5	1.5	Round	0	0
Round	0	0	Round	1.5	1.5	Round	1.5	1.5	NoShape	0	0	NoShape	0	0	Drilled	Round	0	0.000
50	True	0.375	NAN	False	0	NAN	False	0
Pad	MultiLayer	No Net	Free	-1.905	6.35	False	False	False	4	0.000	0.9
N/A	N/A	0	False	False	False	False	False	False	False	False	0.102	0.102	0.102	From Rule	False	Load
True	True	True	False	-2539.975	False	1146251546.592	Manual	Simple	Round	1.5	1.5	Round	0	0
Round	0	0	Round	1.5	1.5	Round	1.5	1.5	NoShape	0	0	NoShape	0	0	Drilled	Round	0	0.000
50	True	0.375	NAN	False	0	NAN	False	0
Pad	MultiLayer	No Net	Free	-3.175	2.56	False	False	False	12	0.000	0.9
N/A	N/A	0	False	False	False	False	False	False	False	False	0.102	0.102	0.102	From Rule	False	Load
True	True	True	False	-2539.975	False	1146251546.592	Manual	Simple	Round	1.5	1.5	Round	0	0
Round	0	0	Round	1.5	1.5	Round	1.5	1.5	NoShape	0	0	NoShape	0	0	Drilled	Round	0	0.000
50	True	0.375	NAN	False	0	NAN	False	0
Pad	MultiLayer	No Net	Free	-3.175	8.89	False	False	False	3	0.000	0.9
N/A	N/A	0	False	False	False	False	False	False	False	False	0.102	0.102	0.102	From Rule	False	Load
True	True	True	False	-2539.975	False	1146251546.592	Manual	Simple	Round	1.5	1.5	Round	0	0
Round	0	0	Round	1.5	1.5	Round	1.5	1.5	NoShape	0	0	NoShape	0	0	Drilled	Round	0	0.000
50	True	0.375	NAN	False	0	NAN	False	0
Pad	MultiLayer	No Net	Free	-4.09	-4.06	False	False	False	16	0.000
1.02	N/A	N/A	0	False	False	False	False	False	False	False	False	0.102	0.102	0.102	From Rule	False
Load	True	True	True	False	-2539.975	False	1146251546.592	Manual	Simple	Round	1.5	1.5	Round	0
0	Round	0	0	Round	1.5	1.5	Round	1.5	1.5	NoShape	0	0	NoShape	0	0	Drilled	Round	0	0.000
50	True	0.375	NAN	False	0	NAN	False	0
Pad	MultiLayer	No Net	Free	-4.445	6.35	False	False	False	2	0.000	0.9
N/A	N/A	0	False	False	False	False	False	False	False	False	0.102	0.102	0.102	From Rule	False	Load
True	True	True	False	-2539.975	False	1146251546.592	Manual	Simple	Round	1.5	1.5	Round	0	0
Round	0	0	Round	1.5	1.5	Round	1.5	1.5	NoShape	0	0	NoShape	0	0	Drilled	Round	0	0.000
50	True	0.375	NAN	False	0	NAN	False	0
Pad	MultiLayer	No Net	Free	-5.715	0	False	False	False	Un1	0.000	3.2
N/A	N/A	0	False	False	False	False	False	False	False	False	0.102	0.102	0.102	From Rule	False	Load
```

True False False False 0 False 0 From Rule Simple Round 3.2 3.2 Round 0 0 Round 0 0 NoShape 0 0 NoShape 0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.8 NAN False 0 NAN False 0

Pad MultiLayer No Net Free -5.715 3.83 False False False 11 0.000 0.9 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free -5.715 8.89 False False False 1 0.000 0.9 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Rounded Rectangle 1.5 1.5 Round 0 0 Round 0 0 Rounded Rectangle 1.5 1.5 Rounded Rectangle 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 17 True 0.128 NAN False 0 NAN False 0

Pad MultiLayer No Net Free -6.63 -4.06 False False False 15 0.000 1.02 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free -7.875 3.05 False False False 19 0.000 1.7 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 412487718.82 Manual Simple Round 2.5 2.5 Round 0 0 Round 0 0 Round 2.5 2.5 Round 2.5 2.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.625 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 0.635 6.35 False False False 6 90.000 0.9 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 1.905 8.89 False False False 7 0.000 0.9 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 3.175 2.56 False False False 13 0.000 0.9 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 3.175 6.35 False False False 8 0.000 0.9 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 4.09 -4.06 False False False 17 0.000

1.02 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 4.445 8.89 False False False 9 0.000 0.9 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 5.715 0 False False False Un2 0.000 3.2 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True False False False 0 False 0 From Rule Simple Round 3.2 3.2 Round 0 0 Round 0 0 NoShape 0 0 NoShape 0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.8 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 5.715 3.83 False False False 14 0.000 0.9 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 5.715 6.35 False False False 10 0.000 0.9 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 6.63 -4.06 False False False 18 0.000 1.02 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 1146251546.592 Manual Simple Round 1.5 1.5 Round 0 0 Round 0 0 Round 1.5 1.5 Round 1.5 1.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.375 NAN False 0 NAN False 0

Pad MultiLayer No Net Free 7.875 3.05 False False False 20 0.000 1.7 N/A N/A 0 False False False False False False False False 0.102 0.102 0.102 From Rule False Load True True True False -2539.975 False 412487718.82 Manual Simple Round 2.5 2.5 Round 0 0 Round 0 0 Round 2.5 2.5 Round 2.5 2.5 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.625 NAN False 0 NAN False 0

EXAMPLE 2: USB 3.0 Connector (GSB3115XXXXF1HR)

Pad Data (key pads shown)

Pad MultiLayer No Net Free -3.5 -0.57 False False False 1 0.000 0.75 N/A N/A 0 False False False False False False True False 0.05 0.05 0.05 Manual False Load True True

```
True False -2539.975 False 1650763667.124 Manual Top-Middle-Bottom - - - Round 0 0 Round 0
0 Rectangular 1.25 1.25 Rectangular 1.25 1.25 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000
- True 0.313 NAN False 0 NAN False 0
Pad MultiLayer No Net Free -6.4 0 False False False SH1 90.000 0.65
N/A N/A 0 False False False False False False True False 0.05 0.05 0.05 Manual False Load True True
True False 0.045 True 10 Manual Simple Round 3.05 1.25 Round 0 0 Round 0 0 NoShape 0 0
NoShape 0 0 NoShape 0 0 NoShape 0 0 Drilled Slot 2.45 0.000 50 True 0.313 NAN
False 0 NAN False 0
Pad MultiLayer No Net Free 6.4 0 False False False SH2 90.000 0.65
N/A N/A 0 False False False False False False True False 0.05 0.05 0.05 Manual False Load True True
True False 0.045 True 10 Manual Simple Round 3.05 1.25 Round 0 0 Round 0 0 NoShape 0 0
NoShape 0 0 NoShape 0 0 NoShape 0 0 Drilled Slot 2.45 0.000 50 True 0.313 NAN
False 0 NAN False 0
Pad MultiLayer No Net Free -7.8 -7.5 False False False SH3 270.000
0.65 N/A N/A 0 False False False False True True True False 0 0 0 Manual False Load True True True False
0.037 True 10 Manual Simple Round 2.15 1.075 Round 0 0 Round 0 0 NoShape 0 0 NoShape 0 0
NoShape 0 0 NoShape 0 0 Drilled Slot 1.65 0.000 50 True 0.269 NAN False 0
NAN False 0
Pad MultiLayer No Net Free 7.8 -7.5 False False False SH4 270.000
0.65 N/A N/A 0 False False False False True True True False 0 0 0 Manual False Load True True True False
0.037 True 10 Manual Simple Round 2.15 1.075 Round 0 0 Round 0 0 NoShape 0 0 NoShape 0 0
NoShape 0 0 NoShape 0 0 Drilled Slot 1.65 0.000 50 True 0.269 NAN False 0
NAN False 0
```

Note: SH1-SH4 use `Drilled Slot` instead of `Drilled Round`

EXAMPLE 5: SO-8EP

Pad Data

```
Pad Top Layer No Net Free 0 0 False False 9 0.000 0 N/A N/A 0 False False False
False False False False False 0.102 0.102 0.102 From Rule False Load False False True True 0 False
0 From Rule Simple Rectangular 2.613 3.502 Round 0 0 Round 0 0 NoShape 0 0 NoShape 0 0 NoShape
0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.653 NAN False 0 NAN False 0
Pad Top Layer No Net Free 2.497 -1.905 False False 5 90.000 0 N/A N/A 0 False
False False False False False False False 0.102 0.102 0.102 From Rule False Load False False True
True 0 False 0 From Rule Simple Rectangular 0.802 1.505 Round 0 0 Round 0 0 NoShape 0 0 NoShape
0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.2 NAN False 0 NAN False 0
Pad Top Layer No Net Free 2.497 -0.635 False False 6 90.000 0 N/A N/A 0 False
False False False False False False False 0.102 0.102 0.102 From Rule False Load False False True
True 0 False 0 From Rule Simple Rectangular 0.802 1.505 Round 0 0 Round 0 0 NoShape 0 0 NoShape
```

0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.2 NAN False 0 NAN False 0
Pad Top Layer No Net Free 2.497 0.635 False False 7 90.000 0 N/A N/A 0 False
False False False False False False False 0.102 0.102 0.102 From Rule False Load False False True
True 0 False 0 From Rule Simple Rectangular 0.802 1.505 Round 0 0 Round 0 0 NoShape 0 0 NoShape
0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.2 NAN False 0 NAN False 0
Pad Top Layer No Net Free 2.497 1.905 False False 8 90.000 0 N/A N/A 0 False
False False False False False False False 0.102 0.102 0.102 From Rule False Load False False True
True 0 False 0 From Rule Simple Rectangular 0.802 1.505 Round 0 0 Round 0 0 NoShape 0 0 NoShape
0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.2 NAN False 0 NAN False 0
Pad Top Layer No Net Free -2.498 -1.905 False False 4 90.000 0 N/A N/A 0 False
False False False False False False False 0.102 0.102 0.102 From Rule False Load False False True
True 0 False 0 From Rule Simple Rectangular 0.802 1.505 Round 0 0 Round 0 0 NoShape 0 0 NoShape
0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.2 NAN False 0 NAN False 0
Pad Top Layer No Net Free -2.498 -0.635 False False 3 90.000 0 N/A N/A 0 False
False False False False False False False 0.102 0.102 0.102 From Rule False Load False False True
True 0 False 0 From Rule Simple Rectangular 0.802 1.505 Round 0 0 Round 0 0 NoShape 0 0 NoShape
0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.2 NAN False 0 NAN False 0
Pad Top Layer No Net Free -2.498 0.635 False False 2 90.000 0 N/A N/A 0 False
False False False False False False False 0.102 0.102 0.102 From Rule False Load False False True
True 0 False 0 From Rule Simple Rectangular 0.802 1.505 Round 0 0 Round 0 0 NoShape 0 0 NoShape
0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.2 NAN False 0 NAN False 0
Pad Top Layer No Net Free -2.498 1.905 False False 1 90.000 0 N/A N/A 0 False
False False False False False False False 0.102 0.102 0.102 From Rule False Load False False True
True 0 False 0 From Rule Simple Rectangular 0.802 1.505 Round 0 0 Round 0 0 NoShape 0 0 NoShape
0 0 NoShape 0 0 NoShape 0 0 Drilled Round 0 0.000 50 True 0.2 NAN False 0 NAN False 0

Via Data

Via MultiLayer No Net Free 0.55 -1.1 False False 0.2 N/A N/A Top Layer - Bottom
Layer False False False False False False False False 0.102 0.102 0.102 From Rule False
0 False 0 None Simple Round 0.5 0.5 Round 0 0 Round 0 0
Via MultiLayer No Net Free -0.55 -1.1 False False 0.2 N/A N/A Top Layer -
Bottom Layer False False False False False False False False 0.102 0.102 0.102 From Rule False
0 False 0 None Simple Round 0.5 0.5 Round 0 0 Round 0 0
Via MultiLayer No Net Free 0.55 0 False False 0.2 N/A N/A Top Layer - Bottom
Layer False False False False False False False False 0.102 0.102 0.102 From Rule False
0 False 0 None Simple Round 0.5 0.5 Round 0 0 Round 0 0
Via MultiLayer No Net Free -0.55 0 False False 0.2 N/A N/A Top Layer - Bottom
Layer False False False False False False False False 0.102 0.102 0.102 From Rule False
0 False 0 None Simple Round 0.5 0.5 Round 0 0 Round 0 0
Via MultiLayer No Net Free 0.55 1.1 False False 0.2 N/A N/A Top Layer - Bottom
Layer False False False False False False False False 0.102 0.102 0.102 From Rule False
0 False 0 None Simple Round 0.5 0.5 Round 0 0 Round 0 0

```
Via  MultiLayer  No Net  Free -0.55  1.1  False  False  0.2  N/A N/A  Top Layer -
Bottom Layer False  False  False  False  False  False  False  False  0.102  0.102  0.102  From Rule  False
0  False  0  None  Simple Round 0.5  0.5  Round 0  0  Round 0  0
```

KEY FIELD MAPPING

Based on analysis of the raw data, here are the critical field positions (0-indexed, tab-delimited):

Field Index	Content	Example
0	Type	`Pad`, `Via`, `Track`
1	Layer	`MultiLayer`, `Top Layer`
4-5	X, Y coordinates	`-5.715`, `8.89`
13	Pin Designator	`1`, `SH1`, `Un1`
14	Rotation (degrees)	`0.000`, `90.000`
20	Hole Size (for TH)	`0.9`, `3.2`
~34-35	Shape	`Round`, `Rectangular`, `Rounded Rectangle`
~36-37	XSize, YSize	`1.5`, `1.5`
~50	Drill Type	`Round`, `Slot`
~51	Slot Length (if slot)	`2.45`

NOTES FOR IMPLEMENTATION

1. **Coordinate system:** Origin at component center, +X right, +Y up
2. **Units in raw data:** mm (Examples 1, 2, 5) or mils (Examples 3, 4)
3. **Pin 1 identification:** Look for `Rounded Rectangle` or `Rectangular` shape on pin 1
4. **SMD vs TH:** Layer = `Top Layer` → SMD, Layer = `MultiLayer` → TH
5. **Slot holes:** `Drilled  Slot` with slot length field populated