



# CONTROLLED IMPEDANCE

## STACKUP AND LAYER DESCRIPTION

GENERAL PARAMETERS				
Parameter		Layer/Layers	Value	
Copper foil thickness		Top	17.5um	
Dielectric thickness between layers		Top-L2	173um (6.8 mils)	
Dielectric permittivity between layers (Er)			4.2	
Copper foil thickness		Bottom	17.5um	
Dielectric thickness between layers		Bottom-L5	173um (6.8 mils)	
Dielectric permittivity between layers (Er)			4.2	
CALCULATIONS				
RF (Top)	Target impedance		Single-ended	50R
	Additional comments		Top layer, no side GND plane	
	Top layer copper foil thickness		17.5 um	
	Track width		0.325 mm (12.795 mils)	
	Top layer copper foil thickness		173um (6.8 mils)	
	Dielectric thickness between layers		Top-L2	173um (6.8 mils)
	Dielectric permittivity between layers (Er)			4.2
	Approximate microstrip line impedance		49.99 Ohms (+/- 10% tolerance)	
HDMI (Top)	Target impedance		Differential	100R
	Additional comments		Top layer, no side GND plane	
	Top layer copper foil thickness		17.5 um	
	Track width		0.2 mm (7.874 mils)	
	Track spacing		0.14 mm (5.511 mils)	
	Top layer copper foil thickness		173um (6.8 mils)	
	Dielectric thickness between layers		Top-L2	173um (6.8 mils)
	Dielectric permittivity between layers (Er)			4.2
Approximate microstrip line impedance		100.6 Ohms (+/- 10% tolerance)		

**GERBER LAYER NAMES:**

**TH via**  
**Top-Bot**

Layer Name	Material	Thickness	Properties
GTP Top solder paste			
GTO Silkscreen			
GTS Soldermask			
GTL 0.5oz+plating			
G1 1oz (35um)	PP	6.8mil (173um)	IT180A: 1086X1+2113X1
G2 1oz (35um)	CORE	10mil (250um)	IT180A: 2116X2
G3 1oz (35um)	PP	18mil (450um)	IT180A: 7628X2
G4 1oz (35um)	CORE	10mil (250um)	IT180A: 2116X2
G5 1oz (35um)	PP	6.8mil (173um)	IT180A: 1086X1+2113X1
GBL 0.5oz+plating			
GBS Soldermask			
GBL (halogen free)			
GBS Silkscreen			
GBP Bottom solder paste			

**ELECTRICAL LAYERS:**

Top: RF//PWR/GND

L2: GND

L3: Signal/PWR/GND

L4: PWR/Signal/GND

L5: GND

Bottom: RF/Signal/PWR/GND

**ADDITIONAL LAYERS:**

Mechanical 1: Board cutout

ASM TOP: Assembly top

ASM BOT: Assembly bottom

Mechanical 13: Component 3D body

Notes: Board shape and frame

**Total PCB thickness: 1.6mm +/- 10%**

**Via type #1**

0.2mm drill  
0.4mm ring

GENERAL PCB SPECS			ADDITIONAL REQUIREMENTS															
Minimum copper to copper spacing	0.1mm (3.9mil)		● Electrical test : 100 % netlist.															
Minimum track width	0.1mm (3.9mil)																	
PCB thickness	1.6mm +/-10%		● Boards are to be individually bagged.															
PCB material	IT-180A preferred or equivalent RF-rated material (up to 3 GHz or higher)																	
Copper weight	External layer	0.5 oz+plating	● PCB vendor to silkscreen UL and RoHS compliance marks, vendor logo and date code on bottom where shown (ignore if none of the info will be placed on PCB)															
	Internal layer	1 oz																
Solder mask	DARK BLUE		Assembly note: Assembly house MUST provide notes in paper with shipped board if there were any changes during assembly and the board is not assembled 100% according to BOM and P&P files. Note example: ● <table><tr><th>Part</th><th>Initial BOM asm. note</th><th>Current PCB status</th><th>Comment</th></tr><tr><td>R1</td><td>FIT</td><td>NF</td><td>Not mounted due to bad footprint</td></tr><tr><td>IC5</td><td>FIT</td><td>NF</td><td>Not mounted due to part shortage</td></tr></table>				Part	Initial BOM asm. note	Current PCB status	Comment	R1	FIT	NF	Not mounted due to bad footprint	IC5	FIT	NF	Not mounted due to part shortage
	Part	Initial BOM asm. note					Current PCB status	Comment										
	R1	FIT					NF	Not mounted due to bad footprint										
	IC5	FIT					NF	Not mounted due to part shortage										
Both sides																		
Halogen free																		
Glossy finish (NOT matte)																		
Silkscreen	White epoxy ink																	
	Both sides																	
	Halogen free																	
	No silkscreen on pads																	
	Plated <input checked="" type="checkbox"/> Non-plated <input checked="" type="checkbox"/>																	
Hole types on the PCB and information	Hole diameters are final																	
	● manufactured diameters INCLUDING HOLE METALIZATION.																	
Route process	U-score <input type="checkbox"/>	Tab route <input checked="" type="checkbox"/>																
	U-score and tab route <input type="checkbox"/>																	
Panel	Yes <input type="checkbox"/>	No <input checked="" type="checkbox"/>																
Surface finish (both sides)	HASL lead free <input type="checkbox"/>																	
	HASL with lead <input type="checkbox"/>																	
	Immersion gold 0.05-0.10um of gold over 2.50-5.00um of nickel <input checked="" type="checkbox"/>																	
	OSP <input type="checkbox"/>																	
	Hard gold <input type="checkbox"/>																	