CASE STUDY

14060 Post Layout Simulation Report

Caliber Interconnect Solutions (Pvt) Ltd
No 6 ,1st Street Gandhi Nagar,
Kavundampalayam,
Coimbatore-30.
Tamil Nadu, India.
www.caliberinterconnects.com

Scope of the work

- To perform S-parameter simulation for high speed RX channel.
- To analyze the impact of SMA pad structure in the layout.

Tools used for simulation

- Ansys HFSS
- Ansys Designer

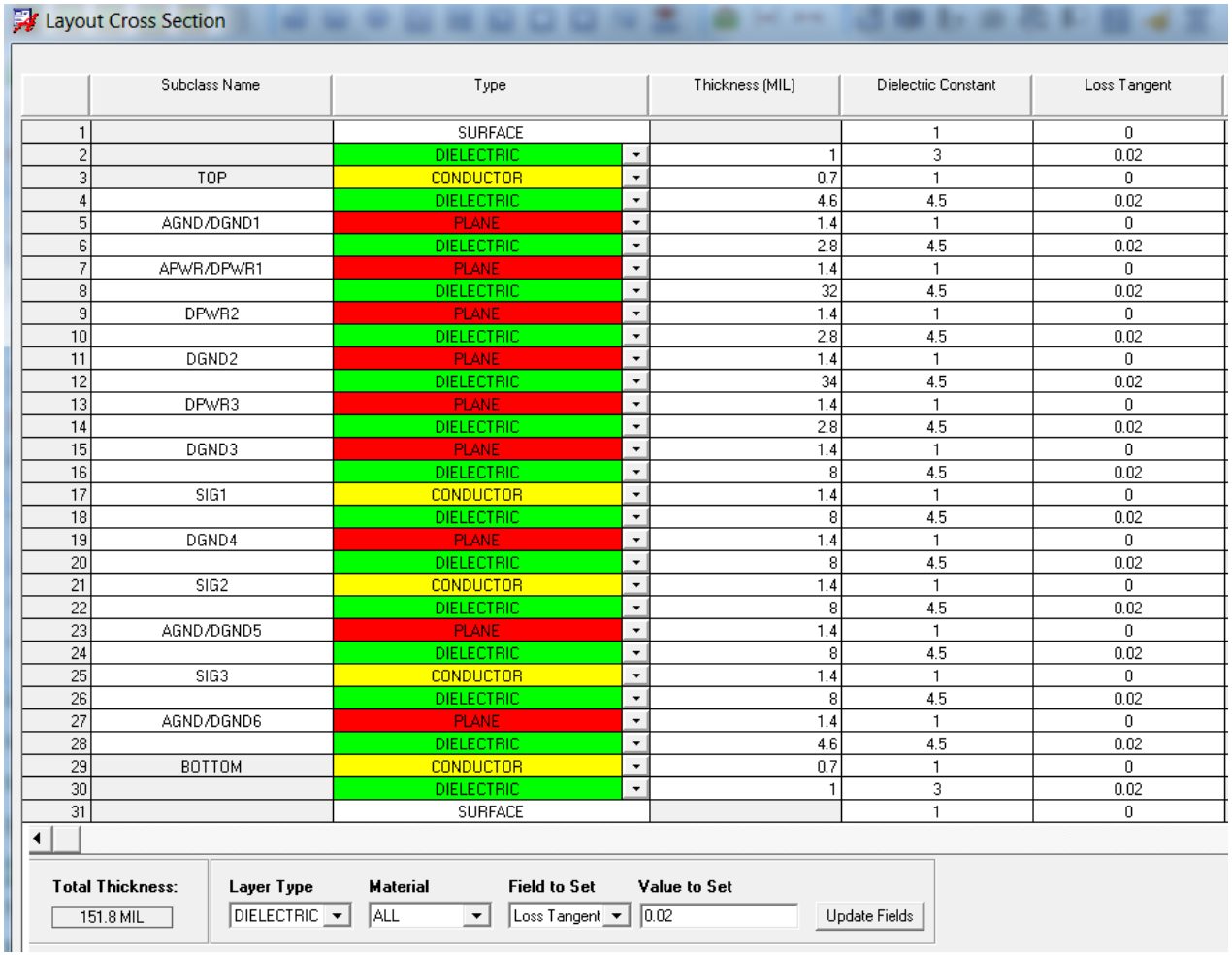
Simulation Inputs

- Layout file
- Stack up information
- Nets to simulate

Nets to simulate

- HDTX
- HDRX

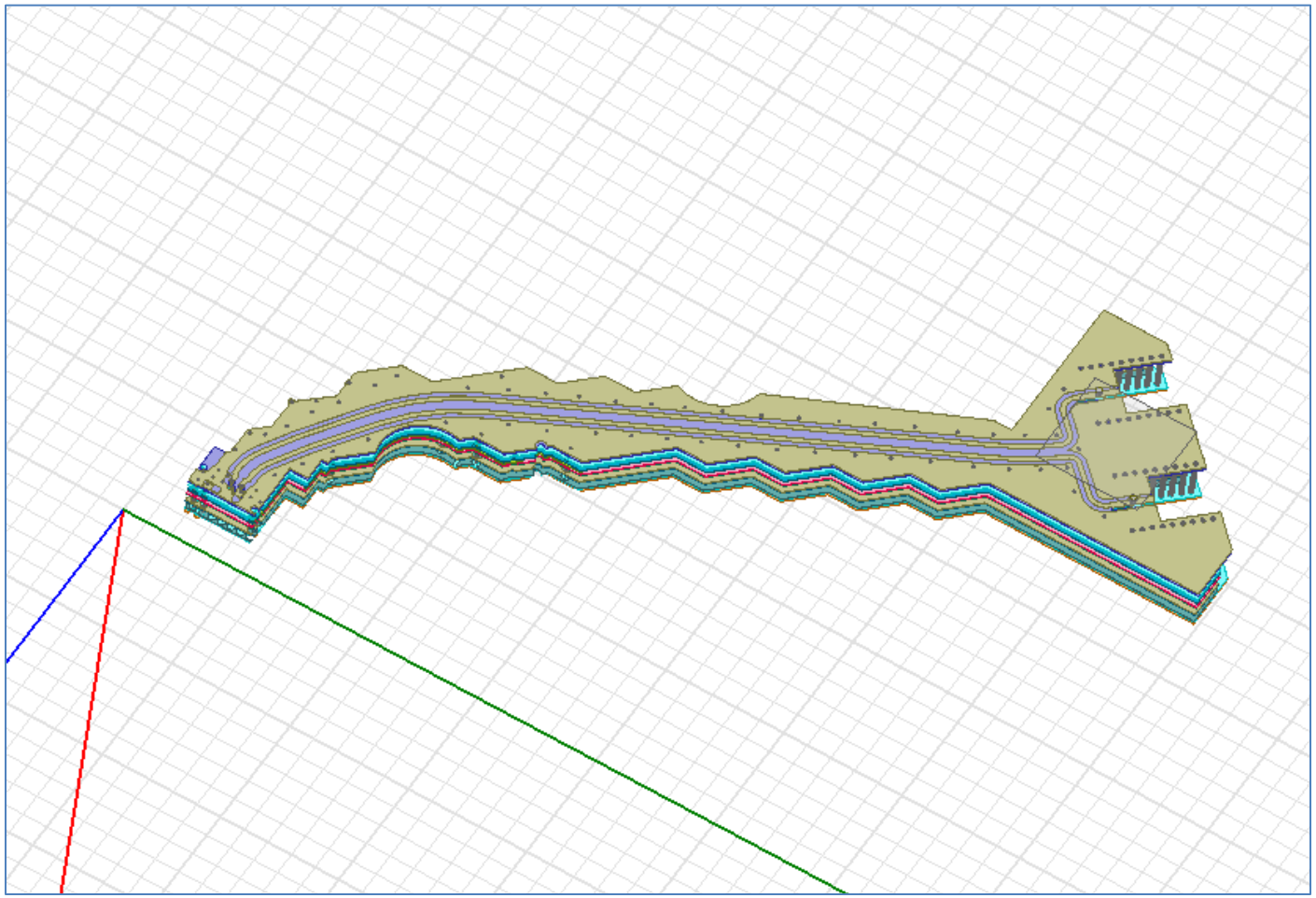
Stack up used in simulation



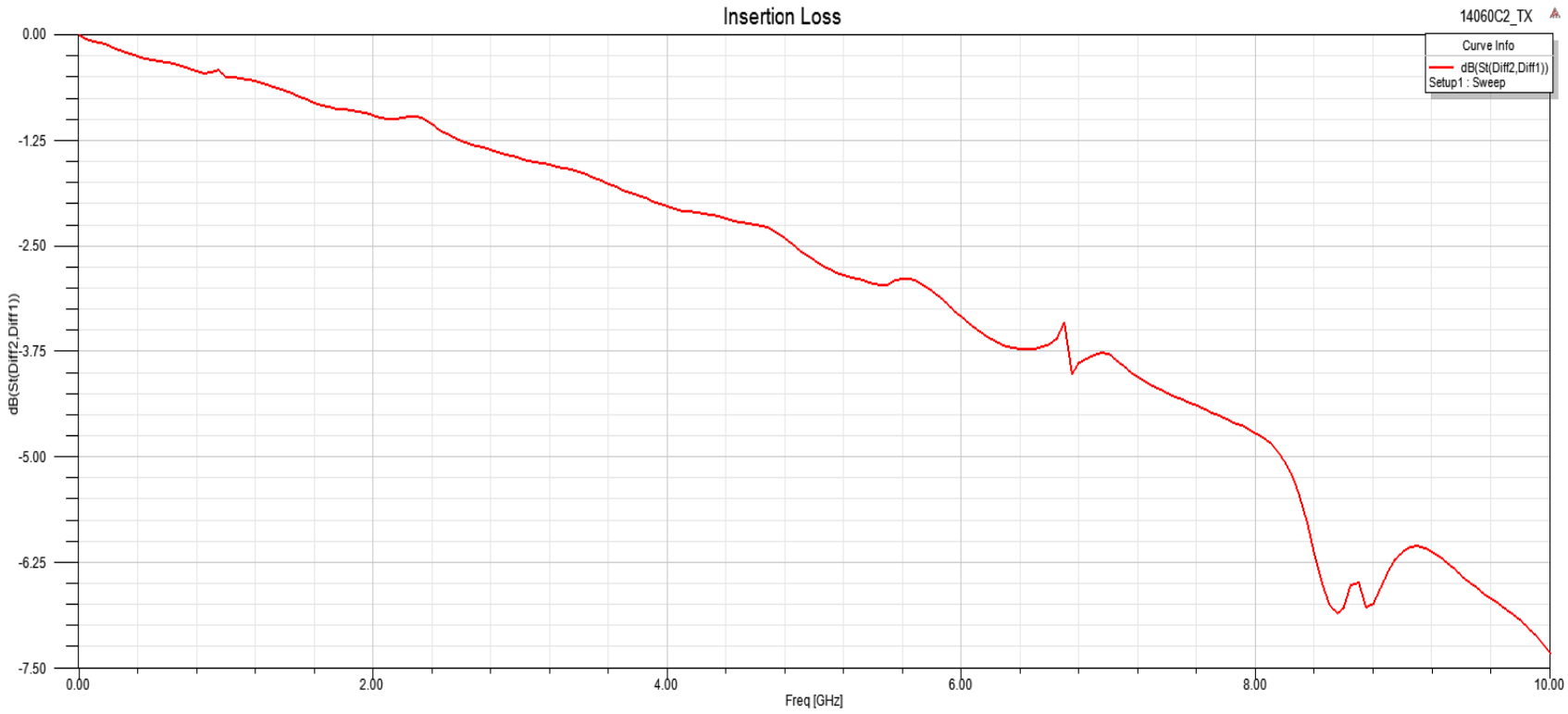
	Subclass Name	Type	Thickness (MIL)	Dielectric Constant	Loss Tangent
1		SURFACE		1	0
2		DIELECTRIC	1	3	0.02
3	TOP	CONDUCTOR	0.7	1	0
4		DIELECTRIC	4.6	4.5	0.02
5	AGND/DGND1	PLANE	1.4	1	0
6		DIELECTRIC	2.8	4.5	0.02
7	APWR/DPWR1	PLANE	1.4	1	0
8		DIELECTRIC	32	4.5	0.02
9	DPWR2	PLANE	1.4	1	0
10		DIELECTRIC	2.8	4.5	0.02
11	DGND2	PLANE	1.4	1	0
12		DIELECTRIC	34	4.5	0.02
13	DPWR3	PLANE	1.4	1	0
14		DIELECTRIC	2.8	4.5	0.02
15	DGND3	PLANE	1.4	1	0
16		DIELECTRIC	8	4.5	0.02
17	SIG1	CONDUCTOR	1.4	1	0
18		DIELECTRIC	8	4.5	0.02
19	DGND4	PLANE	1.4	1	0
20		DIELECTRIC	8	4.5	0.02
21	SIG2	CONDUCTOR	1.4	1	0
22		DIELECTRIC	8	4.5	0.02
23	AGND/DGND5	PLANE	1.4	1	0
24		DIELECTRIC	8	4.5	0.02
25	SIG3	CONDUCTOR	1.4	1	0
26		DIELECTRIC	8	4.5	0.02
27	AGND/DGND6	PLANE	1.4	1	0
28		DIELECTRIC	4.6	4.5	0.02
29	BOTTOM	CONDUCTOR	0.7	1	0
30		DIELECTRIC	1	3	0.02
31		SURFACE		1	0

S-parameter simulation

HDTX Channel model in HFSS

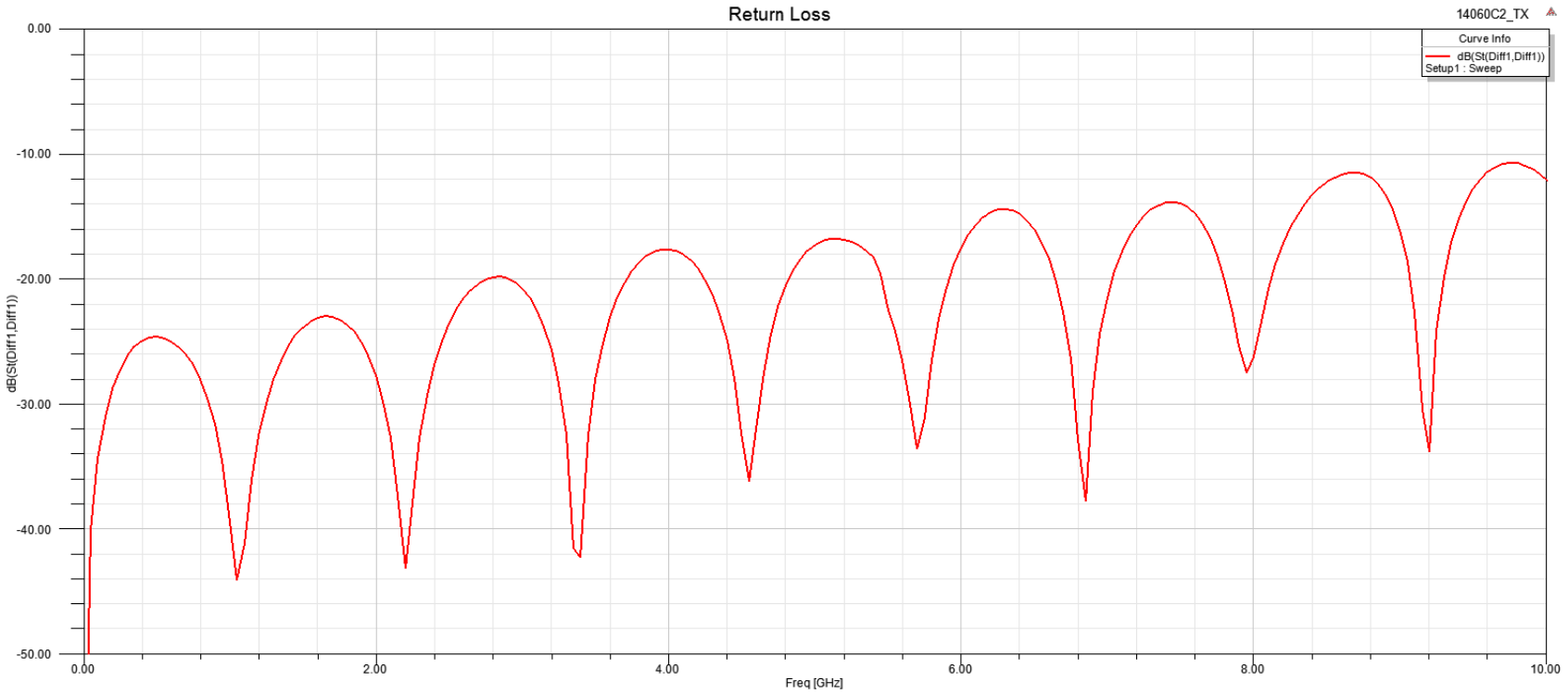


HDTX



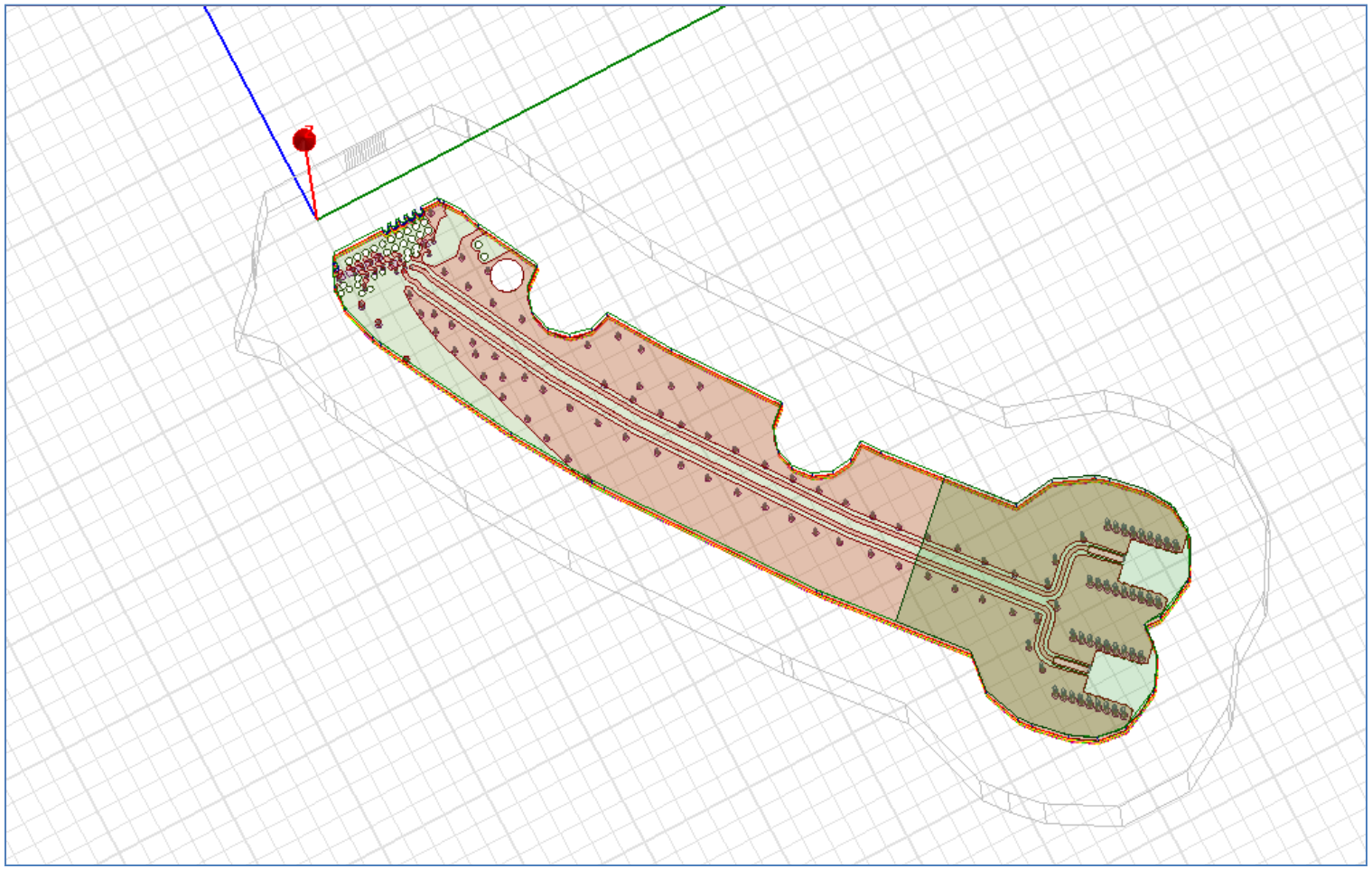
The Insertion loss is below -3 db up to 5.5 GHz.

HDTX

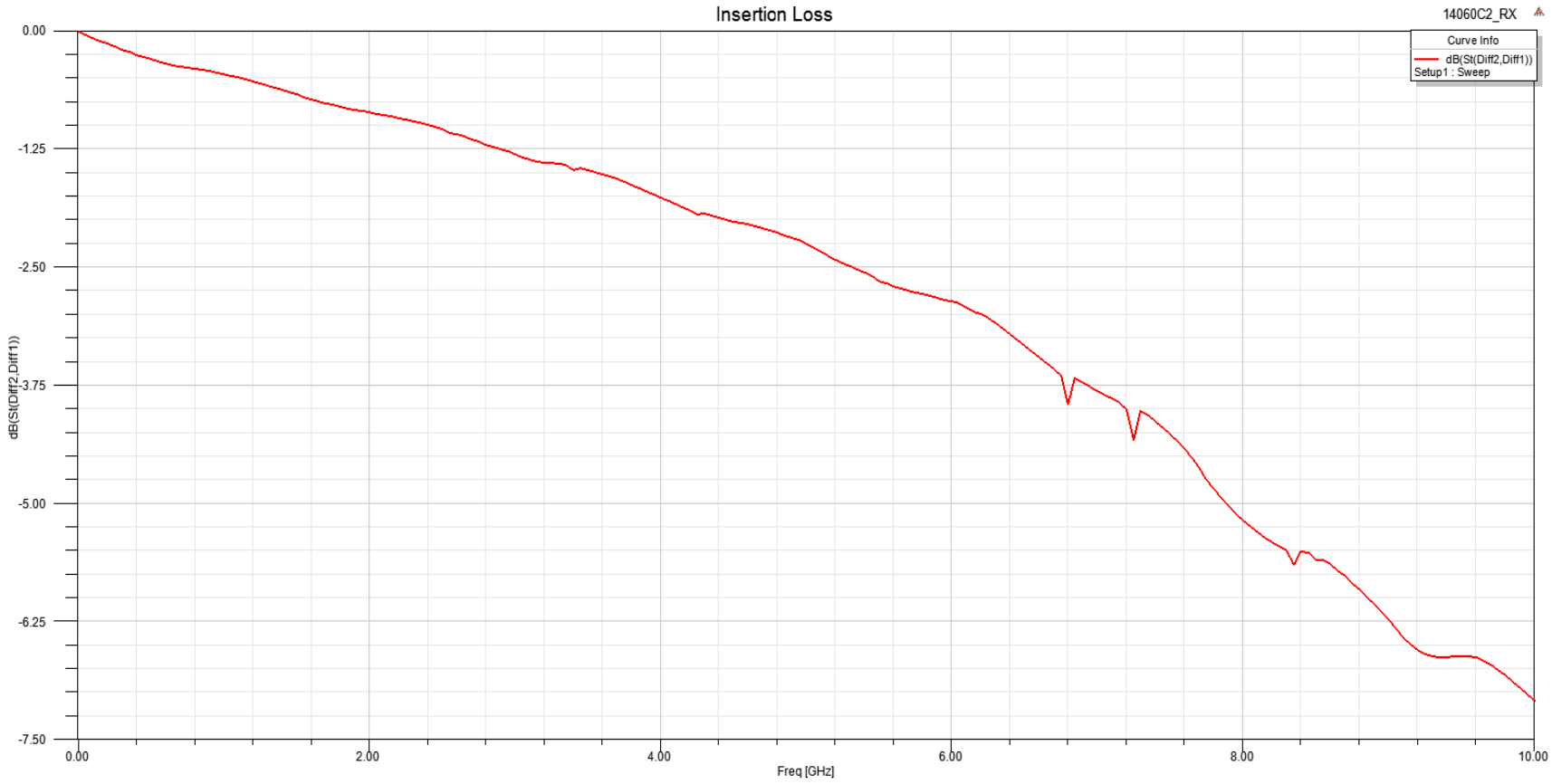


The return loss is below -15 db up to 6 GHz.

HDRX Channel model in HFSS

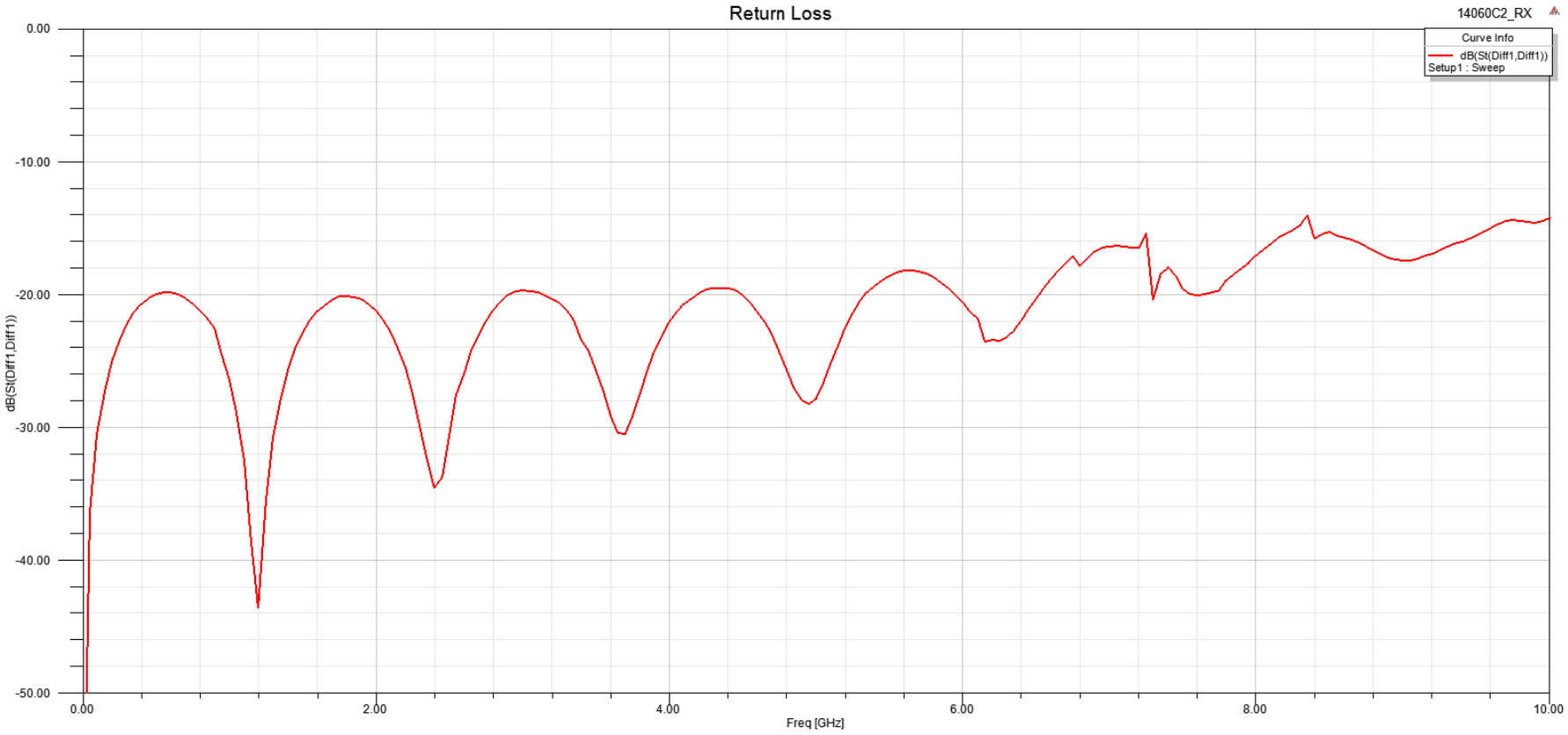


HDRX



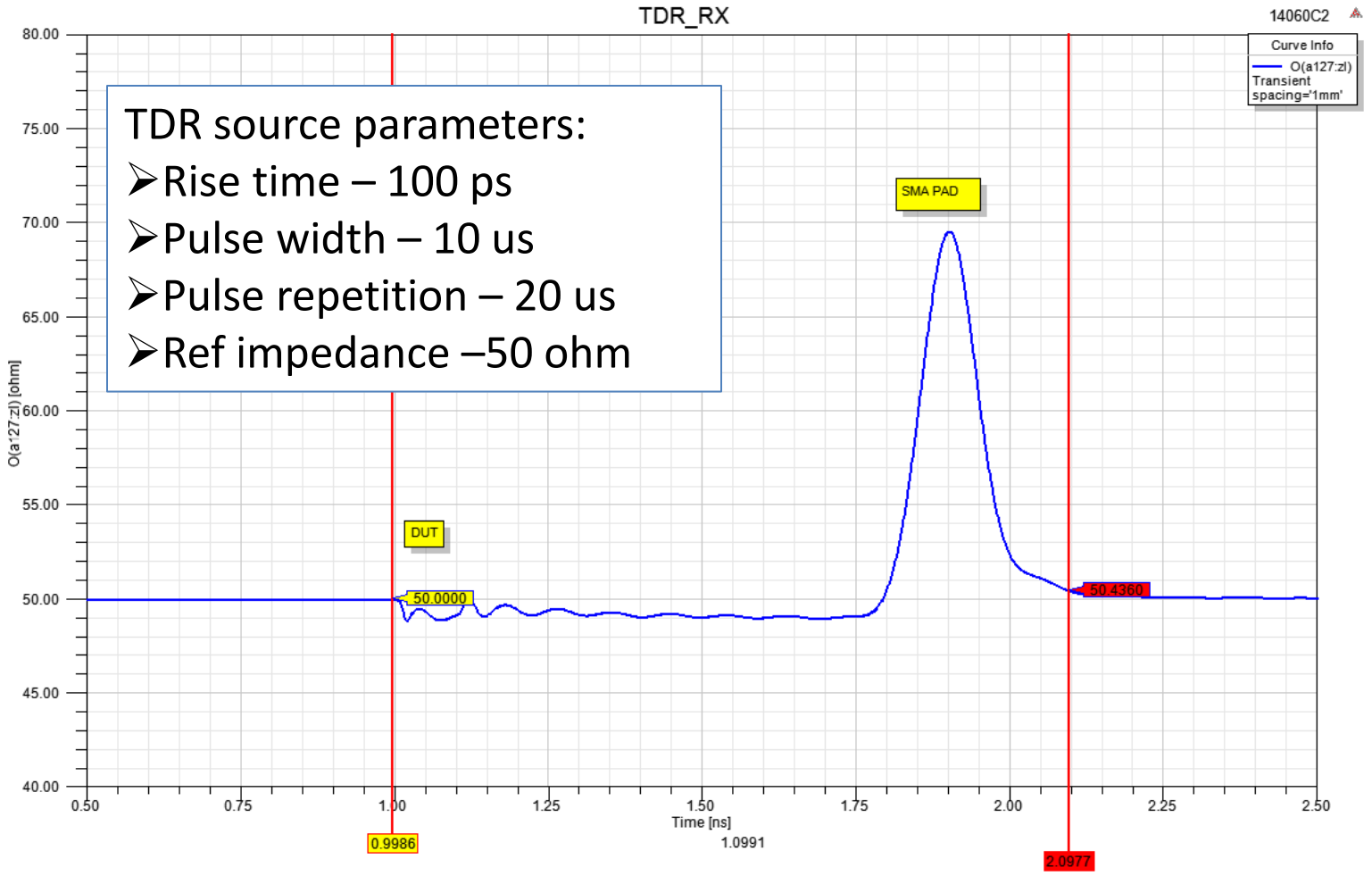
The Insertion loss is below -3 db up to 6 GHz.

HDRX



The return loss is below -15 db up to 8 GHz.

HDRX TDR



The impedance is around 68 ohm at SMA pad.

Summary and Conclusion

- The S-parameter simulation is done using Ansys HFSS tool.
- As per simulation result, there is little impact for missing reference plane of the SMA pad @ 6 GHz and above.
- As per the TDR plot, the impedance in the SMA area is higher due to full cut out of the SMA pad reference in all layers.
- In order to reduce the impedance in SMA pad and to remove the resonance impact, it is recommended to put reference for SMA pad in GND layer instead of cut out in all layers.
- Since the impedance discontinuity at SMA area is small, there is not much impact in s-parameter results in lower frequency below 5 GHz.
- The simulated graphs for both TX and RX channels are included along with the report for reference.

Contact Details

M/S Caliber Interconnect Solutions Pvt Ltd

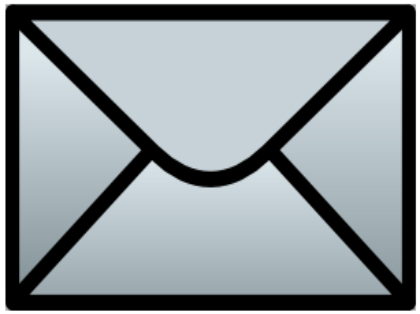
No.6, 1st Street, Gandhi Nagar

Kavundampalayam, Coimbatore - 30, TN, India.

Phone: 91 – 422 – 2448557.

info@caliberinterconnect.com

www.caliberinterconnects.com



Our Locations

INDIA

Coimbatore
No 6, 1st Street, Gandhi Nagar
Kavundampalayam,
Coimbatore - 641030,
Tamilnadu, India.
Directline: +91 422 2448557
Fax: +91 422 2448557

Chennai
157, First Floor,
10th Cross Street,
C.L.R.I. Nagar,
Neelankarai,
Chennai - 600041,
Tamilnadu, India.
Phone:+91 82200 45099

Bangalore
No.362,12th Main Road,
Hosur Sarjapur Road,
Sector-5, HSR Layout,
Bangalore –560 103,
Karnataka, India.
Directline: +91 80 25535420

JAPAN

Mr.Kimiaki Tanaka,
1-12-15 Ogikubo, Suginamiku,
Tokyo 167- 0051, Japan,
Phone: +81-3-6321-8051

USA

4647, Carmen Ct,
Union City-94857,
California ,USA
Phone: 510-709-0750

THANK YOU !!!

Contact us
sales@caliberinterconnect.com

Visit us at
www.caliberinterconnects.com