

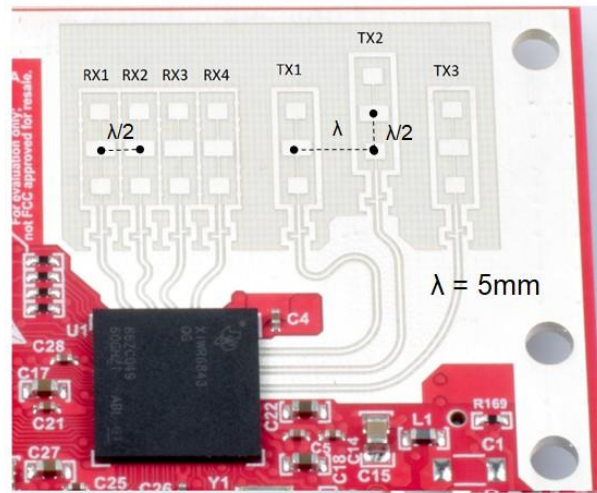
Introduction

we (OmniSight) confirm that our antenna has been manufactured in accordance with the specifications set forth in the reference design obtained from TI.” IWR6843ISK EVM antenna is designed to be operated in 60GHz frequency range. The use cases which can be addressed with this antenna are fluid level sensing, industrial automation, motion detection etc.

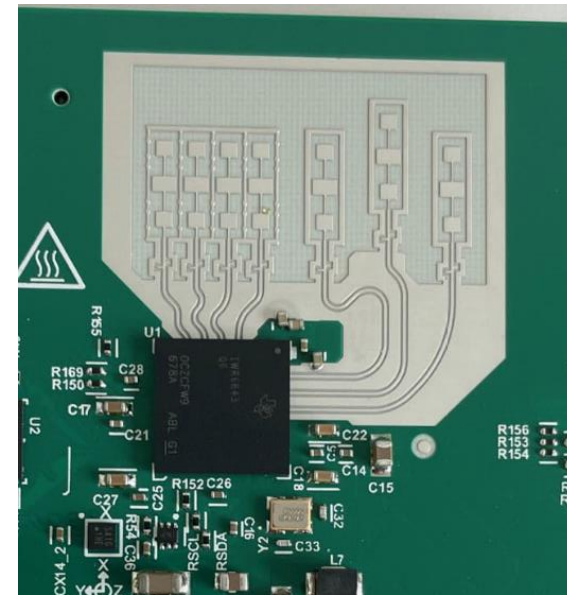
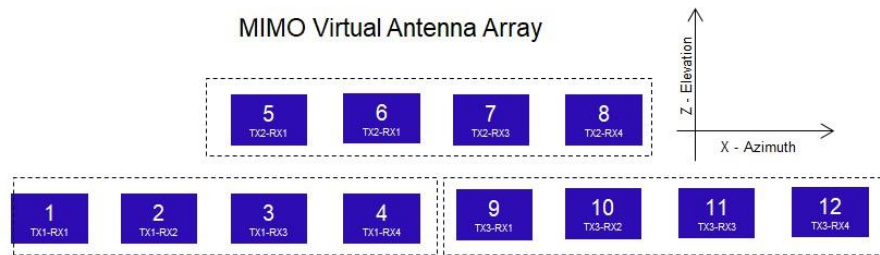
Design	Azimuth FOV (deg)*	Elevation FOV (deg)*	Azimuth Angular Resolution(deg)	Elevation Angular Resolution (deg)	Max Distance for Person (m) **
IWR6843ISK (60GHz)	+/-60	+/-15	15	58	75

A comparison table of all antenna configurations can be on the Industrial Toolbox Antennas overview page (../antennas_landing.html).

IWR6843ISK EVM Antenna Picture & Dimensions



MIMO Virtual Antenna Array



Close-up of applicant's antenna array to show it is the same as the MIMO antenna array.

The antenna peak gain of IWR6843ISK EVM Antenna is about 7 dBi across the operating frequency band of 60 GHz.

For more details about this EVM, please refer to the following link: <http://www.ti.com/tool/iwr6843isk>
(<http://www.ti.com/tool/iwr6843isk>)

IWR6843ISK EVM Stackup

Please refer to below PCB stackup details for IWR6843ISK Antenna.

Layer	Type	CU Weight	CU %	Material Description	Via Structure	Segment	Glass Style	Material Family	Dielectric Constant @ 1GHz	Thickness after lamination[mil]
Soldermask										0.80
1 Mixed	H	49								1.60
				4.0 mil H/H		Core		RO4835 LOPRO	3.66	4.00
2 Mixed	H	90								1.40
				Press thk = 5.63 mil		Prepreg	1080(66)	370HR	3.90	5.63
							1080(66)	370HR	3.90	
3 Mixed	1	64								1.20
				28.0 mil 1/1		Core	4-7628	370HR	4.36	28.00
4 Mixed	1	84								1.20
				Press thk = 5.89 mil		Prepreg	1080(66)	370HR	3.90	5.89
							1080(66)	370HR	3.90	
5 Plane	1	90								1.20
				4.0 mil 1/H		Core	1-2116	370HR	4.26	4.00
6 Signal	H	61								1.60
Soldermask										0.80

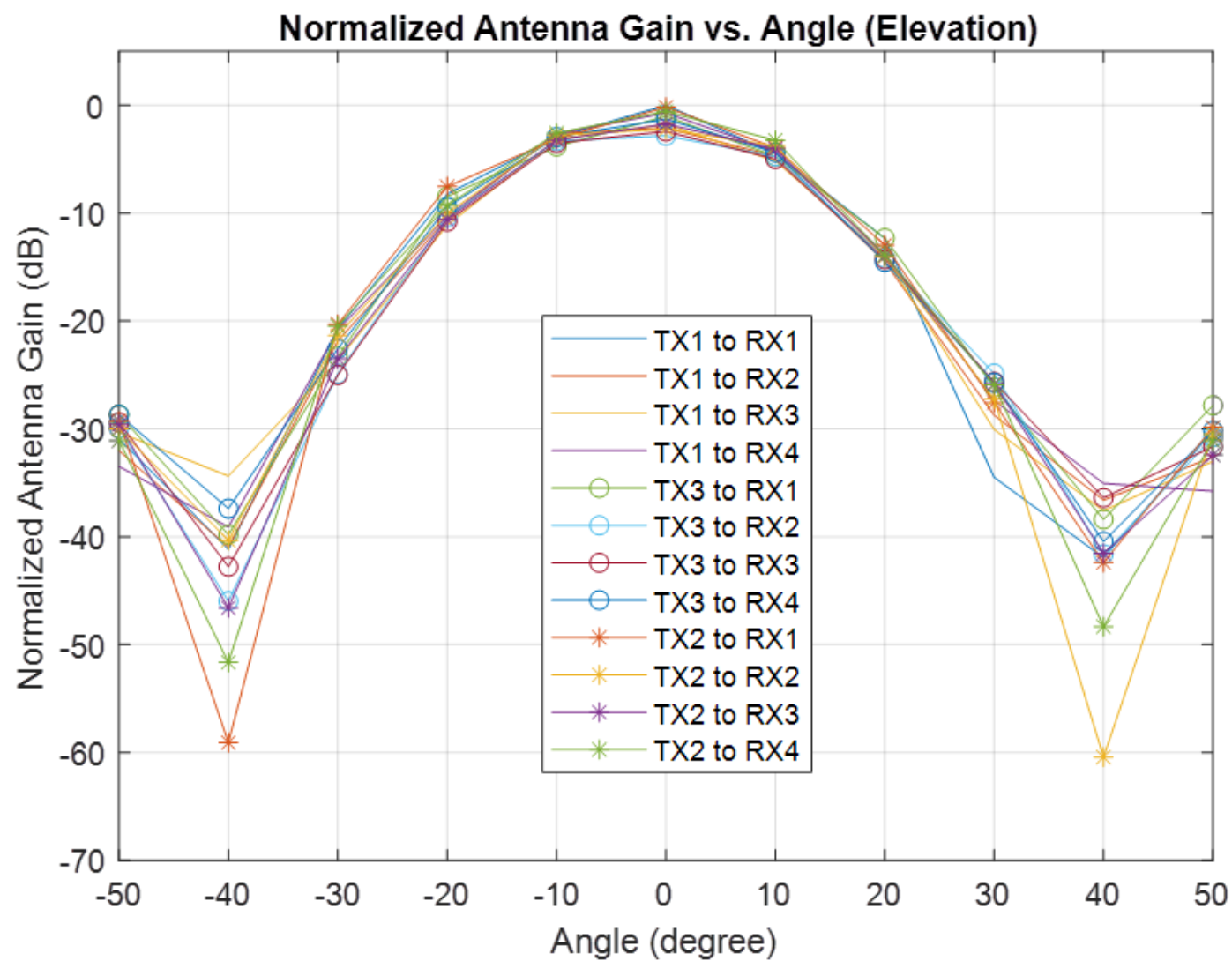
The mmWave layer is Rogers RO4835 with LoPro copper. ED (electro-deposited) copper is not a suitable material for mmWave frequencies.

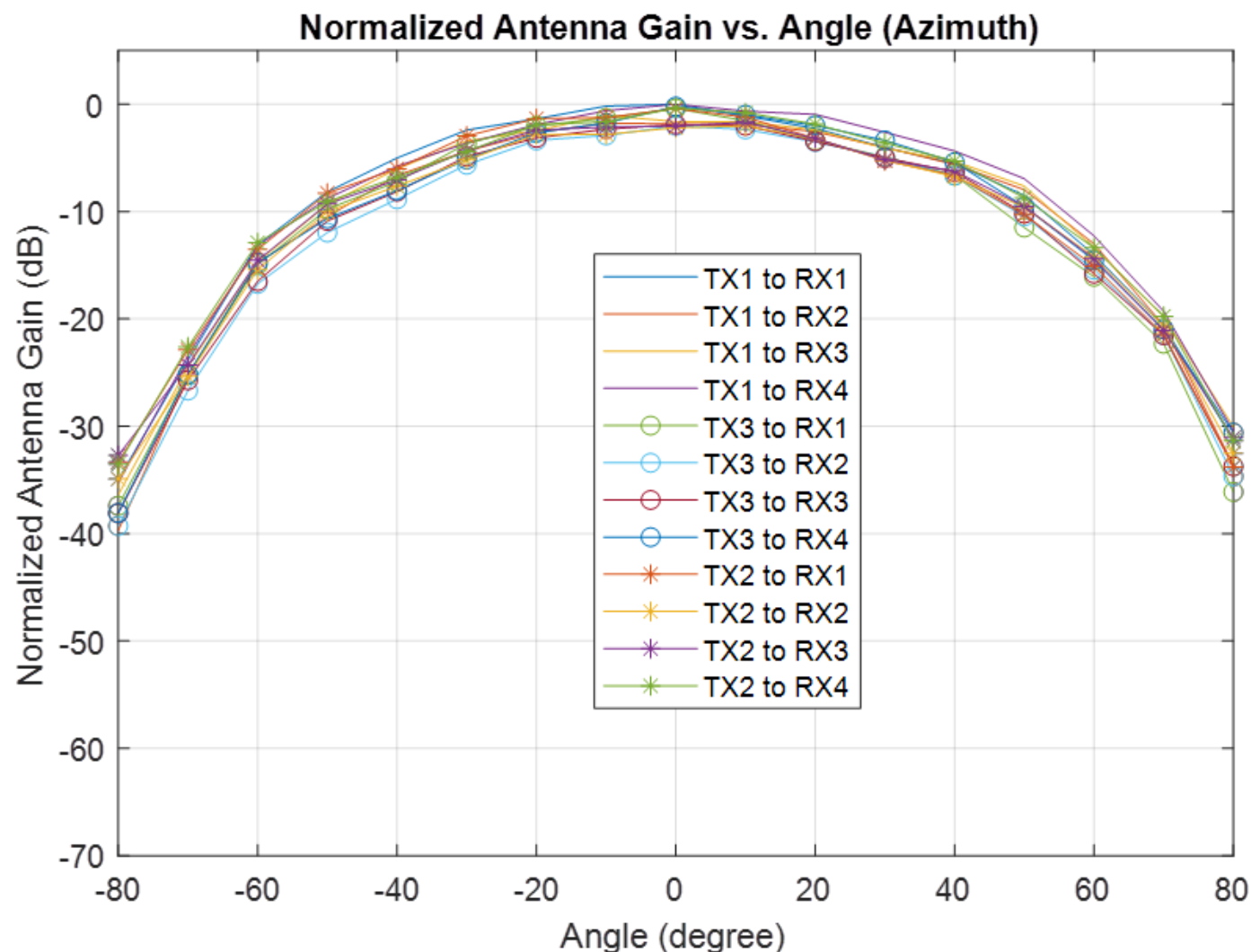
Detailed layout of this antenna with stackup are available for you to download and reuse at the following link:

<http://www.ti.com/lit/zip/swrc355> (<http://www.ti.com/lit/zip/swrc355>)

Measured Radiation Patterns

Measured radiation patterns of IWR6843ISK EVM Antenna for Elevation and Azimuth can be seen below.





In the above pictures X axis represents the angle (in degrees) and Y axis represents the normalized gain (in dB). This radiation pattern is measured inside a Anechoic chamber with a corner reflector. The FMCW chirp used for this measurement has a start frequency of 60GHz and a RF bandwidth of 2GHz.

Manufacturing Guidelines

The details on manufacturing this antenna can be found in the “TI mmWave Radar Sensor RF PCB Design, Manufacturing and Validation Guide” - <http://www.ti.com/lit/pdf/spracg5> (<http://www.ti.com/lit/pdf/spracg5>)

Board Manufacturer

Streamline Circuits (Now part of Summit Interconnect)- <https://www.summit-pcb.com/> (<https://www.summit-pcb.com/>)

Material Details

Rogers Corporation - <https://www.rogerscorp.com/> (<https://www.rogerscorp.com/>)