Frequency	E_max	Theta_max	Phi_max	Directivity_max	Gain_max	RadiatedPower	InputPower	Efficiency	CutType	CutAngle
2.400E10	1.298	1.000	184.000	11.990	10.851	0.002	0.002	0.769	Phi	0.000

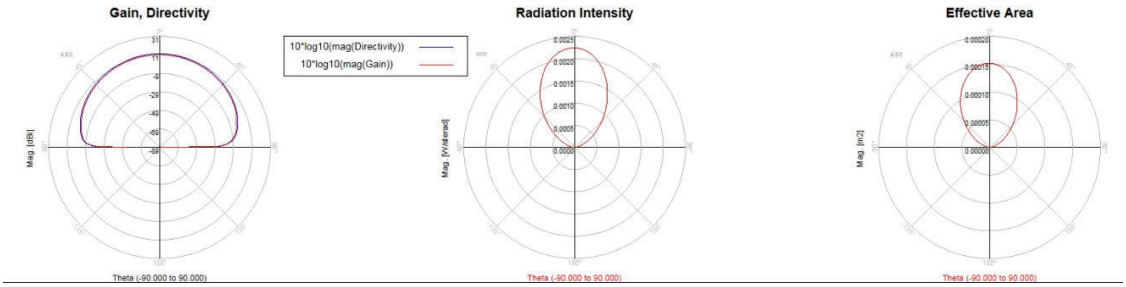

Fig.3: Far Field Report

According to the Fig.2 and Fig.3, this antenna array achieved maximum gain of 10.851 dBi, theoretically.

For the top- level design process, we always need to imagine and simulate the possible solutions in our brain, at the beginning. Actually, I wrote down six possible solutions on my sketch and finally chose to implement the right-hand side solution (Fig.4) due to compact PCB footprint.

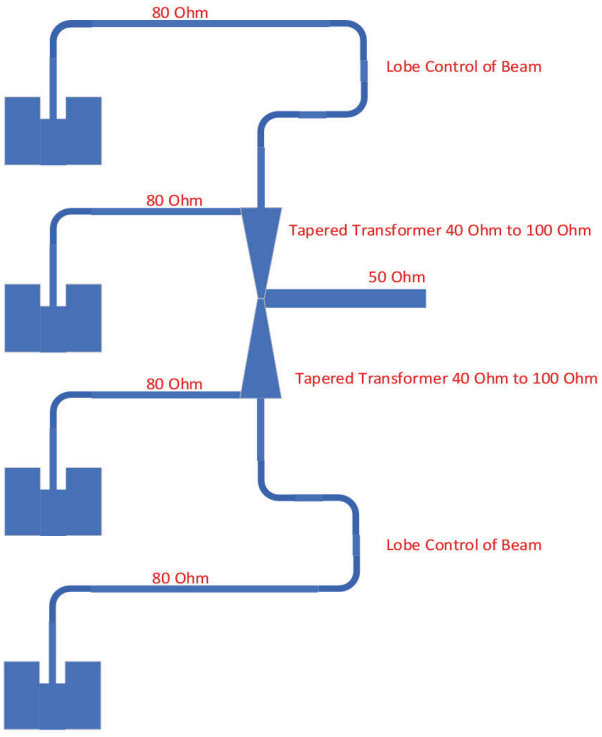

Fig.4: The sketch of top-level design

The Implementation process can be divided into three parts, Single Patch Antenna, Parallel Feeding Network and Four Patches Antenna Array. All those three parts will be discussed in this article.

Part II: Single Microstrip Patch Antenna