

APPROVAL SHEET

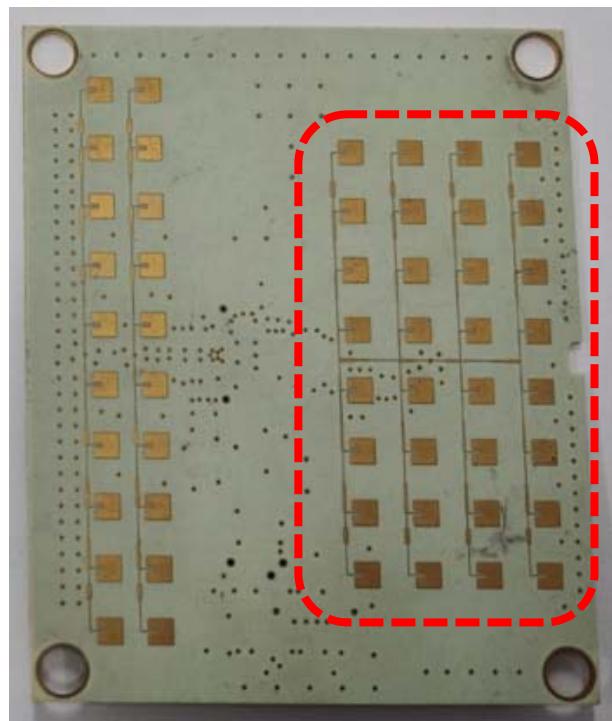
Description	RM-02C 3080Antenna (Long rangeAntenna)
Version	V1.1

Date : 10 / 18 / 23

Compiled	Approved	Authorized
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Title:RM-02C 3080 Antenna

STD name:RM-02C 3080ANT



Newest-one tech

Outline

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1. Outline

1.1 Specification

This document is a Radar product using 24GHz frequency and is a specification for patch antenna of "RM-02C 3080".

Item	Detail	note
Image		
Dimension(mm)	30mm X 60 mm	
Part Num	RM-02C 3080 Tx ANT	
Ant type	Metal patch antenna	
Array	8 by 4	
Application	24GHz radar sensor	
Angle	H: 40degree, V: 124 degree	@ -3dB
Tx Frequency	24.05 ~ 24.25GHz	
Rx Frequency	24.05 ~ 24.25GHz	
Impedance	50ohm	
Polarization	Linear	
Gain	14.9dBi	measurement value
Manufacturing	Newest one tech	

1.2 Feature

The antenna applied to the 24GHz multipurpose radar sensor is a metal patch antenna and is an 8by4 array.

It is installed in commercial vehicles and used for the main purpose of detecting obstacles.

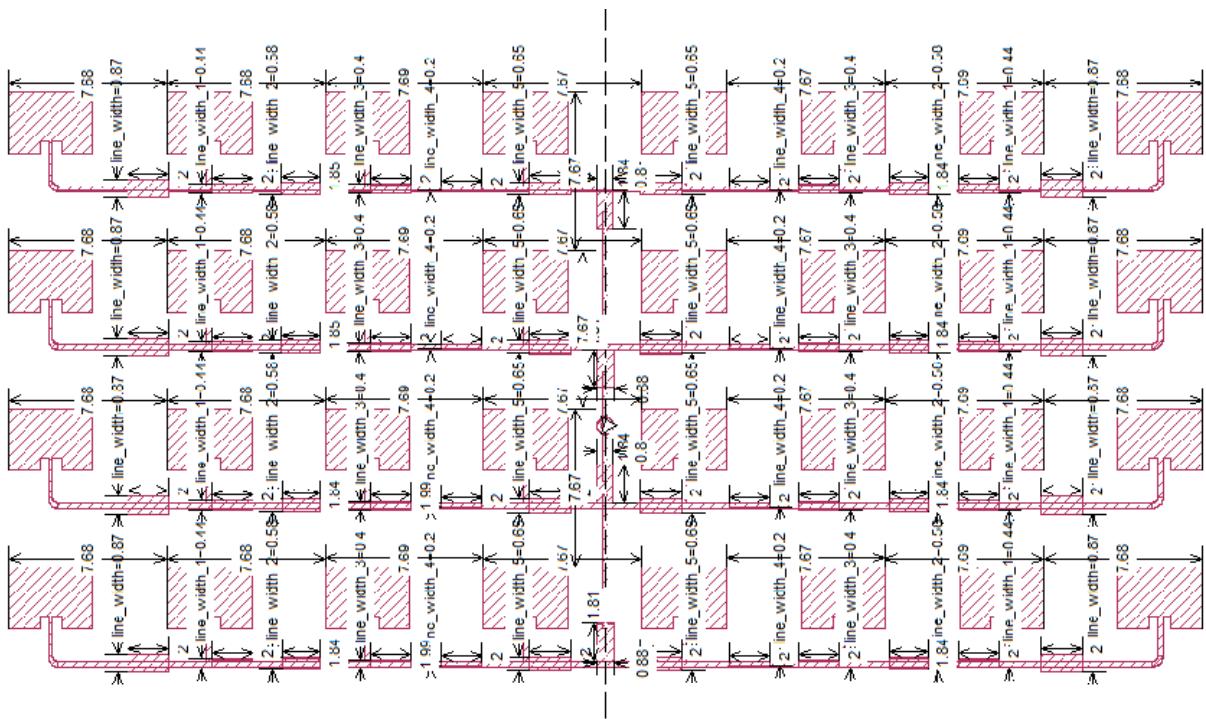
Based on the installation height of 1M, the maximum detection width is 8 meters and the detection distance is 30M (adjustable distance).

It is designed based on RF PCB (0.25mm, 1oz, Er : 3.66) and the radiation pattern is 80 degrees vertically and 40 degrees horizontally.

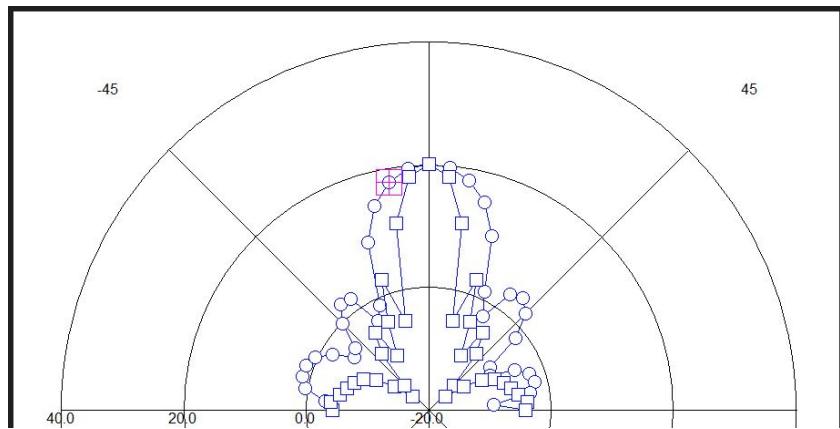
1.3 Antenna pattern specification

A Chebyshev array was applied to the horizontal antenna array, and the line antenna patch and line impedance were designed based on 100 ohm and feeding line impedance 50 ohm.

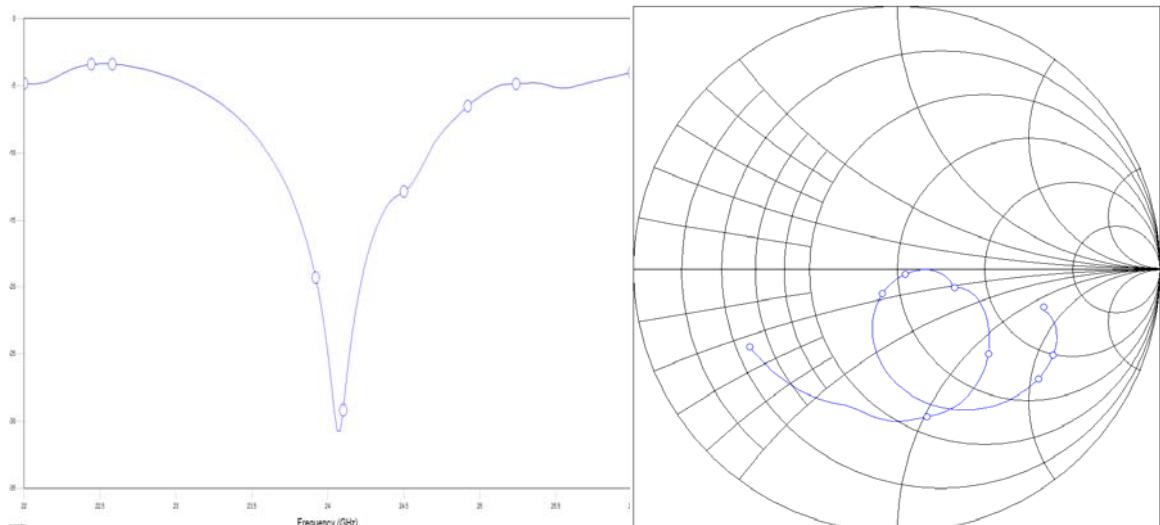
Isolation between Tx and Rx is increased by designing a guide to which the ground via is connected next to the Tx antenna feeding line.



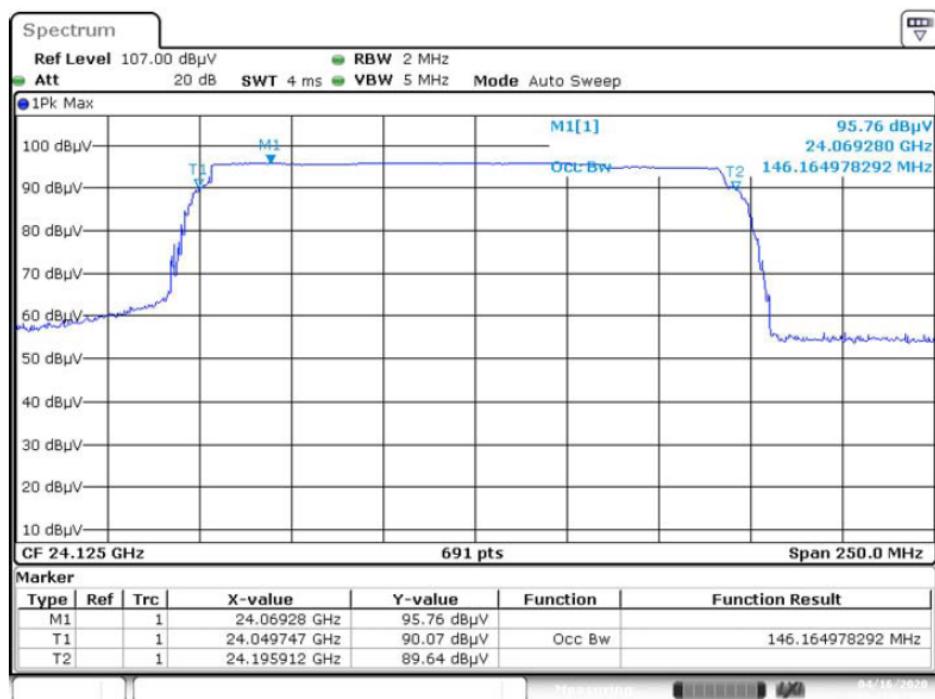
Antenna layout



Antenna simulation result(20dBi, side lobe -15dB)



antennaS11, Smith chart

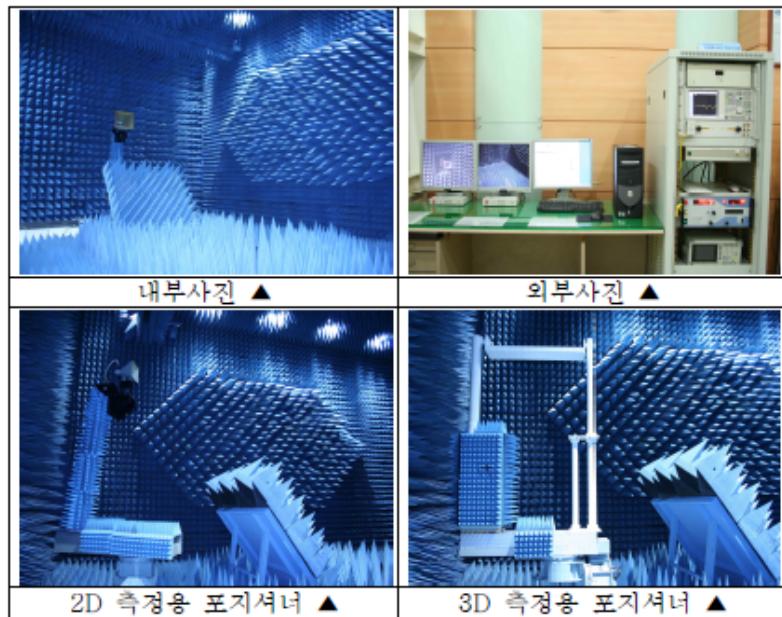


Tx spectrum measurement result

1.4 Antenna measurement date / location

- 04/30/21
- Korea Electromagnetic Wave Promotion Association Radio Technology Institute

측정실 전경

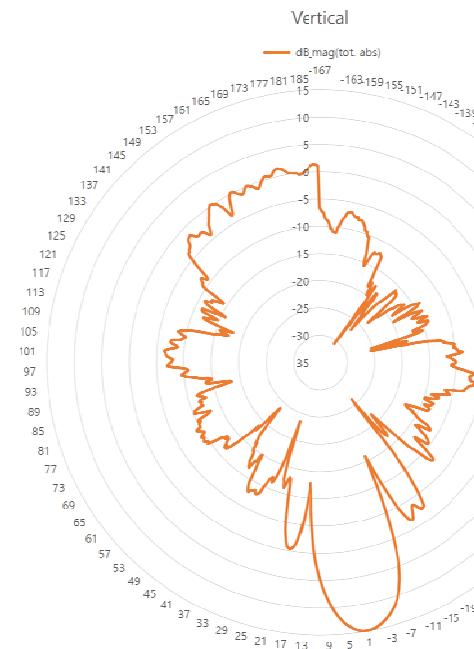


□ 측정 시스템 구성

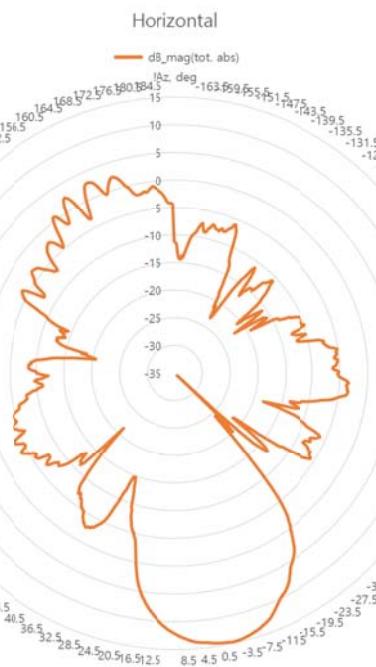
◦ 구성 장비

Network Analyzer	Amplifier
	
Model : E8361A PNA (Agilent)	Model : 83017A (Agilent)
Amplifier	LO/IF distribution unit
	
Model : 20T4G18AM2	Model : 85309A (Agilent)
Mixer	
	
Model : 85320A, 85320B (Agilent)	

1.5Antenna measurement result



Vertical(14.72 dBi, 25degree@-3dB)



Horizontal(14.9dBi, 12 degree@-3dB)