



## Antenna Test Report

( GV50)

# Revision History

Revision	Note	Date
V1	New Issue	2021.12.20

## Data Preview

ANT1:

<b>Freq.(MHz)</b>	<b>820</b>	<b>840</b>	<b>860</b>	<b>880</b>	<b>900</b>	<b>920</b>	<b>940</b>	<b>960</b>	<b>1710</b>
Gain(dBi)	-2.71	-0.32	1.86	1.39	-1.25	-4.23	-6.67	-9.25	-2.17
Eff.	17.9%	28.5%	33.4%	28.4%	21.9%	15.4%	10.7%	8.6%	22.5%
<b>Freq.(MHz)</b>	<b>1795</b>	<b>1880</b>	<b>1990</b>	<b>2080</b>	<b>2170</b>				
Gain(dBi)	0.04	1.78	1.57	2.19	0.53				
Eff.	42.3%	48.3%	54.8%	43.8%	30.9%				

Test	GSM850 TRP			Test	GSM850 TIS		
Result	128	190	251	Result	128	190	251
Frequency (MHz)	824.2	836.599	848.799	Frequency (MHz)	869.2	881.599	893.799
TRP (dBm)	27.68	28.54	28.15	TRP (dBm)	-105.29	-105.12	-104.69

Test	GSM900 TRP			Test	GSM900 TIS		
Result	975	37	124	Result	975	37	124
Frequency (MHz)	880.2	897.4	914.799	Frequency (MHz)	925.2	942.4	959.799
TRP (dBm)	27.43	27.29	27.74	TRP (dBm)	-102.86	-100.01	-97.32

Test	GSM1800 TRP			Test	GSM1800 TIS		
Result	512	698	885	Result	512	698	885
Frequency (MHz)	1710.199	1747.4	1784.8	Frequency (MHz)	1805.199	1842.4	1879.8
TRP (dBm)	26.57	26.83	24.21	TRP (dBm)	-103.95	-103.9	-106.61

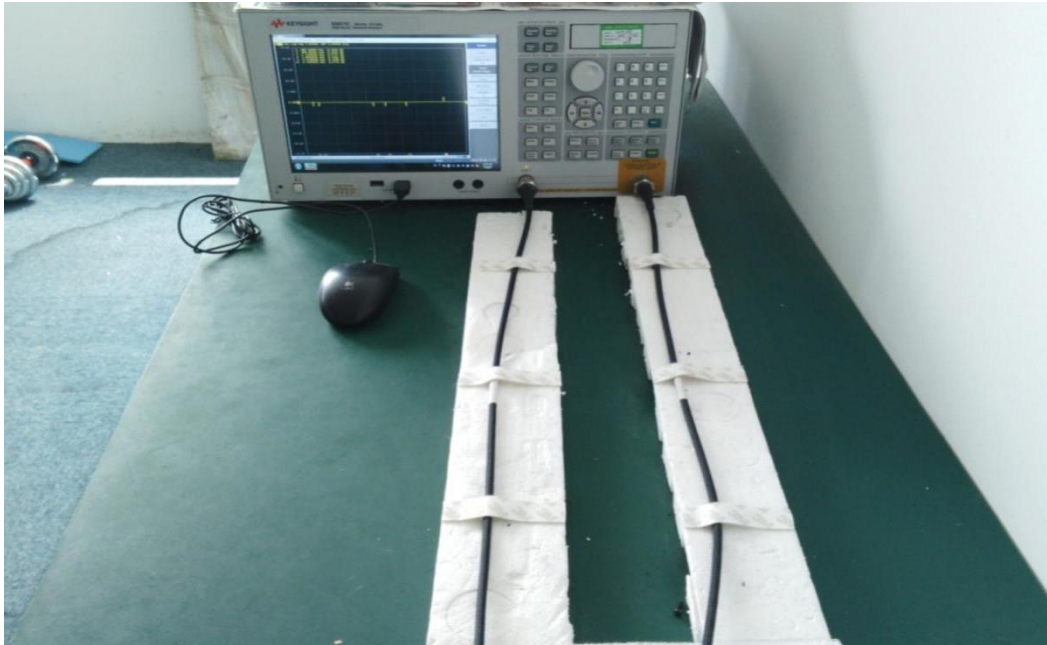
Test	GSM1900 TRP			Test	GSM1900 TIS		
Result	810	661	512	Result	810	661	512
Frequency (MHz)	1909.8	1880	1850.199	Frequency (MHz)	1930.199	1960	1989.8
TRP (dBm)	23.41	26.42	28.19	TRP (dBm)	-108.93	-108.86	-109.58

# 1. RF Fixture Experiment

## 1.1 Test Setup

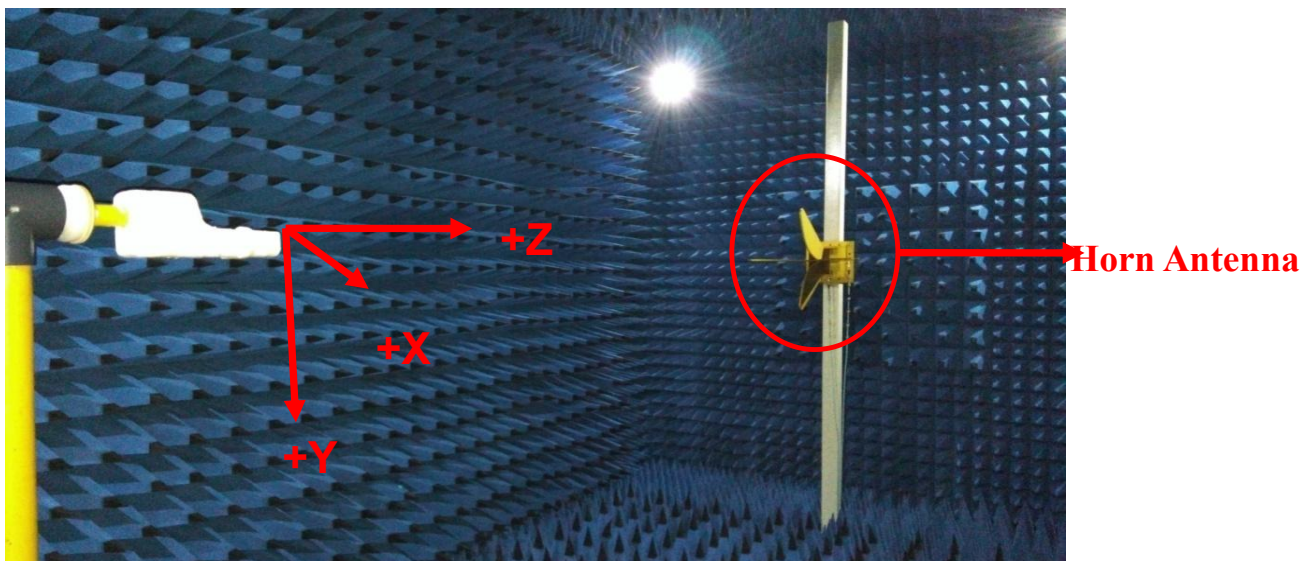
### 1.1.1 VNA Test Setup

VSWR and Return Loss measurements ( $S_{11}$ ) were performed using an Keysight E5071C Network Analyzer. The isolation between antennas is also tested. The testing was performed with apparatus in free space.



### 1.1.2 Anechoic Chamber Test Setup

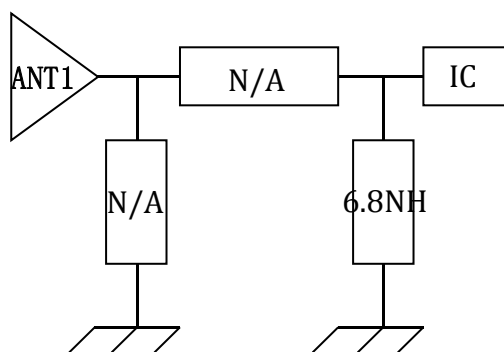
The gain of the antenna was measured in the anechoic chamber. The chamber provides less than  $-30$  dB reflectivity from 400 MHz through 6 GHz. The chamber size is: 7m\*4m\*3m. The measurement results are calibrated using a leaky wave horn standard. We can measure the antenna gain and efficiency accurately.



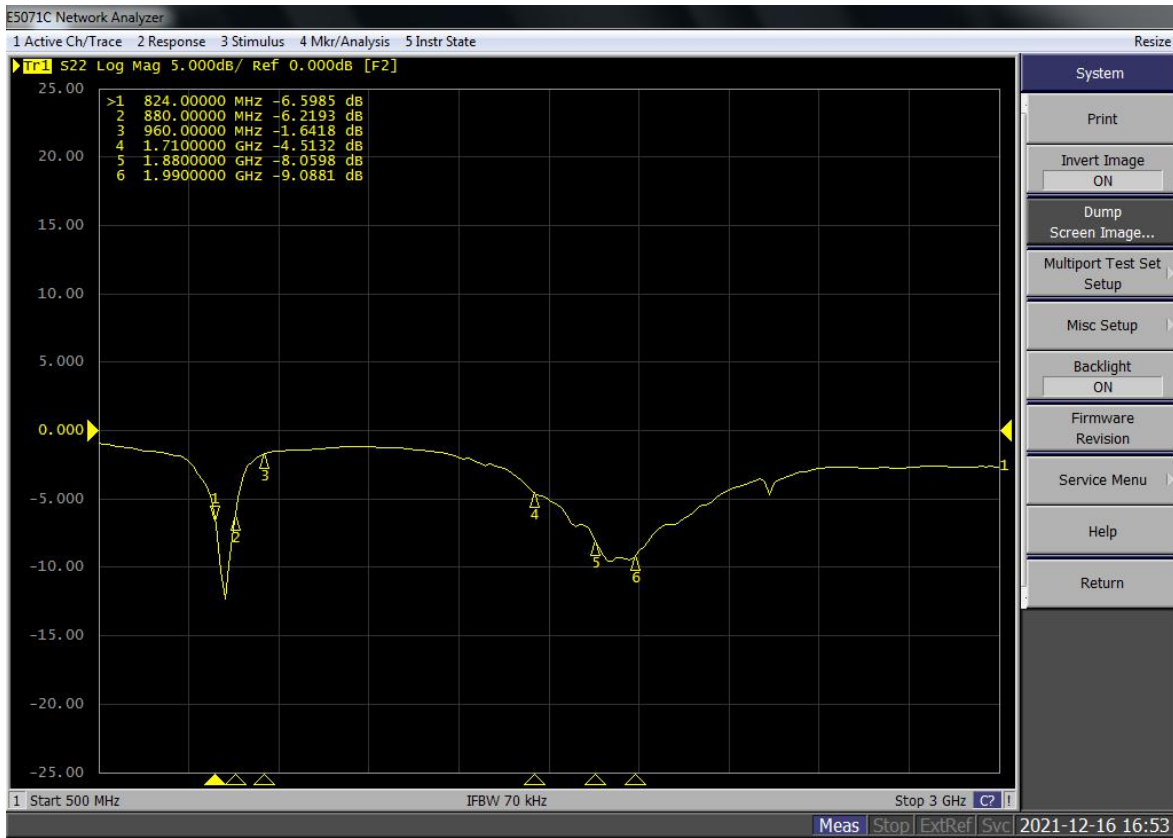
## 2. Antenna Solution



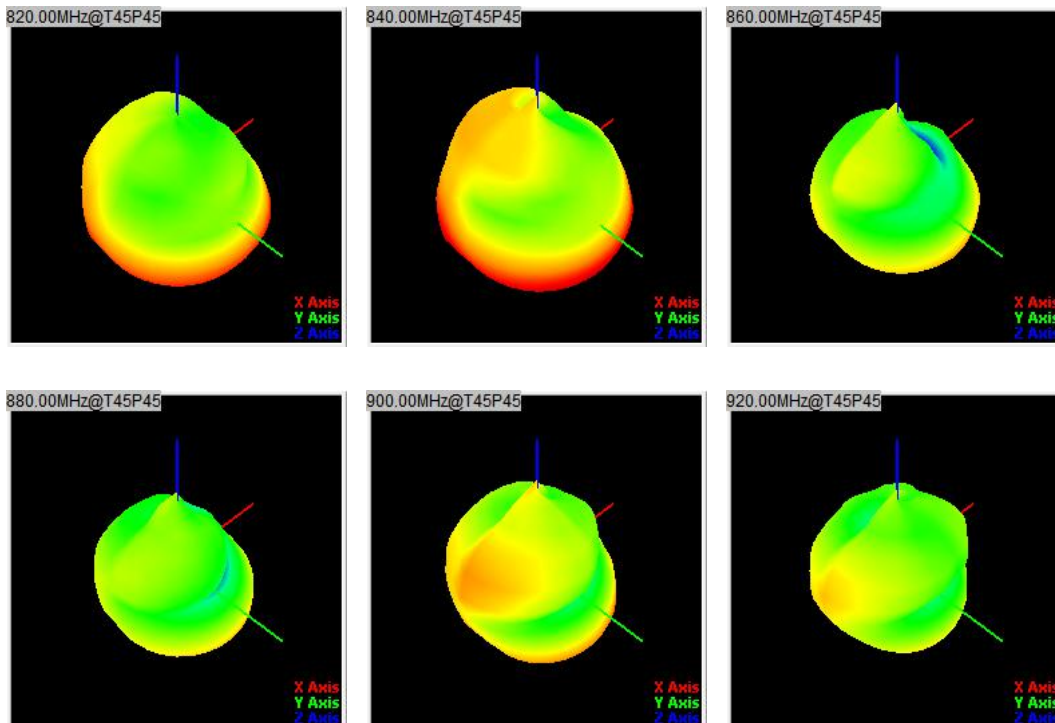
## 3. RF matching circuit for different antennas



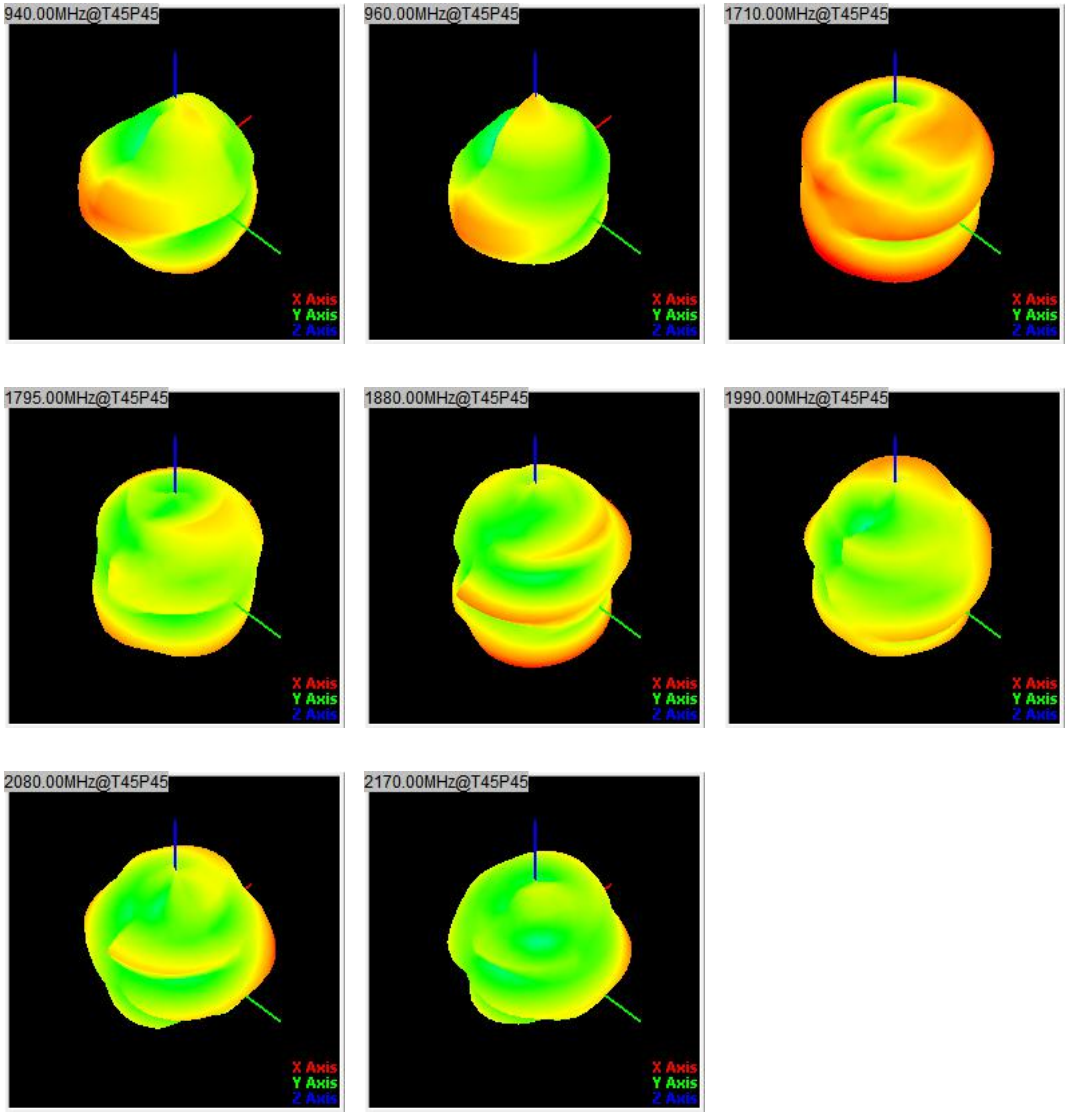
# S11(ANT1)



## Radiation patterns:3D







Radiation patterns:2D **820MHz**

