Regulatory WWAN Antenna Information

Platform information				
Brand	**ODM**	**Platform model name**	**Platform type (ex: regular NB, convertible PC, AIO…etc)**	**˙SAR minimum separation (mm)**
HP Inc.	Inventec	HSN-I62C	Convertible PC	217.17

Antenna information						Maximum Peak gain
Vendor	**Type**	**Antenna Part number (Ant5 TX/RX)**	**Antenna Part number (Ant6 RX)**	**Antenna Part number (Ant7 RX)**	**Antenna Part number (Ant8 TX/RX)**	**3400 MHz (Choice TX high peak gain)**
WNC	PIFA	81ELBF15.G36 (6036B0366201)	81ELBF15.G35 (6036B0366101)	81ELBF15.G37 (6036B0366301)	81ELBF15.G36 (6036B0366201)	1.58 dBi

Module information	
Model	**Form factor and suffixes (NGW/ HMW AND AN/ NB/ BN….)**
Kavalan R	Rolling wireless RW350-GL WWAN 4x4 5G NR radio module

Antenna vendor connect person	
Antenna Vendor	WNC
contact person	Annie Lo
E-mail	annie.lo@wnc.com.tw
Tel/Mobile	886-3-666-7799 ext: 3415
Web address	https://www.wnc.com.tw
Address	20 Park Avenue II, Hsinchu Science Park Hsinchu 300, Taiwan

Antenna Sample / Antenna Data
Requirements for worldwide regulatory approval

Section	Description of Required OEM / ODM Antenna Information	US / IC	EU	Japan	Taiwan	S.Korea
1A	Part Number for Antenna Assembly	Required	Required	Required	Required	Required
1B	Antenna Manufacturer Name	Required	Required	Required	Required	Required
1C	Description of Antenna Type	Required	N/A	N/A	N/A	N/A
1D	Tx antenna Gain (Peak Gain W/ cable loss) *	Required	Required	Required	Required	Required
2	Dimensioned Photographs and Drawings of Tx and Rx antennas	Required	Required	Required	Required	Required
3	Radiation patterns of antennas loaded in the host platform.	N/A	Required	Required	Required	N/A
4	Platform model name / number - correlated to antenna manufacturer and antenna part number	Required	Required	Desired	Required	Desired
5	Photograph(s) or Drawings showing location of antennas in platform. (S. Korea requires photographs of antennas for approval submission). Taiwan requires pictures of each antenna type shown in the system.	Required	Required	Desired	Required (Photos)	Required (Photos)
6	Mech. drawings / photos with dimensions of antenna locations and distance from end-user (For evaluation of SAR testing requirement).	Required	N/A	N/A	N/A	N/A
7	Photograph(s) or Drawings showing the location of all antennas (WLAN, other) and distance between those transmitting antennas. Information will be used to evaluate whether co-location testing is required.	Required	N/A	N/A	N/A	N/A
8	Local representative contact information for LMA/ PARS process.	Required	N/A	N/A	N/A	N/A

Antenna Information

Section 1. Antenna Assembly Specifications

Communication System	Band	Frequency(MHz) from low to high spectrum		1A Part Number for Antenna Assembly	1B Antenna Manufacturer Name	1C Description of Antenna Type	1D Tx Antenna Gain (dBi) Ant5
5G NR FR1	2	1850	1910	Ant5 : 81ELBF15.G36	WNC	PIFA	-1.4
WCDMA/ LTE/5G NR FR1	5	824	849				-1.93
WCDMA/ LTE/5G NR FR1	8	880	915				-2.64
LTE/5G NR FR1	12	699	716				-0.18
LTE	13	777	787				-1.38
LTE/5G NR FR1	14	788	798				-2.7
LTE	17	704	716				-0.18
LTE	18	815	830				-3.11
LTE	19	830	845				-2.07
LTE/5G NR FR1	20	832	862				-1.93
5G NR FR1	25	1850	1915				-1.4
LTE/5G NR FR1	26	814	849				-1.93
LTE/5G NR FR1	28	703	748				-0.18
LTE/5G NR FR1	41	2496	2690				-1.62
LTE	42	3400	3600				0.85
LTE/5G NR FR1	48	3550	3700				0.85
LTE/5G NR FR1	71	663	698				-2.64
5G NR FR1	77	3300	4200				0.85
5G NR FR1	78	3300	3800				0.85
5G NR FR1	79	4400	5000				-0.1

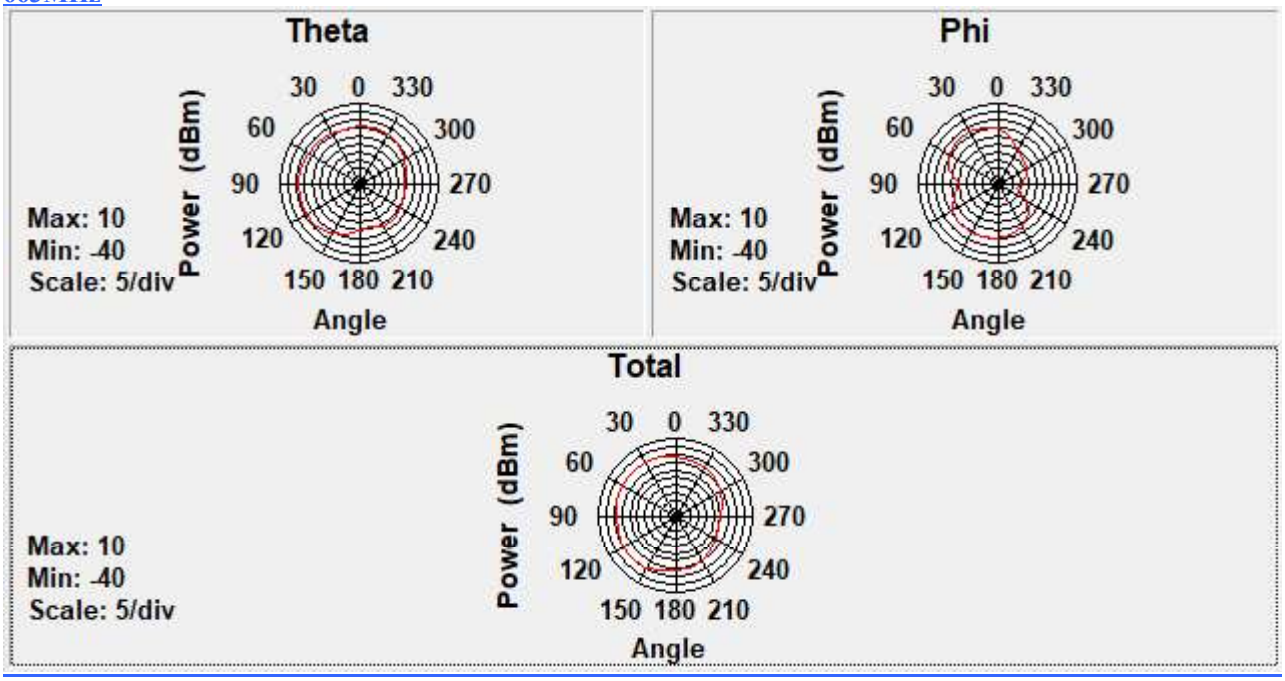
Communication System	Band	Frequency(MHz) from low to high spectrum		1A Part Number for Antenna Assembly	1B Antenna Manufacturer Name	1C Description of Antenna Type	1D Tx Antenna Gain (dBi) Ant8
WCDMA/LTE/5G NR FR1	1	1920	1980	Ant8 : 81ELBF15.G36	WNC	PIFA	-1.36
WCDMA/LTE/5G NR FR1	2	1850	1910				-1.88
LTE/5G NR FR1	3	1710	1785				-0.92
WCDMA/LTE	4	1710	1755				-0.92
LTE/5G NR FR1	7	2500	2570				-1.88
LTE/5G NR FR1	25	1850	1915				-1.88
LTE/5G NR FR1	30	2305	2315				-3.25
LTE	34	2010	2025				-1.76
LTE/5G NR FR1	38	2570	2620				-2.6
LTE	39	1880	1920				-2.24
LTE/5G NR FR1	40	2300	2400				-2.69
LTE/5G NR FR1	41	2496	2690				-1.88
LTE	42	3400	3600				1.58
LTE	43	3600	3800				1.39
LTE/5G NR FR1	48	3550	3700				0.93
LTE/5G NR FR1	66	1710	1780				-0.92
5G NR FR1	77	3300	4200				1.58
5G NR FR1	78	3300	3800				1.58
5G NR FR1	79	4400	5000				-2.24

Antenna Peak Gain required being test in system basis.

- **The listed frequency 2D radiation pattern is required**
- **Ant5:**

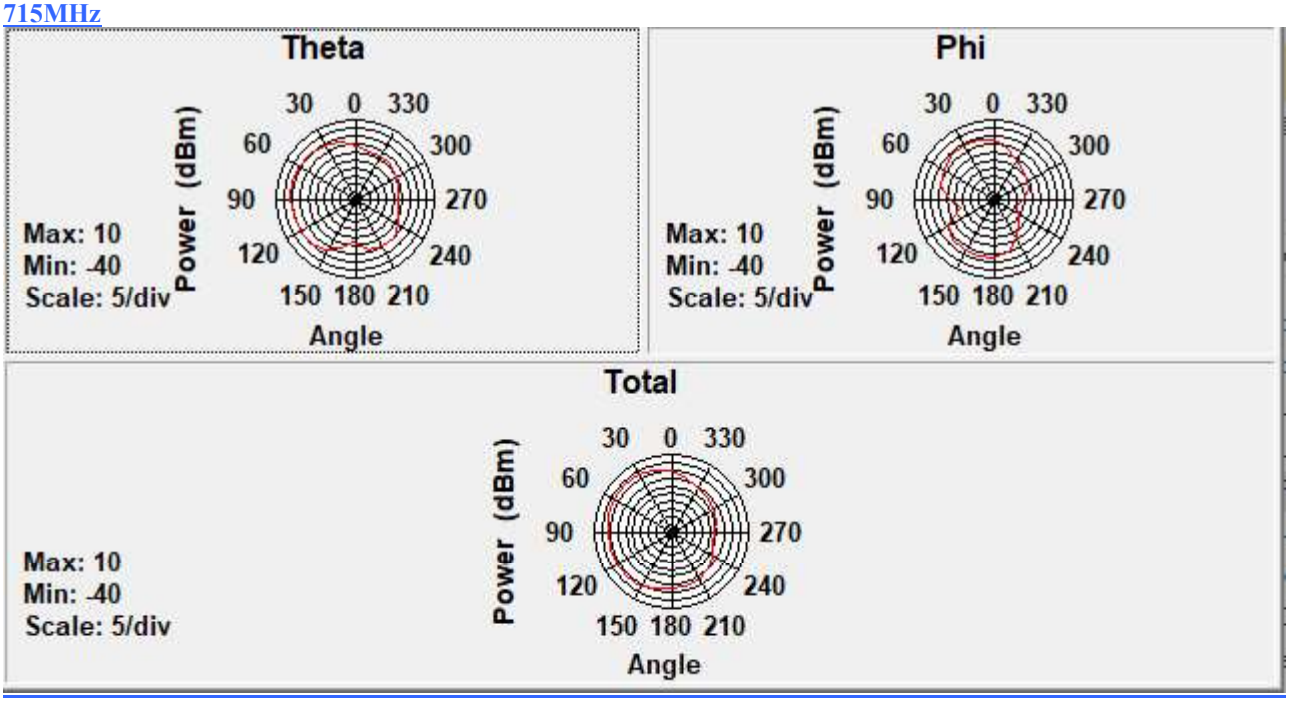
Example

663MHz



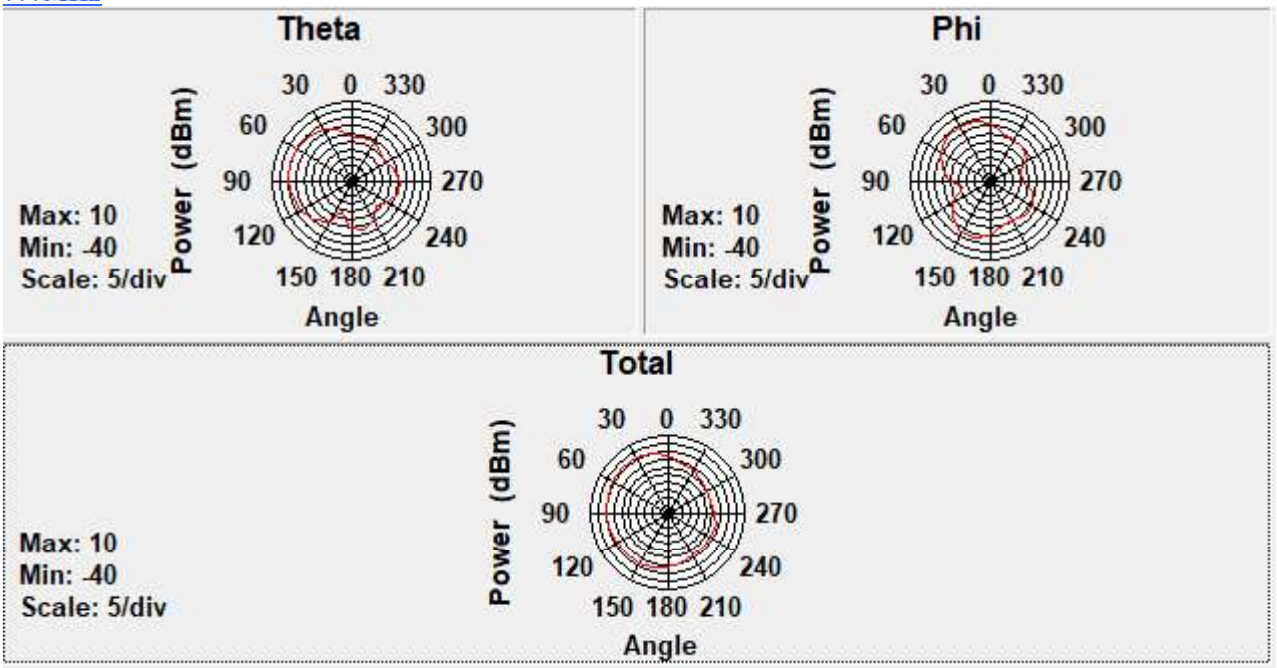
Center Frequency	**663MHz**
Horizontal (dBi) peak	-2.64
Vertical (dBi) peak	-3.62

715MHz



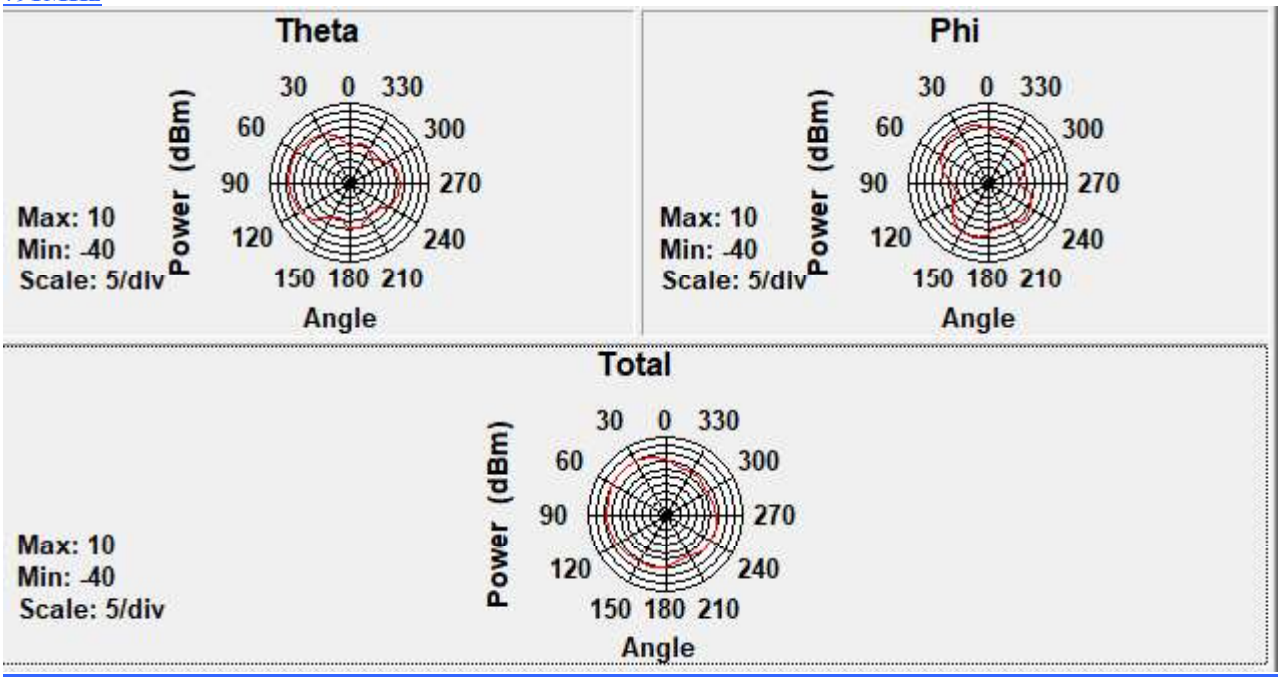
Center Frequency	**715MHz**
Horizontal (dBi) peak	-0.18
Vertical (dBi) peak	-2.09

777MHz



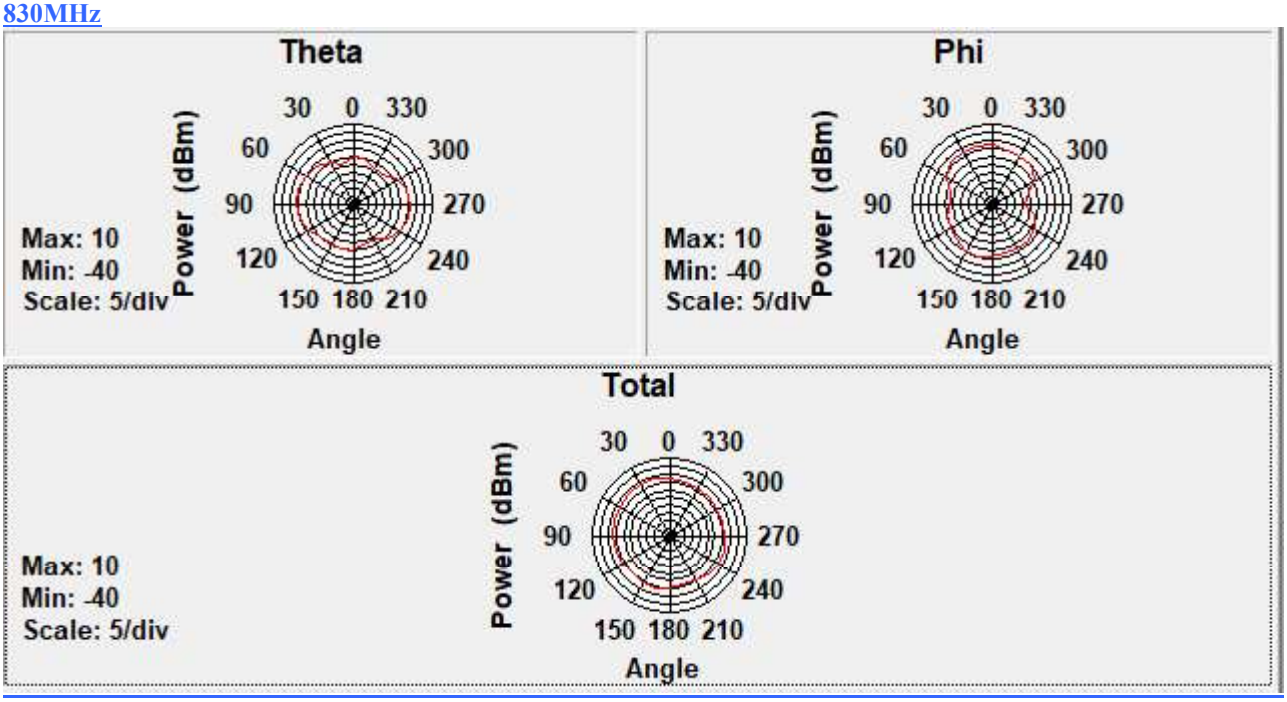
Center Frequency	**777MHz**
Horizontal (dBi) peak	-1.38
Vertical (dBi) peak	-2.38

791MHz



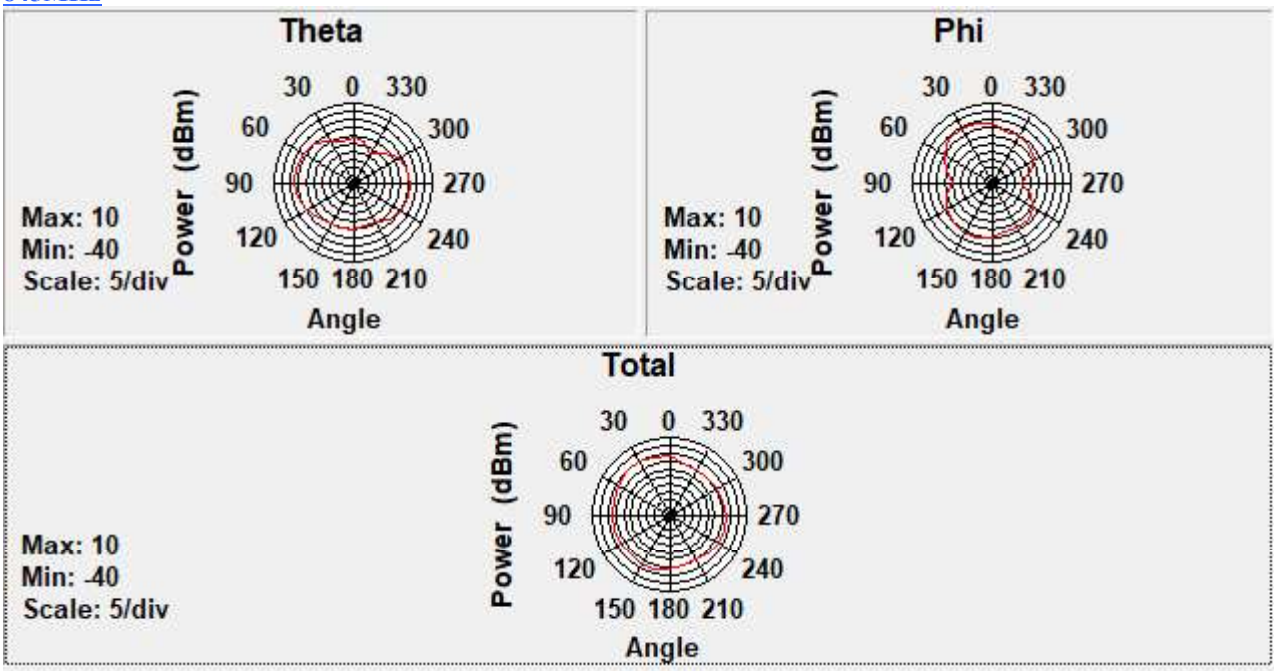
Center Frequency	**791MHz**
Horizontal (dBi) peak	-2.7
Vertical (dBi) peak	-3.23

830MHz



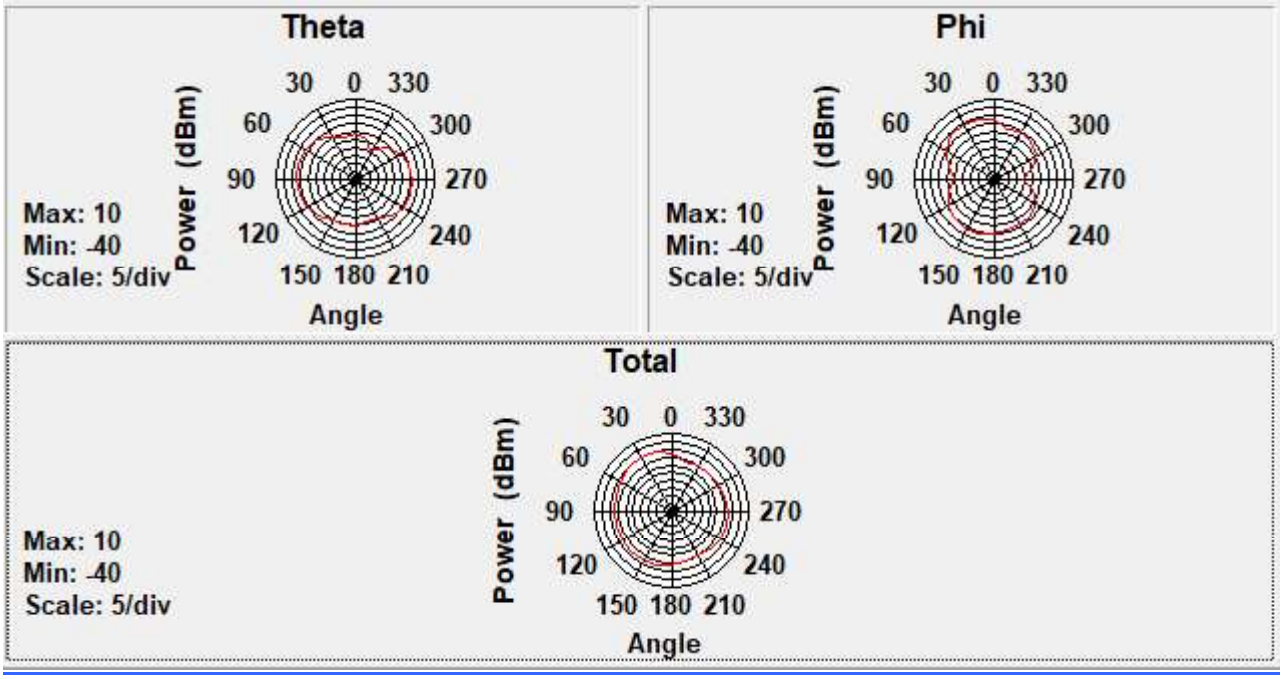
Center Frequency	**830MHz**
Horizontal (dBi) peak	-5
Vertical (dBi) peak	-3.11

845MHz



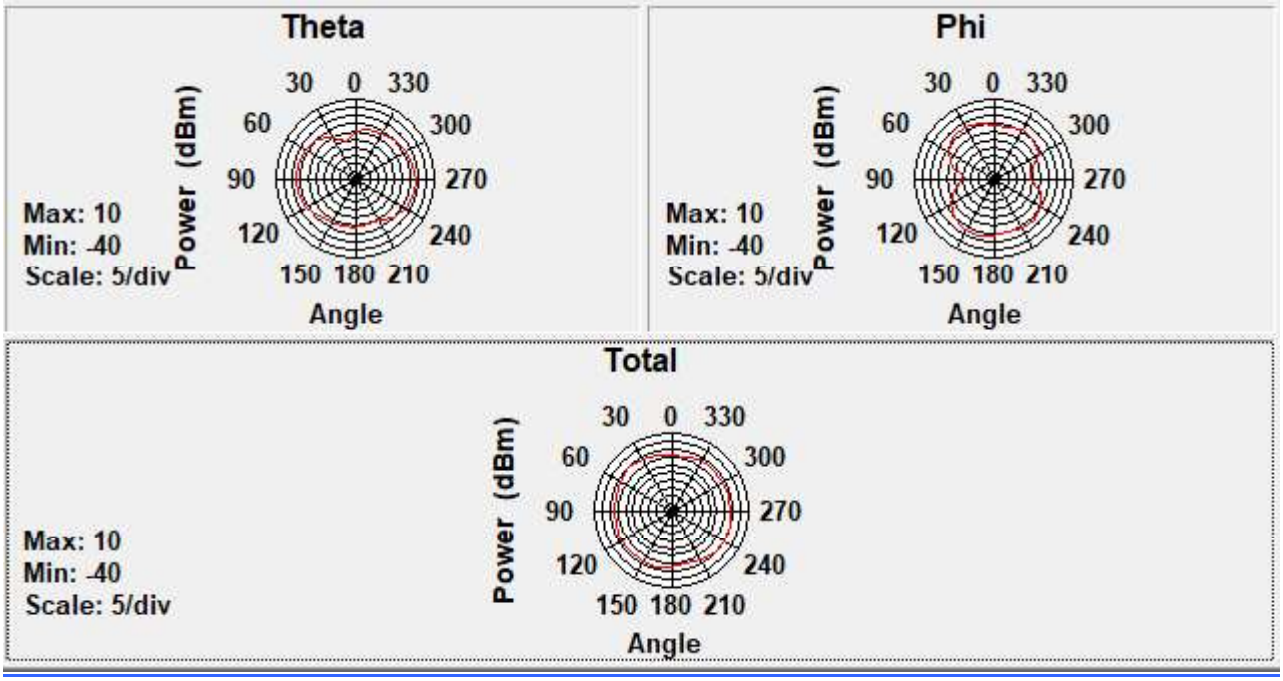
Center Frequency	**845MHz**
Horizontal (dBi) peak	-4.14
Vertical (dBi) peak	-2.07

849MHz



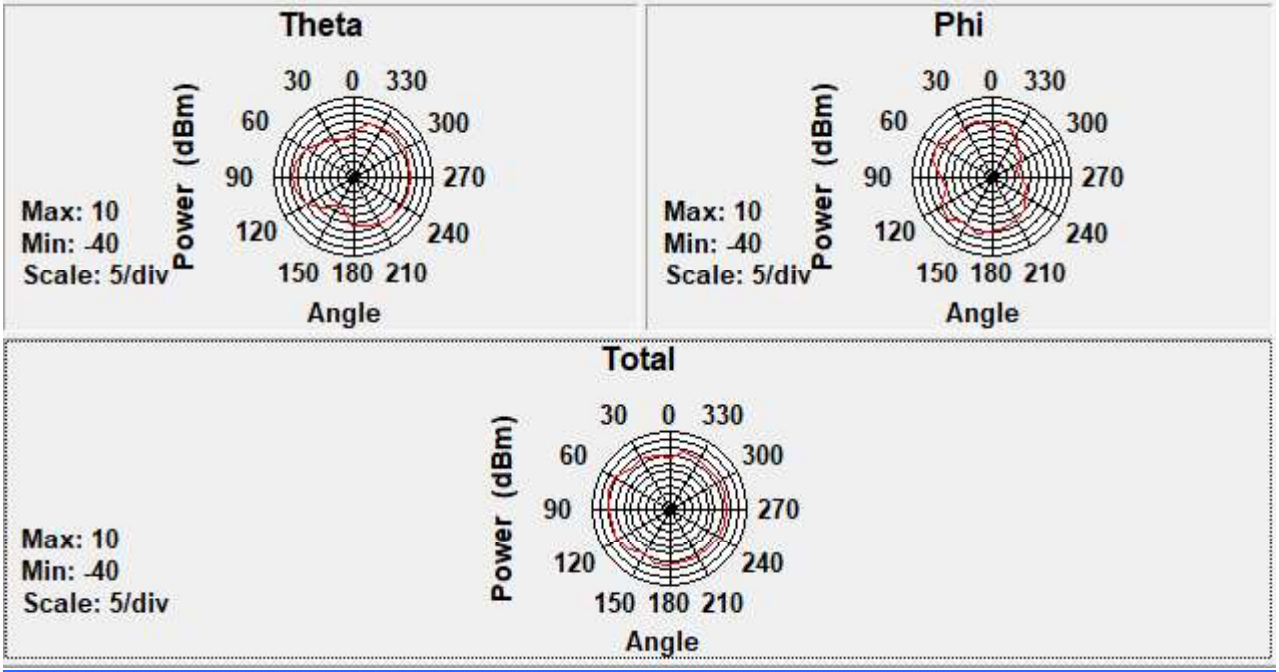
Center Frequency	**849MHz**
Horizontal (dBi) peak	-4.16
Vertical (dBi) peak	-1.93

915MHz



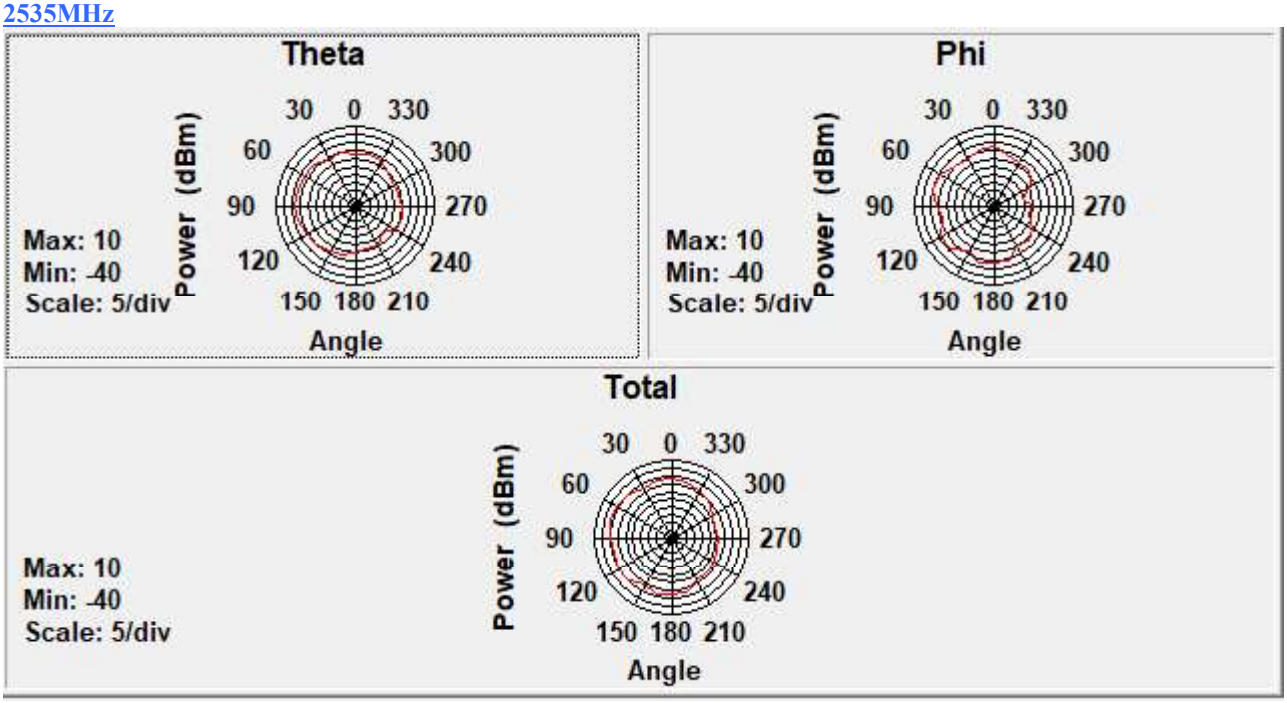
Center Frequency	**915MHz**
Horizontal (dBi) peak	-2.64
Vertical (dBi) peak	-3.68

1850MHz



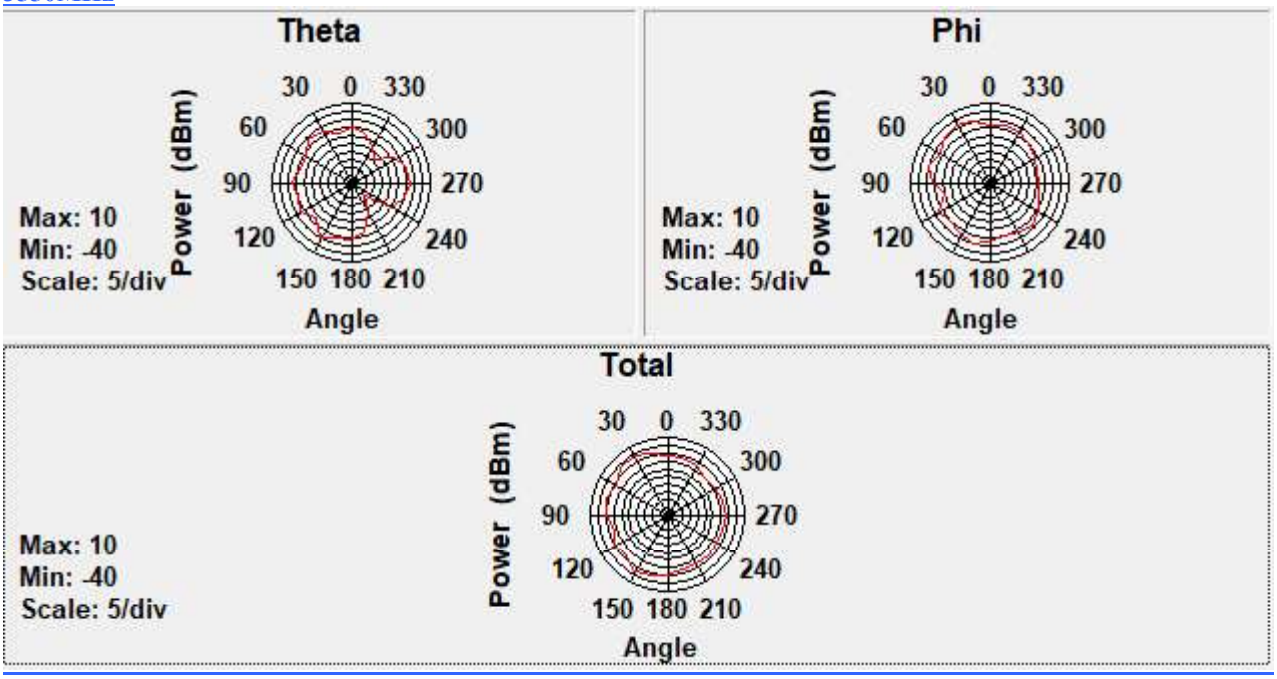
Center Frequency	**1850MHz**
Horizontal (dBi) peak	-3.02
Vertical (dBi) peak	-1.4

2535MHz



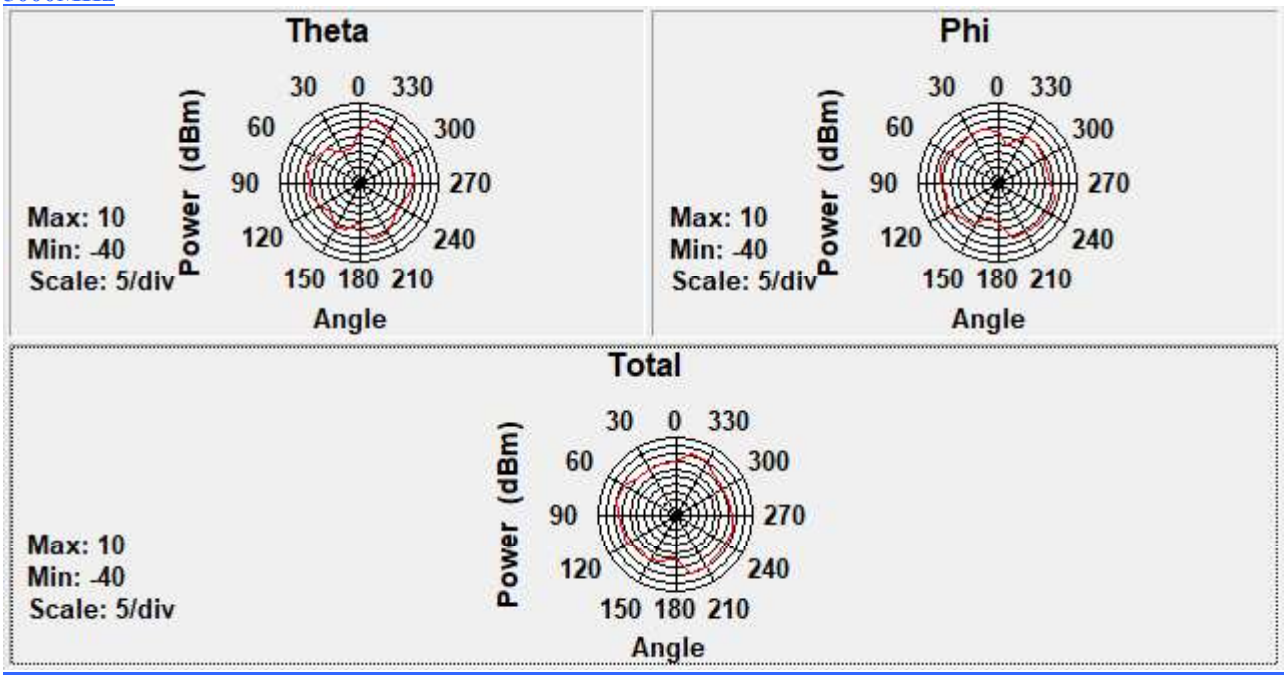
Center Frequency	**2535MHz**
Horizontal (dBi) peak	-2.98
Vertical (dBi) peak	-1.62

3550MHz



Center Frequency	**3550MHz**
Horizontal (dBi) peak	-1.09
Vertical (dBi) peak	0.85

5000MHz

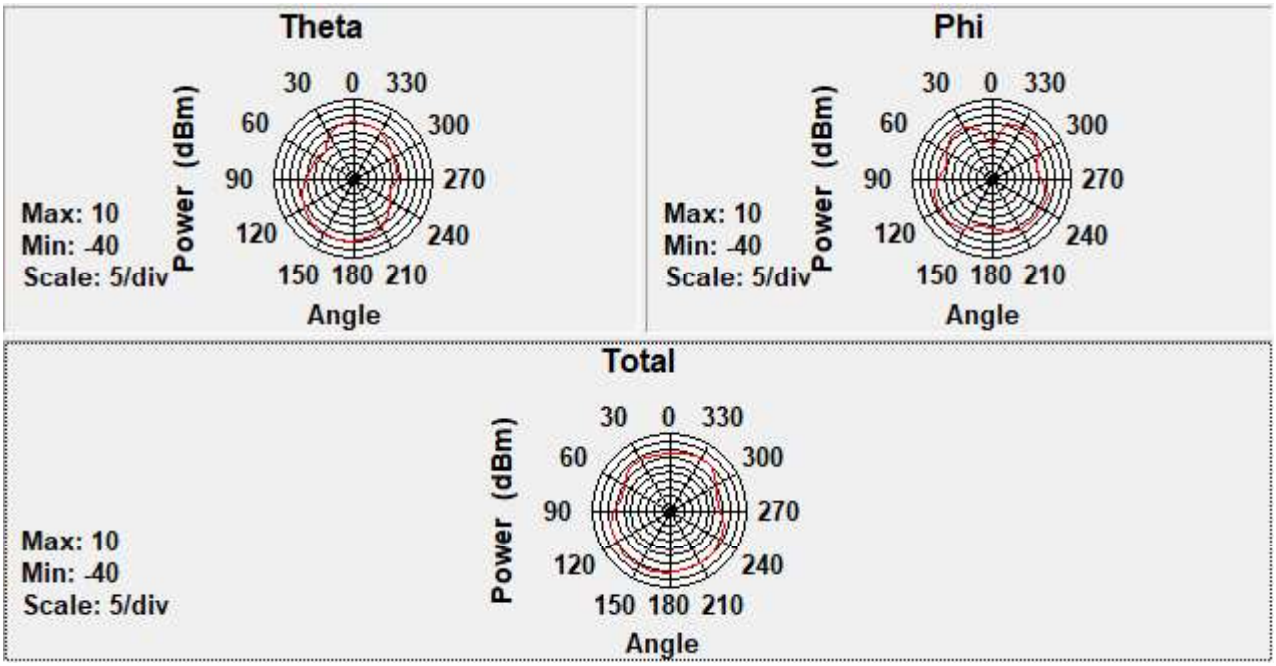


Center Frequency	**5000MHz**
Horizontal (dBi) peak	-0.1
Vertical (dBi) peak	-3.31

- **Ant8:**

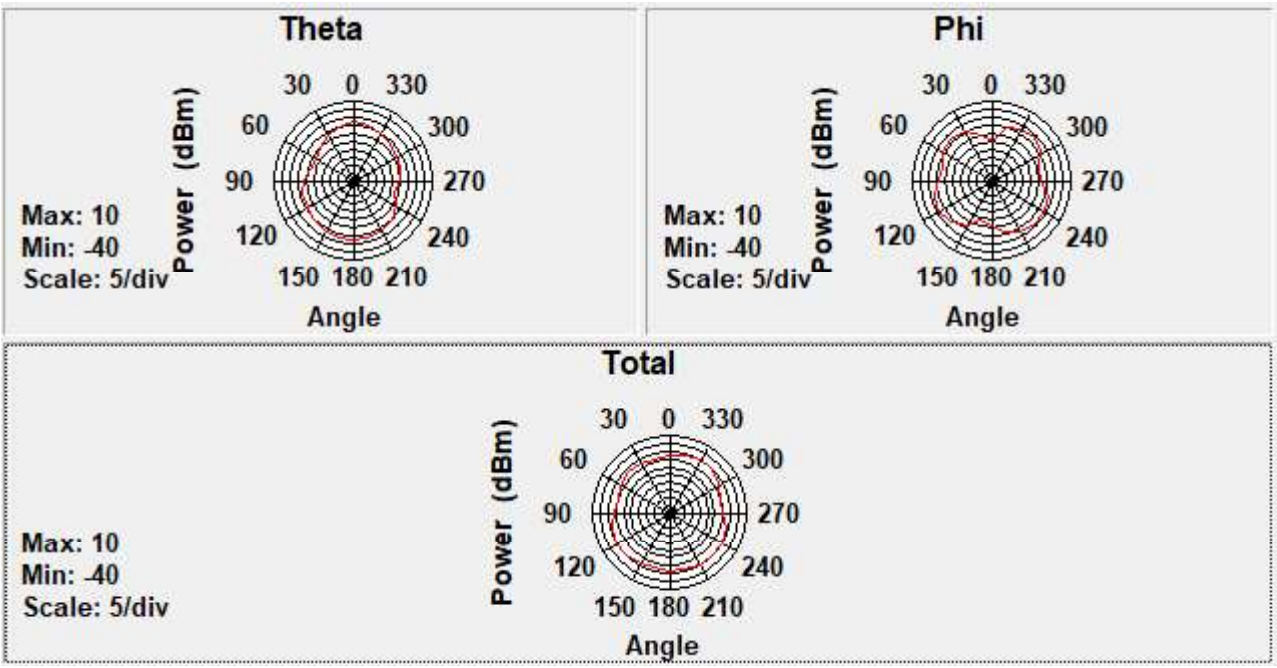
Example

1750MHz



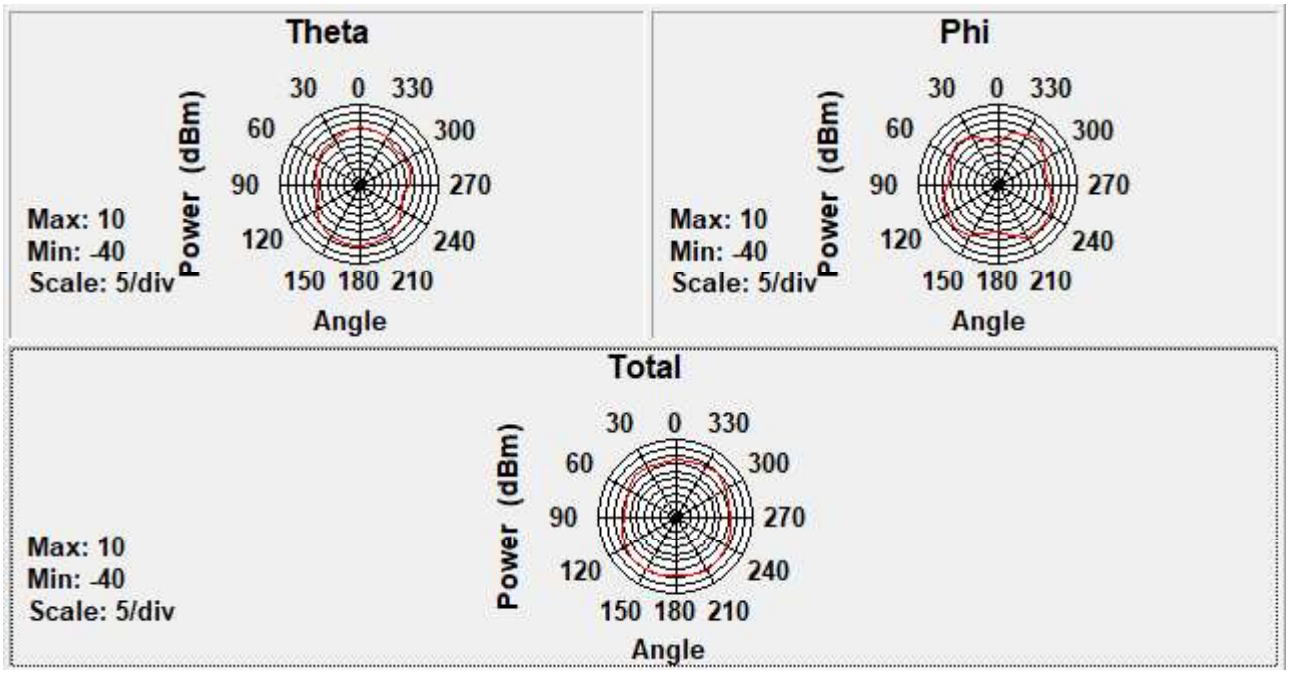
Center Frequency	**1750MHz**
Horizontal (dBi) peak	-0.92
Vertical (dBi) peak	-2.39

1850MHz



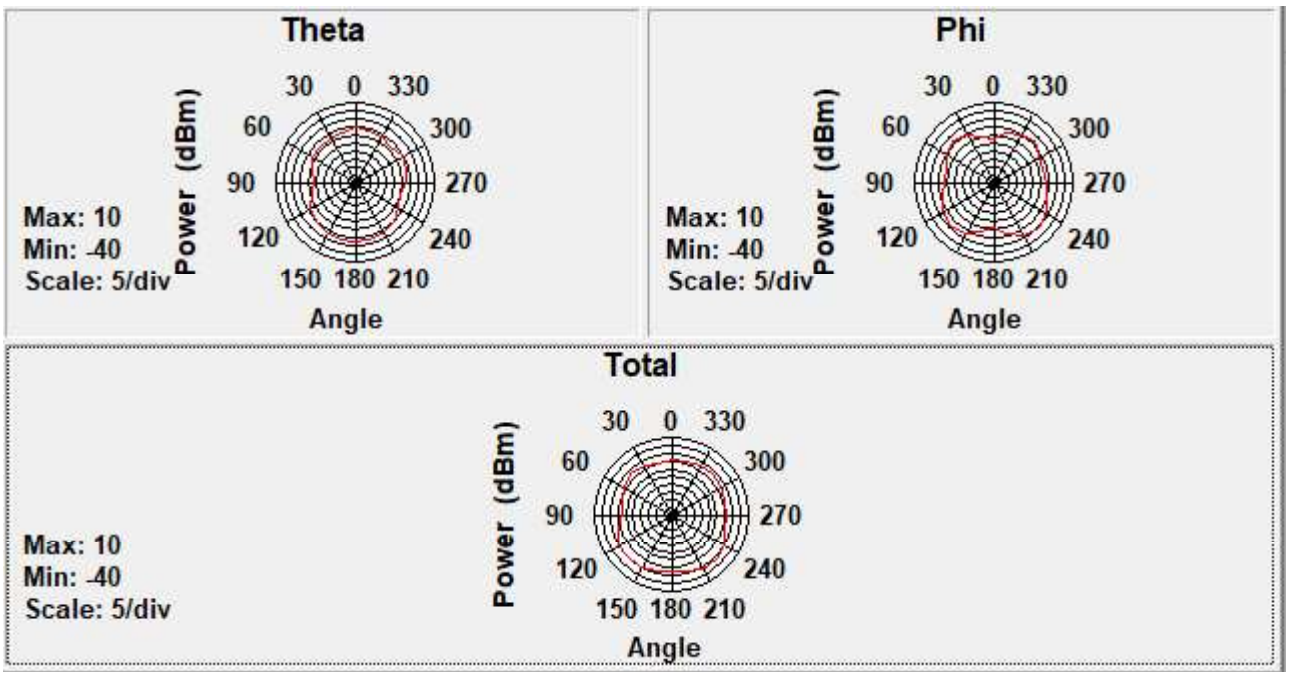
Center Frequency	**1850MHz**
Horizontal (dBi) peak	-3.6
Vertical (dBi) peak	-1.88

1920MHz



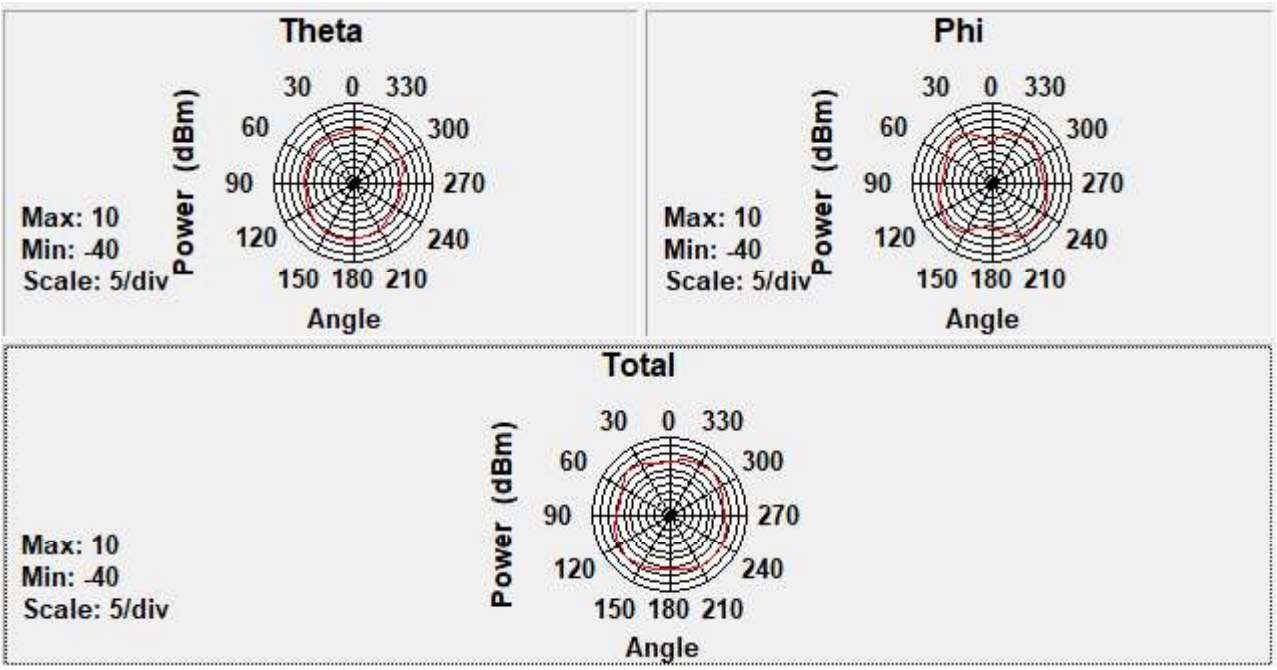
Center Frequency	**1920MHz**
Horizontal (dBi) peak	-2.79
Vertical (dBi) peak	-2.24

1950MHz



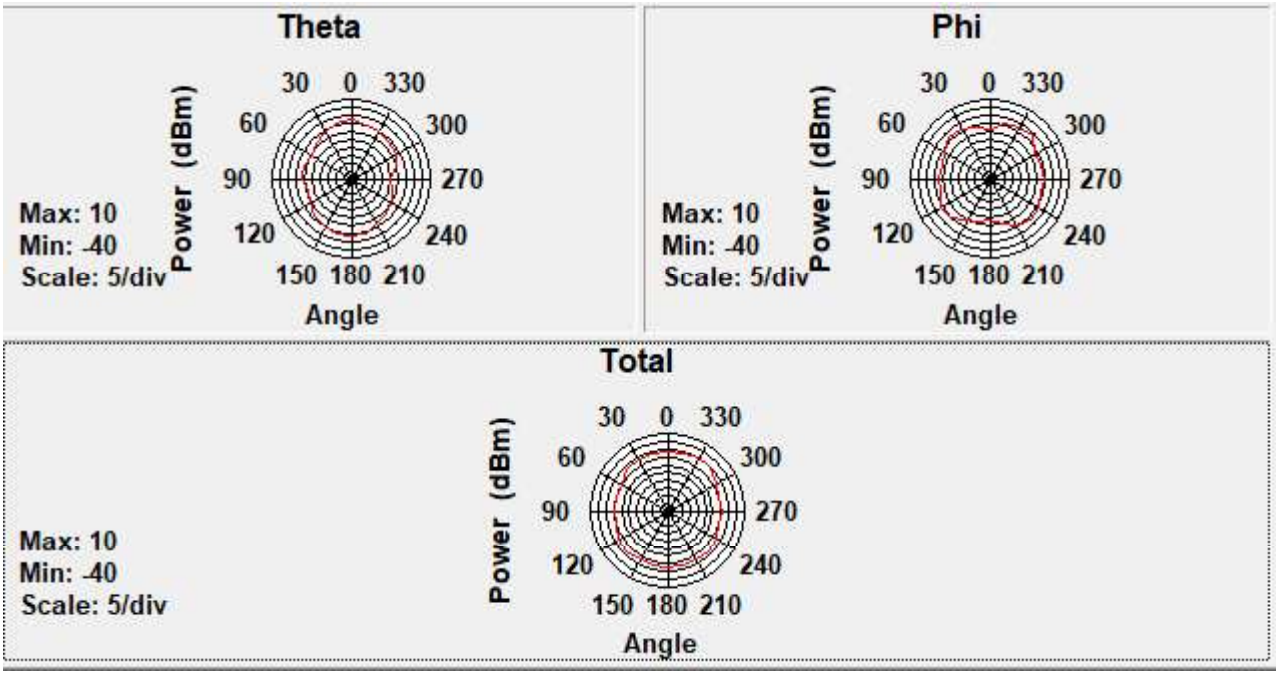
Center Frequency	**1950MHz**
Horizontal (dBi) peak	-4.15
Vertical (dBi) peak	-1.36

2010MHz



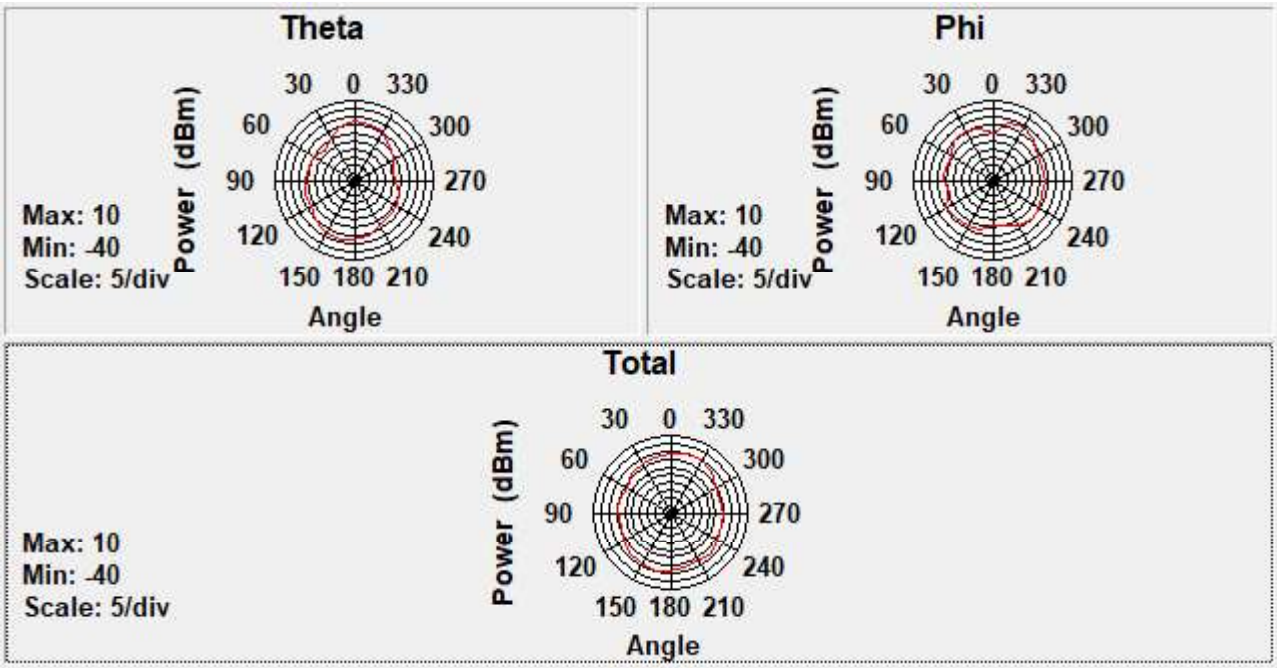
Center Frequency	**2010MHz**
Horizontal (dBi) peak	-5.19
Vertical (dBi) peak	-1.76

2315MHz



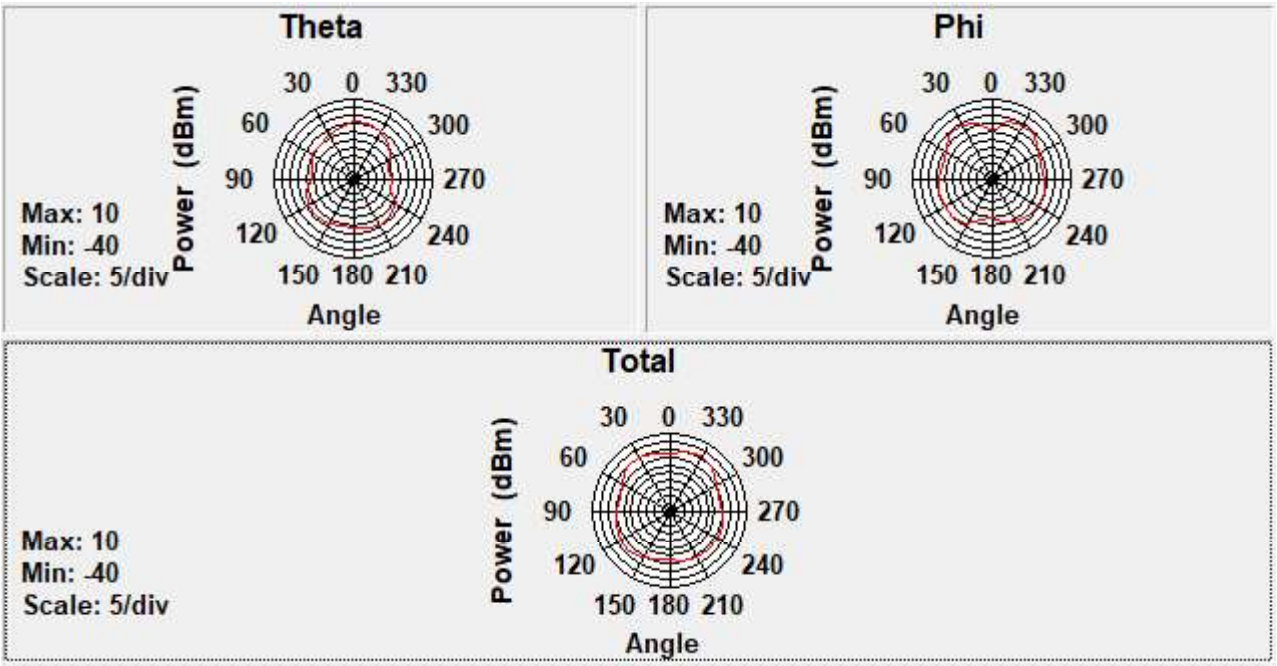
Center Frequency	**2315MHz**
Horizontal (dBi) peak	-3.66
Vertical (dBi) peak	-3.25

2400MHz



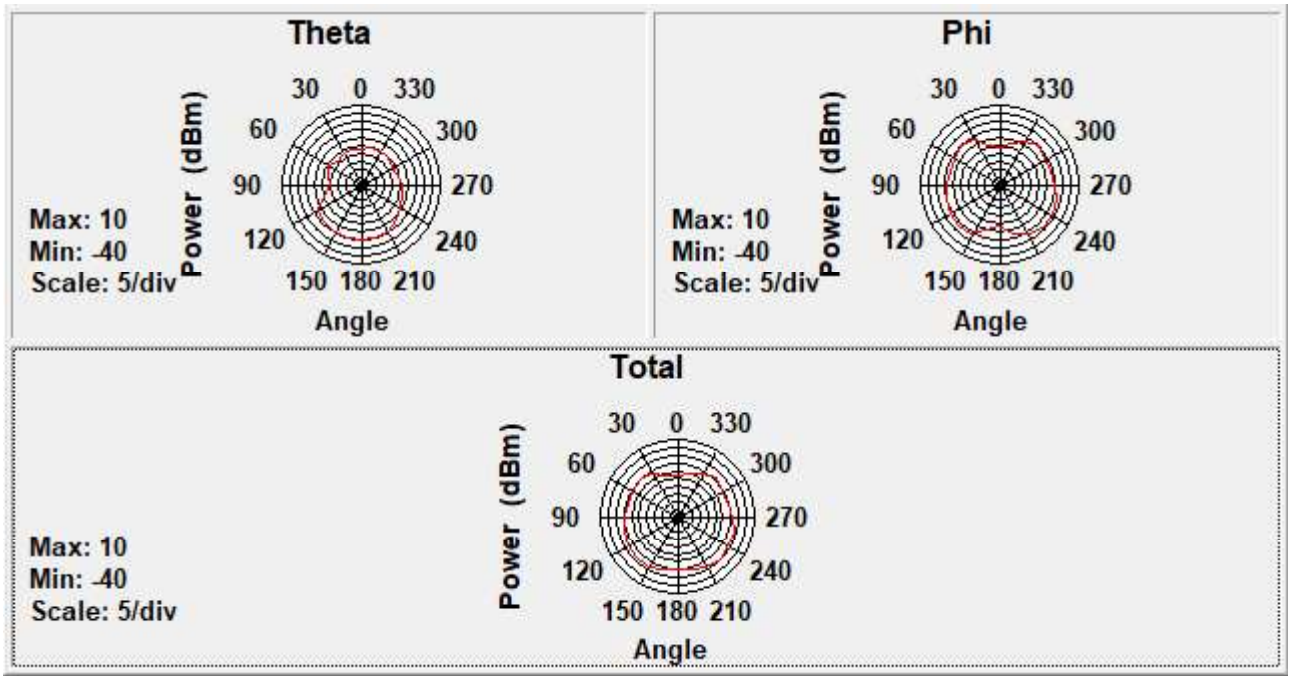
Center Frequency	**2400MHz**
Horizontal (dBi) peak	-2.91
Vertical (dBi) peak	-2.69

2500MHz



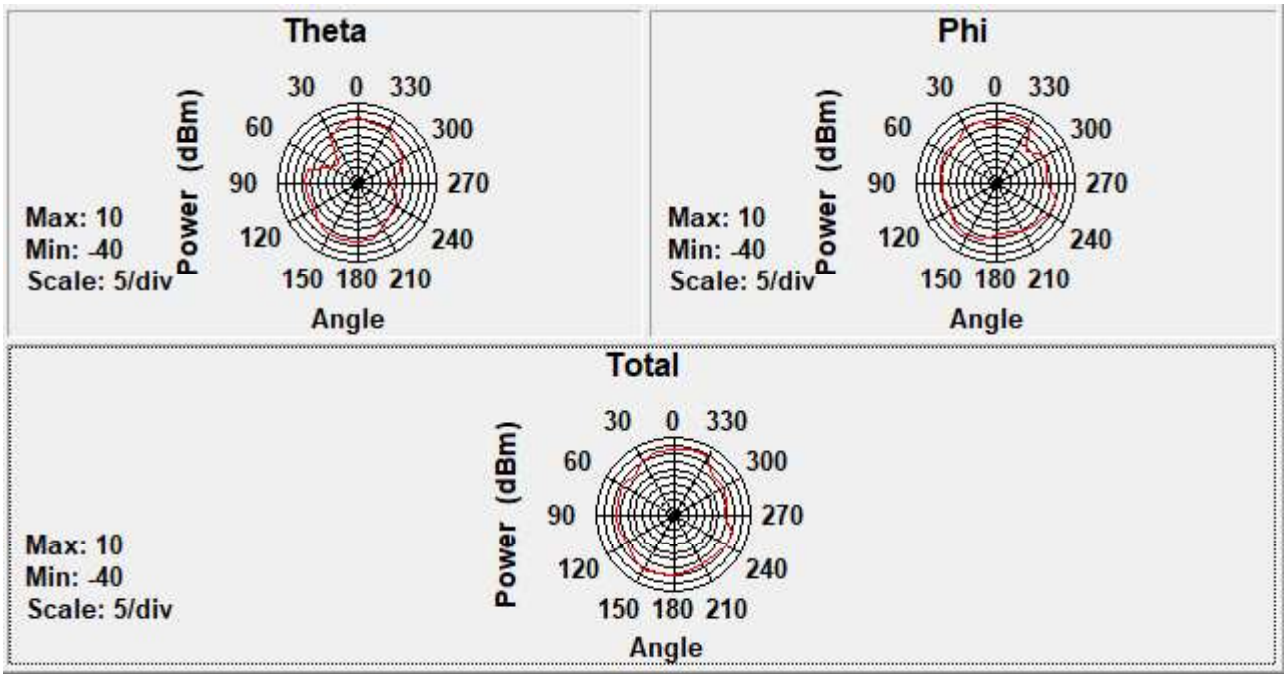
Center Frequency	**2500MHz**
Horizontal (dBi) peak	-5.35
Vertical (dBi) peak	-1.88

2620MHz



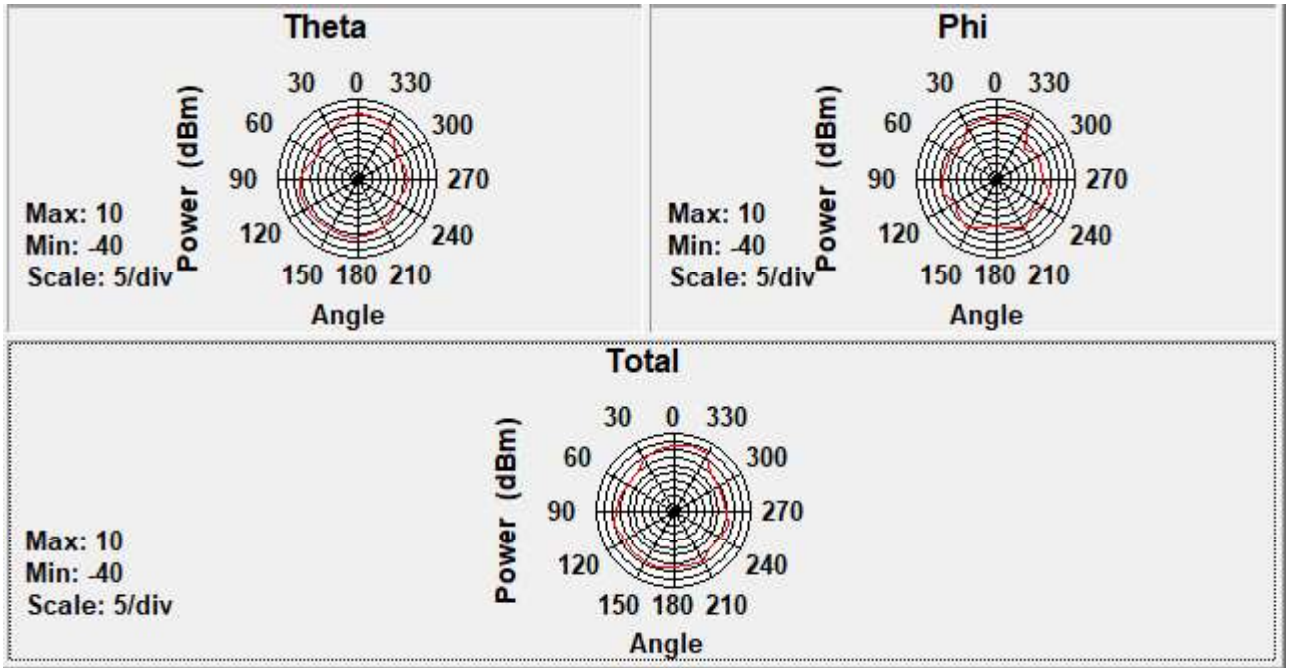
Center Frequency	**2620MHz**
Horizontal (dBi) peak	-6.66
Vertical (dBi) peak	-2.6

3400MHz



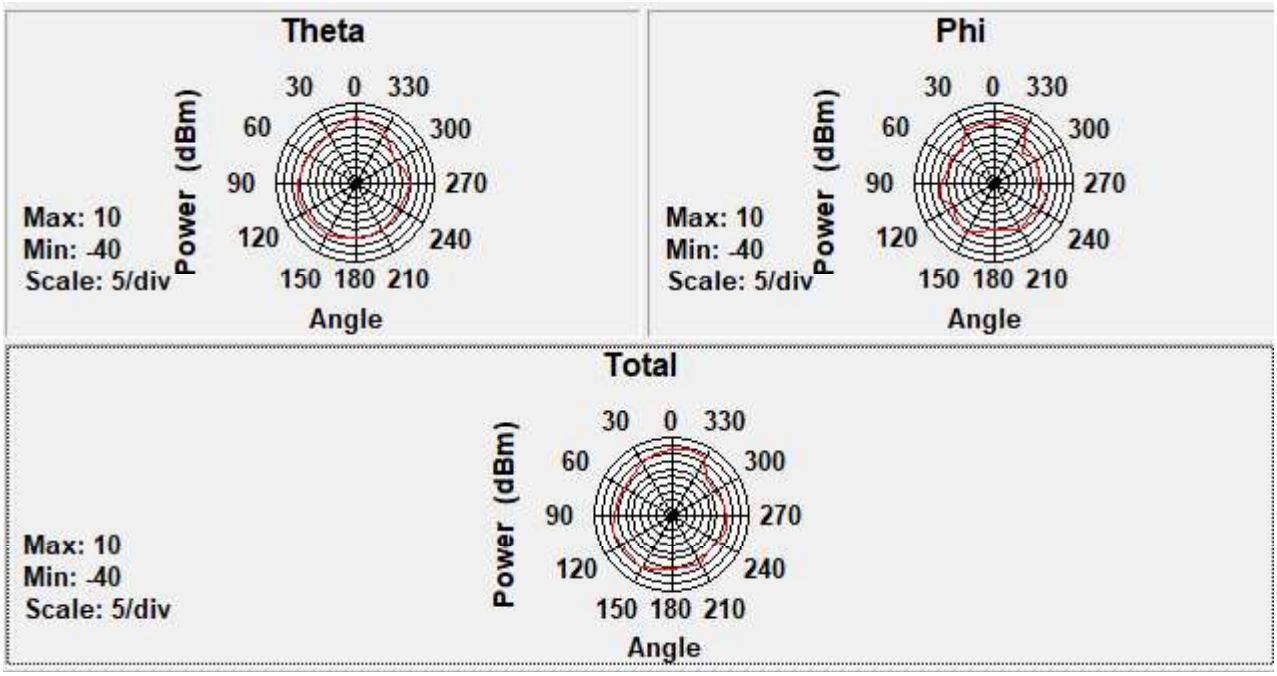
Center Frequency	**3400MHz**
Horizontal (dBi) peak	-0.18
Vertical (dBi) peak	1.58

3700MHz



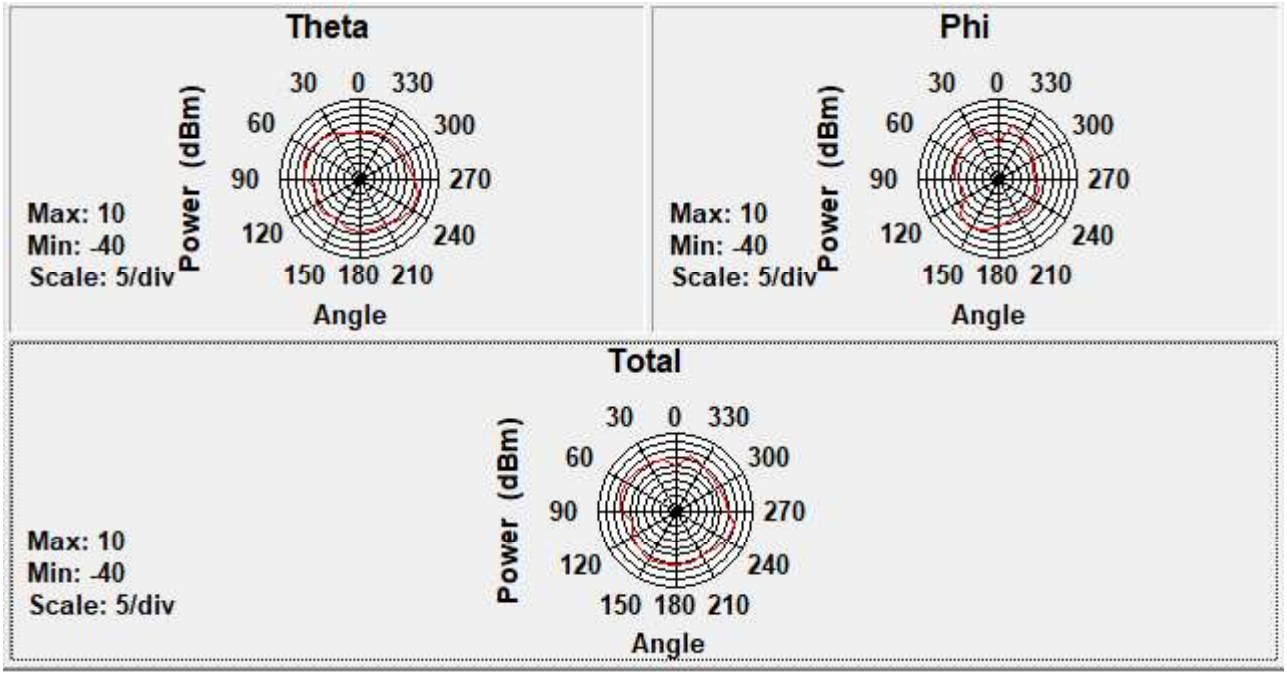
Center Frequency	**3700MHz**
Horizontal (dBi) peak	0.15
Vertical (dBi) peak	0.93

3750MHz



Center Frequency	**3750MHz**
Horizontal (dBi) peak	-0.12
Vertical (dBi) peak	1.39

5000MHz



Center Frequency	**5000MHz**
Horizontal (dBi) peak	-2.24
Vertical (dBi) peak	-5.71