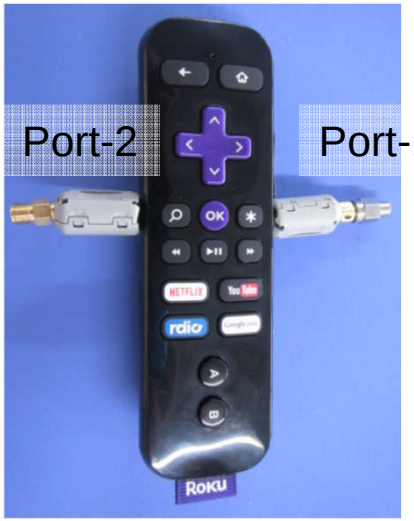
TDK Antenna Measurement report

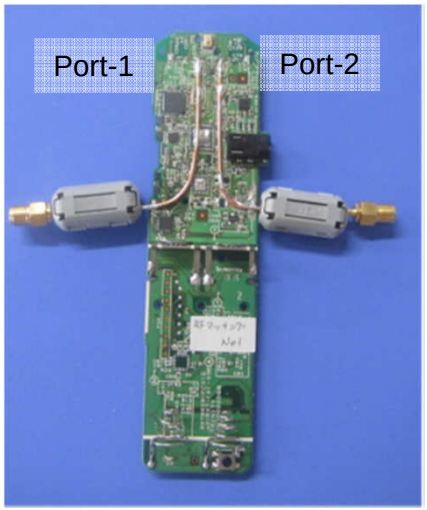
- ANT016008LCD2442MA1

Antenna product section
Systems Acoustics Waves BG
TDK-EPC Corporation
Apr,2015

Setup & Summery

Cable setup



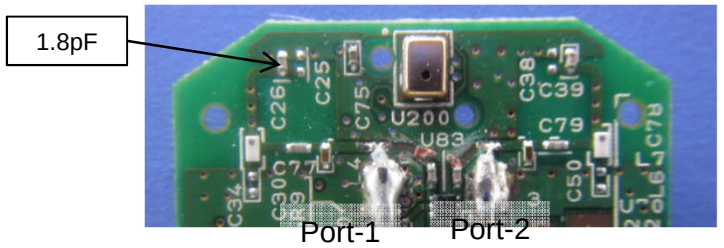


Summery

	Tune-1_P1			Tune-1_P2		
Frequency[GHz]	2.4	2.442	2.485	2.4	2.442	2.485
VSWR	1.5	1.2	2.4	1.3	1.4	2.3
Total Efficiency[dB]	−5.0	−4.3	−5.0	−5.1	−4.7	−5.3
Max Gain [dBi]	0.6	0.4	−0.4	0.4	0.0	−0.5

	Tune-1_P1			Tune-1_P2		
Frequency[GHz]	5.15	5.5	5.85	5.15	5.5	5.85
VSWR	1.21	1.62	2.08	1.24	1.97	2.49
Total Efficiency[dB]	−2.1	−2.0	−2.1	−2.3	−2.4	−2.5
Max Gain [dBi]	3.0	4.1	2.5	2.3	2.5	2.2

Tune-1



Port-1

No	Value	P/N
C34	Blank	-
C77	Initial	
C25	Blank	-
C26	1.8pF	GJM1554C1H1R8CB01
L4	Initial	-

Port-2

No	Value	P/N
C50	Blank	-
C79	Initial	
C38	Blank	-
C39	Initial	-
L5	Initial	-

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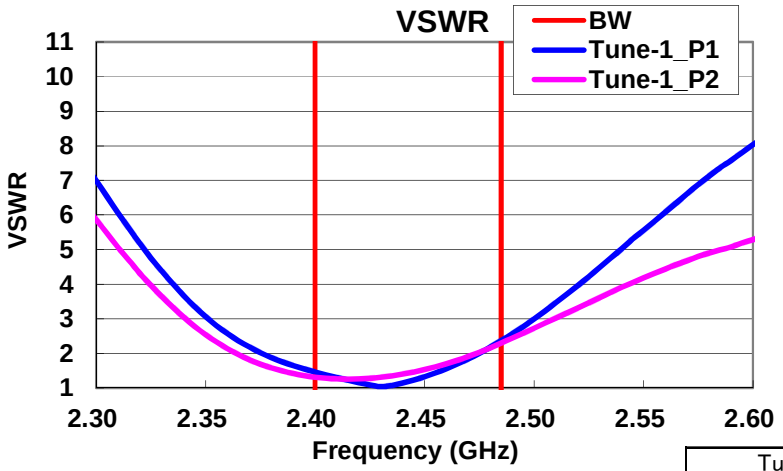
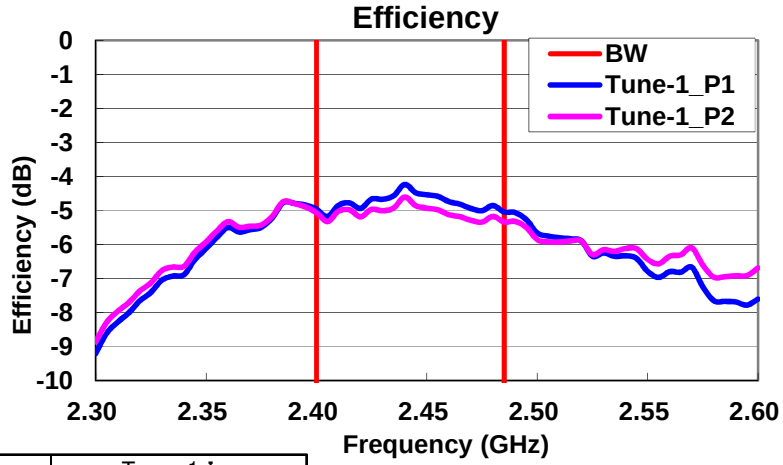
Measurement results VSWR & Efficiency

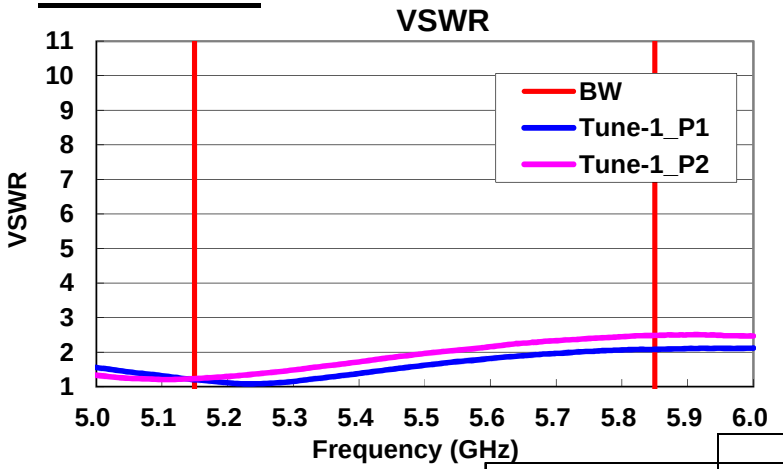
2.4GHz band

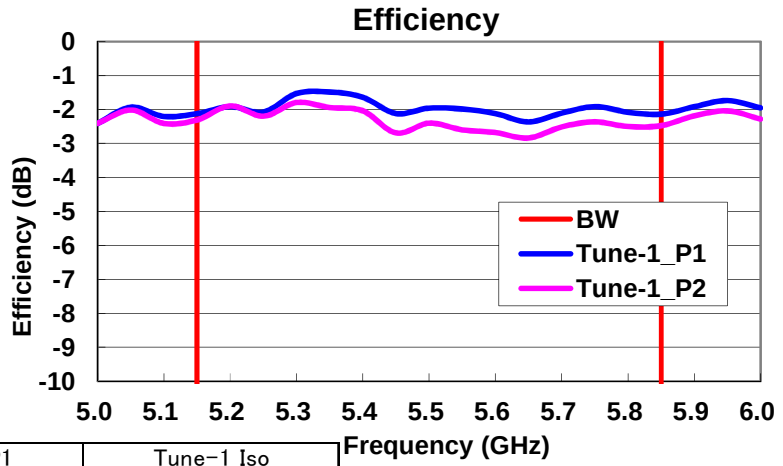




	Tune-1_P1			Tune-1_Iso		
Frequency[GHz]	2.4	2.442	2.485	2.4	2.442	2.485
VSWR	1.5	1.2	2.4	1.3	1.4	2.3
Total Efficiency[dB]	-5.0	-4.3	-5.0	-5.1	-4.7	-5.3

5GHz band





	Tune-1_P1			Tune-1_Iso		
Frequency[GHz]	5.15	5.5	5.85	5.15	5.5	5.85
VSWR	1.21	1.62	2.08	1.24	1.97	2.49
Total Efficiency[dB]	-2.1	-2.0	-2.1	-2.3	-2.4	-2.5

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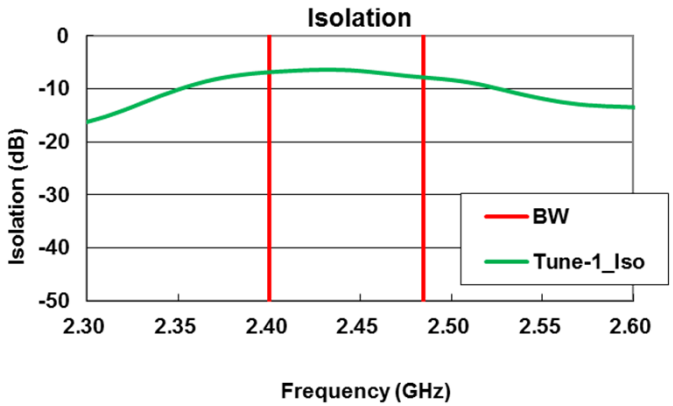
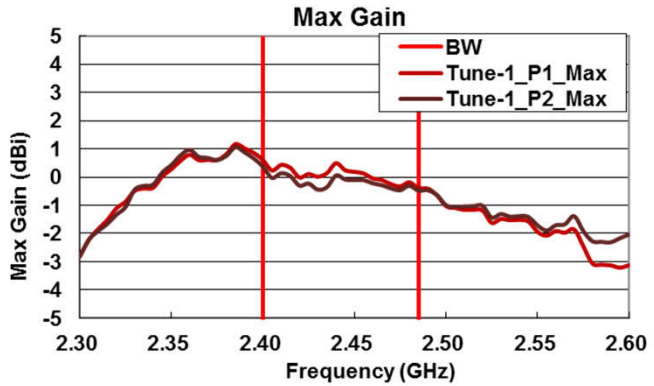
Measurement results Isolation & Max Gain

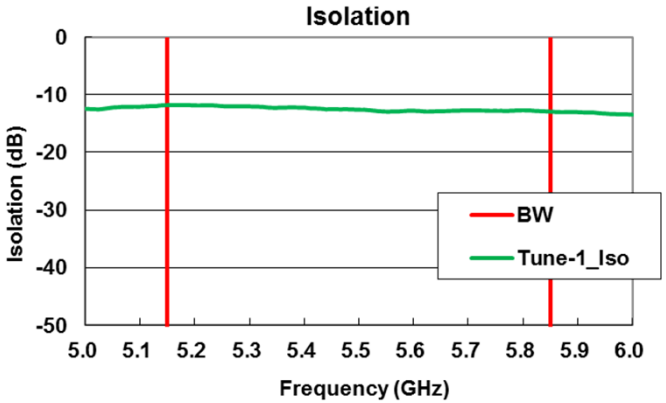
2.4GHz band

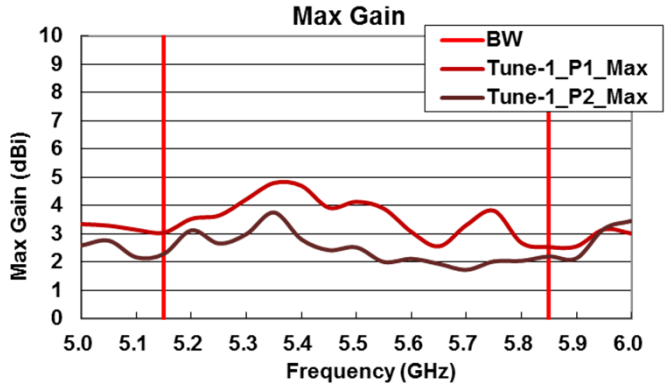




	Tune-1_P1			Tune-1_P2		
Frequency[GHz]	2.4	2.442	2.485	2.4	2.442	2.485
Max Gain [dBi]	0.6	0.4	-0.4	0.4	0.0	-0.5

5GHz band





	Tune-1_P1			Tune-1_P2		
Frequency[GHz]	5.15	5.5	5.85	5.15	5.5	5.85
Max Gain [dBi]	3.0	4.1	2.5	2.3	2.5	2.2

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Radiation patter
Port-1

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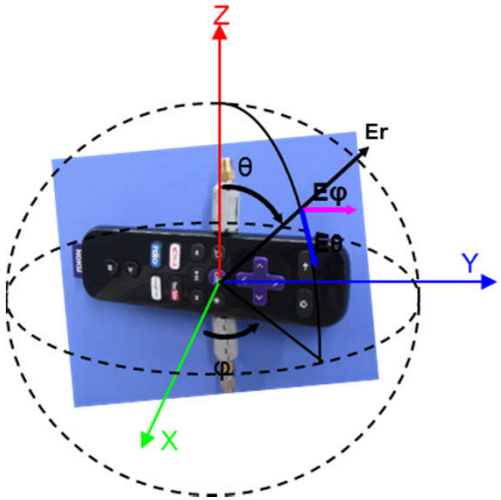
Radiation pattern for 2.4GHz band

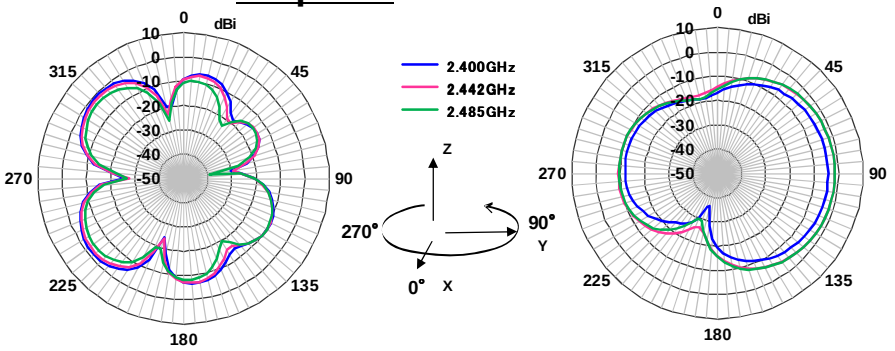
V & H Polarization

Tune-1

Port-1



XY plane



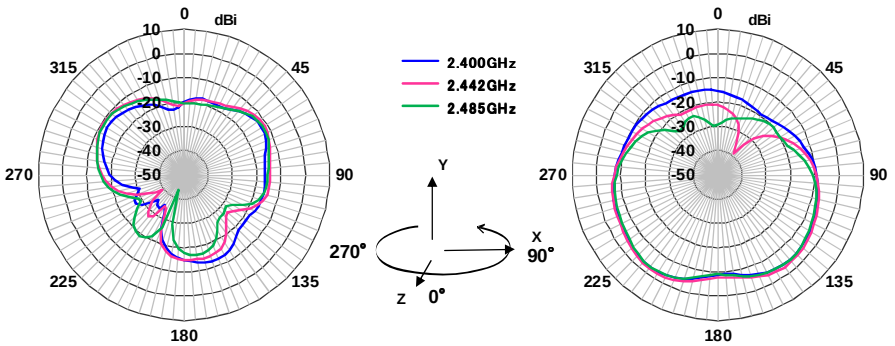
Horizontal Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-6.8	-7.6	-9.3
Maximum[dBi]	-0.6	-1.4	-3.2
Minimum[dBi]	-30.4	-29.4	-39.0

Vertical Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-9.2	-6.4	-6.4
Maximum[dBi]	-4.3	-1.5	-1.5
Minimum[dBi]	-36.0	-26.9	-29.9

ZX plane



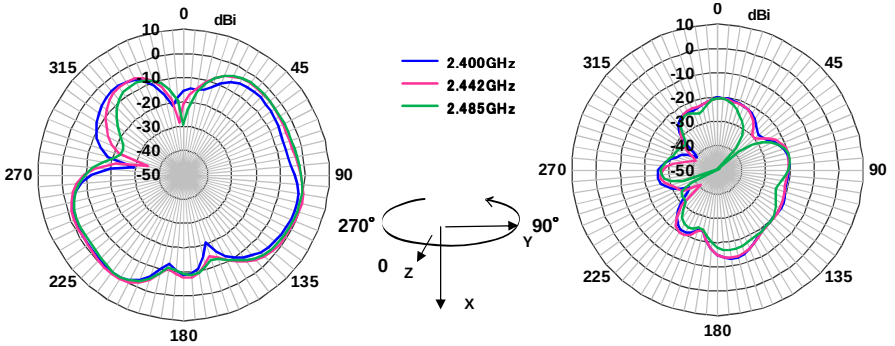
Horizontal Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-16.4	-15.3	-16.1
Maximum[dBi]	-12.4	-10.6	-10.9
Minimum[dBi]	-35.3	-39.1	-43.4

Vertical Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-7.67	-7.23	-8.35
Maximum[dBi]	-2.93	-2.03	-3.03
Minimum[dBi]	-19.07	-38.85	-29.98

ZY plane



Horizontal Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-5.2	-4.0	-4.6
Maximum[dBi]	-0.3	0.4	-0.5
Minimum[dBi]	-29.7	-34.9	-29.4

Vertical Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-20.7	-20.8	-22.6
Maximum[dBi]	-13.0	-13.2	-16.3
Minimum[dBi]	-40.3	-40.7	-50.8

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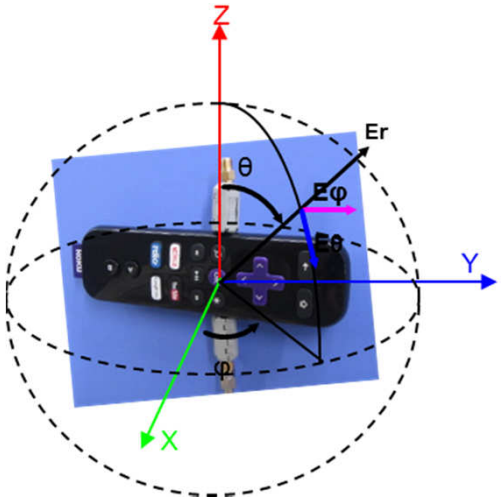
Radiation pattern for 5GHz band

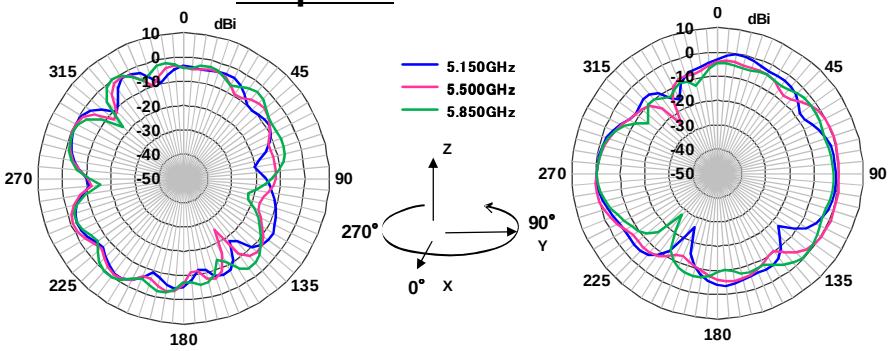
V & H Polarization

Tune-1

Port-1



XY plane



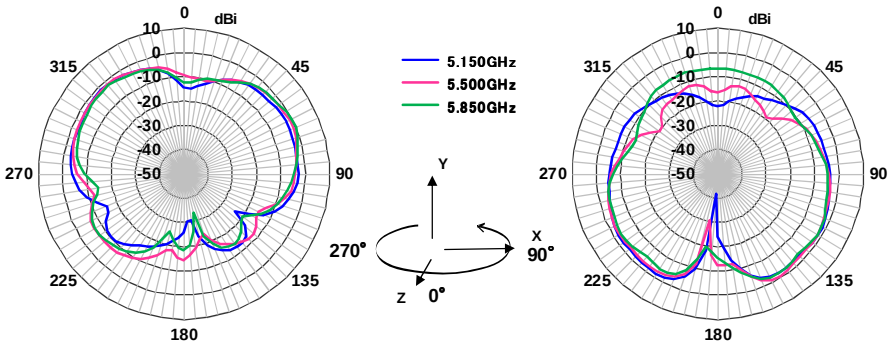
Horizontal Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-5.5	-5.2	-4.4
Maximum[dBi]	-0.3	-0.2	0.7
Minimum[dBi]	-20.2	-25.2	-22.6

Vertical Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-4.0	-3.3	-4.5
Maximum[dBi]	-0.2	0.6	-0.4
Minimum[dBi]	-26.0	-24.8	-27.5

ZX plane



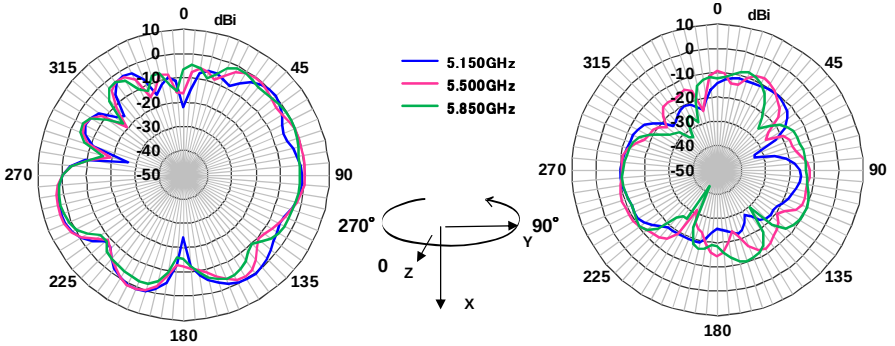
Horizontal Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-6.0	-5.5	-6.0
Maximum[dBi]	-1.3	-1.1	0.0
Minimum[dBi]	-30.5	-23.9	-33.8

Vertical Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-5.29	-5.73	-5.70
Maximum[dBi]	-1.35	-0.41	-1.68
Minimum[dBi]	-41.60	-30.45	-19.63

ZY plane



Horizontal Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-2.6	-2.4	-3.3
Maximum[dBi]	2.9	3.6	2.2
Minimum[dBi]	-26.8	-19.4	-17.5

Vertical Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-15.0	-13.1	-13.3
Maximum[dBi]	-9.8	-7.6	-7.9
Minimum[dBi]	-33.8	-31.4	-42.4

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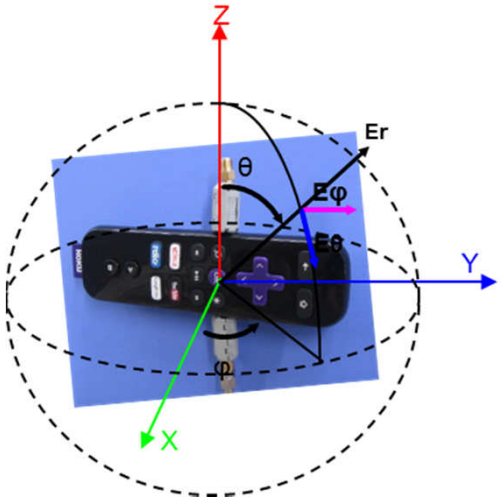
Radiation pattern for 2.4GHz band

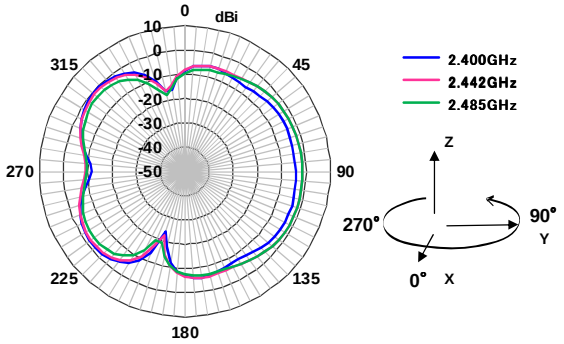
Total power

Tune-1

Port-1



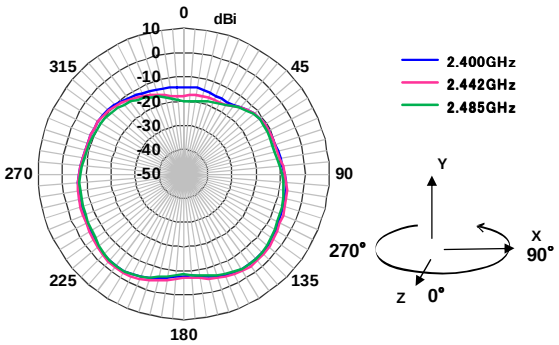
XY plane



Total power

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-4.8	-3.9	-4.6
Maximum[dBi]	-0.4	-1.0	-1.3
Minimum[dBi]	-24.2	-22.3	-19.3

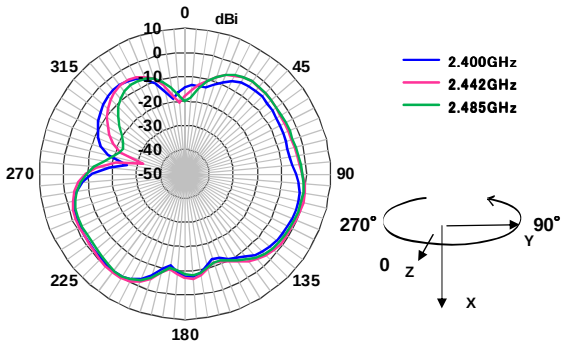
ZX plane



Total Power

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-7.1	-6.6	-7.7
Maximum[dBi]	-2.9	-2.0	-2.9
Minimum[dBi]	-15.3	-18.0	-19.8

ZY plane



Total power

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-5.1	-3.9	-4.5
Maximum[dBi]	-0.2	0.4	-0.5
Minimum[dBi]	-26.1	-32.2	-22.4

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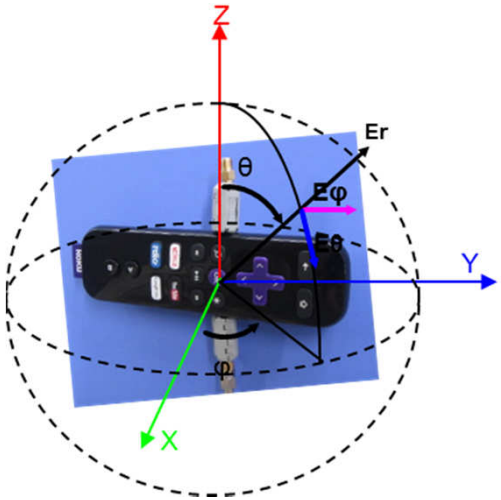
Radiation pattern for 5GHz band

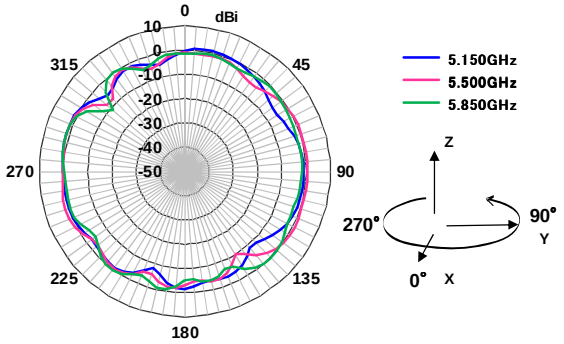
Total power

Tune-1

Port-1



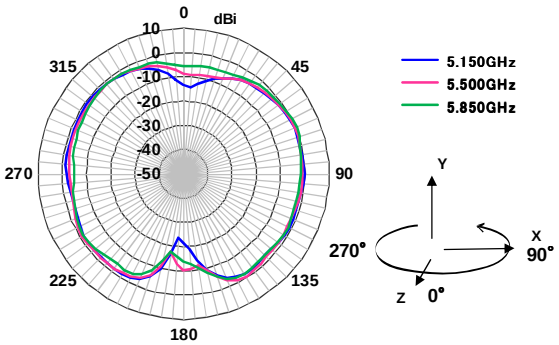
XY plane



Total power

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-1.7	-1.1	-1.4
Maximum[dBi]	1.2	1.7	1.3
Minimum[dBi]	-8.6	-9.8	-11.1

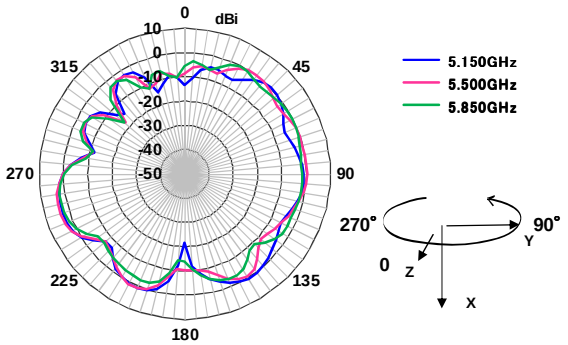
ZX plane



Total Power

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-2.6	-2.6	-2.8
Maximum[dBi]	-0.2	-0.3	0.6
Minimum[dBi]	-23.4	-17.7	-17.7

ZY plane



Total power

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-2.3	-2.1	-2.9
Maximum[dBi]	3.0	3.8	2.4
Minimum[dBi]	-21.8	-17.7	-17.0

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Radiation patter
Port-2

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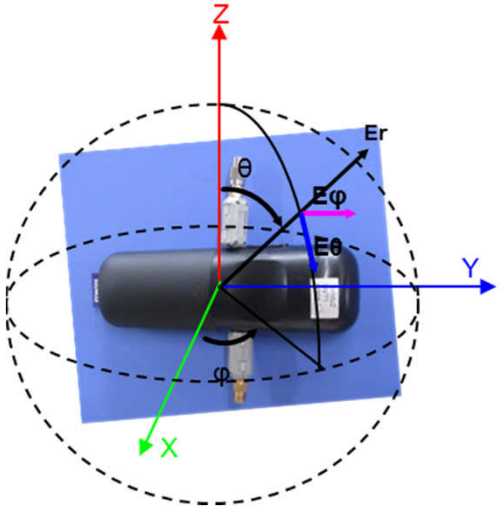
Radiation pattern for 2.4GHz band

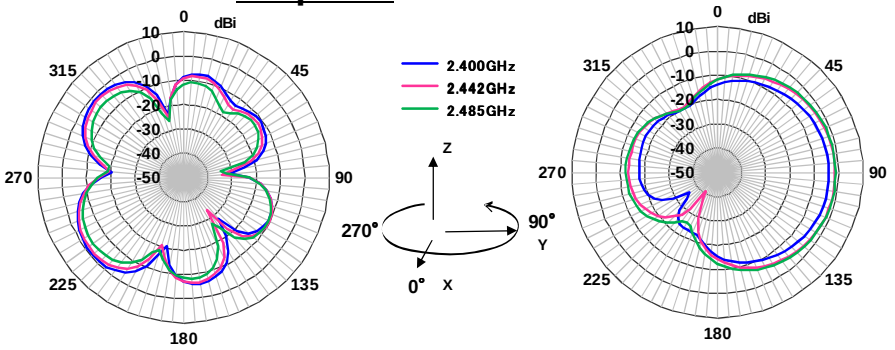
V & H Polarization

Tune-1

Port-2



XY plane



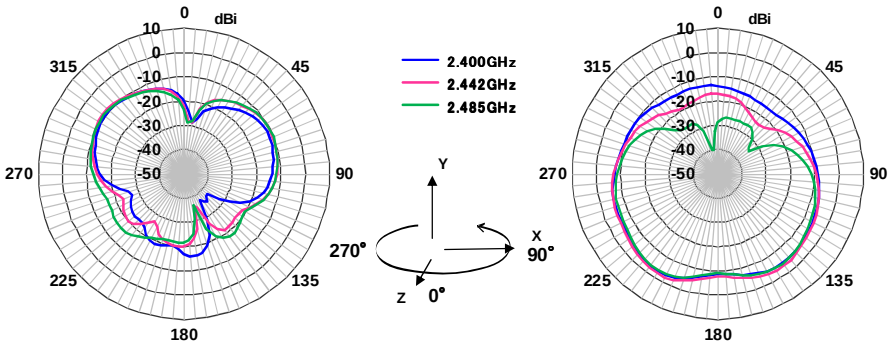
Horizontal Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-6.7	-7.7	-9.9
Maximum[dBi]	-0.6	-1.7	-3.9
Minimum[dBi]	-31.2	-34.0	-34.3

Vertical Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-9.3	-6.6	-6.2
Maximum[dBi]	-4.0	-1.3	-1.1
Minimum[dBi]	-35.8	-41.0	-26.1

ZX plane



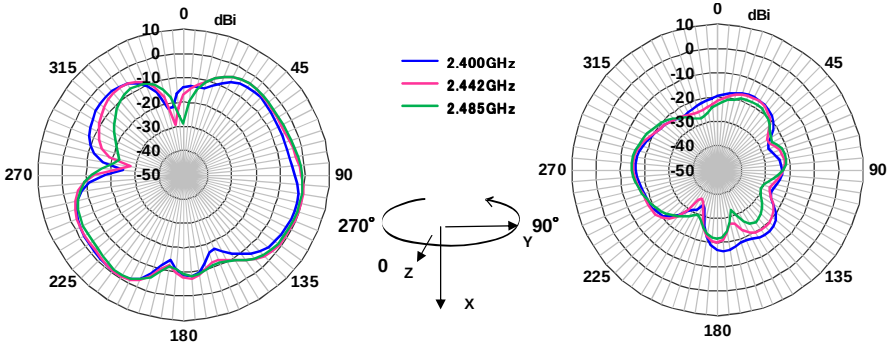
Horizontal Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-15.1	-14.0	-13.7
Maximum[dBi]	-9.5	-8.6	-9.0
Minimum[dBi]	-37.2	-35.7	-36.5

Vertical Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-7.63	-7.22	-8.63
Maximum[dBi]	-2.97	-1.94	-3.25
Minimum[dBi]	-16.18	-23.58	-40.19

ZY plane



Horizontal Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-5.5	-4.5	-5.1
Maximum[dBi]	-0.9	0.0	-0.5
Minimum[dBi]	-24.9	-28.9	-28.8

Vertical Polarization

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-19.6	-20.2	-20.8
Maximum[dBi]	-16.0	-15.0	-14.9
Minimum[dBi]	-34.3	-36.4	-32.6

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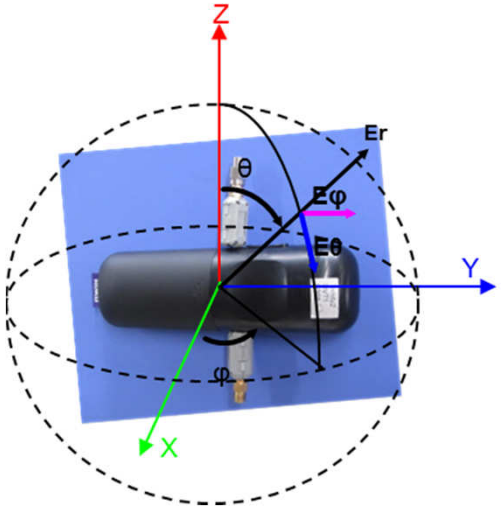
Radiation pattern for 5GHz band

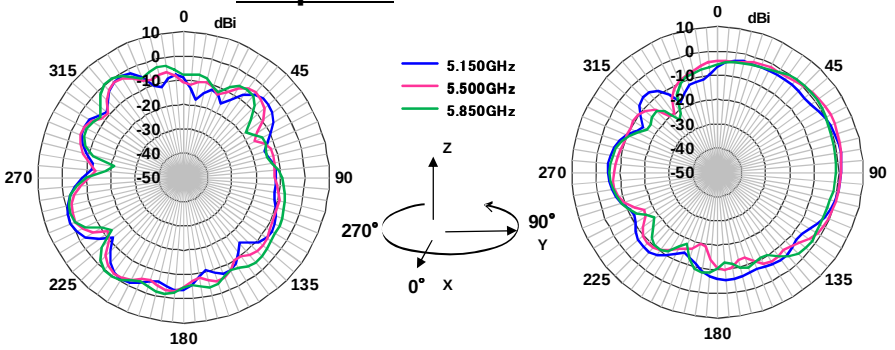
V & H Polarization

Tune-1

Port-2



XY plane



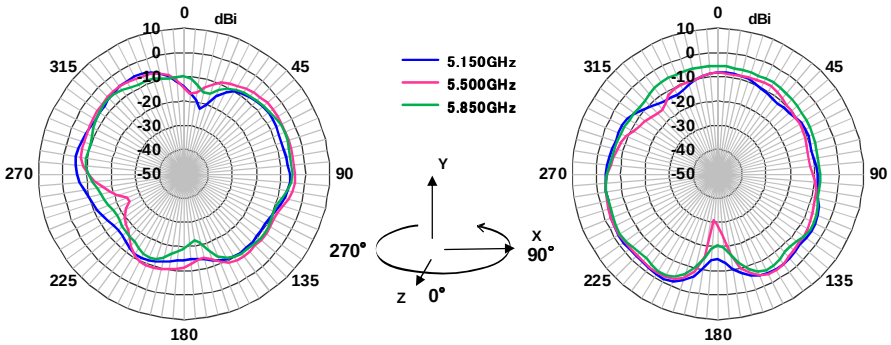
Horizontal Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-5.7	-6.1	-4.7
Maximum[dBi]	0.3	-1.0	0.4
Minimum[dBi]	-17.7	-17.2	-21.0

Vertical Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-4.2	-3.5	-4.5
Maximum[dBi]	1.4	2.4	1.0
Minimum[dBi]	-17.3	-20.1	-23.2

ZX plane



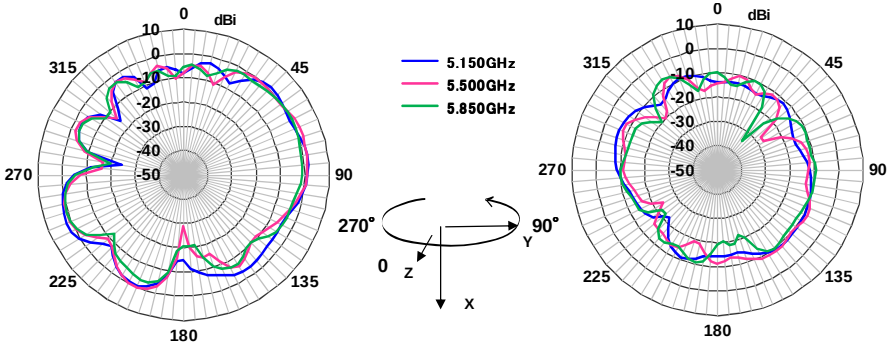
Horizontal Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-8.7	-7.8	-9.2
Maximum[dBi]	-4.8	-4.2	-4.7
Minimum[dBi]	-22.5	-24.9	-22.5

Vertical Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-5.91	-6.62	-5.99
Maximum[dBi]	-1.33	-2.13	-2.73
Minimum[dBi]	-15.13	-30.71	-20.65

ZY plane



Horizontal Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-2.5	-2.9	-3.9
Maximum[dBi]	2.2	2.0	0.5
Minimum[dBi]	-24.2	-28.8	-20.9

Vertical Polarization

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-11.2	-12.0	-11.9
Maximum[dBi]	-6.4	-6.9	-6.4
Minimum[dBi]	-22.4	-27.5	-34.6

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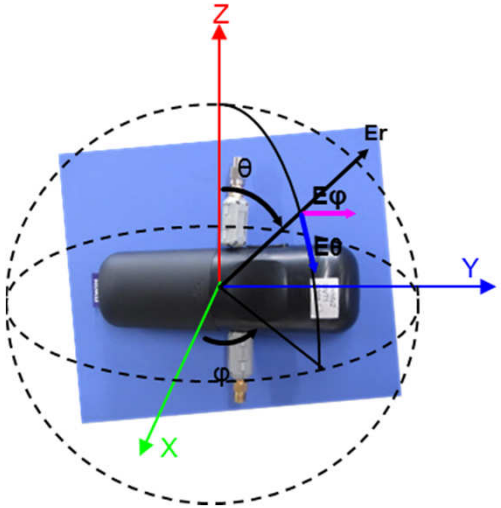
Radiation pattern for 2.4GHz band

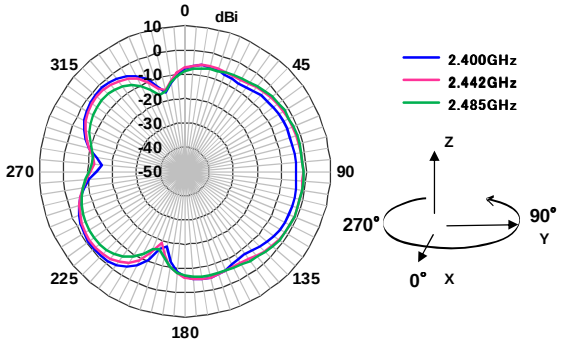
Total power

Tune-1

Port-2



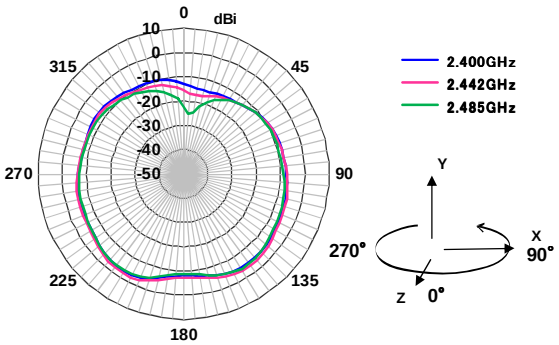
XY plane



Total power

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-4.8	-4.1	-4.7
Maximum[dBi]	-0.6	-1.1	-1.0
Minimum[dBi]	-18.1	-19.1	-16.6

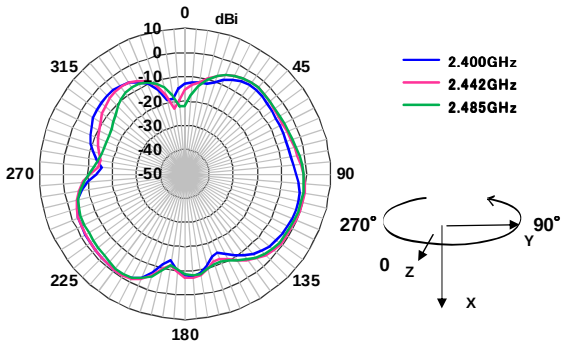
ZX plane



Total Power

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-6.9	-6.4	-7.5
Maximum[dBi]	-2.9	-1.9	-3.1
Minimum[dBi]	-14.5	-17.2	-24.9

ZY plane



Total power

Frequency(GHz)	2.4	2.442	2.485
Average[dBi]	-5.4	-4.4	-5.0
Maximum[dBi]	-0.9	0.1	-0.5
Minimum[dBi]	-18.8	-22.6	-22.0

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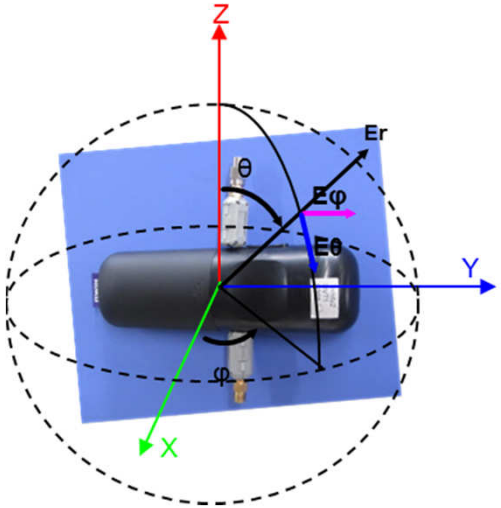
Radiation pattern for 5GHz band

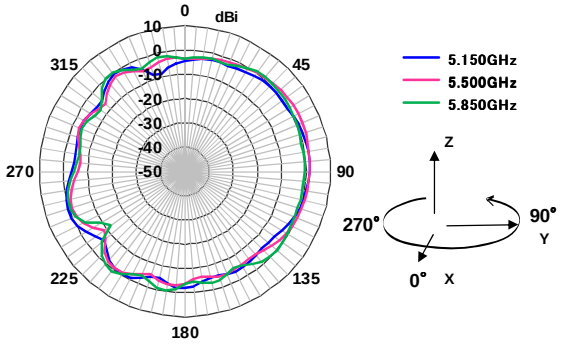
Total power

Tune-1

Port-2



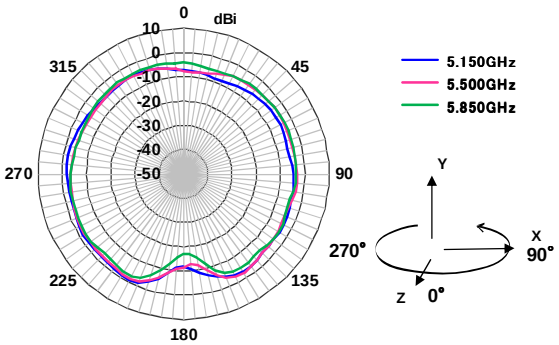
XY plane



Total power

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-1.9	-1.6	-1.6
Maximum[dBi]	1.6	2.4	1.3
Minimum[dBi]	-8.7	-8.9	-12.1

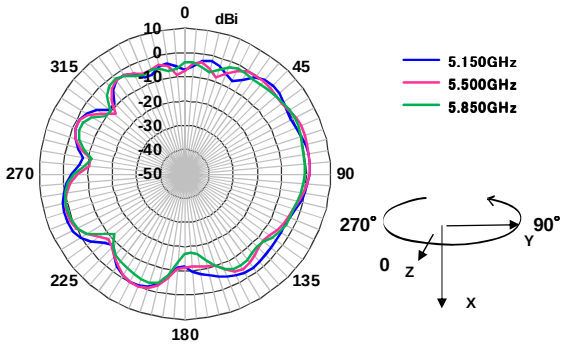
ZX plane



Total Power

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-4.1	-4.2	-4.3
Maximum[dBi]	-0.9	-1.5	-2.6
Minimum[dBi]	-11.7	-12.5	-17.1

ZY plane



Total power

Frequency(GHz)	5.15	5.5	5.85
Average[dBi]	-1.9	-2.4	-3.2
Maximum[dBi]	2.3	2.1	0.8
Minimum[dBi]	-11.7	-12.2	-17.3

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