

WWAN Antenna Information

ThinkPad X13 Gen 3 Series

[Speed antenna]

Platform	
Platform owner	Lenovo(Japan) Limited
Platform name	ThinkPad X13 Gen 3
Regulatory Model name (Compliance ID)	TP00131C *, TP00131D* (* = 0 -9, A-Z, a-z, or blank)
ODM	LCFC
Target Launch Date	2022 / 03/ 31
Tx Antenna	
Brand name	Speed
Parts Number	Main Antenna: Main Antenna:
	Auxiliary Antenna: Auxiliary Antenna:
	MIMO1 Antenna MIMO1 Antenna
	MIMO2 Antenna MIMO2 Antenna
Transmitter Module	
WWAN Module	Model: Fibocom FM350-GL FCC ID: ZMOFM350GL IC: :21374-FM350GL
	Model: Fibocom L860-GL-16 FCC ID: ZMOL860GL16 IC: :21374-L860GL16
	Model: Quectel EM05-G FCC ID: XMR2021EM05G IC: 10224A-2021EM05G

Revision history

Revision number	Date	Description
1	2020/ xx/ xx	Initial release

Section 1. Antenna Assembly Specifications

Main Antenna

Green = EM05G & L860-GL-16 & FM350GL
Yellow = EM05G
Blue = FM350GL
Gray = No Support Plan

Antenna Part Number	Manufacturer	Antenna Type	Cable Assembly Part Number and Information	Frequency (MHz)		Cable Loss (dB)	Peak Gain (including cable loss)	
							Horizontal (dBi)	Vertical (dBi)
DC33001YN00	Speed	PIFA	1. Cable P/N: SY113L/50-015 or compatible 2. Diameter: 1.13mm 50 ohm coaxial cable 3. Cable length: 126 mm 4. Connector P/N: 20565-001R-13 or compatible	EU/ANZ/CN/Japan UMTS/HSPA (UMTS 2100, Band 1) (UE-UTRA, Band 1, n1)	1920.00	-0.4	1.1	-5.5
					1950.00	-0.4	1.3	-6.7
					1980.00	-0.4	1.3	-6.7
				FCC Part 24 GSM/GPRS/EDGE (GSM 1900) UMTS/HSPA/EVDO (UMTS1900, Band 2) (UE-UTRA, Band 2, n2)	1850.00	-0.4	-1.4	-6.6
					1880.00	-0.4	-1	-5.5
					1910.00	-0.4	-0.7	-5.5
				EU/ANZ/CN/Japan GSM/GPRS/EDGE (GSM 1800, Band 3) (UE-UTRA, Band 3, n3)	1710.00	-0.3	-0.7	-5.4
					1747.50	-0.3	-0.1	-6.0
					1785.00	-0.3	1.5	-6.8
				FCC Part 27 UMTS(AWS) / HSPA (UMTS, Band 4) (UE-UTRA, Band 4)	1710.00	-0.3	-0.7	-5.4
					1732.50	-0.3	-0.8	-6
					1755.00	-0.3	-0.7	-6.2
				FCC Part 22 GSM/GPRS/EDGE (GSM 850) ANZ (UMTS850, Band 5) (UE-UTRA, Band 5, n5)	824.00	-0.3	-1.4	-8.6
					836.50	-0.3	-0.6	-8.5
					849.00	-0.3	-0.7	-9
				Japan (UMTS, Band 6)	830.00	-0.3	-0.5	-8.5
					835.00	-0.3	0.1	-8.4
					840.00	-0.3	0.2	-8.5
				FCC Part 27 CA/EU/ANZ (UE-UTRA, Band 7, n7)	2500.00	-0.4	0.6	-8.4
					2535.00	-0.4	0.5	-8.4
					2570.00	-0.4	0.6	-7
				EU/ANZ/Japan UMTS/HSPA (UMTS 900, Band 8) (UE-UTRA, Band 8, n8)	880.00	-0.3	-2.4	-9.1
					897.50	-0.3	-2.3	-8.9
					915.00	-0.3	-1.5	-8.5
				Japan (WCDMA, Band 9)	1844.9	-0.4	1.7	-6.4
					1862.5	-0.4	1.0	-6.3
					1879.9	-0.4	0.7	-5.3
				FCC Part 27 (UE-UTRA, Band 12, n12)	699.00	-0.2	-3.4	-5.6
					707.50	-0.2	-3.0	-5.7
					716.00	-0.2	-3.3	-5.1
				FCC Part 27 (UE-UTRA, Band 13)	777.00	-0.2	-1.1	-7.0
					782.00	-0.2	-0.5	-6.5
					787.00	-0.3	-0.7	-7.0
				FCC Part 90 (UE-UTRA, Band 14)	788.00	-0.3	-0.7	-7.1
					793.00	-0.3	-0.4	-7.1
					798.00	-0.3	-0.3	-7.0
				FCC Part 27 (UE-UTRA, Band 17)	704.00	-0.2	-3.2	-5.8
					710.00	-0.2	-3.1	-5.4
					716.00	-0.2	-3.3	-5.1
				Japan (UE-UTRA, Band 18)	815.00	-0.3	-1.0	-7.4
					822.50	-0.3	-1.4	-8.5
					830.00	-0.3	-0.5	-8.5
				Japan (UMTS, Band 19) (UE-UTRA, Band 19)	830.00	-0.3	-0.5	-8.5
					837.50	-0.3	0.1	-8.6
					845.00	-0.3	0.2	-8.5

EU (UE-UTRA, Band 20, n20)	832.00	-0.3	-0.1	-8.4
	847.00	-0.3	-0.1	-8.9
	862.00	-0.3	-0.2	-9.0
FCC Part 24 (UE-UTRA, Band 25)	1850.00	-0.4	-1.4	-6.6
	1882.50	-0.4	-0.7	-5.3
	1915.00	-0.4	-0.4	-5
FCC Part 90, 22H (UE-UTRA, Band 26)	814.00	-0.3	-1.1	-7.5
	831.50	-0.3	-0.6	-8.4
	849.00	-0.3	-0.7	-9
EU/ANZ/Japan (UE-UTRA, Band 28, n28)	703.00	-0.2	-3.3	-5.7
	725.50	-0.2	-2.6	-5.0
	748.00	-0.2	-1.7	-5.4
FCC Part 27 CA (UE-UTRA, Band 29) * Down link only	717.00	-0.2	-3.2	-5.1
	722.50	-0.2	-2.7	-5.0
	728.00	-0.2	-2.8	-5.1
FCC Part 27 (UE-UTRA, Band 30)	2305.00	-0.4	0.7	-7.1
	2310.00	-0.4	0.8	-7.2
	2315.00	-0.4	0.7	-7.5
EU (LTE, Band 32) * Down link only	1452.00	-0.3	-0.3	-6.6
	1474.00	-0.3	0.5	-6.6
	1496.00	-0.3	0.9	-6.8
EU (LTE Band 34)	2010.00	-0.4	1.9	-6.4
	2017.50	-0.4	1.9	-6.5
	2025.00	-0.4	1.6	-7.1
EU/CN (UE-UTRA, Band 38, n38)	2570.00	-0.4	0.6	-7
	2595.00	-0.4	0.9	-5.6
	2620.00	-0.4	0.8	-5.9
CN (TD-SCDMA, Band 39)	1880.00	-0.4	-1	-5.5
	1900.00	-0.4	1.2	-4.7
	1920.00	-0.4	1.1	-5.5
EU/ANZ/CN (UE-UTRA, Band 40)	2300.00	-0.4	1.6	-6.9
	2350.00	-0.4	1.5	-8.9
	2400.00	-0.4	1.9	-7.9
FCC Part 27 US/CN/Japan (UE-UTRA, Band 41, n41)	2496.00	-0.4	0.8	-8.4
	2593.00	-0.4	0.8	-5.6
	2690.00	-0.4	0.7	-4.8
FCC Part 96 CA/EU/Japan (LTE Band 42)	3400.00	-0.5	-0.7	-7.1
	3500.00	-0.5	0.8	-8.9
	3600.00	-0.5	0.3	-6.2
LTE Band 43	3600.00	-0.5	0.3	-6.2
	3700.00	-0.5	0.5	-4.3
	3800.00	-0.5	0.2	-5.3
FCC Part 15, 90, 95 (LTE Band 46) TD Unlicensed, LAA RCV only	5150.00	-0.6	-3.0	-3.8
	5537.00	-0.6	0.3	-3.7
	5925.00	-0.7	-0.9	-3.1
FCC Part 96 (LTE Band 48)	3550.00	-0.5	0.2	-7.4
	3625.00	-0.5	0.5	-5.5
	3700.00	-0.5	0.5	-4.3
FCC Part 27 (LTE, Band 66, n66)	1710.00	-0.3	-0.7	-5.4
	1745.00	-0.3	-0.8	-6
	1780.00	-0.3	-0.7	-7.3
FCC Part 24, 27 (LTE Band 71, n71)	663.00	-0.2	-2.7	-5.4
	680.50	-0.2	-3.3	-7.0
	698.00	-0.2	-3.5	-5.6
FCC/EU/CN/JP (5G NR Band 77)	3300.00	-0.5	-0.3	-7.3
	3750.00	-0.5	0.9	-4.8
	4200.00	-0.6	0.2	-5.2
EU/CN/JP	3300.00	-0.5	-0.3	-7.3

				(5G NR Band 78)	3550.00	-0.5	0.2	-7.4
					3800.00	-0.5	0.2	-5.3
				CN/JP (5G NR Band 79)	4400.00	-0.6	-3.6	-6.1
					4700.00	-0.6	-1.2	-6.3
					5000.00	-0.6	-1.6	-3.0
				Japan (UE-UTRA, Band 21) Japan J-CDMA	1447.90	-0.3	-0.4	-6.3
					1455.40	-0.3	-0.1	-6.8
					1462.90	-0.3	-0.1	-7.2
					815.00	-0.3	-1.0	-7.4
					824.70	-0.3	-1.4	-8.7
					836.52	-0.3	0.1	-8.5
					848.31	-0.3	-0.2	-9.0
					870.00	-0.3	-0.9	-9.4
					880.20	-0.3	-2.4	-9.1
					897.60	-0.3	-2.2	-8.9
					914.80	-0.3	-1.5	-8.5
					925.00	-0.3	-2.0	-9.3
					940.00	-0.3	-1.7	-9.2
				Japan J-CDMA	1922.40	-0.4	1.1	-5.9
					1950.00	-0.4	1.3	-6.7
					1977.60	-0.4	1.3	-6.5

MIMO Antenna

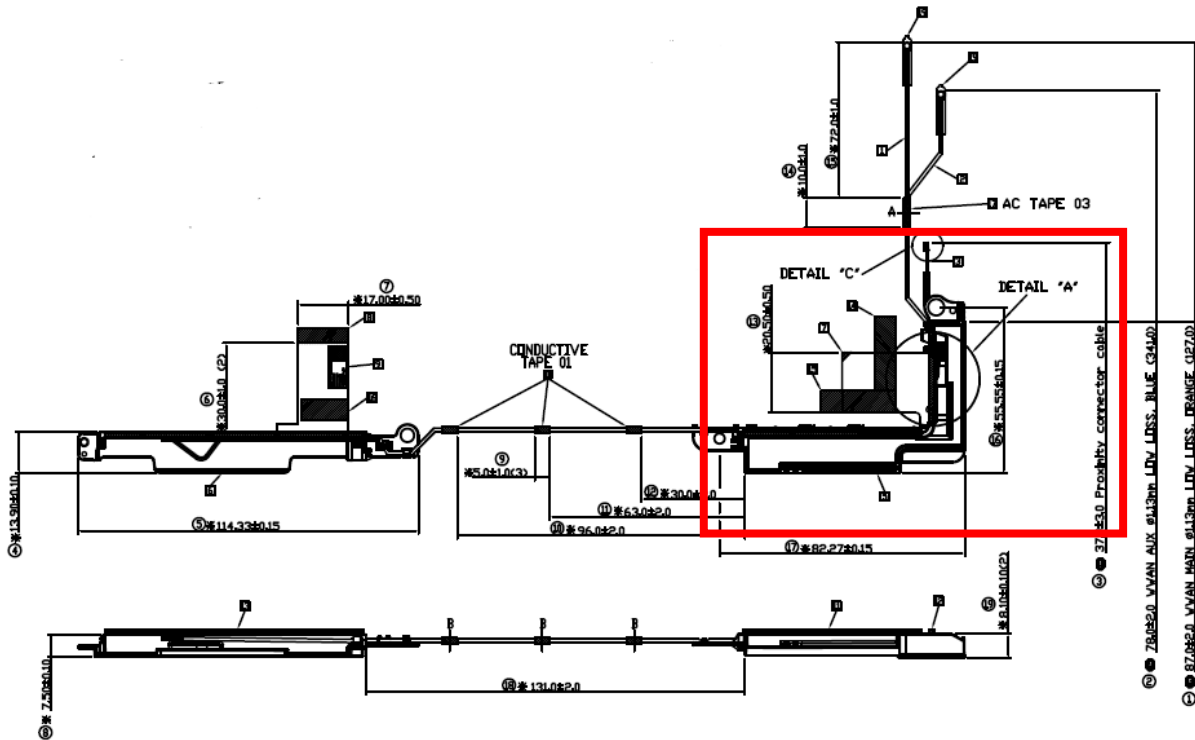
Antenna Part Number	Manufacturer	Antenna Type	Cable Assembly Part Number and Information	Frequency (MHz)		Cable Loss (dB)	Peak Gain (including cable loss)	
							Horizontal (dBi)	Vertical (dBi)
DC33001RF30	Speed	PIFA	1. Cable P/N: SY113L/50-015 or compatible 2. Diameter:1.13mm 50 ohm coaxial cable 3.Cable length: 458 mm 4. Connector P/N: 20565-001R-13 or compatible	EU/ANZ/CN/Japan UMTS/HSPA (UMTS 2100, Band 1) (UE-UTRA, Band 1, n1)	1920.00	-1.1	-2.1	-2.2
					1950.00	-1.1	-2.4	-2.2
					1980.00	-1.2	-2.6	-1.7
				FCC Part 24 GSM/GPRS/EDGE (GSM 1900) UMTS/HSPA/EVDO (UMTS1900, Band 2) (UE-UTRA, Band 2, n2)	1850.00	-1.1	-1.8	-0.9
					1880.00	-1.1	-0.2	-1.0
					1910.00	-1.1	-0.9	-1.1
				EU/ANZ/CN/Japan GSM/GPRS/EDGE (GSM 1800, Band 3) (UE-UTRA, Band 3, n3)	1710.00	-1.1	-1.0	-2.4
					1747.50	-1.1	-0.4	-1.2
					1785.00	-1.1	1.7	1.1
				FCC Part 27 UMTS(AWS) / HSPA (UMTS, Band 4) (UE-UTRA, Band 4)	1710.00	-1.1	-1.0	-2.4
					1732.50	-1.1	-0.8	-1.8
					1755.00	-1.1	0.7	-0.7
				FCC Part 22 GSM/GPRS/EDGE (GSM 850) ANZ (UMTS850, Band 5) (UE-UTRA, Band 5, n5)	824.00			
					836.50			
					849.00			
				Japan (UMTS, Band 6)	830.00			
					835.00			
					840.00			
				FCC Part 27 CA/EU/ANZ (UE-UTRA, Band 7, n7)	2500.00	-1.3	0.4	-3.8
					2535.00	-1.3	0.3	-3.7
					2570.00	-1.3	0.5	-2.7
				EU/ANZ/Japan UMTS/HSPA (UMTS 900, Band 8) (UE-UTRA, Band 8, n8)	880.00			
					897.50			
					915.00			
				Japan (WCDMA, Band 9)	1844.9			
					1862.5			
					1879.9			
				FCC Part 27 (UE-UTRA, Band 12, n12)	699.00			
					707.50			
					716.00			
				FCC Part 27 (UE-UTRA, Band 13)	777.00			
					782.00			
					787.00			
				FCC Part 90 (UE-UTRA, Band 14)	788.00			
					793.00			
					798.00			
				FCC Part 27 (UE-UTRA, Band 17)	704.00			
					710.00			
					716.00			
				Japan (UE-UTRA, Band 18)	815.00			
					822.50			
					830.00			
				Japan (UMTS, Band 19) (UE-UTRA, Band 19)	830.00			
					837.50			
					845.00			
				EU (UE-UTRA, Band 20,	832.00			
					847.00			

				n20)	862.00			
				FCC Part 24	1850.00	-1.1	0.7	-1.0
				(UE-UTRA, Band 25)	1882.50	-1.1	1.9	-0.6
					1915.00	-1.1	1.5	0.2
				FCC Part 90, 22H	814.00			
				(UE-UTRA, Band 26)	831.50			
					849.00			
				EU/ANZ/Japan (UE-UTRA, Band 28, n28)	703.00			
					725.50			
					748.00			
				FCC Part 27 CA (UE-UTRA, Band 29) * Down link only	717.00			
					722.50			
					728.00			
				FCC Part 27 (UE-UTRA, Band 30)	2305.00	-1.2	-0.7	-5.4
					2310.00	-1.3	-0.6	-5.0
					2315.00	-1.3	-1.0	-4.9
				EU (LTE, Band 32) * Down link only	1452.00			
					1474.00			
					1496.00			
				EU (LTE Band 34)	2010.00			
					2017.50			
					2025.00			
				EU/CN (UE-UTRA, Band 38, n38)	2570.00	-1.3	0.5	-2.7
					2595.00	-1.3	0.2	-2.6
					2620.00	-1.3	0.3	-3.0
				CN (TD-SCDMA, Band 39)	1880.00			
					1900.00			
					1920.00			
				EU/ANZ/CN (UE-UTRA, Band 40)	2300.00	-1.2	-0.5	-5.0
					2350.00	-1.3	0.4	-4.1
					2400.00	-1.3	0.0	-4.4
				FCC Part 27 US/CN/Japan (UE-UTRA, Band 41, n41)	2496.00	-1.3	0.1	-4.1
					2593.00	-1.3	0.3	-2.5
					2690.00	-1.4	0.3	-3.0
				FCC Part 96 CA/EU/Japan (LTE Band 42)	3400.00	-1.6	0.7	-1.0
					3500.00	-1.6	0.6	-1.7
					3600.00	-1.6	0.4	-2.0
				LTE Band 43	3600.00	-1.6	0.4	-2.0
					3700.00	-1.6	0.8	-2.6
					3800.00	-1.7	0.3	-1.2
				FCC Part 15, 90, 95 (LTE Band 46) TD Unlicensed, LAA RCV only	5150.00			
					5537.00			
					5925.00			
				FCC Part 96 (LTE Band 48)	3550.00	-1.6	0.6	-2.0
					3625.00	-1.6	0.8	-2.3
					3700.00	-1.6	0.8	-2.6
				FCC Part 27 (LTE, Band 66, n66)	1710.00	-1.1	-1.0	-2.4
					1745.00	-1.1	-0.4	-1.2
					1780.00	-1.1	1.6	0.7
				FCC Part 24, 27 (LTE Band 71, n71)	663.00			
					680.50			
					698.00			
				FCC/EU/CN/JP (5G NR Band 77)	3300.00	-1.5	0.6	-0.1
					3750.00	-1.7	0.5	-1.5
					4200.00	-1.8	0.7	-1.3
				EU/CN/JP (5G NR Band 78)	3300.00	-1.5	0.6	-0.1
					3550.00	-1.6	0.6	-2.0
					3800.00	-1.7	0.3	-1.2

				CN/JP (5G NR Band 79)	4400.00	-1.8	0.8	0.0
					4700.00	-1.9	0.5	0.2
					5000.00	-1.9	-0.5	0.4
				Japan (UE-UTRA, Band 21) Japan J-CDMA	1477.90			
					1455.40			
					1462.90			
					815.00			
					824.70			
					836.52			
					848.31			
					870.00			
					880.20			
					897.60			
					914.80			
					925.00			
					940.00			
				Japan J-CDMA	1922.40			
					1950.00			
					1977.60			

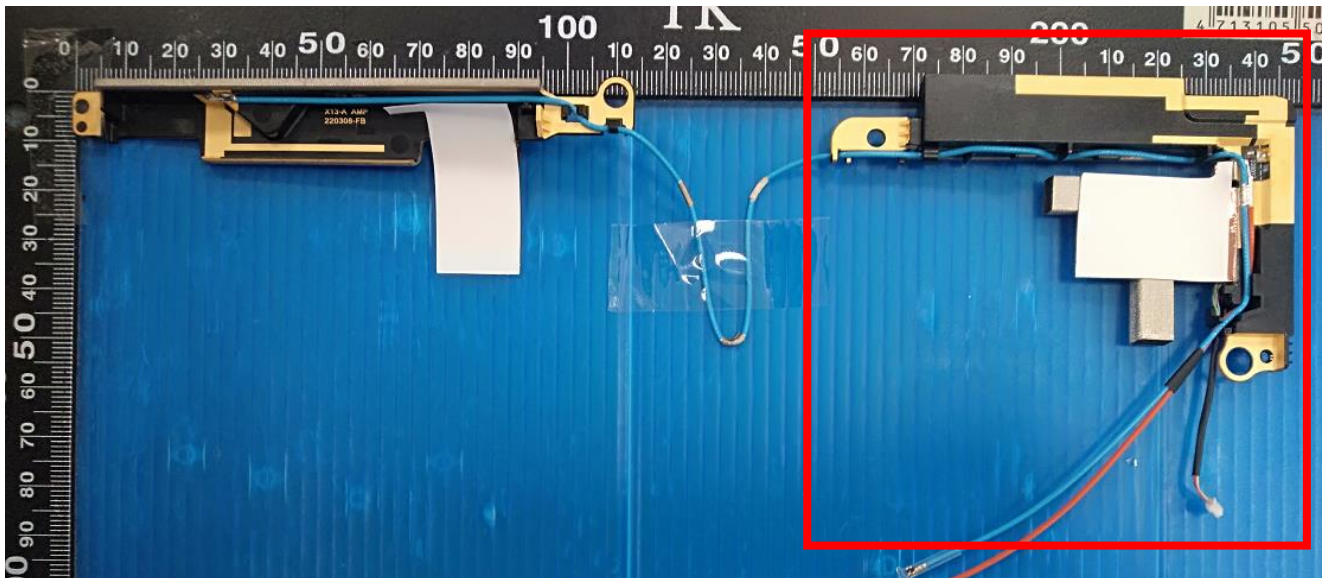
Section 2. Dimensioned Photos or Drawings of Antennas

Main Antenna Dimensioned Drawing:

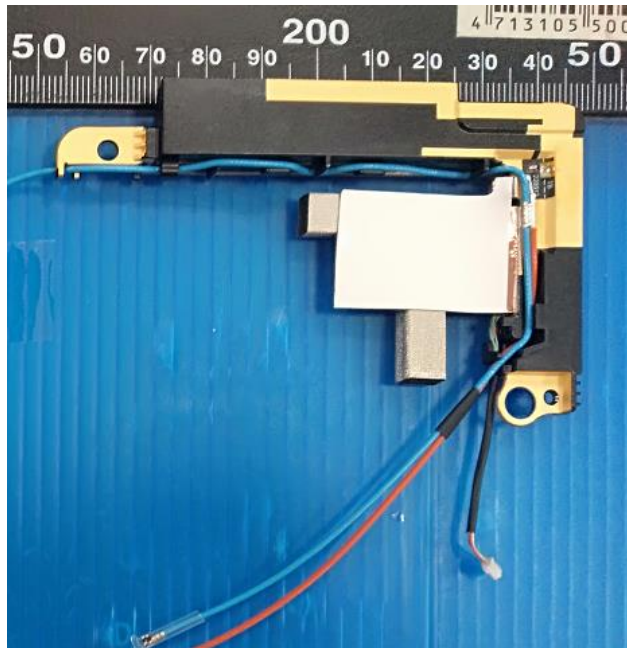


Main Antenna Photo:

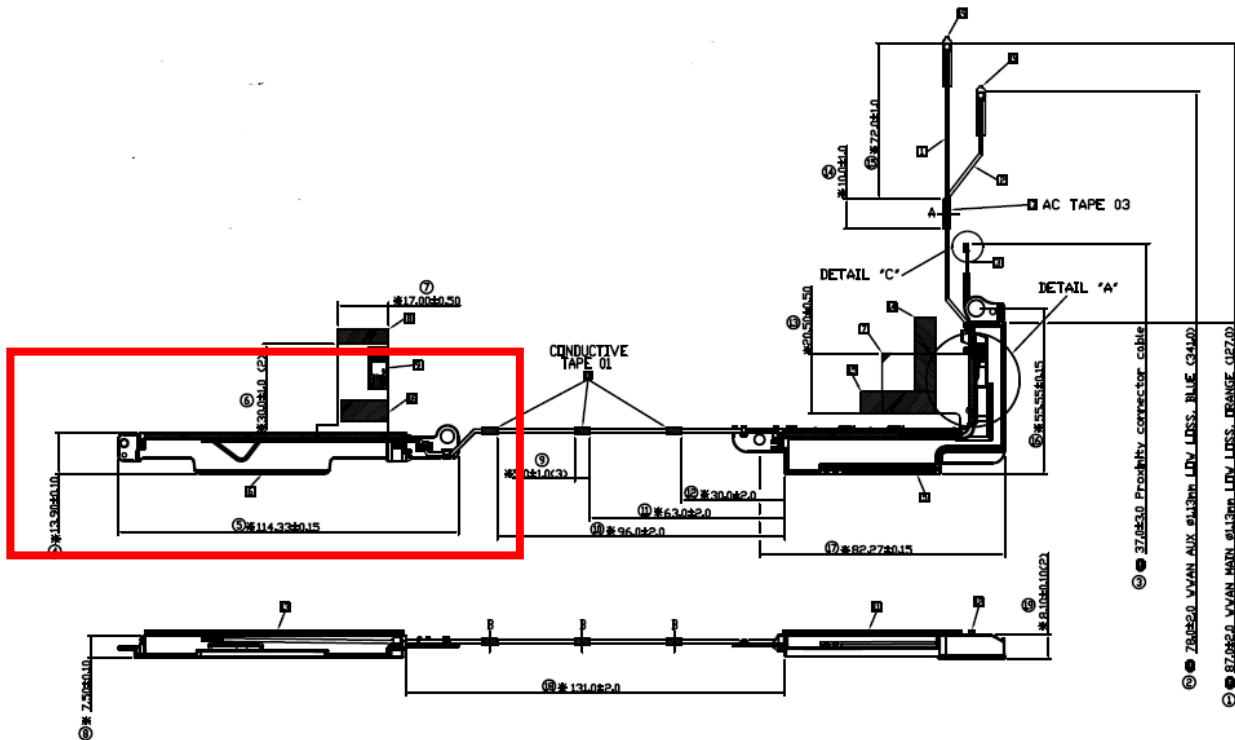
Overall view



Close-up view

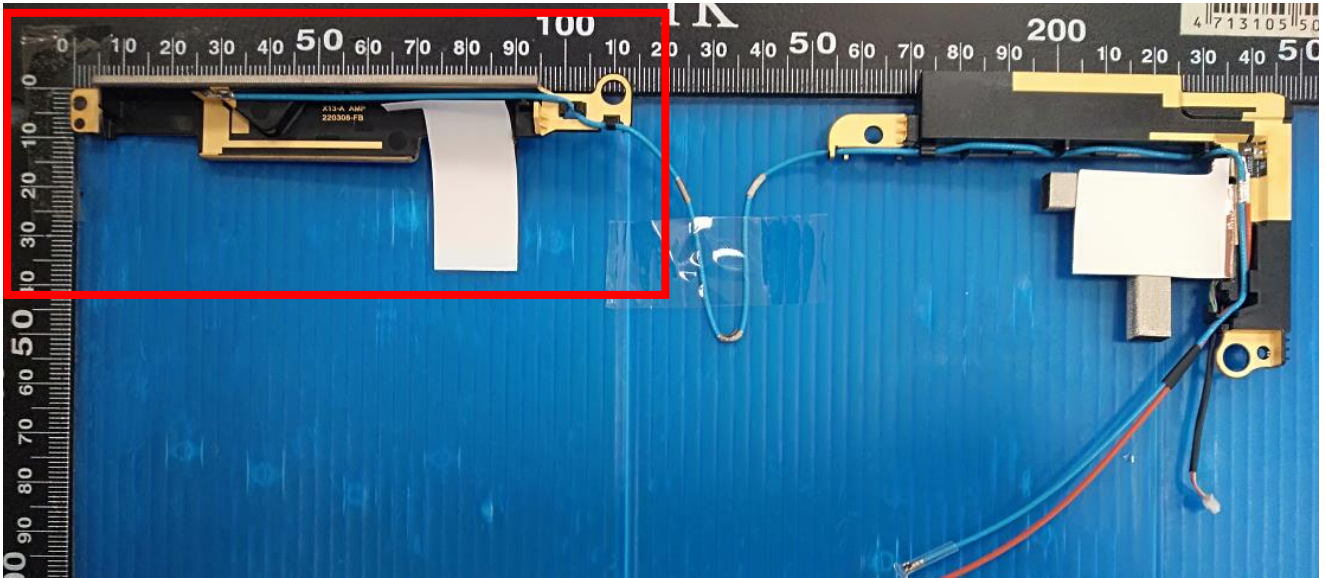


Aux Antenna Dimensioned Drawing:

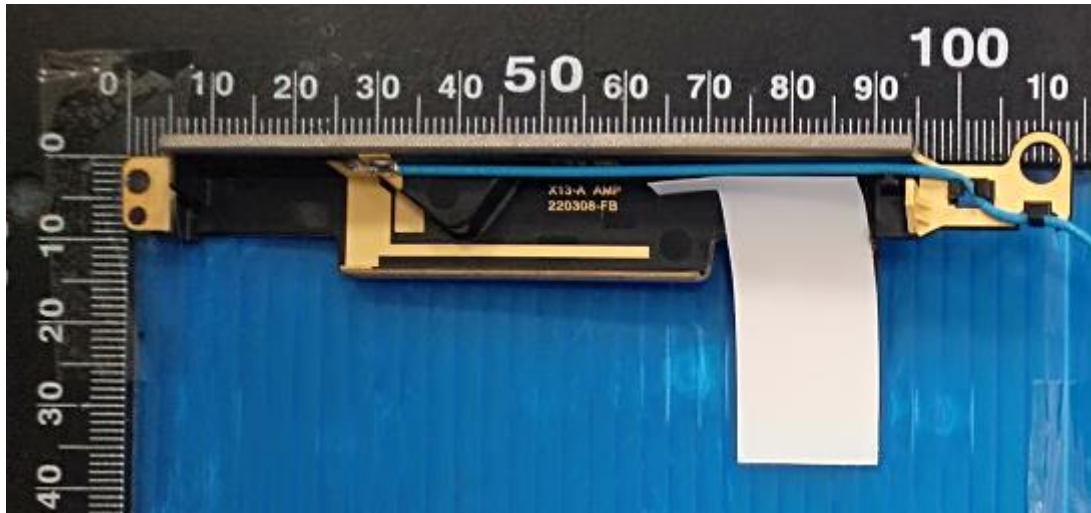


Aux Antenna Photo:

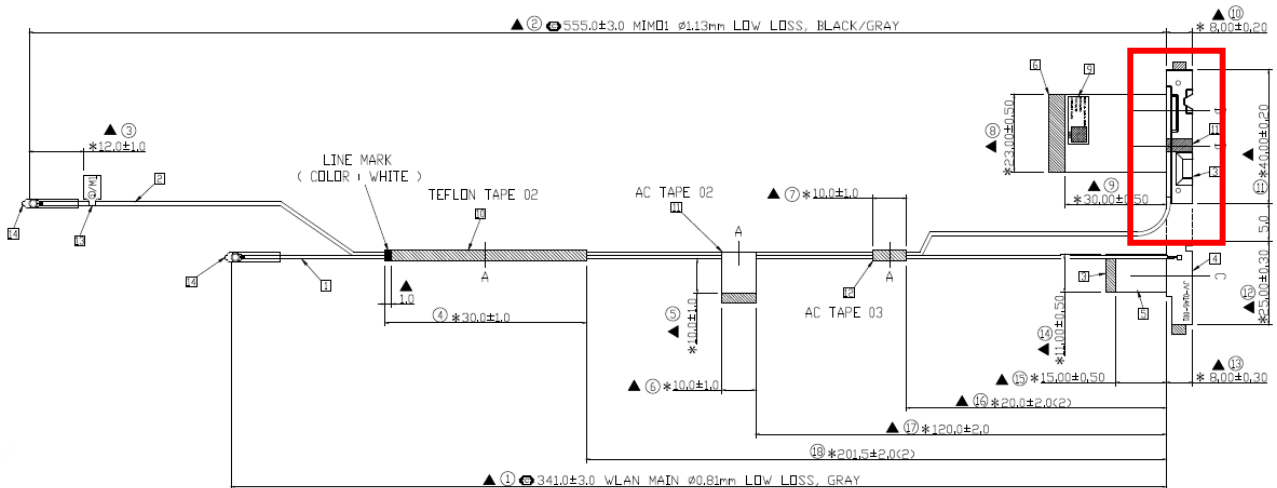
Overall view



Close-up view

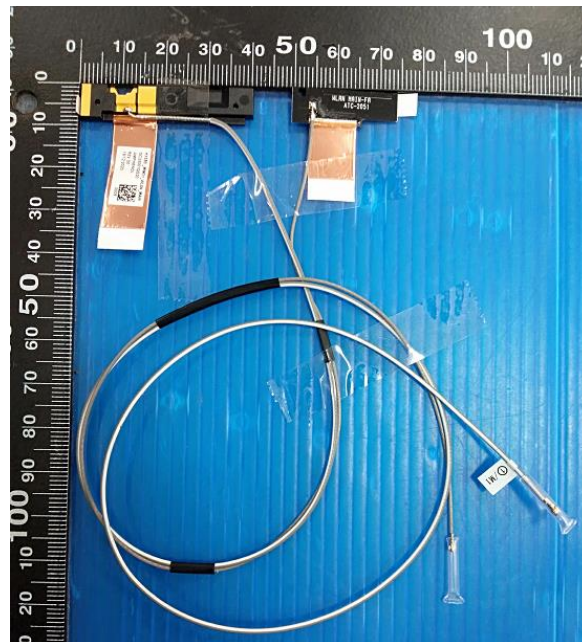


MIMO1 Antenna Dimensioned Drawing:

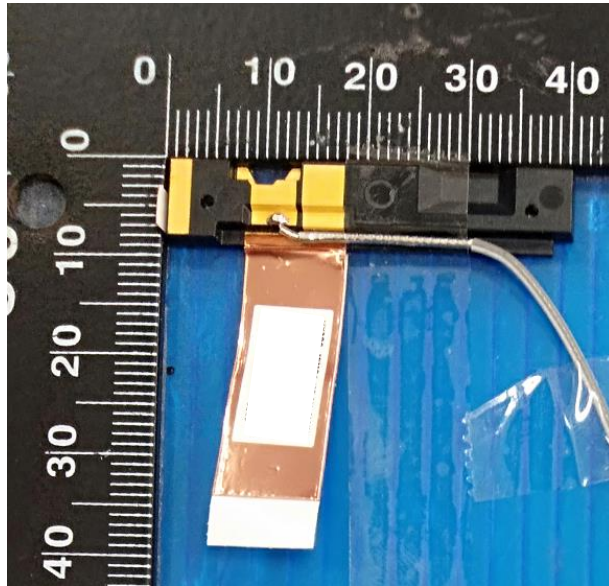


MIMO1 Antenna Photo:

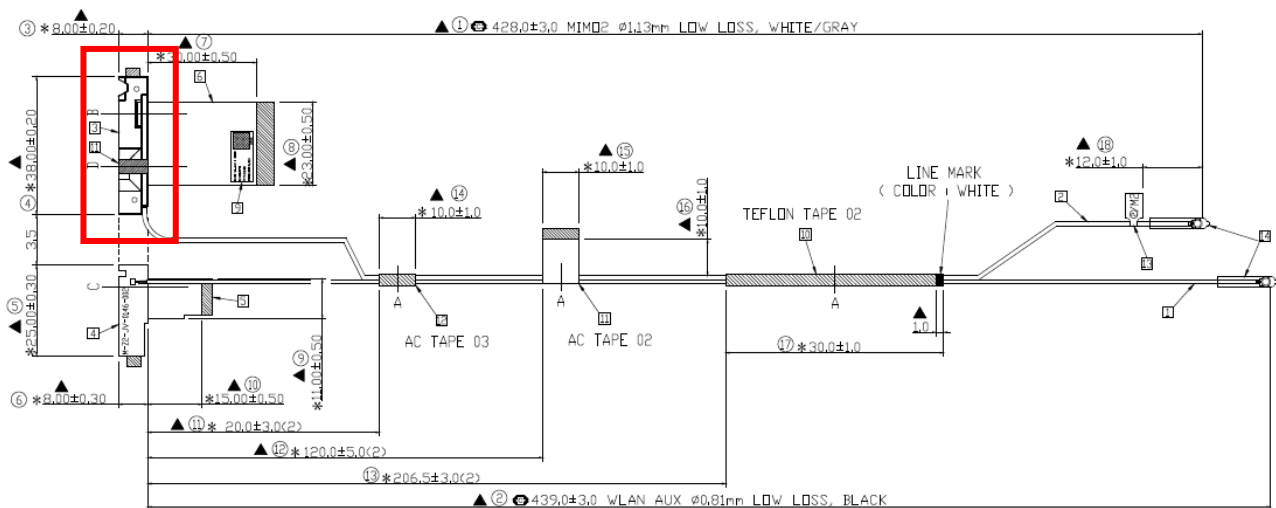
Overall view



Close-up view



MIMO2 Antenna Dimensioned Drawing:

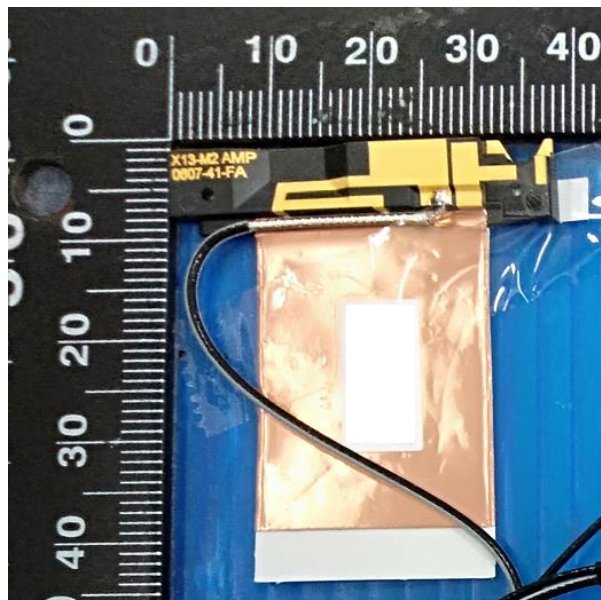


MIMO2 Antenna Photo:

Overall view

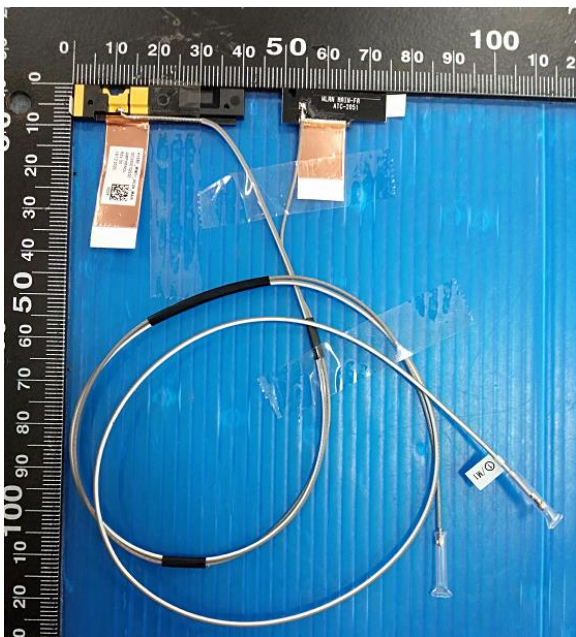
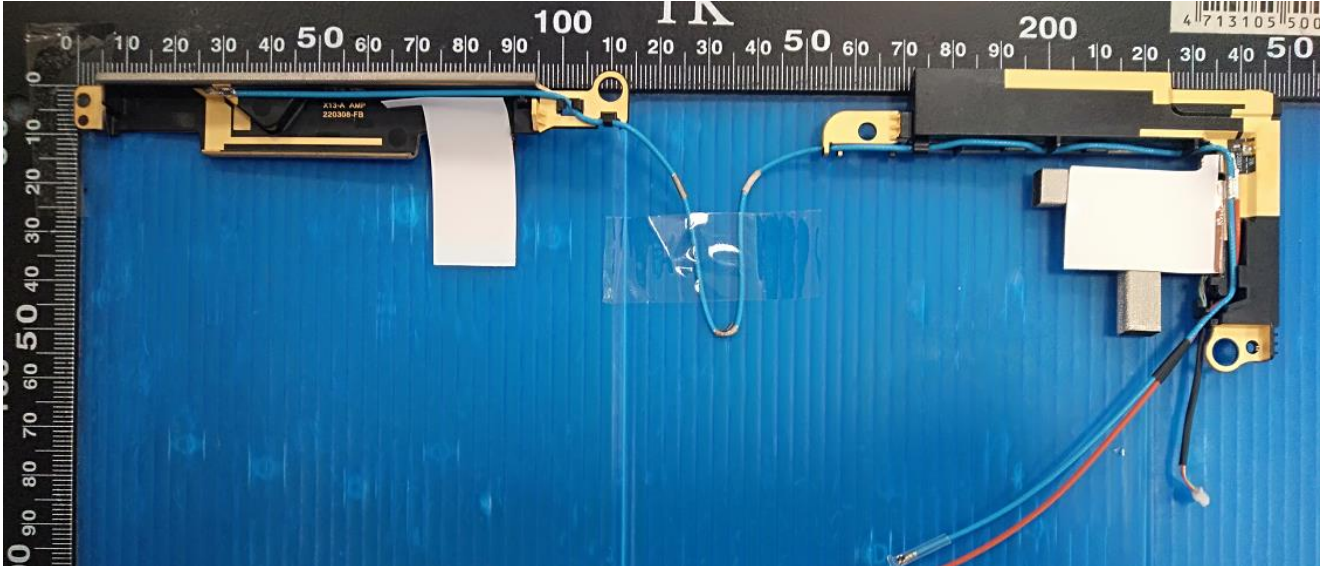


Close-up view



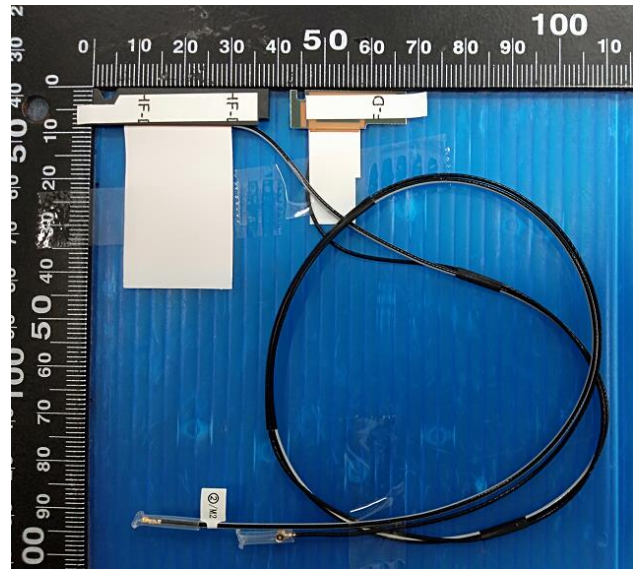
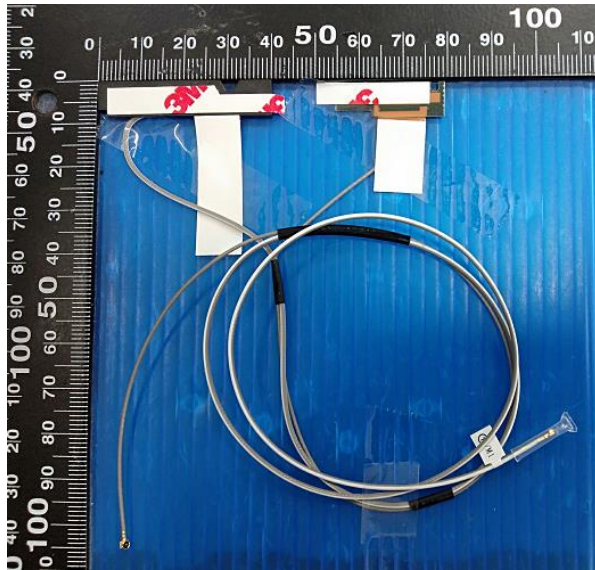
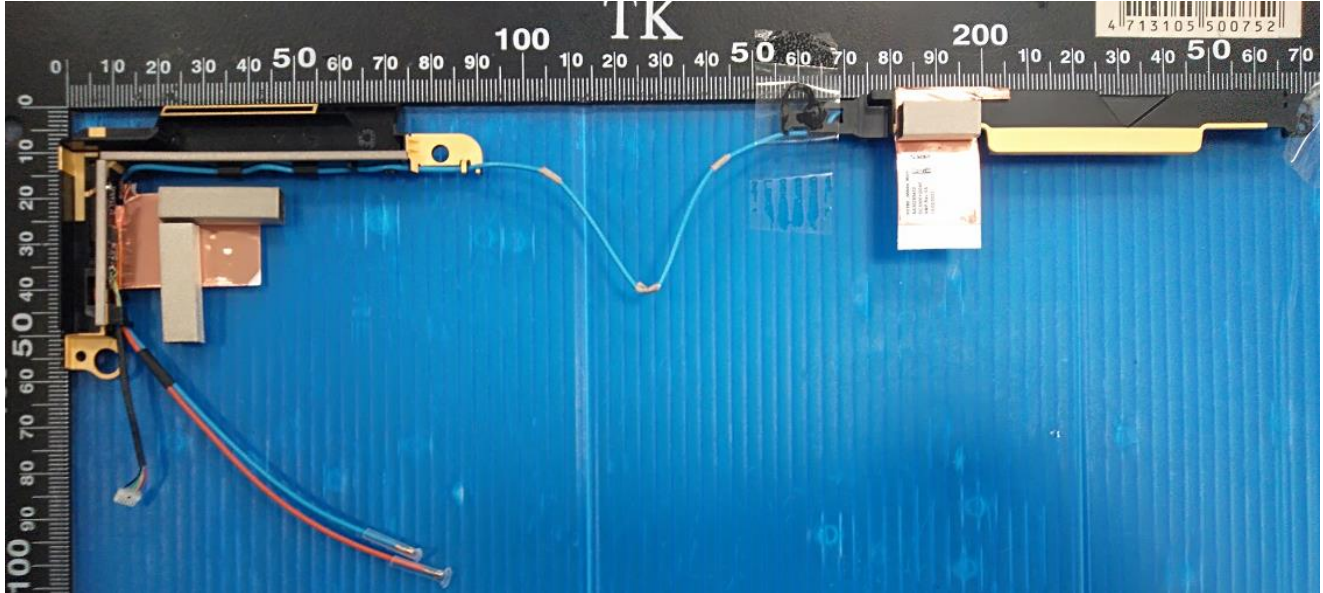
Trade Name: Speed
Model No.: DC33001YN00 (Main)
DC33001YN00 (Aux)
DC33001RF20 (MIMO1)
DC33001RF30 (MIMO2)

Front view



Trade Name: Speed
Model No.: DC33001YN00 (Main)
DC33001YN00 (Aux)
DC33001RF20 (MIMO1)
DC33001RF30 (MIMO2)

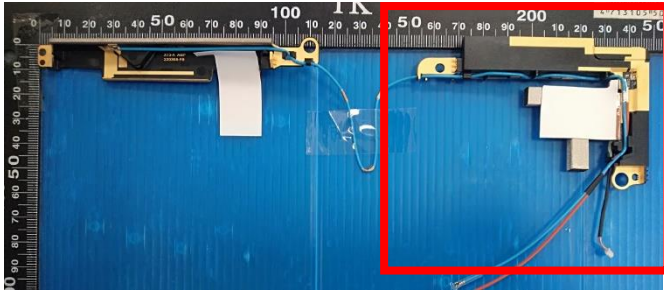
Back view



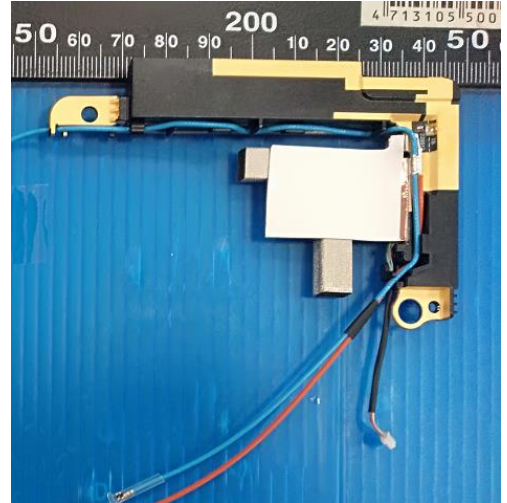
<Front View>

Trade Name: Speed
Model No.: DC33001YN00 (WWAN Main)

Front view – Far



Front view – Near



Model No.: DC33001YN00 (WWAN Aux)

Front view – Far



Front view – Near

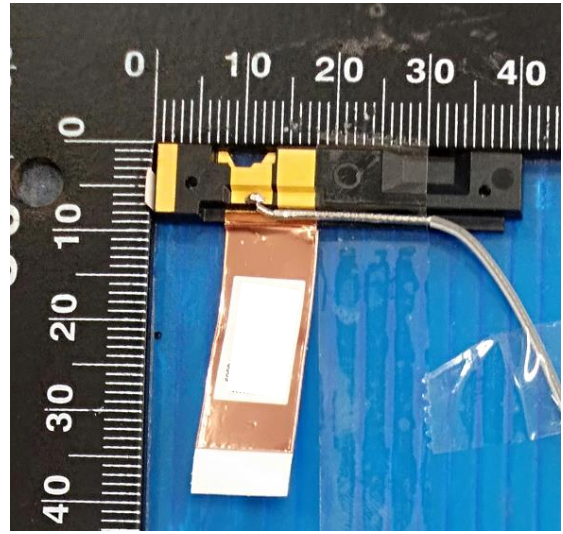


Trade Name: Speed
Model No.: DC33001RF20 (WWAN MIMO1)

Front view – Far



Front view – Near

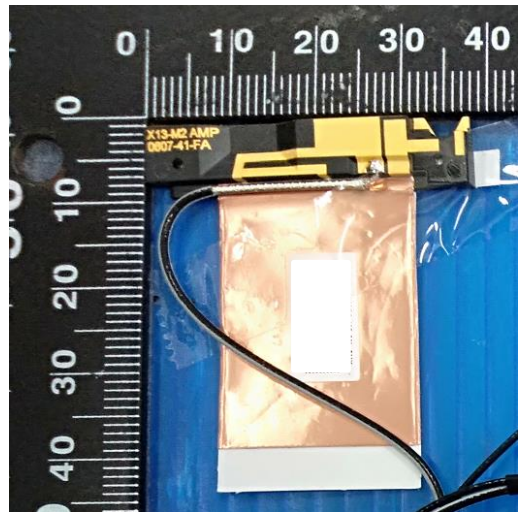


Model No.: DC33001RF30 (WWAN MIMO2)

Front view – Far



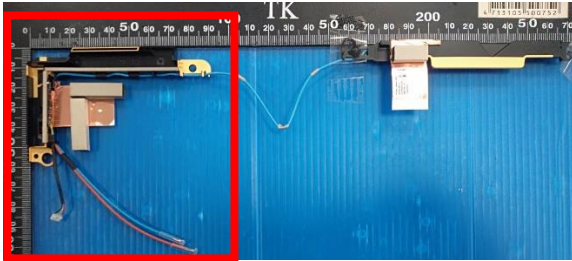
Front view – Near



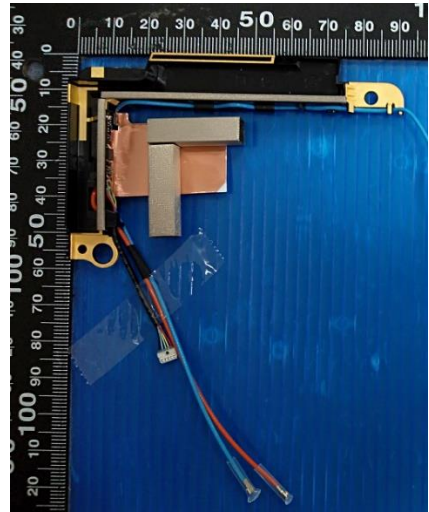
<Back View>

Trade Name: Speed
Model No.: DC33001YN00 (WWAN Main)

Back view – Far

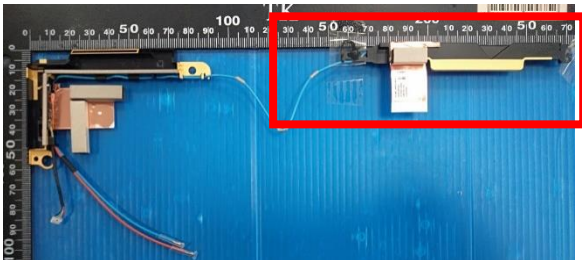


Back view – Near



Model No.: DC33001YN00 (WWAN Aux)

Back view – Far

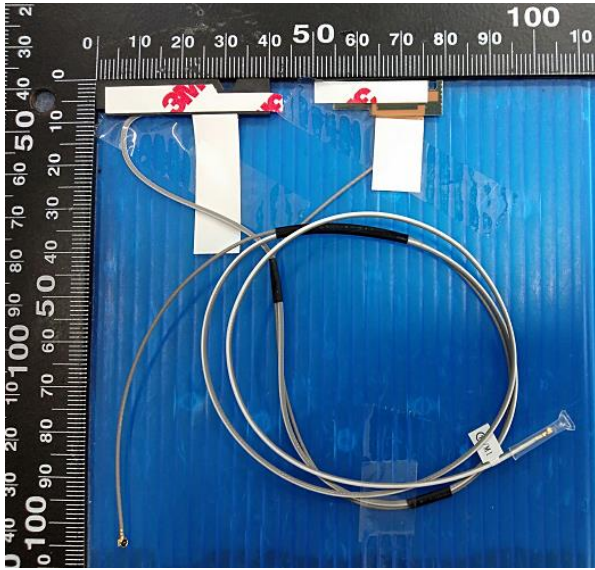


Back view – Near

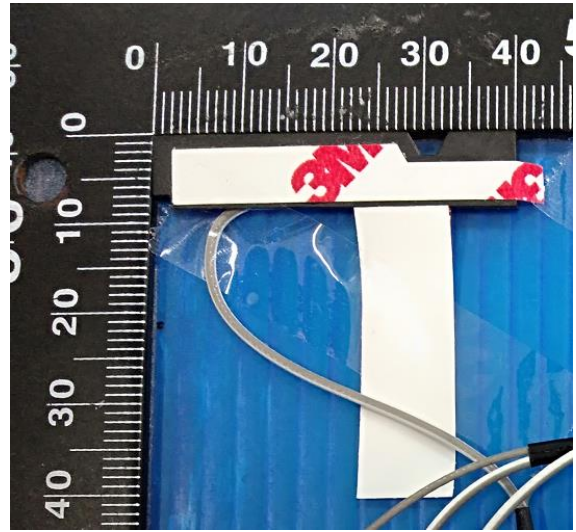


Trade Name: Speed
Model No.: DC33001RF20 (WWAN MIMO1)

Back view – Far



Back view – Near

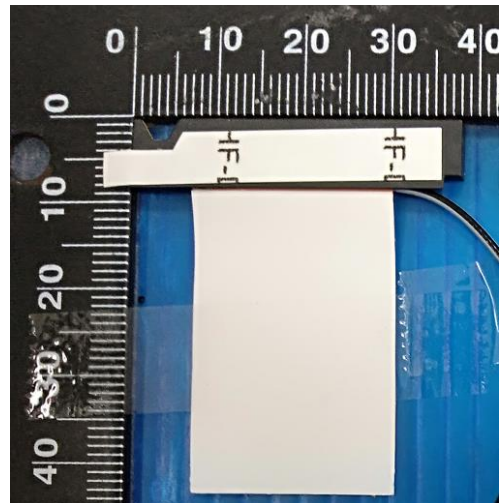


Model No.: DC33001RF30 (WWAN MIMO2)

Back view – Far

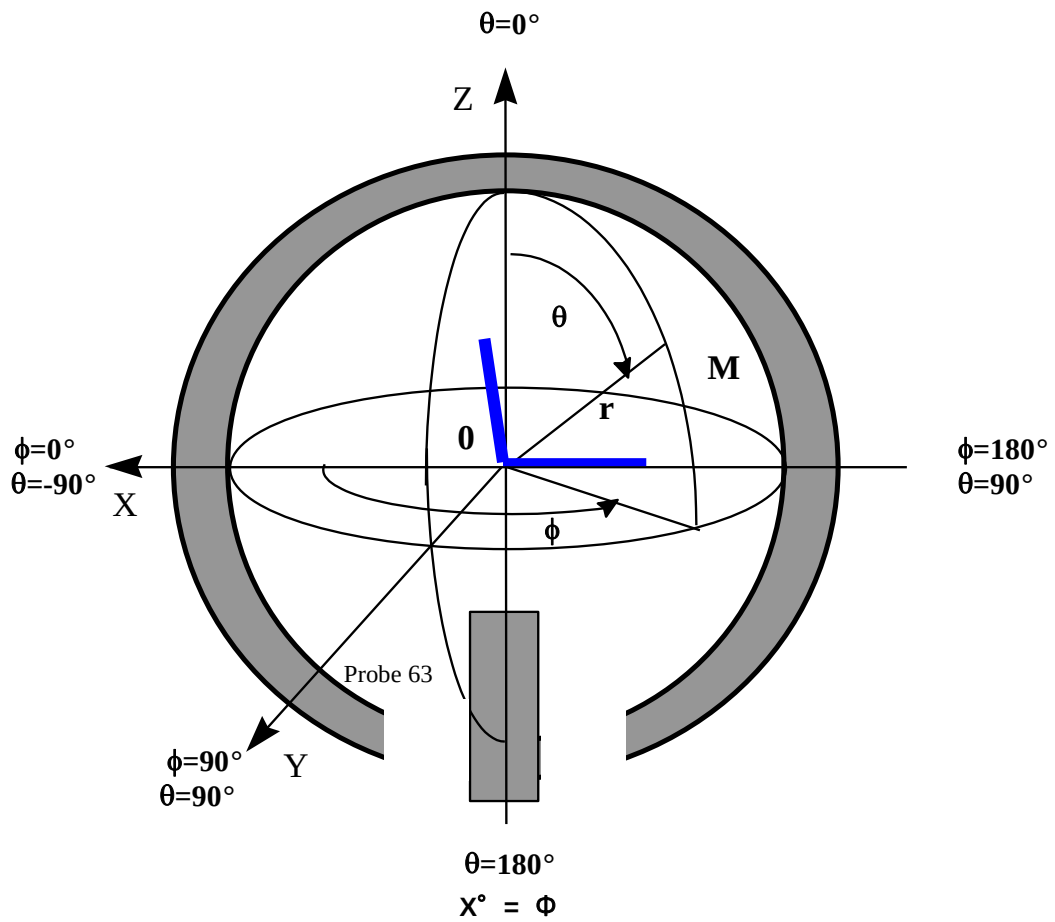


Back view – Near



Section 3. Radiation characteristics of antenna

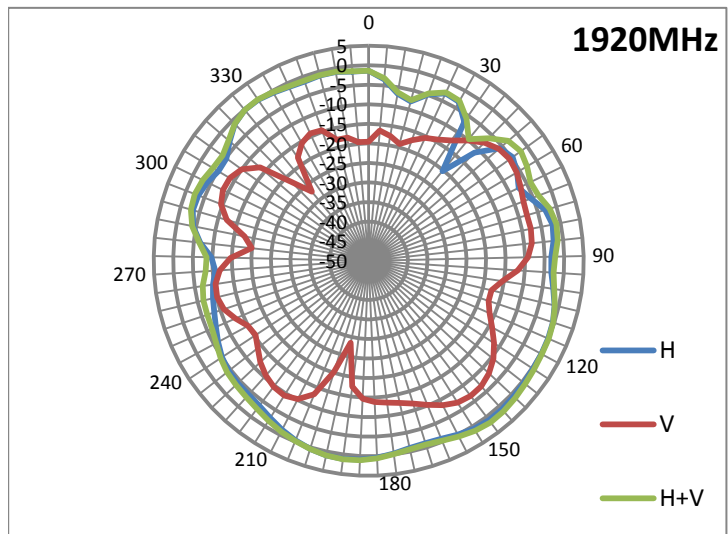
Antenna Gain and Radiation Pattern Measuring Structure Diagram



Radiation characteristic in 1920MHz ~ 1980MHz (EU/ANZ/CN/JP: UMTS/HSDPA, Band 1, n1)

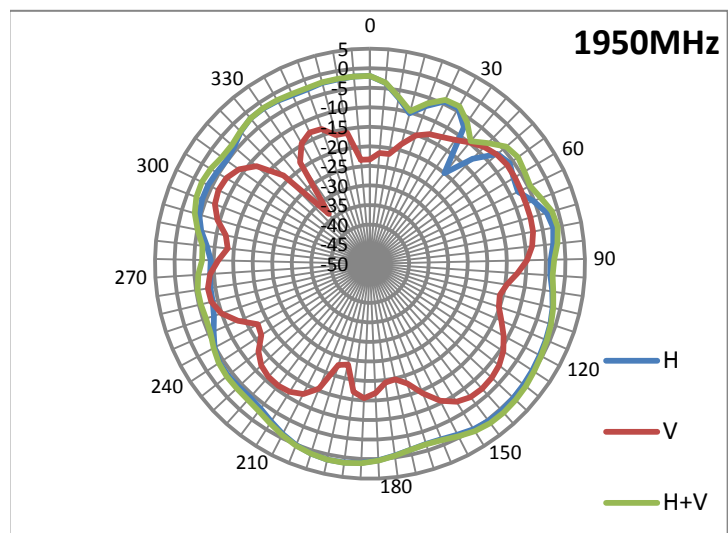
Main antenna: 1920.00 MHz

1920.00 MHz		
Horizontal Peak (dBi)	1.1	300deg
Vertical Peak(dBi)	-5.5	135deg



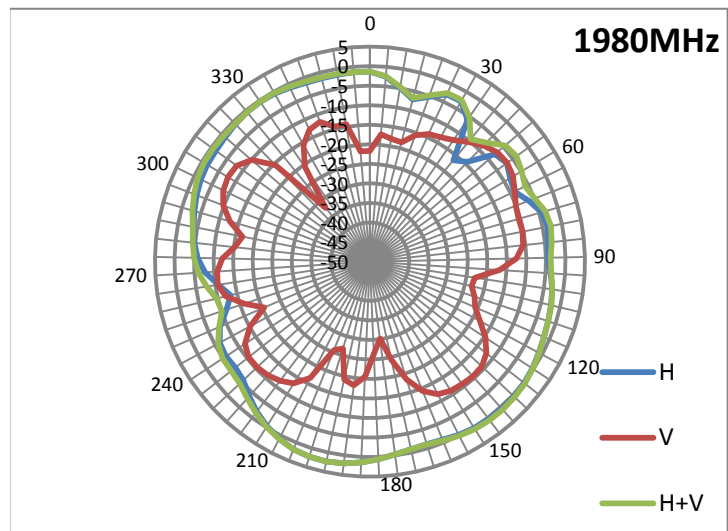
Main antenna: 1950.00 MHz

1950.00 MHz		
Horizontal Peak (dBi)	1.3	300deg
Vertical Peak(dBi)	-6.7	135deg



Main antenna: 1980.00 MHz

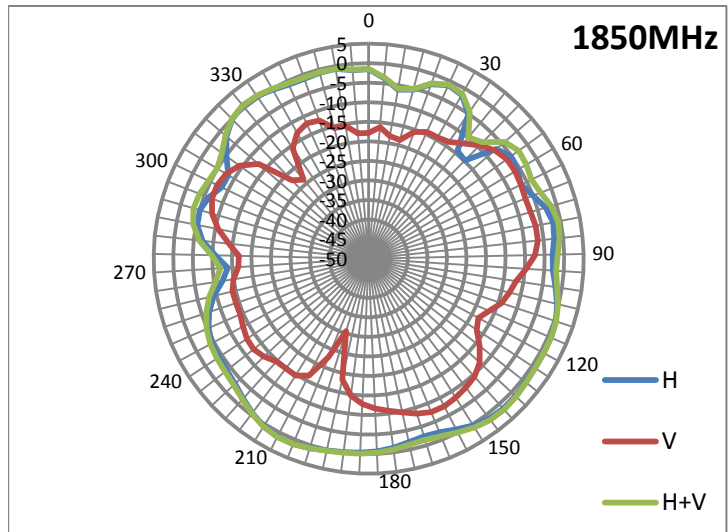
1980.00 MHz		
Horizontal Peak (dBi)	1.3	300deg
Vertical Peak(dBi)	-6.7	130deg



Radiation characteristic in 1850MHz ~ 1910MHz (FCC Part 24 PCS, Band 2, n2)

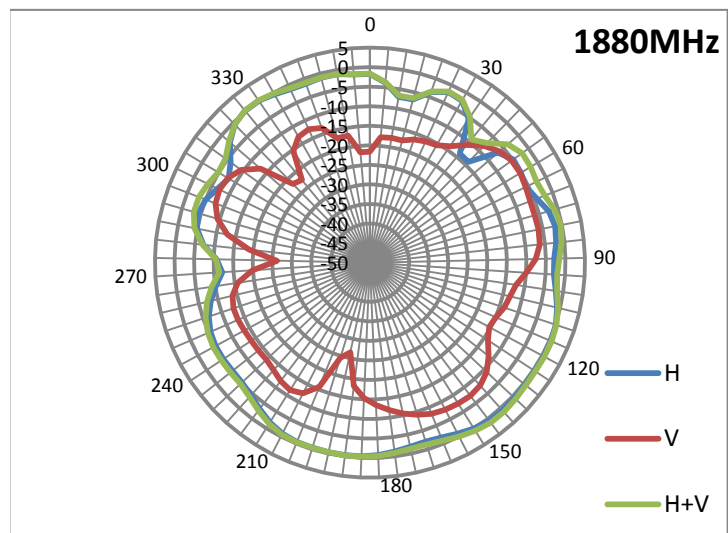
Main antenna: 1850.00 MHz

1850.00 MHz		
Horizontal Peak (dBi)	-1.4	295deg
Vertical Peak(dBi)	-6.6	140deg



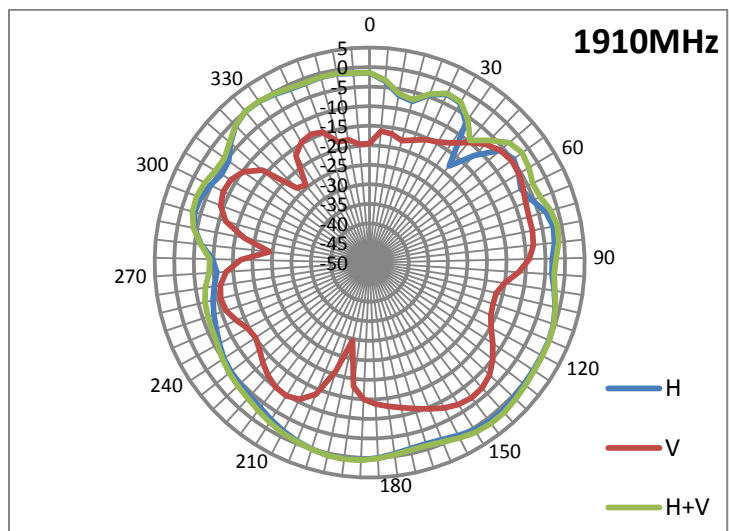
Main antenna: 1880.00 MHz

1880.00 MHz		
Horizontal Peak (dBi)	-1	300deg
Vertical Peak(dBi)	-5.5	140deg



Main antenna: 1910.00 MHz

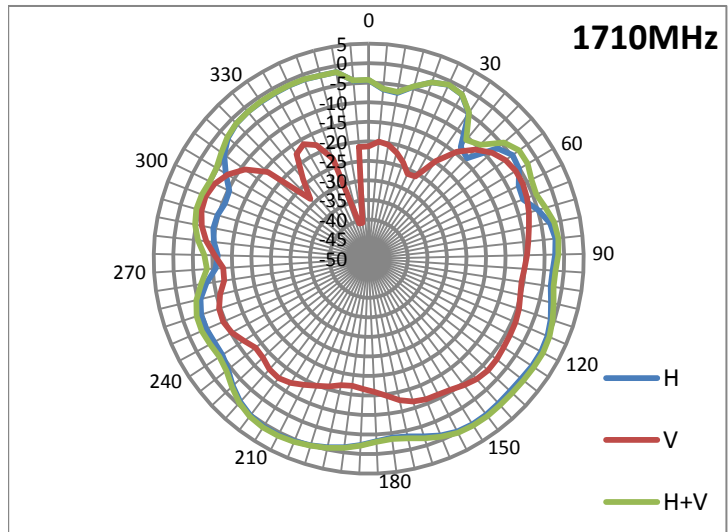
1910.00 MHz		
Horizontal Peak (dBi)	-0.7	300deg
Vertical Peak(dBi)	-5.5	135deg



Radiation characteristic in 1710MHz ~ 1785MHz (EU/ANZ/CN/JP: UE-UTRA, Band 3, n3)

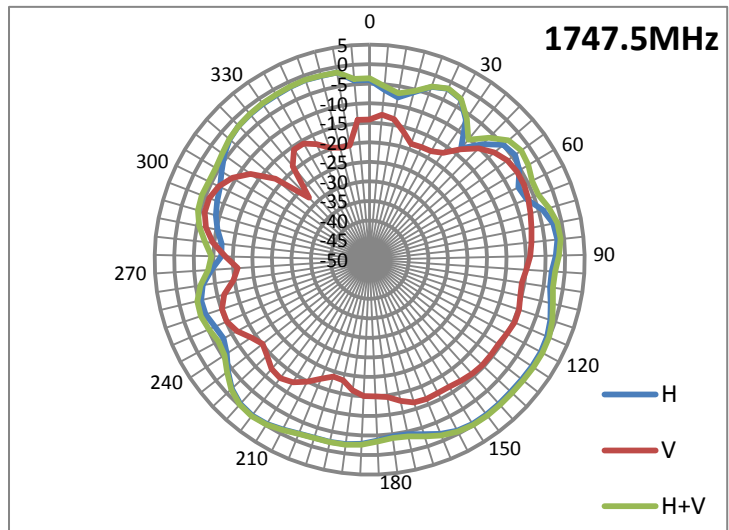
Main antenna: 1710.00 MHz

1710.00 MHz		
Horizontal Peak (dBi)	-0.7	300deg
Vertical Peak(dBi)	-5.4	130deg



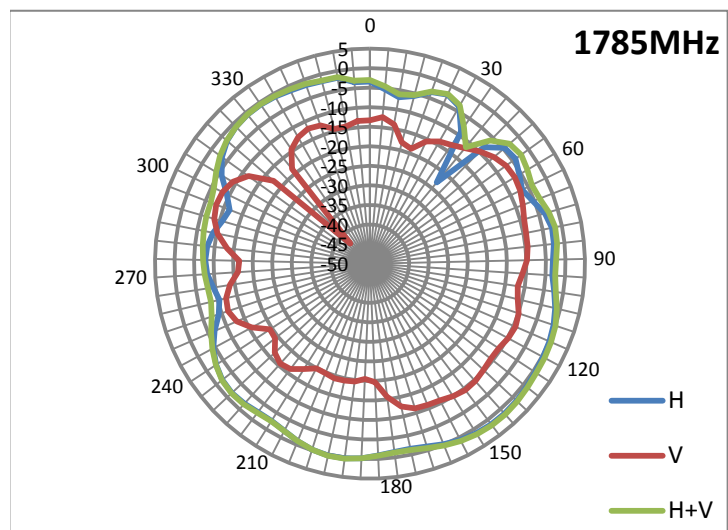
Main antenna: 1747.50 MHz

1747.50 MHz		
Horizontal Peak (dBi)	-0.1	300deg
Vertical Peak(dBi)	-6.0	150deg



Main antenna: 1785.00 MHz

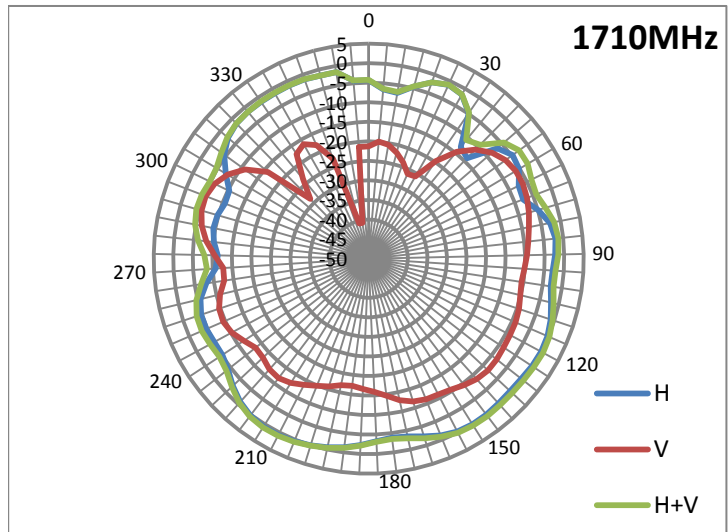
1785.00 MHz		
Horizontal Peak (dBi)	1.5	300deg
Vertical Peak(dBi)	-6.8	145deg



Radiation characteristic in 1710MHz ~ 1755MHz (FCC Part 27 UMTS(AWS), Band 4)

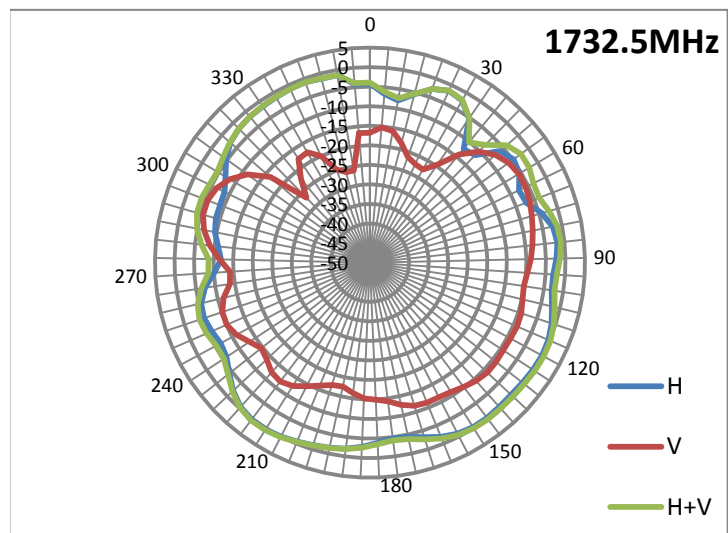
Main antenna: 1710.00 MHz

1710.00 MHz		
Horizontal Peak (dBi)	-0.7	300deg
Vertical Peak(dBi)	-5.4	130deg



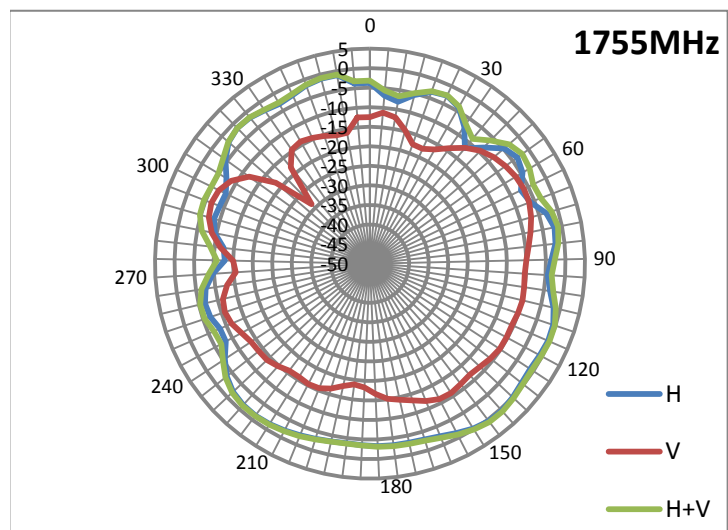
Main antenna: 1732.50 MHz

1732.50 MHz		
Horizontal Peak (dBi)	-0.8	300deg
Vertical Peak(dBi)	-6	150deg



Main antenna: 1755.00 MHz

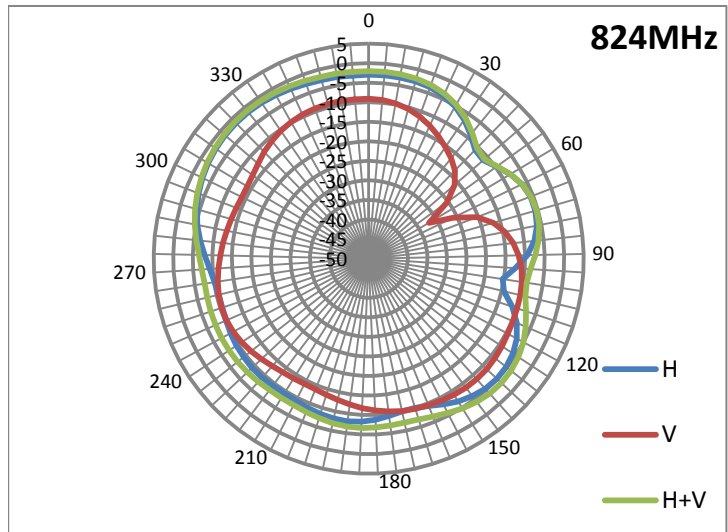
1755.00 MHz		
Horizontal Peak (dBi)	-0.7	300deg
Vertical Peak(dBi)	-6.2	145deg



Radiation characteristic in 824MHz ~ 849MHz (FCC Part 22 Cellular, Band 5, n5)

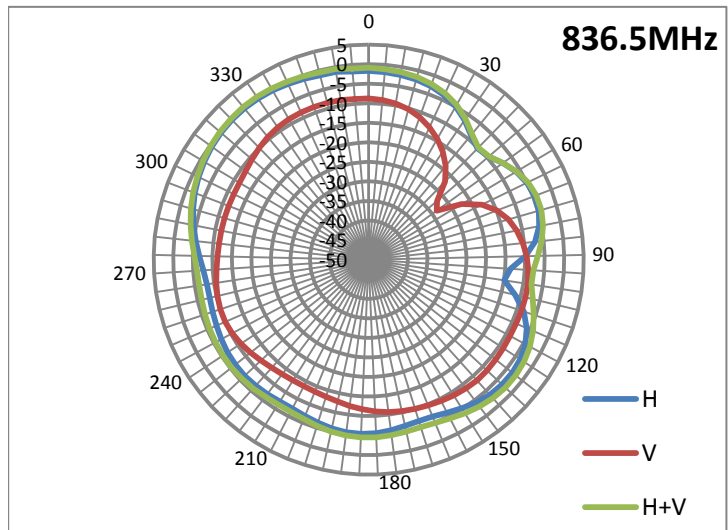
Main antenna: 824.00 MHz

824.00 MHz		
Horizontal Peak (dBi)	-1.4	275deg
Vertical Peak(dBi)	-8.6	345deg



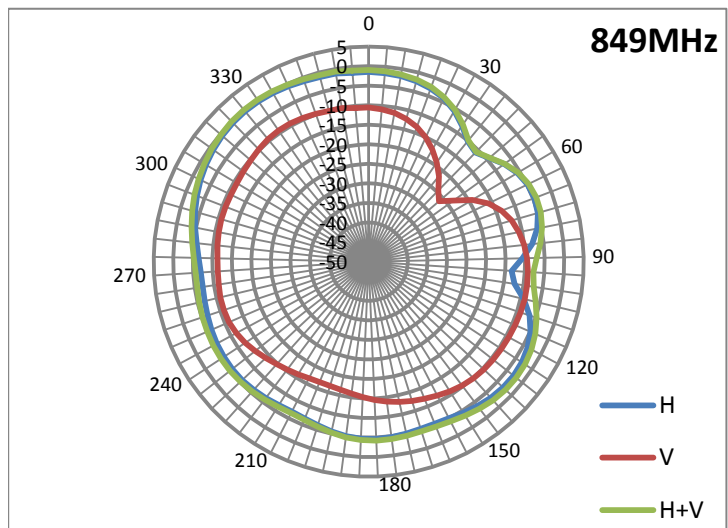
Main antenna: 836.50 MHz

836.50 MHz		
Horizontal Peak (dBi)	-0.6	280deg
Vertical Peak(dBi)	-8.5	185deg



Main antenna: 849.0 MHz

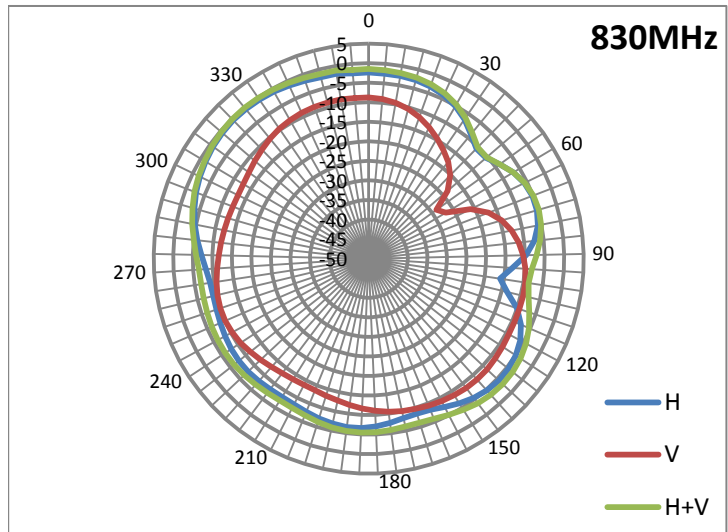
849.0 MHz		
Horizontal Peak (dBi)	-0.7	285deg
Vertical Peak(dBi)	-9	240deg



Radiation characteristic in 830MHz ~ 840MHz (Japan, Band 6)

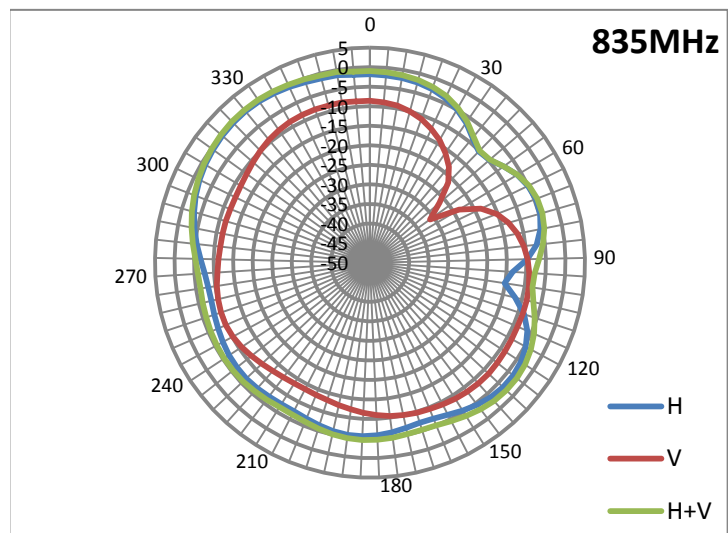
Main antenna: 830.00 MHz

830.00 MHz		
Horizontal Peak (dBi)	-0.5	275deg
Vertical Peak(dBi)	-8.5	345deg



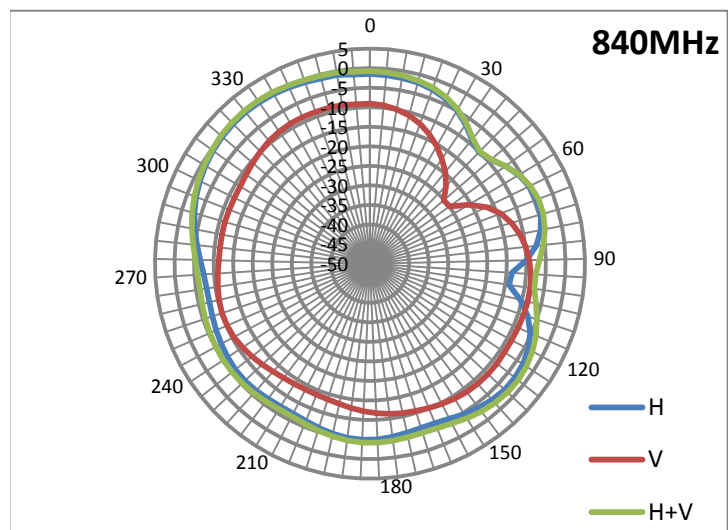
Main antenna: 835.00 MHz

835.00 MHz		
Horizontal Peak (dBi)	0.1	280deg
Vertical Peak(dBi)	-8.4	185deg



Main antenna: 840.00 MHz

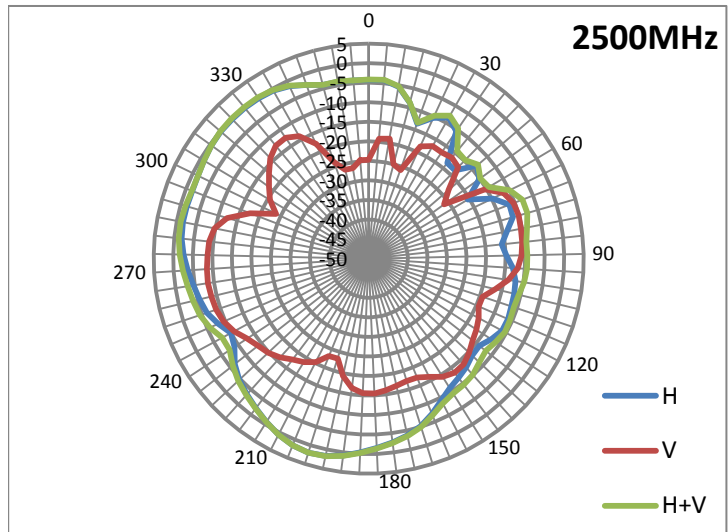
840.00 MHz		
Horizontal Peak (dBi)	0.2	280deg
Vertical Peak(dBi)	-8.5	215deg



Radiation characteristic in 2500MHz ~ 2570MHz (CA/EU/ANZ UE-UTRA, Band 7, n7)

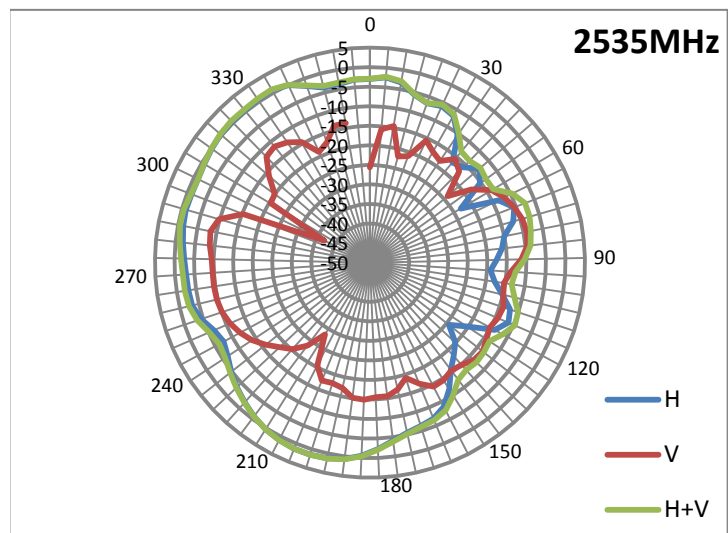
Main antenna: 2500.00 MHz

2500.00 MHz		
Horizontal Peak (dBi)	0.6	280deg
Vertical Peak(dBi)	-8.4	250deg



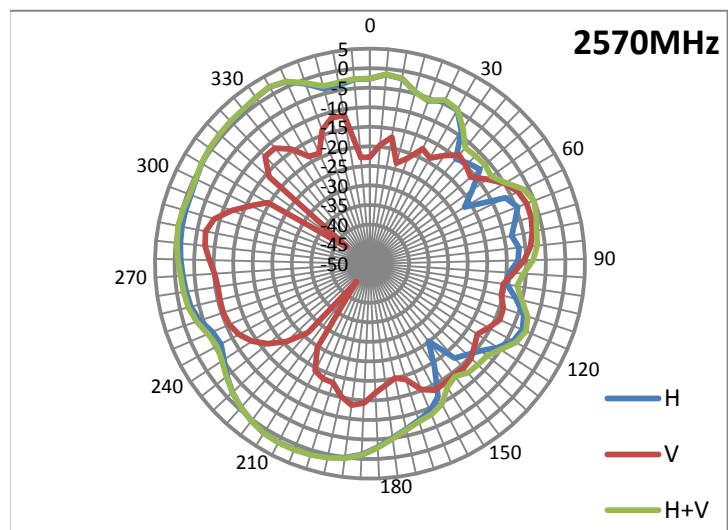
Main antenna: 2535.00 MHz

2535.00 MHz		
Horizontal Peak (dBi)	0.5	280deg
Vertical Peak(dBi)	-8.4	250deg



Main antenna: 2570.00 MHz

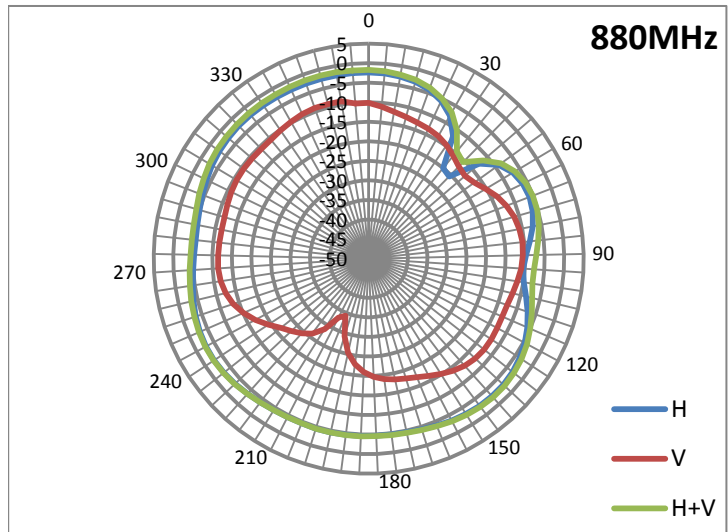
2570.00 MHz		
Horizontal Peak (dBi)	0.6	285deg
Vertical Peak(dBi)	-7	255deg



Radiation characteristic in 880MHz ~ 915MHz (EU/ANZ/JP: Band 8, n8)

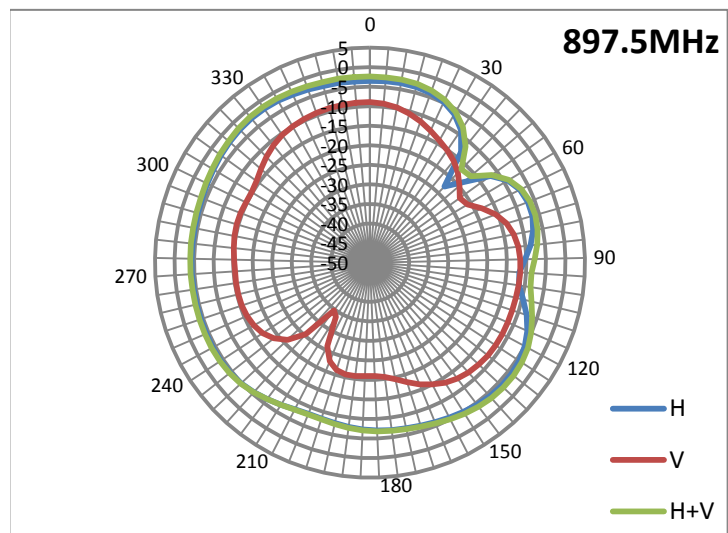
Main antenna: 880.00 MHz

880.00 MHz		
Horizontal Peak (dBi)	-2.4	345deg
Vertical Peak(dBi)	-9.1	290deg



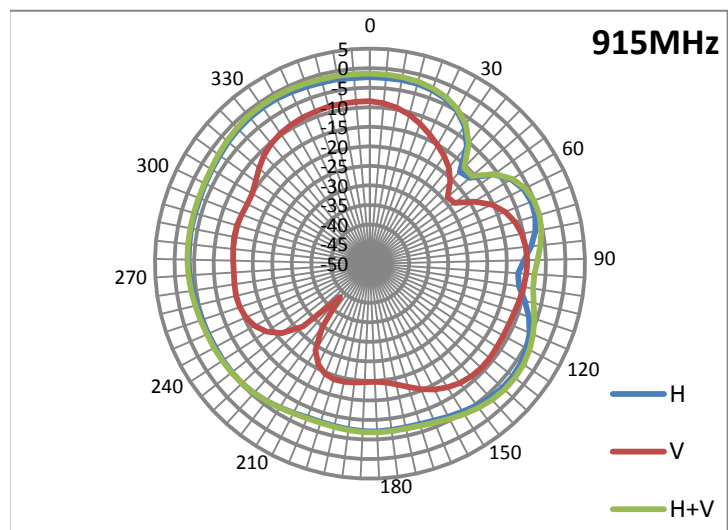
Main antenna: 897.50 MHz

897.50 MHz		
Horizontal Peak (dBi)	-2.3	320deg
Vertical Peak(dBi)	-8.9	295deg



Main antenna: 915.00 MHz

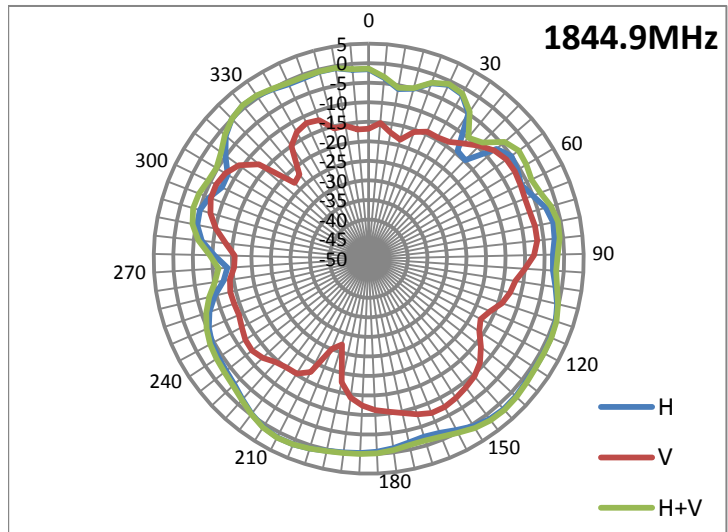
915.00 MHz		
Horizontal Peak (dBi)	-1.5	320deg
Vertical Peak(dBi)	-8.5	290deg



Radiation characteristic in 1844.9MHz ~ 1879.9MHz (Japan, Band 9)

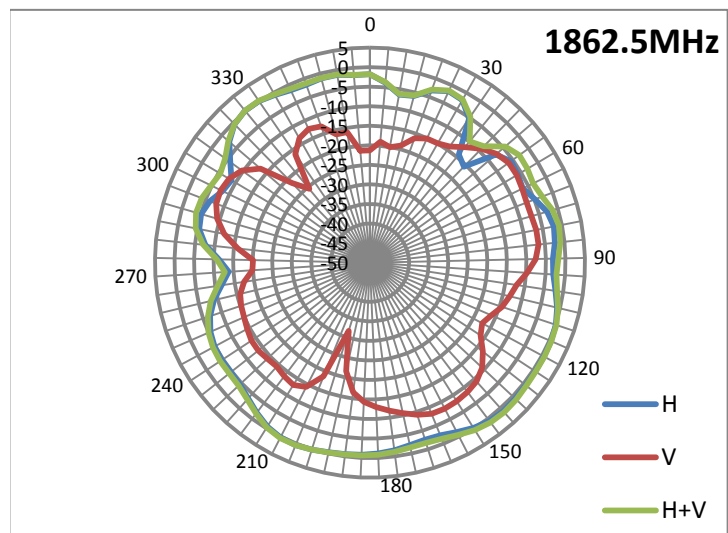
Main antenna: 1844.90 MHz

1844.90 MHz		
Horizontal Peak (dBi)	1.7	295deg
Vertical Peak(dBi)	-6.4	145deg



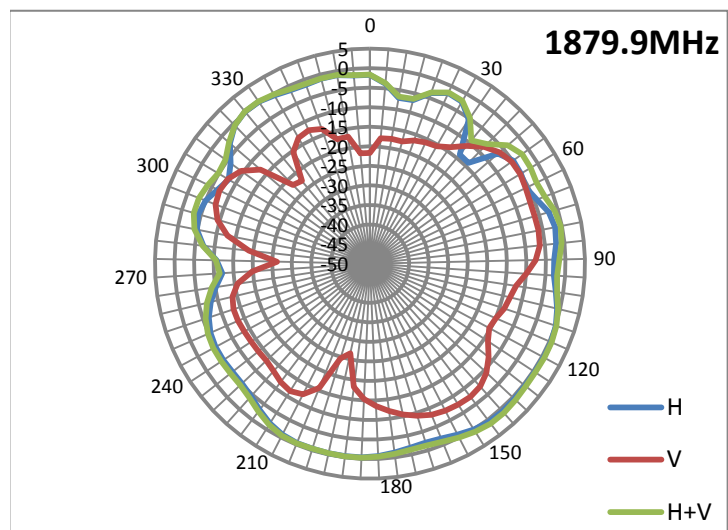
Main antenna: 1862.50 MHz

1862.50 MHz		
Horizontal Peak (dBi)	1.0	295deg
Vertical Peak(dBi)	-6.3	140deg



Main antenna: 1879.90 MHz

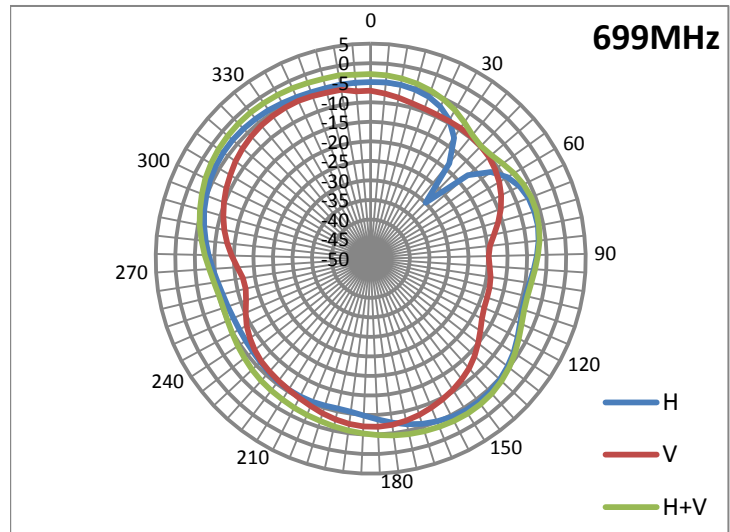
1879.90 MHz		
Horizontal Peak (dBi)	0.7	295deg
Vertical Peak(dBi)	-5.3	140deg



Radiation characteristic in 699MHz ~ 716MHz (FCC Part 27 UE-UTRA, Band 12, n12)

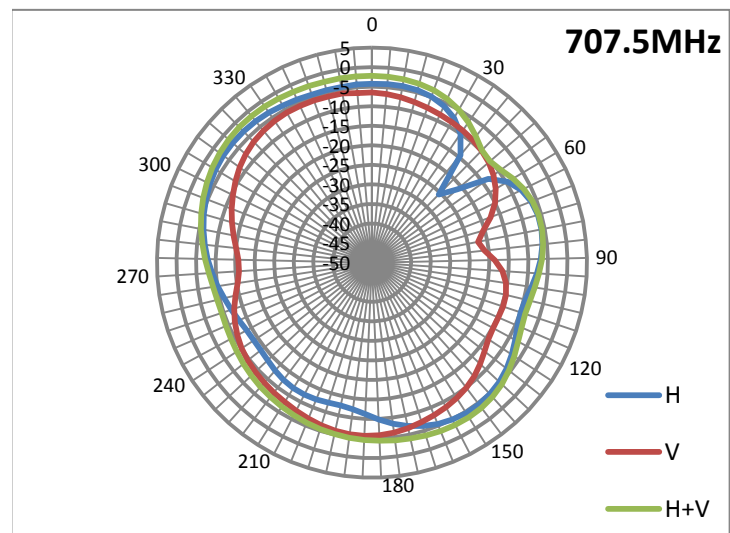
Main antenna: 699.00 MHz

699.00 MHz		
Horizontal Peak (dBi)	-3.4	270deg
Vertical Peak(dBi)	-5.6	315deg



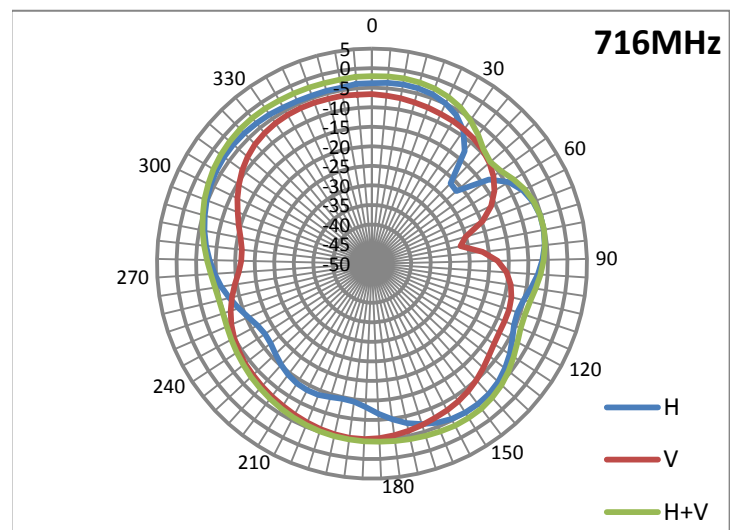
Main antenna: 707.50 MHz

707.50 MHz		
Horizontal Peak (dBi)	-3.0	265deg
Vertical Peak(dBi)	-5.7	345deg



Main antenna: 716.00 MHz

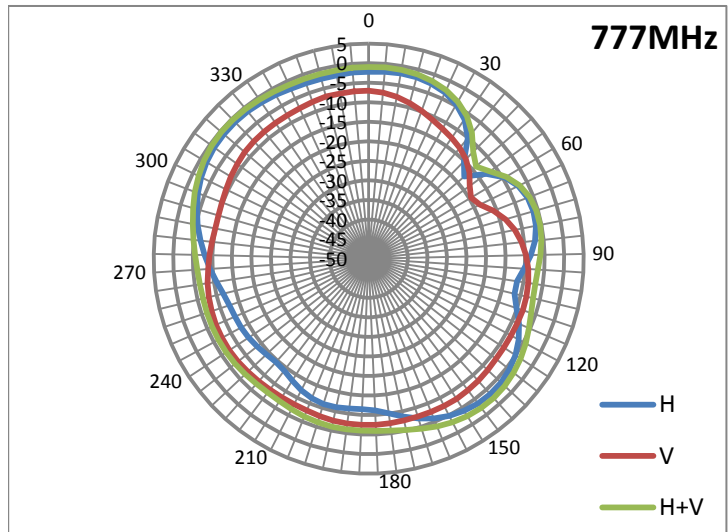
716.00 MHz		
Horizontal Peak (dBi)	-3.3	260deg
Vertical Peak(dBi)	-5.1	345deg



Radiation characteristic in 776MHz ~ 787MHz (FCC Part 27 UE-UTRA, Band 13)

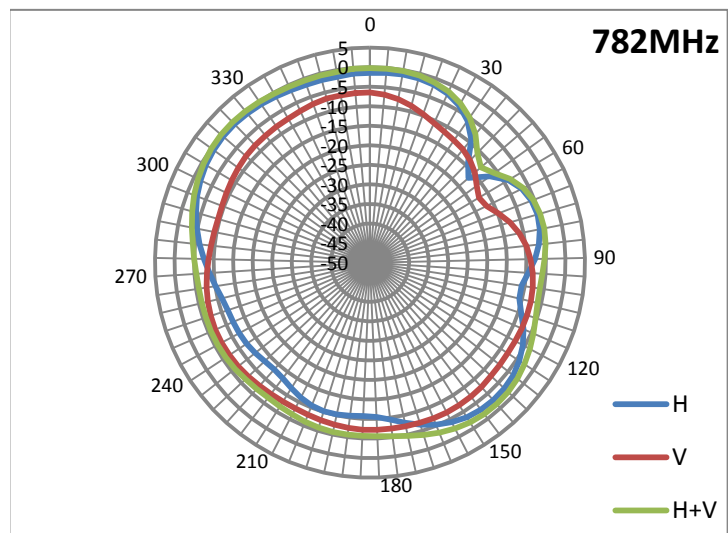
Main antenna: 777.00 MHz

777.00 MHz		
Horizontal Peak (dBi)	-1.1	265deg
Vertical Peak(dBi)	-7.0	350deg



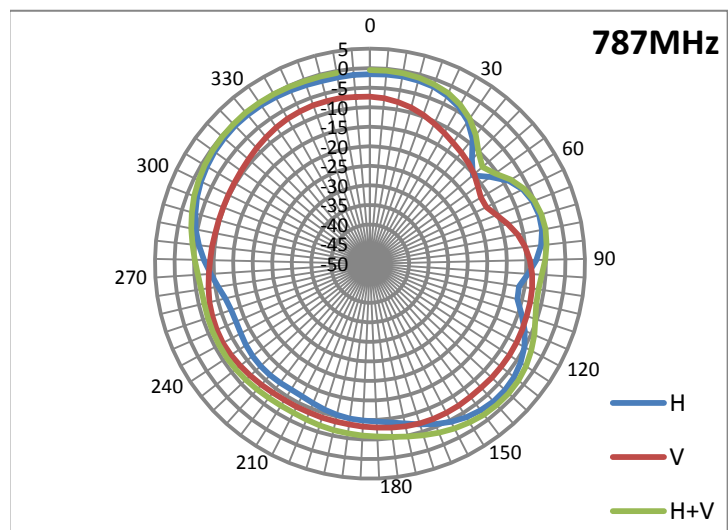
Main antenna: 782.00 MHz

782.00 MHz		
Horizontal Peak (dBi)	-0.5	265deg
Vertical Peak(dBi)	-6.5	350deg



Main antenna: 787.00 MHz

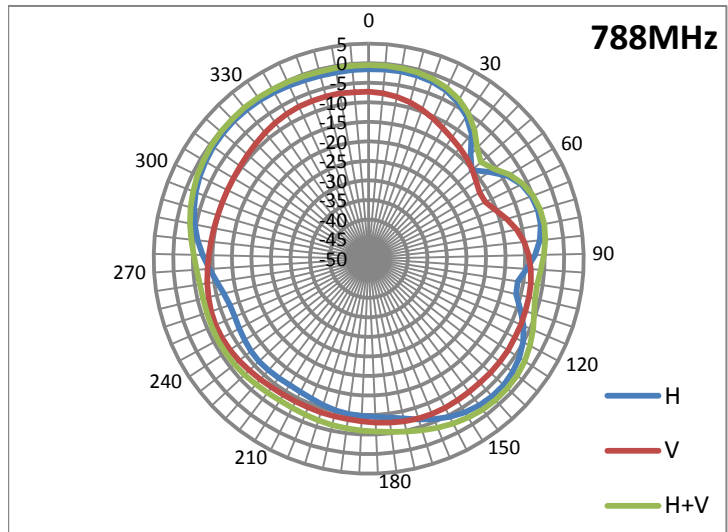
787.00 MHz		
Horizontal Peak (dBi)	-0.7	270deg
Vertical Peak(dBi)	-7.0	350deg



Radiation characteristic in 788MHz ~ 798MHz (FCC Part 90 UE-UTRA, Band 14)

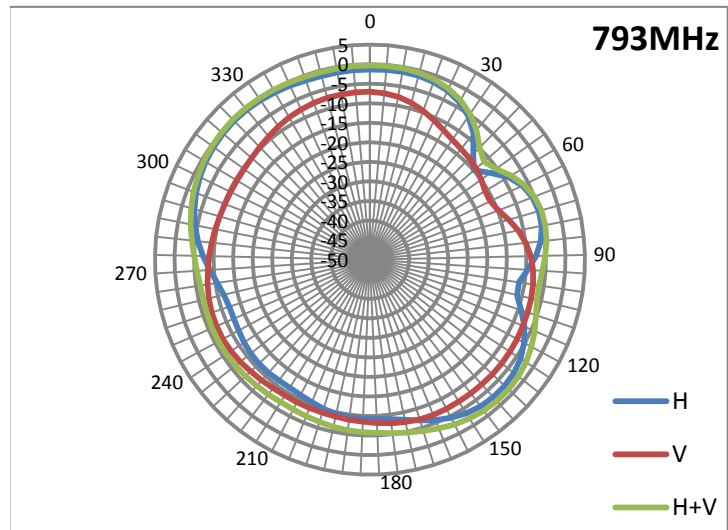
Main antenna: 788.00 MHz

788.00 MHz		
Horizontal Peak (dBi)	-0.7	270deg
Vertical Peak(dBi)	-7.1	350deg



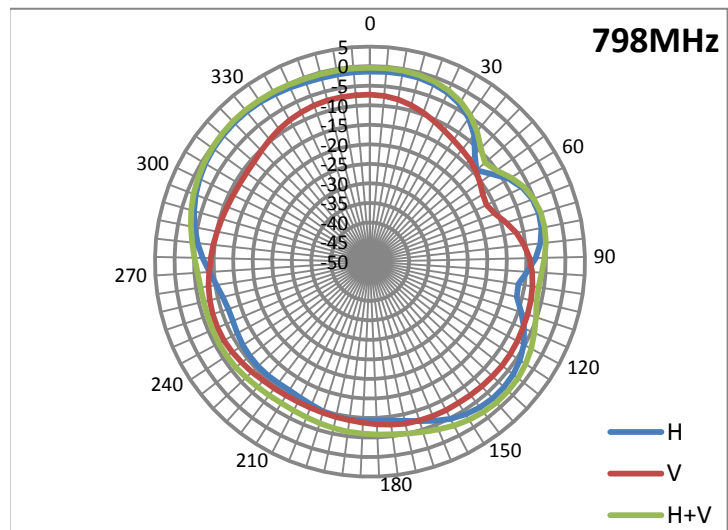
Main antenna: 793.00 MHz

793.00 MHz		
Horizontal Peak (dBi)	-0.4	270deg
Vertical Peak(dBi)	-7.1	350deg



Main antenna: 798.00 MHz

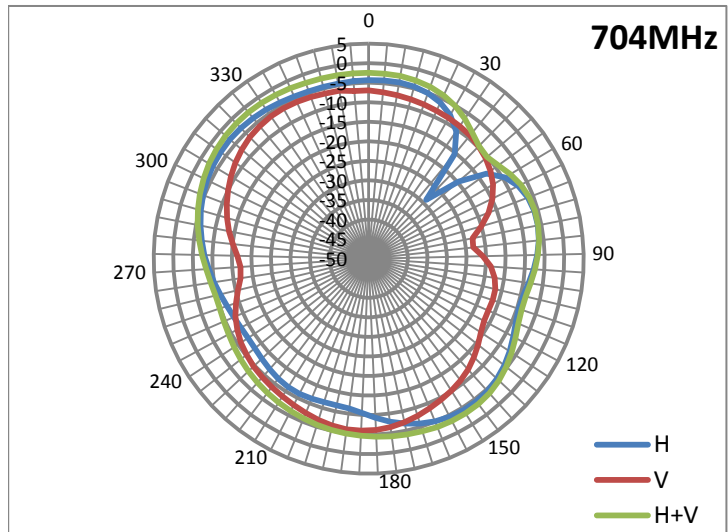
798.00 MHz		
Horizontal Peak (dBi)	-0.3	270deg
Vertical Peak(dBi)	-7.0	350deg



Radiation characteristic in 704MHz ~ 716MHz (FCC Part 27H UE-UTRA, Band 17)

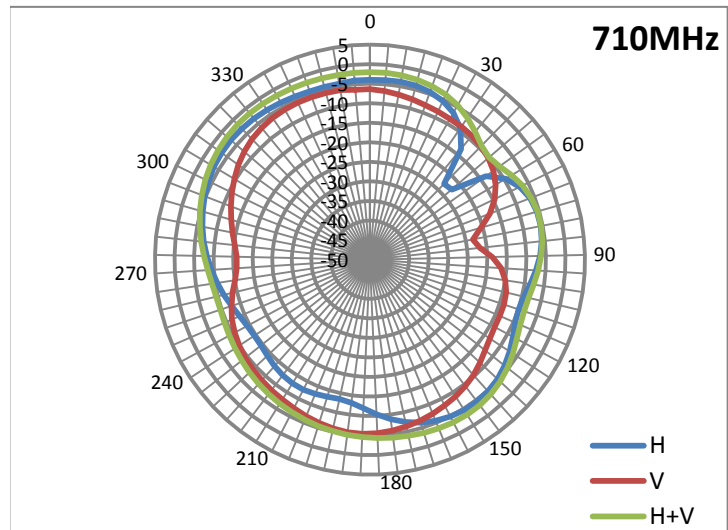
Main antenna: 704.00 MHz

704.00 MHz		
Horizontal Peak (dBi)	-3.2	270deg
Vertical Peak(dBi)	-5.8	315deg



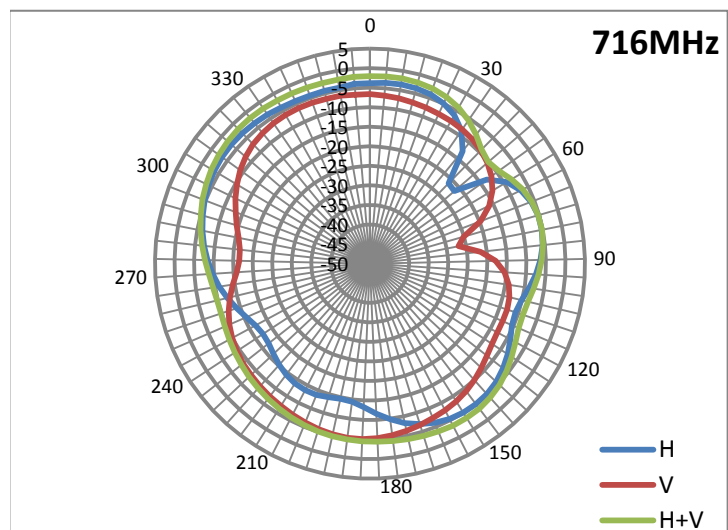
Main antenna: 710.00 MHz

710.00 MHz		
Horizontal Peak (dBi)	-3.1	260deg
Vertical Peak(dBi)	-5.4	345deg



Main antenna: 716.00 MHz

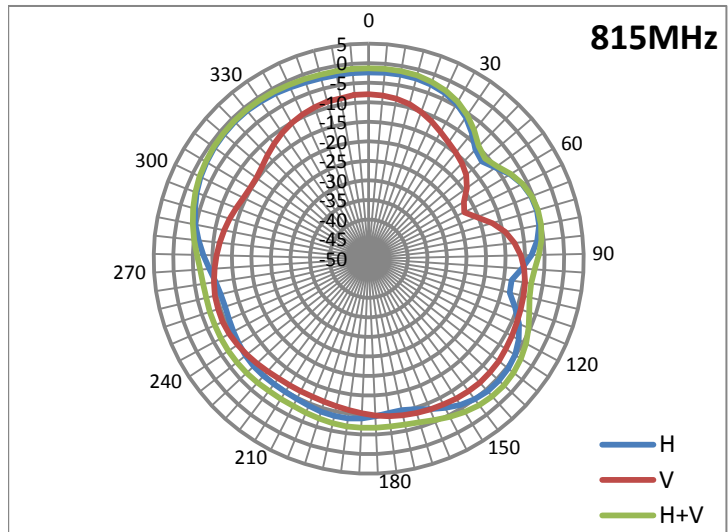
716.00 MHz		
Horizontal Peak (dBi)	-3.3	260deg
Vertical Peak(dBi)	-5.1	345deg



Radiation characteristic in 815MHz ~ 830MHz (Japan, Band 18)

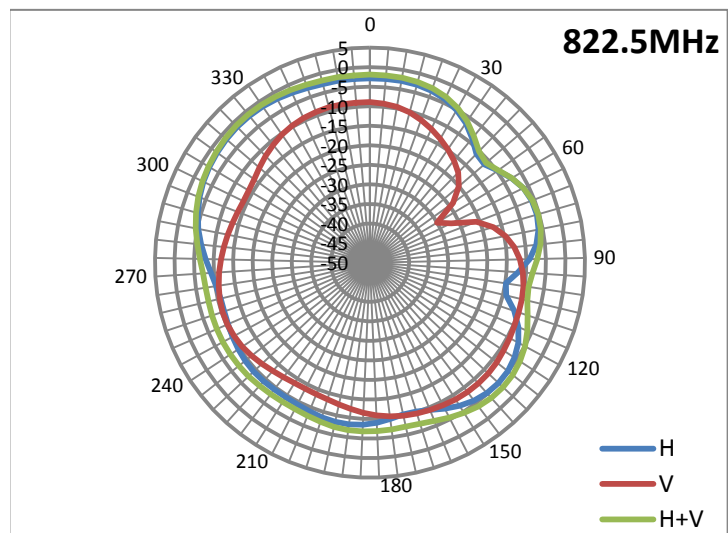
Main antenna: 815.00 MHz

815.00 MHz		
Horizontal Peak (dBi)	-1.0	270deg
Vertical Peak(dBi)	-7.4	345deg



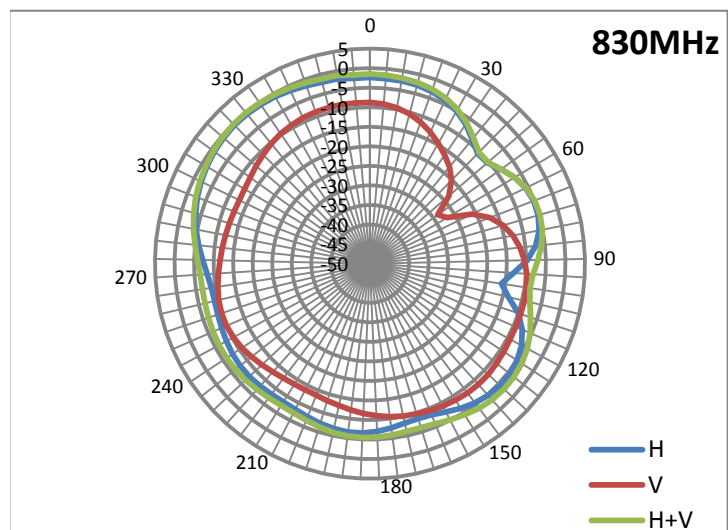
Main antenna: 822.50 MHz

822.50 MHz		
Horizontal Peak (dBi)	-1.4	275deg
Vertical Peak(dBi)	-8.5	345deg



Main antenna: 830.00 MHz

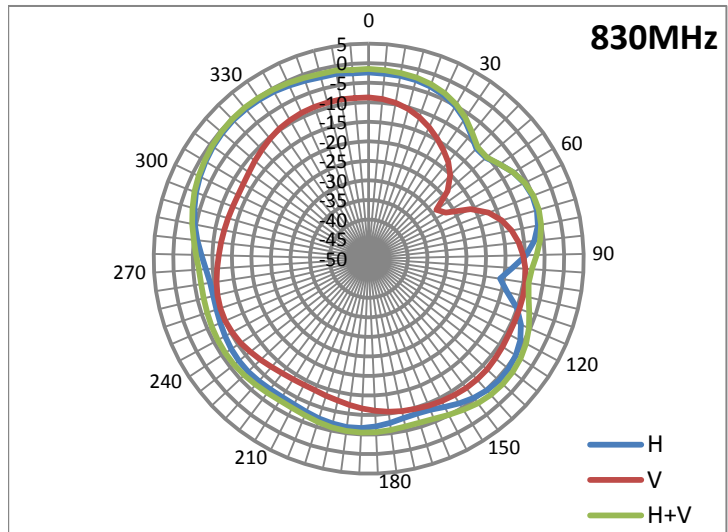
830.00 MHz		
Horizontal Peak (dBi)	-0.5	275deg
Vertical Peak(dBi)	-8.5	345deg



Radiation characteristic in 830MHz ~ 845MHz (Japan, Band 19)

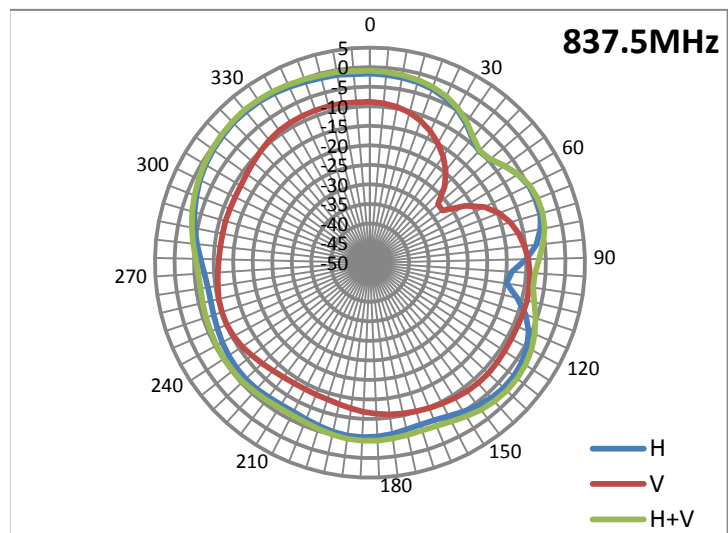
Main antenna: 830.00 MHz

830.00 MHz		
Horizontal Peak (dBi)	-0.5	275deg
Vertical Peak(dBi)	-8.5	345deg



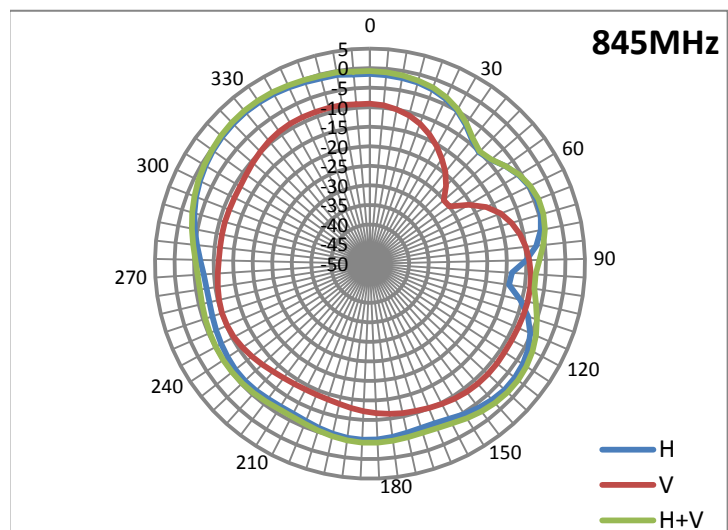
Main antenna: 837.50 MHz

837.50 MHz		
Horizontal Peak (dBi)	0.1	280deg
Vertical Peak(dBi)	-8.6	185deg



Main antenna: 845.00 MHz

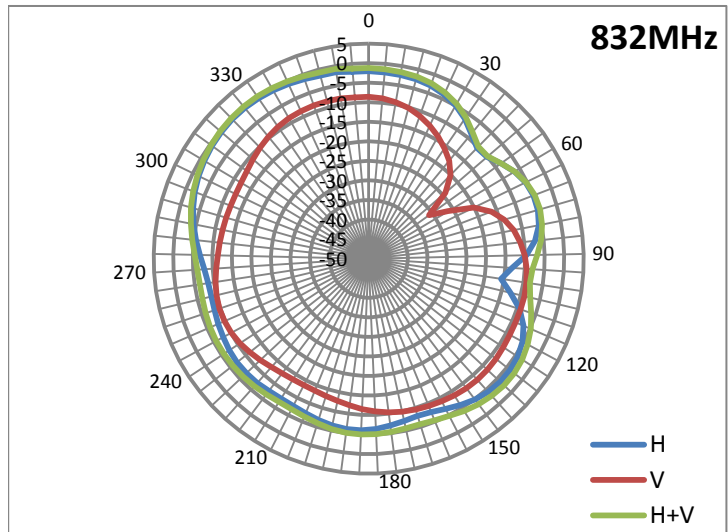
845.00 MHz		
Horizontal Peak (dBi)	0.2	280deg
Vertical Peak(dBi)	-8.5	235deg



Radiation characteristic in 832MHz ~ 862MHz (EU UE-UTRA, Band 20, n20)

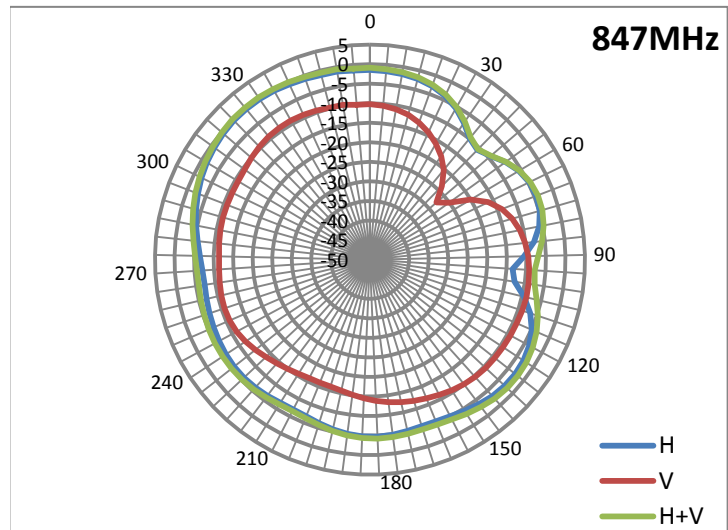
Main antenna: 832.00 MHz

832.00 MHz		
Horizontal Peak (dBi)	-0.1	280deg
Vertical Peak(dBi)	-8.4	345deg



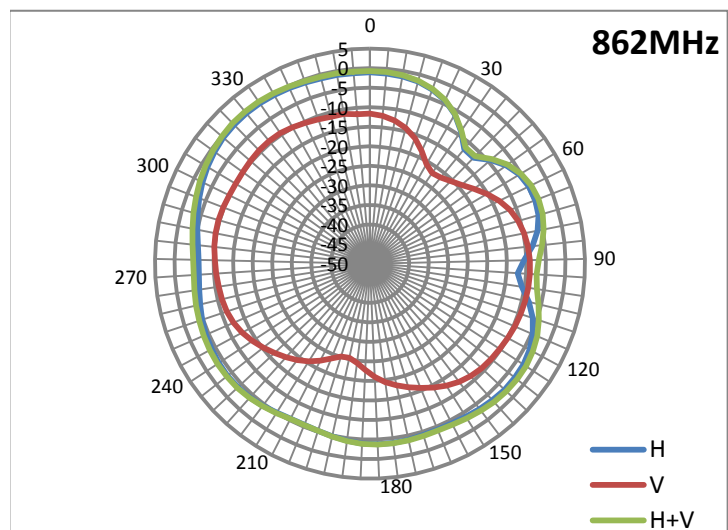
Main antenna: 847.00 MHz

847.00 MHz		
Horizontal Peak (dBi)	-0.1	285deg
Vertical Peak(dBi)	-8.9	240deg



Main antenna: 862.00 MHz

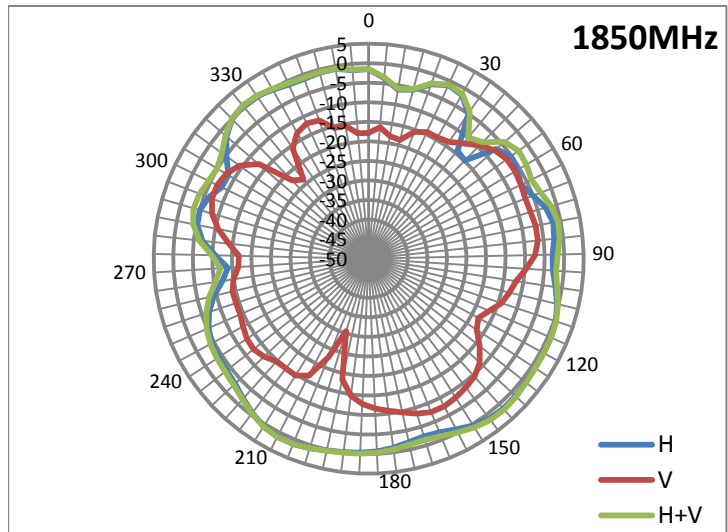
862.00 MHz		
Horizontal Peak (dBi)	-0.2	280deg
Vertical Peak(dBi)	-9.0	240deg



Radiation characteristic in 1850MHz ~ 1915MHz (FCC Part 24 UE-UTRA, Band 25)

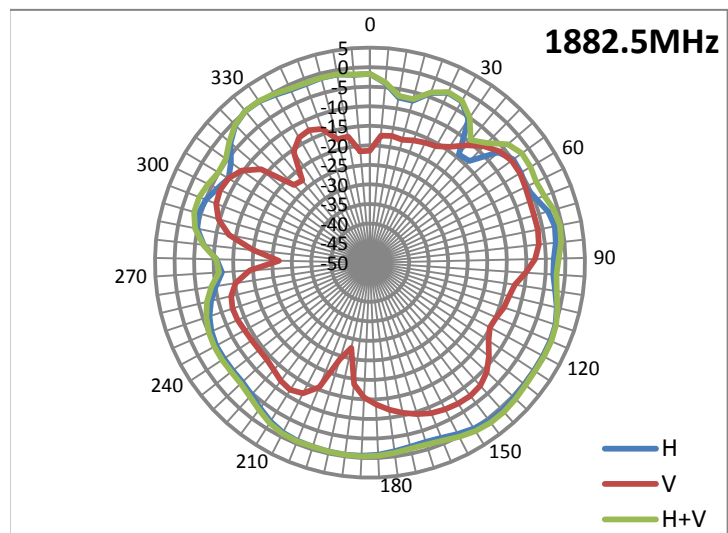
Main antenna: 1850.00 MHz

1850.00 MHz		
Horizontal Peak (dBi)	-1.4	295deg
Vertical Peak(dBi)	-6.6	140deg



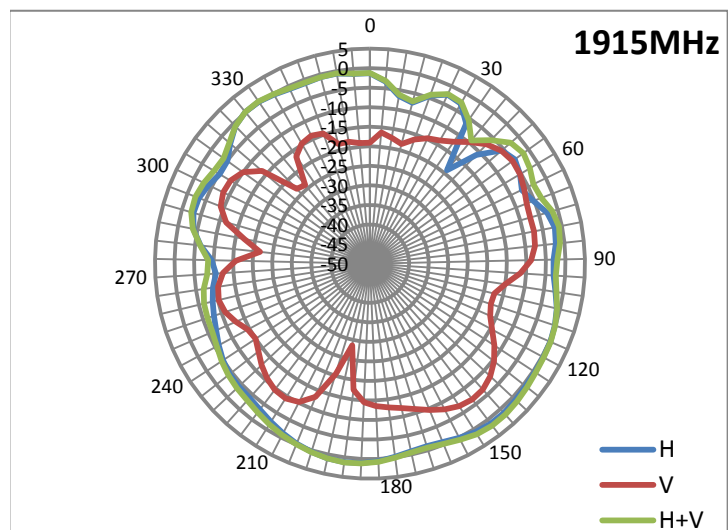
Main antenna: 1882.50 MHz

1882.50 MHz		
Horizontal Peak (dBi)	-0.7	300deg
Vertical Peak(dBi)	-5.3	140deg



Main antenna: 1915.00 MHz

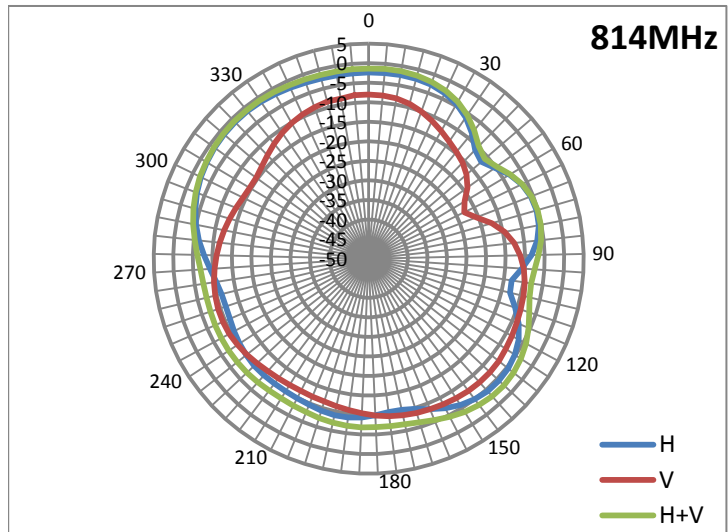
1915.00 MHz		
Horizontal Peak (dBi)	-0.4	300deg
Vertical Peak(dBi)	-5	135deg



Radiation characteristic in 814MHz ~ 849MHz (FCC Part 90, 22H UE-UTRA, Band 26)

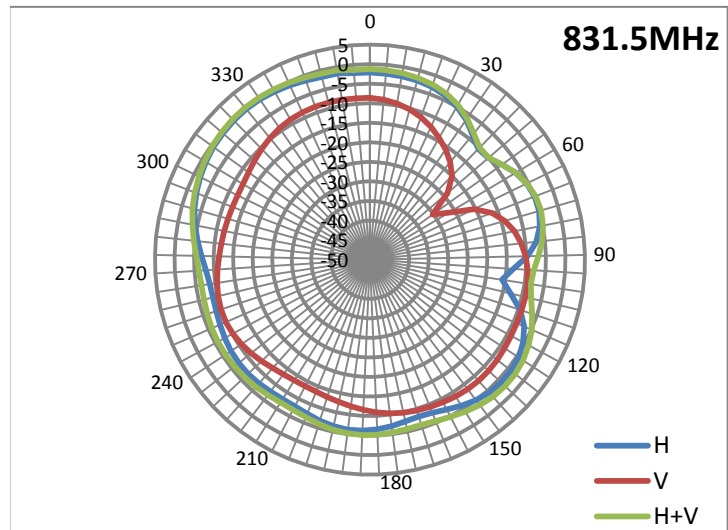
Main antenna: 814.00 MHz

814.00 MHz		
Horizontal Peak (dBi)	-1.1	270deg
Vertical Peak(dBi)	-7.5	345deg



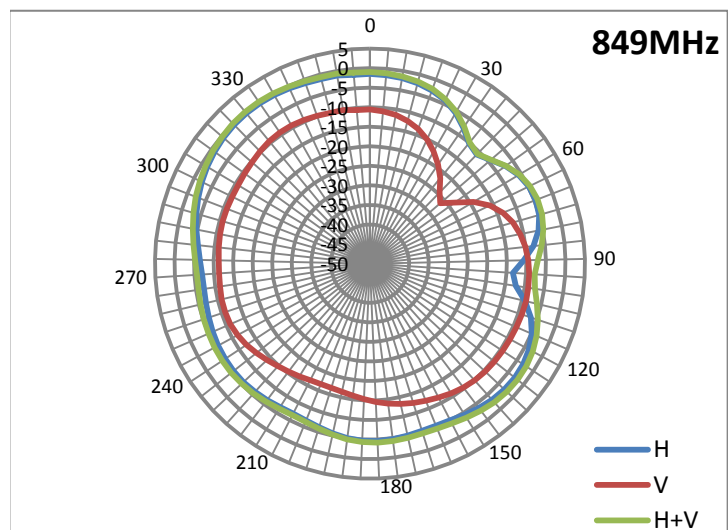
Main antenna: 831.50 MHz

831.50 MHz		
Horizontal Peak (dBi)	-0.6	280deg
Vertical Peak(dBi)	-8.4	345deg



Main antenna: 849.00 MHz

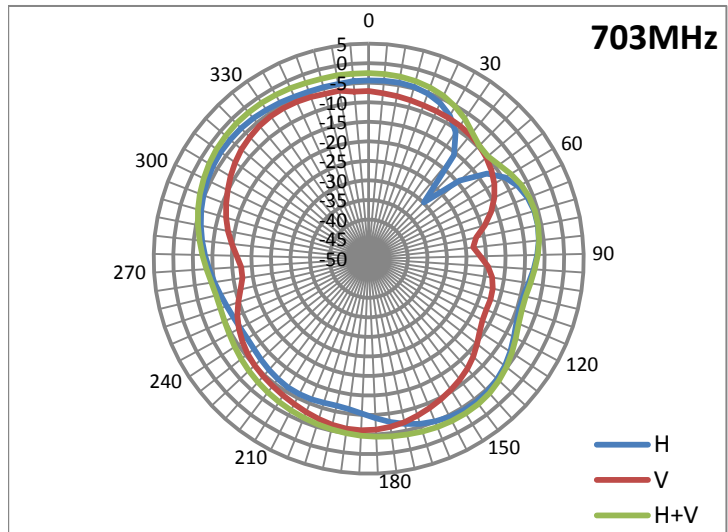
849.00 MHz		
Horizontal Peak (dBi)	-0.7	285deg
Vertical Peak(dBi)	-9	240deg



Radiation characteristic in 703MHz ~ 748MHz (EU/ANZ/Japan UE-UTRA, Band 28, 28)

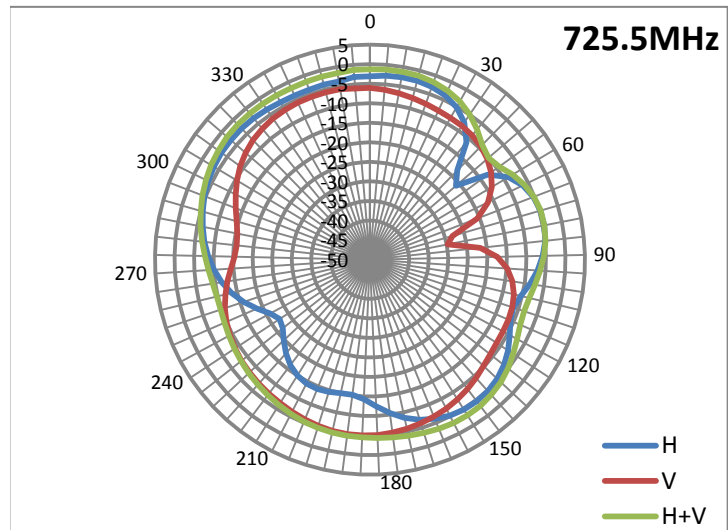
Main antenna: 703.00 MHz

703.00 MHz		
Horizontal Peak (dBi)	-3.3	270deg
Vertical Peak(dBi)	-5.7	315deg



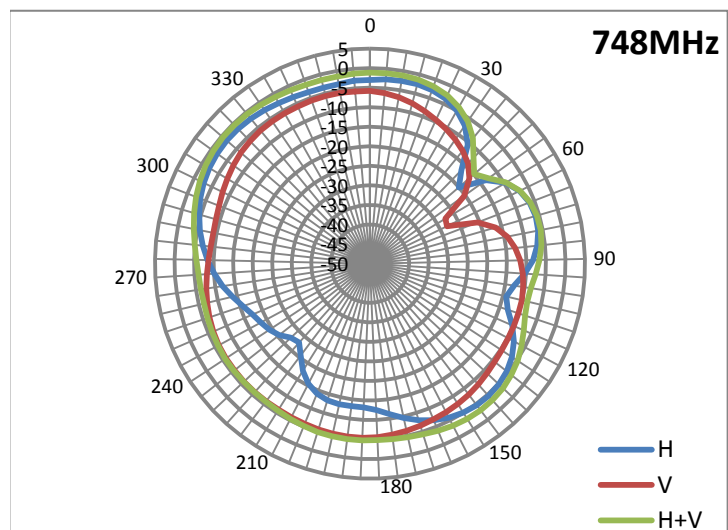
Main antenna: 725.50 MHz

725.50 MHz		
Horizontal Peak (dBi)	-2.6	260deg
Vertical Peak(dBi)	-5.0	345deg



Main antenna: 748.00 MHz

748.00 MHz		
Horizontal Peak (dBi)	-1.7	265deg
Vertical Peak(dBi)	-5.4	345deg

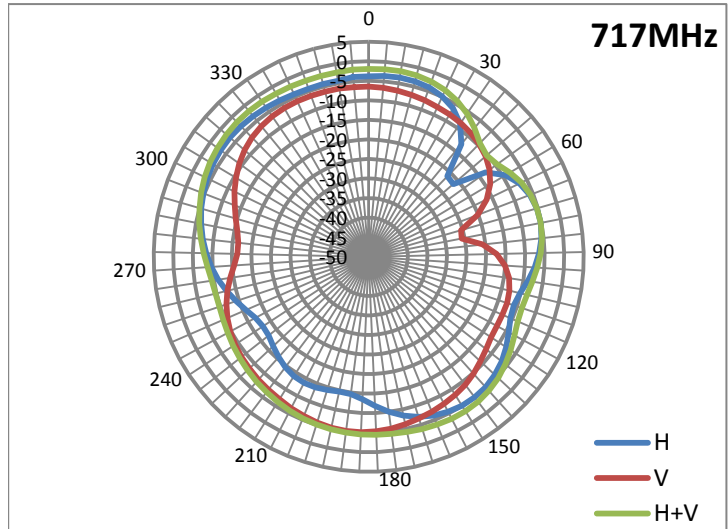


Radiation characteristic in 717MHz ~ 728MHz (FCC Part 27 UE-UTRA, Band 29)

* Down link only

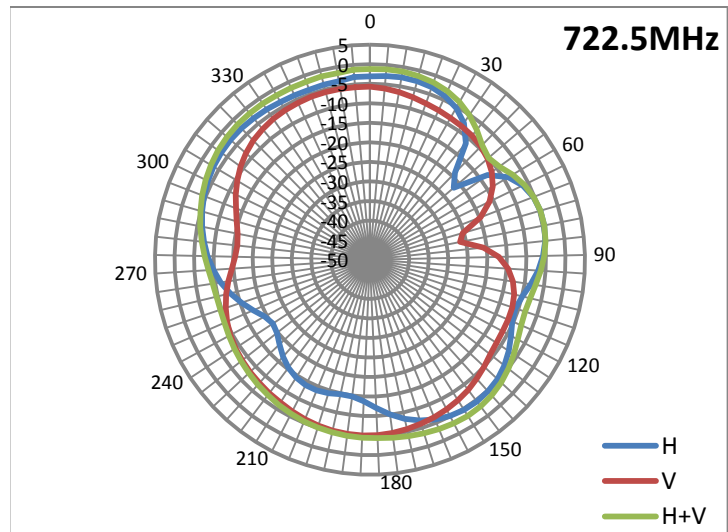
Main antenna: 717.00 MHz

717.00 MHz		
Horizontal Peak (dBi)	-3.2	260deg
Vertical Peak(dBi)	-5.1	345deg



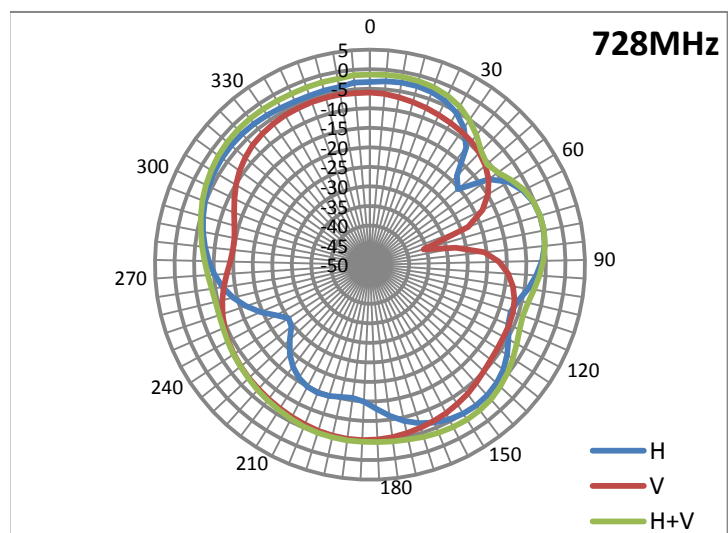
Main antenna: 722.50 MHz

722.50 MHz		
Horizontal Peak (dBi)	-2.7	260deg
Vertical Peak(dBi)	-5.0	345deg



Main antenna: 728.00 MHz

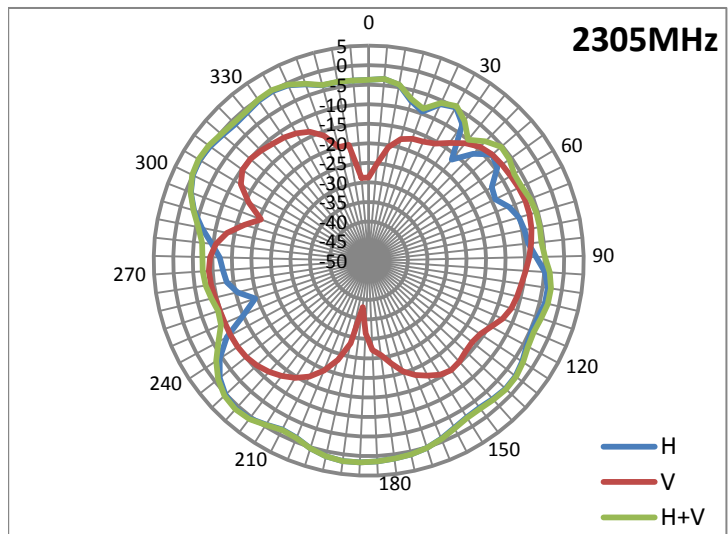
728.00 MHz		
Horizontal Peak (dBi)	-2.8	260deg
Vertical Peak(dBi)	-5.1	345deg



Radiation characteristic in 2305MHz ~ 2315MHz (FCC Part 27 UE-UTRA, Band 30)

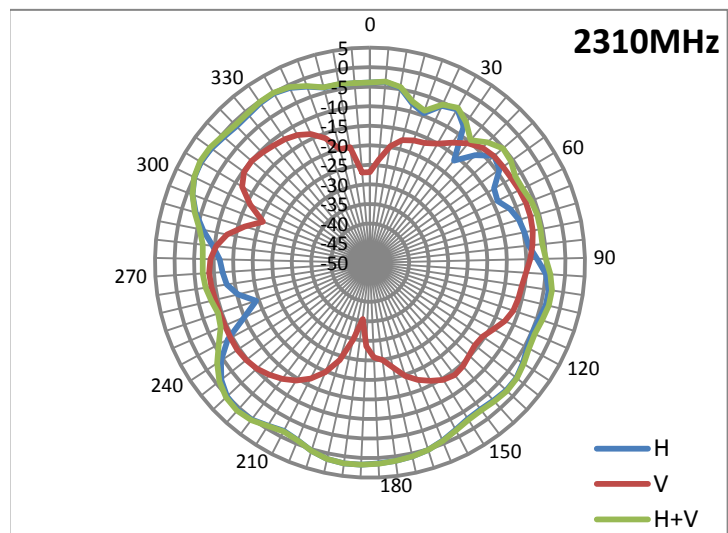
Main antenna: 2305.00 MHz

2305.00 MHz		
Horizontal Peak (dBi)	0.7	280deg
Vertical Peak(dBi)	-7.1	230deg



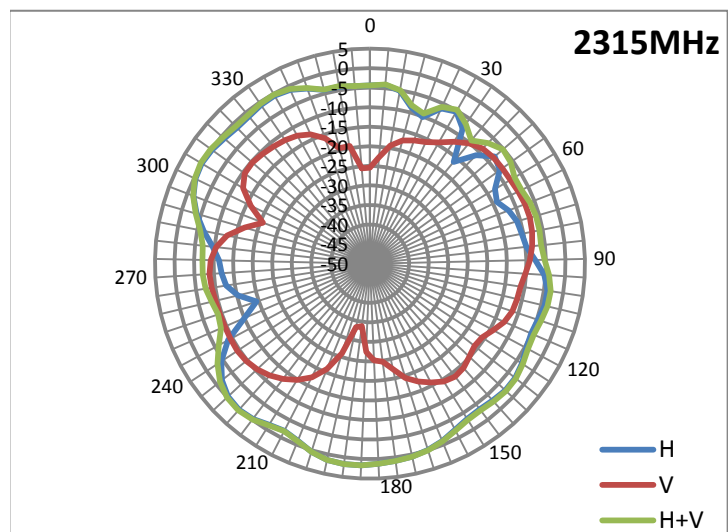
Main antenna: 2310.00 MHz

2310.00 MHz		
Horizontal Peak (dBi)	0.8	280deg
Vertical Peak(dBi)	-7.2	280deg



Main antenna: 2315.00 MHz

2315.00 MHz		
Horizontal Peak (dBi)	0.7	280deg
Vertical Peak(dBi)	-7.5	280deg

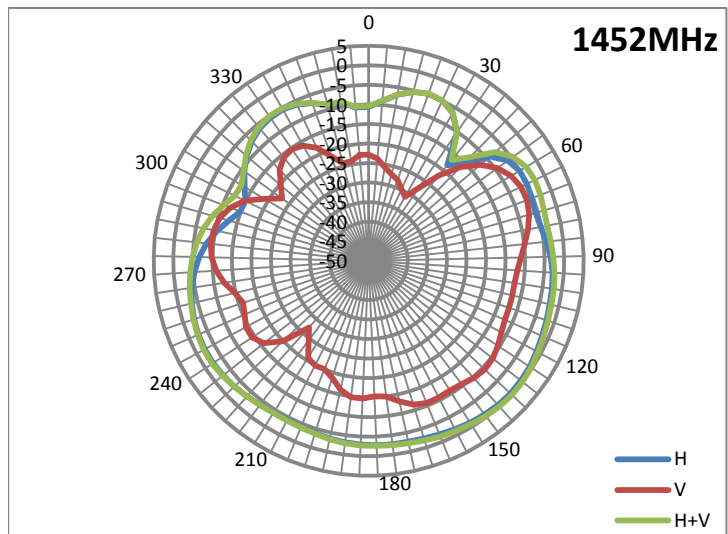


Radiation characteristic in 1452MHz ~ 1496MHz (EU LTE, Band 32)

* Down link only

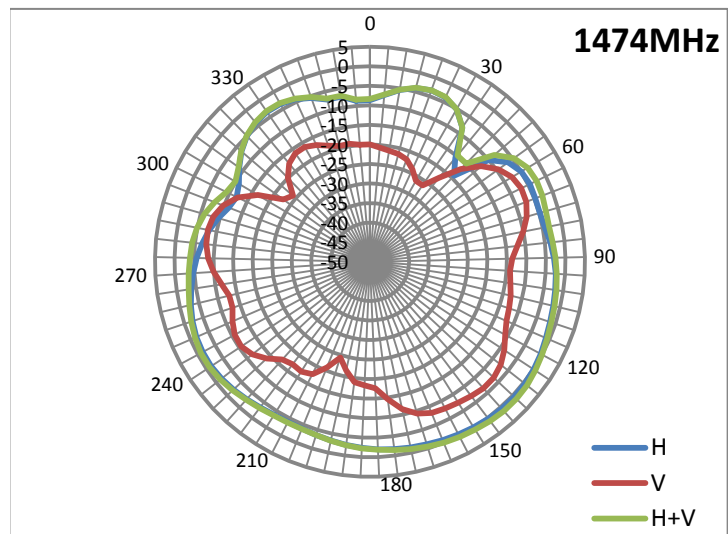
Main antenna: 1452.00 MHz

1452.00 MHz		
Horizontal Peak (dBi)	-0.3	295deg
Vertical Peak(dBi)	-6.6	270deg



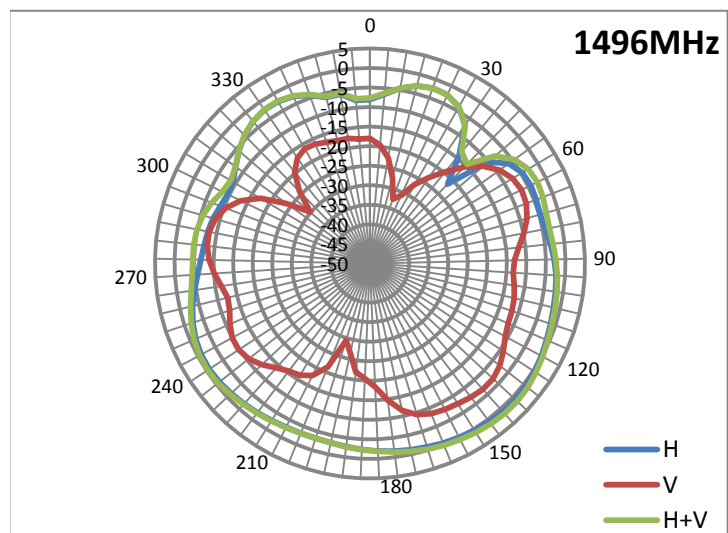
Main antenna: 1474.00 MHz

1474.00 MHz		
Horizontal Peak (dBi)	0.5	300deg
Vertical Peak(dBi)	-6.6	135deg



Main antenna: 1496.00 MHz

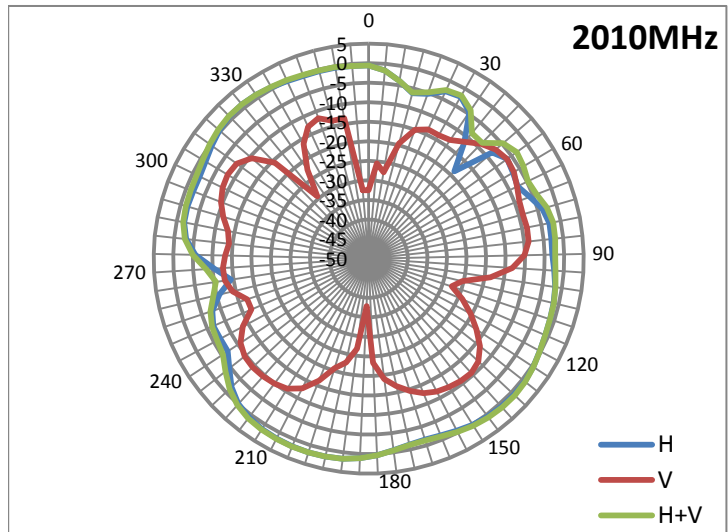
1496.00 MHz		
Horizontal Peak (dBi)	0.9	300deg
Vertical Peak(dBi)	-6.8	135deg



Radiation characteristic in 2010MHz ~ 2025MHz (EU LTE, Band 34)

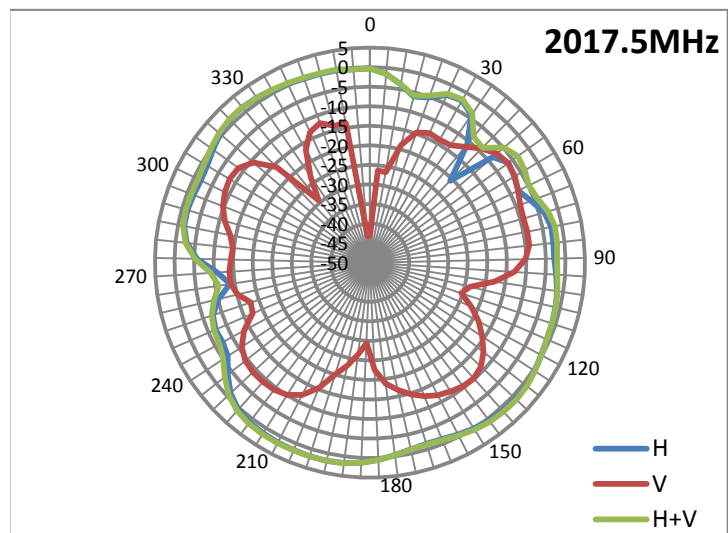
Main antenna: 2010.00 MHz

2010.00 MHz		
Horizontal Peak (dBi)	1.9	300deg
Vertical Peak(dBi)	-6.4	130deg



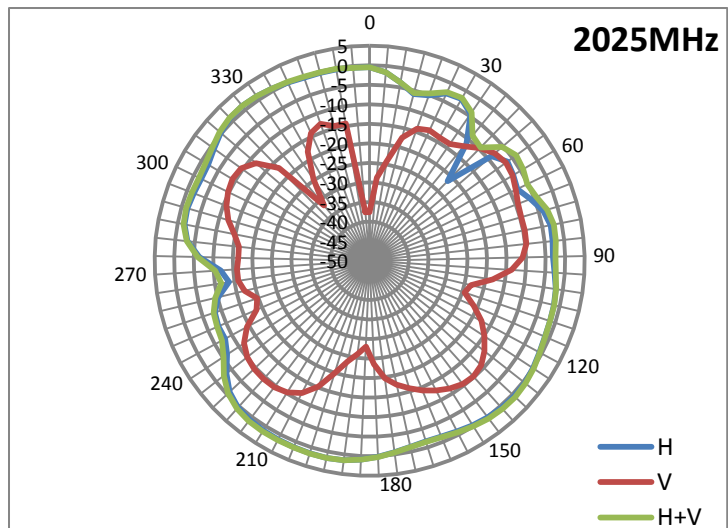
Main antenna: 2017.50 MHz

2017.50 MHz		
Horizontal Peak (dBi)	1.9	300deg
Vertical Peak(dBi)	-6.5	130deg



Main antenna: 2025.00 MHz

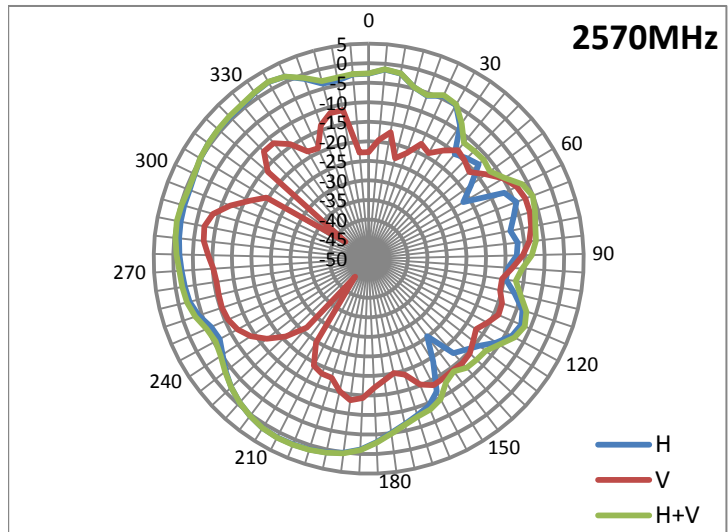
2025.00 MHz		
Horizontal Peak (dBi)	1.6	300deg
Vertical Peak(dBi)	-7.1	130deg



Radiation characteristic in 2570MHz ~ 2620MHz (EU/CN UE-UTRA, Band 38, n38)

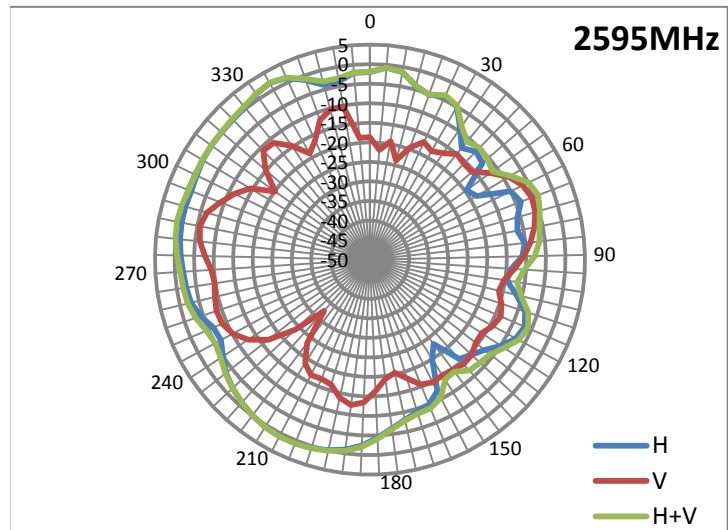
Main antenna: 2570.00 MHz

2570.00 MHz		
Horizontal Peak (dBi)	0.6	285deg
Vertical Peak(dBi)	-7	255deg



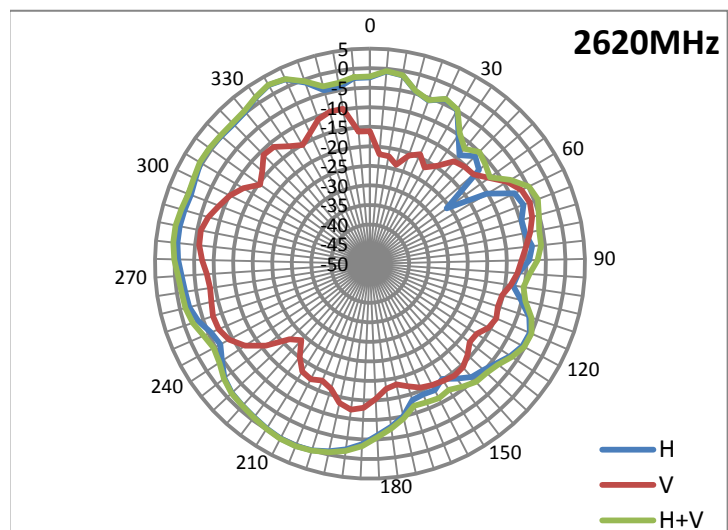
Main antenna: 2595.00 MHz

2595.00 MHz		
Horizontal Peak (dBi)	0.9	285deg
Vertical Peak(dBi)	-5.6	320deg



Main antenna: 2620.00 MHz

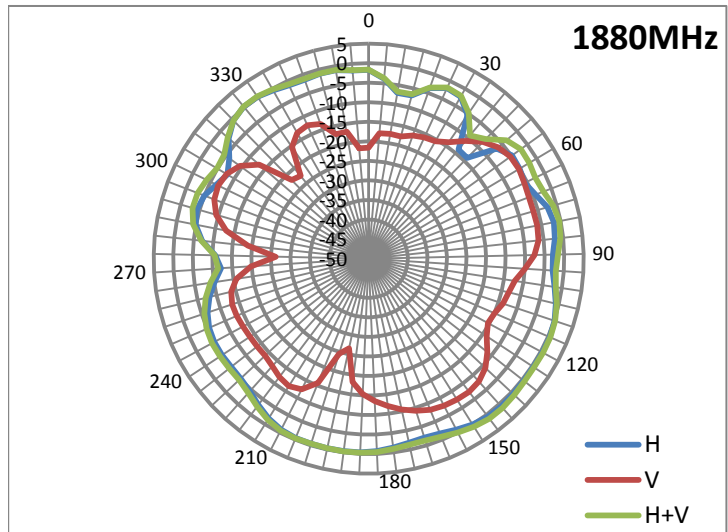
2620.00 MHz		
Horizontal Peak (dBi)	0.8	280deg
Vertical Peak(dBi)	-5.9	320deg



Radiation characteristic in 1880MHz ~ 1920MHz (CN TD-SCDMA, Band 39)

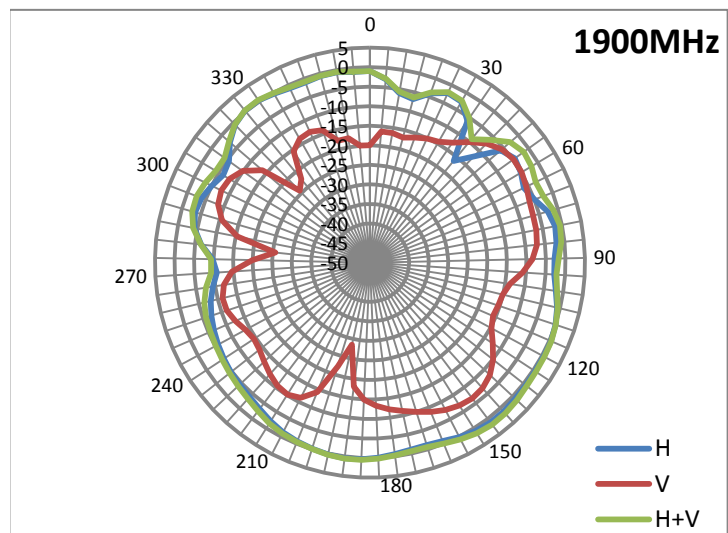
Main antenna: 1880.00 MHz

1880.00 MHz		
Horizontal Peak (dBi)	-1	300deg
Vertical Peak(dBi)	-5.5	140deg



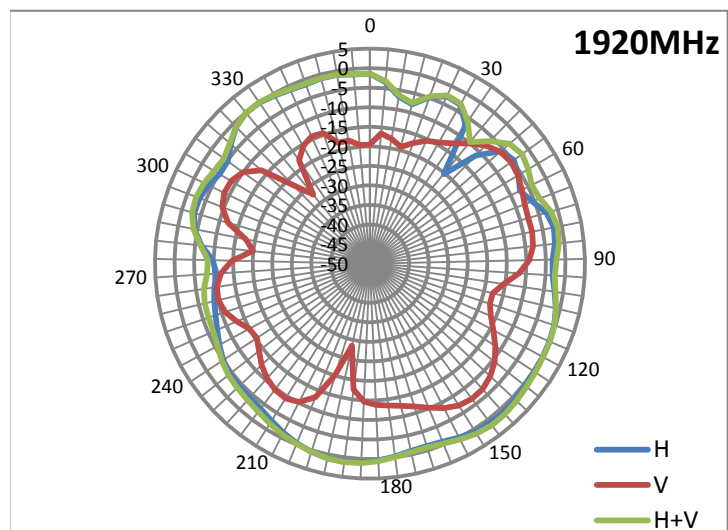
Main antenna: 1900.00 MHz

1900.00 MHz		
Horizontal Peak (dBi)	1.2	300deg
Vertical Peak(dBi)	-4.7	140deg



Main antenna: 1920.00 MHz

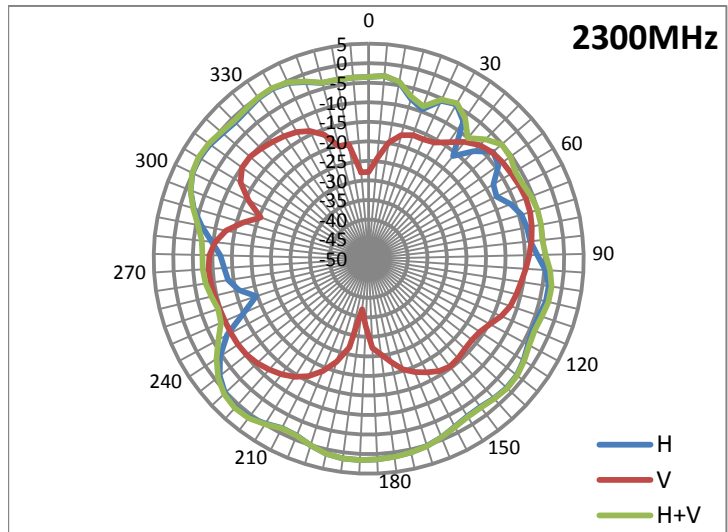
1920.00 MHz		
Horizontal Peak (dBi)	1.1	300deg
Vertical Peak(dBi)	-5.5	135deg



Radiation characteristic in 2300MHz ~ 2400MHz (EU/ANZ/CN UE-UTRA, Band 40)

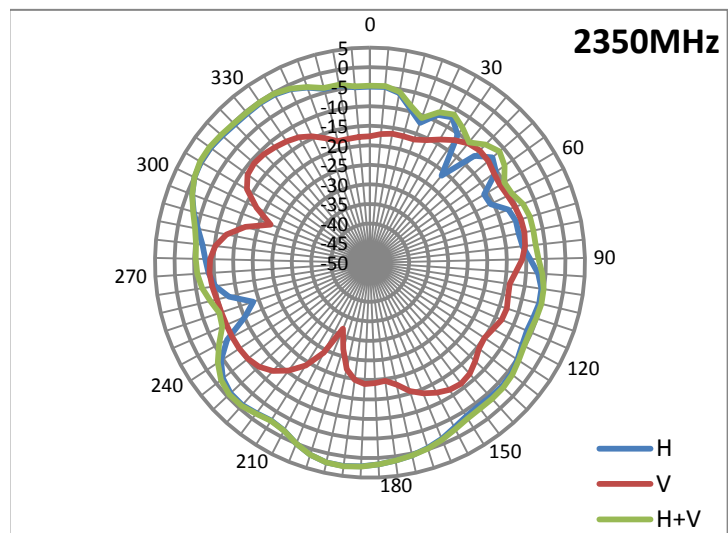
Main antenna: 2300.00 MHz

2300.00 MHz		
Horizontal Peak (dBi)	1.6	280deg
Vertical Peak(dBi)	-6.9	130deg



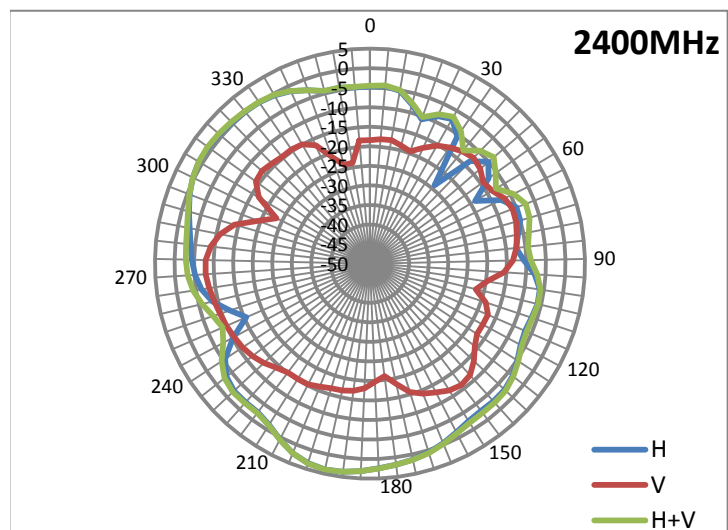
Main antenna: 2350.00 MHz

2350.00 MHz		
Horizontal Peak (dBi)	1.5	280deg
Vertical Peak(dBi)	-8.9	350deg



Main antenna: 2400.00 MHz

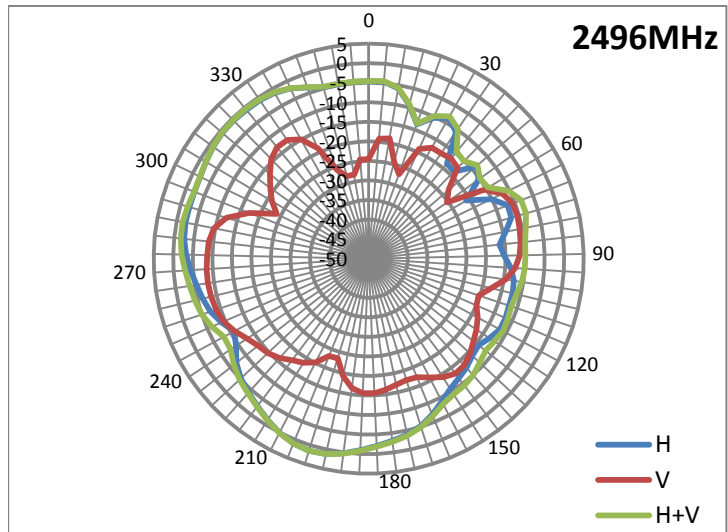
2400.00 MHz		
Horizontal Peak (dBi)	1.9	280deg
Vertical Peak(dBi)	-7.9	250deg



Radiation characteristic in 2496MHz ~ 2690MHz (FCC Part 27 UE-UTRA, Band 41, n41)

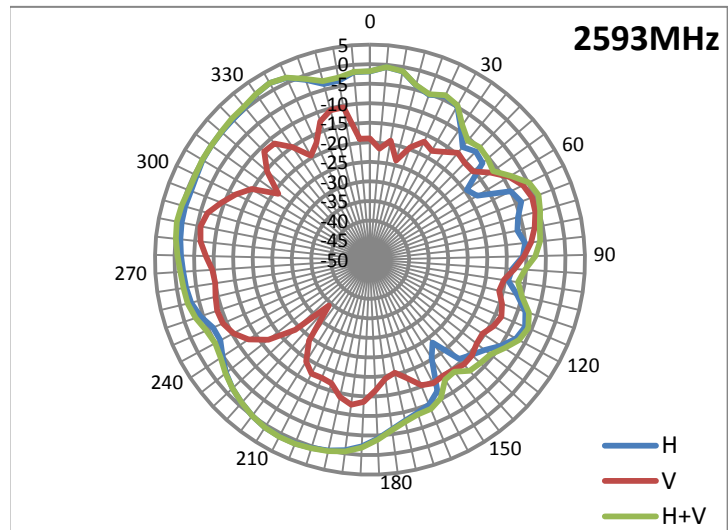
Main antenna: 2496.00 MHz

2496.00 MHz		
Horizontal Peak (dBi)	0.8	280deg
Vertical Peak(dBi)	-8.4	255deg



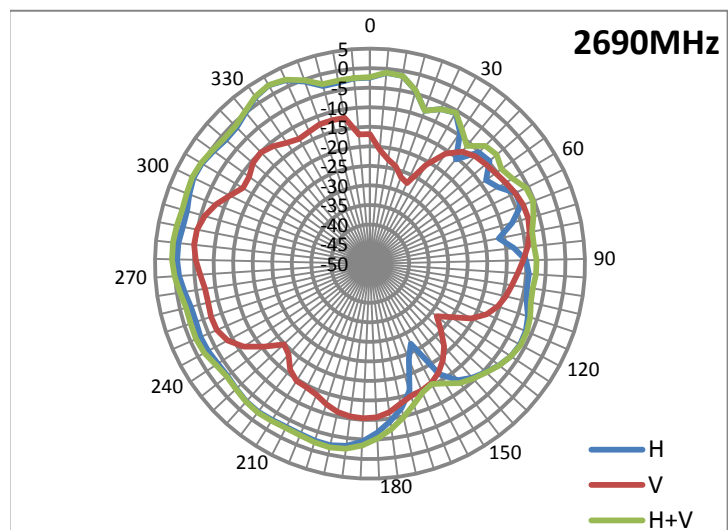
Main antenna: 2593.00 MHz

2593.00 MHz		
Horizontal Peak (dBi)	0.8	285deg
Vertical Peak(dBi)	-5.6	255deg



Main antenna: 2690.00 MHz

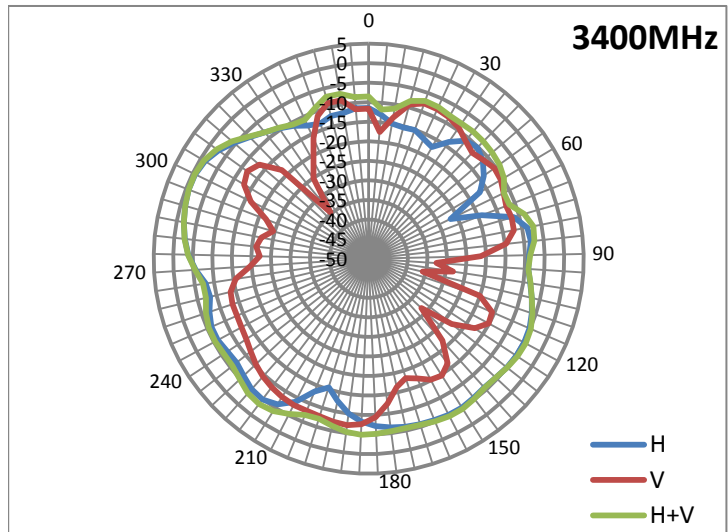
2690.00 MHz		
Horizontal Peak (dBi)	0.7	285deg
Vertical Peak(dBi)	-4.8	320deg



Radiation characteristic in 3400MHz ~ 3600MHz (FCC Part 96 LTE Band 42)

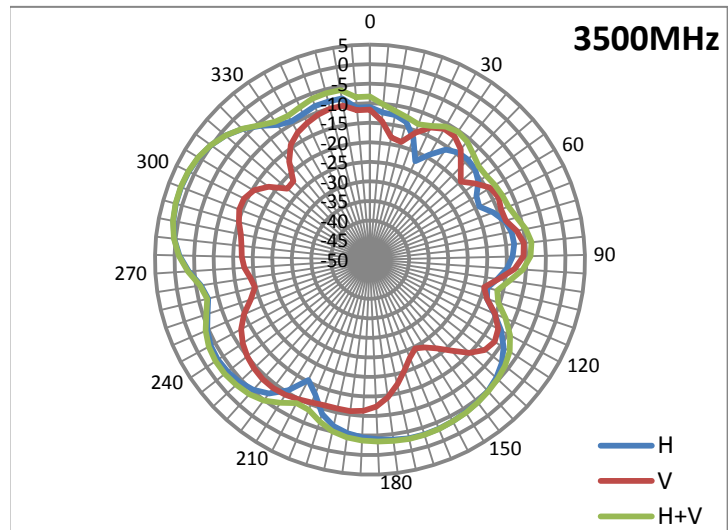
Main antenna: 3400.00 MHz

3400.00 MHz		
Horizontal Peak (dBi)	-0.7	290deg
Vertical Peak(dBi)	-7.1	290deg



Main antenna: 3500.00 MHz

3500.00 MHz		
Horizontal Peak (dBi)	0.8	290deg
Vertical Peak(dBi)	-8.9	225deg



Main antenna: 3600.00 MHz

3600.00 MHz		
Horizontal Peak (dBi)	0.3	290deg
Vertical Peak(dBi)	-6.2	225deg

