

Model name: $\lambda/4$ coax cable antenna BMW 9.289.029.3

Scope

The $\lambda/4$ coax cable antenna (BMW SNR.: 9.289.029.3) is used for the following applications:

- WLAN (WIFI)
- Bluetooth

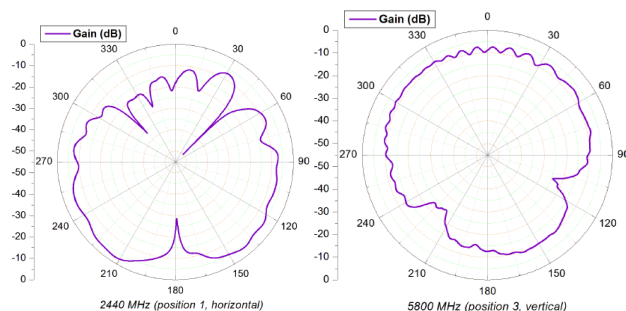
The tested specimen had a length of $\sim 1\text{m}$. The measured values vary with the cable length.

Product informations

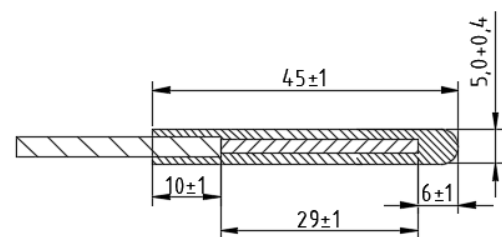
Specifications	
Frequency Range (MHz)	2400–2495; 5150–5850
Antenna Type	$\lambda/4$; $5/8 \lambda$ Monopole
Peak Gain 2.4GHz Band	-2.5 dBi
Peak Gain 5GHz Band	-2,8 dBi
VSWR	< 4.0:1 (> 2 GHz)
Polarization	Linear
Azimuth Beamwidth	Omni-directional
Power Handling	3 Watt CW
Feed Point Impedance	50 Ω unbalanced
Size	L: 45.0 mm; D: 5mm
Weight	1.6 g
Mounting	Moulding
Cable / Connector	Fakra SF or MiniCoax

- The open inner conductor at the end of the coax cable set a $\lambda/4$ or a $5/8 \lambda$ antenna for WLAN or Bluetooth
- Molding is only for the coax cable 6.923.610.9 (Low Loss/RTK 031) possible
- On the coax cable 6.923.610.9* (Low Loss/RTK 031) can be assembled two contact types:
 - Fakra SF (with diagnostic function)
 - MiniCoax (connection monitoring in combination with ADTCon-MC Diagnosepin)

Radiation pattern



Dimensions



*Please note that the article must be comply with the MD-Specifications and handling instructions, you can request them from your contact person or you can find them on our internet page.

Picture



Versions

Document	Version	Date	Type of modification
Specification	00	10.06.2020	Walzik Werner (BMW) Grasser Thomas (MD) Huber Markus (MD)

Datasheet Wave FAKRA – 8705915-03





Datasheet Wave FAKRA

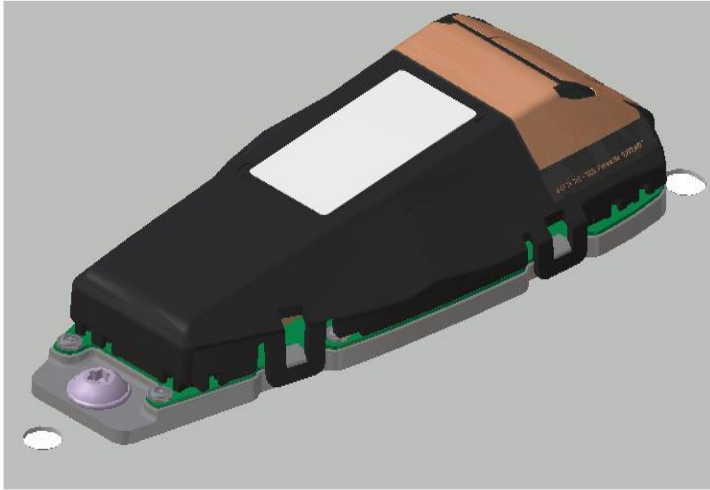
8705915-03
19.02.2020

Supplier data

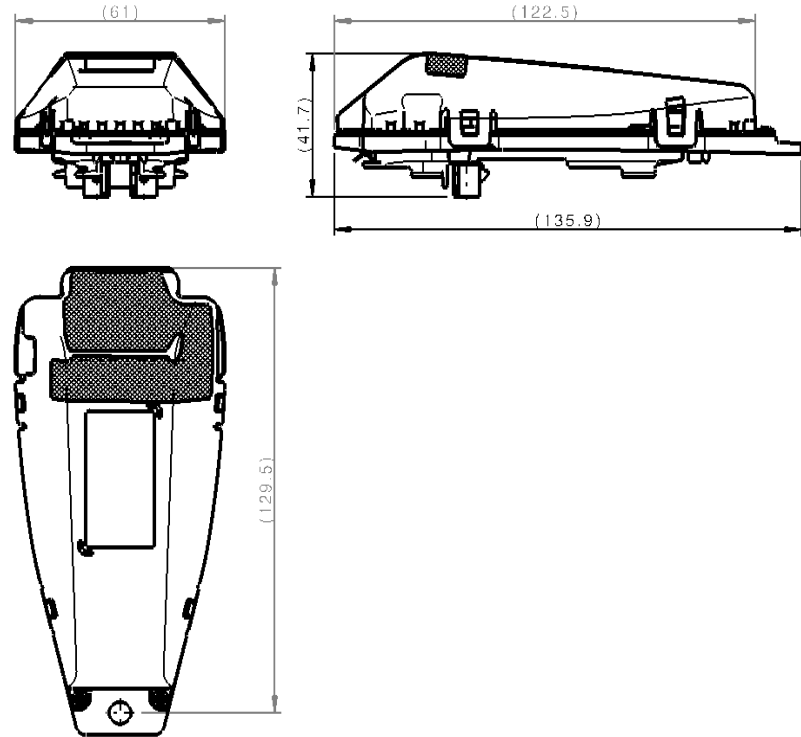
Company	Molex CVS Hildesheim GmbH
Address	Daimlerring 31, D-31135 Hildesheim
Production site (address, country)	Molex CVS Shanghai, China

Alle Messwerte wurden an B3-Mustern durchgeführt und werden sich bis zur Serienreife ggf. nochmalig ändern.

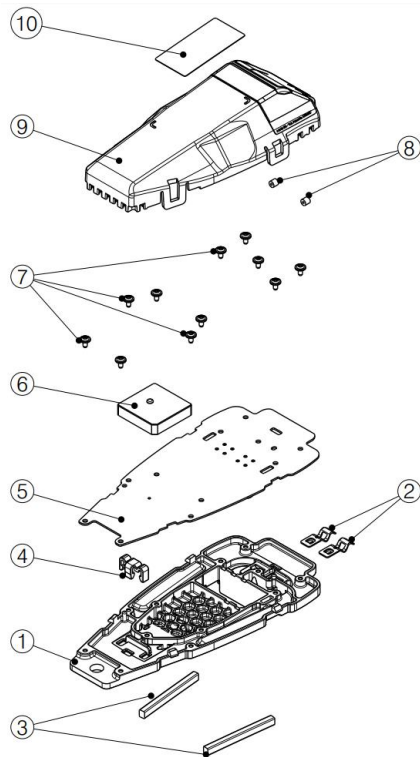
Mechanical data



64174 – 8705915-03



Mechanical data



MOLEX PN	BMW PN	AI	Status: 2020-02-20 BMW DESCRIPTION	weight in g
6 41 74	8705915	03	ANTENNE WAVE 5G GNSS ROW - FAKRA	170

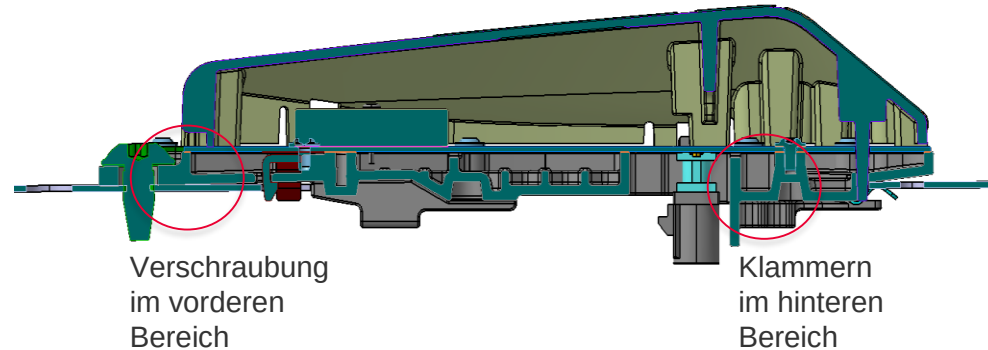
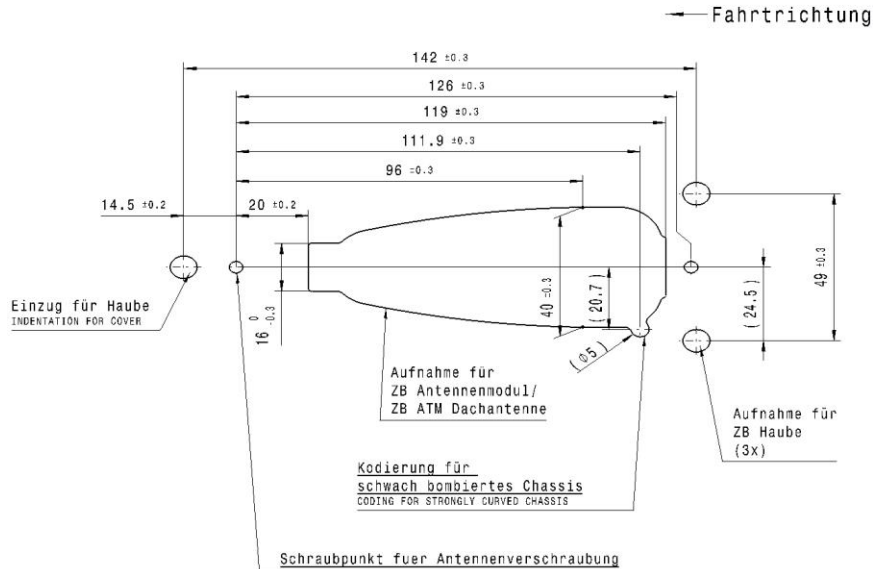
1	1	3 41 14 401	Chassis
2	2	3 41 03 301	Spring
3	2	3 41 10 801	Gasket
4	1	3 41 14 102	Compensorclip
5	1	6 41 74 911	PCB populated
6	1	6 41 74 801	GNSS-L1-Patch
7	11	FC010030036	Screw
8	2	3 41 03 801	Silicone Contact
9	1	6 41 74 201	Cover Assembly
9.1	1	3 41 14 101	Cover
9.2	1	6 41 74 701	MIMO1-Foil
9.3	1	6 41 74 602	Cover-Label printed
10	1	6 41 74 601	Label printed

Mounting situation in vehicle

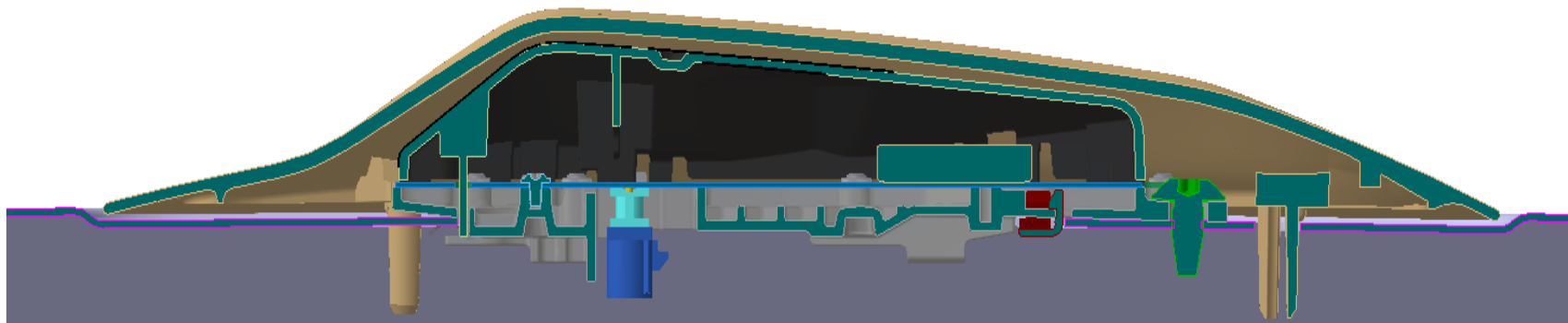
Lochbild Dachverprägung

(Ansicht von oben)

CUT OUT FOR EMBOSSEMENT OF THE ROOF



Mounting situation in vehicle



Electrical parameter GNSS

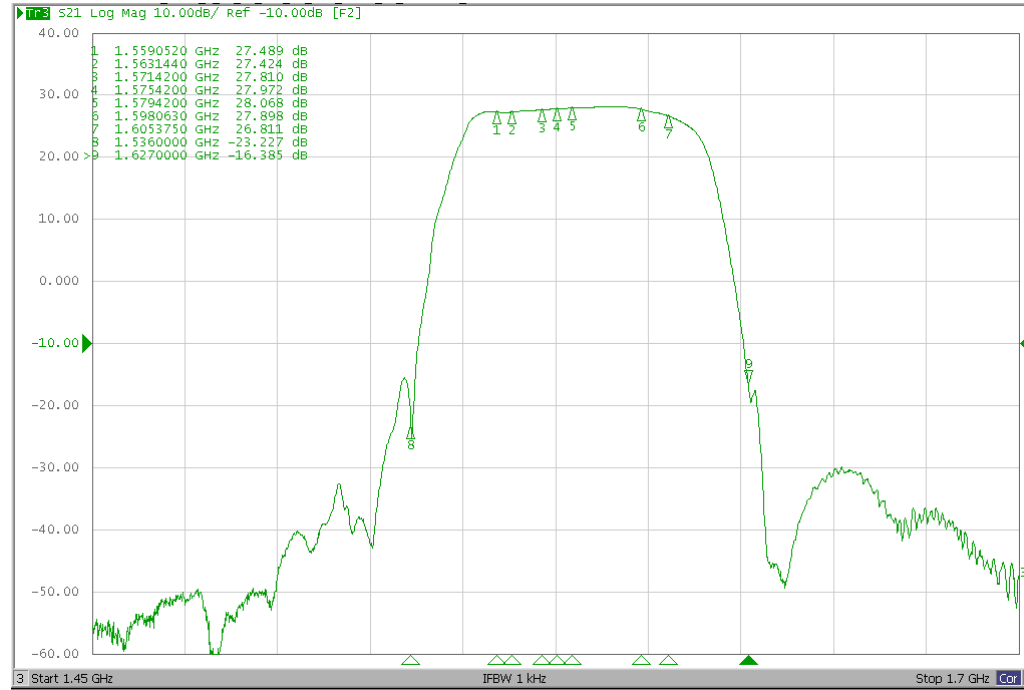
Main electrical data

Parameter	Unit	Min	Typ	Max
Supply Voltage	V	4.5	5.0	5.5
Supply Current	mA		24	
LNA Gain	dB	25		29
Noise Figure	dB			2.5
Output Return Loss	dB	10		
Antenna Passive Average Gain (at Zenith) in Band 1	dBiC	4.1	4.7	4.9

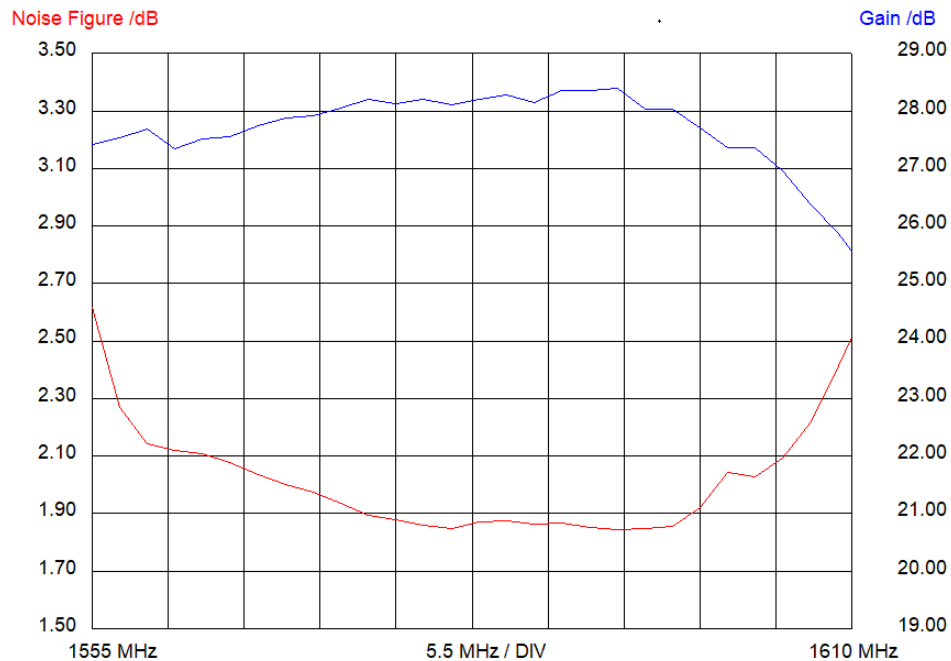
GNSS frequency bands

Band 1	Frequency-Range
L1 Beidou	1559 – 1563 MHz
L1 GPS, Galileo E1, QZSS, SBAS	1565 – 1585 MHz
L1 Glonass	1598 – 1606 MHz

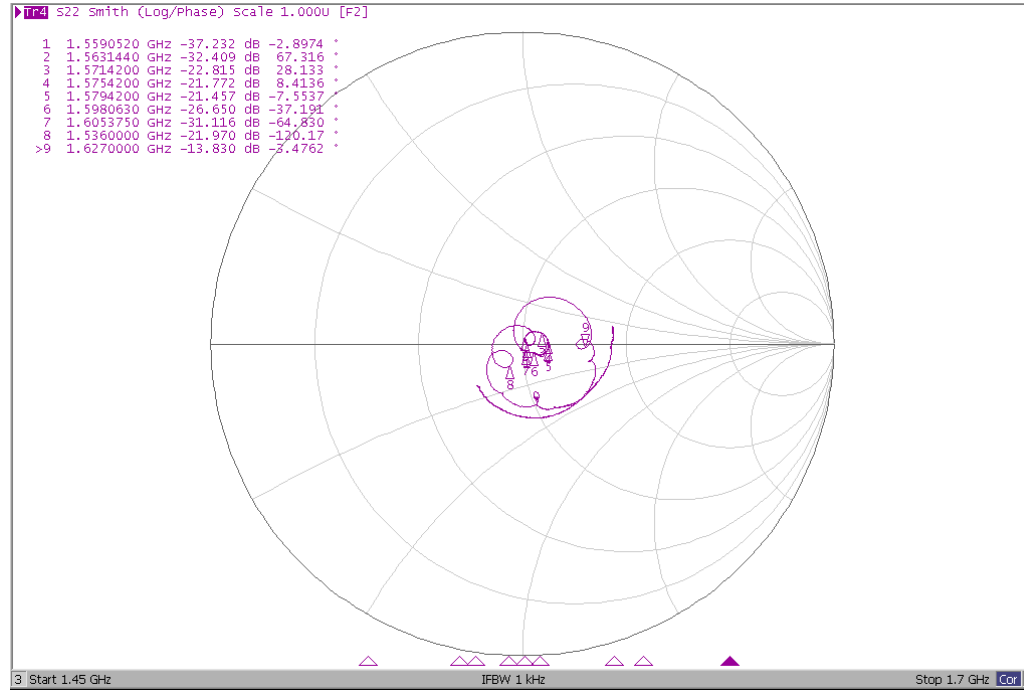
LNA Gain



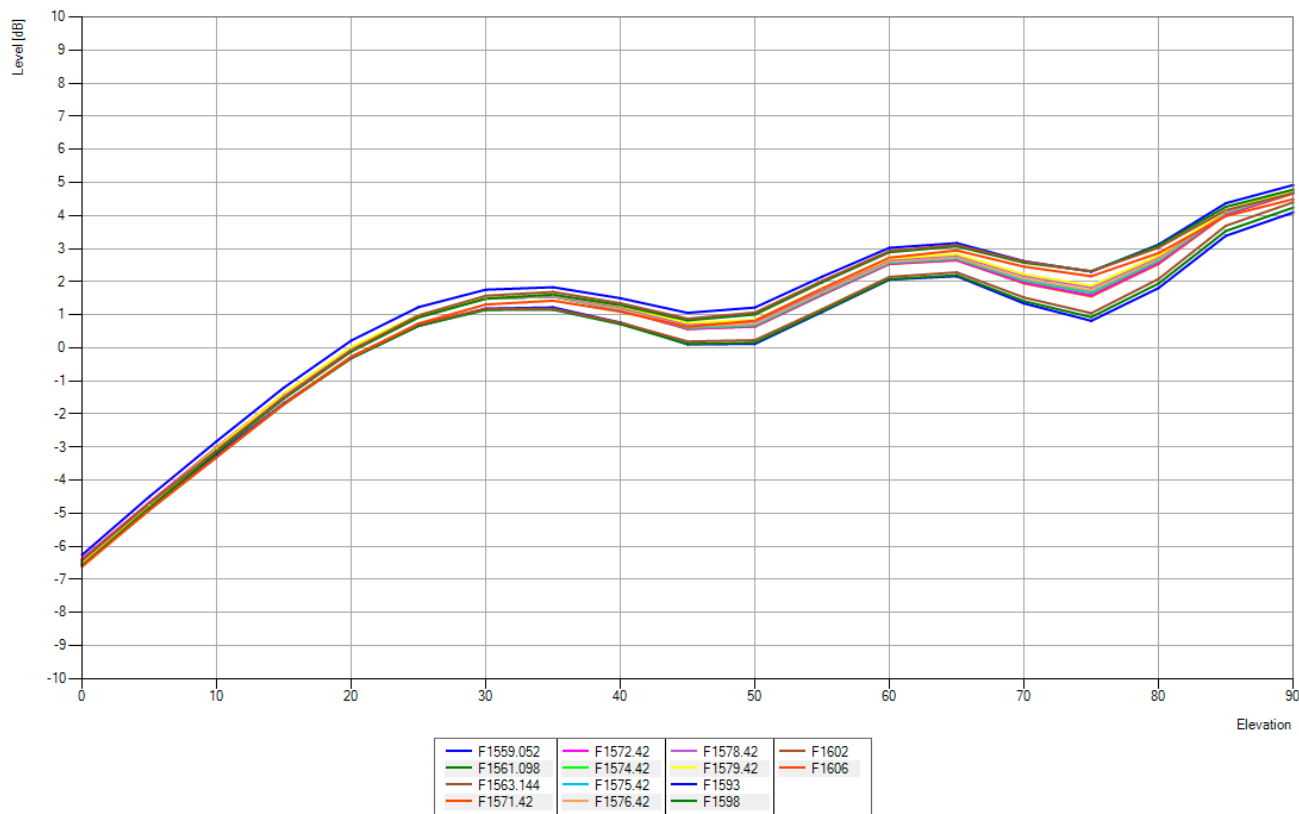
LNA Noise figure



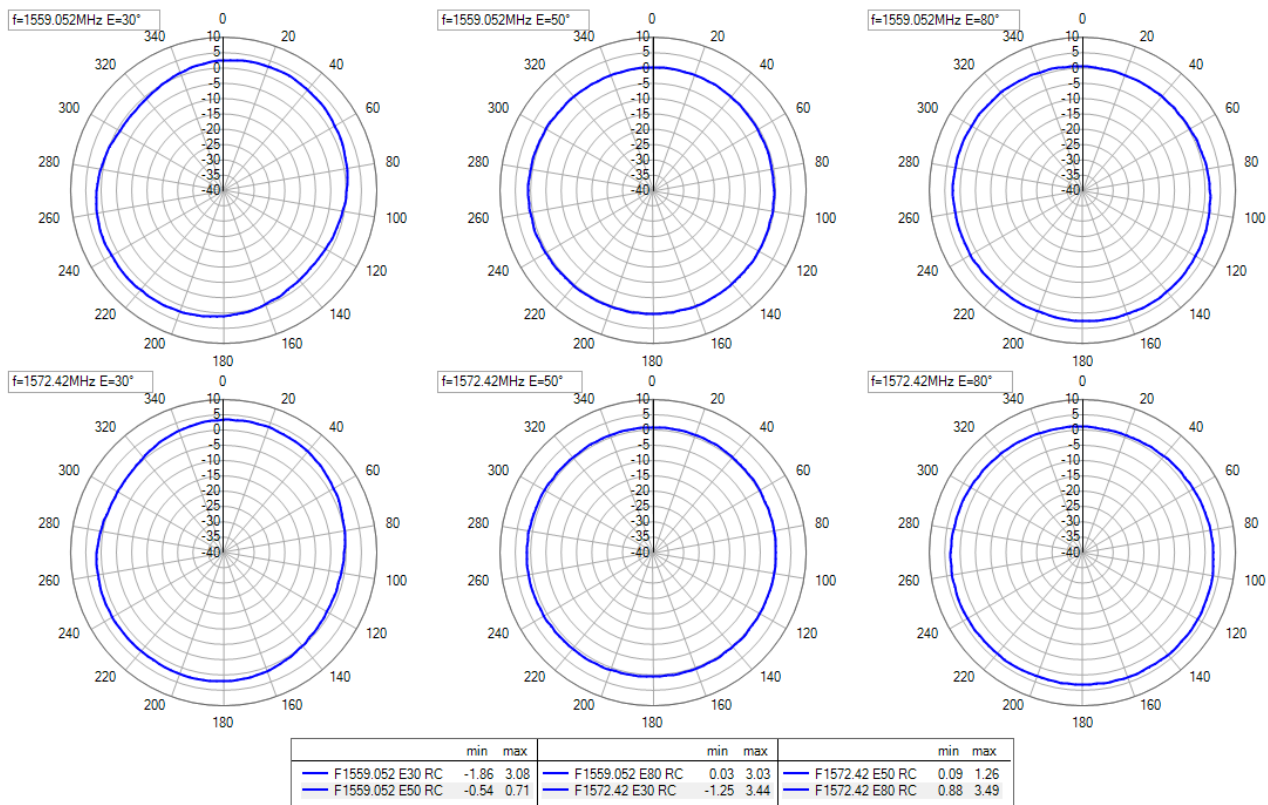
LNA Output return loss



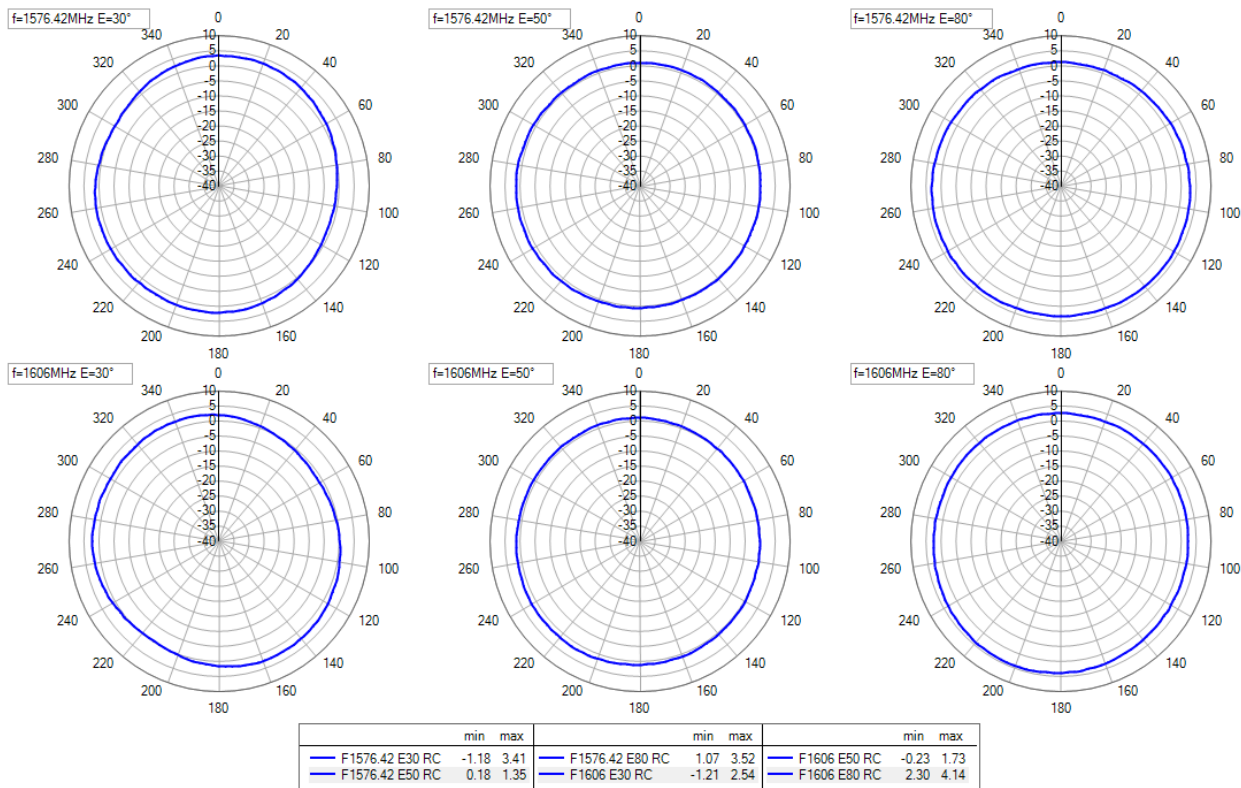
Average Gain over Elevation (RC-Polarization)



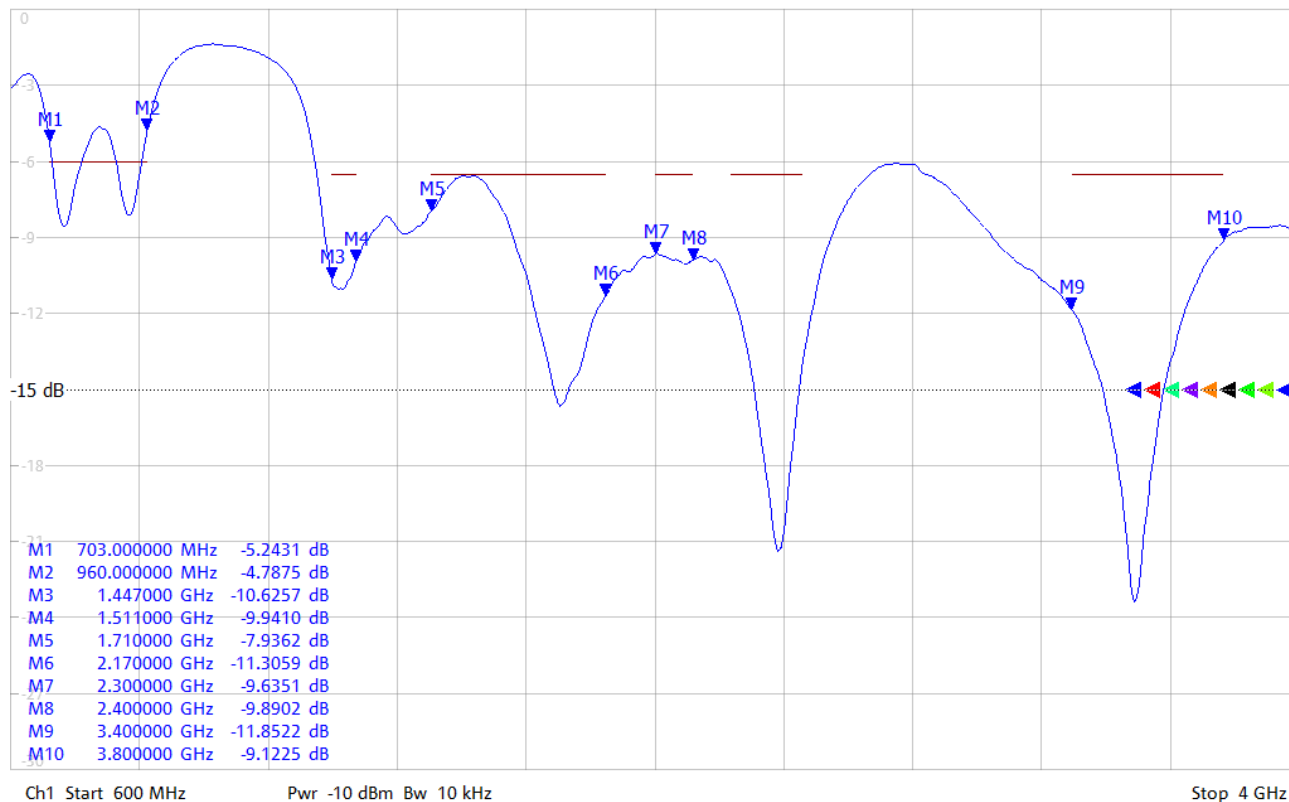
Radiation Pattern GNSS



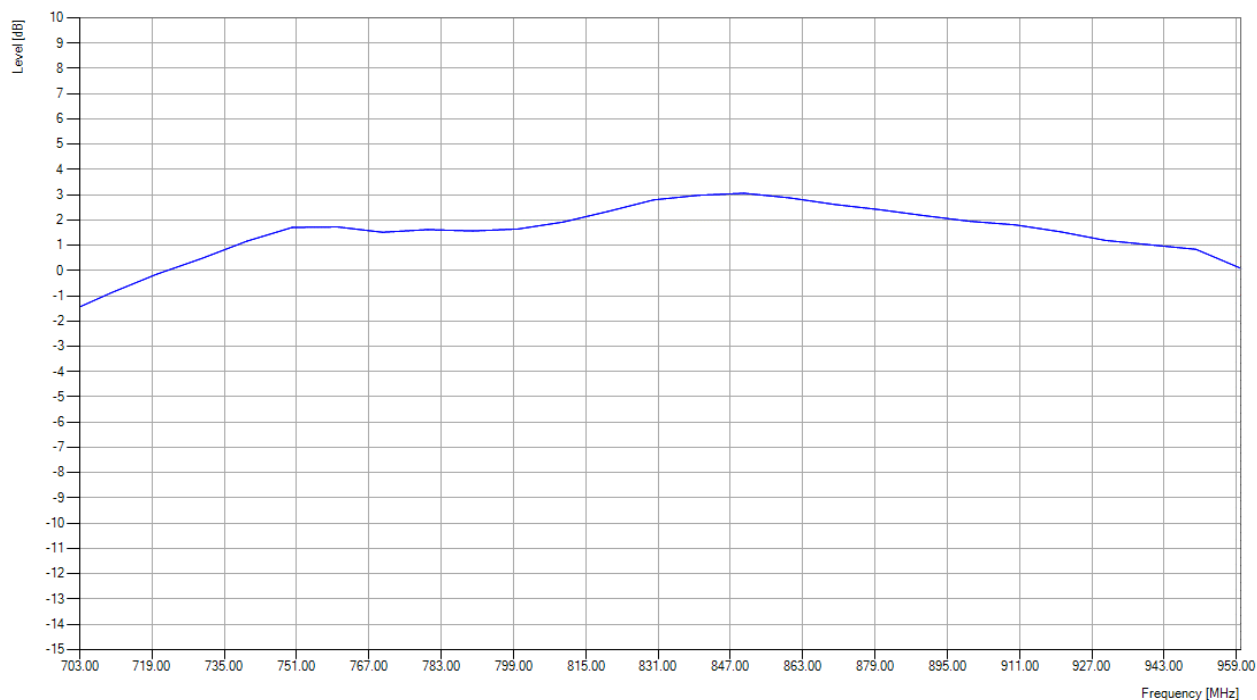
Radiation Pattern GNSS



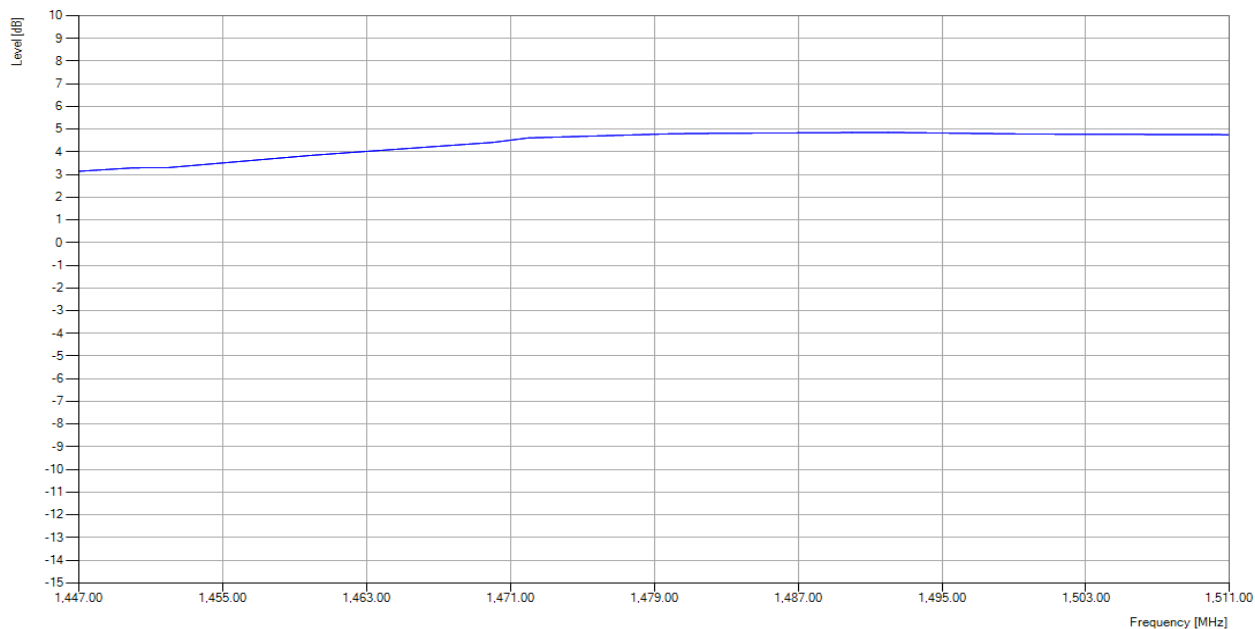
Matching MIMO1



Max. Gain vs. Frequency (703 MHz-960 MHz)

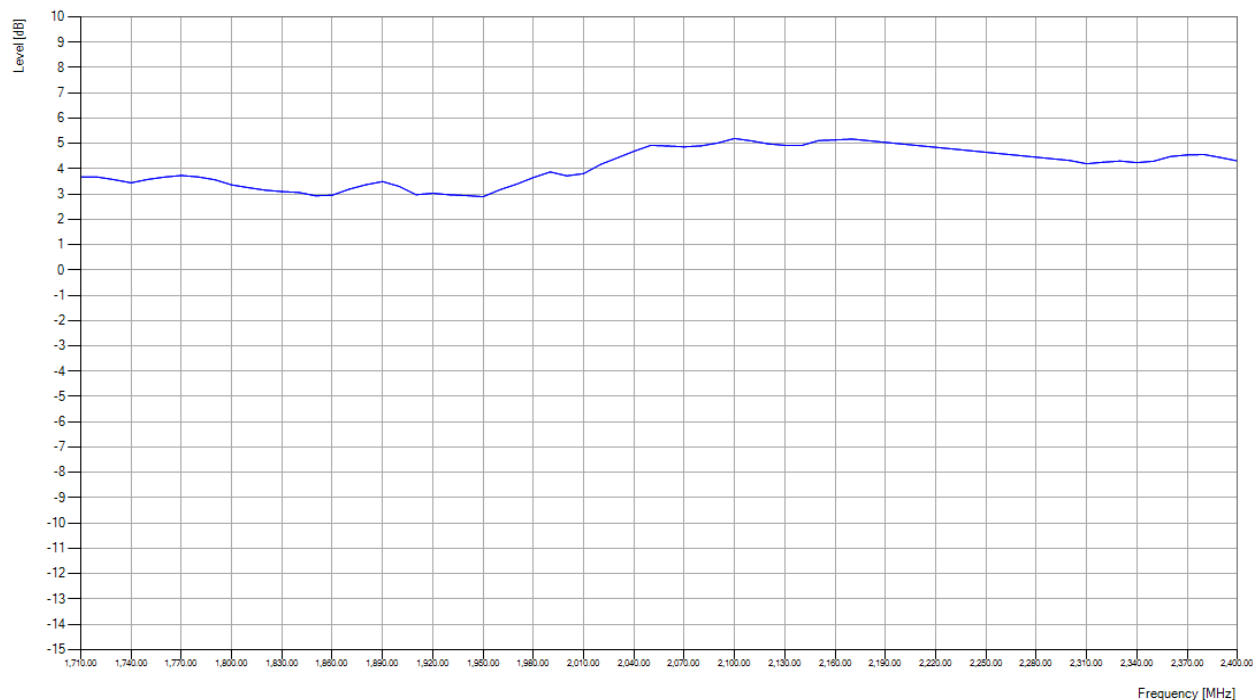


Max. Gain vs. Frequency (1447 MHz-1511 MHz)

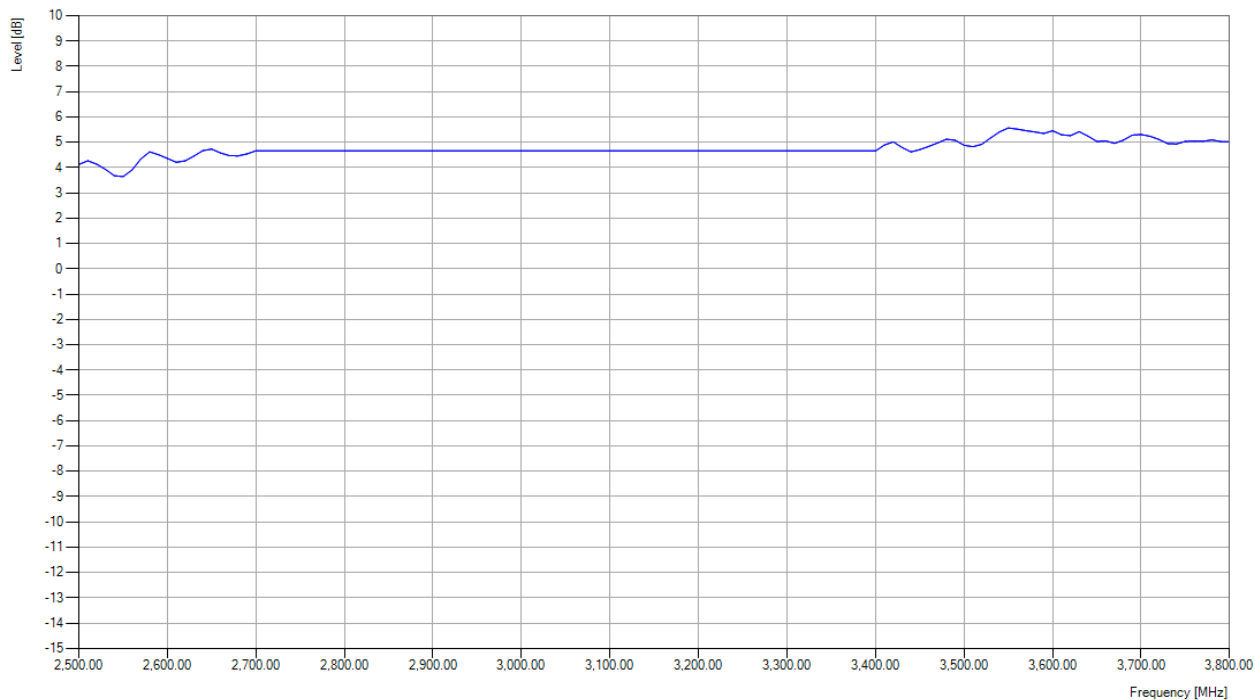


	min	max		min	max
L(H+V) (theta: -90 ... 90)	-7.98	-0.65	L(H+V) (max)	-2.19	5.57
L(H+V) (min)	-49.57	-19.54			

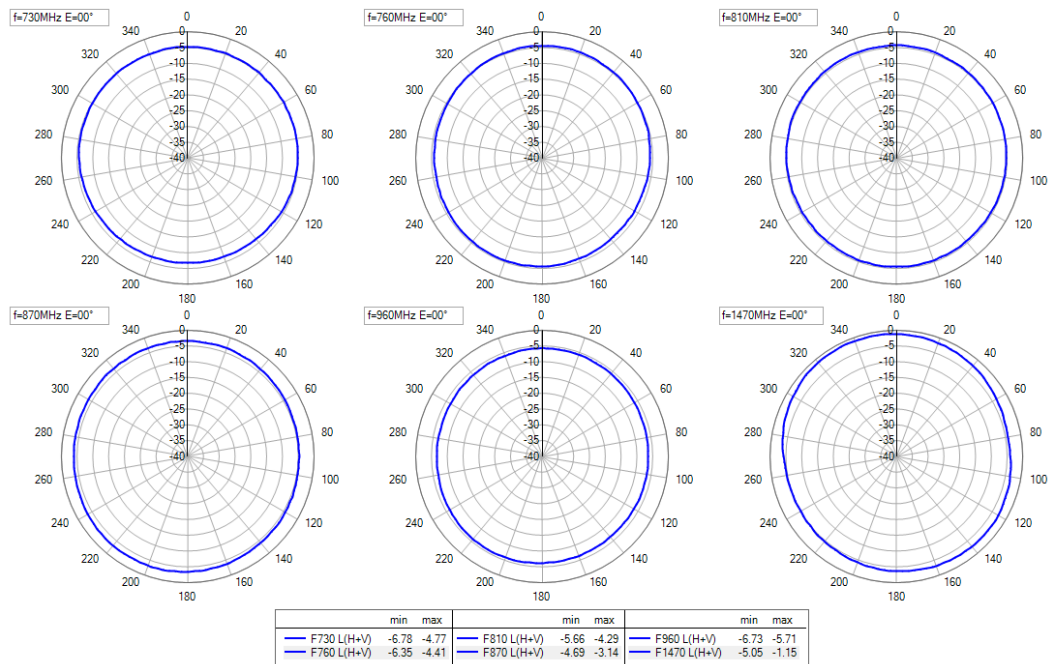
Max. Gain vs. Frequency (1710 MHz-2400 MHz)



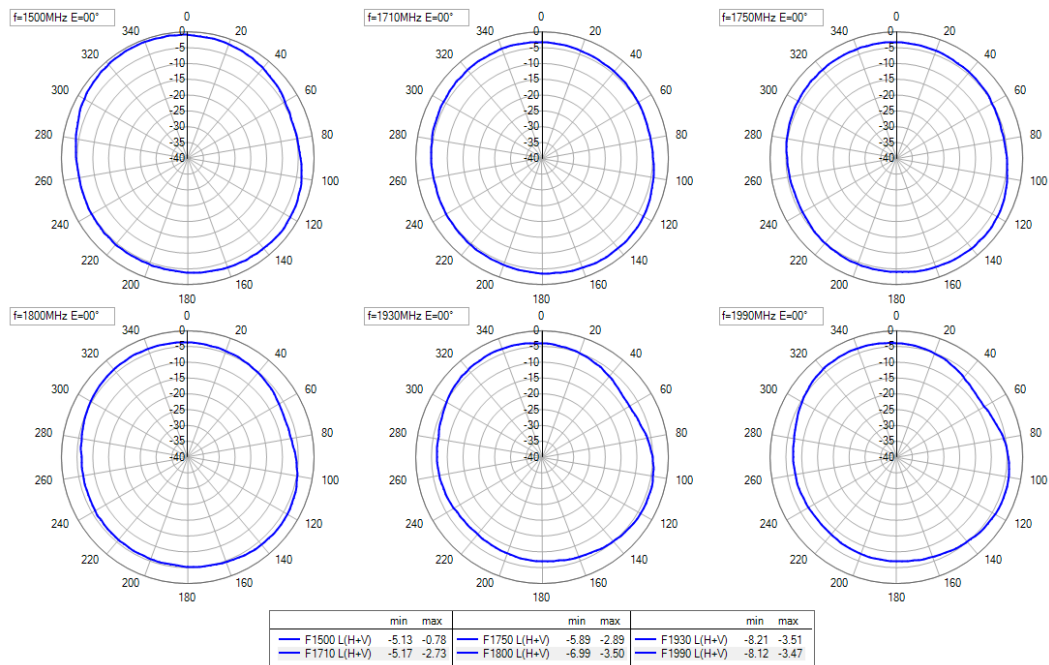
Max. Gain vs. Frequency (2500 MHz-3800 MHz)



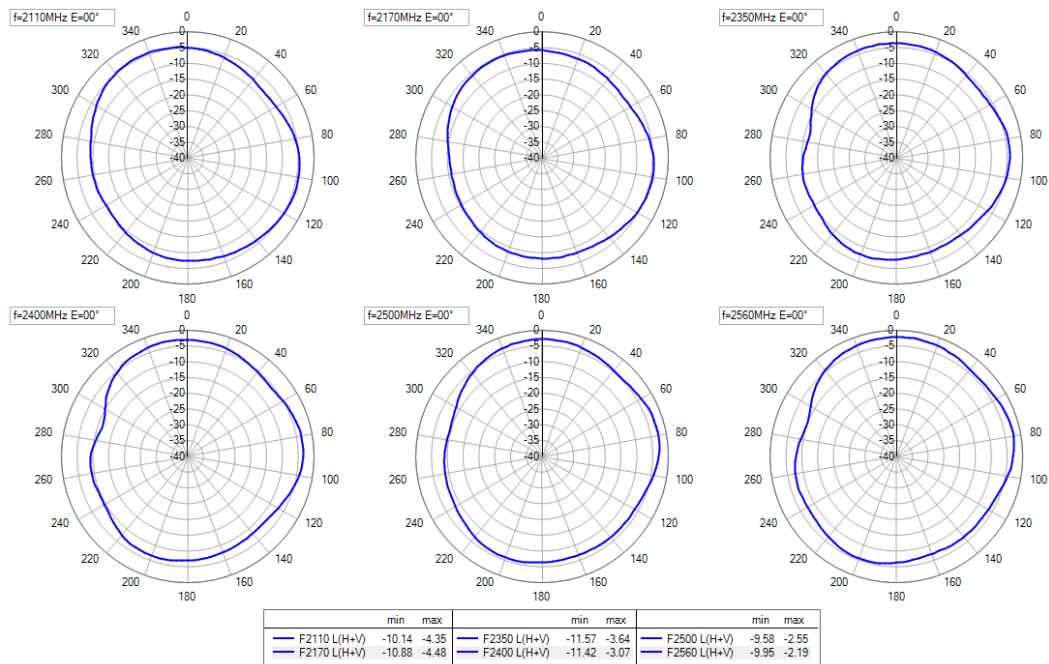
Radiation Pattern MIMO



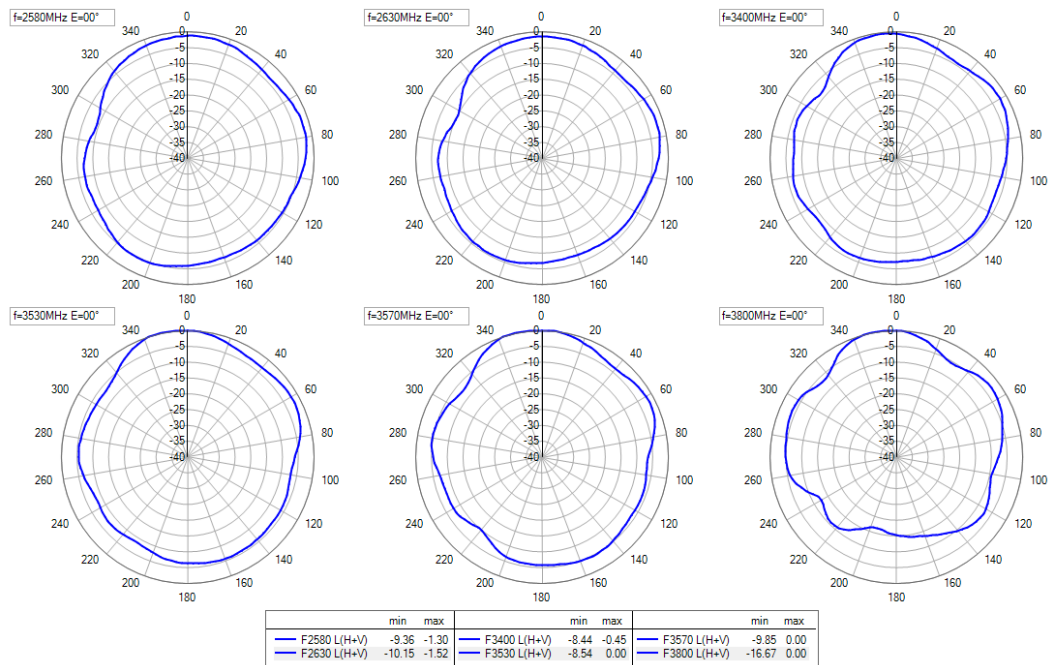
Radiation Pattern MIMO



Radiation Pattern MIMO



Radiation Pattern MIMO



Max. Gain Summary

E-UTRA Bands	Frequency-Range UL	Max Gain (MIMO1)
GSM 850	824 – 849	3 dBi
GSM 900	890 – 915	2.2 dBi
GSM 1800	1710 –1785	3.7 dBi
GSM 1900	1850 –1910	3.5 dBi
UMTS B. 1	1920 –1980	3.7 dBi
UMTS B. 2	1850 –1910	3.5 dBi
UMTS B. 3	1710 –1785	3.7 dBi
UMTS B. 5	824 – 849	3 dBi
UMTS B. 6	830 – 840	3 dBi
UMTS B. 8	880 – 915	2.2 dBi
UMTS B. 19	830 – 845	3 dBi

Max. Gain Summary

Band	Frequency-Range UL	Max Gain (MIMO1)
LTE 1	1920 - 1980	3.7 dBi
LTE 3	1710 - 1785	3.7 dBi
LTE 5	824 - 849	3 dBi
LTE 7	2500 - 2570	4.3 dBi
LTE 8	880 - 915	2.2 dBi
LTE 9	1749 - 1785	3.7 dBi
LTE 13	777 - 787	1.6 dBi
LTE 17	704 - 716	-0.9 dBi
LTE 19	830 - 845	3 dBi
LTE 20	832 - 862	3.1 dBi
LTE 21	1447 - 1463	4 dBi

Max. Gain Summary

Band	Frequency-Range UL	Max Gain (MIMO1)
LTE 28	703 - 748	1.9 dBi
LTE 32	1452-1496	4.9 dBi
LTE 38	2570-2620	4.6 dBi
LTE 40	2300 -2400	4.6 dBi
LTE 41	2496 -2690	4.7 dBi
TD3500	3400-3600	5.6 dBi
TD3700	3600-3800	5.6 dBi

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