ANTENNA BASE FULL FEAT.

ANTENNA BASE_ANT VT FULL FEAT.

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ANTENNA BASE_ANT RT FULL FEAT.

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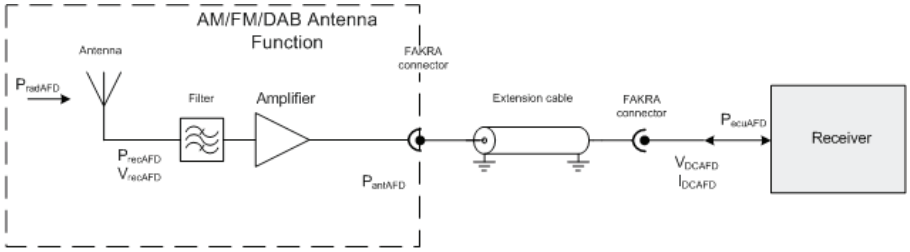
- Vehicle roof antenna for combined AM/FM/DAB and GNSS reception with integrated LNA
- Transmission operation in the CELLULAR and WLAN services LTE low and high, GSM 850/900/1800/1890/UMTS and WLAN 2,4 GHz plus 5 GHz
- Antenna rod 405 and 200 mm for AM/FM/DAB with M6 thread
- Mounting on metallic vehicle roof from outside

Subject to alterations

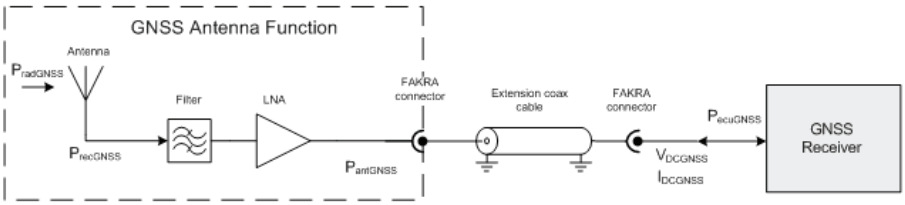
ANTENNA AM/FM/DAB-ROD, 400 mm
224 729 86
825 066-001

ANTENNA AM/FM/DAB-ROD, 200 mm
230 371 07
825 180-001

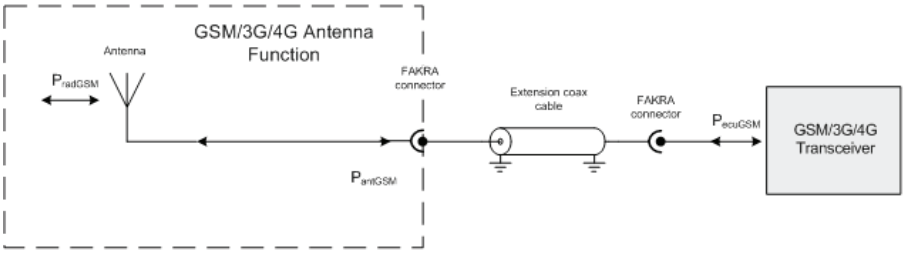
System overview



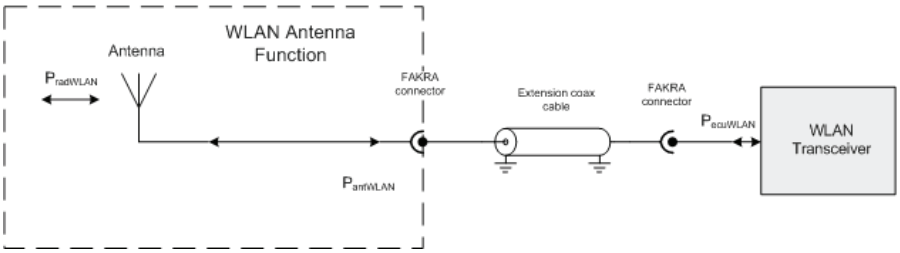
FAKRA male Code B white



FAKRA male Code C blue



FAKRA male Code D bordeaux



FAKRA male Code I beige

Datasheet

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Technische Daten / Technical data*

Parameter	TR reference	Remarks	Units	Values
Dimensions / Package				142 mm x 69 mm x 85 mm w/o rod
Housing protection class	REQ 22379848-6 v1 REQ 22379848-7 v1	ISO 20653		IP 6k9k
Housing material	REQ 22379848-23 v1			PA6 Wellamid 6000, UV stabilized, thundergray
Mounting material		metal sheet	mm	0,75 - 1,2mm
Operating temperature	REQ 22379848-9 v1		°C	-40 – +85 °C
Storage temperature			°C	-40 – +85 °C
Antenna Isolation GSM to AM/FM/DAB (wo. Filter at AM/FM/DAB amplifier input)	REQ 22379848-61 v1	87 – 108 MHz 174 – 240 MHz 699 – 960 MHz	dB	> 30 > 22 > 7
Antenna Isolation GSM to WLAN	REQ 22379848-61 v1	699 – 960 MHz 1710 – 2690 MHz	dB	> 26 > 17
Antenna Isolation GSM to GNSS	REQ 22379848-61 v1	699 - 960 MHz 1559 – 1615 MHz 1710 – 2690 MHz	dB	> 32 > 15 > 23
Antenna Isolation WLAN to GNSS (wo. Filter at LNA input)	REQ 22379848-61 v1	1559 – 1615 MHz 2400 – 2500 MHz	dB	> 14 > 8

AM/FM/DAB Amplifier

Parameter	TR reference	Frequency ranges	Units	Values
Polarization	REQ 22379848-60 v1			vertical
Average antenna gain	REQ 22379848-55 v1	AM-LF 405 mm rod AM-LF 200 mm rod AM-MF 405 mm rod AM-MF 200 mm rod FM 405 mm rod FM 200 mm rod DAB 405 mm rod DAB 200 mm rod	dB ref	2,7 -4,7 3,3 -3,7 9,4 5,5 16,6 15,0
Frequency Bands	REQ 22379848-53 v1	AM 0.1485 ≤ f ≤ 1.705 MHz FM 76 ≤ f ≤ 108 MHz DAB(BandIII)) 174 ≤ f ≤ 240 MHz	dB	±0,5
Impedance (Output)	REQ 22379848-54 v1		Ω	50
Return loss (Output)	REQ 22379848-54 v1	Band II (FM RoW) Band III	dB	> 10 > 10
ΔIM3 P_{out} = 110 dBµV	REQ 22379848-58 v1	LF f=(300 ±50) kHz MF f=(1000 ±50) kHz	dB	49 56

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Technische Daten / Technical data*

Parameter	TR reference	Frequency ranges	Units	Values
ΔIM3 P_{out} = 110 dBµV	REQ 22379848-58 v1	Band II f=(98 ±0.5) MHz	dB	60
ΔIM3 P_{out} = 110 dBµV	REQ 22379848-58 v1	Band III f=(207 ±0.5) MHz	dB	61
AM Voltage gain (S_{21}) 50 Ω resistor connected to ground at the input	REQ 22379848-56 v1	LF MF	dB	5 ±2 5,7 ±2
FM Gain (S_{21} Band II / FM RoW)	REQ 22379848-56 v1		dB	10 ±2
DAB Gain (S_{21} Band III)	REQ 22379848-56 v1		dB	21 -3/+2
Noise Voltage (Output) (Detector average, Bandwidth 9 kHz, open input)	REQ 22379848-63 v1	LF MF	dBµV	-10 -11
Noise figure Band II / FM RoW	REQ 22379848-63 v1		dB	4,8
Noise Figure Band III	REQ 22379848-63 v1		dB	1,9
Supply voltage	REQ 22379848-47 v1		V	12 -4/+2
Supply current	REQ 22379848-48 v1		mA	140 -5/+4
Power Supply Method	REQ 22379848-48 v1			Phantom feed with internal voltage regulator in antenna
GNSS				
Frequency bands	REQ 22379848-53 v1	GNSS (GLONASS, GPS, Galilleo, BeiDou) 1559 MHz ≤ f ≤ 1606 MHz	dB	±0,5
Polarization	REQ 22379848-60 v1			RHCP
Average antenna gain GNSS	REQ 22379848-55 v1	passive, zenith θ=0°	dBic	2,7
Noise figure	REQ 22379848-63 v1		dB	2,1
Gain (Filter+LNA) S_{21}	REQ 22379848-56 v1		dB	28
Out of band ΔIM3	REQ 22379848-58 v1	f1 = 1712,7 MHz f2 = 1850 MHz	dB	> 55
Band Pass Filter Rejection	REQ 22379848-62 v1	50 ≤ |Δf| ≤ 70: 30 dBc 70 < |Δf| ≤ 100: 35 dBc |Δf| > 100: 40 dBc	dB	> 30 > 40 > 50
Impedance Output	REQ 22379848-54 v1		Ω	50
Return loss (Output)	REQ 22379848-54 v1		dB	> 10

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Technische Daten / Technical data*

Parameter	TR reference	Frequency ranges	Units	Values
Current consumption	REQ 22379848-48 v1		mA	27 -5/+3
Supply voltage	REQ 22379848-47 v1		V	3,15-5,25
2G/3G/4G (CELLULAR)				
Frequency bands	REQ 22379848-53 v1	698 ≤ f ≤ 803 MHz 824 ≤ f ≤ 960 MHz 1710 ≤ f ≤ 2170 MHz 2300 ≤ f ≤ 2690 MHz	dB	±0,5
Polarization	REQ 22379848-60 v1			vertical
Return loss	REQ 22379848-54 v1	699-803 MHz 824-894 MHz 880-960 MHz 1710-2170 MHz 2300-2690 MHz	typ. dB	7,3 10 9,8 8,0 8,9
Impedance	REQ 22379848-54 v1		Ω	50
Antenna gain (Average)	REQ 22379848-55 v1	699-803 MHz 824-894 MHz 880-960 MHz 1710-2170MHz 2300-2690 MHz	typ. dBi	3,2 2,0 2,0 3,1 1,6
Diagnosis Resistor	REQ 22379848-67 v1		kΩ	51
Power Handling	REQ 22379848-48 v1	698-803 MHz 824-894 MHz 880-960 MHz 1710-2170 MHz 2300-2690 MHz	dBm	37
WLAN				
Frequency bands	REQ 22379848-53 v1	(2.4GHz) 2400 ≤ f ≤ 2485 MHz (5GHz) 5150 ≤ f ≤ 5925 MHz	dB	±0,5
Polarization	REQ 22379848-60 v1			vertical
Return loss	REQ 22379848-54 v1	2400-2485 MHz	typ. dB	10
Impedance	REQ 22379848-54 v1		Ω	50
Antenna gain (Average)	REQ 22379848-55 v1	2400-2485 MHz	typ. dB	10
Diagnosis resistor	REQ 22379848-67 v1		kΩ	51
Power handling	REQ 22379848-48 v1	2.4GHz/5GHz	dBm	30

* All technical requirements are according to 22379848.06 "Antenna System P2593/P2594 Multifunctional & Single function antennas"

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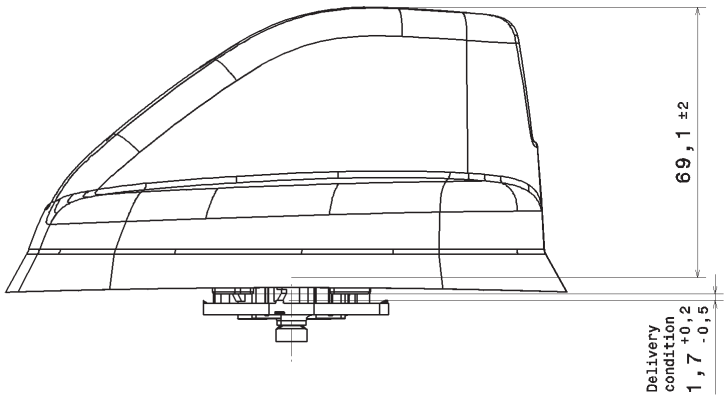
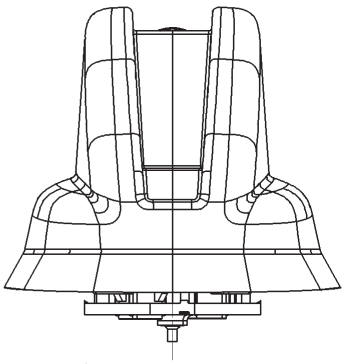
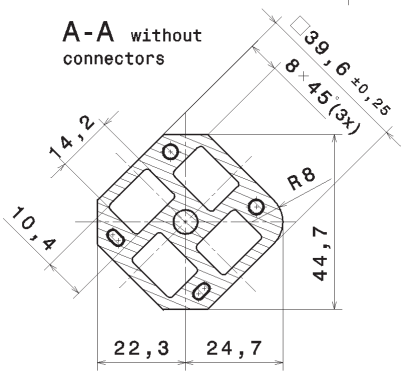
Technical drawings



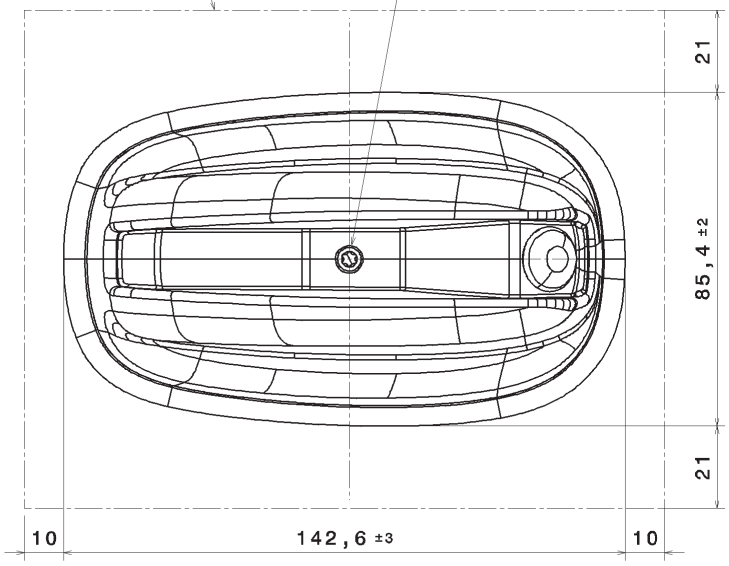




Mounting tool placement, type and torque

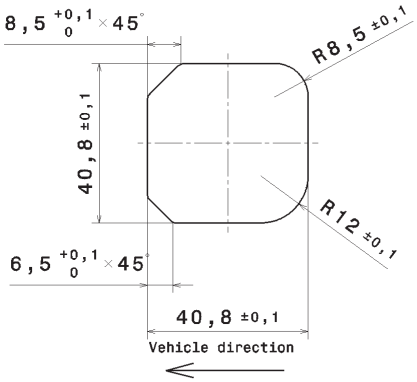
Mounting tool is inserted in centrehole of the cover
Type: Torx T20
Torque: 4,5Nm ± 20%

Required space for installation



Mounting hole BASE_ANT Cod.B

Top View
Final dimensions including all surface coatings (e.g. paint)
undimensioned radii R2+1



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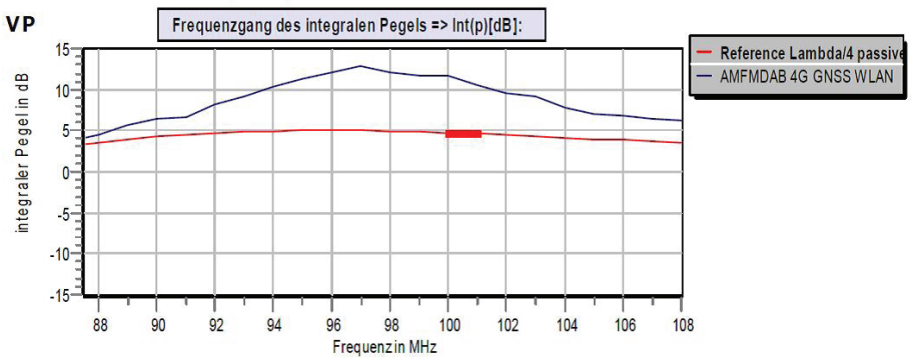
Antenna diagrams AM/FM

Gain (active w. 405 mm rod)

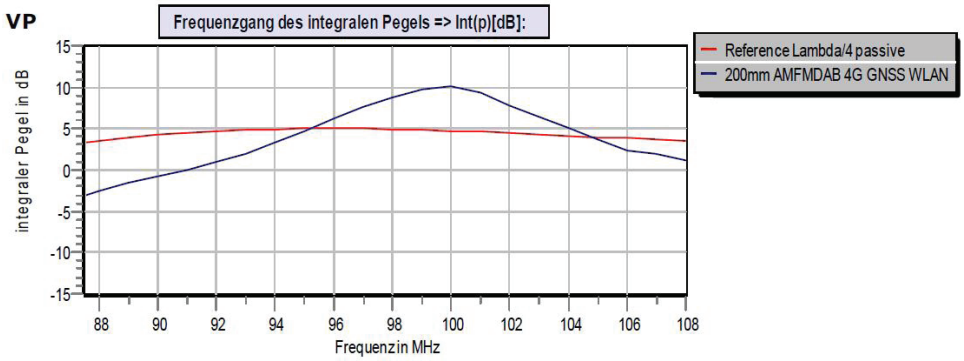


Mittelwert des integralen Pegels als f(f):

Avg(p)[int(p)] = 4.4dB

Avg(p)[int(p)] = 9.4dB

Gain (active w. 200 mm rod)



Mittelwert des integralen Pegels als f(f):

Avg(p)[int(p)] = 4.4dB

Avg(p)[int(p)] = 5.5dB

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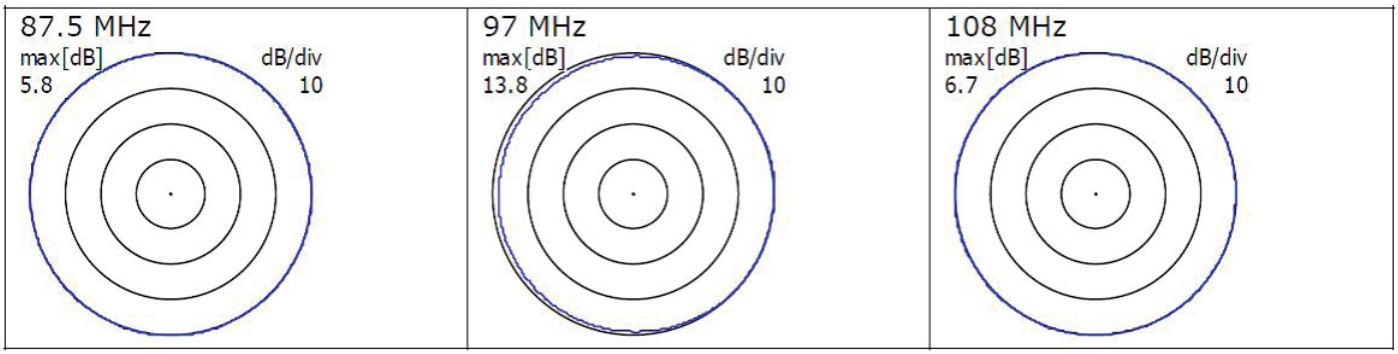
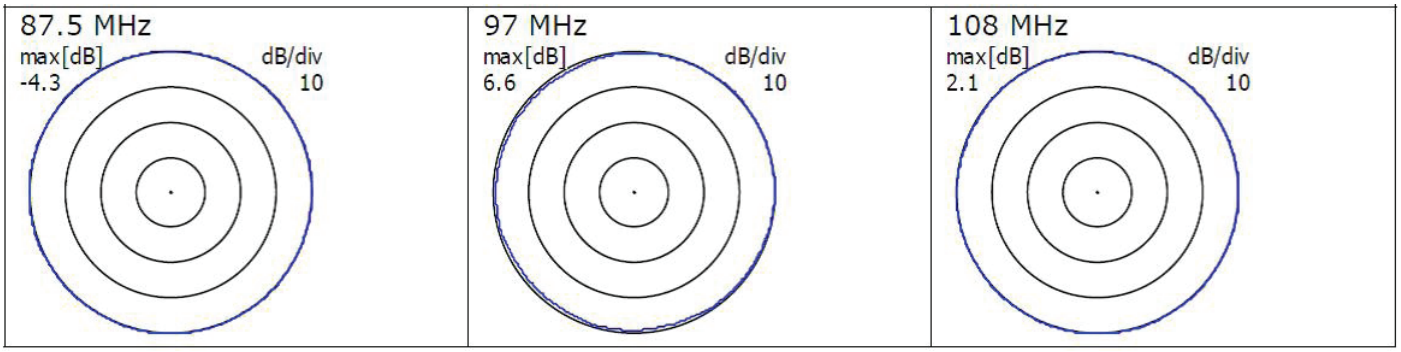
Antenna diagrams

AM/FM

Radiation pattern, horizontal, 405 mm rod



Radiation pattern, horizontal, 200 mm rod



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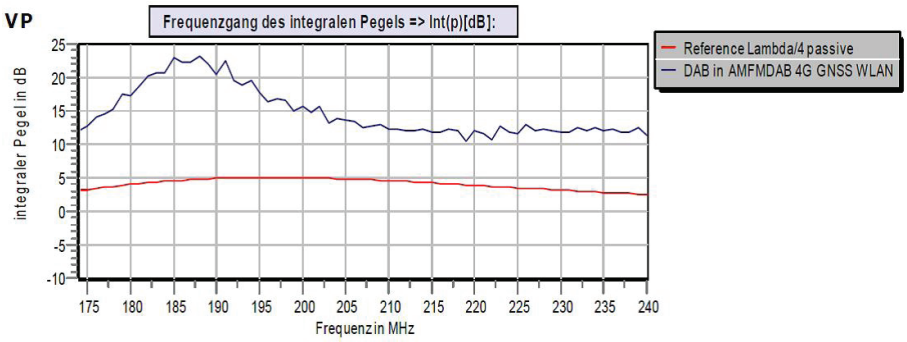
Antenna diagrams

DAB

Gain (active w. 405 mm rod)

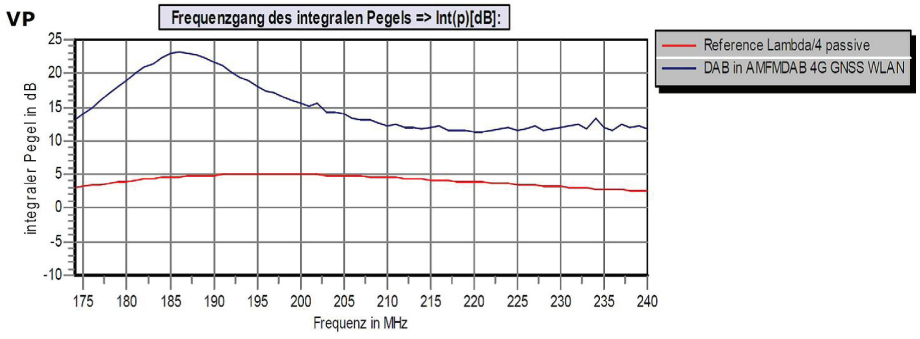


Mittelwert des integralen Pegels als f(f):

Avg(p)[int(p)] = 4.1dB

Avg(p)[int(p)] = 16.6dB

Gain (active w. 200 mm rod)



Mittelwert des integralen Pegels als f(f):

Avg(p)[int(p)] = 4.1dB

Avg(p)[int(p)] = 17.0dB

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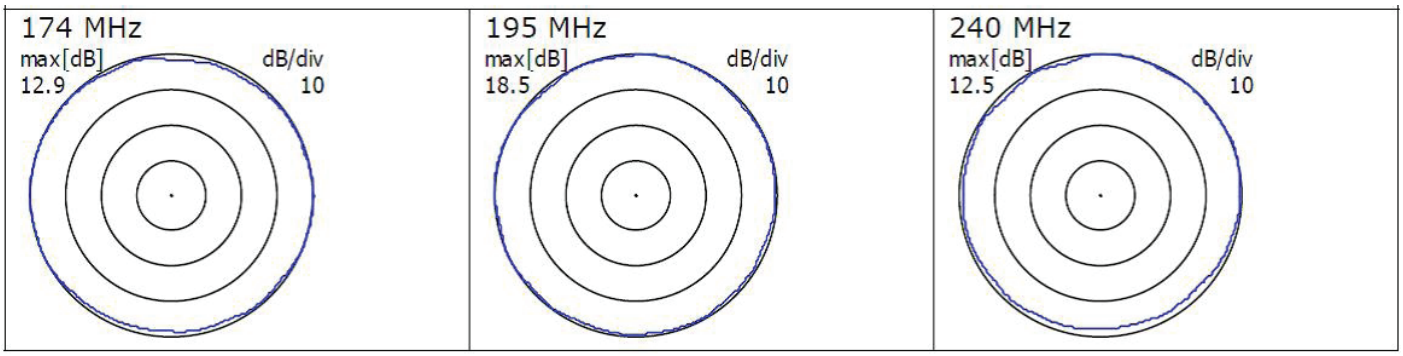
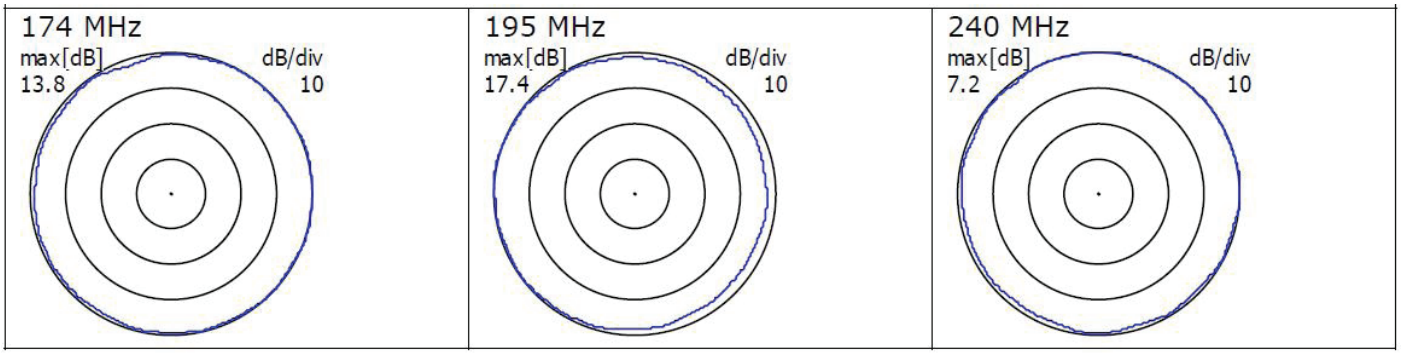
Antenna diagrams

DAB

Radiation pattern, horizontal, 405 mm rod



Radiation pattern, horizontal, 200 mm rod



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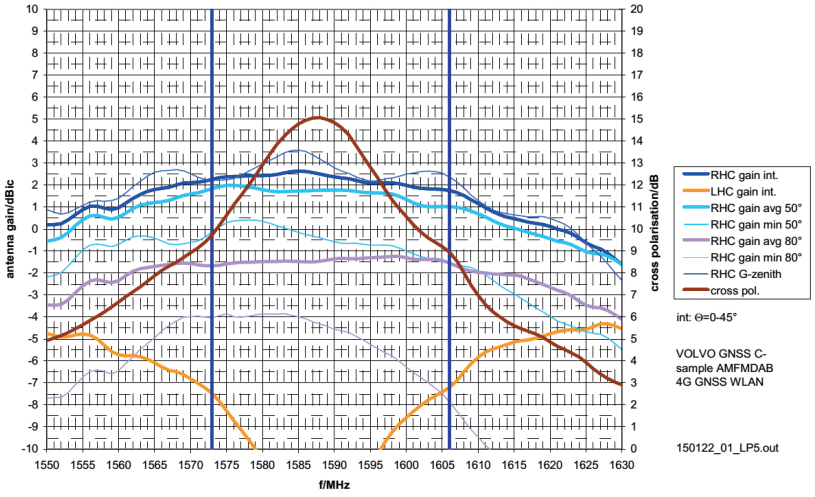
Antenna diagrams
GNSS

Gain



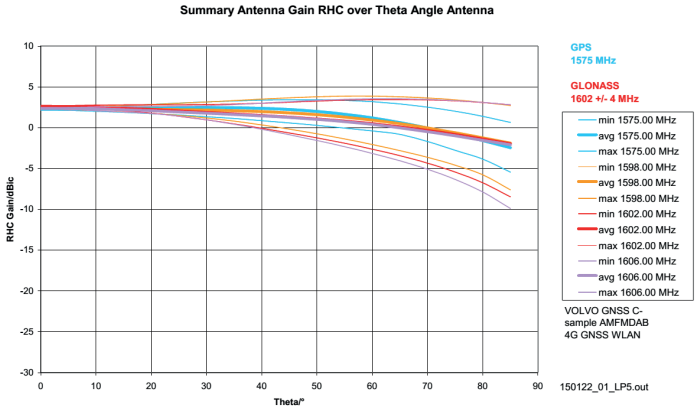
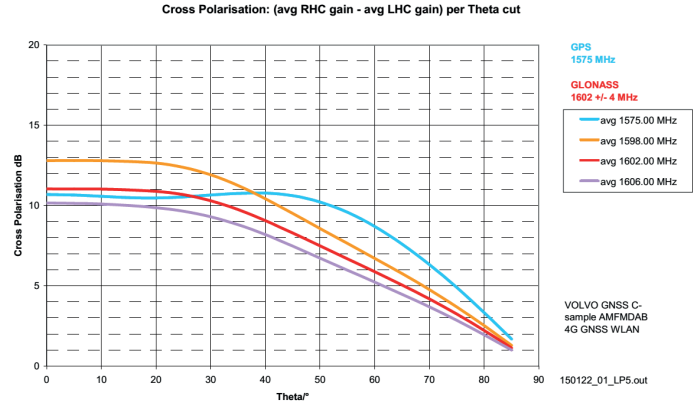


Figure 17 GNSS, Gain over theta, ANTENNA BASE_ANT VT FULL FEAT. (WLAN)



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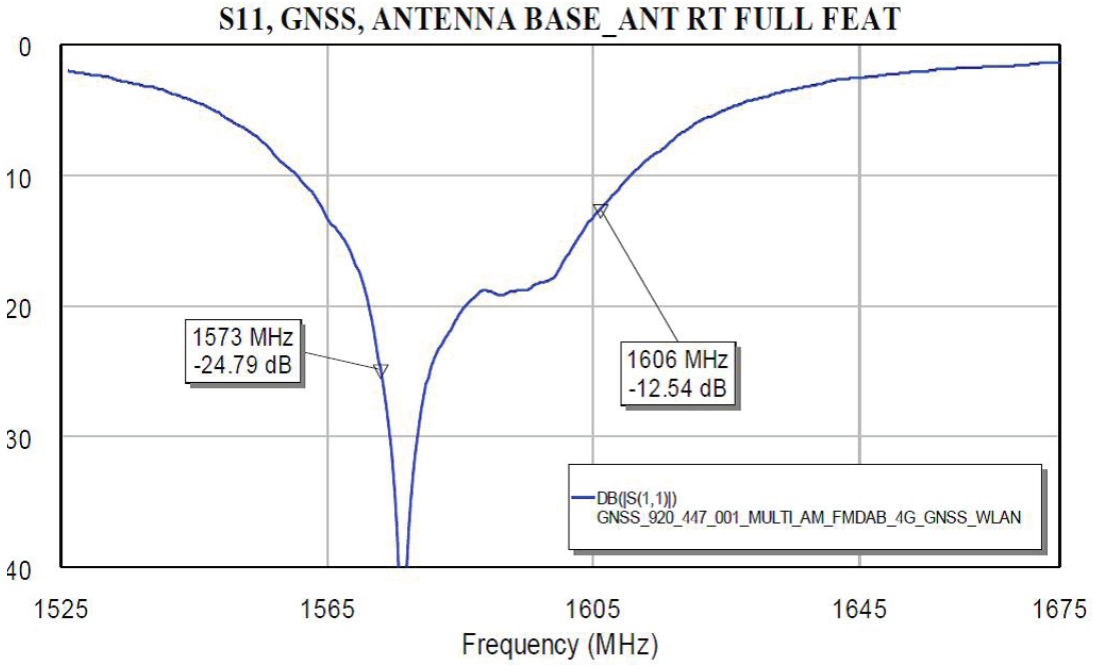
Antenna diagrams

GNSS

Return Loss



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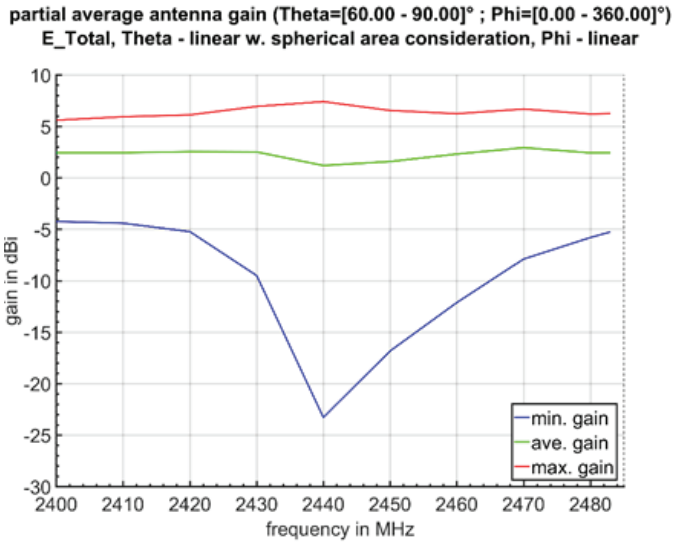
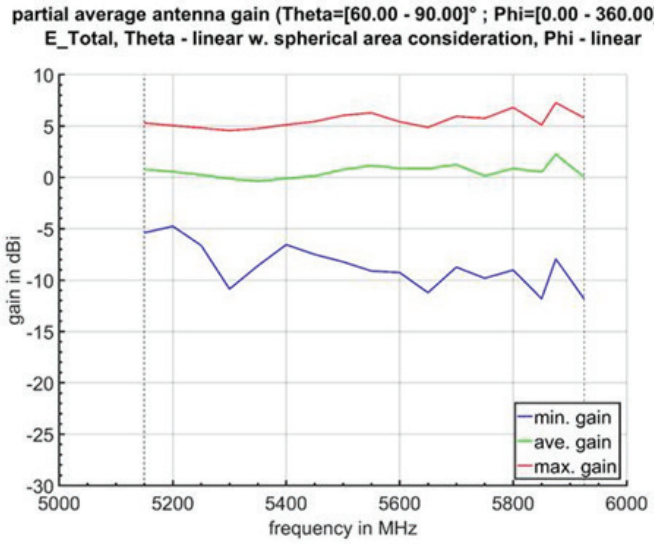
Antenna diagrams

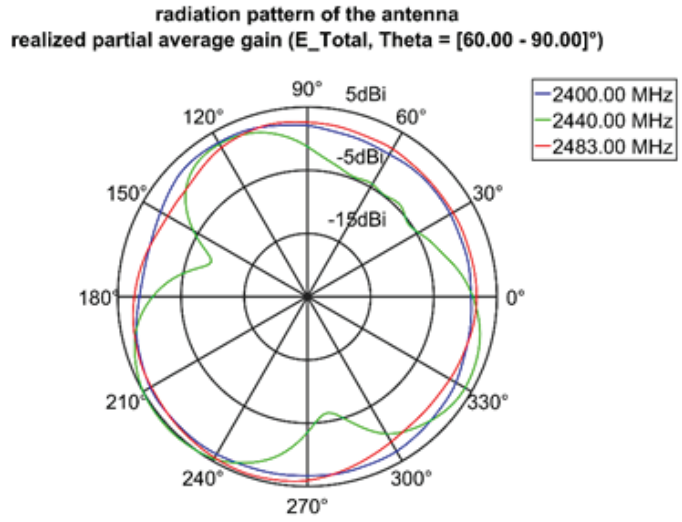
WLAN

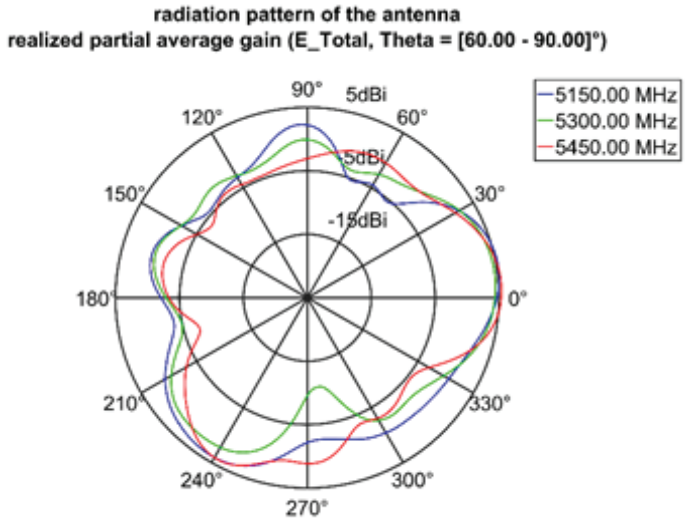
Gain





Radiation pattern, horizontal





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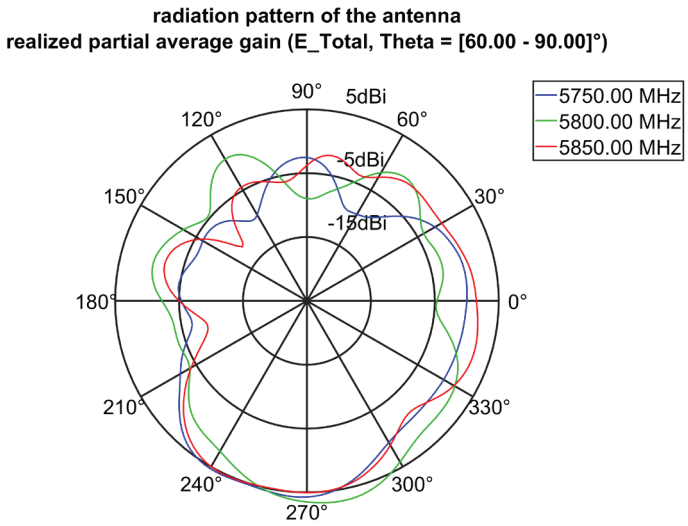
Antenna diagrams

WLAN

Gain



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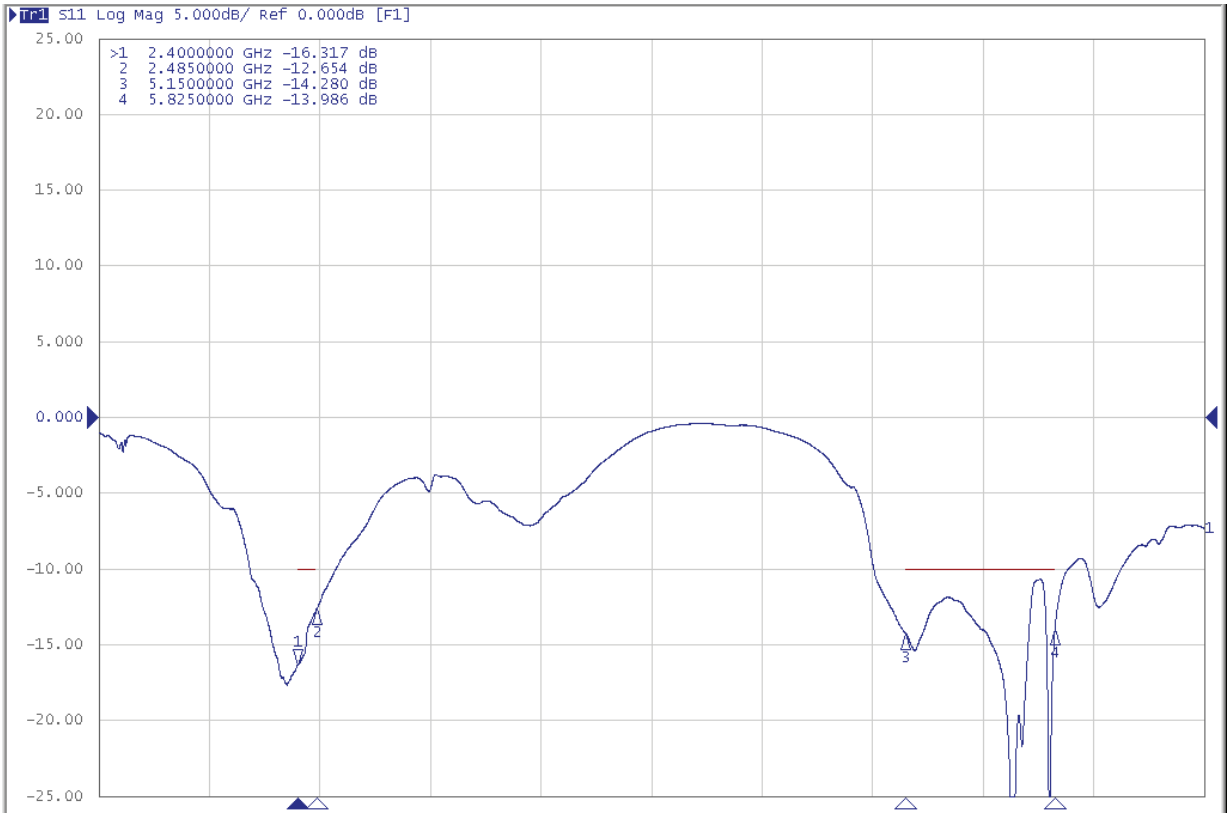
Antenna diagrams

WLAN

Return Loss



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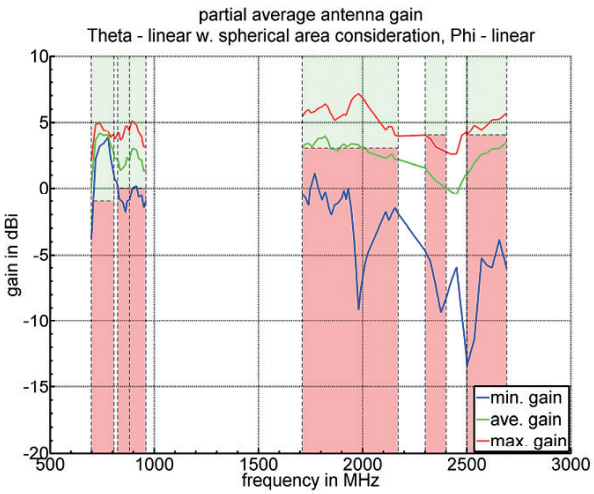
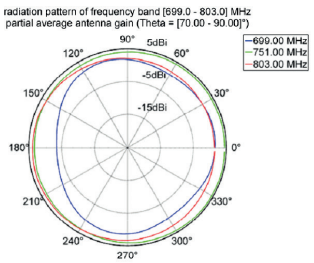
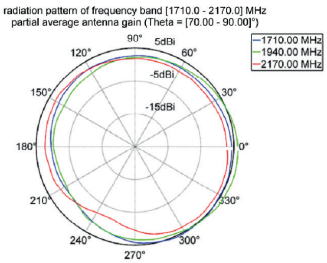
Antenna diagrams
CELLULAR

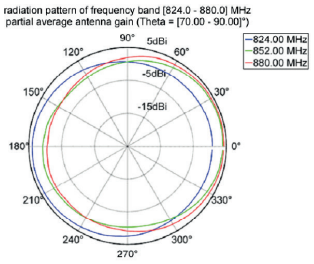
Gain

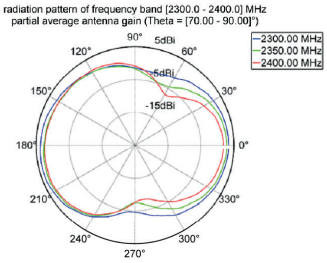


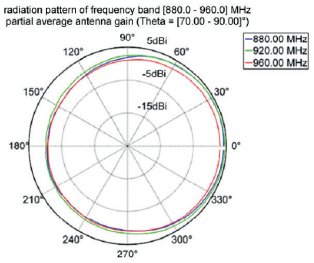
Radiation pattern, horizontal

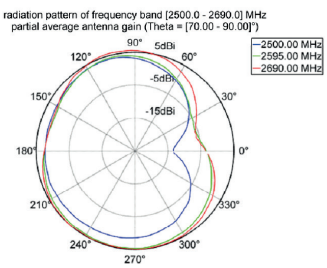












ANTENNA BASE_ANT VT FULL FEAT.

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ANTENNA BASE_ANT RT FULL FEAT.

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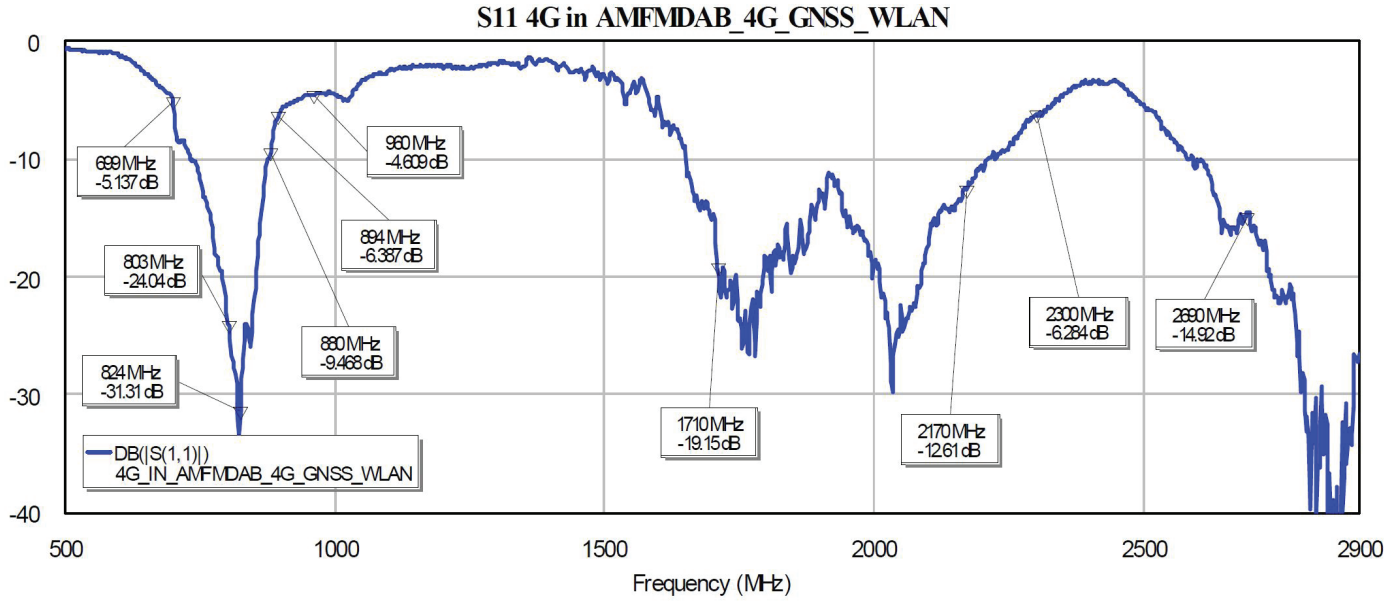
Antenna diagrams

CELLULAR

Return Loss



Datasheet

ANTENNA BASE_ANT VT FULL FEAT.

Pt no.

23311779/920 447-011

ANTENNA BASE_ANT RT FULL FEAT.

Pt no.

22472983/920 447-012

Frequency Ranges

Service	Lower Limit	Upper Limit
LF	153 kHz	279 kHz
MF	522 kHz	1710 kHz
Band II / FM	76 MHz	108 MHz
Band III DAB	174 MHz	240 MHz
CELL including LTE	698 MHz 1710 MHz 2300 MHz	960 MHz 2170 MHz 2690 MHz
GNSS	1559 MHz	1605 MHz
WLAN	2400 MHz 5150 MHz	2485 MHz 5925 MHz

Note:
Not mentioned test setups and test conditions according to „VDA-Spezifikation für Fahrzeug-Antennen“ issued 04. February 2003.

Confection

Datasheet is valid also for logisticaly handled package conditions

23311779 / 920 447-111/-112 Multi bin serial assembly

22472983 / 920 447-511/-512 Single package replacement