



Topside View



Underside View

Stream

MA208.A.AB.007

Specification

Part No.	MA208.A.AB.007
Product Name	Stream GPS and LTE/GSM/UMTS (2G/3G/4G 700MHz to 960MHz/1710MHz to 2200MHz) Combination Antenna
Feature	Adhesive Mount IP67 Antenna GPS: 3M RG-174 Fakra Code C Blue Cellular: 3M CFD-200 Fakra Code D Violet 1.8~5.5V/30dB 200.5*66.5*9mm RoHS Compliant

1. Introduction

The Stream MA.208 GPS/LTE Cellular antenna is a low profile, heavy-duty, fully IP67 waterproof external M2M antenna for use by RF professionals in telematics, transportation and remote monitoring applications. The Stream is unique in the market as it combines the highest possible efficiency and peak gain for GPS and all cellular bands in 2G/3G/4G in a low profile compact format for mounting via high quality first tier automotive approved 3M adhesive foam.

The patent pending design incorporates internally a custom Taoglas 35mm patch antenna on an extended integral ground-plane to deliver more than

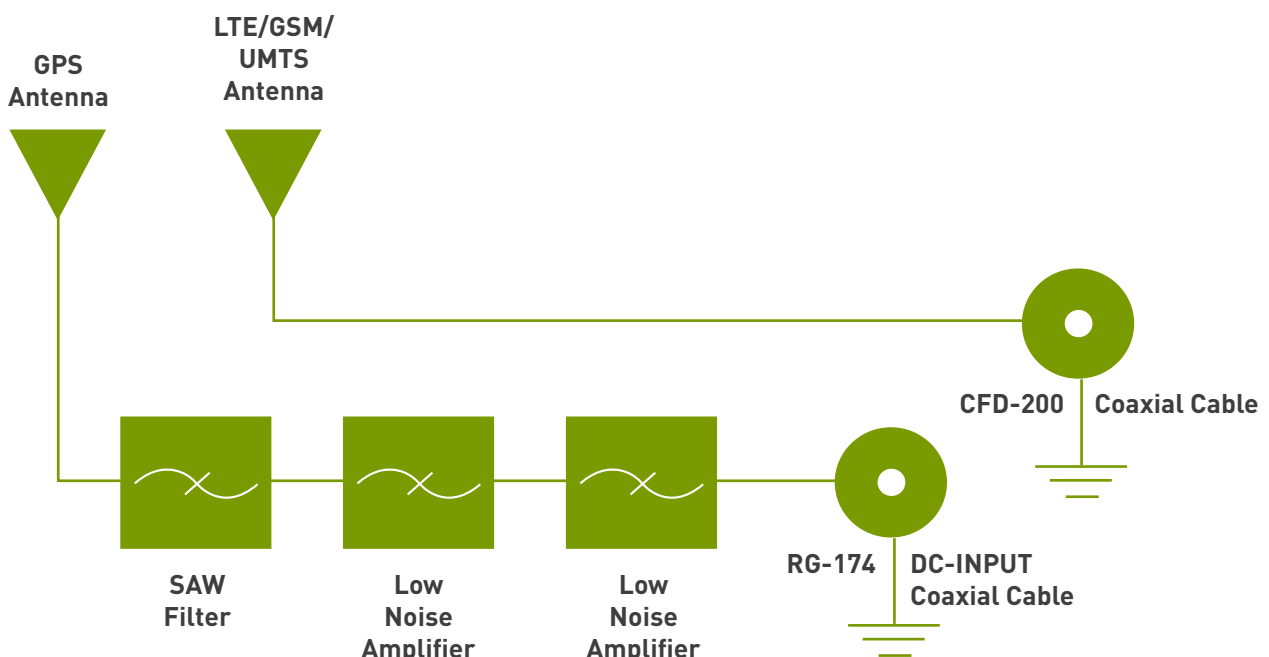
3.5dBiC gain. A front-end SAW filter dramatically reduces radiated spurious emissions. The extended ground-plane used with an innovative internal cellular PIFA also enables the unique wide-band 2G/3G/4G response to deliver the highest performance possible, at 3 metres cable length. Nothing else out there comes close in terms of consistency of efficiency and peak gain at all cellular bands, with an awesome 70%+ at the LTE 700MHz band, again including 3 metres of cable loss. High antenna efficiencies are absolutely critical in today's 3G and 4G systems to achieving targeted data-speeds and coverage.

All this is done while still maintaining 20dB isolation between antennas. The Stream uses high-shielded PTFE dielectric ultra low-loss cables that maintain low attenuation at all frequency bands, and high noise rejection, with an average loss of only 0.3dB per meter (0.1dB per foot), compared to 0.7dB for RG58 and 1.2dB for RG174.

Because of this, the Stream maximizes chances of passing PTCRB and network approvals first time. The Stream works best when attached to plastic or glass, but can also be used on metal if some foam spacing is added.

2. System Configuration

This antenna specification covers the LTE/GSM/UMTS Full band for 700MHz~960MHz, 1710MHz~2170MHz and GPS (L1 Band).



3. Specification

Parameter	GPS Antenna	Cellular Antenna
Features	High performance GPS 35*35*4mm ceramic patch antenna with two stage high gain LNA 1575.42 +/- 1.023MHz	LTE - 700MHz CDMA: 824~896MHz GSM: 880~960MHz DCS: 1710~1880MHz PCS: 1850~1990MHz 3G: 1920~2170MHz
Gain	3.5dBic typ @ Zenith	Average: -3.03dBi at 700~960MHz -4.34dBi at 1710~2170MHz Peak: 2.16dBi at 700~960MHz 0.42dBi at 1710~2170MHz
Polarization	RHCP	Linear
VSWR		3.3 Max. at 700~960MHz 3.6 Max. at 1710~1850MHz 2.2 Max. at 1880~2170MHz
Impedance	50Ω	50Ω
Efficiency		≥ 68% @ 700MHz ≥ 72% @ 750MHz ≥ 66% @ 824MHz ≥ 56% @ 890MHz ≥ 61% @ 880MHz ≥ 53% @ 960MHz ≥ 37% @ 1710MHz ≥ 51% @ 1880MHz ≥ 55% @ 1990MHz ≥ 54% @ 2110MHz ≥ 45% @ 2170MHz

3.2 Cable and Connectors (Fully Customisable)

Parameter	GPS Antenna	Cellular Antenna
Cable	3m RG-174 Cable	CFD-200 Cable
Connector	Fakra Code C Blue Connector	Fakra Code D Violet Connector

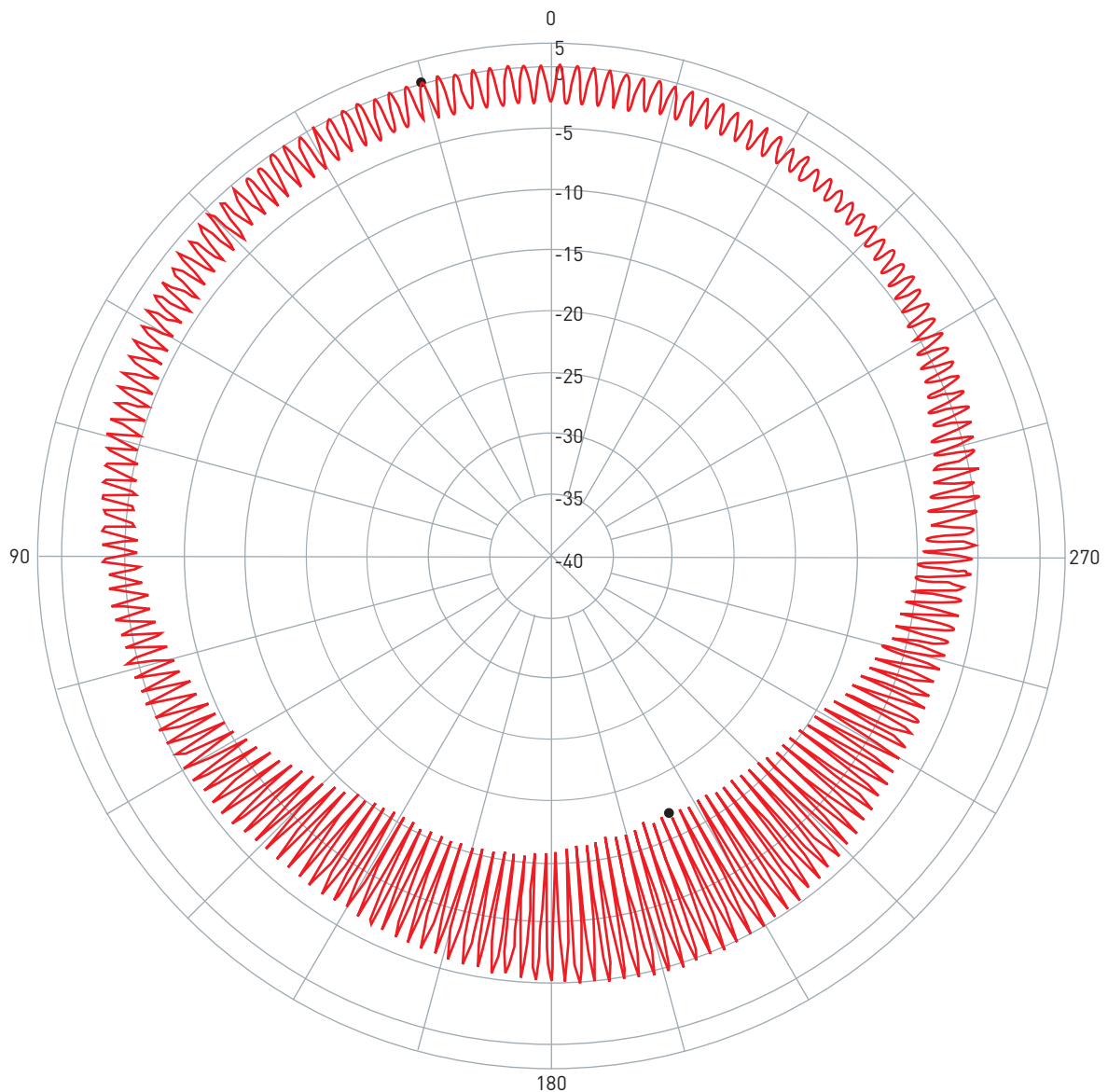
3.3 Mechanical Data

Parameter	
Housing	UV resistant PVC
Adhesive Mount	3M 1600TB (196.57*62.57*1.25mm)
Protection Class	IP-67
Operation Temperature	-40°C to +85°C
Storage Temperature	-40°C to +85°C
Relative Humidity	20% to 95%
Weight per unit	0.18kg

***Note:** specifications may be subject to change

4. Axial Ratio

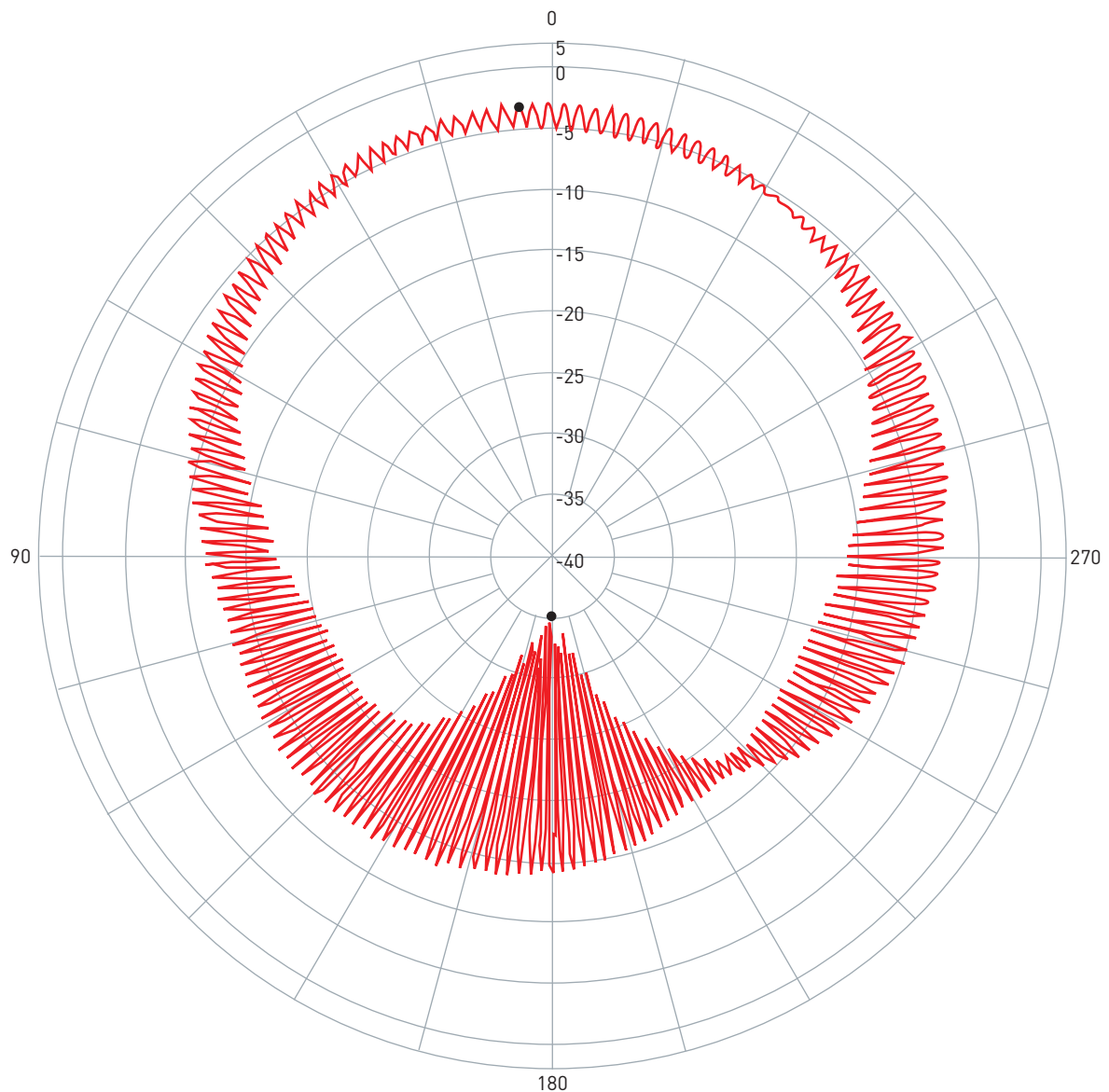
4.1 With IPEX Cable



Pattern	Model No.	Test Mode	Freq (MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1 	MA208.A.AB.007	Axial Ratio	1575.42	0.06 / 15.14	-16.87 / 204.77	-4.51	CP

4. Axial Ratio

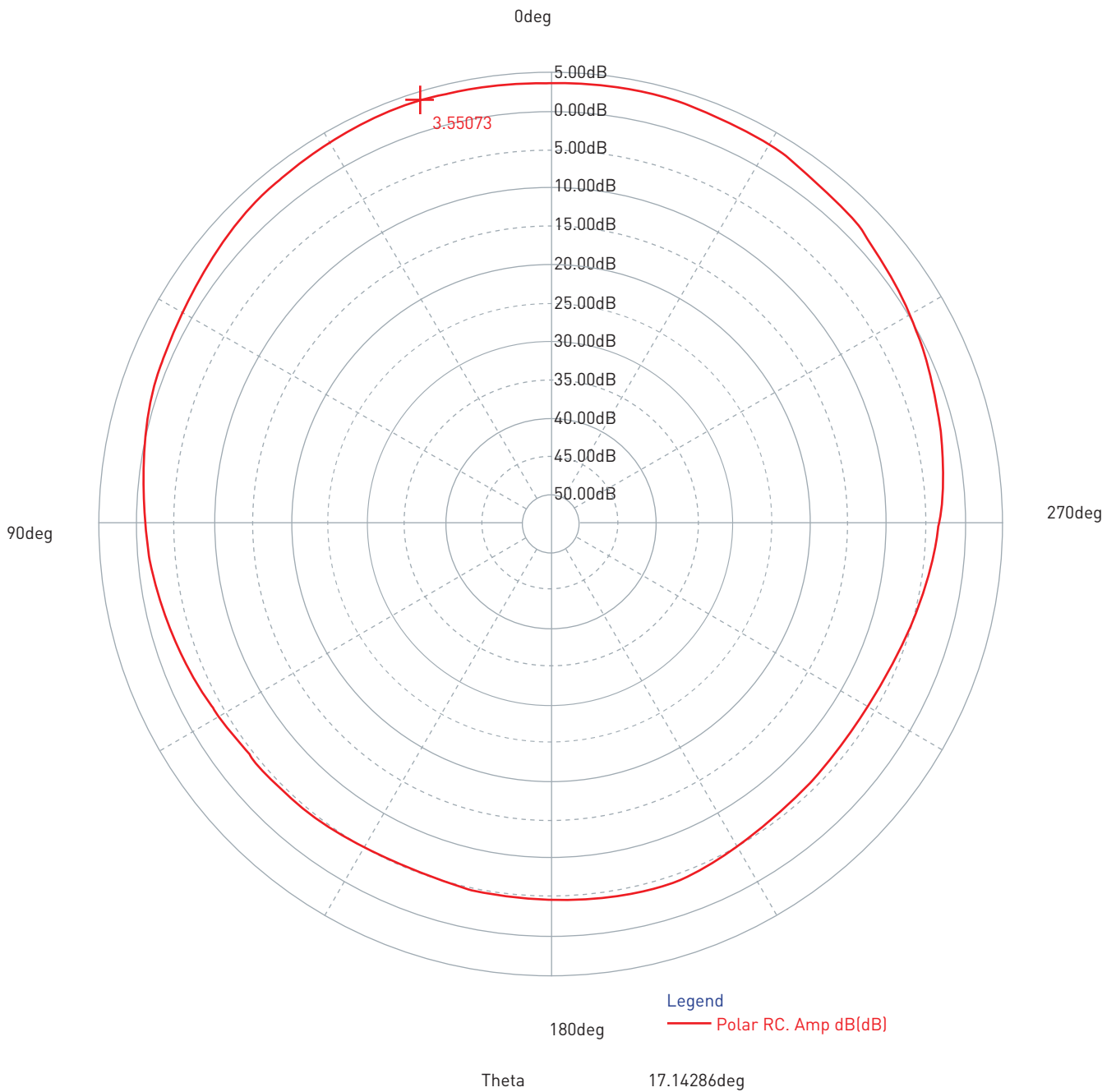
4.2 3M CFD-200 Cable



Pattern	Model No.	Test Mode	Freq (MHz)	Max Gain(dBi)	Min Gain(dBi)	Avg. Gain(dBi)	Source Polar.
1 	MA208.A.AB.007	Axial Ratio	1575.42	-3.19 / 4.61	-34.89 / 178.75	-8.79	CP

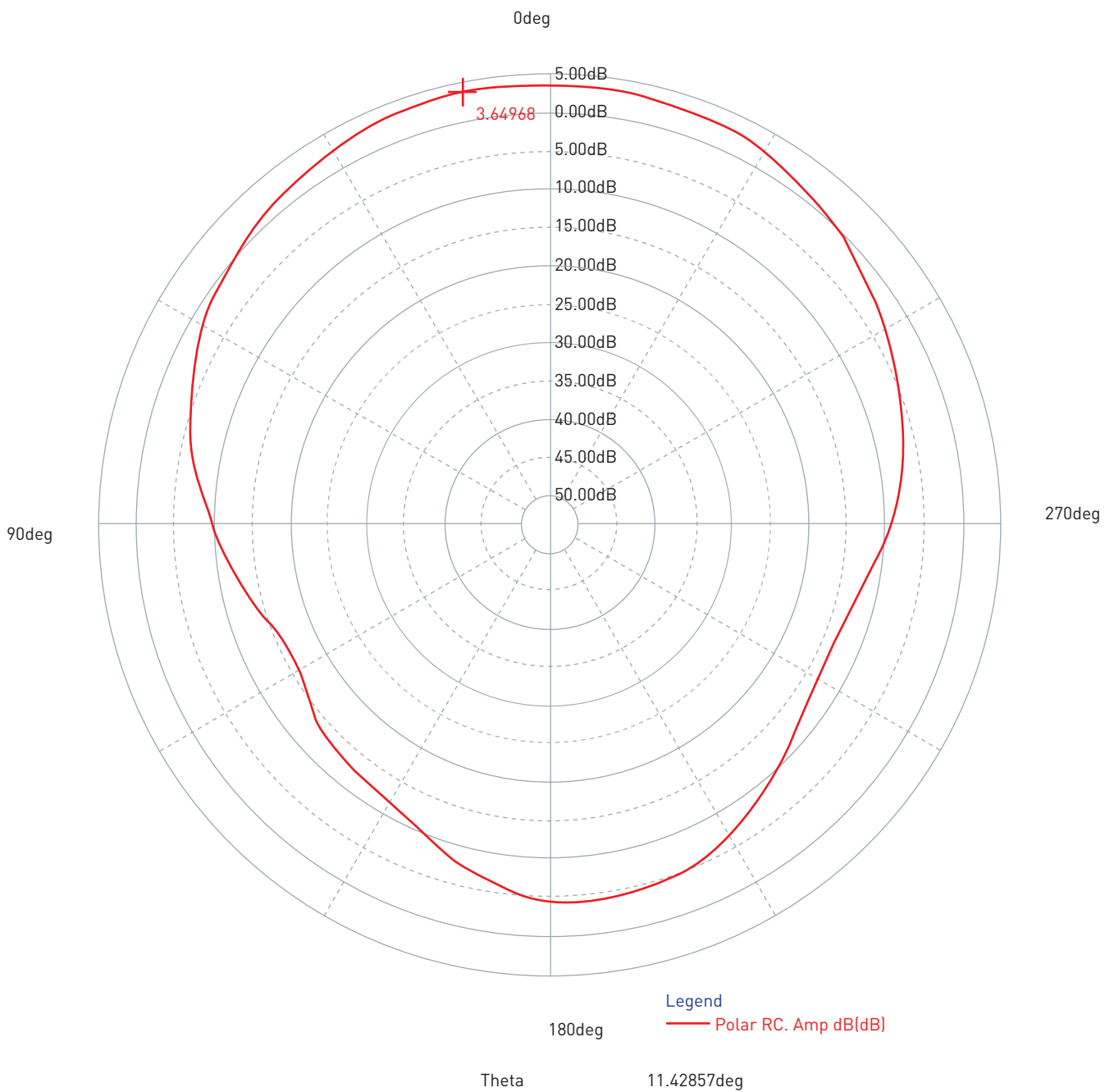
5. Radiation Patterns

5.1 Radiation Pattern in XZ plane



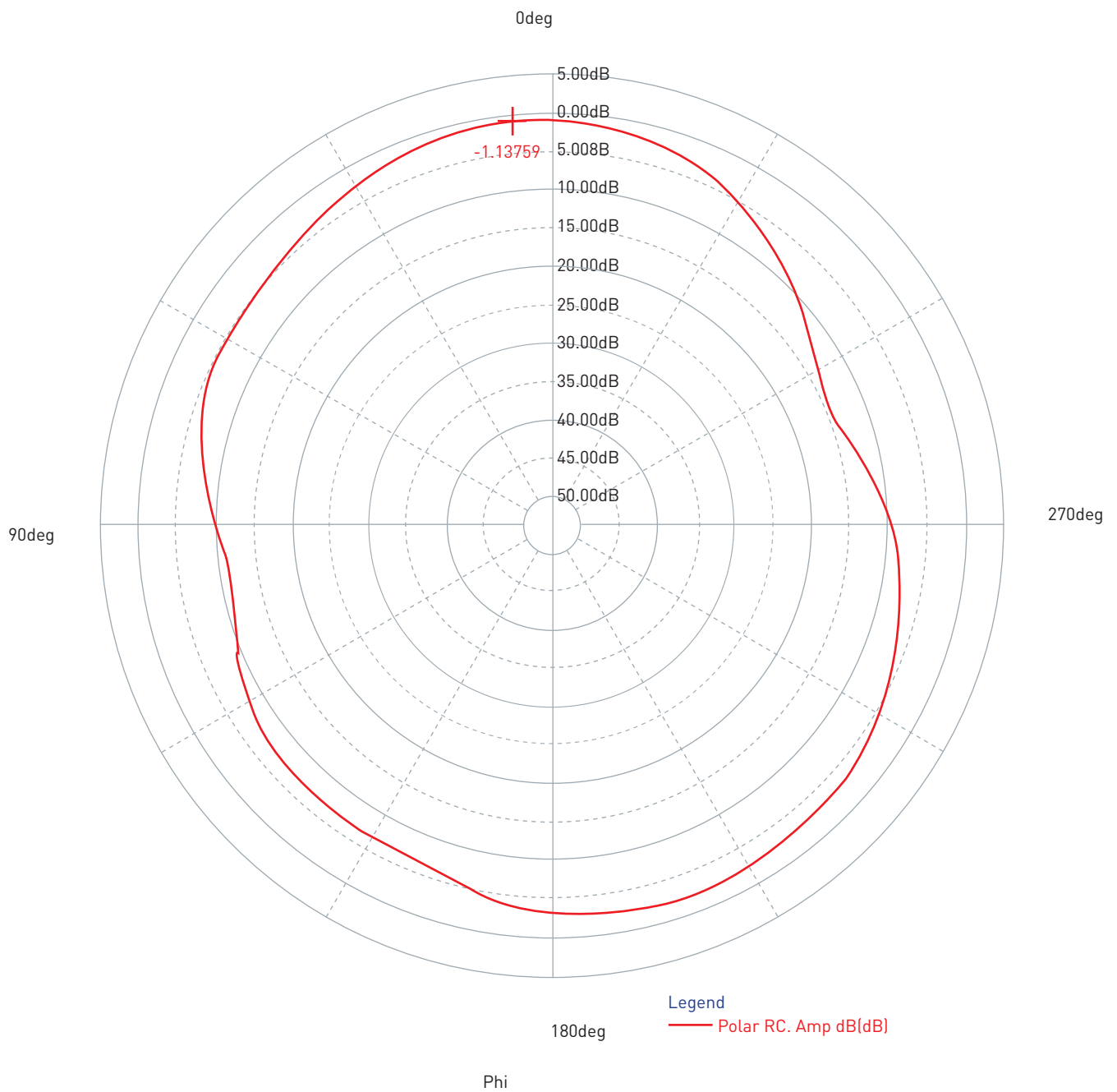
5. Radiation Patterns

5.2 Radiation Pattern in YZ plane

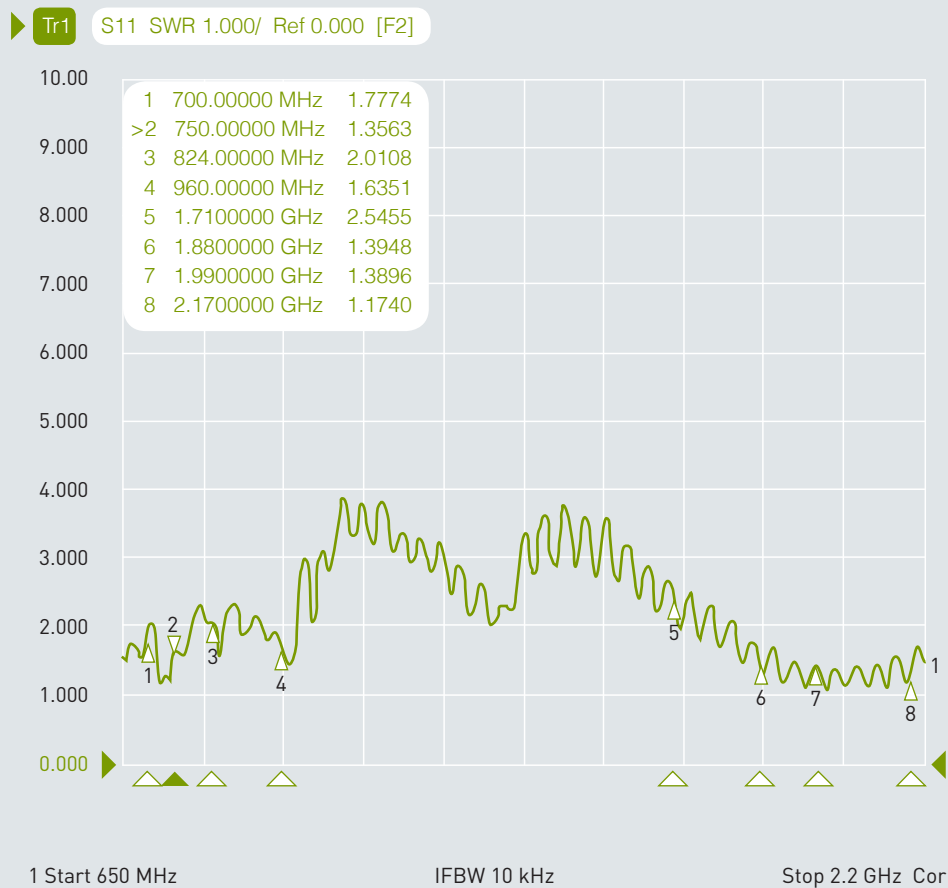


5. Radiation Patterns

5.3 Radiation Pattern in XY plane

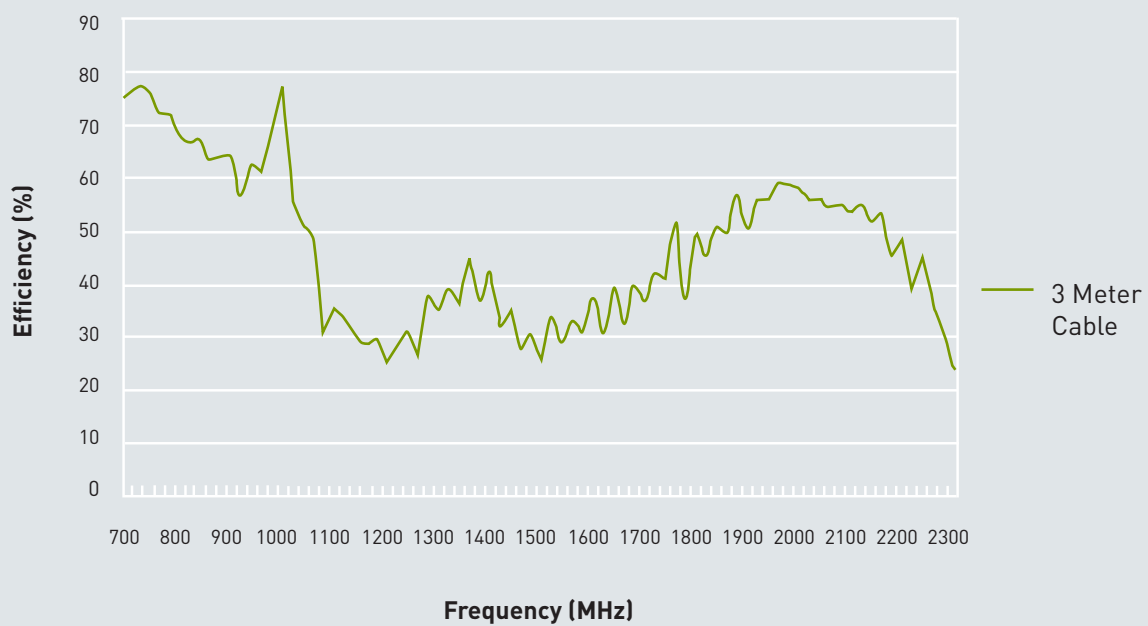


6. VSWR



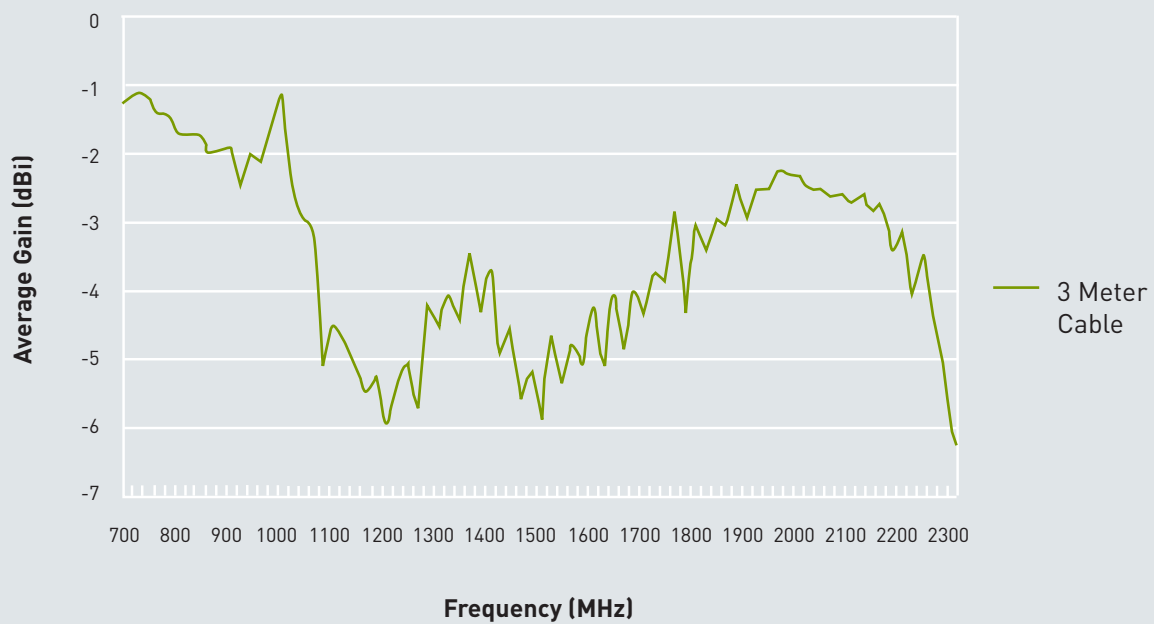
GSM / UMTS Band VSWR (with length 3 meter CFD-200 Cable)

7. Efficiency



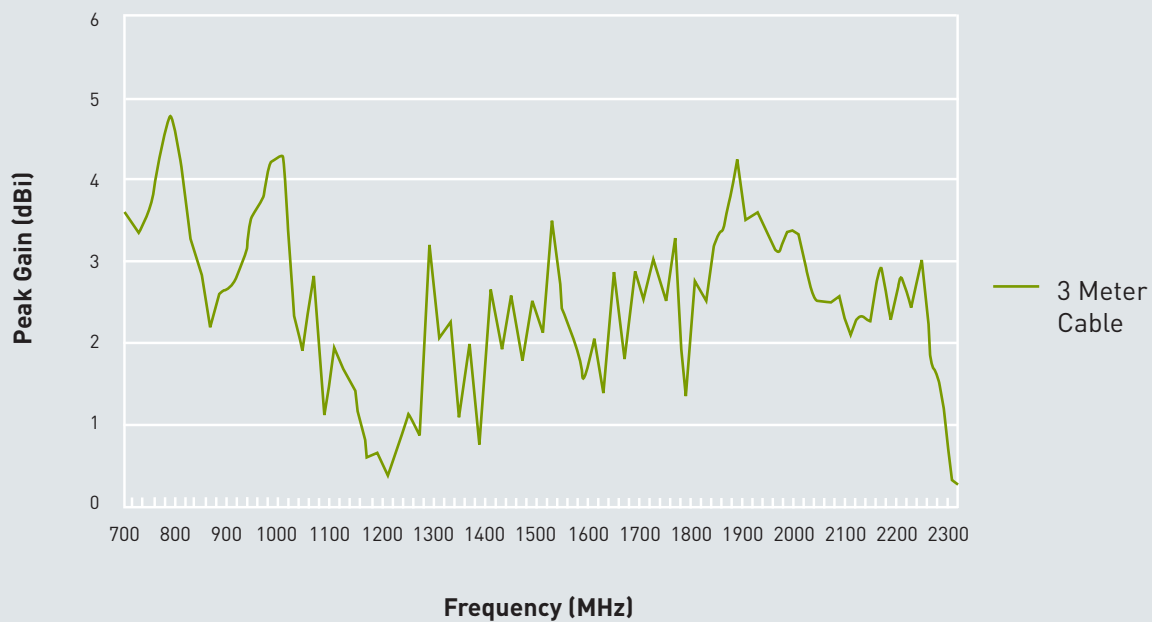
GSM / UMTS Band Efficiency (with length 3 meter CFD-200 Cable)

8. Average Gain



GSM / UMTS Average Gain (with length 3 meter CFD-200 Cable)

9. Peak Gain



GSM / UMTS Peak Gain (with length 3 meter CFD-200 Cable)

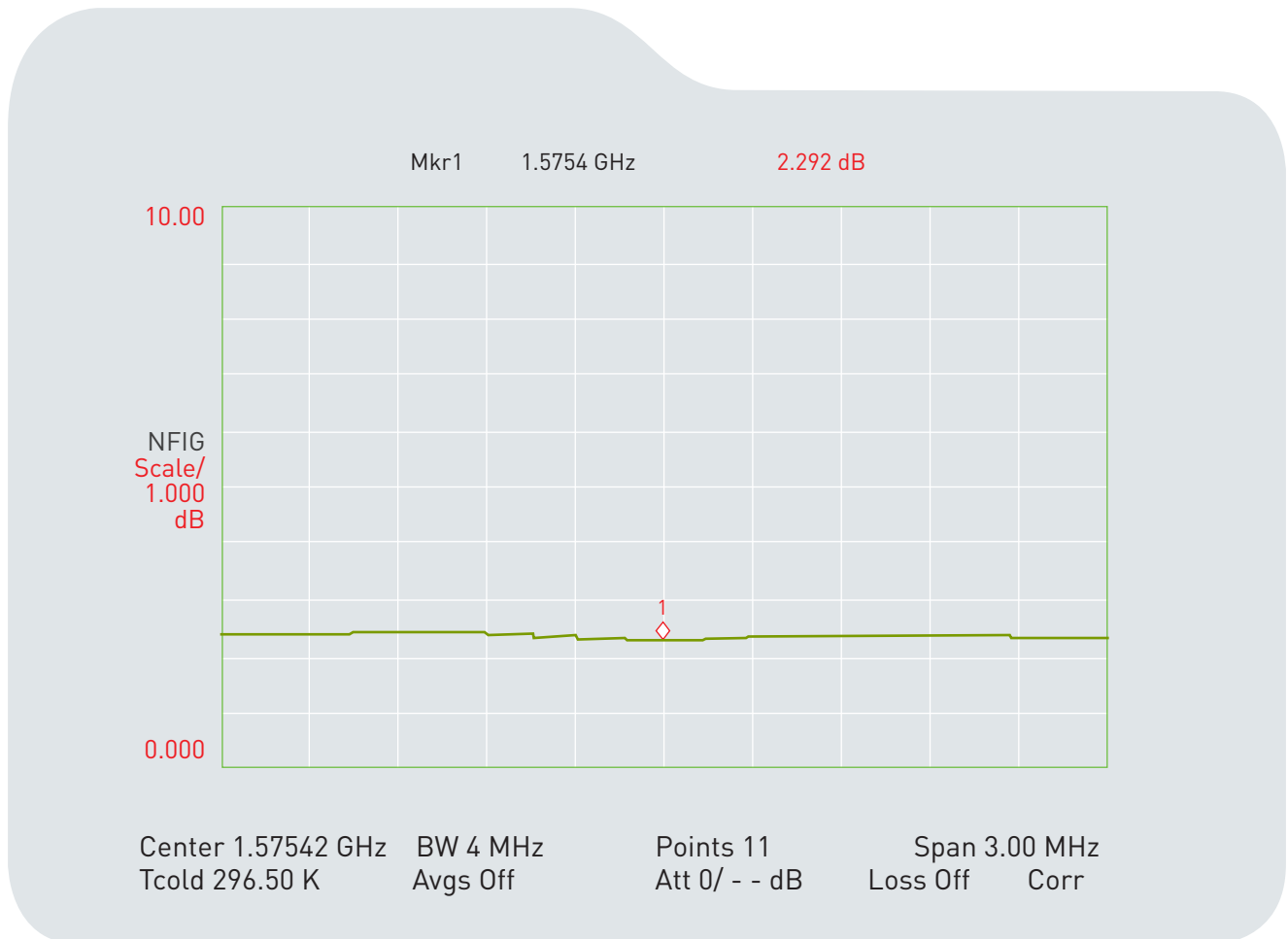
10. LNA

Parameter

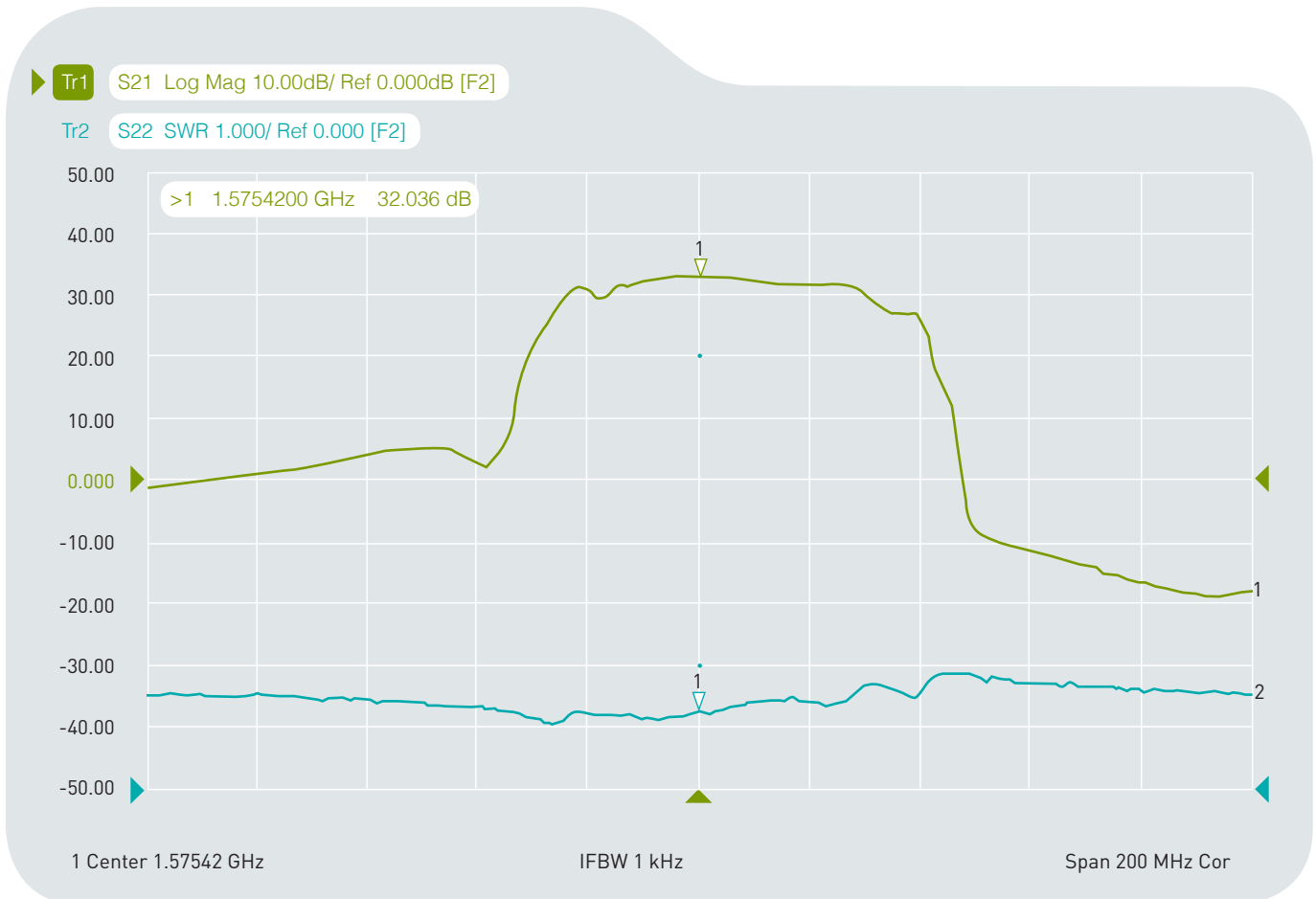
Frequency Range	1575.42+/-1.023Mhz
Output Impedance	50Ω
Output Power at 1dB Compression Point	-35dBm typ.
Output VSWR	2.0 Max.

Supply Voltage	Gain(Typ)	Noise Figure(Typ)	Power Consumption (Typ.)
1.8V	27.0dB	2.2dB	5.5mA
3.0V	32.9dB	2.3dB	12.5mA
5.5V	33.8dB	2.5dB	15.0mA

11. LNA Noise Figure at 3.0V



12. LNA Gain and Output of VSWR at 3.0V



Ch1	Tr1	S21	>1	1.5754200 GHz	32.936	dB
Ch1	Tr2	S21	1	1.5754200 GHz	1.2368	

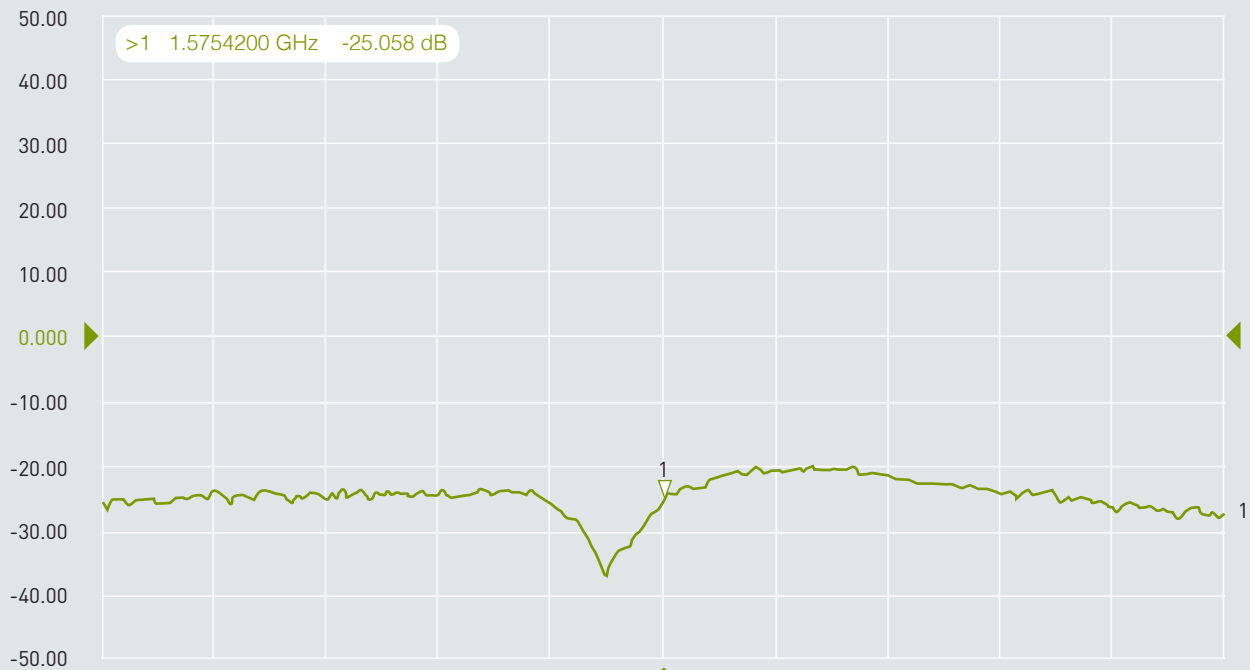
13. GPS Antenna Specifications (Through Antenna, LNA and Cable Assembly)

Parameter

Frequency Range	1575.42+/-1.023Mhz
Gain at 3.0V	32.5dBic @ Zenith
Output VSWR	2.0 Max.
Output Impedance	50Ω

14. 20dB min isolation to GPS LNA input and LTE / GSM / UMTS ANTENNA

► Tr1 S12 Log Mag 10.00dB/ Ref 0.000dB [F2]



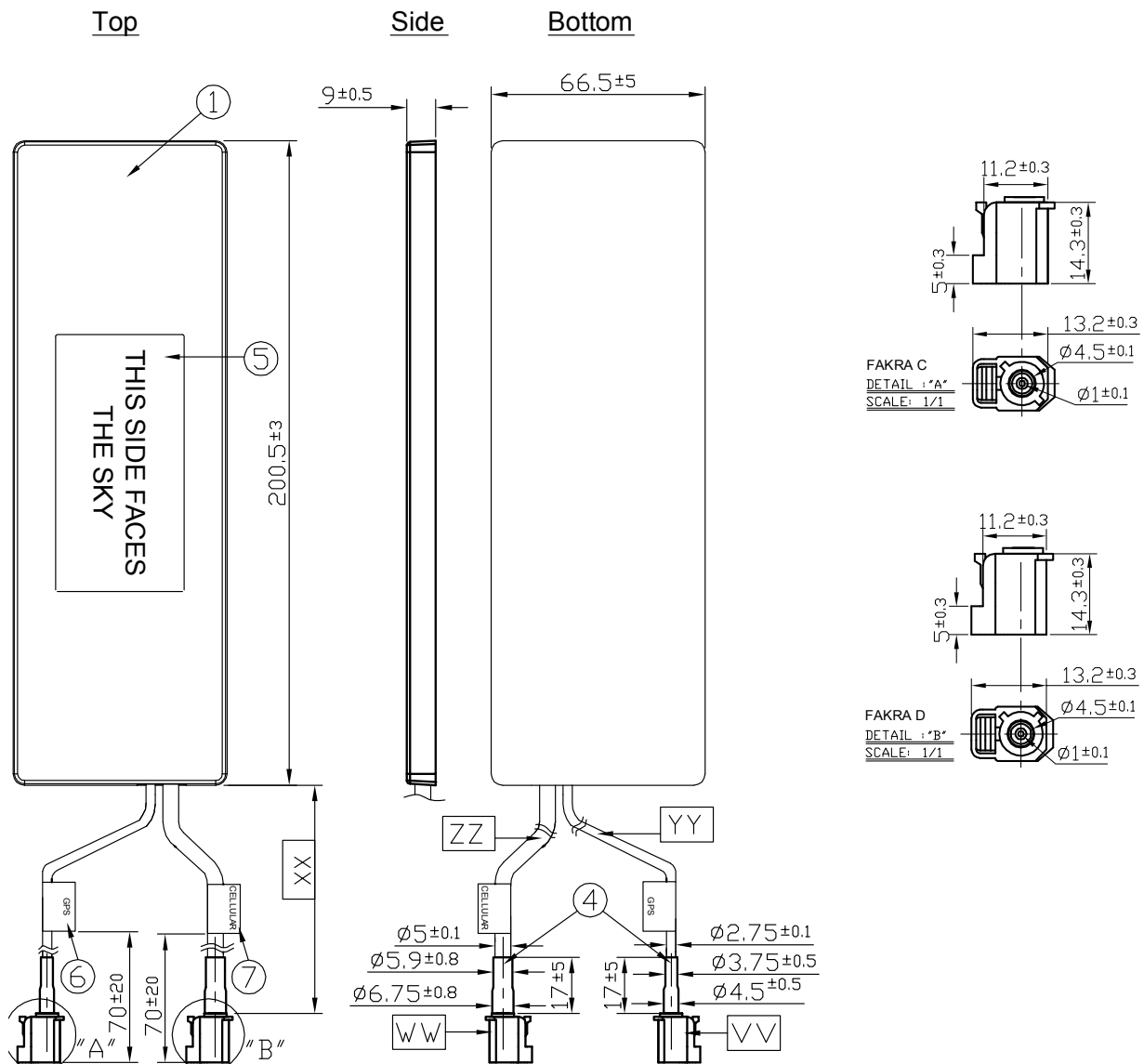
1 Center 1.57542 GHz

IFBW 1 kHz

Span 200 MHz Cor

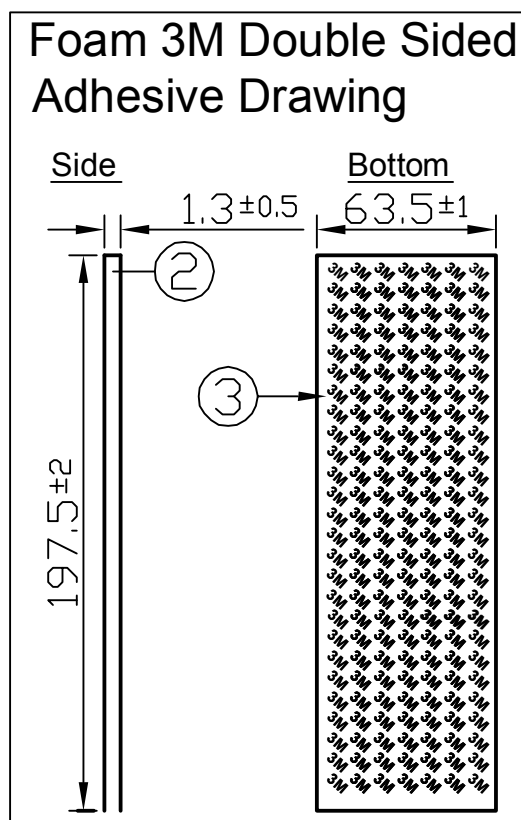
Ch1 Tr1 S12 >1 1.5754200 GHz -25.058 dB

15. Drawing



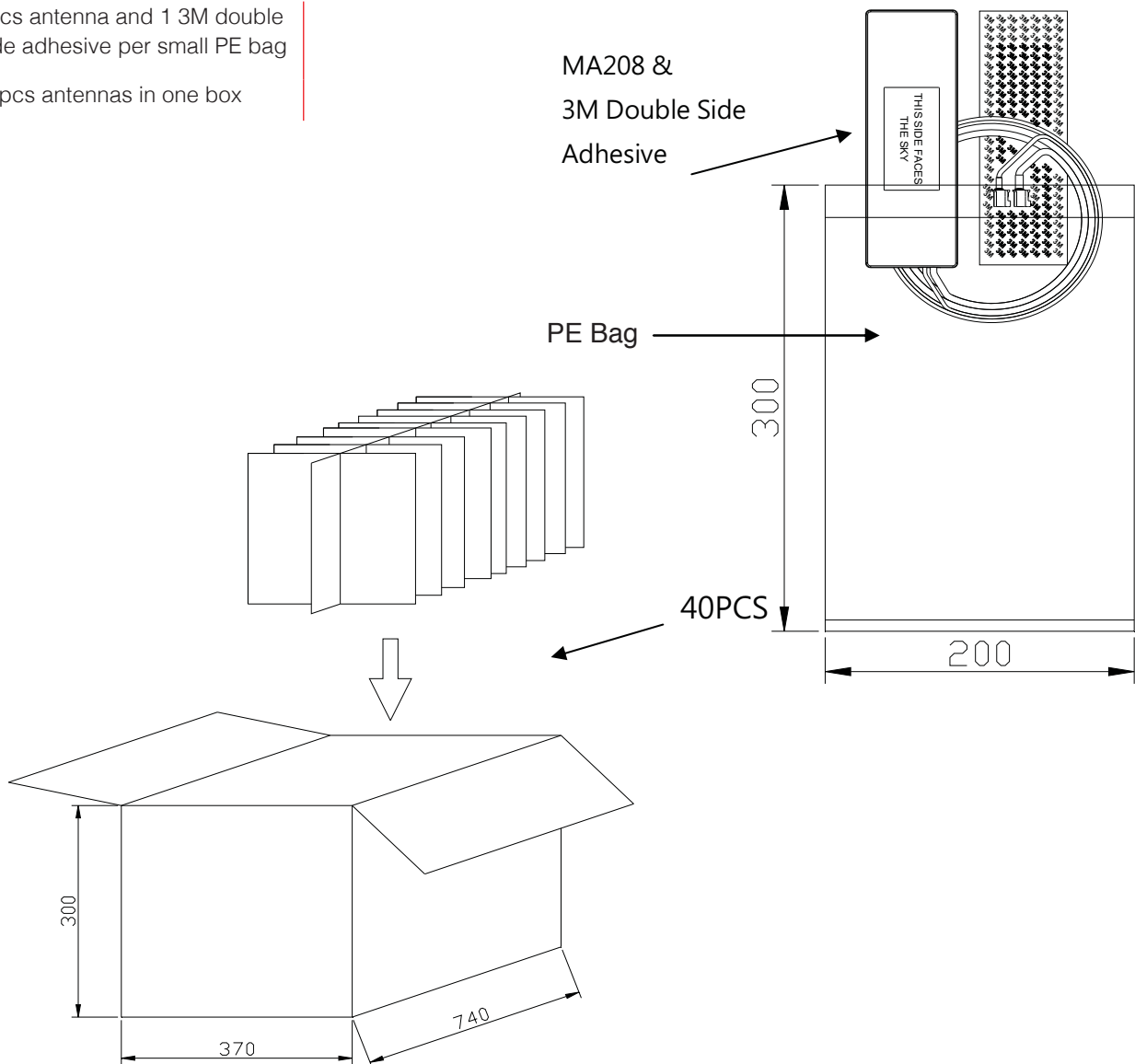
	Name	Material	Finish	QTY		Name	Spec	Finish	QTY
1	Housing	ABS	Black	1	VV	Connector Type	FAKRA C	Blue	1
2	Closed Cell Foam	F 100	Black	1	WW	Connector Type	FAKRA D	Violet	1
3	3M Double Adhesive	3M 9448 B	White Liner	1	XX	Cable Length	3000mm ± 30 mm	Black	1
4	Heat Shrink Tube	PE	Black	2	YY	Cable Type	RG174	Black	1
5	Clear Label	Label	White	1	ZZ	Cable Type	CFD 200	Black	1
6	GPS Label	Coated Paper	Orange	1					
7	Cellular Label	Coated Paper	Blue	1					

15.1 Separate Adhesive Pad



16. Packaging

1pcs antenna and 1 3M double side adhesive per small PE bag
40pcs antennas in one box



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