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INTRODUCTION
MIMO Antenna CPG04D(2-in-1)
Permanent Screws Mount (M12x1P)

2-Cables :1 x GNSS,1xLTE 5G/4G

Cable 1:GPS/Glonass RG174 Low less 3M SMA/M S/T
1575.42/1602.00MHz 5 dBic

Cables 2 : LTE/5G4G/3G/2G RG174 Low Less 3M SMA/M S/T
600-960/1710-2170/2600-2700/3300-3500MHz 2-5dBi

MIMO antenna Permanent mount CPG04D(2-in-1)

1.NERAL DESCRIPTION

Model No	Products P/N
CPG04D(2-in-1)-V4-RG174-3M-SMA/M	CPG04D-3M-SMA

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Below is a table summarizing the GNSS/LTE 5G/4G/3G (2-in-1) antenna design specification

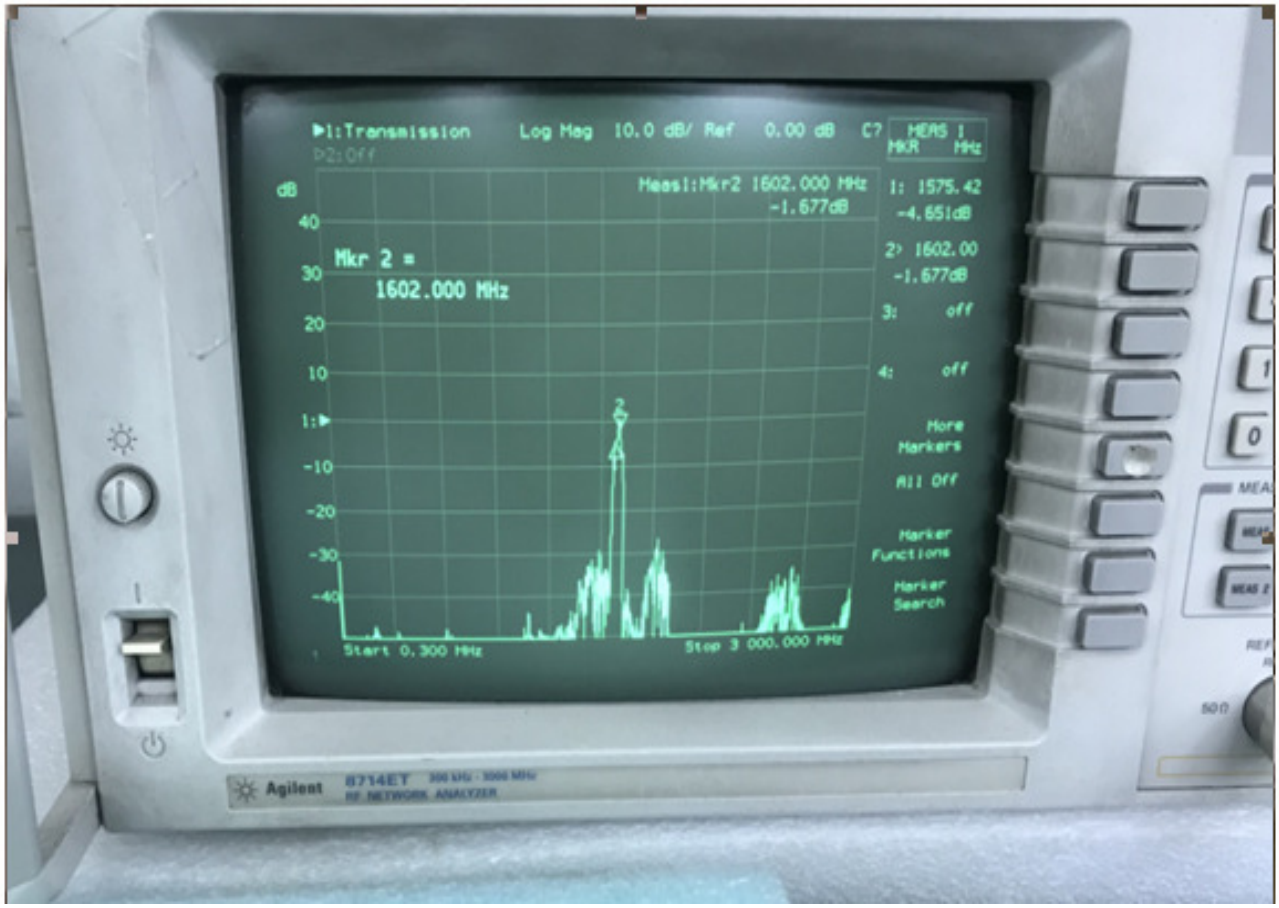
Cable 1:

2.1 GPS/GLONASS Antenna Electrical Properties

Antenna Gain	90° : 2.0 dBi Min. 20° : -5.0 dBi Min. Mounted on the 60mm*60mm ground plane.
Polarization	RHCP
Axial Ratio	90° : Max 3.0dB Mounted on the 60mm*60mm ground plane.
Input Voltage	2.4V-5.0V
Power Consumption	At 2.4 V Type: 13mA. Max: 16mA. At 5.0 V Type: 18mA. Max: 22mA.
Parameter	**Description**
GPS/Glonass Center Frequency Band	1575.42 /1602MHz ± 1.023 MHz.
V.S.W.R	<1.5：1
Note: Gain includes the cable loss	

2.2GPS/GLONASS LNA Electrical Properties

Parameter	Description
Frequency Range	1575.42/1602.00 ± 1.023 MHz
Gain	27~29 ± 4.5dB (+ 25 ℃± 5℃)
27~29 ± 4.5dB (+ 25 ℃± 5℃)	1.5 dB Max. (+25 ℃ ± 5℃) 2.2 dB Max. (+85 ℃)SMA 180°(Male)
Out Band Rejection	for = 1575.42/1602 MHz for ± 20 MHz 7dB MIN for ± 30 MHz 12dB MIN for ± 50 MHz 20dB MIN for ± 100 MHz 30dB MIN
Output Impedance	50Ω



2.3 GPS/GLONASS Antenna Mechanical Properties

Parameter	Description
Antenna Mounting	Permanent screws mount (M12 x1P)
Waterproof	100 % waterproof.(IP66~IP67)
Shock 10msec. Half sine wave.	Shock 10msec. Half sine wave.
Antenna cable	RG174U Low less
Antenna Cable Total Length	3000 mm(10ft)
Antenna Color	ABS (Black)
Connector	SMA 180°(Male)
Operating Temperature Range	-30℃~+75℃
Storage Temperature Range	-40℃~+80℃

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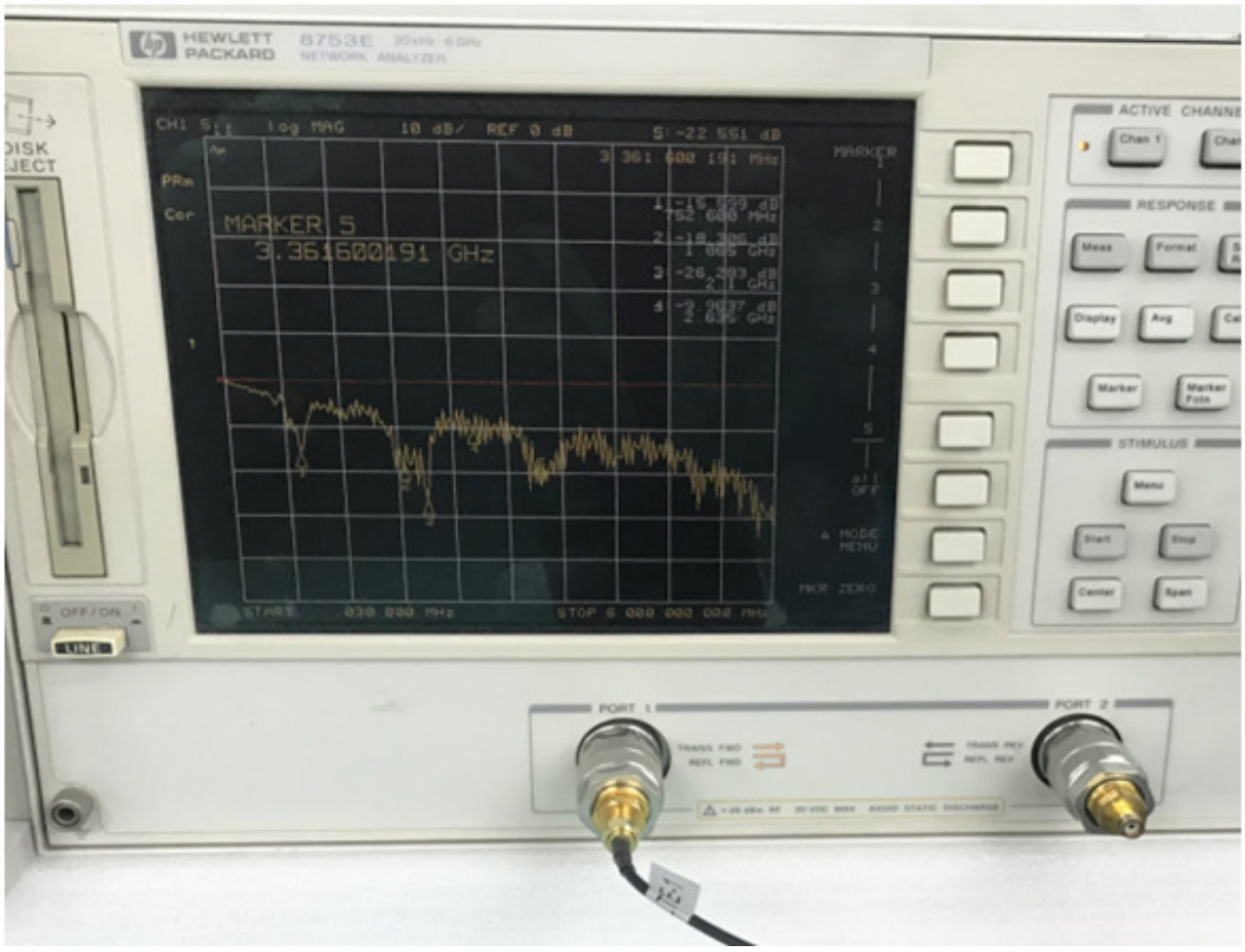
Cable 2:

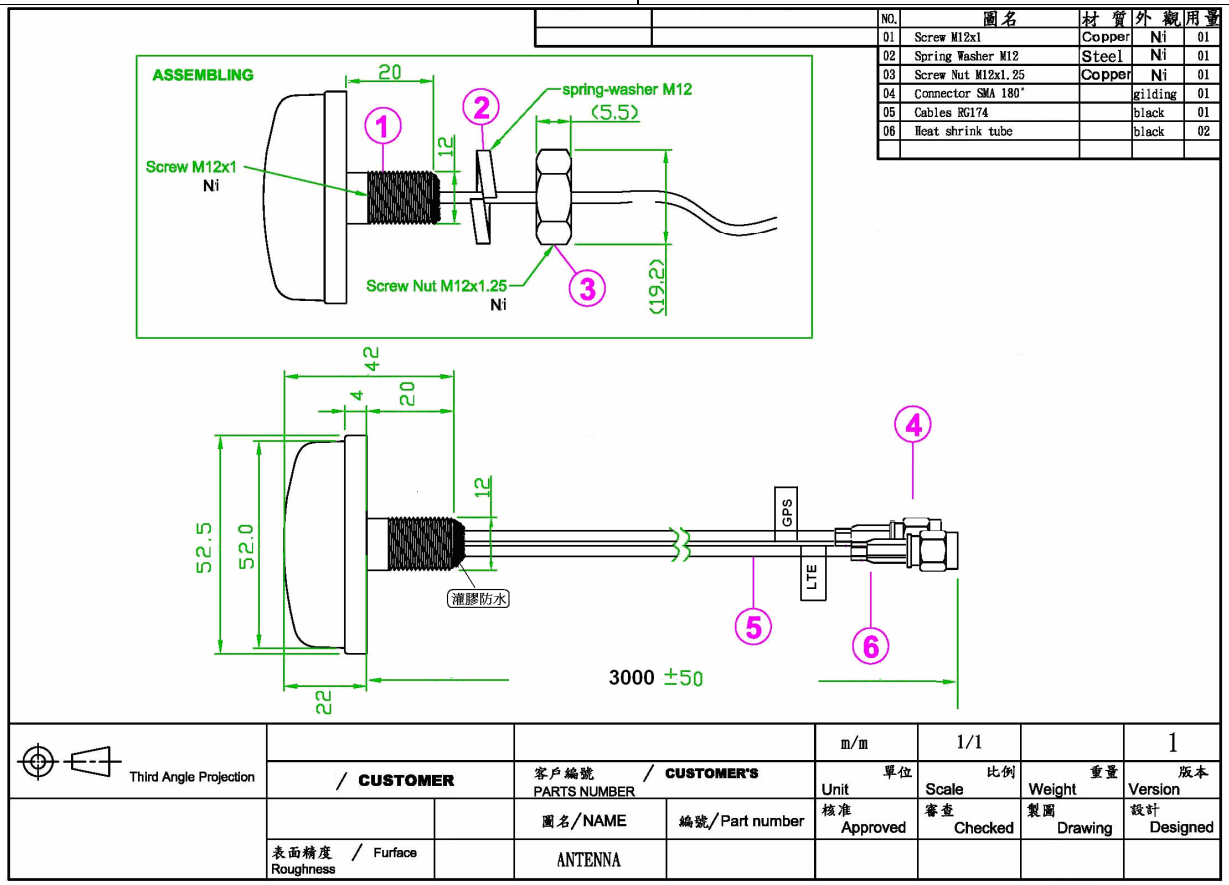
3.1 LTE 5G/4G/3G/GSM Multi-band Antenna Electrical Properties

Parameter	Description
Communication System	5G/4G/3G/AMPS/GSM/DCS/UMTS/LTE
Frequency Band (MHz)	600~960/1710~2170/2600~2700/3300~3500MHz
Average Efficiency	47%/67%/59%/54%/57%
Average Gail	2.0~5.0dBi
Nominal Impedance	50 ohm
Polarization	Vertical
Return Loss	Please See Data
V.S.W.R	<1.5：1



3.2 LTE/5G/4G/3G/2G Multi-band Antenna Mechanical Properties

Parameter	Description
Antenna Type	External Antenna
Touch Type	Screw Type (M12x1P)
Antenna cable	RG174 Low loss cable
Connector Type	SMA 180°(Male)
Antenna Cable Total Length	3000mm(10ft) ±30mm
Antenna Color	Black
Waterproof	100% waterproof.(IP66~IP67)
Shock (Drop Test)	25CM drop on concret



5.Antenna Appearance Size: M12 x1P
Diameter :54.7 mm (2.15”)
Height : 60mm (2.36”)

6 .GPS/Glonass Antenna Frequency : 1575.42/1602.00 MHz

6-1. Electrical Specification:

˙All values are defined at 25±15℃,65 ± 20％RH , power handling 1 u watt , air pressure 960±100 HPA unless noted.

˙Patch characteristics are measured with 70x70 mm ground plane in an anechoic chamber.

6-2) Patch

Characteristics	Specification
Center Frequency	1575.42 /1602.00±1.023 MHz (when covered with a radome and measured by LNA ground plane)
Bandwidth (10dB return loss)	10 MHz min @S11≦-10dB
Gain at Zenith	2 dBic type
Gain at 10° elevation	-7 dBic min
Polarization	R.H.C.P
Axial Ratio	3 dB type
VSWR	<2.0:1

6-3) Filter / LNA

Characteristics	Specification
Center Frequency	1575 -1610 MHz
Gain	27 dB type
Noise Figure	1.5 dB type
Output V.S.W.R	2.0 max
Voltage	2.3~5.5 V
Current	2.3V：6.6 mA Typical
	3.0 V：8.6 mA Typical
	4.0 V：12.6 mA Typical
	5.5 V：16 mA Typical

6-4 GPS/Glonass Log MAG & U FS

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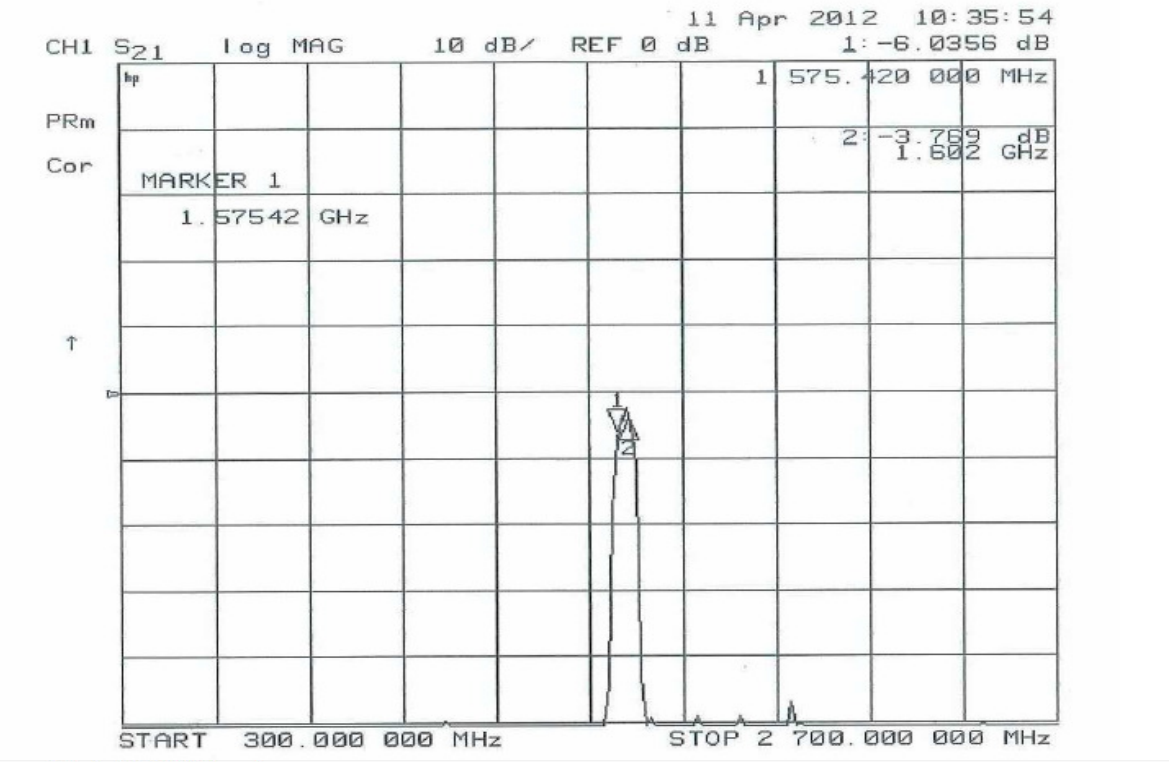

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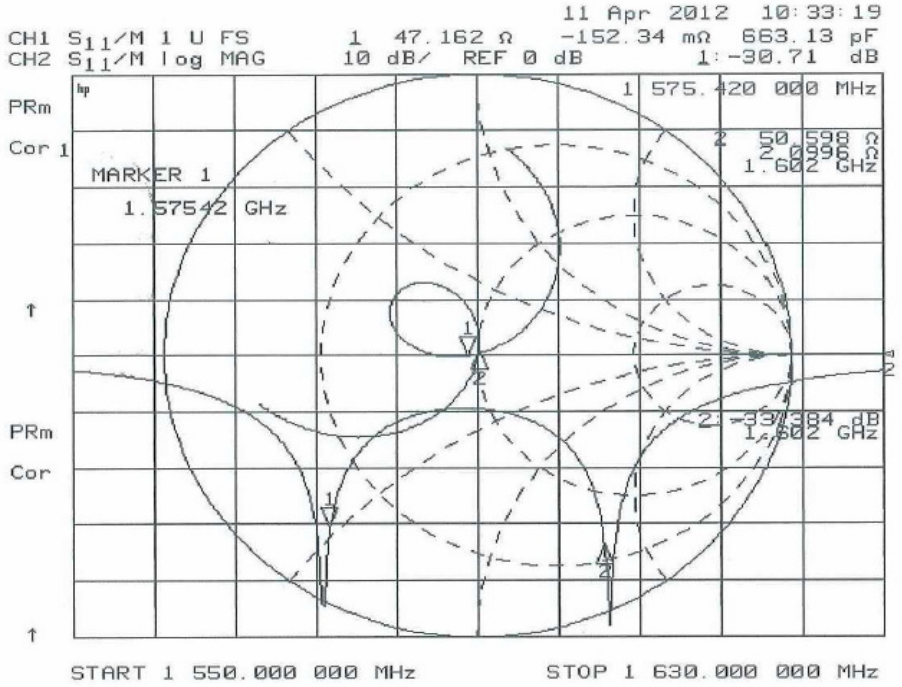
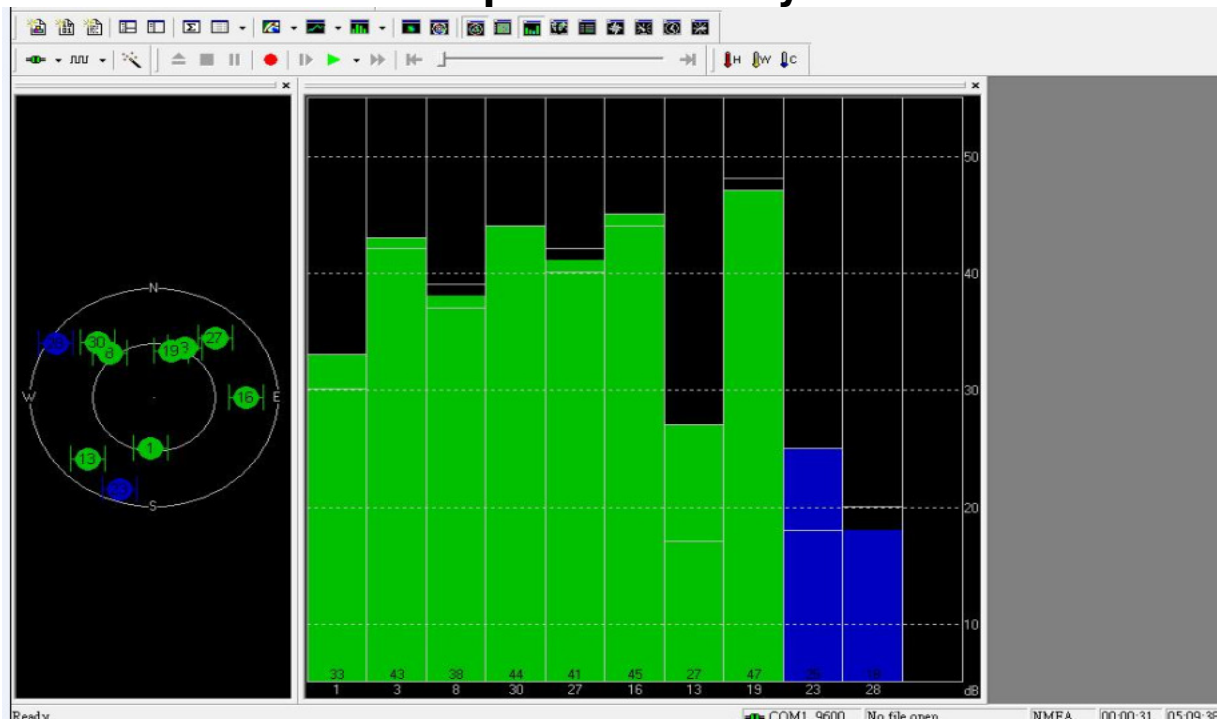
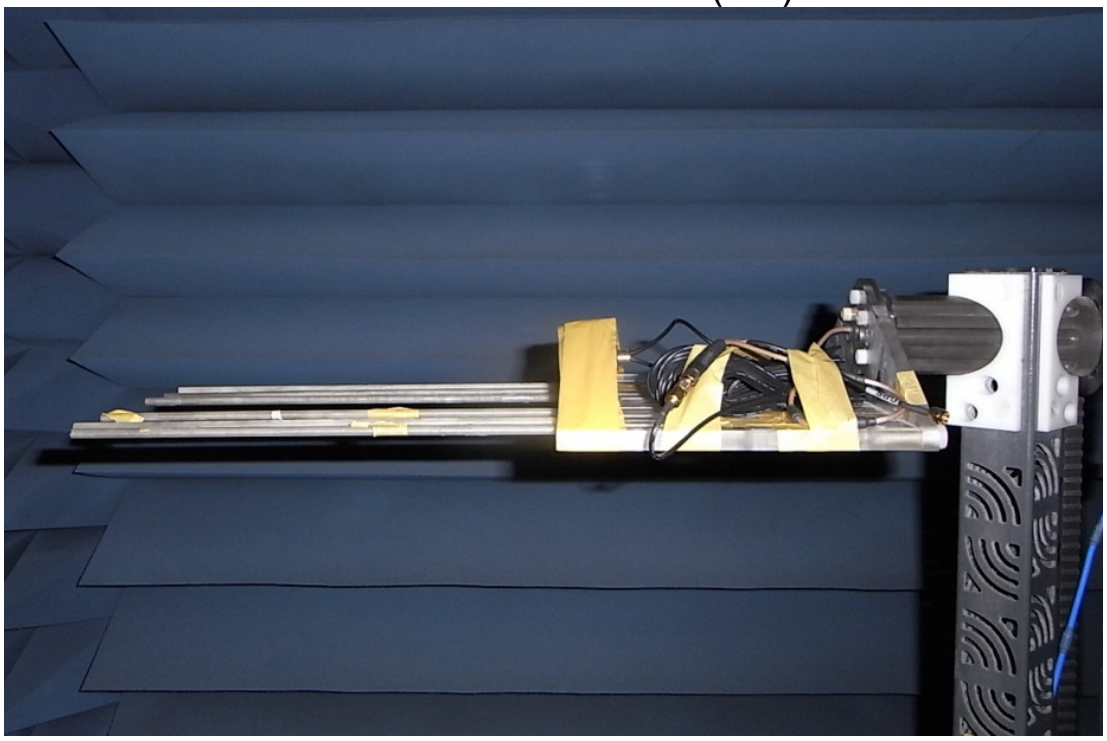


6-5 GPS Satellite reception intensity



6-6 GPS/GLONASS RESPONSE (dB)



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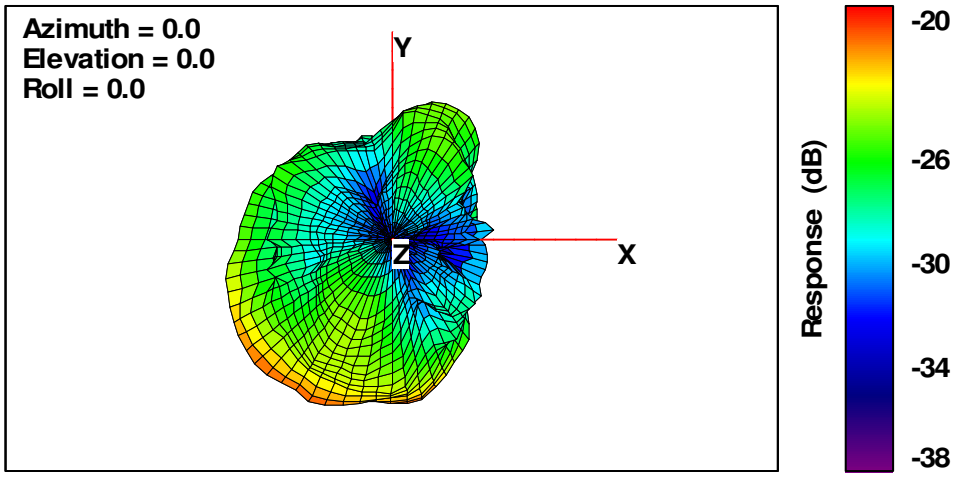
1575.42MHz

Total



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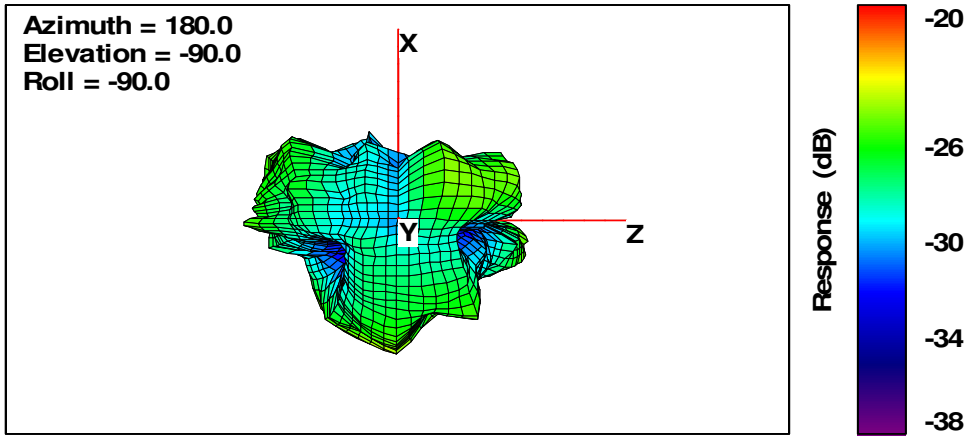

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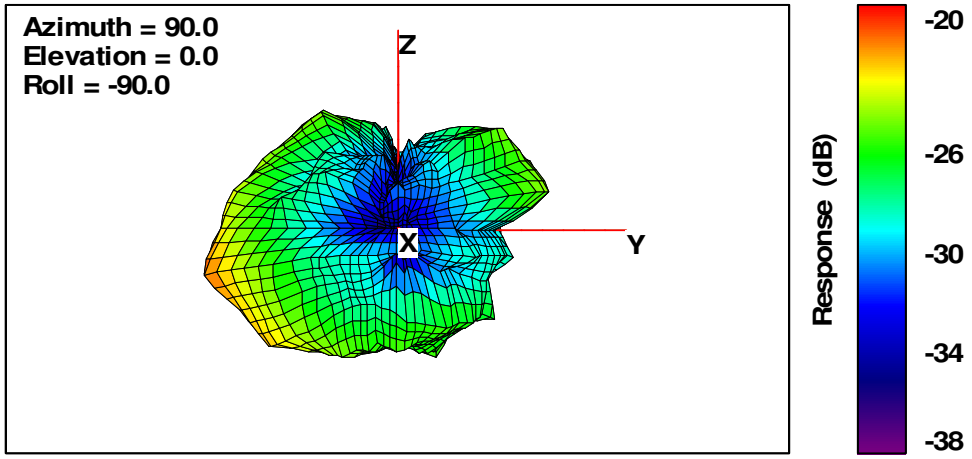
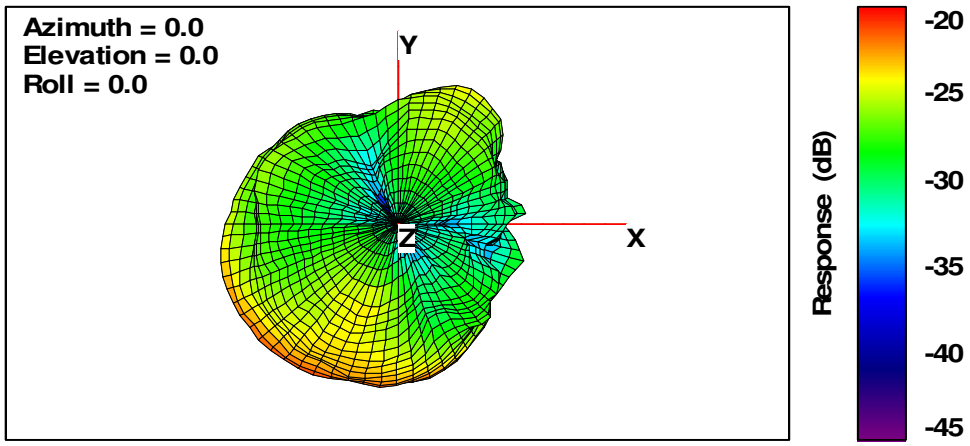


1602.00MHz

Total



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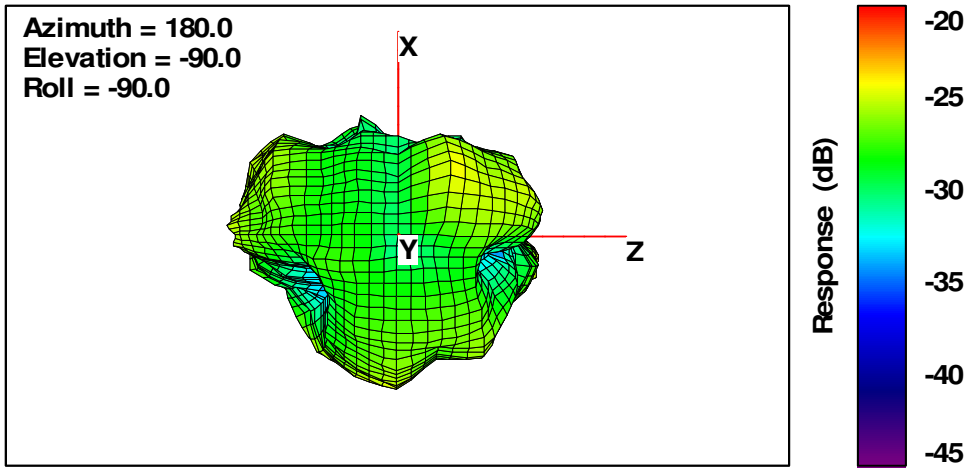

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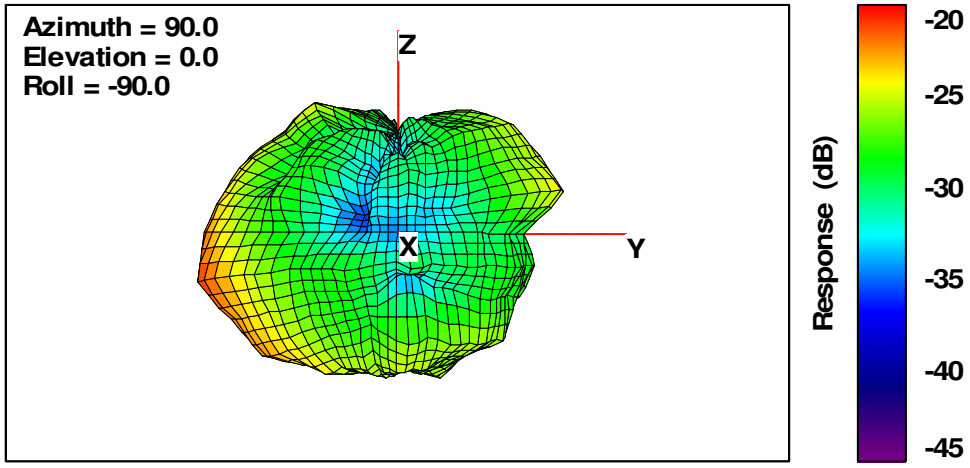

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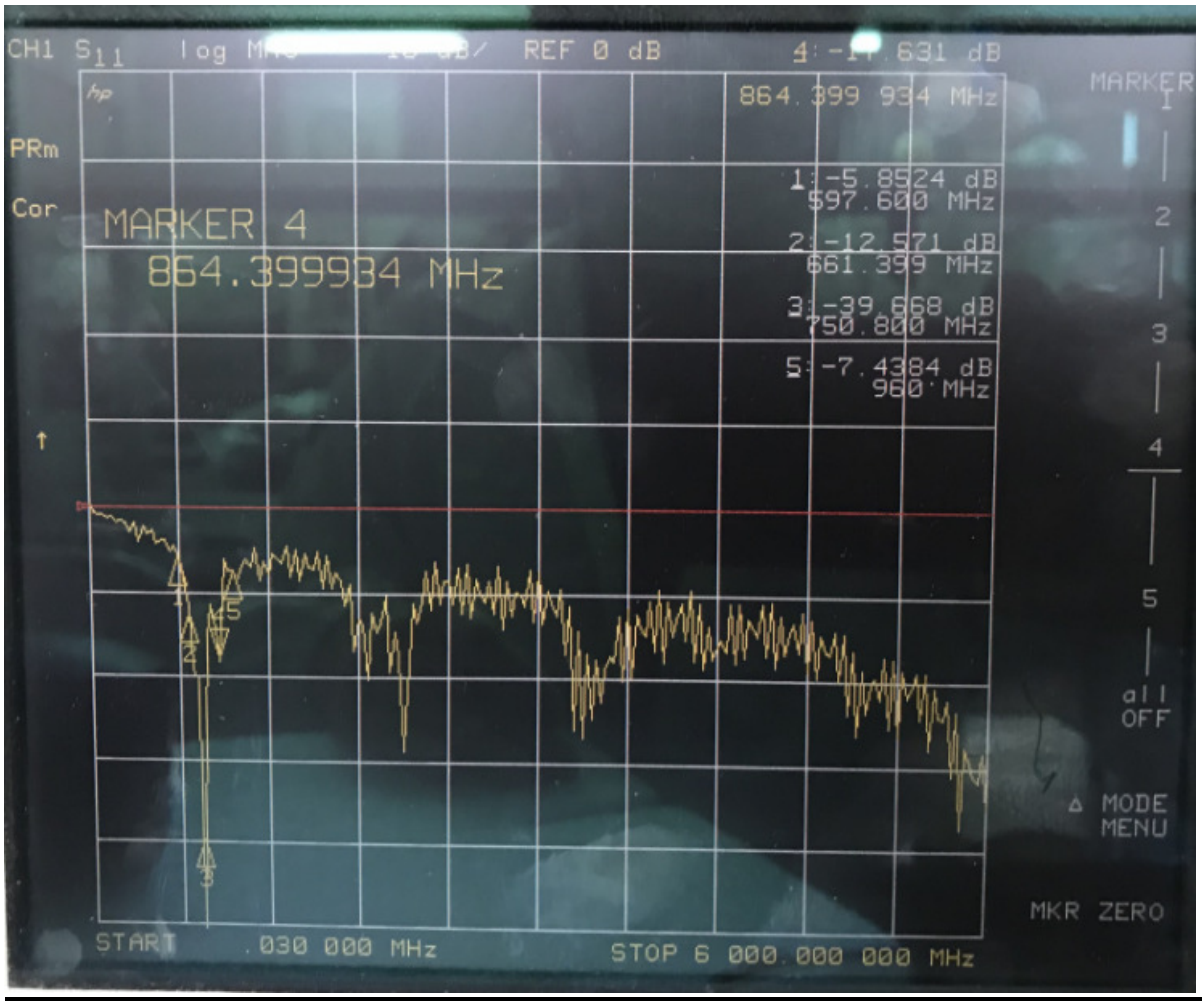
7.LTE/5G/4G/3G Multi -band Networt analyzer test
Frequency : 600~960/1710~2170/2600~2700/3300-3500MHz

Cable 2-3

7-1 Detail band test - Frequency : 600~960MHz

Frequency	Ruturn loss	V.S.W.R	Reflection coefficient
597.600MHz	-5.8524dB	3.080:1	0.510
661.339MHz	-12.571dB	1.615:1	0.235
750.800MHz	-39.668dB	1.021:1	0.010
864.399MHz	-17.631dB	1.302:1	0.131
960.000MHz	-7.4384dB	2.476:1	0.425



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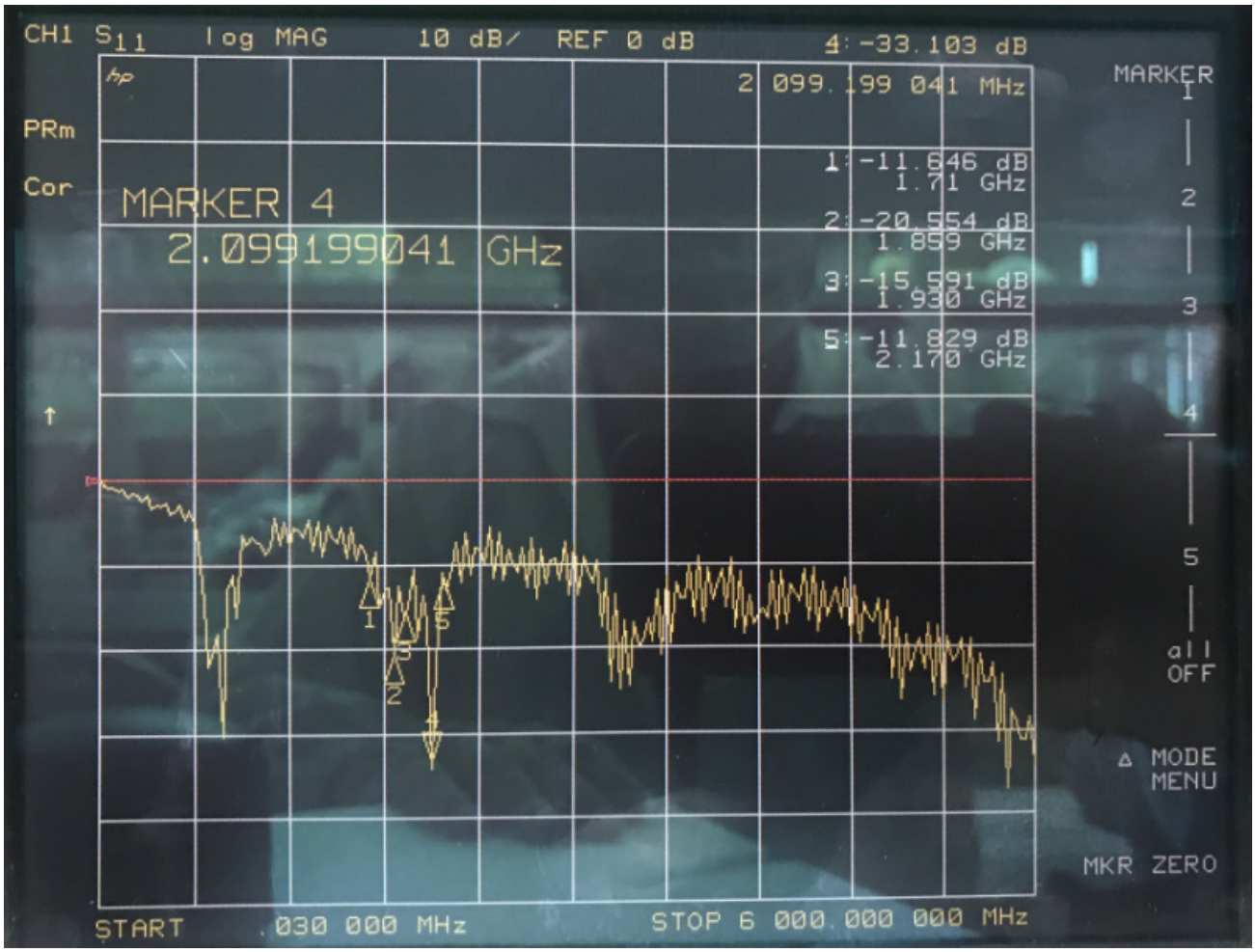
7-2 Detail band test - Frequency : 1710~2170MHz

Frequency	Ruturn loss	V.S.W.R	Reflection coefficient
1710.00MHz	-11.646dB	1.709:1	0.262
1859.10MHz	-20.554dB	1.069:1	0.033
1930.00MHz	-15,591dB	1.398:1	0.166
2099.19MHz	-33.103dB	1.045:1	0.022
2170.00MHz	-11.829dB	1.689:1	0.256



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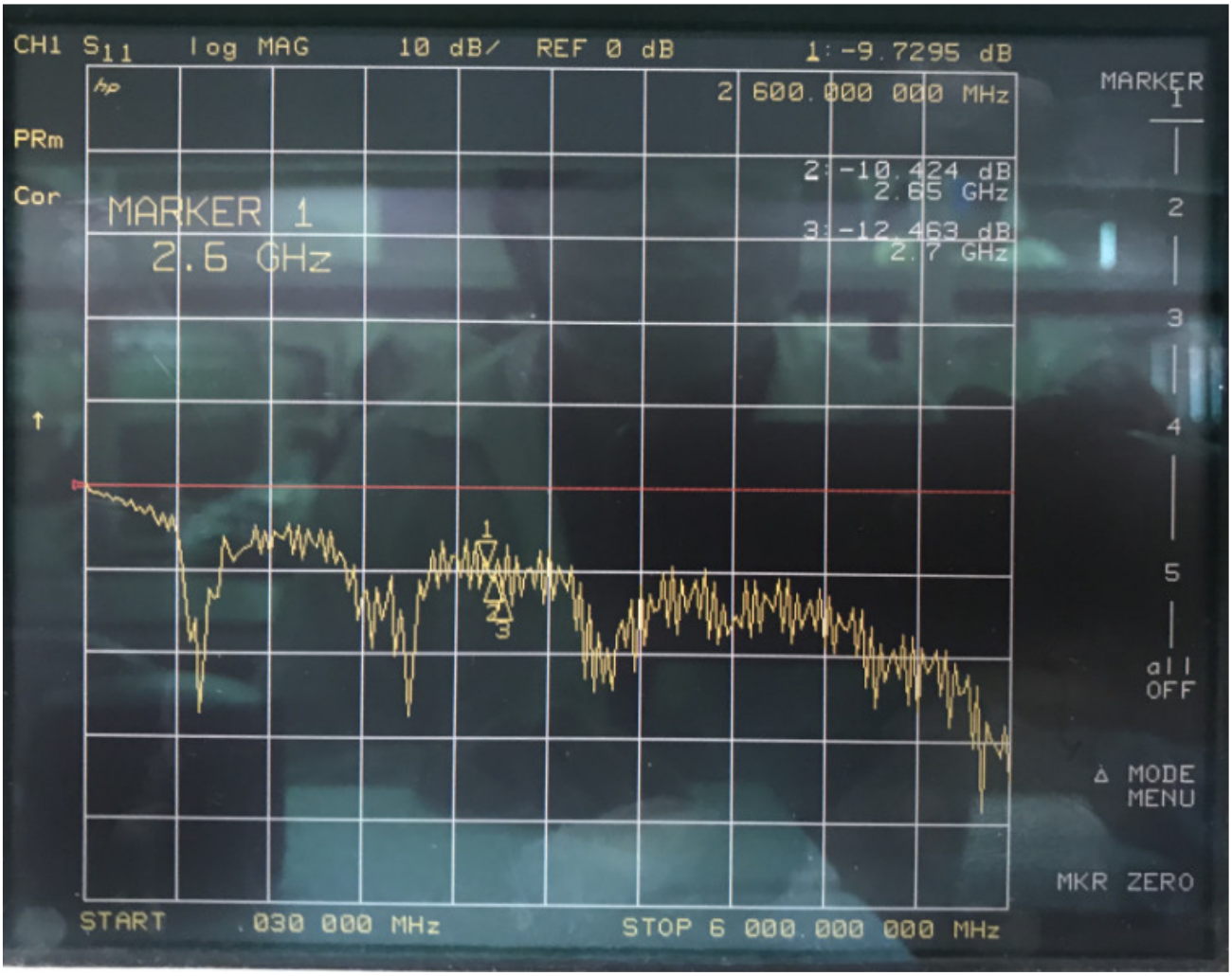
7-3 Detail band test - Frequency : 2600-2700Mhz

Frequency	Ruturn loss	V.S.W.R	Reflection coefficient
2600.00MHz	-9.7295dB	1.968:1	0.326
2650.00MHz	-10.424dB	1.862:1	0.301
2700.00MHz	-12.463dB	1.625:1	0.238



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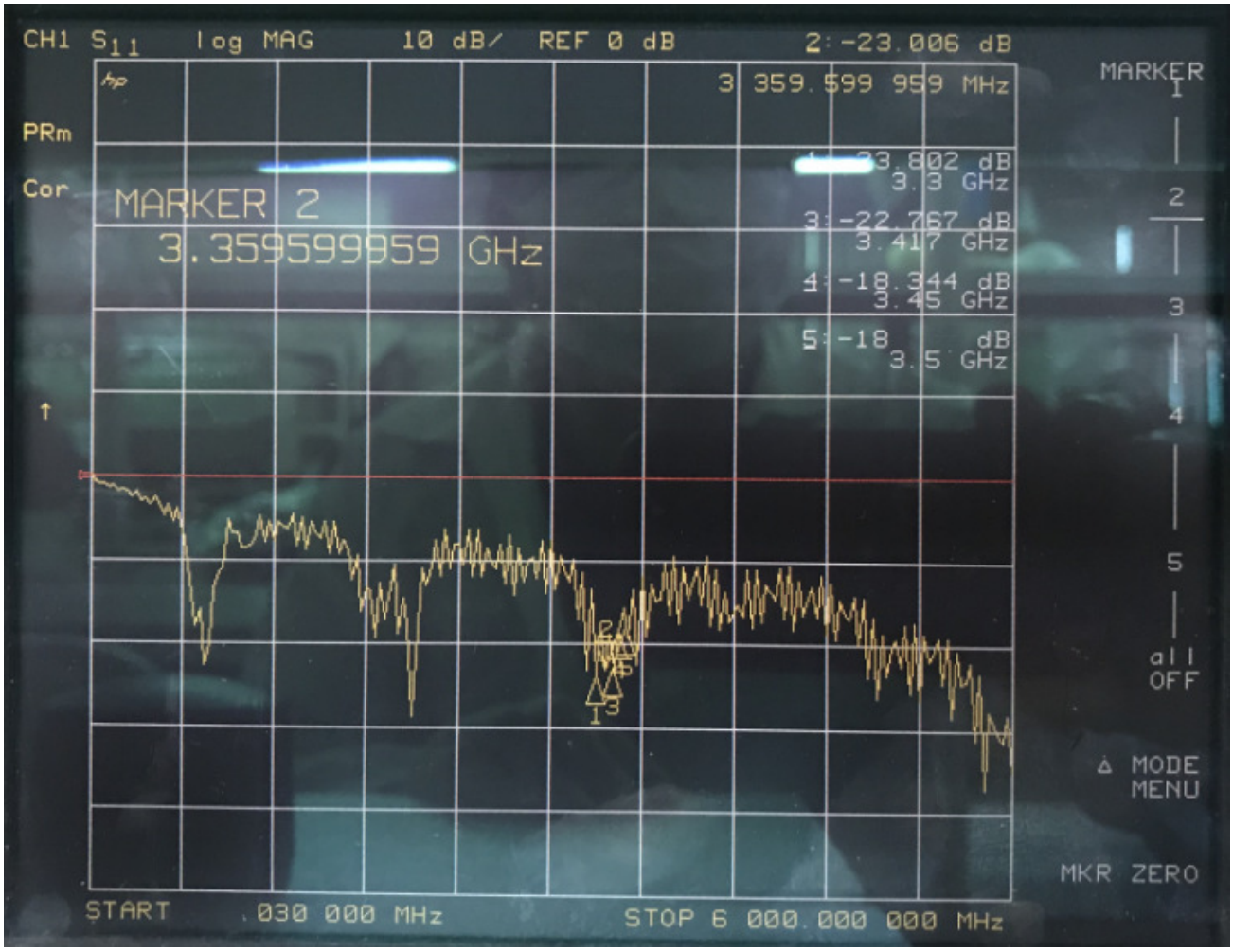
7-4 Detail band test - Frequency : 3300~3500MHz

Frequency	Ruturn loss	V.S.W.R	Reflection coefficient
3300.00MHz	-23.802dB	1.138:1	0.065
3359.00MHz	-23.006dB	1.152:1	0.071
3417.00MHz	-22.767dB	1.157:1	0.073
3450.00MHz	-18.344dB	1.275:1	0.121
3500.00MHz	-18.000dB	1.288:1	0.126



9.Antenna Waterproof test (IP66~IP67)

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PROJYE INTERNATIONAL CO.,LTD
ROHS Declaration

We (Projye International Co.,Ltd.) hereby confirm and assure that our product are in conformity of following stipulations.

The concentration of the 6 controlled substances specified by RoHS be less than the level stated as below for the sub-material and additives and the like in the manufacturing processes.

(Lead):	0.1% = 1,000ppm
(Lead in steel alloy)	0.35% = 3500ppm
(Lead in aluminium)	0.4% = 4000ppm
(Lead in copper alloy)	4% = 40,000ppm
(Lead in solder)	0.1% =1,000ppm
(Mercury):	0.1% = 1,000ppm
(Hexavalent chromium)	0.1% = 1,000ppm
(PBB)	0.1% = 1,000ppm
(PBDE)	0.1% = 1,000ppm
(cadmium)	0.01% =100ppm

From material receipt, during manufacturing process to delivery to Tragent Handels-und Beteiligungs GmbH , the contamination of the environment-related substances mentioned above must be prevented.

All parts and packaging material delivered to Tragent Handels-und Beteiligungs GmbH must be in compliance with the above stipulations. If failure of any part to this guarantee letter happened, our company is responsible for all incurred charge and legal issue.

Company Name : PROJYE INTERNATIONAL CO.,LTD

Authorized Signature: *Jack Liang*

Date: Aug-05-2016

PROFESSOR TECHNOLOGY CO.,LTD.

TATUNG CO.Wire & Cable plant

通信線中心 2007. 3 -1 文件發行章

Product Specification	Subject	UL 1354 #26-7/0.16A Coaxial Cable (RG-174/U)-XLPE (LOW LOSS)	No.	H	S	S	C	T	4	9	5	9	2
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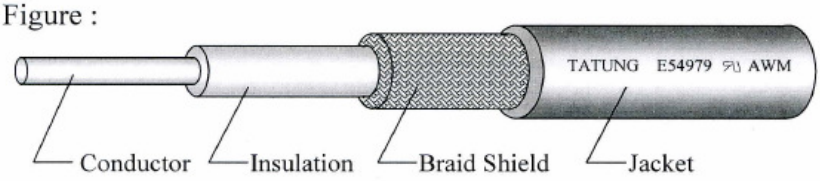
Structure Figure :



1. Specification :

Item		Specification
Conductor	Material	Copper Strand
	Structure	AWG 26 (7/0.16 mm)
	Diameter	Approx. 0.48 mm
Insulation	Material	XLPE
	Minimum Thickness	0.455 mm
	Nominal Thickness	Approx. 0.535 mm
	Diameter	1.55 ± 0.05 mm
Braid Shielded	Material	Tinned Copper Wire
	Structure	16 / 5 / 0.1 mm
Jacket	Material	PVC or LSFH or TPR
	Minimum Thickness	0.22 mm
	Nominal Thickness	Approx. 0.43 mm
	Diameter	2.70 ± 0.10 mm

2. Characteristic :

(1) Temperature Rating :		80℃
(2) Voltage Rating :		30V
(3) Insulation Resistance :	20℃ DC 500V	1000 MΩ-Km (Minimum)
(4) Conductor Resistance :	20℃	142.6 Ω/Km (Maximum)
(5) Mutual Capacitance :	1KHz Between conductor and shielding	100±8 pf/m
(6) Impedance :	10 MHz ~ 3 GHz	50±5 Ω
(7) Standard Attenuation :	100 MHz	359 dB/Km
	400 MHz	655 dB/Km
	1 GHz	1175 dB/Km
	3 GHz	2103 dB/Km

Remark : max. attenuation = standard attenuation × 115%

3. Marking : TATUNG E54979 AWM 1354 80℃ 26AWG RG-174/U LF

Unit	Date.	Design	Check	Approval	Issue
Technical Department	2007.03.01	通信技術 07 3 1 吳燈皇	通信技術 07 3 1 顧忠信	通信線 07 3 1 徐定財	通信技術 07 3 1 林秋雄

PROFESSOR TECHNOLOGY CO.,LTD.

PROFESSOR TECHNOLOGY CO.,LTD

Declaration of Compliance for REACH
REACH

Rev:

Company : Projye International Co.,Ltd.

Address : 5F, NO.25-1, JI LIN RD,CHUNG LI INDUSTRIAL PARK,TAOYUAN COUNTY 320, TAIWAN

Product : CPG04D(2in1)-V4-RG174-3M-SMA/Male

We declare and warrant that:
All of the components, subassembly & finished products which provide do not contain ***73*** substances on the REACH SVHC candidate list in the Table I below in concentrations greater than 0.1% by weight per article, otherwise should report it to GME.

Company Seal

Authorized Signature *Liang Wen-Kuang*

:

Name : Liang wen Kuang

Title : General Manager

Phone : +886 3 455 1081 Ext.206

Date : 2013-3-20