

Amphenol[®] RF

Global RF Solutions

NPI Qualification Test Report

DVT #: 3213

EAR: 5916

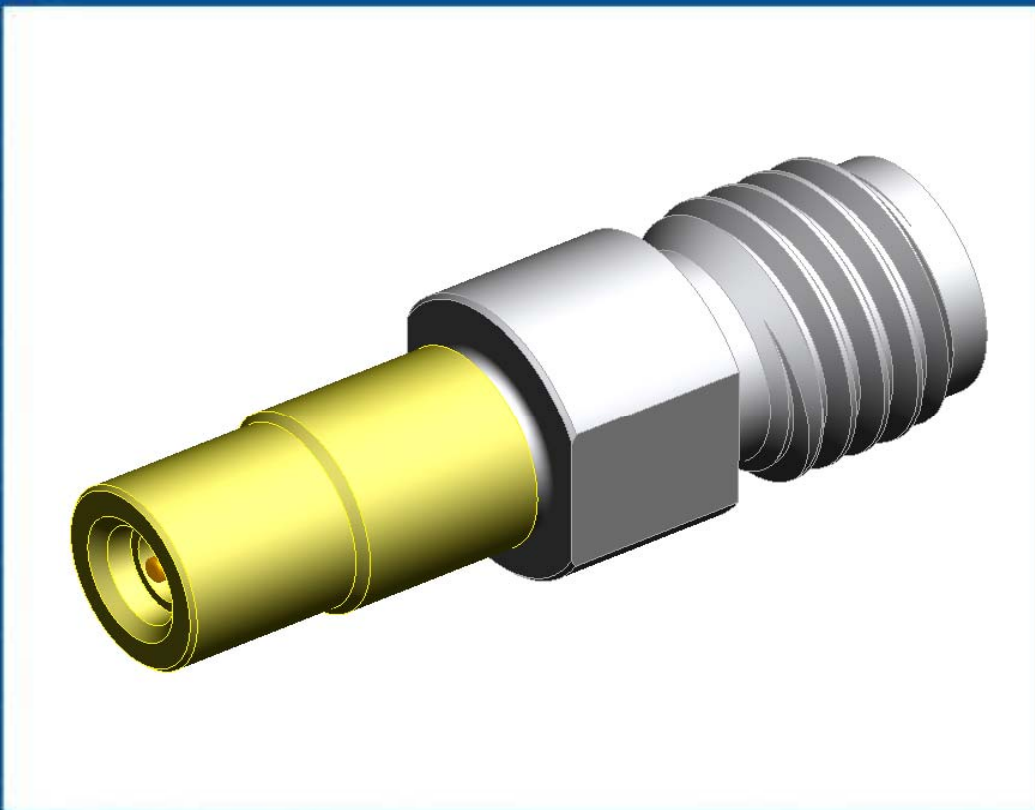
DVT Rev: 1

Date: 1/13/2014

SMA Jack to AMC (U.FL) Probe Adapter

Amphenol RF P/N : 901-10465

Rev : A



Environmental, Mechanical and Electrical
Performance Test Results

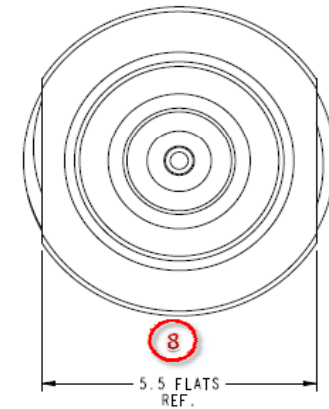
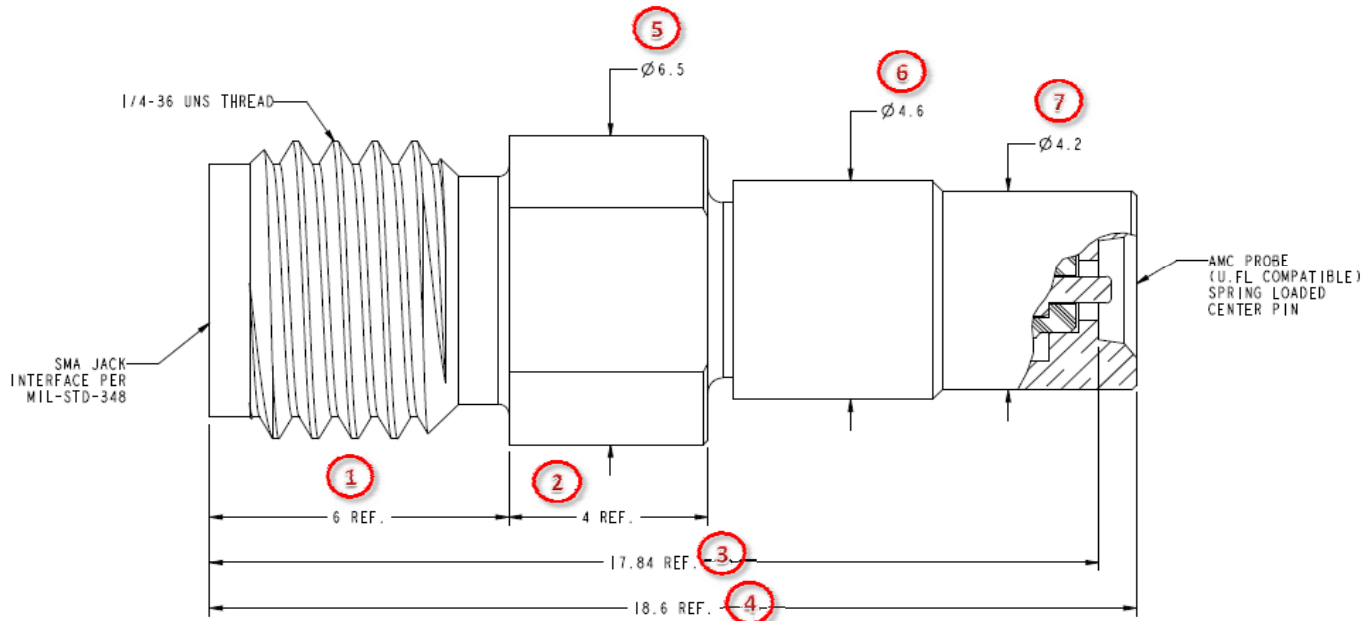
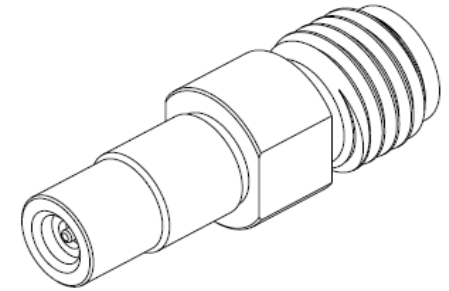
NOTES:

1. MATERIALS AND FINISHES:
 BODY - BRASS, NICKEL PLATING
 HOOD - STAINLESS STEEL, GOLD PLATING
 CONTACTS - BERYLLIUM COPPER OR BRASS, GOLD PLATING (4 MICROINCHES MIN)
 INSULATOR - PTFE
2. ELECTRICAL:
 A. IMPEDANCE: 50 OHM
 B. FREQUENCY RANGE: DC - 6 GHz
 C. VSWR: 1.25 MAX.
 D. DIELECTRIC WITHSTANDING VOLTAGE: 250 VRMS, MIN.
3. MECHANICAL:
 A. DURABILITY: 5000 CYCLES MIN.
 B. TEMPERATURE RANGE: -65° C TO +165° C
4. PACKAGING:
 A. QUANTITY: SINGLE PACK
 B. MARKING: BAG TO BE MARKED
 *AMPHENOL RF, 901-10465, AND DATE CODE"

THIRD ANGLE PROJ.

REVISIONS

REV	DESCRIPTION	DATE	ECO	APPR
A	RELEASE TO MFG.		49879	JTS



CUSTOMER OUTLINE DRAWING
 ALL OTHER SHEETS ARE FOR INTERNAL USE ONLY

UNLESS OTHERWISE SPECIFIED, DIMENSIONS ARE IN METRIC AND TOLERANCES ARE: <0.5mm ±0.05mm 0.5 - 6mm ±0.1mm 6 - 30mm ±0.2mm 30 - 120mm ±0.3mm ANGLES ±1°	MATERIAL	DRAWN T. SMITH	DATE 04-Oct-13	TITLE AMC PROBE (U.FL) TO SMA JACK ADAPTER	Amphenol RF www.amphenolrf.com
	NOTICE - These drawings, specifications, or other data (1) are, and remain the property of Amphenol corp. (2) must be returned upon request; and (3) are confidential and not to be disclosed to any person other than those to whom they are given by Amphenol Corp. The furnishing of these drawings, specifications, or other data by Amphenol Corp., or to any other person to anyone for any purpose is not to be regarded by implication or otherwise in any manner licensing, granting rights to permitting such holder or any other person to manufacture, use or sell any product, process or design, patented or otherwise, that may in any way be related to or disclosed by said drawings, specifications, or other data.	REFERENCE EAR #5916	ENGINEER T. SMITH		
CONFIGURATION LEVEL:	FINISH	APPROVED	DATE	SCALE: 10.0:1.0 SHEET 2 OF 2	ITEM NO. 901-10465
		CAD FILE		DWG SIZE B	REV A
					PART NO. 901-10465

* Form varies by test parameter

Amphenol [®] RF Global RF Solutions		DESIGN VERIFICATION AND VALIDATION TEST PLAN		
Customer:	Distribution	Design Engineer:	Todd Smith	
DVT Number:	3213	Program Manager:	Rahul Rajan	
DVT Rev:	1	Amphenol PN:	901-10465	
EAR Number:	5916	Amphenol Rev:	A	
Description:	SMA Jack to AMC (U.FL) Probe Adapter			
*Individual Dimensional, Mechanical, Electrical and Environmental tests are part specific and not controlled by this document.				
Testing Required by Design Engineer to Verify Design and Validate Product Performance	Description of Testing Requirement	Test Assy's Req.	Assy's that will be lost	Result
Dimensional Tests				
First Article Inspection	As indicated on Customer Outline Drawing.	5	0	Pass
Appearance				
Assembly appearance	Include photo of the complete assembly, to show the appearance.	1	0	Pass
Mechanical Tests				
Component Weight	Product weight in grams.	1	0	Pass
Plating Thickness	The parts must conform to Amphenol Plating spec. 349-50560. Body: nickel plating 100 microinches minimum thickness over copper strike. Hood and contacts: gold plating 5 microinches minimum thickness over 100 microinches minimum high phosphorus electroless nickel.	1	0	Pass
Contact Captivation - Axial	Contact must withstand a 6 Lbf push out force applied from mating direction and meet the interface dimensions shown on dwg.	2	2	Pass
Body Captivation - Axial	Body must withstand an axial force of 20 Lbf and maintain dimensions shown on drawing.	2	2	Pass
Spring Force	Measure spring force when mating to AMC jack (A-1JB).	5	0	Pass
Cycle Testing	Cycle 5000 times by mating to AMC jack (A-1JB). Measure spring force and contact resistance after every 1000 cycles.	5	0	Pass
Electrical Tests				
Contact Resistance	Determine the electrical resistance of both outer conductor crimps and corresponding interface and the inner conductor crimps and corresponding contact interface under low energy conditions; The total contact resistance of inner conductor must not exceed 50 mΩ. Likewise, max contact resistance of the outer conductor must not exceed 50 mΩ.	All	0	Pass
Continuity Test	Verify the DUT shows no open OR short circuits.	All	0	Pass
Dielectric Withstanding Voltage	Demonstrate the connection can withstand momentary over-potentials due to switching, surges and other similar phenomena; Apply 500 VRMS, 60 Hz for 60 seconds. A buzzing noise indicates failure.	All	0	Pass
VSWR / Return Loss	Verify the efficiency of voltage applied to voltage reflected is adequate to the product application; Max VSWR should be 1.25 : 1 @ 6 GHz. Include a screenshot of NA results.	5	0	Pass
Insertion Loss	Verify the total loss of power going through the DUT; record maximum insertion loss. Include a screenshot of NA results.	5	0	Pass
Amphenol Best Practices	Quality shall apply Amphenol Best Practices verification as applicable to this product.	All	0	Pass
Design Engineer Comments:	When required include photo of test equipment when performing a test.			
Total Testing Requirements Identified for Verification of Design Intent and Validation of Customer Requirements			Parts Destroyed	4

Amphenol[®]RF <small>Global RF Solutions</small>		FIRST ARTICLE / PART EVALUATION INSPECTION										
Amphenol P/N		Revision	Mfg Order #	Mfg Location			Supplier Name	Sup. #	Date			
901-10465		A	5525-131108003	Amphenol RF ASIA			-	-	1/13/2014			
Customer P/N		Revision	EAR #	Design Eng			Prog. Mgr.	Evaluated BY				
-		-	5916	Todd Smith			Rahul Rajan	Michael Li				
Part Description						LOT QTY	PO#	DVT Number				
SMA Jack to AMC (U.FL) Probe Adapter						100	-	3213				
<input checked="" type="checkbox"/> First Article Inspection (all dimensions on COD). <input type="checkbox"/> Critical Dimension Inspection Only (defined by Engineering). <input type="checkbox"/> Material Environmental Compliance Documented. <input type="checkbox"/> AQL Supplier Verification.												
Item	Nominal	UCL	LCL	Sample #1	Sample #2	Sample #3	Sample #4	Sample #5	Gage			
1	6.00	REF	REF	6.00	5.99	6.00	6.01	6.00	Digital Mic			
2	4.00	REF	REF	4.05	4.04	4.06	4.06	4.05	Digital Cal			
3	17.84	REF	REF	17.84	17.89	17.86	17.87	17.85	Height Gage			
4	18.60	REF	REF	18.62	18.67	18.65	18.66	18.64	Digital Cal			
5	6.50	0.20	0.20	6.42	6.43	6.44	6.43	6.42	Digital Cal			
6	4.60	0.10	0.10	4.63	4.62	4.60	4.61	4.62	Digital Cal			
7	4.20	0.10	0.10	4.20	4.21	4.21	4.20	4.21	Digital Cal			
8	5.50	0.10	0.10	5.50	5.51	5.51	5.50	5.50	Digital Cal			
9												
10												
11												
12												
13												
14												
15												
16	Cont. (Opens & Shorts)		Pass	Parts were 100 % tested as per DVT requirements.								
17	Hi-Pot test		Pass	Parts were 100 % tested as per DVT requirements.								
18	Orientation		Pass	Parts were checked 100 % as per DVT requirements.								
19	Packaging Type		Single									
20	Packaging QTY		1									
21	Marker #1	Na										
22	Marker #2	Na										
23	Marker #3	Na										
24	Marker #4	Na										
25	Marker #5	Na										
26												
Comments:												
Appearance is okay.												
Thread has been verified with GO-NOGO gauge, result is acceptable.												
PROTOTYPE ENGINEERING VALIDATION						QUALITY ENGINEERING VALIDATION						
<input checked="" type="checkbox"/> Processed through all assembly steps without major issue. <input type="checkbox"/> Additional manufacturing testing and validation required. <input checked="" type="checkbox"/> Manufacturing Process is ready (Including Work Instructions as needed).						<input checked="" type="checkbox"/> Measurements and DVT Plan are adequate for product quality. <input type="checkbox"/> Process controls (Including inspection plans in place as needed). <input type="checkbox"/> Manufacturing equipment is production ready.						
PART EVALUATION REPORT DISPOSITION (See comments section for detailed REPAIR or REWORK instructions)												
Department		Initials	Date	Signature			Pass	Rework	Fail			
Design Engineer		TS	1/13/2014	Todd Smith			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Manufacturing Engineer		DW	1/13/2014	Dico Wang			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Quality Engineer		ML	1/13/2014	Michael Li			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			
Quality Technician		SS	1/13/2014	Stone Shi			<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>			



ASSEMBLY APPEARANCE

Amphenol RF ASIA
 Block DM2 Tang Wei Industrial, General CO.Gong Ming Town,
 Bao An District, Shen Zhen City, China

Supplier	Part Number	Rev Level	DVT #	EAR #
Amphenol RF ASIA	901-10465	A	3213	5916
Name of Laboratory	Part Name			Date of Test
Amphenol RF ASIA	SMA Jack to AMC (U.FL) Probe Adapter			January 13, 2014

Include photo of the complete assembly, to show the appearance.



Signature	Title
<i>Linas Hu</i>	Quality Technician



COMPONENT WEIGHT

Amphenol RF ASIA
 Block DM2 Tang Wei Industrial, General CO.Gong Ming Town,
 Bao An District, Shen Zhen City, China

Supplier Amphenol RF ASIA	Part Number 901-10465	Rev Level A	DVT # 3213	EAR # 5916
Name of Laboratory Amphenol RF ASIA	Part Name SMA Jack to AMC (U.FL) Probe Adapter			Date of Test January 13, 2014

Test Method/Requirements:
 Product weight in grams.

SAM #	REQUIREMENTS	Qty	Grams
1	Weigh one sample and record the data	1	2.03

PLATING THICKNESS

Test Method/Requirements:
 The parts must conform to Amphenol Plating spec. 349-50560.
 Body: nickel plating 100 microinches minimum thickness over copper strike.
 Hood and contacts: gold plating 5 microinches minimum thickness over 100 microinches minimum high phosphorus electroless nickel.

SAM #	REQUIREMENTS	QTY	RESULT
	BODY: NICKEL PLATE 100 MICROINCHES MIN THICK OVER COPPER STRIKE.	1	Ni = 106.2 µin
	CONTACT: GOLD PLATE 5 MICROINCHES MIN THICK OVER PHOSPHORUS CONTENT (9%-13%) ELECTROLESS NICKEL PLATE 100 MICROINCHES MIN THICK	1	Au = 6.22 µin
	CONTACT: GOLD PLATE 5 MICROINCHES MIN THICK OVER PHOSPHORUS CONTENT (9%-13%) ELECTROLESS NICKEL PLATE 100 MICROINCHES MIN THICK	1	Au = 6.17 µin
	BODY: GOLD PLATE 5 MICROINCHES MIN THICK OVER PHOSPHORUS CONTENT (9%-13%) ELECTROLESS NICKEL PLATE 100 MICROINCHES MIN THICK	1	Au = 7.39 µin

**Jadever®
 JBX-1.5K
 Electronic
 Balance**
 Instrument
 range:
 0 ~ 1500g.



Fischerscope® XDAL, this instrument is an energy-dispersive X-ray fluorescence spectrometer capable of performing both quantitative element analysis and thickness measurement in one integrated measurement system. The XDAL can analyze solid samples, as well as powder, paste-like materials and liquids for up to 24 elements from Al (Z=13) to U (Z=92). In addition, coating thickness and composition of complex multi-layer coating systems with up to 24 different coating layers can be measured.



Signature	<i>Stone Shi</i>	Title	Quality Technician
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BODY CAPTIVATION - AXIAL

Amphenol RF ASIA
 Block DM2 Tang Wei Industrial, General CO.Gong Ming Town,
 Bao An District, Shen Zhen City, China

Supplier Amphenol RF ASIA	Part Number 901-10465	Rev Level A	DVT # 3213	EAR # 5916
Name of Laboratory Amphenol RF ASIA	Part Name SMA Jack to AMC (U.FL) Probe Adapter			Date of Test January 13, 2014

Test Method and Specification:

Body must withstand an axial force of 20 Lbf and maintain dimensions shown on drawing.

SAMPLE #	REQUIREMENTS	QTY Tested	Force	Dim (mm)	Fail
1	As above.	1	20	18.62	Pass
2		1	20	18.65	Pass

CONTACT CAPTIVATION - AXIAL

Test Method and Specification:

Contact must withstand a 6 Lbf push out force applied from mating direction and meet the interface dimensions shown on dwg.

SAMPLE #	REQUIREMENTS	QTY Tested	Force	Dim (mm)	Fail
1	As above.	1	6	0.06	Pass
2		1	6	0.08	Pass

CDI 1502LDIN Dial Torque Wrench
 Amphenol RF Asia's CDI 1502LDIN Dial Torque Wrench can test Torque Force with accuracy.
 The range of the instrument is:
 0 ~ 150 in-lb / 0 ~ 2421 in-oz.



KQL® KD / Series Mechanical Force Tester
 Amphenol RF and Amphenol RF Asia's KQL® K / Series Mechanical Force Tester is utilized for tensile and compression testing up to 200 Lbs capacities.



Signature <i>RX Zhao</i>	Title Assistant Engineer
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Contact Mating Force

Amphenol RF ASIA

 Block DM2 Tang Wei Industrial, General CO.Gong Ming Town,
 Bao An District, Shen Zhen City, China

Supplier Amphenol RF ASIA	Part Number 901-10465	Rev Level A	DVT # 3213	EAR # 5916
Name of Laboratory Amphenol RF ASIA	Part Name SMA Jack to AMC (U.FL) Probe Adapter			Date of Test January 13, 2014

Test Method and Specification:

Measure spring force when mating to AMC jack (A-1JB).

SAMPLE #	REQUIREMENTS	QTY Tested	Force (N)	Result
1	As above.	1	3.8	Pass
2		1	2.8	Pass
3		1	3.3	Pass
4		1	3.2	Pass
5		1	3.1	Pass

CONTACT MATING CYCLES

Test Method and Specification:

Cycle 5000 times by mating to AMC jack (A-1JB). Measure spring force and contact resistance after every 1000 cycles.

SAMPLE #	REQUIREMENTS	Cycles	Spring Force	LLCR	Result
1	Measure spring force and contact resistance after every 1000 cycles.	1000	2.4	32.8	Pass
		2000	2.4	34.1	Pass
		3000	2.2	36.8	Pass
		4000	2.2	28.5	Pass
		5000	2.0	32.2	Pass
2	Measure spring force and contact resistance after every 1000 cycles.	1000	2.7	24.5	Pass
		2000	2.3	17.2	Pass
		3000	2.0	18.4	Pass
		4000	2.2	18.7	Pass
		5000	2.2	16.1	Pass
3	Measure spring force and contact resistance after every 1000 cycles.	1000	2.9	16.6	Pass
		2000	2.8	20.7	Pass
		3000	2.8	17.8	Pass
		4000	2.6	16.4	Pass
		5000	2.6	13.7	Pass

Zwick Testing Machines

Single column testing machine for tensile, compression and cyclic testing up to 2.5kN (562 lbf).



Signature

RX Zhao

Title

Assistant Engineer

CONTACT RESISTANCE

Amphenol RF ASIA

 Block DM2 Tang Wei Industrial, General CO.Gong Ming Town,
 Bao An District, Shen Zhen City, China

Supplier	Part Number	Rev Level	DVT #	EAR #
Amphenol RF ASIA	901-10465	A	3213	5916
Name of Laboratory	Part Name	Date of Test		
Amphenol RF ASIA	SMA Jack to AMC (U.FL) Probe Adapter	January 13, 2014		

Test Method/Requirements:

Determine the electrical resistance of both outer conductor crimps and corresponding interface and the inner conductor crimps and corresponding contact interface under low energy conditions; The total contact resistance of inner conductor must not exceed 50 m Ω . Likewise, max contact resistance of the outer conductor must not exceed 50 m Ω .

SAMPLE #	REQUIREMENTS	INNER LLCR	OUTER LLCR	QTY Tested	RESULT
1	As above.	32.8	19.0	1	Pass
2		24.5	23.0	1	Pass
3		16.6	19.0	1	Pass

High Resolution 380560 MilliOhm Meter

 Provide 7 ranges for wide
 20.00m Ω to 20.00k Ω low
 resistance measurements

Analog high voltage Megohmmeter T0004

 has two test
 voltages: 50V and 500V.


Signature



Title

Assistant Engineer

VSWR / RETURN LOSS

Amphenol RF ASIA

 Block DM2 Tang Wei Industrial, General CO.Gong Ming Town,
 Bao An District, Shen Zhen City, China

Supplier Amphenol RF ASIA	Part Number 901-10465	Rev Level A	DVT # 3213	EAR # 5916
Name of Laboratory Amphenol RF ASIA	Part Name SMA Jack to AMC (U.FL) Probe Adapter			Date of Test January 13, 2014

Test Method/Requirements:

Verify the efficiency of voltage applied to voltage reflected is adequate to the product application; Max VSWR should be 1.25 : 1 @ 6 GHz. Include a screenshot of NA results.

SAMPLE #	REQUIREMENTS	VSWR 1		Pass	Fail
1	VSWR 1.2:1 from DC to 6 GHz.	1.19		Pass	
2		1.17		Pass	
3		1.19		Pass	
4		1.20		Pass	
5		1.19		Pass	

After 5000 cycles:

1	VSWR 1.2:1 from DC to 6 GHz.	1.16		Pass	
2		1.16		Pass	
3		1.18		Pass	

INSERTION LOSS

Test Method/Requirements:

Verify the total loss of power going through the DUT; record maximum insertion loss. Include a screenshot of NA results.

SAMPLE #	REQUIREMENTS	dB		Pass	Fail
1	Record maximum insertion loss.	0.15		Pass	
2		0.15		Pass	
3		0.13		Pass	
4		0.13		Pass	
5		0.16		Pass	

After 5000 cycles:

1	Record maximum insertion loss.	0.15		Pass	
2		0.19		Pass	
3		0.15		Pass	

Agilent® N5230A Network Analyzer

Amphenol RF and Amphenol RF Asia's N5230A Network Analyzer apply to test the electrical characteristics, include: Voltage Standing Wave Ratio, Insertion Loss, Return Loss, Smith Chart, etc.

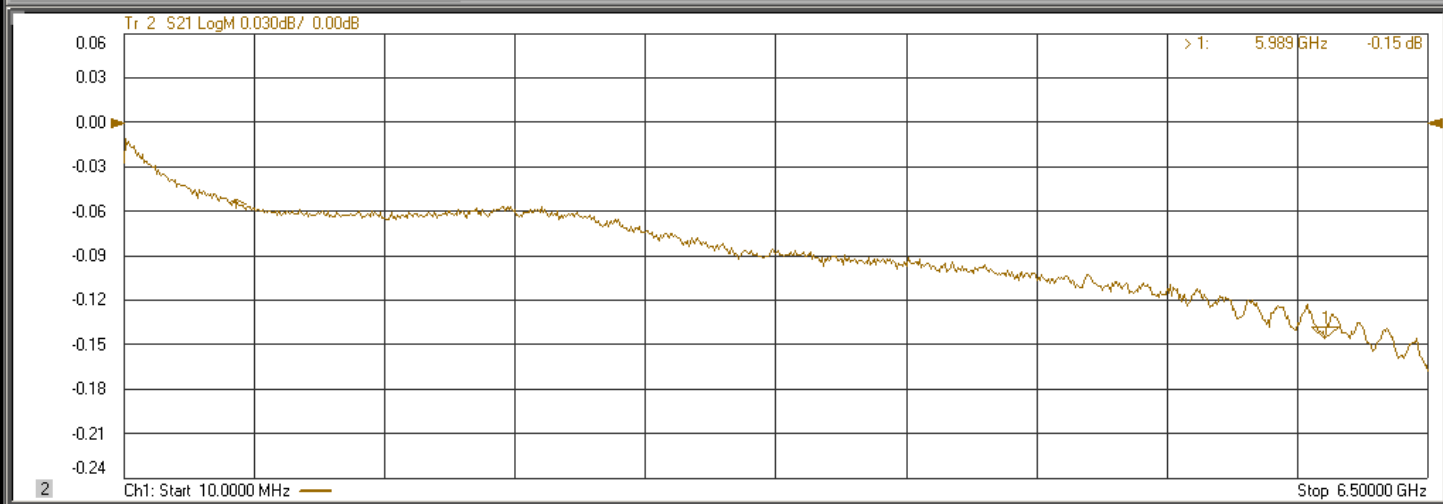
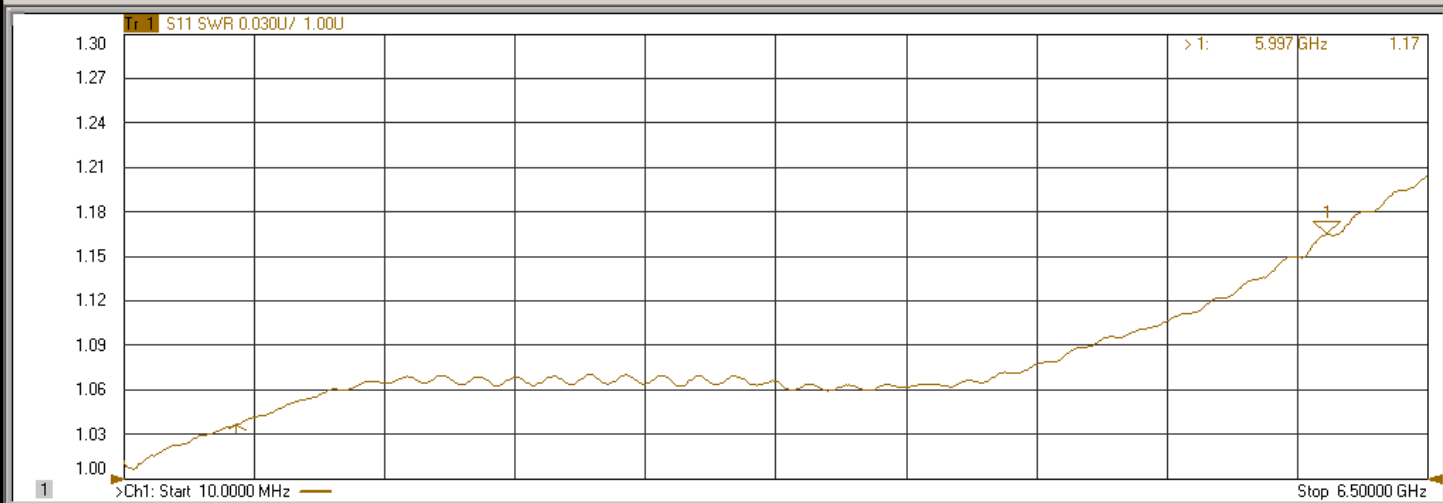
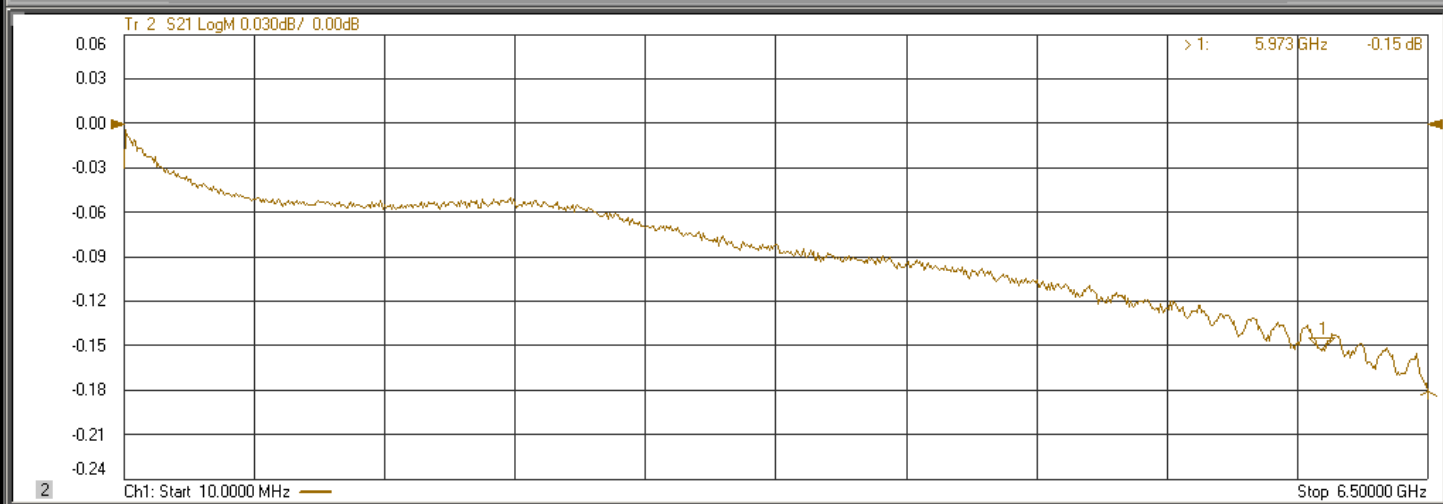
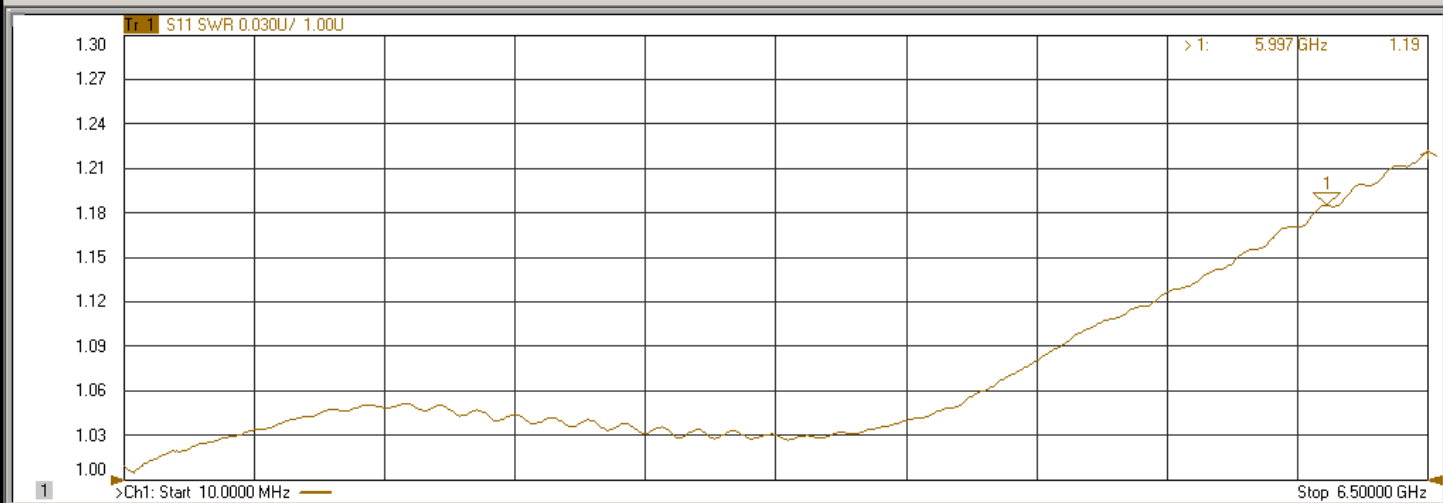


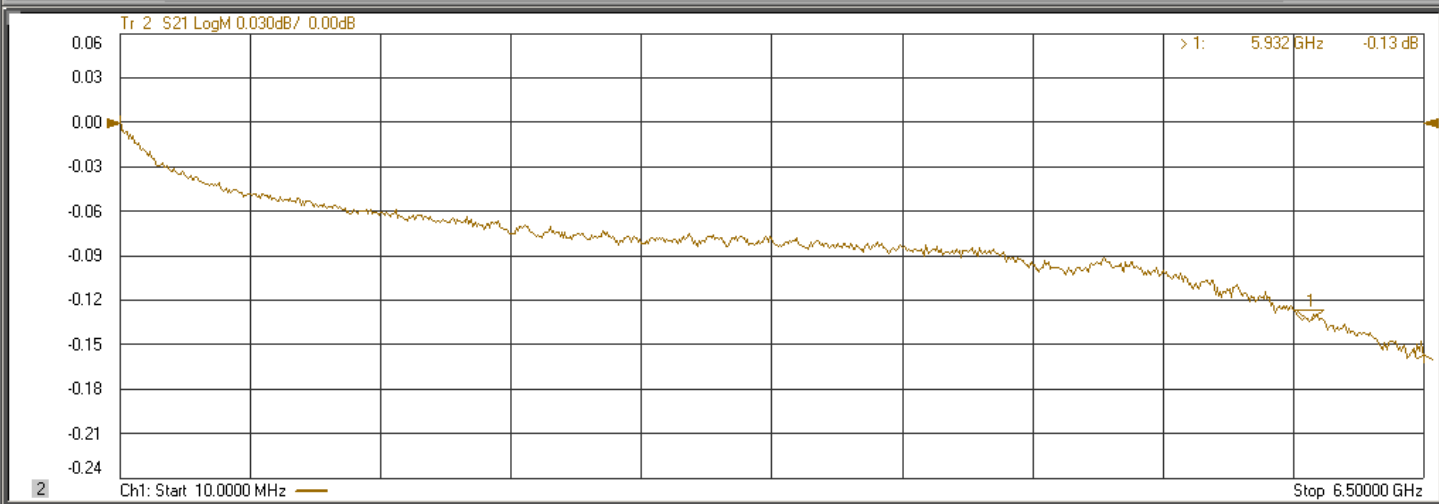
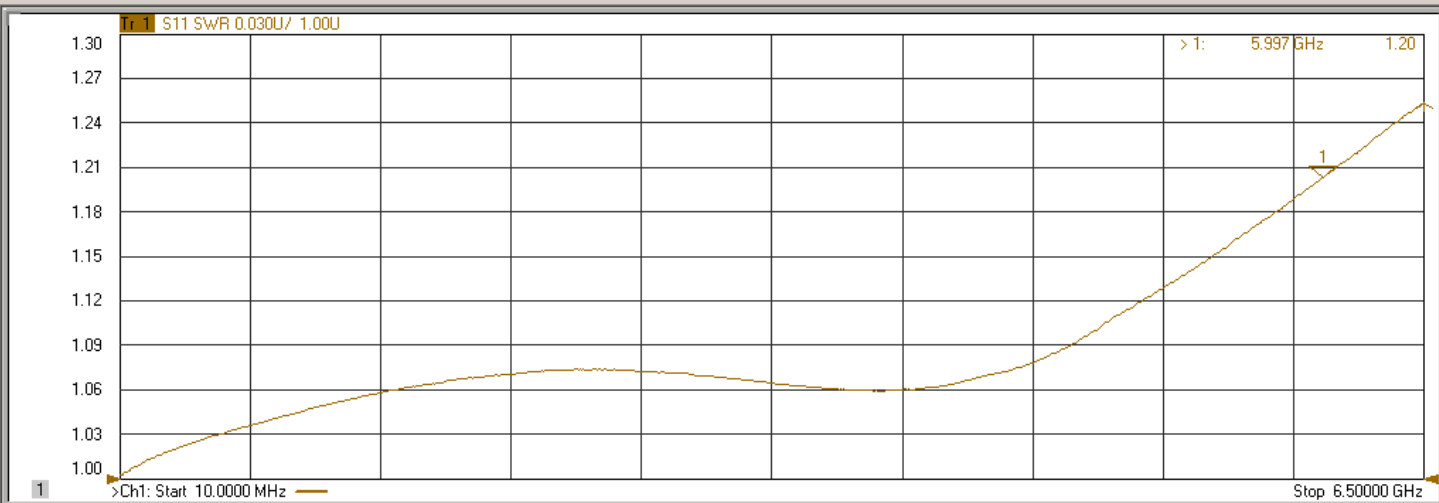
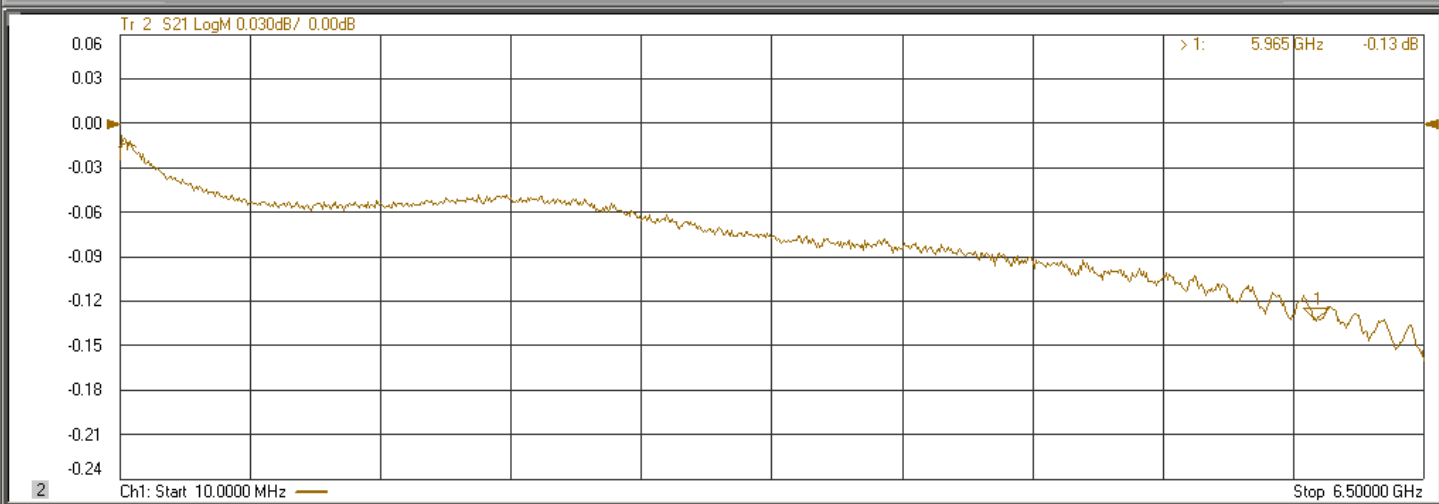
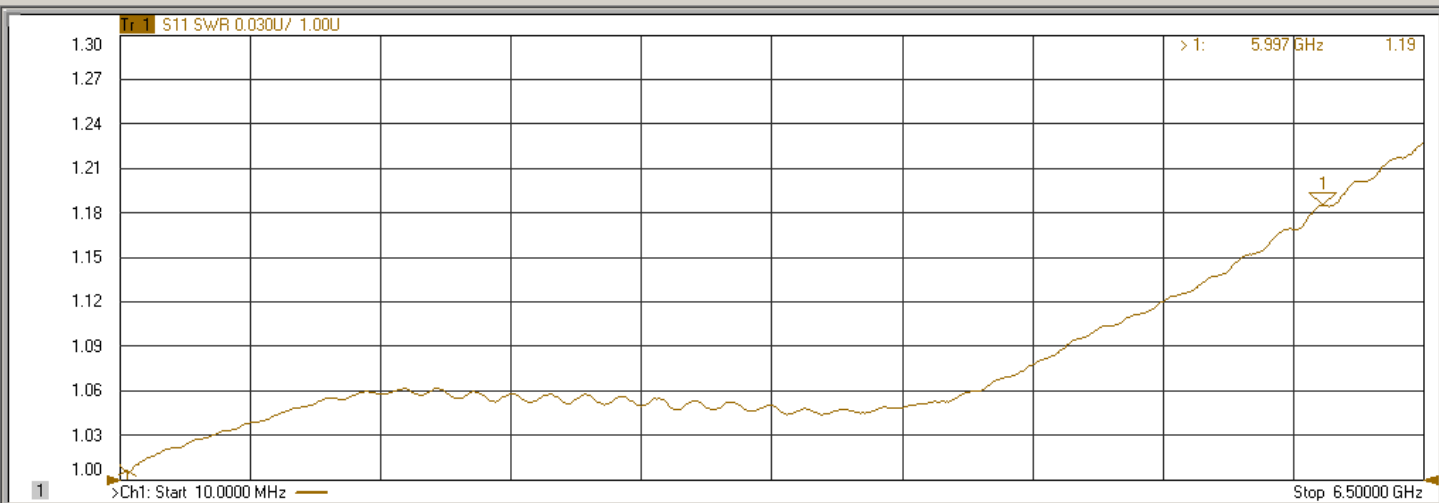
Signature

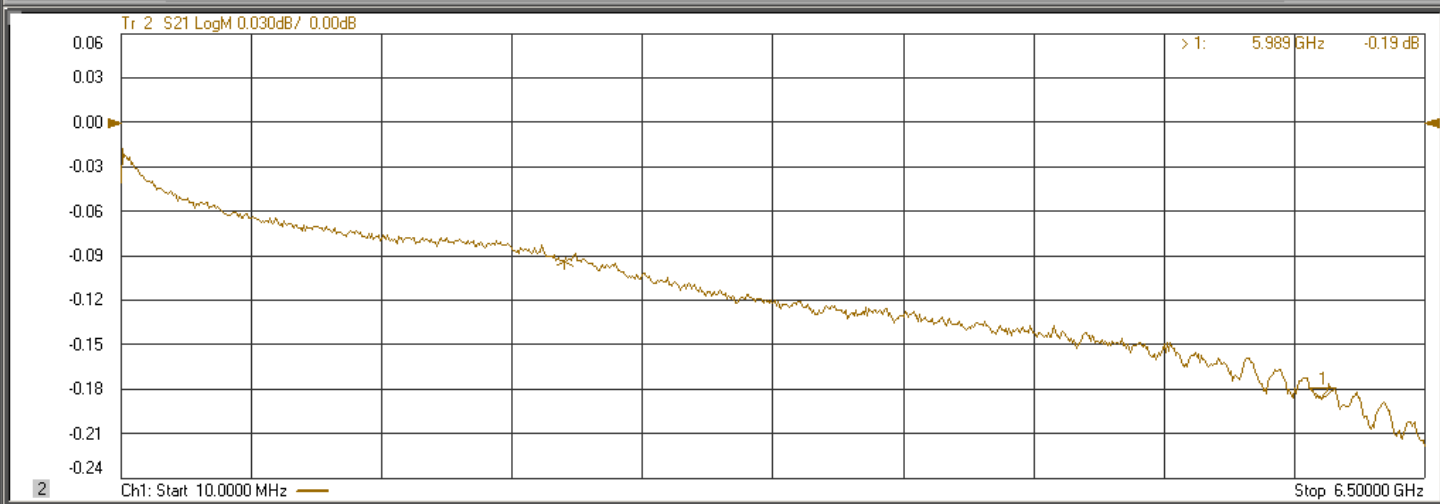
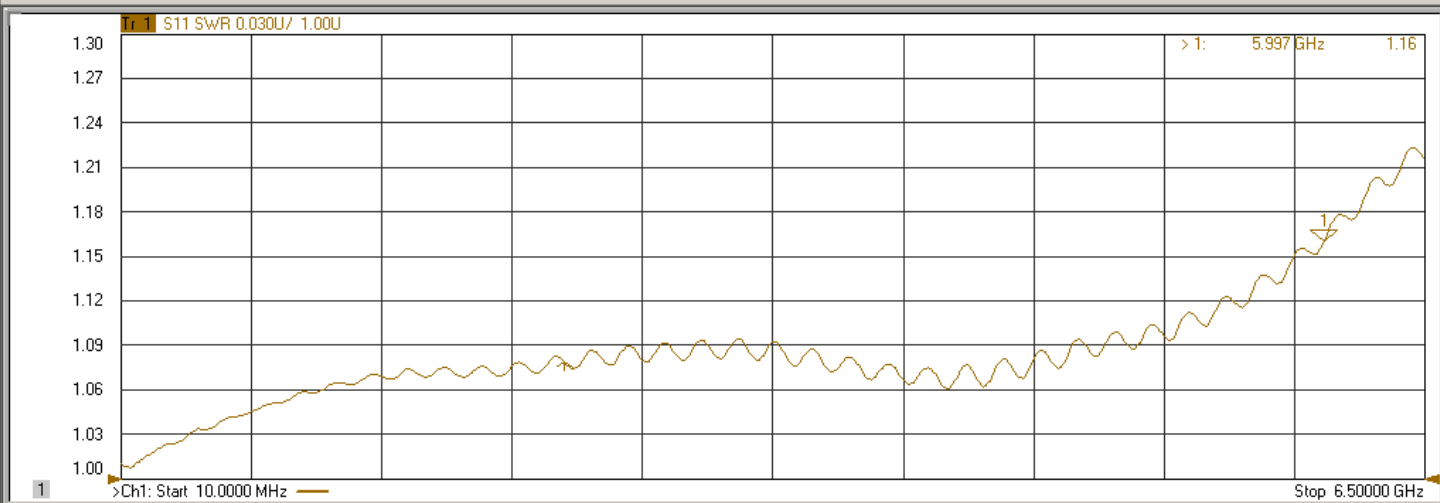
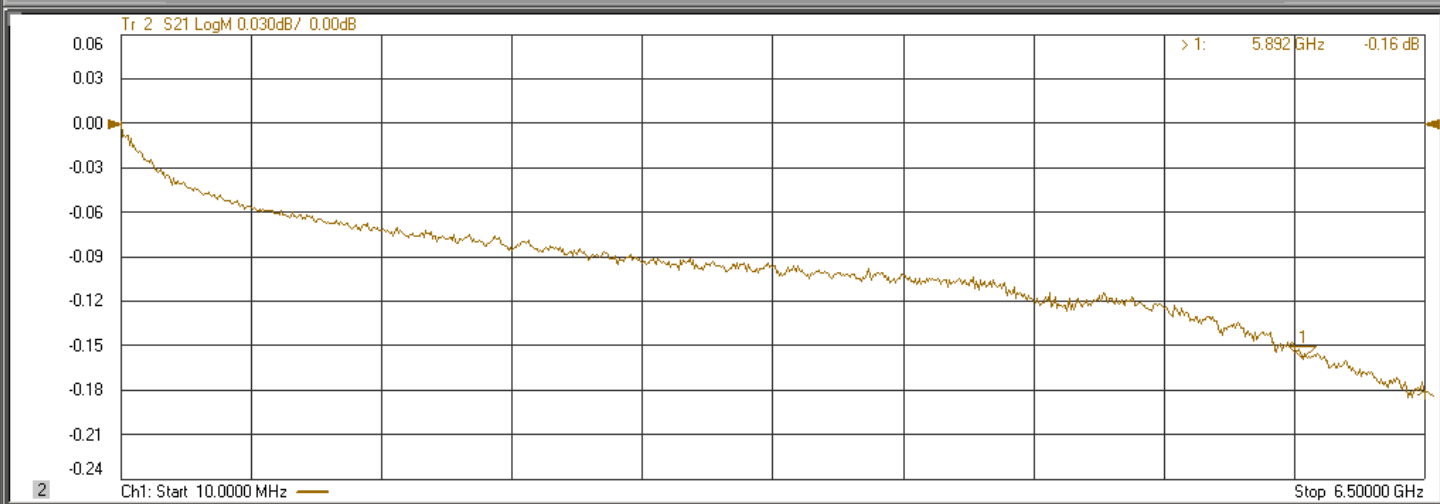
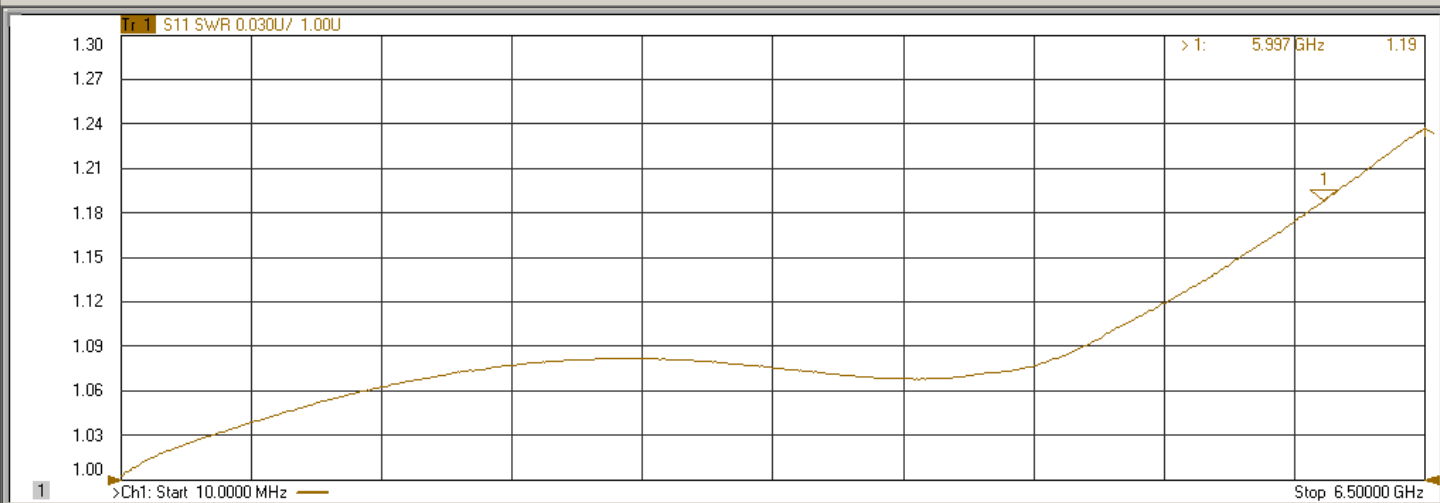
RX Zhao

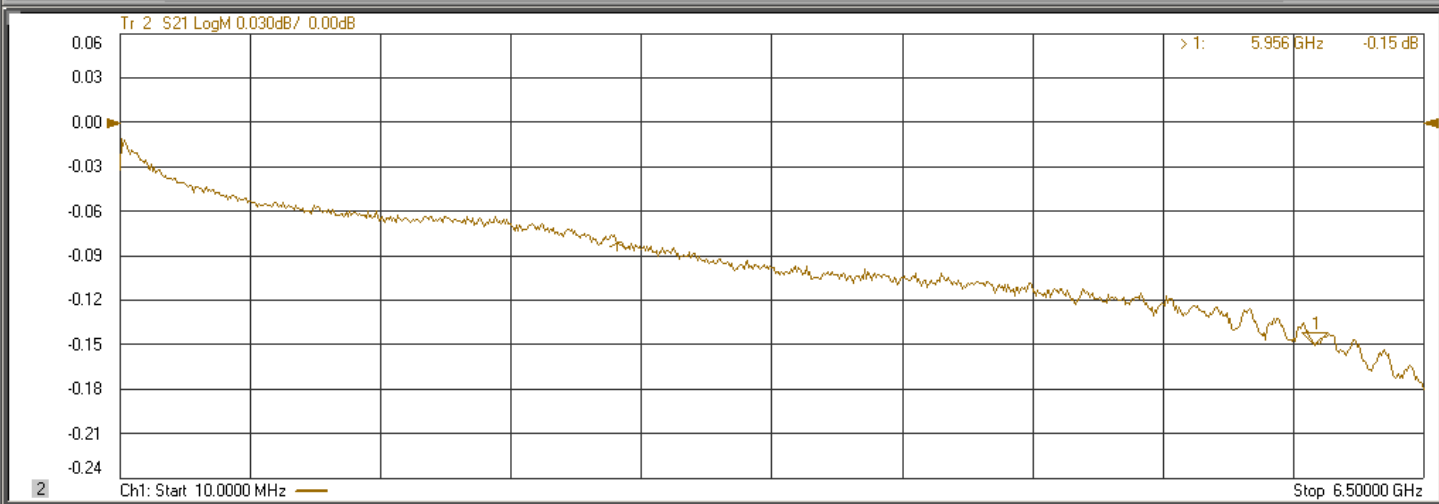
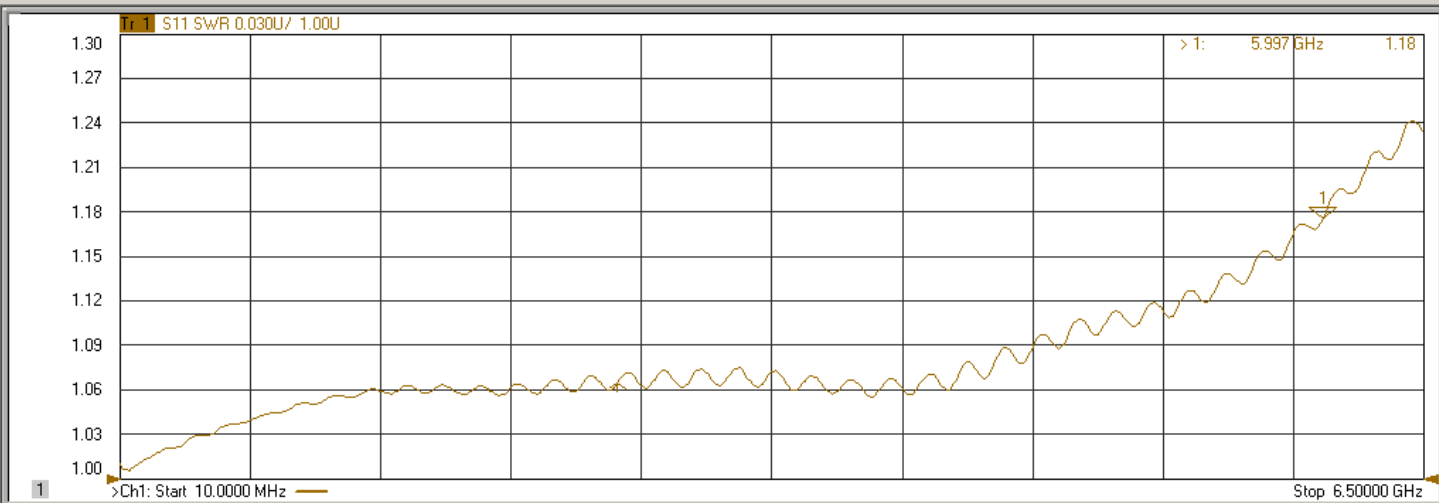
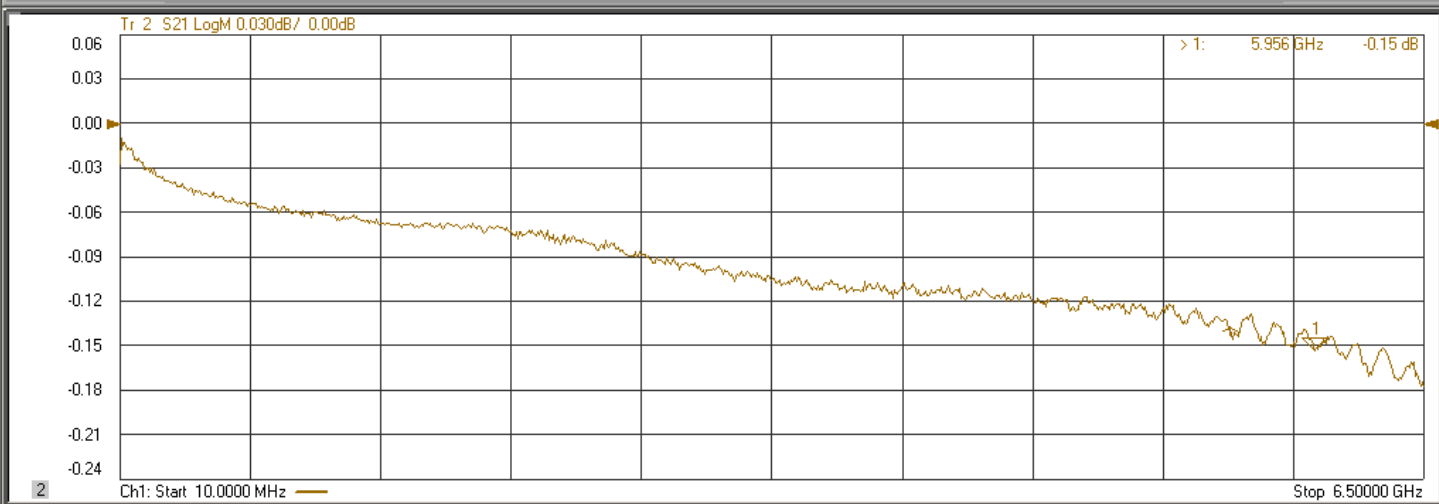
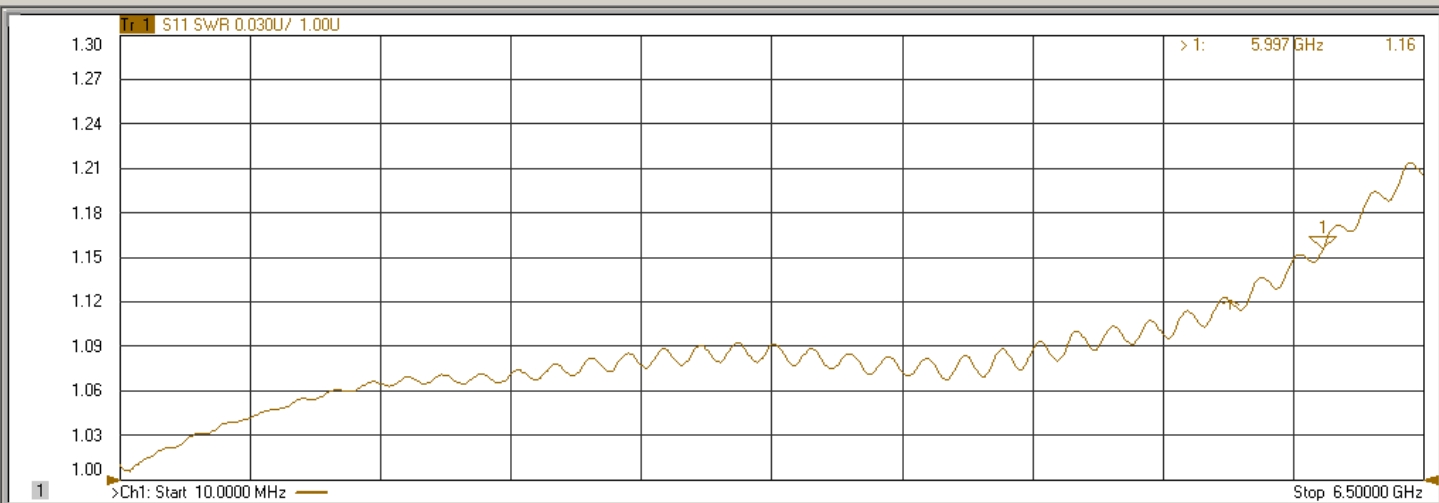
Title

Assistant Engineer











REVISION HISTORY

Amphenol RF ASIA
 Block DM2 Tang Wei Industrial, General CO.Gong Ming Town,
 Bao An District, Shen Zhen City, China

	Dates:	Signatures:	
Prepared by: Todd Smith	January 13, 2014	<i>Todd Smith</i>	
Eng Approval: <i>Ken Capozzi</i>	January 13, 2014	<i>Ken Capozzi</i>	
NPI Approval:	January 13, 2014	<i>[Signature]</i>	

Design Verification Test Report

DVT Number: 3213
EAR Number: 5916
Amphenol Part Number: 901-10465
Product Revision: 2
Part Description: SMA Jack to AMC Probe Adapter

DVT Revision History

1	Initial Release	January 13, 2014

Ship Acceptance/Approval

	Dates	Signatures	
QA Approval: Fred Silva	January 13, 2014	<i>Fred Silva</i>	
Administrative Approval: Greg Straiton	January 13, 2014	<i>Greg Straiton</i>	



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



Как с нами связаться

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