12. API / WEINSCHEL WARRANTY:

PRODUCTS - $, / Weinschel warrants each product it manufactures to be free from defects in material and workmanship under normal use and service anywhere in the world. $, / Weinschel's only obligation under this Warranty is to repair or replace, at its plant, any product or part thereof that is returned with transportation charges prepaid to API / Weinschel by the original purchaser within ONE YEAR from the date of shipment.

The foregoing Warranty does not apply API / Weinschel's sole opinion to products that have been subject to improper or inadequate maintenance, unauthorized modifications, misuse, or operation outside the environmental specifications for the product.

SOFTWARE PRODUCTS- API / Weinschel software products are supplied without representation or Warranty of any kind. API / Weinschel, therefore, assumes no responsibility and will not accept liability (consequential or otherwise) arising from the use of program materials, disk, or tape.

The Warranty period is controlled by the Warranty document furnished with each product and begins on the date of shipment. All Warranty returns must be authorized by API / Weinschel Corporation prior to their return.

API / Weinschel's Quality System Certified to:

APPENDIX A
CARE AND HANDLING OF MICROWAVE COAXIAL CABLE ASSEMBLIES

A-1 CARE AND HANDLING OF ASSEMBLIES.

To ensure accurate measurements and optimal performance of Weinschel products, the microwave coaxial cable assemblies used in system and test setups must be properly used and maintained. Proper connections, routine inspection of all cables, and cleaning of the connectors are extremely important procedures which can prolong the longevity and accuracy of equipment.

A-2 CABLE INSPECTION.

Routinely check external cables for signs of cracked insulation, dents, twists, flattening, signs of jacket abrasion, or other signs of abuse. Wrinkles in the jacket indicate that the minimum bend radius has been exceeded. Most often, this occurs near the marker tubes and connectors.

Also inspect the connector interfaces for the following:

- Bent pins (male).
- Bent or missing tines (female).
- Worn or chipped plating.
- Damaged or displaced dielectric inserts.
- Thread damage.
- Folded or mushroomed outer interface rims.
- Mushroomed pin shoulders (male) or tine ends (female).
- Score lines on pins and outer interface rims visible to the unaided eye.
- Recessed or protruding pins.

It is advisable to clean the connectors prior to inspection to make subtle damage more apparent. If any of the above is noted, replace the assembly before its further use results in equipment damage. Also inspect the mating connectors for similar damage.

Inspect the connector interface for signs of debris. Debris may be in the form of:

- Plating chips or other metal particles.
- Dust or dirt.
- Oily films.
- Other miscellaneous foreign particles.

If signs of debris are present, clean the connector interface as directed in Paragraph A-6.

A-3 MAKING INITIAL CONNECTIONS.

Exercise caution when mating cables. Poor connections lead to poor system performance. They can also damage not only the cable assembly, but more significantly, front or rear panel connectors on the equipment itself which may be more difficult to repair.

A-3.1 ALIGNING CONNECTORS. Align the center lines of two connectors before actual mating. Male retaining nuts contain a small amount of necessary play which may make it possible to mate the threads without the pins being properly aligned. Pin misalignment can damage pins and dielectric inserts.

A-3.2 MATING CONNECTORS. Gently mate the connectors by hand, taking care not to force the coupling nut at the slightest resistance. It is often possible to feel whether or not the pins are mated. If the coupling nut is difficult to turn, either the pins are not mated, the coupling nut is cross-threaded, or one of the connectors has been damaged by excess torque.

Never hold a male connector coupling nut stationary while screwing a female connector into it. This rotation can erode the plating and damage both the outer interface rim as well as the pin. If the pins become locked, serious damage can result to both the equipment and the cable assembly.

A-4 ENSURING PROPER CONNECTOR TORQUE.

A-4.1 OVERTORQUING. Once connectors have been properly mated, apply only the proper amount of torque. Overtorquing damages both connectors involved. Also, a connector which has been damaged by overtorquing, in turn, damages every connector to which it is subsequently mated. It usually leads to poor system performance as well. Overtorque can cause:

- Bent pins.
- Recessed or protruding pins.
- Recessed or protruding dielectrics.
- Chipped plating.
- Damaged coupling threads.
- Coupling nut retaining ring damage.
- Mushroomed outer interface shells.
- Mushroomed pin shoulders.

A-4.2 HEX-NUT TYPES. To mate a connector of the hex-nut type, always use a torque wrench set to the correct torque value. Tighten the connector slowly until the wrench snaps. Tightening too quickly can cause the wrench to exceed its set limit. Do not snap the wrench more than once as this also causes overtorque.

A-4.3 KNURLED NUTS. Tighten connectors with knurled nuts by hand. If this does not provide sufficient tightness use a hex-nut connector and torque wrench instead. Never use pliers to tighten a connector. Table A-1 recommends torque specifications for the various types of connectors.

Table A-1. Recommended Torque Values

Connector	Recommended Torque
GPC-7 (7mm) w/hex nut	14 in/lbs ± 1 in/lbs
Type N w/hex nut	14 in/lbs ± 1 in/lbs
SMA, 2.92mm, 3.5mm 2.4mm, WPM, WPM-3 WPM-4	7.5 in/lbs ± 0.5 in/lbs
Type N & TNC (knurled)	Hand-tight
BNC (knurled)	Hand-tight

A-5 PROPER CABLE HANDLING.

Never exceed the minimum bend radius specified for a cable. Guard against tight bends at the end of connector strain relief tubing, or at the ends of marker tubing where they may be less noticeable. Although cable bend may seem slight, the actual radius of the bend at the point of angular departure may be far smaller than the acceptable radius.

Never pinch, crush or drop objects on cable assemblies. Also, do not drag a cable over sharp edges as this will pinch it and cause it to exceed the minimum bend radius.

Never use a cable assembly to pull a piece of equipment. Cables and connectors are not designed to support or move equipment.

A-5.1 SECURING CABLES. Use toothed, rubber-lined "P-clamps" to hold cables in place. If it is necessary to use tie-wraps, use the widest possible wrap and the lowest setting on the gun to ensure the minimum pressure on the cable.

A-5.2 STORING CABLES. When storing cables, minimize cable "set" by coiling them in large diameters (1 or 2 feet). Unroll the cable properly when it is ready to be used; do not pull the loops out hastily. Similarly, re-roll them when storing them away again.

A-6 CLEANING CONNECTOR INTERFACES.

Use the following guidelines in cleaning connector interfaces:

a. Do not use chlorinated solvents including common tap water. These solvents are extremely penetrating and sometimes ruin otherwise good devices and assemblies.

b. Moisten a cotton swab with isopropyl alcohol. Roll the swab on a paper towel to remove excess.

c. Use the moistened cotton swab to wipe away debris. Do not try to dissolve the debris by overwetting the swab.

d. Repeat the cleaning process using additional swabs as necessary. If metallic particles are embedded in the dielectric, use an eyeglass and a sharp pick in an attempt to dislodge them. Swab again.

e. When satisfied that the interfaces are clean, blow them dry with dry compressed air, or preferably dry nitrogen (pressurized spray cans work well). Do not use breath.

f. Clean the mating connectors. These may be the source of the debris.

APPENDIX B – *488.2 Documentation*

Number	Required Item	Implementation
1	Interface Function Subsets Implemented	SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT0, C0
2	Device behavior when the address is set outside of the 0-30 range.	The 8210A address is set to 10.
3	When is a user address changed recognized?	When the DIP switch setting is changed.
4	Description of settings at power-on.	User programmable via macro.
5	Message exchange options. a. Size and behavior of input buffer. b. Queries that return more than one <RESPONSE MESSAGE UNIT> c. Queries that generate a response when parsed. d. Queries that generate a response when read e. Commands that are coupled.	a. The GPIB input buffer is 2048 bytes in length. When the Input Buffer becomes full it processes the messages currently received before accepting additional messages. All data bytes received will be stored in the Input Buffer until 'end of message' is detected. The message(s) received are the processed in the order received. b. The 8210A contains no Query commands that return more than one <RESPONSE MESSAGE UNIT> c. All valid queries generate a response when parsed. The reply is generated at the time the Query message is received. d. none e. none
6	Functional elements used in construction of device specific commands	<PROGRAM MESSAGE> <PROGRAM MESSAGE TERMINATOR> <PROGRAM MESSAGE UNIT> <PROGRAM MESSAGE UNIT SEPARATOR> <COMMAND MESSAGE UNIT> <QUERY MESSAGE UNIT> <COMMAND PROGRAM HEADER> <QUERY PROGRAM HEADER> <PROGRAM HEADER SEPARATOR> <PROGRAM DATA SEPARATOR> <PROGRAM DATA> <DECIMAL NUMERIC PROGRAM DATA> <CHARACTER PROGRAM DATA>
7	Buffer size limitations for block data.	not implemented
8	<PROGRAM DATA> elements that may appear within an expression.	none
9	Response syntax for queries.	see command table
10	Description of device to device message transfer traffic that does not follow the rules for <RESPONSE MESSAGES>	none
11	Size of block data responses.	none
12	Common commands and queries that are imple-mented.	*IDN?, *RST, *OPC, *OPC?, *CLS, *SRE, *SRE?, *ESE, *ESE?, *STB, *TST?, *WAI
13	State of the 8210A following completion of the CAL? Query	not implemented
14	Max length of the trigger macro block.	not implemented
15	Macro parameters	not implemented (device specific forms used)
16	Response to *IDN?	<Weinschel, 8210A, Serial Number, Software Revision> Manufacturer string length = 16 chars max Model Number string length = 8 chars max Serial number string length = 16 chars max Software Revision string length = 8 chars max
17	*DDT implementation	not implemented
18	Size of *RDT/*RDT? resources	not implemented
19	States affected by *RST, *LRN, *RCL, and *SAV	*RST resets the Parser, Input Buffer, and Output Queue. *LRN, *RCL, and *SAV are not implemented
20	Scope of the self test performed by the *TST?	a. checks non-volatile memory contents. b. checks Device Interface Bus. c. checks front-panel interface.
21	Additional status data structures used in status reporting	none
22	Commands overlapped/sequential.	All commands are sequential
23	Functional criteria met with an operation complete message is generated in response to that command	Command is finish executing

Appendix C
Internal Device Data Sheets

Click on link below to get internal device data sheet...

- 150 Series Programmable Attenuators...dc-18/26.5 GHz
- 3200 Series Programmable Attenuators...dc-2/3 GHz
- 3250 Series 75Ω Series Programmable Attenuators...dc-1.5 GHz
- 4226 & 4228 Series Solid-State Attenuators

Model 8310A (IM-289) Revision Record

REVISION	DATE	DESCRIPTION	APPLICABLE SERIAL NUMBERS
A	5/00	Initial Issue	All Units
B	10/01	Incorporated Weinschel ECNs 01-109 & 01-381. Adding Models 8310-204-X & deleted 8310-203	8310-204-X
C	8/02	Revised & Rewritten in MS-Word format to include all new models	All Units
D	5/04	Incorporated API name change.	All Units
E	9/08	Incorporated API / Weinschel ECN 08-295	All units built after 9-4-08
F	1/10	Incorporated API / Weinschel ECN 10-009	8310-204-F

EC DECLARATION OF CONFORMITY

This is to certify that the:

SmartStep Attenuator Unit
8310 Series

Manufactured by:

Weinschel Corporation

Conforms with the protection requirements of Council Directive 89/336/EEC and the Amending Directive 93/68/EEC, relating to Electromagnetic Compatibility and Council Directive 73/23/EEC relating to LVD (Safety), by the application of:

EN50081-1:	1992 Generic Emissions Standard. (Class B Equipment)
EN50082-1:	1992 Generic Immunity Standard. (Class B Equipment)
EN61010-1:	1993 Safety requirements for electrical equipment for measurement, control and laboratory use.

Signed: _____ Position: Subsystem Manager

Of: Weinschel Corp. Date: 10/1/1999