OML Millimeter Wave Extension Module Customer Order Information

(the following form must be completed and returned to facilitate a quotation) Rev. 1-1-03

Customer Company Name _____

Specifying Engineer Name _____

Please check one of the following equipment types, in each category, that is to be used in a system with OML modules. System and equipment definitions are given on the attachment "8510/OML Millimeter Wave System Options." OML introduced the "VNA2" series of modules on Jan. 1, 2003 which eliminats the need for the "X2" option for WR-08 and above. Further information can be found in the Vector Analysis section on the OML web site: www.oml-mmw.com

1) The system to be used with the OML modules is:

_____	8510B	with Rev. 5.41 firmware or later
_____	8510C	all firmware revisions
_____	8510XF	user must load the Agilent supplied 8510C Operating System for waveguide operation
_____	8530A	customer must consult with OML to determine system configuration required

2) The Millimeter Wave Controller or IF Interface Cable to be used with the OML modules is: [(xxx) system options]

_____	85105A Mod	*customer modified* for LO 2-20 GHz, RF is 8-20 GHz, customer power supply required.
_____	85105A H01	LO is 2-20 GHz, RF is 8-20 GHz, customer power supply required.
_____	85105A H03	LO is 2-20 GHz, RF is 8-20 GHz, customer power supply required.
_____	85105A K10	LO is 2-20 GHz, RF is 8-28+ GHz, includes power supply for OML.
N/A	85105A (004)	not compatible with OML modules.
_____	85105A (050)	*customer modified* for LO 2-20 GHz, RF is 8-20 GHz, customer power supply required.
N/A	85105A (054)	not compatible with OML modules.
_____	08510-60105	IF Interface Cable, measure S11and S21 only, LO & RF freq. limited by synthesizers used.

3) The LO synthesizer to be used with the OML modules is: (OML LO frequency range limited to 8-20 GHz)

_____	83620A/B	20GHz	
_____	83621A	20 GHz	
_____	83622A/B	20 GHz	
_____	83623A/B/L	20 GHz	
_____	83624A/B	20 GHz	
_____	83630A/B/L	26.5 GHz	
_____	83631A	26.5 GHz	
_____	83640A/B/L	40 GHz	
_____	83650A/B/L	50 GHz	
_____	8340A/B	26.5 GHz	both synthesizers must be 834x series, customer understands the spur and switching problems and is responsible for additional filtering required.
_____	8341A/B	20 GHz	both synthesizers must be 834x series, customer understands the spur and switching problems and is responsible for additional filtering required.

4) The RF synthesizer to be used with the OML modules is:

_____	83620A/B	20 GHz	
_____	83621A	20 GHz	
_____	83622A/B	20 GHz	
_____	83623A/B/L	20 GHz	
_____	83624A/B	20 GHz	
_____	83630A/B/L	26.5 GHz	
_____	83631A	26.5 GHz	
_____	83640A/B/L	40 GHz	
_____	83650A/B/L	50 GHz	
_____	8340A/B	26.5 GHz	both synthesizers must be 834x series and customer understands the spur and switching problems and is responsible for additional filtering required.
_____	8341A/B	20 GHz	both synthesizers must be 834x series and customer understands the spur and switching problems and is responsible for additional filtering required.

Please fill out this page and fax to OML at (408) 778-0491 [Outside the USA fax to RST at (650) 949-8082]

Order Information Attachment: "8510/OML Millimeter Wave System Options"

There are several different methods of integrating OML millimeter wave modules with an 8510 VNA system. Block diagrams for the configuration of these various systems can be found on the OML web site at: *http://www.oml-mmw.com/vector/hp8510_1.htm*. Additional information can be found at: *http://www.oml-mmw.com/vector/padjag.htm*

First, two synthesizers are always required (8360 series strongly recommended). The RF and LO synthesizer needs to cover up to 20 GHz. The only possible alternative to 8360 synthesizers is to use two 8340 synthesizers which is not recommended by Agilent or OML (requires additional filtering of both the RF and LO signals, more on this on the OML web site: *http://www.oml-mmw.com/vector/hp8510_1.htm*). A test system configuration combining an 8360 and an 8340 cannot be used because of timing problems, **neither Agilent nor OML can support this configuration!!!** An 8340 or 8360 cannot be used with an 8350 because of phase lock problems, **neither Agilent nor OML can support this configuration!!!**

Second, a version of the 85105 Millimeter Wave Controller or an 08510-60105 IF Interface Cable (08510-60105 Cable supports only S11 and S21 measurements) is required to interface OML millimeter wave modules to the 8510 VNA. The 08510-60105 Cable and the various versions of the 85105 Controller and their limitations are discussed below.

There are numerous options that are available with the 85105A Millimeter Wave Controller. These options are broken into two families. Option Exx are "system" options, i.e. 85106D Opt E31 is a millimeter wave 8510 system which includes a 85105A Opt H01. Option Hxx and Option xxx are options to the 85105A indicating the specific options installed in the 85105A, i.e. 85105A Opt. H01 or 85105A Opt. 050. For the purposes of specifying compatibility with OML millimeter wave modules the Option Hxx is the important information and will be listed first. These options nomenclatures are part of the 85105A label and are found on the front panel as well as on the rear panel ID tag. The 85105A option is the important information, not the system option.

The standard 85105A has a LO frequency range of 2 GHz to 8 GHz @ +20 dBm min. and a RF frequency range of 8 GHz to 20 GHz @ +20 dBm min. It contains power supplies suitable only for the x85104A modules. All versions of the 85105A have an IF input frequency of 20 MHz with 30 dB internal gain except the Option K10 which has an IF frequency of 20 MHz but no internal gain. The OML modules compensate for the lack of IF gain in the K10 version.

85105A Options

85105A Mod The standard 85105A can be easily user modified (85105A Mod) to expand the available LO frequency range to be 2 to 20 GHz which is necessary for use with OML modules. The LO and RF levels must be set to +8 dBm via the 8510 "Stimulus" menu to insure that the 85105A internal LO and RF amplifiers are properly driven. This is not the 85105A output level. An external 12 VDC @ 4 amp power supply is required for the OML modules. See the OML web site for further information at: *http://www.oml-mmw.com/vector/85105.htm*.

85105A Opt. H01 This 85105A version is configured for an LO frequency range of 2 GHz to 20 GHz @ approximately +20 dBm. The LO and RF levels must be set to +8 dBm via the 8510 "Stimulus" menu to insure that the 85105A internal LO and RF amplifiers are properly driven. This is not the 85105A output level. No other specifications are changed. If the user wants to be able to operate either Agilent or OML millimeter wave frequency extension modules this is the recommended Controller. An external 12 VDC @ 4 amp power supply is required for the OML modules.

85105A Opt. H03 This 85105A version is configured for an LO frequency range of 2 GHz to 20 GHz @ approximately +20 dBm. The LO and RF levels must be set to +8 dBm via the 8510 "Stimulus" menu to insure that the 85105A internal LO and RF amplifiers are properly driven. This is not the 85105A output level. Option H03 includes Opt. 050 which provides for upgraded internal switching ("pass-thru", rear panel interface) to allow RF frequencies up to 50 GHz to be passed through for use with the 8517B 50 GHz coaxial test set in multiband system. No other specifications are changed. This is a recommended Controller if a mixture of Agilent and OML millimeter wave modules are to be used in the same system with an 8517B. An external 12 VDC @ 4 amp power supply is required for the OML modules.

85105A Opt. K10 This 85105A version is configured for an RF frequency range of 2 GHz to 50 GHz @ >+5 dBm output. The LO frequency range is 2 GHz to 20 GHz @ approximately +12 dBm. *Unlike the other versions of the 85105A, there is no IF amplification provided.* The power supplies are changed to +12 VDC to power OML modules. The K10 Option was designed to be used with OML millimeter wave modules only and cannot be used with the Agilent x85104A series of millimeter wave modules.

85105A Opt. 004 The millimeter wave module interfaces are moved from the front panel to the rear panel. This is not a common option. *It is not recommended, compatible with or supported for the OML millimeter wave modules.* For further information please see: *http://www.oml-mmw.com/vector/hp8510_1.htm*.

85105A Opt. 050 Provides the same functions as the standard 85105A except the RF "pass-thru" rear panel interface is extended to 50 GHz to allow the connection of a 8517B 50 GHz coaxial test set to a 85106D MMW system for 8510 front panel controlled switching between the 85105A and the 8517B. The 85105A Opt. 050 can be easily user modified to expand the available LO frequency range to be 2 to 20 GHz which is necessary for use with OML modules. The LO and RF levels must be set to +8 dBm via the 8510 "Stimulus" menu to insure that the 85105A internal LO and RF amplifiers are properly driven. This is not the 85105A output level. See the OML web site for further information. An external 12 VDC @ 4 amp power supply is required for the OML modules.

85105A Opt. 54 Combines Opt. 004 and 050 in one option. This is not a common option. *It is not recommended, compatible with or supported for the OML millimeter wave modules.* For further information please see: *http://www.oml-mmw.com/vector/hp8510_1.htm*.

08510-60105 IF Interface Cable

08510-60105 IF Interface Cable This cable was originally part of the old HP 85104A millimeter wave system. It attaches directly to the rear of the 8510 and allows four IF signals to be fed to the 8510. When using this cable there are no controller functions available and only S11 and S21 parameters can be measured. An external 12 VDC @ 4 amp power supply is required for the OML modules. See the OML web site for further information.