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Product Note No 19

GPIB Instrument Support CCMT, MTS

The Computer Controlled Microwave Tuner (CCMT) and Microwave Tuner System (MTS) support most extensively used GPIB instruments. Focus Microwaves enhances its GPIB driver support continuously. New permanent drivers can be added on customer request. CCMT also includes the USER DEFINED option, in which the operator can develop and incorporate GPIB drivers himself [1].

Network Analyzer

Manufacturer	Model	CCMT	MTS	Remarks
Hewlett Packard	8753A/B	Yes	Yes	Not recommended
" " "	8720A/B/C	Yes	Yes	Prefer C with TRL
" " "	8510A/B/C	Yes	Yes	Prefer B or C (speed)
Wiltron	360A/B	Yes	Yes	Fastest operation
Anritsu	37000 serie	Yes	No	" " "
USER DEFINED		Yes	No	

Noise Analyzer

Manufacturer	Model	CCMT	MTS	Remarks
Hewlett Packard	8970A/B	Yes	Yes	
" " "	8970/8971	Yes	Yes	need LNA
Eaton/Maury	2075A/B	Yes	Yes	
USER DEFINED		Yes	No	

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Power Meter

Manufacturer	Model	CCMT	MTS	Remarks
Hewlett Packard	436/437A	Yes	Yes	
" " "	437B	Yes	Yes	
" " "	5342	Yes	Yes	Power option
" " "	438 dual ch	Yes	Yes	Ch.B=Output
" " "	70100A	Yes	No	Insert in 70000 system
Gigatronics	8542 dual ch	Yes	Yes	HP-438 emulation
Boonton	4200A dual ch	Yes	Yes	
" "	4220 dual ch	Yes	Yes	
Wavetek	8502A Peak	Yes	Yes	
Anritsu	ML-4803A	Yes	Yes	
Marconi	6960	Yes	Yes	
Focus Microwaves	Analog A/D	Yes	Yes	2 channels,8 bit resolution
USER DEFINED		Yes	No	

Signal Source

Manufacturer	Model	CCMT	MTS	Remarks
Hewlett Packard	8350/53	Yes	Yes	
" " "	83732A	Yes	Yes	
" " "	8672	Yes	Yes	
" " "	83650	Yes	Yes	
" " "	8341B	Yes	Yes	
" " "	8642	Yes	Yes	
" "	83623A	Yes	Yes	
" " "	8673H	Yes	Yes	
" " "	8657B	Yes	Yes	
" " "	8648C	Yes	Yes	
Wiltron	6600/6700	Yes	Yes	
" "	360SS60	Yes	No	
Anritsu	MG-3633A	Yes	Yes	
" "	MG-3631/321	Option	Option	
" "	MG-3601/02	"	"	
Marconi	2031	Yes	Yes	
Boonton	2100	Yes	Yes	
USER DEFINED		Yes	No	

Spectrum Analyzer

Manufacturer	Model	CCMT	MTS	Remarks
Hewlett Packard	8569	Option	Option	only GPIB version
" " "	8562/63	Yes	Yes	
" " "	8594E	Yes	Yes	
" " "	70000	Yes	Yes	
" " "	8566-68	Yes	Yes	" " "
Tektronix	2755	Yes	Yes	
" "	2782	Yes	Yes	HP-8566 compatible
Anritsu	MS-2602A	Yes	Yes	
" "	MS-2601B	Yes	Yes	
" "	MS-2702A	Option	Option	
" "	MS-2613B	Yes	Yes	
" "	MS-610C/K	Option	Option	
" "	MS-710C/D/E	"	"	
Advantest	R-3271	Yes	Yes	includes JDC option
USER DEFINED		Yes	No	

DC Power Supply/Reading

Manufacturer	Model	CCMT	MTS	Remarks
Hewlett Packard	3478	Yes	Yes	use 2 or 3 DMM
" " "	3458	Yes	Yes	" " "
" " "	6623/24/25	Yes	Yes	no gate current measure
" " "	6643A	Yes	Yes	
" " "	6653A	Yes	Yes	
" " "	6038A	Yes	Yes	
" " "	4142	Yes	Yes	
Advantest	TR-6846	Yes	Yes	
" "	TR-6143	Yes	Yes	
Focus Microwaves	Analog A/D	Yes	Yes	2 channels,8 bit resolution
USER DEFINED		Yes	No	includes 2 instruments

Frequency Counter

Manufacturer	Model	CCMT	MTS	Remarks
Hewlett Packard	5351	Yes	Yes	
" " "	5342	Yes	Yes	incl power option
EIP	575 series	Yes	Yes	incl power option
Systron Donner	6530	Yes	Yes	
USER DEFINED		Yes	No	

User Defined GPIB drivers

The above listed GPIB drivers are all permanent part of the CCMT/MTS measurement software (calibration, noise, load pull, S-parameter).

Since new GPIB instruments are being introduced all the time by the equipment manufacturers Focus Microwaves has developed an approach which permits to the CCMT users to write themselves new GPIB drivers and incorporate those in the measurement software, without re-compiling and linking source code.

CCMT provides a GPIB direct communication programm which permits to send GPIB mnemonics, typed in the keyboard, to any instrument in order to configure, trigger and read its response. This way the user can develop his own GPIB command sequence for readily any new instrument.

Once this is done the user has to write three ASCII files, using any ASCII editor programm, following a precise format (described in [1]), which permit to configure, trigger and read the response of the instrument on one hand, but also make tuner/setup loss corrections to the readings (in order to correct to the DUT reference plane) on the other.

This method of developing own GPIB drivers deliberates the users of the system from waiting for new upgrades and permits a high level of flexibility in their applications.

User Defined Limit Action

CCMT provides the option to the user to interfere automatically with the load pull operation once certain conditions are detected.

At this point the system can detect high Gate/Base current and the user can generate a set of GPIB commands which will be dispatched automatically, in order to prevent device damage (switch bias off, set RF power to certain level etc...)

For further reading on this option please refer to the CCMT operation manual, section 4.11.6 [6].

GPTC - GPIB Tuner Controller

This software package permits to the Users to send GPIB and Tuner control commands, including Tuner Calibration and Tuning, and write their own test procedures, which are saved in files and can be repeated automatically. PN-16 describes this option in detail.

Related Topics

- [1] User Defined GPIB drivers for the CCMT System, Application Note No 6, Dec 1993, Focus Microwaves.
- [2] Microwave Tuner System, Data sheet, June 1993.
- [3] GPTC - A GPIB Tuner Controller, Product Note No 16, August 1994, Focus Microwaves.
- [4] Develop your own Noise Measurement routines using the GPTC, Application Note No 14, October 1994, Focus Microwaves.
- [5] Develop your own Load Pull routines using the GPTC, Application Note No 15, October 1994, Focus Microwaves.
- [6] CCMT Operation Manual, version 4.0, sections 2 and 4 (January 1994).