

RIGOL DSA815-TG - 2014-09-12

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Hidden Modes - Keys and ScanCode

Factory Boot Mode

BW	52 00 00 00
SWEEP	62 00 00 00
MARK	12 01 00 00
TG	e2 00 00 00
MEAS	f2 00 00 00
MEASSET	02 01 00 00
DEMODO	c2 00 00 00

Requires an inserted USB flash drive.

Probably requires an appropriate firmware on the USB stick.

Maintenance Mode

TRACE	d2 00 00 00
TG	e2 00 00 00
MARKFUNC	22 01 00 00
MEASSET	02 01 00 00
SYSTEM	82 01 00 00
PRINTSETUP	c2 01 00 00
STORAGE	92 01 00 00

Adds menu: System -> Service - **Do not use Calibration -> Clr Int Cal**

Adds function: TG -> ALC

Unknown Mode 1

BW	52 00 00 00
MARK	12 01 00 00
TRACE	d2 00 00 00
TG	e2 00 00 00
MARKFUNC	22 01 00 00
SWEEP	62 00 00 00
TG	e2 00 00 00

Unknown Mode 2

MEASSET	02 01 00 00
PRINTSETUP	c2 01 00 00
TG	e2 00 00 00
MEAS	f2 00 00 00
SYSTEM	82 01 00 00
TG	e2 00 00 00
DEMODO	c2 00 00 00

If the keys for „Unknown Mode 1“, „Unknown Mode 2“ and STORAGE is entered in the menu System -> Self-Test -> Key Test, a chinese text is displayed:

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Google translation:

DSA Series Product Declaration

This product is copyright Rigol Technologies Ltd. All pirated reserved!

User Mode

STORAGE	92 01 00 00
ENTER	e2 05 00 00
ESC	d2 05 00 00
BACK	c2 05 00 00
FREQ	12 00 00 00
FREQ	12 00 00 00
FREQ	12 00 00 00

Exits the Maintenance Mode.

SCPI commands

Firmware v01.09

```
:PRIVate:FACTory:SN? -> "DSA8A145208137"  
:PRIVate:FACTory:MODEL? -> "DSA815"  
:PRIVate:FACTory:MAC? -> "00-19-AF-52-06-F0"  
:PRIVate:FACTory:RTC? -> "2014-07-20 16:19:14"  
:PRIVate:FACTory:CALRtc? -> "2012-08-14 06-48-56"  
:PRIVate:FACTory:AKEy? x -> "0"  
:PRIVate:FACTory:SKEY? -> Output only if set. Do not use, all options will be  
lost.
```

```
:PRIVate:CTRL:DATAtype? -> "0"  
:PRIVate:CTRL:ESR? -> "1"  
:PRIVate:CTRL:SYNC? -> (:SYST:ERR? -220, "Parameter error")  
:PRIVate:CTRL:TRACe? -> 9026 Bytes Testtrace
```

```
:PRIVate:TEMPeratue:GET? -> "0.000000E+00"
```

```
:PRIV:SOFT:VER? x -> "00.01.09"
```

Menu System -> Service -> Calibration:

```
:PRIVate:CALibration:AMPLref? -> "1167"  
:PRIVate:CALibration:FREQref? -> "1799"  
:PRIVate:CALibration:LOdac? -> "0"  
:PRIVate:CALibration:CLKdac? -> "0"  
:PRIVate:CALibration:ONdac? -> "0"  
:PRIVate:CALibration:OFFdac? -> "0"
```

Menu System -> Service -> Log Manage:

```
:SERVice:LOG:DEVIce? -> "PC", "UDISK", "RMT" (Output Device: PC, U-Disk, Rmt-Mo-  
nitor)  
:SERVice:LOG:CPState? -> "0"
```

```
:SELFtest:KEY -> Brings up the Local 'Self Test' Menu for Key Test.  
:SELFtest:SYS -> No response, no error
```

```
:DBGCMD:STAT? TX -> "(u16HostFetchErr = 0),(u16FifoLenErr = 0),(u32NoDataCnt =  
0),(u32WaitDataCnt = 0),(u16FmtDataErr = 0),(u16FmtTypeErr = 0),(u16StateMachi-  
neErr = 0),(u16DeadLockCnt = 0),(u16SysFmtErr = 0),(u16AddrAccessErr =  
0),(u32TotalTxByte = 56),(u32CurTxByte = 56)"
```

```
:DBGCMD:STAT? RX -> "(u16InteruptCnt = 0),(u16WInQCnt = 0),(u16RxDataCnt =  
0),(u16ProCnt = 3),(u16IBFullCnt = 0),"
```

```
:DBGCMD:STAT? Q -> "(u16NoFreeNode = 0),(u16QIsFull = 0),(u16QIsEmpty =  
0),(u16RxBufOverflow = 0),(u16RxDataPtrNull = 0),(u16RxDataLenErr = 0),"
```

```
:DBGCMD:STAT? PARSE -> "(u16InvalidCharacter = 0),(u16KeywordNotFound =  
2),(u16CmdNotFound = 0),(u16TooManyKeyword = 0),(u16LastKeywordOmitted =  
0),(u16CmdSNErr = 0),(u16InvalidCallBackFunc = 0),(u16CmdExcuteErr = 0),"
```

```
:DBGCMD:STAT? CLR -> "Clear all dbg stat."  
:DBGCMD:VER? -> "SCP Module Ver : 00.02.02.00"
```

:KEYBoard:KEYValue Keyname

Keyname:

AMP	DIGIT4	ENTER	F7	MEAS	SPAN
BACK	DIGIT5	ESC	FREQ	MEASSET	STORAGE
BW	DIGIT6	F1	HELP	PAGEDOWN	SWEEP
DEMOD	DIGIT7	F2	KNOBL	PEAK	SYSTEM
DIGIT0	DIGIT8	F3	KNOBR	PRESET	TG
DIGIT1	DIGIT9	F4	MARK	PRINT	TRACE
DIGIT2	DOT	F5	MARKFUNC	PRINTSETUP	TUNE
DIGIT3	DOWN	F6	MARKTO	RETURN	UP

For example, show the frequency menu:

:KEYBoard:KEYValue ESC;:KEYBoard:KEYValue FREQ

or enter Maintenance Mode:

:KEYB:KEYV ESC;:KEYB:KEYV TRACE;:KEYB:KEYV TG;:KEYB:KEYV MARKFUNC;:KEYB:KEYV MEASSET;:KEYB:KEYV SYSTEM;:KEYB:KEYV PRINTSETUP;:KEYB:KEYV STORAGE

:SYST:FREAd? Address decimal, length decimal -> Read Flash memory

The DSA uses only 4 MB of the 8 MB.

Read the first 4 MB.:

:SYST:FRE? 0,1048576
:SYST:FRE? 1048576,1048576
:SYST:FRE? 2097152,1048576
:SYST:FRE? 3145728,1048576

Read the next 4 MB, the same data is read again:

:SYST:FRE? 4194304,1048576
:SYST:FRE? 5242880,1048576
:SYST:FRE? 6291456,1048576
:SYST:FRE? 7340032,1048576

:SYST:FWRite Address decimal, length decimal, data -> Write Flash memory

Only text data is written properly, eg. :SYST:FWR 4194048,8,ABCD1234

A byte with the value zero can be written only with tricks.

SCPI commands

TEST:ONE15
 TEST:ONE16
 TEST:ONE17
 TEST:ONE18
 TEST:ONE19
 TEST:ONE20
 TEST:ONE21
 TEST:ONE22
 TEST:ONE23
 TEST:ONE24
 TEST:ONE25
 TEST:ONE26
 TEST:ONE27
 TEST:ONE28
 TEST:ONE29
 TEST:ONE30
 TEST:ONE31
 TEST:ONE32
 TEST:ONE33
 TEST:ONE34
 TEST:ONE35
 TEST:ONE36
 TEST:ONE37
 TEST:ONE38
 TEST:ONE39
 TEST:ONE40
 TEST:ONE41
 TEST:ONE42
 TEST:ONE43
 *CLS
 *ESE *ESE?
 *ESR?
 *IDN?
 *OPC *OPC?
 *RST
 *SRE *SRE?
 *STB?
 *TRG
 *TST?
 *WAI
 ABORt ABOR
 CALCulate CALC
 BANDwidth BAND
 NDB NDB?
 RESult? RES?
 MARKer MARK
 AOFF
 CPEak CPE
 STATE STAT STATE? STAT?
 DELTa DELT
 SET
 CENTer CENT
 SPAN
 FCOunt FCO
 RESolution RES RESolution?
 AUTO AUTO?
 X?
 FUNCtion FUNC FUNCTION? FUNC?
 MAXimum MAX
 LEFT
 NEXT
 RIGHT RIGH

MINimum MIN
 MODE MODE?
 PEAK
 EXCursion EXC EXCursion? EXC?
 SEARch SEAR
 CF
 THReshold THR THReshold? THR?
 PTPeak PTP
 RLEVel RLEV
 START STAR
 STEP
 STOP
 TABLe TABL
 TRACe TRAC TRACe? TRAC?
 TRCKing TRCK TRACKing
 X
 CENTer? CENT?
 POSition POS POSition? POS?
 SPAN?
 START? STAR?
 STOP?
 READout READ READout? READ?
 Y?
 VSRefl? VSR?
 VSValue? VSV?
 LLINe LLIN
 ALL
 DELeTe DEL
 CONTrol CONT
 DOMain DOM DOMain? DOM?
 INTerpolate INT
 TYPE TYPE?
 DATA DATA?
 MERGe MERG
 FAIL FAIL?
 RATIo? RATI?
 RELFreq RELF RELFreq? RELF?
 RELAmpt RELA RELAmpt? RELA?
 NTData NTD
 CALibration CAL
 ACCUrate ACCU
 SIGNal SIGN SIGNal? SIGN?
 CONFigure CONF
 ACPower ACP
 CHPower CHP
 CNRatio CNR
 EBWidth EBW
 HDISt HDIS
 OBWidth OBW
 SANalyzer SAN
 TOI
 TPOWer TPOW
 PF
 CONFigure? CONF?
 COUPle COUP COUPle? COUP?
 DISPlay DISP
 AFUnction AFU
 ANNotation ANN
 CLOCk CLOC
 BRIGtness BRIG BRIGtness? BRIG?
 BRIGHtness BRIGH BRIGHtness? BRIGH?
 FSCReen FSCR

ZSCReen ZSCR
SSCRenn SSCR
ENABle ENAB ENABle? ENAB?
MSGswitch MSG
WINdow WIN
GRATicule GRAT
GRID GRID?
Y
DLINe DLIN DLINe? DLIN?
SCALe SCAL
PDIVision PDIV PDIVision? PDIV?
RLEVel? RLEV?
OFFSet OFFS OFFSet? OFFS?
SPACing SPAC SPACing? SPAC?
NRLevel NRL NRLevel? NRL?
NRPosition NRP NRPosition? NRP?
UKEY
FETCh FETC
ACPower? ACP?
LOWer? LOW?
UPPer? UPP?
MAIN?
CHPower? CHP?
DENSity? DENS?
CNRatio? CNR?
CARRier? CARR?
NOISe? NOIS?
EBWidth? EBW?
HARMonics HARM
AMPLitude AMPL AMPLitude? AMPL?
ALL?
DISTortion? DIST?
FREQuency FREQ FREQuency? FREQ?
FUNDamental? FUND?
OBWidth? OBW?
FERRor? FERR?
TOIntercept TOIntercept? TOI?
IP3?
TPower? TPOW?
FORMat FORM
BORDer BORD BORDer? BORD?
HCOPy HCOP
IMAGe IMAG
COLor COL
INVert INV INVert? INV?
PTIME PTIM PTIME? PTIM?
QUALity QUAL QUALity? QUAL?
FTYPE FTYP FTYPE? FTYP?
IMMediate IMM
PAGE
ORIENTATION ORI ORIENTATION? ORI?
PRINTs PRIN PRINTs? PRIN?
SIZE SIZE?
RESume
INITiate INIT
CONTinuous CONTinuous? CONT?
PAUSE PAUS
REStart REST
INPut INP
IMPedance IMP IMPedance? IMP?
MMEMory MMEM
MOVE
LOAD
CORRection CORR

SETUp SETU
LIMit LIM
MTABle MTAB
STORe STOR
SCReem SCR
RESults
PTABle PTAB
DISK
INFomation? INF? INFOrmation? INFO?
OUTPut OUTP
SENSe SENS
VIDeo VID VIDeo? VID?
RATio RAT RATio? RAT?
EMIFilter EMIF
CSET
DEMod DEM DEMod? DEM?
TIME TIME?
DETEctor DET
INCRement INCR INCRement? INCR?
UP
DOWN
FULL
PREVious PREV
ZIN
ZOUT
ZONE
RZONe RZON
LZONe LZON
SYSNThesis SYSNT SYSNThesis? SYSNT?
POWER POW
RF
ATTenuation ATT ATTenuation? ATT?
GAIN
MIXer MIX
RANGE RANG
UPPer UPP
ASCaLe ASC
ARANge ARAN
ATUNe ATUN
SWEep SWE
COUNT COUN COUNT? COUN?
CURRent? CURR?
RULes RUL RULes? RUL?
AVERage AVER
TCONtrol TCON TCONtrol? TCON?
INTEgration INTEgration? INT?
ACHannel ACH ACHannel? ACH?
CSPacing CSP CSPacing? CSP?
NOISe NOIS
MAXHold MAXH
XDB XDB?
NUMBers NUMB NUMBers? NUMB?
PERCent PERC PERCent? PERC?
LLIMit LLIM LLIMit? LLIM?
RLIMit RLIM RLIMit? RLIM?
VSWR
RESet
FREflect FREF
NREFlect NREF
SOURce SOUR
LEVel LEV
SWEep? SWE?
STORref
REF

ALC
STATus
OPERation OPER
CONDition? COND?
EVENT? EVEN?
PRESet PRES
QUESTionable QUES
SYSTem SYST
COMMunicate COMM
APORt APOR APORT? APOR?
GPIB
SELF
ADDRess ADDR ADDRess? ADDR?
LAN
DHCP
AUToip AUT
MANuip MAN
IP
ADDRess ADD ADDRess? ADD?
SUBMask SUBM SUBMask? SUBM?
GATeway GAT GATeway? GAT?
DNSServer DNSS DNSServer? DNSS?
DNAME DNAM DNAME? DNAM?
HNAME HNAM HNAME? HNAM?
PASSword PASS PASSword? PASS?
SERial SER
RECeive REC
BAUD BAUD?
PARity PAR PARity? PAR?
USB
CLASSs CLAS CLASSs? CLAS?
MESSAge? MESS?
DATE DATE?
ERRor ERR
NEXT?
LANGuage LANG LANGuage? LANG?
LKEY LKEY?
OPTions? OPT?
PON
SAVE
SPEaker SPE
VOLume VOL VOLume? VOL?
BEEPer BEEP
LINemod LIN
TYPe TYP
USERkey USER
KEYCmd KEYC KEYCmd? KEYC?
CONFirm
VERSion? VERS?
FSWItch FSWI
TX
SWSTa? SWST?
SWSet SWS
FREAd? FRE?
FWRite FWR
MATH
SUBTract SUBT
POINts? POIN?
SORT SORT?
A A?
B B?
CONSt CONS CONSt? CONS?
CLEAr CLE
TRIGger TRIG

SEquence SEQ
EXTernal EXT
SLOPe SLOP SLOPe? SLOP?
READY?
SOURce? SOUR?
LEVel? LEV?
TRIGer TRI
UNIT
POWER? POW?
KEYBoard KEYB
KEYValue KEYV
SELFtest
KEY
SYS
SERVice SERV
LOG
DEVIce DEVI DEVIce? DEVI?
CPState CPS CPState? CPS?
PRIVate PRIV
AMPLref AMPLref?
FREQref FREQref?
LOdac LO LOdac? LO?
CLKDac CLKD CLKDac? CLKD?
ONDac OND ONDac? OND?
OFFDac OFFD OFFDac? OFFD?
WRITeflash WRIT
READflash?
WNVram WNV
RNVram? RNV?
TGCal TGC
TEMPerature TEMP
GET?
COMPensate COMP
SNAPscr? SNAP?
TEST
FloodData FD FloodData? FD?
FACTory FACT
SN SN?
MODEL MODEL?
MAC MAC?
RTC RTC?
CALRtc CALR CALRtc? CALR?
AKEY AKEY?
SKEY SKEY?
SOFT
VER?
CTRL
DATAtype?
SYNC?
ESR?
CMD1
CMD2
CMD3
CMD4
CMD5
CMD6
CMD7
CMD8
CMD9
CMD10
CMD11
CMD12
CMD13
CMD14

CMD15
CMD16
CMD17
CMD18
CMD19
CMD20
CMD21
CMD22
CMD23
CMD24
CMD25
CMD26
CMD27

CMD28
CMD29
CMD30
CMD31
CMD32
CMD33
CMD34
CMD35
CMD36
CMD37
CMD38
CMD39

SCPI parameter

Rigol Tech-	TGLOR1	LAND	PASS	COLOR_EGG	MAXIMUM
nolo-	TGLOR2	A4	FAIL	ON	PARAMETER
gies,%s,%s,	TGLOR3	A5	INT	ANT	PERIOD
%s	TGLOR4	A6	LAN	ANTENNA	ITIME
ERR	TGLORALL	B5	USB	CAB	LOGARITHMIC
NULL	TGATT	FREQ	GPIB	CABLE	LINEAR
N/A	DACA	AMPL	115K	OTH	INTERNAL
ALL	DACB	DLM	57.6K	OTHER	BOTTOM
NONE	LORATE	DLL	38.4K	EXPONENTIAL	CENTER
.cbl	SPIPHASEEXE	WRIT	19.2K	REPEAT	PRINTER
.CBL	SPIPHASEUP	MAXH	9600	NEGATIVE	ENGLISH
.CSV	SPIPHASESET	MINH	4800	NORMAL	CHINESE
CSV	OFF	POW	2400	POSITIVE	JAPAN
TRC	AM	VIEW	NONE	SAMPLE	JAP
TRACE1	FM	BLANK	ODD	VAVERAGE	GERM
TRACE2	PM	LOWERL	EVEN	QPE	POL
TRACE3	POS	UPPERL	ENGL	ACCURACY	KOR
MATH	NEG	T1	CHIN	AVERAGE	PRESET
MKR	SAMP	T2	JAPANESE	FIXED	ASC
OFF	NORA	T3	GERMAN	SWEEP	REAL
ERR	RMS	T_MATH	POLISH	IMMEDIATE	SWAPPED
.sta	VAV	A-B	PORTUGESE	EXTERNAL	TRACE1
BMP	ERR	A+CONST	KOREA	VIDEO	TRACE2
JPEG	NORM	A-CONST	FACT	CLASSIC	TRACE3
1LOCUR	ACC	NOIS	USER1	MODERN	TRACE4
1LOMUXOUT	EXP	NDB	USER2	DEFAULT	50
1LOFREQ	REP	MAX	USER3	DRAFT	75
1LOR0	PEAK	PAR	USER4	EXIFJPEG	GHZ
1LOR1	AVER	PER	USER5	LANDSCAPE	MHZ
1LOR2	QPEAK	TIME	USER6	PORTRAIT	KHZ
1LOR3	SWE	ITIM	AUTO	FREQUENCY	HZ
1LOR4	FIX	DELT	TMC	AMPLITUDE	PS
1LORALL	IMM	BAND	PRIN	DLMORE	NS
1LOCH	EXT	SPAN	LAST	DLLESS	US
1LOBW	VID	TPOW	PRES	WRITE	MS
2LOCUR	DBM	ACP	TOP	MAXHOLD	KS
2LOMUXOUT	DBUV	CHP	CENT	MINHOLD	S
2LOFREQ	DBMV	OBW	BOTT	VIDEOAVG	SW1
2LOR0	V	EBW	SWAP	POWERAVG	SW2
2LOR1	W	CNR	ASCII	BLAN	SW3
2LOR2	CLAS	HD	REAL, 32	2	SW4
2LOR3	MODE	TOI	PC	3	SW5
2LORALL	DEF	PF	UDISK	MATH	
TGLOCUR	DRAF	NULL	RMT	4	
TGLOMUXOUT	FINE	LOG	USER	NOISE	
TGLOFREQ	EXIF	LIN	FACTORY	POSITION	
TGLOR0	PORT	UNMEAS	REPAIR	DELTA	

Non-visible menu items. It is only the text available.

System -> Licence -> Install
Del Option

Storage
Cover file
Reenter

Menu text english:

Frequency.Center Freq.Start Freq.Stop Freq.CF Step.Auto.Manual.Signal Track.On.
Off.Peak->CF.CF->Step.Span.Span.Full Span.Zero Span.Zoom In.ZoomOut.Last Span.
Amplitude.Auto Scale.Ref Level.Input Att..Auto.Manual.Scale/Div.Scale Type.Log.
Lin.Units.dBm.dBmV.dBuV.Volts.Watts.Ref Offset.Auto Range.RF Preamp.On.Off.
Corrections.Select.Off.Antenna.Cable.Other.User.Correction.On.Off.Edit.Point.
Frequency.Amplitude.Del Point.Freq Interp.Log.Lin.Delete.OK.Cancel.Corr Table.
On.Off.Corr View.All .Sel.MaxMixL.Input.50|.75|.BW/Det.RBW.Auto.Manual.VBW.
Auto.Manual.V/R Ratio.Det Type.Pos Peak.Neg Peak.Sample.Normal.RMS Avg.
Voltage Avg.Quasi-Peak.Filter Type.Gauss.EMI.Sweep/Trig.Time.Auto.Manual.
Auto SWT.Normal.Accy.Mode.Single.Cont.Single.Numbers.Trig Type.FreeRun.Video.
External.Trig Setup.Video.Trig Level.External.Edge.Pos.Neg.Auto .Demod.Demod.
Off.AM.FM.Demod Setup.AM.Earphone.On.Off.Volume.Demod Time.FM.Earphone.On.Off.
Volume.Demod Time.Trace/PF.Select Trace.1.2.3.Trace Type.Clear Write.Max Hold.
Min Hold.Video Avg.Power Avg.Freeze.Blank.Avg Times.Trace Math.Function.A-B.
A+Const.A-Const.A.T1.T2.T3.B.T1.T2.T3.Const.Operate.On.Off.Clear All.Pass/Fail.
Switch.On.Off.Setup.Limit.Upper.Lower.Test.On.Off.Edit.Limit.Upper.Lower.Point.
X Axis.Amplitude.Connected.Yes.No.Del Point.OK.Cancel.X Axis.Freq.Time.
Freq Interp.Log.Lin.Rel Setting.Rel Freq.On.Off.Rel Ampt.On.Off.Fail Stop.On.
Off.Del Limit.OK.Cancel.Beeper.On.Off.Restart.Pause.Resume.Meas Mode.Single.
Cont.Single.AVG Reset.TG.TG.On.Off.TG Level.TG Lvl Offset.Power Sweep.On.Off.
Power Range.Normalize.Stor Ref.Normalize.On.Off.Norm Ref Lvl.Norm Ref Pos.
Ref Trace.View.Blank.ALC.Auto.On.Off.Measure.VSWR.On.Off.Meas Fctn.Off.T-Power.
ACP.Chan Pwr.OBW.EBW.C/N Ratio.Harmo Dist.TOI.Restart.Pause.Resume.Meas Mode.
Single.Cont.Single.Meas Setup.T-Power.Avg Num.On.Off.Avg Mode.Exp.Repeat.
TP Type.Peak.Average.RMS.Start Line.Stop Line.ACP.Avg Num.On.Off.Avg Mode.Exp.
Repeat.Main CH BW.Adj CH BW.CH Spacing.Chan Power.Avg Num.On.Off.Avg Mode.Exp.
Repeat.Integ BW.CH PwrSpan.OBW.Avg Num.On.Off.Avg Mode.Exp.Repeat.Max Hold.On.
Off.OBW Span.Power Ratio.EBW.Avg Num.On.Off.Avg Mode.Exp.Repeat.Max Hold.On.Off.
EBW Span.EBW X dB.C/N Ratio.Avg Num.On.Off.Avg Mode.Exp.Repeat.Offset Freq.
Noise BW.Carrier BW.Harmo Dist.Avg Num.On.Off.Avg Mode.Exp.Repeat.NO.of Harmo.
Harmonic ST.Auto.Manual.TOI.Avg Num.On.Off.Avg Mode.Exp.Repeat.TOI span.VSWR.
Reset.Cal Open.VSWR.Marker.1.2.3.4.Marker State.On.Off.Ref Lvl.Marker.
Select Mkr.1.2.3.4.Normal.Delta.Delta Pair.Ref.Delta.Span Pair.Span.Center.Off.
Mkr Trace.1.2.3.Math.Auto.Readout.Frequency.Period.|Time.1/|time.Mkr Table.On.
Off.All Off.Marker Fctn.Select Mkr.1.2.3.4.Noise Mkr.N dB BW.Function Off.
Freq Count.State.On.Off.Resolution.Auto.Manual.Marker->.Mkr->CF.Mkr->Step.
Mkr->Start.Mkr->Stop.Mkr->Ref.Mkr|<->CF.Mkr|<->Span.Peak.Next Peak.Peak Right.
Peak Left.Min Search.Peak Peak.Cont Peak.On.Off.Search Para.Pk Excursn.
Pk Thresh.Peak Search.Max.param.Peak Table.State.On.Off.Peak Sort.Freq.Ampl.
Pk Readout.Normal.>DL.<DL.Preset.System.Language.English.ÖĐĲ.ÈÖ+ÖZ.Portugu"°s.
Deutsch.Polski.???.Reset.Power On.Last.Preset.Preset Type.Factory.User1.User2.
User3.User4.User5.User6.Save Preset.OK.Cancel.Calibrate.Cal Now.Self-Cal.On.Off.
Acc Cal.I/O Setting.Remote I/O.Off.LAN.USB.GPIB.LAN.Reset.OK.Cancel.Config.OK.
Cancel.DHCP.On.Off.Auto-IP.On.Off.Manual-IP.On.Off.IP.IP Address.Subnet Mask.
Gateway.DNS.USB.Dev Class.AutoConfig.TMC.Printer.Dev Addr.GPIB.Display.
DisplayLine.On.Off.Active Fctn.Top.Center.Bottom.Graticule.Scr State.On.Off.
Brightness.UserKey.On.Off.Msg Switch.On.Off.Work Setting.Front Switch.On.Off.
Line Mode.Factory.User1.User2.User3.User4.User5.User6.UserKey Set.On.Off.
Coupl Param.Information.System Info.System Msg.Self-Test.Screen Test.Key Test.
Time/Date.Time/Date.On.Off.Set Time.Set Date.License.Option Info.License Info.
Install.OK.Cancel.Del Option.TX1000.Sw1.On.Off.Sw2.On.Off.Sw3.On.Off.Sw4.On.Off.
Sw5.On.Off.Service.Calibration.Cal Switch.On.Off.Int Ref Signal.On.Off.
Clr Int Cal.Save Cal.Ref DAC.Cal DAC.LO DAC.TG Cal.On.Off.TG Att.Clk DAC.

Off DAC.On DAC.Log Manage.Log.On.Off.OutPut Dev.PC.U-Disk.Rmt-Monitor.CP state.
Signal Ctrl.Ph Noise Opt.On.Off.Storage.File Type.All.Setup.State.Trace.
Corrections.Limit.Measure.Mkr Table.Peak Table.Format.BIN.CSV.File Source.T1.
T2.T3.Trace Math.Trace All.Browser.Dir.File.Save.OK.Cover file.Reenter.Save.
Cancel.Cancel.Expand Dir.Collapse Dir.Recall.Rename.OK.Cancel.Delete.OK.Cancel.
Copy.Copy From.Copy To.Replace File.Cancel.Apply To.User1.User2.User3.User4.
User5.User6.Browser.Dir.File.Expand Dir.Collapse Dir.Create Dir.OK.Cancel.
Disk Info.Name Prefix.Prefix Switch.On.Off.Edit Prefix.OK.Cancel.Sys Update.
Print .Print Setup.Print.Resume.Cancel.Orientation.Portr.Landsc.Page Size.
Default.A4.A5.A6.B5.Inverted.On.Off.Palette.Gray.Color.Copies.Date Prints.On.
Off.Qualities.Default.Normal.Draft.Fine.FileType.Default.Exif/JPEG.BMP.Help.
User Key.Marker.Marker.Delta Marker.Marker Ref.Marker Delta.Marker Span.
Marker Center.Unit.U_Freq.GHz.MHz.kHz.Hz.U_Amp.U_dBm.dBm.-dBm.mV.uV.U_dBmV.dBmV.
-dBmV.mV.uV.U_dBuV.dBuV.-dBuV.mV.uV.U_Volts.V.mV.uV.nV.dBm.U_Watts.W.mW.uW.nW.
dBm.U_dB.dB.U_Time.ks.s.ms.us.ns.ps.U_Enter.Enter.U_Percent.%.LIST.L_T_POWER.
T-POWER.TP Type.L_ACP.Main CH Pwr.Upper.Lower.Adjacent Channel Power.L_CHP.
Channel Power.Power Spectral Density.L_OBW.Occupied BandWidth.
Transmit Freq Error.L_EBW.Emission BandWidth.L_CNR.Carrier Power.Noise Power.
CNRrator.L_HD.THD.Freq.Amp.Real Harmonics.Sweep Time.Harmonic Distortion.L_TOI.
dBc.Intercept.Base Lower.Base Upper.3rd Order Lower.3rd Order Upper.Pass.
P/F Ratio.L_MARKER.Marker.Trace.Type.X Axis.MarkerTable.Refl Coefficient.
Return Loss.L_PEAKER.Peak.L_CORR.Num.L_LAN.IP Setting.L_INFO_MSG.Msg ID.
Msg Content.Time.Line Mode:.Esc to exit..Invalid sweep Data.L_DISK_INFO.
Disk name.Type.Local disk.Mobile disk.File system.Used space.Free space.
Total space.Byte.Opt Install.Offical.Trial.Invalid.None.Forever

\SDRAM_FWv00.01.09.00.07_with-TG-TGCal-Options\dsa815_sdram.bin

```
.....
.....
..... SCPI parameter, commands
00470db0 52 69 67 6f 6c 20 54 65 63 68 6e 6f 6c 6f 67 69 Rigol Technologi
00470dc0 65 73 2c 25 73 2c 25 73 2c 25 73 00 24 21 0c 00 es,%s,%s,%s.$!...
.....
00470f50 31 4c 4f 43 55 52 00 00 31 4c 4f 4d 55 58 4f 55 1LOCUR..1LOMUXOU
00470f60 54 00 00 00 31 4c 4f 46 52 45 51 00 31 4c 4f 52 T...1LOFREQ.1LOR
.....
00471110 4f 46 46 00 41 4d 00 00 46 4d 00 00 50 4d 00 00 OFF.AM..FM..PM..
00471120 50 4f 53 00 4e 45 47 00 53 41 4d 50 00 00 00 00 POS.NEG.SAMP....
.....
00473240 35 00 00 00 43 4d 44 33 36 00 00 00 43 4d 44 33 5...CMD36...CMD3
00473250 37 00 00 00 43 4d 44 33 38 00 00 00 43 4d 44 33 7...CMD38...CMD3
00473260 39 00 00 00 9c 19 47 00 9c 19 47 00 ff ff 01 00 9...æ.G.æ.G.ÿÿ..
.....
.....
..... Menu text english
00603000 46 72 65 71 75 65 6e 63 79 00 43 65 6e 74 65 72 Frequency.Center
00603010 20 46 72 65 71 00 53 74 61 72 74 20 46 72 65 71 Freq.Start Freq
00603020 00 53 74 6f 70 20 46 72 65 71 00 43 46 20 53 74 .Stop Freq.CF St
00603030 65 70 00 41 75 74 6f 00 4d 61 6e 75 61 6c 00 53 ep.Auto.Manual.S
00603040 69 67 6e 61 6c 20 54 72 61 63 6b 00 4f 6e 00 4f ignal Track.On.O
00603050 66 66 00 50 65 61 6b 2d 3e 43 46 00 43 46 2d 3e ff.Peak->CF.CF->
00603060 53 74 65 70 00 53 70 61 6e 00 53 70 61 6e 00 46 Step.Span.Span.F
.....
.....
.....
.....
.....
.....
..... Key ScanCode
01883780 1e 30 00 00 12 00 00 00 46 52 45 51 00 00 00 00 .0.....FREQ....
01883790 00 00 00 00 22 00 00 00 53 50 41 4e 00 00 00 00 ...."....SPAN....
018837a0 00 00 00 00 32 00 00 00 41 4d 50 00 00 00 00 00 ....2...AMP.....
018837b0 00 00 00 00 52 00 00 00 42 57 00 00 00 00 00 00 ....R...BW.....
018837c0 00 00 00 00 62 00 00 00 53 57 45 45 50 00 00 00 ....b...SWEEP...
018837d0 00 00 00 00 a2 00 00 00 54 55 4e 45 00 00 00 00 ....ç...TUNE....
018837e0 00 00 00 00 c2 00 00 00 44 45 4d 4f 44 00 00 00 ....Â...DEMOD...
018837f0 00 00 00 00 d2 00 00 00 54 52 41 43 45 00 00 00 ....Ò...TRACE...
01883800 00 00 00 00 e2 00 00 00 54 47 00 00 00 00 00 00 ....â...TG.....
01883810 00 00 00 00 f2 00 00 00 4d 45 41 53 00 00 00 00 ....ò...MEAS....
01883820 00 00 00 00 02 01 00 00 4d 45 41 53 53 45 54 00 ....MEASSET.
01883830 00 00 00 00 12 01 00 00 4d 41 52 4b 00 00 00 00 ....MARK....
01883840 00 00 00 00 22 01 00 00 4d 41 52 4b 46 55 4e 43 ...."....MARKFUNC
01883850 00 00 00 00 32 01 00 00 4d 41 52 4b 54 4f 00 00 ....2...MARKTO..
01883860 00 00 00 00 42 01 00 00 50 45 41 4b 00 00 00 00 ....B...PEAK....
01883870 00 00 00 00 72 01 00 00 50 52 45 53 45 54 00 00 ....r...PRESET..
01883880 00 00 00 00 82 01 00 00 53 59 53 54 45 4d 00 00 ....,....SYSTEM..
01883890 00 00 00 00 92 01 00 00 53 54 4f 52 41 47 45 00 ....'....STORAGE.
018838a0 00 00 00 00 b2 01 00 00 50 52 49 4e 54 00 00 00 ....^....PRINT...
018838b0 00 00 00 00 c2 01 00 00 50 52 49 4e 54 53 45 54 ....Â...PRINTSET
018838c0 55 50 00 00 d2 01 00 00 48 45 4c 50 00 00 00 00 UP..Ò...HELP....
018838d0 00 00 00 00 02 03 00 00 46 31 00 00 00 00 00 00 ....F1.....
018838e0 00 00 00 00 12 03 00 00 46 32 00 00 00 00 00 00 ....F2.....
018838f0 00 00 00 00 22 03 00 00 46 33 00 00 00 00 00 00 ...."....F3.....
01883900 00 00 00 00 32 03 00 00 46 34 00 00 00 00 00 00 ....2....F4.....
01883910 00 00 00 00 42 03 00 00 46 35 00 00 00 00 00 00 ....B....F5.....
01883920 00 00 00 00 52 03 00 00 46 36 00 00 00 00 00 00 ....R....F6.....
01883930 00 00 00 00 62 03 00 00 46 37 00 00 00 00 00 00 ....b....F7.....
01883940 00 00 00 00 72 03 00 00 52 45 54 55 52 4e 00 00 ....r...RETURN..
01883950 00 00 00 00 82 03 00 00 50 41 47 45 44 4f 57 4e ....,....PAGEDOWN
01883960 00 00 00 00 12 04 00 00 55 50 00 00 00 00 00 00 ....UP.....
```

01883970	00 00 00 00	02 04 00 00	44 4f 57 4e 00 00 00 00	DOWN....
01883980	00 00 00 00	42 04 00 00	4b 4e 4f 42 4c 00 00 00	B...KNOBL...
01883990	00 00 00 00	52 04 00 00	4b 4e 4f 42 52 00 00 00	R...KNOBR...
018839a0	00 00 00 00	02 05 00 00	44 49 47 49 54 30 00 00	DIGIT0...
018839b0	00 00 00 00	12 05 00 00	44 49 47 49 54 31 00 00	DIGIT1...
018839c0	00 00 00 00	22 05 00 00	44 49 47 49 54 32 00 00	"....DIGIT2...
018839d0	00 00 00 00	32 05 00 00	44 49 47 49 54 33 00 00	2....DIGIT3...
018839e0	00 00 00 00	42 05 00 00	44 49 47 49 54 34 00 00	B....DIGIT4...
018839f0	00 00 00 00	52 05 00 00	44 49 47 49 54 35 00 00	R....DIGIT5...
01883a00	00 00 00 00	62 05 00 00	44 49 47 49 54 36 00 00	b....DIGIT6...
01883a10	00 00 00 00	72 05 00 00	44 49 47 49 54 37 00 00	r....DIGIT7...
01883a20	00 00 00 00	82 05 00 00	44 49 47 49 54 38 00 00	,....DIGIT8...
01883a30	00 00 00 00	92 05 00 00	44 49 47 49 54 39 00 00	'....DIGIT9...
01883a40	00 00 00 00	a2 05 00 00	44 4f 54 00 00 00 00 00	ç....DOT.....
01883a50	00 00 00 00	c2 05 00 00	42 41 43 4b 00 00 00 00	Â...BACK....
01883a60	00 00 00 00	d2 05 00 00	45 53 43 00 00 00 00 00	Ò...ESC.....
01883a70	00 00 00 00	e2 05 00 00	45 4e 54 45 52 00 00 00	â...ENTER...

.....
.....

	Factory Boot Mode	Maintenance Mode	Unknown Mode 1	Unknown Mode 2	User Mode
0188aea0	01 00 00 00	53 45 43 52 45 54 00 00	31 32 33 34	SECRET..1234	
0188aeb0	35 30 30 30	31 32 33 34 35 36 00 00	00 00 00 00	5000123456.....	
0188aec0	00 00 00 00	00 00 00 00 00 00 00 00	c9 f0	Éð	
0188aed0	25 2f 00 00	30 30 30 31 00 30 30 30	30 30 30 30	%/.0001.0002.00	
0188aee0	30 33 00 30	30 30 34 00 30 30 30 35	00 00 00 00	03.0004.0005....	
0188aef0	06 01 69 ad	68 0c b2 01 14 00 00	00 00 00 00	..i-h.^.....	
0188af00	06 00 3c ad	7c 0c b2 01 54 00 00	00 00 00 00	..<- ^.^T.....	
0188af10	00 02 00 00	09 03 05 01 09 08 00 00	09 01 07 08		
0188af20	41 73 54 55	56 57 58 4e 4f 50 44	36 42 43 6a 4b	AsTBVWYNOPD6BCjK	
0188af30	4c 4d 63 6b	6c 6d 6e 45 46 76 77	78 79 7a 74 6f	LMcklmnEFvsxyzto	
0188af40	70 34 35 47	71 75 52 53 59 5a 61	62 72 30 31 32	p45Gq8RSYZabr012	
0188af50	33 48 49 4a	64 65 66 67 68 69 51	37 38 39 23 2e	3HIJdeaghiQ789#.	
0188af60	00 00 00 00	06 01 a5 ad d0 0c b2 01	60 00 00 00	¥-Ð.^.`....	
0188af70	00 00 00 00	06 00 54 ad 30 0d b2 01	70 01 00 00	T-0.^..p...	
0188af80	00 00 00 00	05 00 00 00 01 00 00 00	02 00 00 00		
0188af90	03 00 00 00	04 00 00 00 05 00 00 00	52 00 00 00	R...	
0188afa0	62 00 00 00	12 01 00 00 e2 00 00 00	f2 00 00 00	b.....â...ò...	
0188afb0	02 01 00 00	c2 00 00 00 d2 00 00 00	e2 00 00 00	Â...Ò...â...	
0188afc0	22 01 00 00	02 01 00 00 82 01 00 00	c2 01 00 00	".....,....Â...	
0188afd0	92 01 00 00	52 00 00 00 12 01 00 00	d2 00 00 00	'...R.....Ò...	
0188afe0	e2 00 00 00	22 01 00 00 62 00 00 00	e2 00 00 00	â..."...b....â...	
0188aff0	02 01 00 00	c2 01 00 00 e2 00 00 00	f2 00 00 00	Â...â...ò...	
0188b000	82 01 00 00	e2 00 00 00 c2 00 00 00	92 01 00 00	,...â...Â...'....	
0188b010	e2 05 00 00	d2 05 00 00 c2 05 00 00	12 00 00 00	â...Ò...Â.....	
0188b020	12 00 00 00	12 00 00 00	46 41 43 54 4f 52 59 4d	FACTORYM	
0188b030	4f 44 45 45	4e 54 52 41 4e 43 45 00	52 45 50 41	ODEENTRANCE.REPA	
0188b040	49 52 4d 4f	44 45 45 4e 54 52 41 4e	43 45 00 00	IRMODEENTRANCE..	
0188b050	45 58 49 54	43 55 52 52 45 4e 54 4d	4f 44 45 00	EXITCURRENTMODE.	
0188b060	33 35 4f 38	4f 32 32 38 4f 4c 4f 38	4c 4e 4d 4e	35080238OLO8LNMN	
0188b070	39 36 39 30	32 31 37 39 36 33 4d 4e	32 4f 39 4f	9690217963MN2090	
0188b080	4e 34 36 4f	39 50 30 35 39 37 35 4b	30 30 34 37	N4609P05975K0047	
0188b090	33 4c 35 37	38 31 34 31 4b 39 36 32	39 35 36 31	3L568141K9629561	
0188b0a0	31 30 32 32	4c 38 4e 33 37 34 36 33	39 35 32 34	1022K8N374639524	
0188b0b0	30 4c 32 33	32 33 4f 31 36 30 32	33 32 34 34 4b	0L2323E16023244K	
0188b0c0	34 31 32 34	31 34 38 37 30 30 33	4c 35 35 50 37	41241487013L55P7	
0188b0d0	4b 36 4d 4c	4b 4b 36 33 30 36 34	39 4d 39 33 31	K6MLKK633649M931	
0188b0e0	4b 4f 34 4c	30 35 36 37 32 38 4e	33 39 39 50 4f	KO4L056729N399PO	
0188b0f0	00 00 00 00	06 01 9d ad a0 0e b2 01	10 3b 01 00	- .^...;...	

..... It's all twice.

0186a490	80 00 00 00 00 00 19 52 69 67 6f 6c 20 54 65	€.....Rigol Te
0186a4a0	63 68 6e 6f 6c 6f 67 69 65 73 2c 25 73 2c 25 73	chnologies,%s,%s

0186a4b0 2c 25 73 00 24 21 0c 00 26 21 0c 00 48 21 0c 00 ,%s.\$!...&!...H!...

.....
.....
.....

..... Key ScanCode

01b18e50 00 00 00 00 1e 30 00 00 12 00 00 00 46 52 45 510.....FREQ
01b18e60 00 00 00 00 00 00 00 00 22 00 00 00 53 50 41 4e " ...SPAN
01b18e70 00 00 00 00 00 00 00 00 32 00 00 00 41 4d 50 002...AMP.

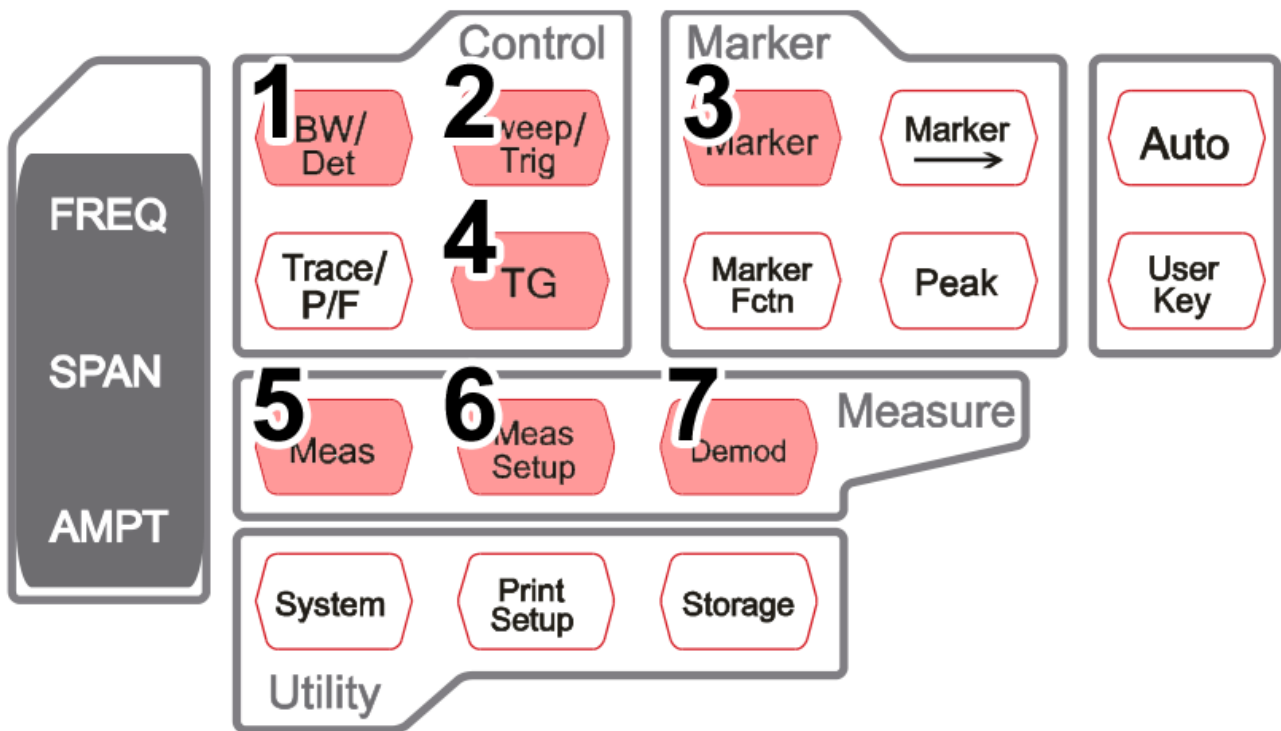
.....
.....

..... Factory Boot Mode Maintenance Mode Unknown Mode 1 Unknown Mode 2 User Mode

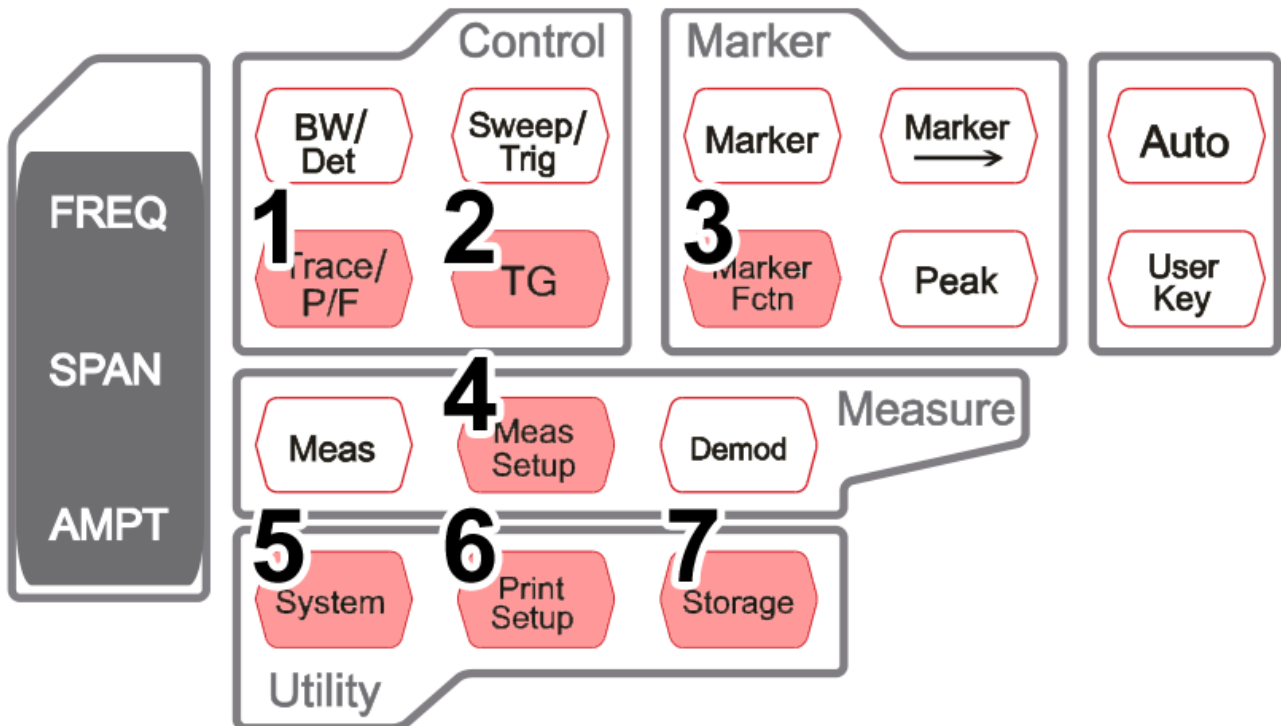
01b20c10 19 40 34 40 ff 11 00 00 01 00 00 00 53 45 43 52 .@4@ÿ.....SECR
01b20c20 45 54 00 00 31 32 33 34 35 30 30 30 31 32 33 34 ET..123450001234
01b20c30 35 36 00 00 a0 42 65 21 e6 97 01 00 d2 19 92 a9 56.. Be!æ—..Ò.'©

.....
.....
.....

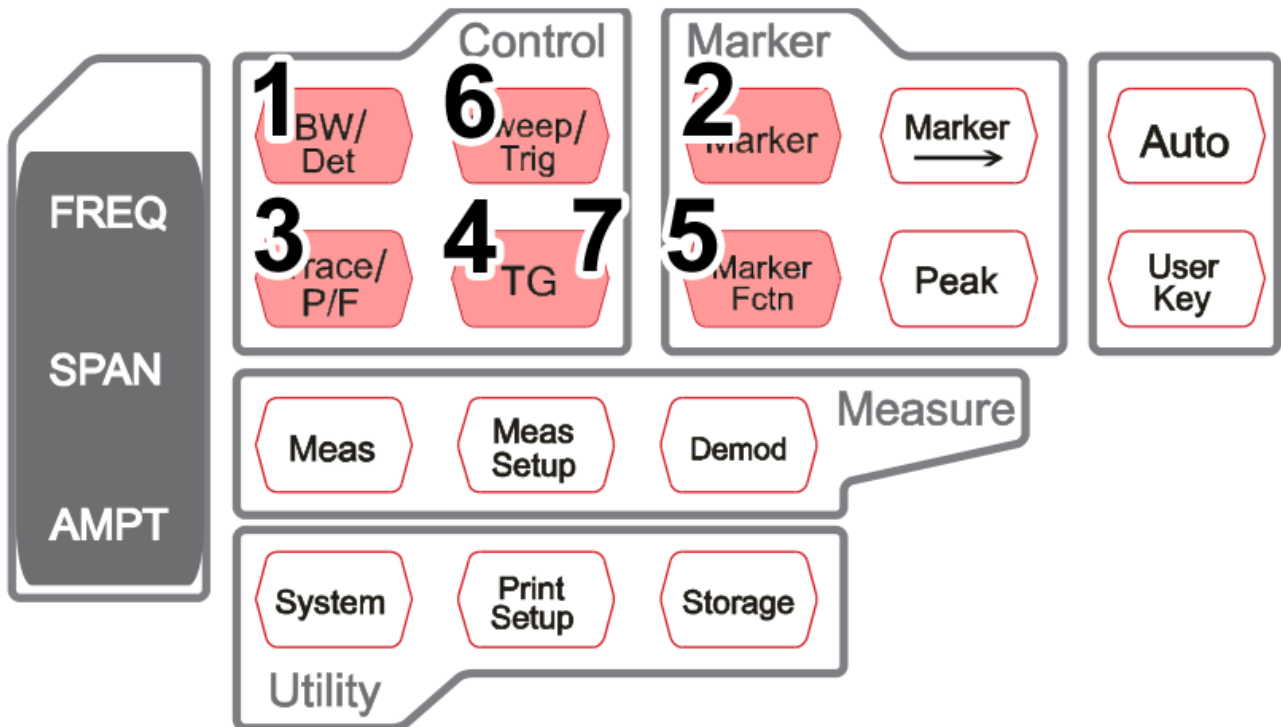
DSA815 - FACTORY BOOT MODE



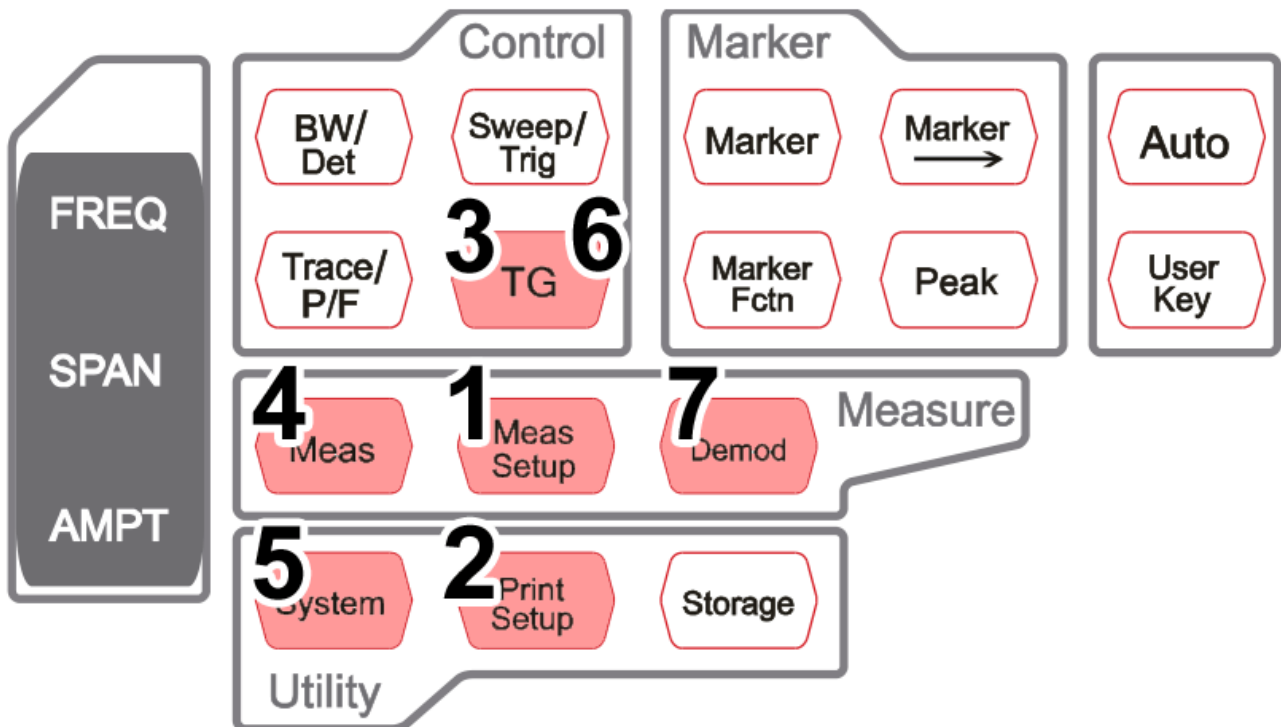
DSA815 - MAINTENANCE MODE



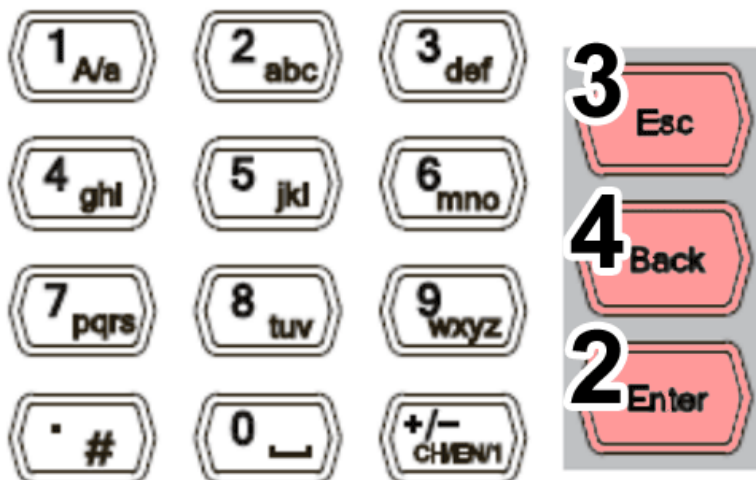
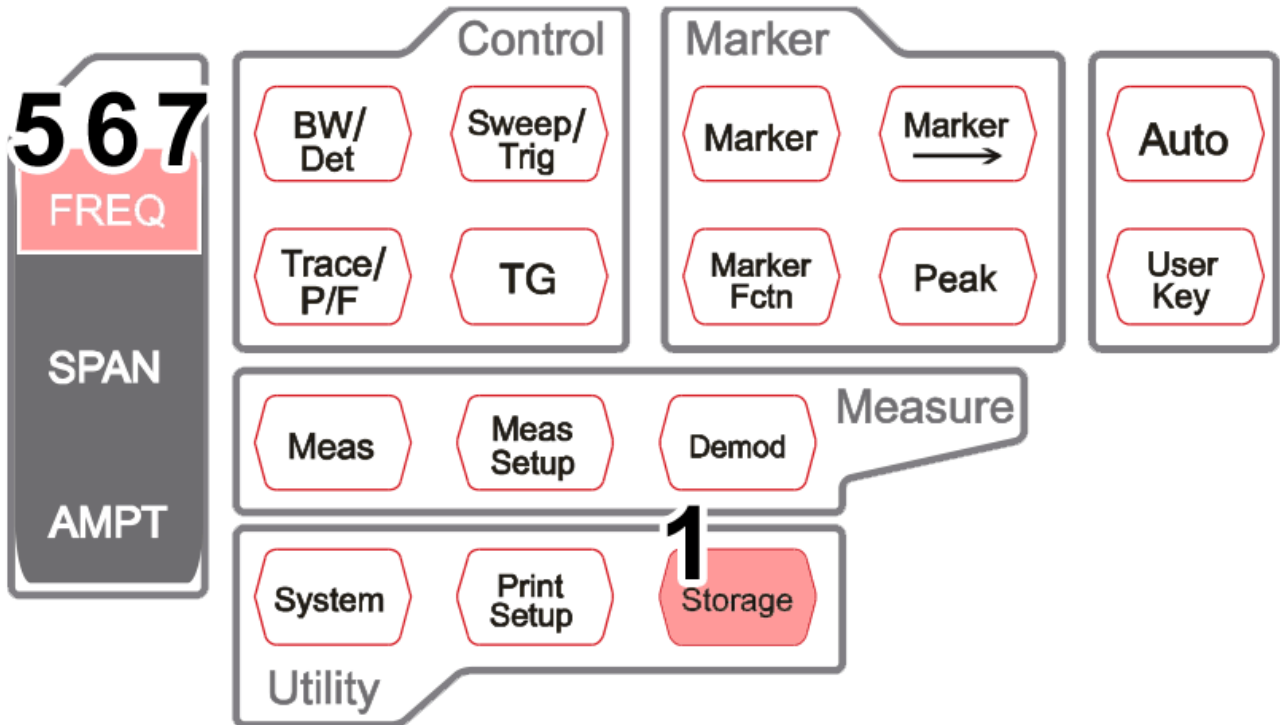
DSA815 - UNKNOWN MODE 1



DSA815 - UNKNOWN MODE 2



DSA815 - USER MODE



Correction file

\testcal4.cbl - 322 Bytes

00000000	39 93 3c 01	00 00 ff 11 00 00	43 42 4c 46	38 01	9" <...ÿ...CBLF8.
00000010	00 00	14 00 64 00	c0 00 00 00	00 00 00 00 01 00	d.À.....
00000020	00 00	43 4f 52 52	c0 00 00 00	4e 4f 4e 45 00 00	..CORRÀ...NONE..
00000030	00 00	4e 4f 4e 45	00 00 00 00	4e 4f 4e 45 00 00	..NONE...NONE..
00000040	00 00	4e 4f 4e 45	00 00 00 00	4e 4f 4e 45 00 00	..NONE...NONE..
00000050	00 00	4e 4f 4e 45	00 00 00 00	4e 4f 4e 45 00 00	..NONE...NONE..
00000060	00 00	4e 4f 4e 45	00 00 00 00	4e 4f 4e 45 00 00	..NONE...NONE..
00000070	00 00	30 30 2e 30	31 2e 30 39	2e 30 30 2e 30 37	..00.01.09.00.07
00000080	00 00	00 00 a0 c0	80 77 8e 06	00 00 00 00	 ÀewŽ.....
00000090	80 3f	00 c2 eb 0b	00 00 00 00	00 00 80 3f	€?.Äë.....€?.£
000000a0	e1 11	00 00 00 00	00 00 80 3f	00 84 d7 17	á.....€?„×...
000000b0	00 00	00 00 80 3f	00 65 cd 1d	00 00 00 00	€?.eí.....
000000c0	80 3f	00 46 c3 23	00 00 00 00	00 00 00 40	€?.FÃ#.....@.'
000000d0	b9 29	00 00 00 00	00 00 e0 40	00 08 af 2f	¹).....à@..-/..
000000e0	00 00	00 00 00 40	00 e9 a4 35	00 00 00 00	@.é¤5.....
000000f0	00 40	00 ca 9a 3b	00 00 00 00	00 00 00 40	..@.Êš;.....@.«
00000100	90 41	00 00 00 00	00 00 40 40	00 8c 86 47	A.....@@.€†G..
00000110	00 00	00 00 40 40	00 6d 7c 4d	00 00 00 00	@.@.m M.....
00000120	40 40	00 4e 72 53	00 00 00 00	00 00 40 40	@@.NrS.....@@€>
00000130	6d 56	00 00 00 00	00 00 80 c0	c0 ec 58 59	mV.....€ÀìXY..
00000140	00 00				..

testcal4.cbl - CorrTable

Point 1	110 MHz	-5 dB	Point 9	900 MHz	2 dB
Point 2	200 MHz	1 dB	Point 10	1000 MHz	2 dB
Point 3	300 MHz	1 dB	Point 11	1100 MHz	2 dB
Point 4	400 MHz	1 dB	Point 12	1200 MHz	3 dB
Point 5	500 MHz	1 dB	Point 13	1300 MHz	3 dB
Point 6	600 MHz	1 dB	Point 14	1400 MHz	3 dB
Point 7	700 MHz	2 dB	Point 15	1450 MHz	3 dB
Point 8	800 MHz	7 dB	Point 16	1499 MHz	-4 dB

Address 00000000 39 93 3c 01 = Is usually different per file, but not always.
 Address 0000000A 43 42 4c 46 = Format identifier?
 Address 0000000E 38 01 00 00 = 0x00000138 = 312 + 10 = 322 Bytes File size.
 Address 00000016 c0 00 00 00 = 0x000000C0 = 192 Bytes Points data.
 Address 00000022 43 4f 52 52 = „CORR” = Correction data, Format identifier.
 Address 00000026 c0 00 00 00 = 0x000000C0 = 192 Bytes Points data.
 Address 00000072 30 30 2e 30 31 2e 30 39 2e 30 30 2e 30 37 = Firmware version.

Point 1	110 MHz	-5 dB	- 00000082	00 00 a0 c0	80 77 8e 06	00 00 00 00
Point 2	200 MHz	1 dB	- 0000008E	00 00 80 3f	00 c2 eb 0b	00 00 00 00
.....						
.....						
.....						

Point 1 - Address 00000082

Float 32 bit 00 00 a0 c0 = 0xC0A00000 = -5.0E0 = -5 dB
 Integer 80 77 8e 06 = 0x068E7780 = 110000000 = 110 MHz
 Unknown 00 00 00 00

Point 2 - Address 0000008E

Float 32 bit 00 00 80 3f = 0x3F800000 = 1.0E0 = 1 dB
 Integer 00 c2 eb 0b = 0x0BEBC200 = 200000000 = 200 MHz
 Unknown 00 00 00 00

.....

