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SCPI COMMAND REFERENCE

TH2852 / TH2853 Series

The full remote-command set for the TH2852 (Precision Impedance Analyzer) and TH2853 (RF LCR Tester) series, organized by subsystem — calibration, point/list measurement, curve sweep, display, and file management. Companion to the TH2852/TH2853 Series Operation Manual.

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Rev. 2026-09

TH2852 / TH2853 Series SCPI Command Reference

Companion to the TH2852/TH2853 Series Operation Manual

This reference documents the full remote-command set — around 300 commands — for the TH2852/TH2853 platform. Commands are grouped by subsystem. See the Operation Manual for how each menu, screen and measurement mode maps to these commands.

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Total: approximately 303 commands. TH2853 does not support the CALCulate<Ch> equivalent-circuit/limit-line/Smith-chart/dielectric-permeability/cursor commands (§8.3–§8.8) or the Γ/Z/Y/VSWR measurement parameters — see the Operation Manual §1.10 for the full function comparison.

SECTION 1

Command Syntax & Conventions

1.1 Command tree & message format

Commands are arranged in a hierarchical tree, written as colon-separated mnemonics (e.g. `:CORRection:FIXture:LOAD:STATe`). A leading colon addresses the command from the root of the tree; without one, an unterminated path continues from wherever the previous command in the same message left off. A message terminator (e.g. the line ending) always resets the current path back to the root for the next message. Use a semicolon to send multiple commands in one message without a full path reset in between.

A program message ends with `<newline>` (0x0A), `<^END>`, or both — use `\n` as the terminator when programming. Separate a command from its first parameter with a space; separate multiple parameters with commas.

1.2 Command types

Type	Meaning
Command	Sets a value or triggers an action; no query form (unless also listed as Command/Query)
Command/Query	Send with a parameter to set a value; send with a trailing `?` and no parameter to read it back
Query	Read-only — always ends in `?`, never takes a parameter

1.3 Notation used in this reference

Notation	Meaning
`<Ch>`	Channel number — curve-sweep channels are numbered 1–4
`<Tr>`	Trace number — up to 4 traces per channel
`<Mk>`	Cursor (marker) number — up to 10 cursors per trace
`{A|B|C}`	Choose exactly one of the listed keywords
`<number>`	A numeric parameter
`"<text>"`	A quoted string parameter, e.g. a file name
`[:KEYword]`	Optional node — can be omitted from the command path

Command mnemonics use mixed case in this reference purely for readability (capital letters = the short form accepted by the instrument, e.g. `CORR` for `CORRection`); SCPI itself is case-insensitive.

1.4 IEEE 488.2 common commands

Common commands are prefixed with `*`, are not part of the hierarchical tree, and work identically regardless of the current path (§2).

SECTION 2

Common (IEEE 488.2) Commands

Command	Type	Description
`*IDN?`	Query	Returns the instrument's identification string (manufacturer, model, serial number, firmware version)
`*OPC?`	Query	Returns `+1` once all pending operations are complete, otherwise `0`
`*RST`	Command	Resets the instrument to its factory power-on state. Distinct from `:SYSTem:PREset`, which resets to the state configured in System Setup (§11 note)
`*TRG`	Command	Issues one trigger. In point or list measurement, the result is returned once the measurement finishes; in curve sweep, the sweep runs but no data is returned automatically — read it back with the relevant `:FETCh` or `:CALCulate<Ch>:DATA` query

SECTION 3

CORRection — Calibration

Mirrors the User Calibration screen (Operation Manual §4) — fixture selection, full-range open/short/load calibration, port extension, DCR calibration, electrical length, and the 20 per-point user calibration points.

Command	Type	Description
`:CORRection:ACCEssory <text>`	Cmd/Qry	Sets or queries the test fixture currently associated with the instrument
`:CORRection:CLEar`	Command	Clears the data of all user calibration points, restoring them to default
`:CORRection:DCR`	Command	Runs a DCR (DC resistance) measurement — the test port must be shorted first
`:CORRection:DCR:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the DCR on/off state; if set on while no DCR measurement file exists, it reverts to off
`:CORRection:ELENgth <number>`	Cmd/Qry	Sets or queries the electrical-length value
`:CORRection:FIXture:LOAD`	Command	Runs a fixture load calibration across all frequency points
`:CORRection:FIXture:LOAD:{R|C|L} <number>`	Cmd/Qry	Sets or queries the R/C/L value used for fixture load calibration
`:CORRection:FIXture:LOAD:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the fixture load-calibration on/off state
`:CORRection:FIXture:OPEN`	Command	Runs a fixture open-circuit zero across all frequency points
`:CORRection:FIXture:OPEN:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the fixture open-calibration on/off state
`:CORRection:FIXture:SHORt`	Command	Runs a fixture short-circuit zero across all frequency points
`:CORRection:FIXture:SHORt:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the fixture short-calibration on/off state
`:CORRection:LOAD:TYPE {RX|CPD|CPQ|CPG|CPRP|CSD|CSQ|CSRS|LPD|LPQ|LPG|LPRP|LSD|LSQ|LSRS|ZTD|ZTR|GB|Y}`	Cmd/Qry	Sets or queries the parameter pair used to specify the load-calibration standard's reference value

Command	Type	Description
`:CORRection:PORT:LENGth <number>`	Cmd/Qry	Sets or queries the port-extension length value
`:CORRection:PORT:STATe <number>`	Cmd/Qry	Sets or queries the port-extension on/off state
`:CORRection:SPOT{1-20}:FREQ <number>`	Cmd/Qry	Sets or queries the frequency of the specified user calibration point (1–20)
`:CORRection:SPOT{1-20}:LOAD[:EXECute]`	Command	Runs a load calibration at the specified user calibration point
`:CORRection:SPOT{1-20}:OPEN[:EXECute]`	Command	Runs an open-circuit zero at the specified user calibration point
`:CORRection:SPOT{1-20}:SHORt[:EXECute]`	Command	Runs a short-circuit zero at the specified user calibration point
`:CORRection:USER:DATA?`	Query	Returns the calibration data for every user calibration point
`:CORRection:USER:LOAD`	Command	Runs a full-range user load calibration across all frequency points
`:CORRection:USER:LOAD:STANard {Tonghui|16195B|Others}`	Cmd/Qry	Sets or queries the load-standard model used for user load calibration
`:CORRection:USER:LOAD:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the user load-calibration on/off state
`:CORRection:USER:LOSS`	Command	Runs an air-capacitor (loss) calibration
`:CORRection:USER:LOSS:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the air-capacitor calibration on/off state
`:CORRection:USER:OPEN`	Command	Runs a full-range user open-circuit zero across all frequency points
`:CORRection:OPEN:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the user open-calibration on/off state
`:CORRection:USER:SHORt`	Command	Runs a full-range user short-circuit zero across all frequency points
`:CORRection:USER:SHORt:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the user short-calibration on/off state

> **NOTE**
>
> "Fixture" calibration compensates the test fixture; "user" calibration (spot points and full-range) compensates the test head/system. Both follow the same open/short/load logic described in Operation Manual §4.2–§4.3.

SECTION 4

Point & List Measurement — Core Commands

These top-level commands apply to point measurement; the equivalent per-point settings for list sweep use the `:LIST` subsystem (§5) instead. Mirrors Operation Manual §5.

4.1 Frequency, level & averaging

Command	Type	Description
`:FREQuency <number>`	Cmd/Qry	Sets or queries the point-measurement test frequency
`:VOLTage <number>`	Cmd/Qry	Sets or queries the point-measurement source test voltage; setting it switches the level mode to voltage automatically
`:CURRent <number>`	Cmd/Qry	Sets or queries the point-measurement source test current; setting it switches the level mode to current automatically
`:RF <number>`	Cmd/Qry	Sets or queries the point-measurement source test power; setting it switches the level mode to power automatically
`:APERture <0-5>`	Cmd/Qry	Sets or queries the point-measurement speed level (0 fast – 5 precise)
`:AVERage:COUNt <number>`	Cmd/Qry	Sets or queries the point-measurement averaging count

4.2 DC bias

Command	Type	Description
`:BIAS:MODE {VOLTage|CURRent}`	Cmd/Qry	Sets or queries the point-measurement DC bias mode
`:BIAS:VOLTage <number>`	Cmd/Qry	Sets or queries the DC bias voltage. Setting the value does not by itself turn the bias on
`:BIAS:CURRent <number>`	Cmd/Qry	Sets or queries the DC bias current. Setting the value does not by itself turn the bias on
`:BIAS:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the DC bias output on/off state

4.3 Measurement parameters & monitors

Command	Type	Description
`:FUNCtion:PARameter{1-4}:FORMat <text>`	Cmd/Qry	Sets or queries the measurement parameter assigned to display slot 1–4
`:FUNCtion:DEV{1-4}:MODE {OFF|ABSolute|PERCent}`	Cmd/Qry	Sets or queries the result-display mode (off / delta / percent-delta) for the given parameter slot
`:FUNCtion:DEV{1-4}:REFerence <number>`	Cmd/Qry	Sets or queries the reference value used by delta/percent-delta mode for the given parameter slot
`:FUNCtion:SMONitor:{IAC|VAC} {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the AC current/voltage monitor on/off state; turning it off switches the DC monitor on
`:FUNCtion:SMONitor:{IDC|VDC} {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the DC current/voltage monitor on/off state; turning it off switches the AC monitor on

4.4 Trigger & sweep control

Command	Type	Description
`:TRIGger`	Command	Issues one point-measurement trigger; also used to trigger manually when the trigger source is manual and the trigger mode is not hold
`:TRIGger:DELay <number>`	Cmd/Qry	Sets or queries the point-measurement trigger delay
`:TRIGger:SOURce {INTernal|MANual|EXTernal|BUS}`	Cmd/Qry	Sets or queries the point-measurement trigger source
`:TRIGger[:SEQuence]:SOURce {INTernal|EXTernal|MANual|BUS}`	Cmd/Qry	Sets or queries the curve-sweep trigger source
`:TRIGger[:SEQuence]:SCOPe {ALL|ACTive}`	Cmd/Qry	Sets or queries whether all channels trigger in rotation, or only the active channel
`:TRIGger[:SEQuence]:AVERage {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the moving-average trigger on/off state for the active channel
`:TRIGger[:SEQuence]:POINt {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether point-by-point trigger mode is on for curve sweep
`:TRIGger[:SEQuence]:SINGle`	Command	Issues one immediate trigger when the trigger source is bus and the trigger mode is not hold
`:ABORt`	Command	Ends the current sweep cycle immediately and starts a new one
`:INITiate`	Command	Sets the trigger mode to internal
`:INITiate:CONTinuos {ON|OFF|1|0}`	Cmd/Qry	Sets the trigger mode to internal; query returns whether internal trigger mode is currently active
`:SENSe<Ch>:APERture[:TIME] {1-5}`	Cmd/Qry	Sets or queries the sweep speed of the selected curve-sweep channel

4.5 Reading results

Command	Type	Description
`:FETCh[:IMPedance]?`	Query	Returns the current point/list measurement result
`:FETCh[:IMPedance]:CORRected?`	Query	Returns the current point/list measurement result as corrected R/X values
`:FETCh:AUTO {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether automatic result return is on (Operation Manual §11.5)
`:FETCh:AUTO:SOURce {LAN|GPIB|USB}`	Cmd/Qry	Sets or queries which interface automatic result return uses
`:FETCh:SMONitor:VAC?` / `:IAC?`	Query	Returns the AC voltage / AC current monitor reading
`:FETCh:SMONitor:VDC?` / `:IDC?`	Query	Returns the DC voltage / DC current monitor reading

4.6 Binning (comparator)

Command	Type	Description
`:COMParator[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the point-measurement binning on/off state
`:COMParator:BIN{1-9}[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the on/off state of bin 1–9
`:COMParator:BIN{1-9}:CONDition{1-4}:LIMit <lower>, <upper>`	Cmd/Qry	Sets or queries the limit range for condition 1–4 of the given bin
`:COMParator:BIN{1-9}:CONDition{1-4}:LTYPe {IN|OUT|ALL}`	Cmd/Qry	Sets or queries whether the given condition passes inside, outside, or regardless of its limit range
`:COMParator:CONDition{1-4}:SWitch {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether comparator condition 1–4 is active
`:COMParator:CONDition{1-4}:PARameter {Z|Y|TZR|TZD|TYR|TYD|RS|RP|LS|LP|CS|CP|R|G|X|B|Q|D}`	Cmd/Qry	Sets or queries the measurement parameter that condition 1–4 evaluates
`:COMParator:CONDition{1-4}:MODE {OFF|DEV|PCNT|PDEV}`	Cmd/Qry	Sets or queries the result-display mode (off / delta / percent / percent-delta) condition 1–4 evaluates against
`:COMParator:CONDition{1-4}:NOMinal <number>`	Cmd/Qry	Sets or queries the reference (nominal) value for condition 1–4
`:COMParator:OGBins <number>`	Cmd/Qry	Sets or queries how many bins count as a qualified (passing) result
`:COMParator:CLEar`	Command	Restores all point-measurement binning settings to their initial values
`:COMParator:COUNt[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the bin-count display is on
`:COMParator:COUNt:CLEar`	Command	Clears the current bin counts
`:COMParator:DATA:BIN?`	Query	Returns the most recent binning result
`:COMParator:DATA:BCOunt?`	Query	Returns the accumulated count for each bin

4.7 Dielectric-constant & permeability parameters (point measurement, option) — *TH2852 only*

Requires the dielectric-constant or permeability option to be enabled (see the Technical & Applications Guide, §9–§10).

Command	Type	Description
`:PERMittivity:A1 {A1|A2|User}`	Cmd/Qry	Sets or queries the guard electrode used in the dielectric-constant calculation
`:PERMittivity:AREA <number>`	Cmd/Qry	Sets or queries the dielectric sample area used in the calculation (only when the guard electrode is set to User)
`:PERMittivity:THICkness <number>`	Cmd/Qry	Sets or queries the dielectric sample thickness used in the calculation
`:TROIdalcore:HEIGht <number>`	Cmd/Qry	Sets or queries the toroidal-core sample height used in the permeability calculation
`:TROIdalcore:INNer <number>`	Cmd/Qry	Sets or queries the toroidal-core sample inner diameter used in the permeability calculation
`:TROIdalcore:OUTer <number>`	Cmd/Qry	Sets or queries the toroidal-core sample outer diameter used in the permeability calculation

The identical commands nested under `:LIST:PERMittivity:…` and `:LIST:TROIdalcore:…` (§5) apply the same settings within list sweep.

SECTION 5

LIST — List-Sweep Points & Sorting

Mirrors the list-measurement screen (Operation Manual §6). Per-point commands take an optional point-index parameter; omitting it addresses the currently selected point.

5.1 Per-point settings

Command	Type	Description
`:LIST:POINt <number>`	Cmd/Qry	Sets or queries the number of points in the list; points added this way take default settings
`:LIST:FREQ[point] <number>`	Cmd/Qry	Sets or queries the test frequency of the given point
`:LIST:VOLTage[point] <number>`	Cmd/Qry	Sets or queries the source voltage of the given point
`:LIST:CURRent[point] <number>`	Cmd/Qry	Sets or queries the source current of the given point
`:LIST:RF[point] <number>`	Cmd/Qry	Sets or queries the source power of the given point
`:LIST:COUNt[point] <number>`	Cmd/Qry	Sets or queries the averaging count of the given point
`:LIST:DELay[point] <number>`	Cmd/Qry	Sets or queries the measurement delay of the given point
`:LIST:BIAS:MODE[point] {VOLTage|CURRent}`	Cmd/Qry	Sets or queries the DC bias mode of the given point
`:LIST:BIAS:VOLTage[point] <number>`	Cmd/Qry	Sets or queries the DC bias voltage of the given point (setting it does not turn the bias on)
`:LIST:BIAS:CURRent[point] <number>`	Cmd/Qry	Sets or queries the DC bias current of the given point (setting it does not turn the bias on)
`:LIST:BIAS:STATe[point] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the DC bias on/off state of the given point
`:LIST:PARameter{1-4}:FORMat <text>`	Cmd/Qry	Sets or queries the measurement parameter assigned to display slot 1–4
`:LIST:MODE {SEQuence|STEP}`	Cmd/Qry	Sets the list-sweep measurement mode — sweep the whole list per trigger, or step one point per trigger
`:LIST:TRIG {INTernal|MANual|EXTernal|BUS}`	Cmd/Qry	Sets the list-sweep trigger source
`:LIST:CLEar`	Command	Clears the list points on the current page back to default
`:LIST:CLEar:ALL`	Command	Clears the list points on every page back to default

5.2 List binning (comparator)

Command	Type	Description
`:LIST:COMParator[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the list-sweep binning on/off state
`:LIST:COMParator:BIN{1-15}[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the on/off state of bin 1–15
`:LIST:COMParator:BIN{1-15}:CONDition{1-4}:LIMit <lower>,<upper>`	Cmd/Qry	Sets or queries the limit range for condition 1–4 of the given bin
`:LIST:COMParator:BIN{1-15}:CONDition{1-4}:LTYPe {IN|OUT|ALL}`	Cmd/Qry	Sets or queries whether the given condition passes inside, outside, or regardless of its limit range
`:LIST:COMParator:BIN{1-15}:CONDition{1-4}:MODE {OFF|DEV|PCNT|PDEV}`	Cmd/Qry	Sets or queries the result-display mode condition 1–4 evaluates against, for the given bin
`:LIST:COMParator:BIN{1-15}:CONDition{1-4}:NOMinal <number>`	Cmd/Qry	Sets or queries the reference (nominal) value for condition 1–4 of the given bin
`:LIST:COMParator:CONDition{1-4}:PARameter {Z|Y|TZR|TZD|TYR|TYD|RS|RP|LS|LP|CS|CP|R|G|X|B|Q|D}`	Cmd/Qry	Sets or queries the measurement parameter that condition 1–4 evaluates
`:LIST:COMParator:CLEar`	Command	Restores all list-sweep binning settings to their initial values
`:LIST:COMParator:COUNt[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the list bin-count display is on
`:LIST:COMParator:COUNt:CLEar`	Command	Clears the current list bin counts
`:LIST:COMParator:DATA:BIN?`	Query	Returns the most recent list binning result
`:LIST:COMParator:DATA:BCOunt?`	Query	Returns the accumulated count for each list bin

5.3 List dielectric-constant & permeability parameters (option) — *TH2852 only*

Command	Type	Description
`:LIST:PERMittivity:A1 {A1|A2|User}`	Cmd/Qry	Sets or queries the guard electrode used in the list-sweep dielectric-constant calculation
`:LIST:PERMittivity:AREA <number>`	Cmd/Qry	Sets or queries the dielectric sample area used in the list-sweep calculation
`:LIST:TROIdalcore:HEIGht <number>`	Cmd/Qry	Sets or queries the toroidal-core sample height used in the list-sweep permeability calculation
`:LIST:TROIdalcore:INNer <number>`	Cmd/Qry	Sets or queries the toroidal-core sample inner diameter used in the list-sweep permeability calculation
`:LIST:TROIdalcore:OUTer <number>`	Cmd/Qry	Sets or queries the toroidal-core sample outer diameter used in the list-sweep permeability calculation

These behave identically to the point-measurement `:PERMittivity:…` / `:TROIdalcore:…` commands (§4.7), applied within a list sweep. Both require the corresponding option to be enabled.

SECTION 6

SOURce<Ch> — Curve-Sweep Stimulus

Sets the signal source and DC bias for the specified curve-sweep channel (1–4) — mirrors the STIMULUS key group (Operation Manual §3.1, §7.3). Start/Stop and Center/Span describe the same range two different ways; setting one updates the other.

6.1 Source mode & level

Command	Type	Description
`:SOURce<Ch>:MODE {RF|VOLTage|CURRent}`	Cmd/Qry	Sets or queries the signal-source mode of the given channel
`:SOURce<Ch>:RF[:LEVel][:IMMediate][:AMPLitude] <number>`	Cmd/Qry	Sets or queries the source power output of the given channel
`:SOURce<Ch>:VOLTage[:LEVel][:IMMediate][:AMPLitude] <number>`	Cmd/Qry	Sets or queries the source voltage output of the given channel
`:SOURce<Ch>:CURRent[:LEVel][:IMMediate][:AMPLitude] <number>`	Cmd/Qry	Sets or queries the source current output of the given channel
`:SOURce<Ch>:ALC[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the automatic level control (ALC) on/off state of the given channel
`:SOURce<Ch>:ALC:COUNt <number>`	Cmd/Qry	Sets or queries the maximum ALC retry count of the given channel
`:SOURce<Ch>:ALC:TOLerance <number>`	Cmd/Qry	Sets or queries the ALC target accuracy of the given channel

6.2 Level as the swept stimulus

When sweep type is set to level (power/voltage/current, §7), the following define the swept range instead of §6.1's single value:

Command	Type	Description
`:SOURce<Ch>:RF:STARt/:STOP/:CENTer/:SPAN <number>`	Cmd/Qry	Sets or queries the start/stop/center/span of the swept source power
`:SOURce<Ch>:VOLTage:STARt/:STOP/:CENTer/:SPAN <number>`	Cmd/Qry	Sets or queries the start/stop/center/span of the swept source voltage
`:SOURce<Ch>:CURRent:STARt/:STOP/:CENTer/:SPAN <number>`	Cmd/Qry	Sets or queries the start/stop/center/span of the swept source current

6.3 DC bias

Command	Type	Description
`:SOURce<Ch>:BIAS:MODE {VOLTage|CURRent}`	Cmd/Qry	Sets or queries the DC bias mode of the given channel
`:SOURce<Ch>:BIAS:STATe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the DC bias on/off state of the given channel
`:SOURce<Ch>:BIAS:DELay <number>`	Cmd/Qry	Sets or queries the DC bias settling delay of the given channel
`:SOURce<Ch>:BIAS:VOLTage[:LEVel][:IMMediate]:AMPLitude <number>`	Cmd/Qry	Sets or queries the DC bias voltage output of the given channel
`:SOURce<Ch>:BIAS:CURRent[:LEVel][:IMMediate]:AMPLitude <number>`	Cmd/Qry	Sets or queries the DC bias current output of the given channel

When sweep type is set to DC bias (voltage or current, §7), the following define the swept range:

Command	Type	Description
`:SOURce<Ch>:BIAS:VOLTage:STARt/:STOP/:CENTer/:SPAN <number>`	Cmd/Qry	Sets or queries the start/stop/center/span of the swept DC bias voltage
`:SOURce<Ch>:BIAS:CURRent:STARt/:STOP/:CENTer/:SPAN <number>`	Cmd/Qry	Sets or queries the start/stop/center/span of the swept DC bias current

> **NOTE**
>
> As in point measurement, setting a DC bias value or range does not by itself enable the bias output — use the corresponding `:STATe` command.

SECTION 7

SENSe<Ch> / INITiate<Ch> — Curve-Sweep Timing & Range

7.1 Sweep range, points & type

Command	Type	Description
`:SENSe<Ch>:FREQuency <number>`	Cmd/Qry	Sets or queries the non-swept (fixed) frequency of the given channel
`:SENSe<Ch>:FREQuency:STARt/:STOP/:CENTer/:SPAN <number>`	Cmd/Qry	Sets or queries the start/stop/center/span of the swept frequency of the given channel
`:SENSe<Ch>:FREQuency:DATA?`	Query	Returns the measurement frequency of every point in the given channel
`:SENSe<Ch>:SWEep:POINts <number>`	Cmd/Qry	Sets or queries the number of measurement points in the given channel
`:SENSe<Ch>:SWEep:TYPE {LINear|LOGarithmic|SEGMent|POWer|BIAS|LBIas}`	Cmd/Qry	Sets or queries the sweep type (stimulus) of the given channel
`:SENSe<Ch>:SWEep:DIRection {UP|DOWN}`	Cmd/Qry	Sets or queries the sweep direction of the given channel
`:SENSe<Ch>:SWEep:TIME <number>`	Cmd/Qry	Sets or queries the total sweep time of the given channel
`:SENSe<Ch>:SWEep:DELay <number>`	Cmd/Qry	Sets or queries the sweep-start delay of the given channel
`:SENSe<Ch>:SWEep:PDEL <number>`	Cmd/Qry	Sets or queries the per-point delay of the given channel
`:INITiate<Ch>[:IMMediate]`	Command	If the given channel's trigger state is hold, sets it to single-sweep mode and issues one trigger

7.2 Segmented sweep & DC monitor

Command	Type	Description
`:SENSe<Ch>:SEGMent:DATA <…>`	Cmd/Qry	Sets or queries the segment definitions (start, stop, points per segment) for segmented sweep on the given channel
`:SENSe<Ch>:SEGMent:SWEep:POINts?`	Query	Returns the total point count across all defined segments
`:SENSe<Ch>:AVERage[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the single-point averaging on/off state of the given channel
`:SENSe<Ch>:AVERage:COUNt <number>`	Cmd/Qry	Sets or queries the single-point averaging count of the given channel
`:SENSe<Ch>:DC:MEASure:ENABle {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the DC monitor on/off state of the given channel
`:SENSe<Ch>:DC:MEASure:CLEar`	Command	Clears the DC monitor data of the given channel
`:SENSe<Ch>:DC:MEASure:DATA:DCV?`	Query	Returns the DC voltage monitor reading of the given channel
`:SENSe<Ch>:DC:MEASure:DATA:DCI?`	Query	Returns the DC current monitor reading of the given channel

NOTE

Segmented sweep (Operation Manual §7.4) treats every segment as part of one channel's sweep; segment definitions replace the plain start/stop/points settings above while sweep type is set to SEGMent.

SECTION 8

CALCulate<Ch> — Curve-Sweep Analysis

The largest command subsystem (71 commands), mirroring the curve-sweep analysis tools in Operation Manual §7. `[:SELected]` in a command path means it applies to whichever trace is currently active on the given channel unless a trace is otherwise specified. Sections 8.3–8.8 are **TH2852 only**, as marked individually in each heading below.

8.1 Trace selection & data

Command	Type	Description
`:CALCulate<Ch>:PARameter:COUNt <number>`	Cmd/Qry	Sets or queries the number of traces on the given channel
`:CALCulate<Ch>:PARameter<Tr>:DEFine <text>`	Cmd/Qry	Sets or queries the measurement parameter of the given trace
`:CALCulate<Ch>:PARameter<Tr>:SELect`	Command	Makes the given trace the active trace on its channel
`:CALCulate<Ch>[:SELected]:DATA:FDATa <n1>,<n2>…`	Cmd/Qry	Sets or queries the formatted measurement values of the active trace's current curve
`:CALCulate<Ch>[:SELected]:DATA:FMEMory <n1>,<n2>…`	Cmd/Qry	Sets or queries the formatted measurement values of the active trace's memory curve
`:CALCulate<Ch>[:SELected]:DATA:RDATa <n1>,<n2>…`	Cmd/Qry	Sets or queries the raw (R–X) measurement result of the active trace's current curve
`:CALCulate<Ch>[:SELected]:DATA:RMEMory <n1>,<n2>…`	Cmd/Qry	Sets or queries the raw (R–X) measurement result of the active trace's memory curve
`:CALCulate<Ch>[:SELected]:DATA:XAXis?`	Query	Returns the X-axis (stimulus) value for every measurement point

8.2 Averaging, math & statistics

Command	Type	Description
`:CALCulate<Ch>:AVERage[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the moving-average on/off state of the given channel
`:CALCulate<Ch>:AVERage:COUNt <number>`	Cmd/Qry	Sets or queries the moving-average count of the given channel
`:CALCulate<Ch>:AVERage:CLEar`	Command	Clears the moving-average count of the given channel and restarts it
`:CALCulate<Ch>[:SELected]:MATH:FUNCtion {NORMal|DIVide|MULTiply|SUBTract|ADD}`	Cmd/Qry	Sets or queries the trace-math mode against the memory curve (only NORMal is valid until a memory curve exists)
`:CALCulate<Ch>[:SELected]:MATH:OFFSet <number>`	Cmd/Qry	Sets or queries the math offset applied to the active trace's current curve
`:CALCulate<Ch>[:SELected]:MSTatistics[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the curve-data-statistics on/off state of the active trace
`:CALCulate<Ch>[:SELected]:MSTatistics:DATA?`	Query	Returns the curve-data statistics of the active trace

8.3 Equivalent-circuit analysis (EPARameters) — *TH2852 only*

Model letters A–G correspond to the seven topologies in Operation Manual §7.8.

Command	Type	Description
`:CALCulate<Ch>:EPARameters:CIRCuit[:TYPE] {A|B|C|D|E|F|G}`	Cmd/Qry	Sets or queries the equivalent-circuit model of the given channel
`:CALCulate<Ch>:EPARameters:CIRCuit:{A-G}:C1 <number>`	Cmd/Qry	Sets or queries fitting parameter C1 for the given model
`:CALCulate<Ch>:EPARameters:CIRCuit:{A-G}:L1 <number>`	Cmd/Qry	Sets or queries fitting parameter L1 for the given model
`:CALCulate<Ch>:EPARameters:CIRCuit:{A-G}:R1 <number>`	Cmd/Qry	Sets or queries fitting parameter R1 for the given model
`:CALCulate<Ch>:EPARameters:CIRCuit:E:C0 <number>`	Cmd/Qry	Sets or queries fitting parameter C0, specific to model E (resonator)
`:CALCulate<Ch>:EPARameters:CIRCuit:{F|G}:R0 <number>`	Cmd/Qry	Sets or queries fitting parameter R0, specific to models F and G
`:CALCulate<Ch>:EPARameters[:EXECute]`	Command	Runs equivalent-circuit fitting on the given channel's measured data, using the selected model
`:CALCulate<Ch>:EPARameters:SIMulate[:IMMediate]`	Command	Immediately simulates the given channel's current fitting-parameter values and writes the result to the curve and memory curve
`:CALCulate<Ch>:EPARameters:SIMulate:AUTO {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the equivalent-circuit simulation re-runs automatically whenever a fitting parameter changes
`:CALCulate<Ch>:EPARameters:DISPlay[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the equivalent-circuit model and its fitted values are shown on screen

8.4 Curve sort (limit lines) — *TH2852 only*

Command	Type	Description
`:CALCulate<Ch>[:SELected]:LIMit[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the curve-sort on/off state of the active trace
`:CALCulate<Ch>[:SELected]:LIMit:ADD <stim1>,<stim2>,{ABS|DEV|PER|DPER}, <lower>,<upper>`	Command	Adds one limit-line segment to the active trace (requires the reference value below to be set first)
`:CALCulate<Ch>[:SELected]:LIMit:REFerence`	Command	Sets the curve-sort reference value from the active trace's current data; changing the sweep parameters clears it
`:CALCulate<Ch>[:SELected]:LIMit:CLEar`	Command	Clears all limit-line segments on the active trace
`:CALCulate<Ch>[:SELected]:LIMit:SHOW[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the limit lines are drawn on screen
`:CALCulate<Ch>[:SELected]:LIMit:TEST?`	Query	Returns the curve-sort (limit-line) result for the active trace
`:CALCulate<Ch>[:SELected]:LIMit:TEST:ALL?`	Query	Returns the combined curve-sort and cursor-sort result for the active trace

8.5 Smith chart & per-channel dielectric/permeability — *TH2852 only*

Command	Type	Description
`:CALCulate<Ch>:SMITh {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the Smith-chart display on/off state for the given channel's curve sweep
`:CALCulate<Ch>:PERMittivity:A1 {A1|A2|User}`	Cmd/Qry	Sets or queries the guard electrode for the given channel's dielectric-constant calculation (option)
`:CALCulate<Ch>:PERMittivity:AREA <number>`	Cmd/Qry	Sets or queries the dielectric sample area for the given channel's calculation (option)
`:CALCulate<Ch>:TROIdalcore:HEIGht/:INNer/:OUTer <number>`	Cmd/Qry	Sets or queries the toroidal-core height/inner/outer diameter for the given channel's permeability calculation (option)

8.6 Cursors (markers) — basics — *TH2852 only*

`<Mk>` addresses cursor 1–10 on the active trace; a reference cursor is handled separately (last row).

Command	Type	Description
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:ACTivate`	Command	Activates (shows) the given cursor
`:CALCulate<Ch>[:SELected]:MARKer:AOFF`	Command	Turns off every cursor on the active trace
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:X[:DATA] <number>`	Cmd/Qry	Sets or queries the given cursor's excitation (X-axis) value
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:X:POSition <number>`	Cmd/Qry	Sets or queries the given cursor's position relative to the nearest measurement point
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:Y?`	Query	Returns the given cursor's response (Y-axis) reading
`:CALCulate<Ch>[:SELected]:MARKer:DISCrete {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether cursors may be positioned between measurement points
`:CALCulate<Ch>[:SELected]:MARKer:COUPle {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether cursors are coupled (linked) together on the active trace
`:CALCulate<Ch>[:SELected]:MARKer:ZAPerture <number>`	Cmd/Qry	Sets or queries the cursor zoom ratio
`:CALCulate<Ch>[:SELected]:MARKer:REFerence[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the reference cursor's on/off state for the given channel

8.7 Cursor search & bandwidth analysis — *TH2852 only*

Command	Type	Description
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:FUNCtion:{MAXimum|MINimum|PEAK|LPEak|RPEak|TARGet|LTARget|RTARget}`	Cmd/Qry	Sets or queries the cursor-search mode used by the given cursor (max/min, peak, left/right-nearest peak, target, left/right-nearest target)
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:FUNCtion:EXECute`	Command	Runs the cursor search immediately for the given cursor
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:FUNCtion:TRACking {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the given cursor re-runs its search automatically after every sweep
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:FUNCtion:PEXCursion <number>`	Cmd/Qry	Sets or queries the peak/valley excursion threshold for the given cursor's search
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:FUNCtion:PPOLarity {POSitive|NEGative|BOTH}`	Cmd/Qry	Sets or queries the peak/valley polarity the given cursor searches for
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:FUNCtion:TTRansition {POSitive|NEGative|BOTH}`	Cmd/Qry	Sets or queries the target-value crossing direction the given cursor searches for
`:CALCulate<Ch>[:SELected]:MARKer:FUNCtion:MULTi:TYPE {OFF|PEAK|TARGet}`	Cmd/Qry	Sets or queries whether the active trace's cursor search is single or multiple (all peaks / all targets)
`:CALCulate<Ch>[:SELected]:MARKer:FUNCtion:MULTi:{PEXCursion|PPOLarity|TARGet|TTRansition}`	Cmd/Qry	Sets or queries the excursion / polarity / target value / crossing direction used for multiple-search mode
`:CALCulate<Ch>[:SELected]:MARKer:FUNCtion:DOMain[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether cursor search is restricted to a defined sub-range of the sweep
`:CALCulate<Ch>[:SELected]:MARKer:FUNCtion:DOMain:STARt/:STOP <number>`	Cmd/Qry	Sets or queries the start/stop of the cursor-search restricted range
`:CALCulate<Ch>[:SELected]:MARKer:BWIDth {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the bandwidth-analysis on/off state for the active trace
`:CALCulate<Ch>[:SELected]:MARKer:BWIDth:TYPE <…>`	Cmd/Qry	Sets or queries the bandwidth-analysis width mode (level below/above the peak)
`:CALCulate<Ch>[:SELected]:MARKer:BWIDth:DATA?`	Query	Returns the bandwidth-analysis result for the active trace

8.8 Cursor sort & cursor statistics — *TH2852 only*

Command	Type	Description
`:CALCulate<Ch>[:SELected]:MARKer<Mk>:LIMit {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the cursor-sort on/off state for the given cursor
`:CALCulate<Ch> [:SELected]:MARKer<Mk>:LIMit:REFerence <number>`	Cmd/Qry	Sets or queries the cursor-sort reference value for the given cursor
`:CALCulate<Ch> [:SELected]:MARKer<Mk>:LIMit:UPPer <number>`	Cmd/Qry	Sets or queries the cursor-sort upper limit for the given cursor (paired with a lower-limit parameter set the same way)
`:CALCulate<Ch> [:SELected]:MARKer<Mk>:LIMit:TYPE <…>`	Cmd/Qry	Sets or queries the cursor-sort mode for the given cursor
`:CALCulate<Ch> [:SELected]:MARKer<Mk>:LIMit:TEST?`	Query	Returns the cursor-sort result for the given cursor
`:CALCulate<Ch> [:SELected]:MARKer:MATH:STATistics[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries the cursor-statistics on/off state for the active trace
`:CALCulate<Ch> [:SELected]:MARKer:MATH:STATistics:DATA?`	Query	Returns the current cursor-statistics data for the active trace

Overall curve-sweep binning on the HANDLER interface reflects the combination of curve sort (§8.4) and cursor sort above, per trace — see Operation Manual §7.13 and §12.1.1.

SECTION 9

DISPlay — Screen & Trace Layout

9.1 Screen & channel layout

Command	Type	Description
`:DISPlay:PAGE {MEASurement|LIST|STIMulus|SWEEp|CAL|COMParator|PoinTCOmparator}`	Cmd/Qry	Opens the given screen, or queries which screen is currently shown
`:DISPlay:CCLear`	Command	Clears the warning message shown at the bottom of the screen
`:DISPlay:SPLit <layout>`	Cmd/Qry	Sets or queries how the up-to-4 channels are arranged on screen (one of the 14 split-screen layouts)
`:DISPlay:MAXimize {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the active channel is shown maximized (Operation Manual §3.1, Channel Max)
`:DISPlay:IMAGe {NORMal|INVert}`	Cmd/Qry	Sets or queries the curve-sweep colour scheme (normal or inverted)
`:DISPlay:WINDow<Ch>:ACTivate`	Command	Makes the given channel the active channel (it must already be visible on screen)
`:DISPlay:WINDow<Ch>:MAXimize {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the given channel's active trace is shown maximized (Trace Max)
`:DISPlay:WINDow<Ch>:SPLit <layout>`	Cmd/Qry	Sets or queries how the given channel's traces are arranged within its window
`:DISPlay:WINDow<Ch>:LABel {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the Y-axis label is shown for the given channel

9.2 Trace & axis scaling

Command	Type	Description
`:DISPlay:WINDow<Ch>:TRACe<Tr>:DATA[:STATe] {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the given trace's data curve is shown
`:DISPlay:WINDow<Ch>:TRACe<Tr>:Y[:SCALe]:AUTO`	Command	Auto-scales the Y-axis for the given trace
`:DISPlay:WINDow<Ch>:TRACe<Tr>:Y[:SCALe]:SPACing {LINear|LOGarithmic}`	Cmd/Qry	Sets or queries the given trace's Y-axis type (linear or logarithmic)
`:DISPlay:WINDow<Ch>:TRACe<Tr>:Y[:SCALe]:RLEVel <number>`	Cmd/Qry	Sets or queries the Y-axis reference value (linear axis only)
`:DISPlay:WINDow<Ch>:TRACe<Tr>:Y[:SCALe]:RPOSition <number>`	Cmd/Qry	Sets or queries where the Y-axis reference value sits on screen (0 to the number of divisions)
`:DISPlay:WINDow<Ch>:TRACe<Tr>:Y[:SCALe]:TOP/:BOTTom <number>`	Cmd/Qry	Sets or queries the Y-axis maximum/minimum (logarithmic axis only)
`:DISPlay:WINDow<Ch>:TRACe<Tr>:X[:SCALe]:RLEVel <number>`	Cmd/Qry	Sets or queries the X-axis reference value (complex-Z/Y trace formats only)
`:DISPlay:WINDow<Ch>:Y[:SCALe]:DIVisions <number>`	Cmd/Qry	Sets or queries the number of Y-axis divisions (linear axis only)
`:DISPlay:WINDow<Ch>:X:SPACing {LINear|…}`	Cmd/Qry	Sets or queries the X-axis type (frequency or sequence) for a segmented sweep

SECTION 10

MMEMory — Save & Load

Mirrors the save/load menus in Operation Manual §8. Point/list and curve-sweep modes largely share this subsystem but keep separate setup-state slots.

10.1 Point & list measurement

Command	Type	Description
`:MMEMory:STORe:STATe {1-8}`	Command	Saves the current point/list setup to the given numbered state slot
`:MMEMory:LOAD:STATe {1-8}`	Command	Loads the point/list setup from the given numbered state slot
`:MMEMory:STORe "<filename>"`	Command	Saves the current point/list setup to the given file path
`:MMEMory:LOAD "<filename>"`	Command	Loads a point/list setup from the given file path
`:MMEMory:LIST "<filename>"`	Command	Exports the current list-measurement data to the given file (CSV)
`:MMEMory:STORe:COMParator "<filename>"`	Command	Saves the current point-measurement binning setup to the given file
`:MMEMory:LOAD:COMParator "<filename>"`	Command	Loads a point-measurement binning setup from the given file
`:MMEMory:STORe:LIST:COMParator "<filename>"`	Command	Saves the current list-sweep binning setup to the given file
`:MMEMory:LOAD:LIST:COMParator "<filename>"`	Command	Loads a list-sweep binning setup from the given file

10.2 Curve sweep

Command	Type	Description
`:MMEMory:STORe[:STATe] "<filename>"`	Command	Saves the current curve-sweep setup to the given file path
`:MMEMory:LOAD[:STATe] "<filename>"`	Command	Loads a curve-sweep setup from the given file path
`:MMEMory:STORe:STYPe {STATe|DSTate}`	Cmd/Qry	Sets or queries whether a curve-sweep save stores the setup only, or the setup plus curve data (Operation Manual §8.5)
`:MMEMory:STORe:SALL {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether a curve-sweep save covers only the channels/traces currently displayed, or all of them
`:MMEMory:STORe:CHANnel[:STATe] {A|B|C|D}`	Command	Saves the active channel's state to the given internal memory slot
`:MMEMory:LOAD:CHANnel[:STATe] {A|B|C|D}`	Command	Loads a channel state from the given internal memory slot
`:MMEMory:STORe:CHANnel:CLEar`	Command	Clears every saved channel-state memory slot
`:MMEMory:STORe:LIMit "<filename>"`	Command	Saves the current curve-sort (limit-line) setup to the given file
`:MMEMory:LOAD:LIMit "<filename>"`	Command	Loads a curve-sort setup from the given file
`:MMEMory:STORe:SEGMemt "<filename>"`	Command	Saves the current segmented-sweep setup to the given file
`:MMEMory:LOAD:SEGMemt "<filename>"`	Command	Loads a segmented-sweep setup from the given file
`:MMEMory:STORe:FDATa "<filename>"`	Command	Saves the active channel/trace's current measurement data to the given file
`:MMEMory:STORe:EPARameters[:STATe] "<filename>"`	Command	Saves the equivalent-circuit fitting result to the given file (TH2852 only)

10.3 Screen capture & file management

Command	Type	Description
`:MMEMory:STORe:IMAGe "<filename>"`	Command	Saves a screen capture to the given file (do not use the root of the C: drive as the path)
`:MMEMory:COPY "<file1>","<file2>"`	Command	Copies the file at file1's path to file2's path
`:MMEMory:DELete "<filename>"`	Command	Deletes the file at the given path

SECTION 11

SYSTem

Command	Type	Description
`:SYSTem:KLOCk:KBD {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the front panel is locked
`:SYSTem:KLOCk:MOUSe {ON|OFF|1|0}`	Cmd/Qry	Sets or queries whether the touch screen is locked
`:SYSTem:UPReset`	Command	Resets the instrument to the saved user-preset state (returns an error if no user-preset file exists)
`:SYSTem:POFF`	Command	Closes the instrument's control software

> NOTE
> `:SYSTem:UPReset` is the remote equivalent of **Preset** when Reset Settings (Operation Manual §9.5) is configured to restore a saved user state; `*RST` (§2) always goes to factory defaults regardless of that setting.

SECTION 12

SERVice — State Queries

Read-only helper queries for discovering the instrument's current channel/trace/cursor configuration — useful when a program needs to adapt to whatever is currently on screen rather than assuming a fixed layout.

Command	Type	Description
`:SERVice:ACHannel:ACTive <value>`	Cmd/Qry	Sets or queries which channel is currently active
`:SERVice:ACHannel:COUNt?`	Query	Returns how many channels are currently displayed
`:SERVice:CHANnel<Ch>:ATRace:ACTive <number>`	Cmd/Qry	Sets or queries which trace is active on the given channel
`:SERVice:CHANnel<Ch>:ATRace:COUNt?`	Query	Returns how many traces are configured on the given channel
`:SERVice:CHANnel<Ch>:TRACe<Tr>:AMRKer:ACTive <number>`	Cmd/Qry	Sets or queries which cursor is active on the given channel/trace
`:SERVice:CHANnel<Ch>:SWEep:POINt?`	Query	Returns the number of measurement points in the given channel's current sweep range
`:SERVice:CHANnel<Ch>:SEGMent:DATA?`	Query	Returns how many data values the given channel's segmented-sweep definition requires
`:SERVice:SWEep:FREQuency:MAXimum?`	Query	Returns this instrument's maximum test frequency (i.e. the model's frequency ceiling)
`:SERVice:SWEep:FREQuency:MINimum?`	Query	Returns this instrument's minimum test frequency
`:SERVice:SWEep:POINts?`	Query	Returns the maximum number of measurement points the instrument supports (1,601)

SECTION 13

Programming Examples

Each example is a plain sequence of commands sent one per line, terminated with `\n` (§1.1). They assume a fresh connection over LAN, USB or RS-232 as set up in Operation Manual §11.

13.1 Identify the instrument & reset

`*IDN?`	→ read back the identification string
`*RST`	reset to the factory power-on state

13.2 A basic point measurement

`:FREQuency 100E6`	100 MHz test frequency
`:VOLTage 0.5`	0.5 V source level
`:APERture 3`	speed level 3
`:FUNCtion:PARameter1:FORMat "Z"`	display slot 1 = |Z|
`:FUNCtion:PARameter2:FORMat "TZD"`	display slot 2 = θz (degrees)
`:TRIGger:SOURce BUS`	switch to bus-triggered mode
`*TRG`	trigger and wait for the result
`:FETCh?`	→ read back the measurement result

13.3 A three-point list sweep

`:LIST:POINt 3`	three list points
`:LIST:FREQ1 1E6` / `:LIST:FREQ2 10E6` / `:LIST:FREQ3 100E6`	1 MHz, 10 MHz, 100 MHz
`:LIST:VOLTage1 0.5` (repeat per point as needed)	source level per point
`:LIST:TRIG BUS`	bus-triggered list sweep
`*TRG`	trigger the whole list
`:FETCh?`	→ read back the result set

13.4 A curve sweep with data readback

`:SENSe1:SWEep:TYPE LINear`	linear frequency sweep, channel 1
`:SENSe1:FREQuency:STARt 1E6`	start frequency 1 MHz
`:SENSe1:FREQuency:STOP 1E9`	stop frequency 1 GHz
`:SENSe1:SWEep:POINts 201`	201 sweep points
`:CALCulate1:PARameter1:DEFine "Z"`	trace 1 = |Z|
`:TRIGger[:SEQuence]:SOURce BUS`	bus-triggered sweep
`:INITiate1`	arm channel 1 for a single sweep
`*TRG`	trigger the sweep
`*OPC?`	→ poll until the sweep finishes (returns `+1`)
`:CALCulate1:DATA:RDATa?`	→ read back the raw (R–X) curve data

13.5 Equivalent-circuit fitting *(TH2852 only, continuing from §13.4)*

`:CALCulate1:EPARameters:CIRCuit A`	select model A
`:CALCulate1:EPARameters[:EXECute]`	run the fit against the measured curve
`:CALCulate1:EPARameters:CIRCuit:A:R1?`	→ read back the fitted R1
`:CALCulate1:EPARameters:CIRCuit:A:L1?`	→ read back the fitted L1
`:CALCulate1:EPARameters:CIRCuit:A:C1?`	→ read back the fitted C1
`:MMEMory:STORe:EPARameters "D:\Data\fit_A.txt"`	export the fitted model to a file

> **NOTE**
>
> All examples above omit connection setup (opening the VISA/socket resource, timeouts) for brevity — see Operation Manual §11.1–§11.2 for LAN/USB/RS-232 connection details.