Application Note

Remote Command List Examples

MT8870A
Universal Wireless Test Set

Anritsu

Remote Command List Examples

Remote command list for 802.11a/b/g/n, 802.11ac, Bluetooth, GPS, FM

Rev	Changes	Date
01	New release	19th September 2013
02	Add command list for Composite MIMO, and add explanation of SG sequencer mode for WLAN and Bluetooth receiver testing.	31st October 2013
03	Add TX test remote command for True MIMO and Sequential MIMO. Add RX test remote command for True MIMO.	26th June 2014

CONTENTS

MT8870A common parameter settings

Remote command list for initial configuration

Initialize MT8870A

Remote commands	Comments
***IDN?**	Query for MU887000 test module
ANRITSU,MU887000A,6201234567,01.02.03	
***IDN? 1**	Query for MT8870A mainframe
ANRITSU,MT8870A,6200000000,00.00.01	
SYST:LANG SCPI	
:INST SRW	This command is for WLAN/Bluetooth
***RST**	
:CALC:CAL:BAND:STAR:TEMP 2.0	Band Calibration
:CALC:CAL:BAND:RES?	
>Pass	

Load waveforms

Remote commands	Comments
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887030A_b_11_1024L'	This is sample file name
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887030A_ag_54_1000'	This is sample file name
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887030A_n_MCS7_40_4096L'	This is sample file name
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887031A_ac_MCS9_80_4096L'	This is sample file name
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887040A_DH1'	This is sample file name
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887040A_3-DH1'	This is sample file name
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887040A_BLE'	This is sample file name
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887100A_GPS_0002'	This is sample file name
:SOUR:GPRF:GEN:ARB:FILE:LOAD *Enter Waveform Filename*	
:SOUR:GPRF:GEN:ARB:WAV:GEN:ZVSP 'ZERO_200000000Hz_100000p',200000000HZ,100000	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	This is sample file name

Configure Path loss

Remote commands	Comments
:EXTL:TABL:SWIT ON	
:CALC:EXTL:TABL:SETT 1	
:CALC:EXTL:TABL:VAL 1575.42MHz,1.00,2.00,3.00	This is sample code for path loss
:CALC:EXTL:TABL:VAL 2412MHz,1.00,2.00,3.00	This is sample code for path loss
:CALC:EXTL:TABL:VAL 2442MHz,1.00,2.00,3.00	This is sample code for path loss
:CALC:EXTL:TABL:VAL 2472MHz,1.00,2.00,3.00	This is sample code for path loss
:CALC:EXTL:TABL:VAL 5180MHz,1.00,2.00,3.00	This is sample code for path loss
:CALC:EXTL:TABL:VAL 5520MHz,1.00,2.00,3.00	This is sample code for path loss
:CALC:EXTL:TABL:VAL 5785MHz,1.00,2.00,3.00	This is sample code for path loss

WLAN 802.11a/b/g/n/ac Measurements

Remote command list for WLAN 802.11a/b/g/n/ac Test

802.11b TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP AUTODSSS	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:WLB:FTYP GAUSSIAN	
:CONF:SRW:SEL:WLAN:POW ON	
:CONF:SRW:SEL:WLAN:EVM ON	
:CONF:SRW:SEL:WLAN:SPEC:NUM ON	Numerical Spectrum measurements enabled.
:CONF:SRW:SEL:WLAN:SPEC:GRAP ON	Graphical Spectrum measurements enabled.
:CONF:SRW:FREQ 2412000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:CONF:SRW:ALEV:TIME 0.01	10 msec for auto leveling
Transmit 11b signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 13.0	
:INIT:SRW	
***WAI**	
:STAT:SRW:MEAS?	
> 1	
:FETC:SRW:SUMM:WLAN:POW? 1,1	Details
> 1,0,1,1,1,-8.99,-10.63,1.64,1,0,-10.63,-10.63,1,2	
:FETC:SRW:SUMM:WLAN:DSSS:EVM? 1,1	Details

> 1,0,1,-26.8,4.5,-26.9,4.5,-26.9,4.5,0.0,0.2,1.87,3.17,-57.35,48.32,-0.2,-2,1,1,1,1,2,1	
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 1,1	Details
>1,0,1,1,1,2.59,-19.25,14794922,nan,nan,nan,nan,nan,nan,-33105468,-11.89,-93.46,-12988281,-3.51,-65.07,12939453,-3.44,-65.01,22021484,-10.26,-91.83,nan,nan,nan,nan,nan,nan,nan,nan,2,2,2,2,nan,nan,1,0,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:GRAP:ASC? 1 **Or :FETC:SRW:SUMM:WLAN:SPEC:GRAP:BIN? 1**	Spectrum mask graph (Ascii or Binary)
> Return spectrum mask graph data with either Ascii format or Binary format.	
Stop DUT from transmitting signal.	

802.11b RX measurements

Remote commands	Comments
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
***WAI**	
:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
:SOUR:GPRF:GEN:SEQ:REIN 0	
:SOUR:GPRF:GEN:STAT 1	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:LEV -100	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887030A_b_11_1024L'	
***WAI**	
:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,1,TRIGGER	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,2,SNUMBER	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,1,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,2,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,1,0.000	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,2,0.000	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,1,NSEGMENT	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,2,LOOP	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,1,ARB	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,2,ARB	

:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,1,OFF	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,2,OFF	
:SOUR:GPRF:GEN:SEQ:WAV:GEN:DM:POL 1,NORMAL	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-100.0DBM	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'MV887030A_b_11_1024L', 1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1000	Number of PKT
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
:SOUR:GPRF:GEN:MODE SEQUENCE	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-55.0DBM	Set PWR LVL
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,1,2412000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,2,2412000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,1,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,2,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:ERR? 1	Error check
>0,0,0	
Set up DUT for RX testing.	
:SOUR:GPRF:GEN:SEQ:EXEC	Start to test PKT
:SOUR:GPRF:GEN:SEQ:STAT?	
> 1	
:SOUR:GPRF:GEN:SEQ:STAT?	
> 0	*Completed*
Get received packet count from DUT and calculate PER	

802.11g TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP AUTOOFDM	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:OFDM:CEST FULLPACKET	
:CONF:SRW:SEL:WLAN:POW ON	
:CONF:SRW:SEL:WLAN:EVM ON	
:CONF:SRW:SEL:WLAN:SPEC:NUM ON	Numerical Spectrum measurements enabled.
:CONF:SRW:SEL:WLAN:SPEC:GRAP ON	Graphical Spectrum measurements enabled.
:CONF:SRW:FREQ 2412000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:CONF:SRW:ALEV:TIME 0.002	2 msec for auto leveling
Transmit 11g signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 13.0	
:INIT:SRW	
***WAI**	
:STAT:SRW:MEAS?	
> 1	
:FETC:SRW:SUMM:WLAN:POW? 1,1	Details
> 1,0,1,1,1,-1.21,-10.70,9.49,1,0,-10.70,-10.70,1,1	
:FETC:SRW:SUMM:WLAN:OFDM:EVM? 1	Details
> 1,0,64,38,-53.53,-0.1,0.0,51,-45.2,0.5,-45.2,0.5,-45.2,0.5,1,1,1,1,1,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 1,1	Details
>1,0,1,1,1,0,-22.18,16503907,-32568360,-17.05,-91.00,-29980468,-18.66,-92.55,-11083984,-7.93,-61.92,-11000000,-8.31,-62.26,10937500,-9.87,-63.33,11000000,-9.14,-63.09,29003906,-19.20,-91.98,32177734,-	

17.95,-91.90,1,1,1,1,1,1,1,1,1,0,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:GRAP:ASC? 1	Spectrum mask graph
Or :FETC:SRW:SUMM:WLAN:SPEC:GRAP:BIN? 1	(Ascii or Binary)
> Return spectrum mask graph data with either Ascii format or Binary format.	
Stop DUT from transmitting signal.	

802.11g RX measurements

Remote commands	Comments
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
***WAI**	
:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
:SOUR:GPRF:GEN:SEQ:REIN 0	
:SOUR:GPRF:GEN:STAT 1	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:LEV -100	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887030A_ag_54_1000'	
***WAI**	
:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,1,TRIGGER	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,2,SNUMBER	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,1,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,2,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,1,0.000	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,2,0.000	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,1,NSEGMENT	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,2,LOOP	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,1,ARB	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,2,ARB	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,1,OFF	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,2,OFF	
:SOUR:GPRF:GEN:SEQ:WAV:GEN:DM:POL 1,NORMAL	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-100.0DBM	

:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'MV887030A_ag_54_1000', 1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1000	Number of PKT
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
:SOUR:GPRF:GEN:MODE SEQUENCE	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-55.0DBM	Set PWR LVL
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,1,2412000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,2,2412000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,1,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,2,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:ERR? 1	Check error
>0,0,0	
Set up DUT for RX testing.	
:SOUR:GPRF:GEN:SEQ:EXEC	Start to test PKT
:SOUR:GPRF:GEN:SEQ:STAT?	
> 1	
:SOUR:GPRF:GEN:SEQ:STAT?	
> 0	*Completed*
Get received packet count from DUT and calculate PER	

802.11a TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP AUTOOFDM	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:OFDM:CEST FULLPACKET	
:CONF:SRW:SEL:WLAN:POW ON	
:CONF:SRW:SEL:WLAN:EVM ON	
:CONF:SRW:SEL:WLAN:SPEC:NUM ON	Numerical Spectrum measurements enabled.
:CONF:SRW:SEL:WLAN:SPEC:GRAP ON	Graphical Spectrum measurements enabled.
:CONF:SRW:FREQ 5180000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:CONF:SRW:ALEV:TIME 0.002	2 msec for auto leveling
Transmit 11a signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 13.0	
:INIT:SRW	
***WAI**	
:STAT:SRW:MEAS?	
> 1	
:FETC:SRW:SUMM:WLAN:POW? 1,1	Details
> 1,0,1,1,1,-1.75,-11.25,9.51,1,0,-11.25,-11.25,1,1	
:FETC:SRW:SUMM:WLAN:OFDM:EVM? 1	Details
> 1,0,64,38,-52.73,0.1,0.1,397,-45.8,0.5,-45.8,0.5,-45.8,0.5,1,1,1,1,1,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 1,1	Details
>1,0,1,1,1,0,-22.33,16503907,-34228516,-14.88,-88.94,-29931640,-17.08,-91.02,-11083984,-7.92,-62.03,-11000000,-8.23,-62.29,10937500,-10.33,-63.91,11000000,-9.61,-63.67,29931640,-16.53,-90.54,32421876	

,-14.27,-88.33,1,1,1,1,1,1,1,1,1,0,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:GRAP:ASC? 1 **Or :FETC:SRW:SUMM:WLAN:SPEC:GRAP:BIN? 1**	Spectrum mask graph (Ascii or Binary)
> Return spectrum mask graph data with either Ascii format or Binary format.	
Stop DUT from transmitting signal.	

802.11a RX measurements

Remote commands	Comments
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
***WAI**	
:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
:SOUR:GPRF:GEN:SEQ:REIN 0	
:SOUR:GPRF:GEN:STAT 1	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:LEV -100	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887030A_ag_54_1000'	
***WAI**	
:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,1,TRIGGER	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,2,SNUMBER	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,1,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,2,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,1,0.000	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,2,0.000	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,1,NSEGMENT	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,2,LOOP	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,1,ARB	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,2,ARB	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,1,OFF	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,2,OFF	
:SOUR:GPRF:GEN:SEQ:WAV:GEN:DM:POL 1,NORMAL	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-100.0DBM	

:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'MV887030A_ag_54_1000', 1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1000	Number of PKT
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
:SOUR:GPRF:GEN:MODE SEQUENCE	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-55.0DBM	Set PWR LVL
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,1,5180000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,2,5180000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,1,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,2,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:ERR? 1	Check error
>0,0,0	
Set up DUT for RX testing.	
:SOUR:GPRF:GEN:SEQ:EXEC	Start to test PKT
:SOUR:GPRF:GEN:SEQ:STAT?	
> 1	
:SOUR:GPRF:GEN:SEQ:STAT?	
> 0	*Completed*
Get received packet count from DUT and calculate PER	

802.11n TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP AUTOOFDM	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:OFDM:CEST FULLPACKET	
:CONF:SRW:SEL:WLAN:POW ON	
:CONF:SRW:SEL:WLAN:EVM ON	
:CONF:SRW:SEL:WLAN:SPEC:NUM ON	Numerical Spectrum measurements enabled.
:CONF:SRW:SEL:WLAN:SPEC:GRAP ON	Graphical Spectrum measurements enabled.
:CONF:SRW:FREQ 2412000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:CONF:SRW:ALEV:TIME 0.002	2 msec for auto leveling
Transmit 11n signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 13.0	
:INIT:SRW	
***WAI**	
:STAT:SRW:MEAS?	
> 1	
:FETC:SRW:SUMM:WLAN:POW? 1,1	Details
> 1,0,1,1,1,-0.49,-10.92,10.43,1,0,-10.92,-10.92,1,1	
:FETC:SRW:SUMM:WLAN:OFDM:EVM? 1	Details
> 1,0,128,61,-50.54,0.2,-0.0,-107,-46.3,0.5,-46.3,0.5,-46.3,0.5,1,1,1,1,1,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 1,1	Details
>1,0,1,1,1,0,-25.41,36328125,-62500000,-11.56,-92.96,-60000000,-12.64,-94.05,-21142578,-6.55,-62.99,-21000000,-6.67,-63.07,20947266,-8.55,-64.46,21000000,-7.34,-63.74,59521484,-11.27,-92.30,62597656,-	

9.51,-90.91,1,1,1,1,1,1,1,1,1,0,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:GRAP:ASC? 1	Spectrum mask graph
Or :FETC:SRW:SUMM:WLAN:SPEC:GRAP:BIN? 1	(Ascii or Binary)
> Return spectrum mask graph data with either Ascii format or Binary format.	
Stop DUT from transmitting signal.	

802.11n RX measurements

Remote commands	Comments
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
***WAI**	
:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
:SOUR:GPRF:GEN:SEQ:REIN 0	
:SOUR:GPRF:GEN:STAT 1	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:LEV -100	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887030A_n_MCS7_40_4096L'	
***WAI**	
:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,1,TRIGGER	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,2,SNUMBER	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,1,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,2,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,1,0.000	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,2,0.000	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,1,NSEGMENT	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,2,LOOP	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,1,ARB	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,2,ARB	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,1,OFF	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,2,OFF	
:SOUR:GPRF:GEN:SEQ:WAV:GEN:DM:POL 1,NORMAL	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-100.0DBM	

:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'MV887030A_n_MCS7_40_4096L', 1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1000	Number of PKT
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
:SOUR:GPRF:GEN:MODE SEQUENCE	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-55.0DBM	Set PWR LVL
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,1,2412000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,2,2412000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,1,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,2,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:ERR? 1	Check error
>0,0,0	
Set up DUT for RX testing.	
:SOUR:GPRF:GEN:SEQ:EXEC	Start to test PKT
:SOUR:GPRF:GEN:SEQ:STAT?	
> 1	
:SOUR:GPRF:GEN:SEQ:STAT?	
> 0	*Completed*
Get received packet count from DUT and calculate PER	

802.11ac TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP AUTOOFDM	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:OFDM:CEST FULLPACKET	
:CONF:SRW:SEL:WLAN:SPEC:FULL ON	Span freq. for mask measure. ON : +/-140 MHz, OFF : +/-80 MHz
:CONF:SRW:SEL:WLAN:POW ON	
:CONF:SRW:SEL:WLAN:EVM ON	
:CONF:SRW:SEL:WLAN:SPEC:NUM ON	Numerical Spectrum measurements enabled.
:CONF:SRW:SEL:WLAN:SPEC:GRAP ON	Graphical Spectrum measurements enabled.
:CONF:SRW:FREQ 5530000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:CONF:SRW:ALEV:TIME 0.002	2 msec for auto leveling
Transmit 11n signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 13.0	
:INIT:SRW	
***WAI**	
:STAT:SRW:MEAS?	
> 1	
:FETC:SRW:SUMM:WLAN:POW? 1,1	Details
> 1,0,1,1,1,-0.49,-10.92,10.43,1,0,-10.92,-10.92,1,1	
:FETC:SRW:SUMM:WLAN:OFDM:EVM? 1	Details
> 1,0,128,61,-50.54,0.2,-0.0,-107,-46.3,0.5,-46.3,0.5,-46.3,0.5,1,1,1,1,1,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 1,1	Details

>1,0,1,1,1,0,-25.41,36328125,-62500000,-11.56,-92.96,-60000000,-12.64,-94.05,-21142578,-6.55,-62.99,-21000000,-6.67,-63.07,20947266,-8.55,-64.46,21000000,-7.34,-63.74,59521484,-11.27,-92.30,62597656,-9.51,-90.91,1,1,1,1,1,1,1,1,0,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:GRAP:ASC? 1 **Or :FETC:SRW:SUMM:WLAN:SPEC:GRAP:BIN? 1**	Spectrum mask graph (Ascii or Binary)
> Return spectrum mask graph data with either Ascii format or Binary format.	
Stop DUT from transmitting signal.	

802.11ac RX measurements

Remote commands	Comments
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
***WAI**	
:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
:SOUR:GPRF:GEN:SEQ:REIN 0	
:SOUR:GPRF:GEN:STAT 1	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:LEV -100	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887031A_ac_MCS9_80_4096L'	
***WAI**	
:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,1,TRIGGER	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,2,SNUMBER	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,1,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,2,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,1,0.000	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,2,0.000	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,1,NSEGMENT	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,2,LOOP	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,1,ARB	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,2,ARB	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,1,OFF	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,2,OFF	

:SOUR:GPRF:GEN:SEQ:WAV:GEN:DM:POL 1,NORMAL	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-100.0DBM	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2, 'MV887031A_ac_MCS9_80_4096L', **1**	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1000	Number of PKT
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
:SOUR:GPRF:GEN:MODE SEQUENCE	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-55.0DBM	Set PWR LVL
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,1,2412000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,2,2412000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,1,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,2,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:ERR? 1	Check error
>0,0,0	
Set up DUT for RX testing.	
:SOUR:GPRF:GEN:SEQ:EXEC	Start to test PKT
:SOUR:GPRF:GEN:SEQ:STAT?	
> 1	
:SOUR:GPRF:GEN:SEQ:STAT?	
> 0	*Completed*
Get received packet count from DUT and calculate PER	

802.11n/ac TX measurements in True MIMO

The following sample list is based on 2x2 MIMO device. To configure 3x3(or 4x4), please add some remote commands that are written in orange.

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP TMIMOM	
:CONF:SRW:SEGM:APP TMIMOS	
:CONF:SRW:SEGM:APP TMIMOS	Setup the slave segment for 3 stream
:CONF:SRW:STAN?	
:CONF:SRW:SEGM:ACT 1	
:CONF:SRW:ALEV:TIME 0.02	
:CONF:SRW:SEGM:PORT PORT3	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TLEV -20	
:CONF:SRW:FREQ 5775000000	
:CONF:SRW:POW 0	
:CONF:SRW:CAPT:MODE TIME	
:CONF:SRW:TIME 0.01	
:CONF:SRW:WLAN:POW:GATE:ADD 1	
:CONF:SRW:WLAN:SPEC:GATE:ADD 1	
:CONF:SRW:OFDM:CEST FULLPACKET	
:CONF:SRW:PACK 8	
:CONF:SRW:SEGM:ACT?	
>1	
:CONF:SRW:SEGM:ACT 2	
:CONF:SRW:SEGM:PORT PORT3	
:CONF:SRW:POW 0	
:CONF:SRW:SEGM:TMIM:IP "192.168.1.2"	
:CONF:SRW:SEGM:ACT 3	
:CONF:SRW:SEGM:PORT PORT3	
:CONF:SRW:POW 0	
:CONF:SRW:SEGM:TMIM:IP "192.168.1.3"	IP address for 3rd TRX test module
:INIT:SRW	
:STAT:SRW:MEAS?	
>1	

:FETC:SRW:CINF?
1,2,1,1,0,200704,7,1,1561,0,12352,2,1561,30520,12424,3,1561,61112,12424,4,1561,91704,12424,5,1561,122360,12424,6,1561,152952,12424,7,0,183544,12424,2,515,200704,458746,15,1,1558,0,12096,2,1558,30072,12616,3,1558,60664,12680,4,1558,91256,12680,5,1558,121912,12616,6,1558,152504,12616,7,0,183096,12616,8,0,213688,12680,9,0,244280,12680,10,0,274936,12616,11,0,305528,12616,12,0,336120,12616,13,0,366712,12616,14,0,397304,12680,15,0,427896,12680
:FETC:SRW:SEGM:IDEN? 1, 0
1,0,0,0,WLAC,VHT,780.0,CR56,BCC,QAM256,1032,PASS,3,256,LONG,1,2,2,9,VHT80,PASS
:FETC:SRW:SUMM:WLAN:POW? 1, 1
1,0,1,1,1,11.75,3.78,7.67,1,1,3.79,3.77,5,3
:FETC:SRW:SUMM:WLAN:CPOW? 1, 0
1,0,0,1,2,3.78,3.79,3.77,5,3,-29.91,-29.30,-30.40,1,5
:FETC:SRW:SUMM:WLAN:OFDM:EVM? 1, 1
1,0,1,0,0,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,0,0,0,0,0,nan,nan
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 1, 15
1,0,15,1,1,0,-11.78,6.63e-02,nan,114599610,nan,nan,nan,nan,nan,nan,-72673993,1.65,-42.32,-40927961,-8.99,-45.74,40634921,-4.18,-38.00,74871795,1.96,-42.46,nan,nan,nan,nan,nan,nan,4.29,nan,nan,nan,nan,nan,nan,-76092796,5.04,-39.32,-40927961,-2.79,-39.74,40683761,-3.16,-37.16,79853480,6.63,-39.01,nan,nan,nan,nan,nan,nan,nan,nan,3,5,3,5,nan,nan,13.57,6,0,0,1,1
:FETC:SRW:SEGM:IDEN? 2, 0
2,0,0,1539,NONE
:FETC:SRW:SUMM:WLAN:POW? 2, 1
2,0,1,1,1,nan,nan,nan,1,0,nan,nan,nan,nan
:FETC:SRW:SUMM:WLAN:CPOW? 2, 0
2,0,0,1,0
:FETC:SRW:SUMM:WLAN:OFDM:EVM? 2, 1
2,0,1,0,0,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,0,0,0,0,0,nan,nan
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 2, 15
2,0,15,1,1,0,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,nan,0,0,0,0
Send query command for segment #3

802.11n/ac RX measurements in True MIMO

Explanation of symbols in remote commands list. [M] is remote command for a MU887000A TRX Test Module of master. [S] is remote command for a MU887000A TRX Test Module of Slav(s).

Remote commands	Comments
Step1 Send to Master	**e.g.)192.168.1.1**
[M]:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
[M]:SOUR:GPRF:GEN:MODE NORMAL	
[M]:SOUR:GPRF:GEN:ARB:WAV:DEL:ALL	
[M]:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
[M]*WAI	
[M]:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887030A_n_MCS15_40_1000LC'	Set waveform file
[M]*WAI	
[M]:SOUR:GPRF:GEN:SEQ:REIN 0	
[M]:SOUR:GPRF:GEN:STAT 1	
[M]:SOUR:GPRF:GEN:BBM CW	
Step2 Send to Slave(s)	**e.g.)192.168.1.2**
[S]:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
[S]:SOUR:GPRF:GEN:MODE NORMAL	
[S]:SOUR:GPRF:GEN:ARB:WAV:DEL:ALL	
[S]:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
[S]*WAI	
[S]:SOUR:GPRF:GEN:ARB:FILE:LOAD ' MV887030A_n_MCS15_40_1000LC'	Set waveform file
[S]*WAI	
[S]:SOUR:GPRF:GEN:SEQ:REIN 0	
[S]:SOUR:GPRF:GEN:STAT 1	
[S]:SOUR:GPRF:GEN:BBM CW	
[S]:SOUR:GPRF:GEN:RFS:LEV -30	
[S]:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
[S]:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
[S]:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
[S]:SOUR:GPRF:GEN:SEQ:RX:ENDC:ALL 1,TRIGGER,SNUMBER	
[S]:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR:ALL 1,WFGEND,WFGEND	
[S]:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL:ALL 1,0.000,0.000	
[S]:SOUR:GPRF:GEN:SEQ:RX:NSLC:ALL 1,NSEGMENT,LOOP	

[S]:SOUR:GPRF:GEN:SEQ:RX:BBM:ALL 1,ARB,ARB	
[S]:SOUR:GPRF:GEN:SEQ:RX:WCTR:ALL 1,OFF,OFF	
[S]:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-100.0DBM	Set PWR LVL
[S]:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT:ALL 1,PORT3,PORT3	Set test port
[S]:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
[S]:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'ZERO_200000000Hz_100000p',1	
[S]:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,3,'ZERO_200000000Hz_100000p',1	
[S]:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
[S]:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
[S]:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	
[S]:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
[S]:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
[S]:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1	
[S]:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,3,1	
[S]:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	
[S]:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
[S]:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
[S]:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
[S]:SOUR:GPRF:GEN:SEQ:COMB:PATT:SYNC INTSLAVE	
[S]:SOUR:GPRF:GEN:MODE SEQUENCE	
[S]:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,' n mcs 40MHz 1000bytes Long GI Stream 2', 1	Set pattern
[S]:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1000	
[S]:SOUR:GPRF:GEN:SEQ:RX:FREQ:ALL 1,2412000000HZ,2412000000HZ	Set frequency
[S]:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-79.0DBM	Set PWR LVL
[S]:SOUR:GPRF:GEN:SEQ:EXEC	
[S]:STAT:OPER:GEN:COND?	
> 0	
Step3 Start Master	
[M]:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
[M]:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
[M]:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
[M]:SOUR:GPRF:GEN:SEQ:RX:ENDC:ALL 1,TRIGGER,SNUMBER	
[M]:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR:ALL 1,WFGEND,WFGEND	
[M]:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL:ALL 1,0.000,0.000	
[M]:SOUR:GPRF:GEN:SEQ:RX:NSLC:ALL 1,NSEGMENT,LOOP	

[M]:SOUR:GPRF:GEN:SEQ:RX:BBM:ALL 1,ARB,ARB	
[M]:SOUR:GPRF:GEN:SEQ:RX:WCTR:ALL 1,OFF,OFF	
[M]:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-100.0DBM	Set PWR LVL
[M]:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT:ALL 1,PORT3,PORT3	Set test port
[M]:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
[M]:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'ZERO_200000000Hz_100000p',1	
[M]:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,3,'ZERO_200000000Hz_100000p',1	
[M]:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
[M]:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
[M]:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	
[M]:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
[M]:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
[M]:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1	
[M]:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,3,1	
[M]:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	
[M]:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
[M]:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
[M]:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
[M]:SOUR:GPRF:GEN:SEQ:COMB:PATT:SYNC MASTER	
[M]:SOUR:GPRF:GEN:MODE SEQUENCE	
[M]:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'n mcs 40MHz 1000bytes Long GI Stream 1', 1	Set pattern
[M]:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1000	
[M]:SOUR:GPRF:GEN:SEQ:RX:FREQ:ALL 1,2412000000HZ,2412000000HZ	Set frequency
[M]:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-79.0DBM	Set PWR LVL
[M]:SOUR:GPRF:GEN:SEQ:EXEC	
[M]:SOUR:GPRF:GEN:SEQ:STAT?	
> 0	

802.11n/ac TX measurements in Sequential MIMO

The following sample list is based on 2x2 MIMO device. To configure 3x3(or 4x4), please add some remote commands that are written in orange.

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP SEQMIMO	
:CONF:SRW:SEGM:APP SEQMIMO	
:CONF:SRW:SEGM:APP SEQMIMO	Add new segment for 3 stream
:CONF:SRW:STAN?	
:CONF:SRW:SEGM:ACT 1	Configure segment #1
:CONF:SRW:SEGM:PORT PORT3	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TLEV -20	
:CONF:SRW:FREQ 5775000000	
:CONF:SRW:POW 0	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TIME 0.3	
:CONF:SRW:WLAN:POW:GATE:ADD 1	
:CONF:SRW:OFDM:CEST FULLPACKET	
:CONF:SRW:WLAN:SPEC:GATE:ADD 1	
:CONF:SRW:PACK 10	
:CONF:SRW:SEGM:ACT?	
>1	
:CONF:SRW:SEGM:ACT 2	Configure segment #2
:CONF:SRW:ALEV:TIME 0.02	
:CONF:SRW:SEGM:PORT PORT4	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TLEV -20	
:CONF:SRW:FREQ 5775000000	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TIME 0.3	
:CONF:SRW:WLAN:POW:GATE:ADD 1	
:CONF:SRW:WLAN:CCDF:GATE:ADD 1	
:CONF:SRW:OFDM:CEST FULLPACKET	
:CONF:SRW:WLAN:SPEC:GATE:ADD 1	

:CONF:SRW:PACK 10	
:CONF:SRW:SEGM:ACT 3	For 3x3 MIMO, configure #3
:CONF:SRW:ALEV:TIME 0.02	
:CONF:SRW:SEGM:PORT PORT4	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TLEV -20	
:CONF:SRW:FREQ 5775000000	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TIME 0.3	
:CONF:SRW:WLAN:POW:GATE:ADD 1	
:CONF:SRW:WLAN:CCDF:GATE:ADD 1	
:CONF:SRW:OFDM:CEST FULLPACKET	
:CONF:SRW:WLAN:SPEC:GATE:ADD 1	
:CONF:SRW:PACK 10	
:INIT:SRW	
:STAT:SRW:MEAS?	
>1	
:FETC:SRW:CINF?	
>1,2,1,1,0,60000000,1957,1,1536,0,3968,2,0,22136,12424,3,0,52728,12424,4,0,83384,12360,5,0,113976,12360,6,0,144568,12424,7,1561,175160,12424,8,0,205752,12424,9,0,236408,12360,10,0,267000,12360,11,0,297592,12424,12,0,328184,12424,13,0,358776,12424,14,0,389432,12360,15,0,420024,12360,16,0,450616,12424,17,0,481208,12424,18,0,511800,12424,19,0,542392,12424,20,0,573048,12360,21,0,603640,12360,22,0,634232,12360,23,0,664888,12360,24,0,695480,12424,25,0,726072,12424,26,0,756728,12424,27,0,787320,12424,28,0,817976,12360,29,0,848568,12424,30,0,879160,12424,31,0,909752,12424,32,0,940408,12360,33,0,971000,12360,34,0,1001592,12424,35,0,1032184,12424,36,0,1062776,12424,37,0,1093432,12360,38,0,1124024,12360,39,0,1154616,12424,40,0,1185208,12424,41,0,1215800,12424,42,0,1246456,12360,43,0,1277048,12360,44,0,1307640,12360,45,0,1338232,12424,46,0,1368824,12424,47,0,1399416,12424,48,0,1430008,12424,49,0,1460600,12424,50,0,1491256,12360,51,0,1521848,12360,52,0,1552440,12360,53,0,1583032,12424,54,0,1613624,12424,55,0,1644280,124	
:FETC:SRW:SEGM:IDEN? 1, 0	
>1,0,0,0,WLAC,VHT,780.0,CR56,BCC,QAM256,1032,PASS,3,256,LONG,1,2,2,9,VHT80,PASS	
:FETC:SRW:SUMM:WLAN:POW? 1, 1	
>1,0,1,1,1,14.47,3.49,10.61,1,1,3.68,3.38,5,2	
:FETC:SRW:SUMM:WLAN:OFDM:EVM? 1, 1	
>1,0,1,256,3,0.00,-9.3,-8.2,-47629,0.0,2.2,0.0,2.0,0.0,2.1,1.01,0.34,0.64,0,0,0,0,0,1,5	
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 1, 15	

>1,0,15,1,1,0,-12.31,5.87e-02,1.78e-01,75927734,nan,nan,nan,nan,nan,nan,-76434676,-16.01,-61.76,-40830281,-21.66,-58.44,40879121,-12.77,-50.04,41123321,-12.06,-50.57,nan,nan,nan,nan,nan,nan,0.00,nan,nan,nan,nan,nan,nan,-76434676,-11.36,-57.15,-40830281,-20.15,-56.73,40879121,-11.87,-49.12,41855922,-10.17,-48.81,nan,nan,nan,nan,nan,nan,nan,nan,3,6,4,4,nan,nan,0.00,2,1,0,1,1
:FETC:SRW:SEGM:IDEN? 2, 0
>2,0,0,0,WLAC,VHT,780.0,CR56,BCC,QAM256,1032,PASS,3,256,LONG,2,2,2,9,VHT80,PASS
:FETC:SRW:SUMM:WLAN:POW? 2, 1
>2,0,1,1,1,11.66,4.95,6.57,1,1,4.98,4.94,3,1
:FETC:SRW:SUMM:WLAN:OFDM:EVM? 2, 1
>2,0,1,256,3,0.00,23.7,-8.2,-47482,0.1,6.4,0.1,5.6,0.1,5.9,1.03,-1.40,4.84,0,0,0,0,0,1,5
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 2, 15
>2,0,15,1,1,0,-9.24,1.19e-01,1.78e-01,144970704,nan,nan,nan,nan,nan,nan,-75897436,4.05,-38.34,-40976801,-5.34,-40.34,40976801,-3.97,-38.97,70818071,4.26,-37.09,nan,nan,nan,nan,nan,nan,20.06,nan,nan,nan,nan,nan,nan,-78681319,8.65,-34.47,-40927961,-2.12,-36.34,40976801,-1.47,-36.18,73504274,7.14,-34.46,nan,nan,nan,nan,nan,nan,nan,nan,3,6,6,2,nan,nan,26.43,3,0,0,1,1
Send query command for segment #3 (for 3x3 MIMO)

802.11n/ac TX measurements in composite MIMO

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP COMPMIMO	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:OFDM:CEST FULLPACKET	
:CONF:SRW:SEL:WLAN:POW ON	Enable power measurements
:CONF:SRW:SEL:WLAN:EVM ON	Enable EVM measurements
:CONF:SRW:SEL:WLAN:SPEC:NUM ON	Enable numerical spectrum measurements
:CONF:SRW:SEL:WLAN:SPEC:GRAP ON	Enable graphical spectrum measurements
:CONF:SRW:FREQ 5530000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:CONF:SRW:ALEV:TIME 0.002	Set auto level time to 2 ms.
:CONF:SRW:CMIM:REF <reference data>	Send reference data for the composite MIMO measurement.
Transmit 11n/ac MIMO signal from DUT	Connected to port 3
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 13.0	
:INIT:SRW	
***WAI**	
:STAT:SRW:MEAS?	
> 1	
:FETC:SRW:SUMM:WLAN:POW? 1,1	
> 1,0,1,1,1,-0.49,-10.92,10.43,1,0,-10.92,-10.92,1,1	
:FETC:SRW:SUMM:WLAN:OFDM:EVM? 1	
> 1,0,128,61,-50.54,0.2,-0.0,-107,-46.3,0.5,-46.3,0.5,-46.3,0.5,1,1,1,1,1,1,1	
:FETC:SRW:SUMM:WLAN:SPEC:NUM? 1,1	
>1,0,1,1,1,0,-25.41,36328125,-62500000,-11.56,-92.96,-60000000,-12.64,-94.05,-21142578,-6.55,-62.99,-21000000,-6.67,-63.07,20947266,-8.55,-64.46,21000000,-7.34,-63.74,59521484,-11.27,-92.30,62597656,-	

9.51,-90.91,1,1,1,1,1,1,1,1,1,0,1,1
Stop DUT from transmitting signal.

How to construct <reference data>

Composite MIMO reference data is binary data held in a file with the extension ".mimo". This must be transmitted to the instrument before initiating a composite MIMO measurement. The format for transmitting the data is known as "definite length arbitrary block program data" as defined in IEEE Std. 488.2-1992.

This format uses a simple ASCII header followed by the binary data. Some instruments, including the MT8870A, require a carriage return, line feed (CRLF) terminator after the binary data.

The first character of the header is always '#'. This indicates that it is binary data.

The next part of the header defines how long the binary data is. There are two parts. The first is a single non-zero digit. This specifies how long the 'length' field is. This is followed by that number of ASCII digits that define the length of the following binary data.

Example	**#41234<binary data><terminator>**
	# means that the format is binary data 4 means that the next 4 digits define the length of the binary data. 1234 is the length of the binary data + terminator. The binary data is appended immediately after this header information. The terminator (CRLF) follows immediately after the binary data.

The following c# code shows an example of how to send the reference data to the instrument. It builds the complete message, including the SCPI command header string.

Step 1 – Read the binary data into a byte array.
byte[] binaryData = File.ReadAllBytes<filepath>; Read the reference file data into a byte array.
Step 2 – Construct the message header
string terminator = "¥r¥n"; The binary data will be terminated with CRLF characters. These need to be added to the binary data length.
var binaryDataSize = new FileInfo<filepath>.Length; Find the length of the reference file data.

var messageDataSize = binaryDataSize + terminator.Length; Calculate the total length of the binary data.
int messageDataSizeLength = (int)Math.Floor(Math.Log10(messageDataSize) + 1); Work out the first digit after the # character. This is the number of characters needed to represent the length of the binary data – in other words log10 of the binary data length.
Step 3 – Build the message
string messageHeader = string.Format("CONF:SRW:WLAN:CMIM:REF #{0}{1}", messageDataSizeLength.ToString(), messageDataSize.ToString()); Construct the message header "CONF:SRW:WLAN:CMIM:REF #..."
byte[] message = new byte[(messageHeader.Length) + (int)messageDataSize]; Declare a byte array of the correct size. This is the array that will be sent to the instrument.
var bytesarray = Encoding.UTF8.GetBytes(messageHeader); Convert the message header from a string into bytes.
Buffer.BlockCopy(bytesarray, 0, message, 0, (messageHeader.Length)); Insert the message header into the message.
Buffer.BlockCopy(binaryData, 0, message, (messageHeader.Length), ((int)binaryDataSize)); Insert the binary data into the message
bytesarray = Encoding.UTF8.GetBytes(terminator); Convert the message terminator from a string into bytes.
Buffer.BlockCopy(bytesarray, 0, message, ((messageHeader.Length) + (int)binaryDataSize), (int)terminator.Length); Insert the terminator into the message.
Step 4 – Send the message to the instrument
This step is implementation dependent.

Result Format

Power measurements results

Query command - :FETC:SRW:SUMM:WLAN:POW? 1,1

Response : 1,0,1,1,1,-1.21,-10.70,9.49,1,0,-10.70,-10.70,1,1

Peak Power: #6

Average Power: #7

#	Description	Format	Units	Resolution
1	Segment index	Integer	---	---
2	Packet index (always zero)	Integer	---	---
3	Extension code	Integer	---	---
4	Number of gates	Integer	---	---
	Results for first gate:			
1	Gate number	Integer	---	---
2	Peak power recorded in segment	Real number	dBm	0.01 dB
3	Average power of all packets in segment	Real number	dBm	0.01 dB
4	Average crest factor of all segment packets	Real number	dB	0.01 dB
5	Average power upper limit test passed	Boolean	---	---
6	Average power lower limit test passed	Boolean	---	---
	If bit 0 of extension code set:			
7	Average power of packet with highest average power	Real number	dBm	0.01 dB
8	Average power of packet with lowest average power	Real number	dBm	0.01 dB
9	Packet index of packet with highest average power	Integer		
10	Packet index of packet with lowest average power			

EVM Measurement results in DSSS

Query command - : FETC:SRW:SUMM:WLAN:DSSS:EVM? 1,1

Response :

1,0,1,-26.8,4.5,-26.9,4.5,-26.9,4.5,0.0,0.2,1.87,3.17,-57.35,48.32,-0.2,-2,1,1,1,1,2,1

EVM: #5 EVM Max in %

Frequency error: #10 in ppm and #11 in Hz

Response

#	Description	Format	Units	Resolution
1	Segment index	Integer	---	---
2	Packet index (always zero)	Integer	---	---
3	Extension code	Integer	---	---
4	DSSS EVM max - dB	Real number	dB	0.1 dB
5	DSSS EVM max - %	Real number	%	0.1 %
6	DSSS EVM min - dB	Real number	dB	0.1 dB
7	DSSS EVM min - %	Real number	%	0.1 %
8	DSSS EVM avg - dB	Real number	dB	0.1 dB
9	DSSS EVM avg %	Real number	%	0.1 %
10	DSSS center freq tolerance - ppm	Real number	ppm	0.1 ppm
11	DSSS center freq tolerance Hz	Real number	Hz	1 Hz
12	DSSS phase error	Real number	degrees	0.01 degrees
13	DSSS magnitude error	Real number	dB	0.01
14	DSSS IQ offset	Real number	dB	0.01
	If bit 0 of Extension Code is set:			
15	DSSS carrier suppression from IQ offset	Real number	dB	0.01
16	DSSS chip clock error - ppm	Real number	ppm	0.1 ppm
17	DSSS chip clock error Hz	Real number	Hz	1 Hz
18	DSSS EVM test passed	Boolean	---	---
19	DSSS center freq tolerance test passed	Boolean	---	---
20	DSSS chip clock test passed	Boolean	---	---
	If bit 0 of Extension Code is set:			
21	DSSS carrier suppression from IQ offset test passed.	Boolean	---	---
22	Packet number for max EVM	Integer	---	---
23	Packet number for min EVM	Integer	---	---

EVM Measurement results in OFDM

Query command - :FETC:SRW:SUMM:WLAN:OFDM:EVM? 1

Response : 1,0,64,38,-53.53,-0.1,0.0,51,-45.2,0.5,-45.2,0.5,-45.2,0.5,1,1,1,1,1,1,1

EVM: #13 EVM Average in dB

Frequency error: #7 in ppm and #8 in Hz

Response

#	Description	Format	Units	Resolution
1	Segment index	Integer		
2	Packet index (always zero)	Integer		
3	OFDM number of subcarriers	Integer		
4	OFDM number of symbols	Integer		
5	OFDM center frequency leakage (averaged over segment)	Real number	dB	0.01 dB
6	OFDM symbol clk freq tolerance ppm (averaged over segment)	Real number	ppm	0.1 ppm
7	OFDM center freq tolerance ppm (averaged over segment)	Real number	ppm	0.1 ppm
8	OFDM center freq tolerance Hz (averaged over segment)	Real number	Hz	1 Hz
9	OFDM EVM max - dB (from packet whose average EVM is highest)	Real number	dB	0.01 dB
10	OFDM EVM max - % (from packet whose average EVM is highest)	Real number	%	0.01 %
11	OFDM EVM min - dB (from packet whose average EVM is lowest)	Real number	dB	0.01 dB
12	OFDM EVM min - % (from packet whose average EVM is lowest)	Real number	%	0.01 %
13	OFDM EVM avg - dB (averaged over segment)	Real number	dB	0.01 dB
14	OFDM EVM avg % (averaged over segment)	Real number	%	0.01 %
15	OFDM center frequency leakage test passed	Boolean	---	---
16	OFDM symbol clk freq tolerance test passed	Boolean	---	---
17	OFDM center freq tolerance test passed	Boolean	---	---
18	OFDM EVM test passed	Boolean	---	---
19	OFDM spectral flatness test passed	Boolean	---	---
20	Packet number for max EVM	Integer	---	---
21	Packet number for min EVM	Integer	---	---

Spectrum Mask Measurement results

Query command - :FETC:SRW:SUMM:WLAN:SPEC:NUM? 1,1

Response (DSSS) :

1,0,1,1,1,2.59,-19.25,14794922,nan,nan,nan,nan,nan,nan,-33105468,-11.89,-93.46,-12988281,-3.51,-65.07,12939453,-3.44,-65.01,22021484,-10.26,-91.83,nan,nan,nan,nan,nan,nan,nan,nan,2,2,2,2,nan,nan,1,0,1,1

Spectrum mask segment result: #15 to #26, see the following table for more details.

Spectrum mask limit test result: #41, 1(Passed) or 0(Failed)

Response (OFDM) :

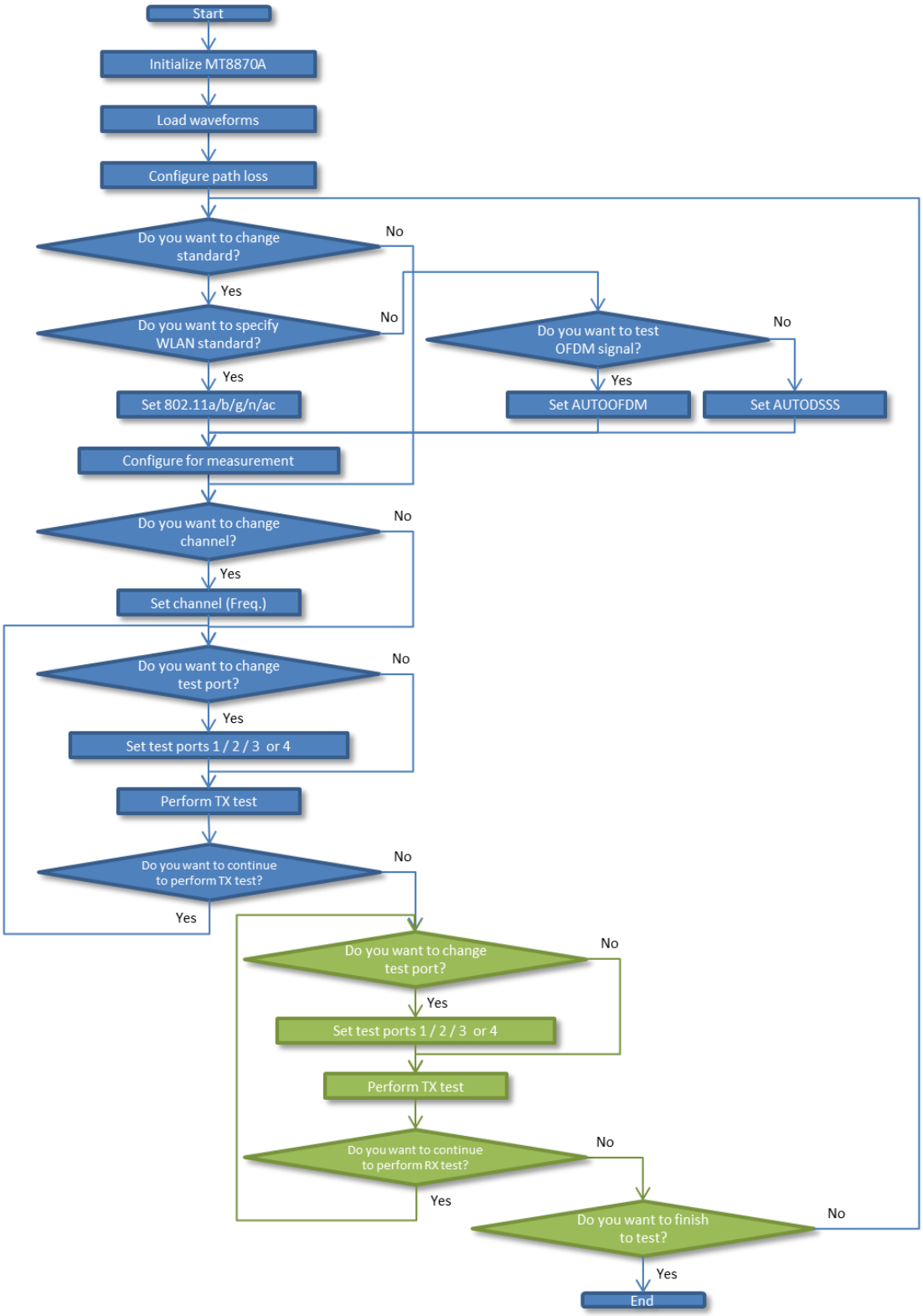
1,0,1,1,1,0,-22.18,16503907,-32568360,-17.05,-91.00,-29980468,-18.66,-92.55,-11083984,-7.93,-61.92,-11000000,-8.31,-62.26,10937500,-9.87,-63.33,11000000,-9.14,-63.09,29003906,-19.20,-91.98,32177734,-17.95,-91.90,1,1,1,1,1,1,1,1,0,1,1

Spectrum mask segment result: #9 to #40, see the following table for more details.

Spectrum mask limit test result: #41, 1(Passed) or 0(Failed)

#	Description	Format	Units	Resolution
1	Segment index	Integer	---	---
2	Packet index (always zero)	Integer	---	---
3	Extension code	Integer	---	---
4	Number of gates	Integer	---	---
	Results for first gate:			
1	Gate number	Integer	---	---
2	RF carrier suppression (DSSS)	Real number	dB	0.01 dB
3	Power spectral density	Real number	dB	0.01 dB
4	Occupied bandwidth	Real number	Hz	1 Hz
	If bit 0 of extension code set:			
5	L4 worst case - frequency offset from carrier	Real number	Hz	1 Hz
6	L4 worst case - power relative to mask	Real number	dB	0.01 dB
7	L4 worst case - absolute power	Real number	dBm	0.01 dB
8	L3 worst case - frequency offset from carrier	Real number	Hz	1 Hz
9	L3 worst case - power relative to mask	Real number	dB	0.01 dB
10	L3 worst case - absolute power	Real number	dBm	0.01 dB
11	L2 worst case - frequency offset from carrier	Real number	Hz	1 Hz
12	L2 worst case - power relative to mask	Real number	dB	0.01 dB
13	L2 worst case - absolute power	Real number	dBm	0.01 dB
14	L1 worst case - frequency offset from carrier	Real number	Hz	1 Hz
15	L1 worst case - power relative to mask	Real number	dB	0.01 dB
16	L1 worst case - absolute power	Real number	dBm	0.01 dB
17	U1 worst case - frequency offset from carrier	Real number	Hz	1 Hz
18	U1 worst case - power relative to mask	Real number	dB	0.01 dB
19	U1 worst case - absolute power	Real number	dBm	0.01 dB
20	U2 worst case - frequency offset from carrier	Real number	Hz	1 Hz
21	U2 worst case - power relative to mask	Real number	dB	0.01 dB
22	U2 worst case - absolute power	Real number	dBm	0.01 dB
23	U3 worst case - frequency offset from carrier	Real number	Hz	1 Hz
24	U3 worst case - power relative to mask	Real number	dB	0.01 dB
25	U3 worst case - absolute power	Real number	dBm	0.01 dB
26	U4 worst case - frequency offset from carrier	Real number	Hz	1 Hz
27	U4 worst case - power relative to mask	Real number	dB	0.01 dB
28	U4 worst case - absolute power	Real number	dBm	0.01 dB
29	L4 worst case - packet number	Integer	---	---
30	L3 worst case - packet number	Integer	---	---
31	L2 worst case - packet number	Integer	---	---
32	L1 worst case - packet number	Integer	---	---
33	U1 worst case - packet number	Integer	---	---
34	U2 worst case - packet number	Integer	---	---
35	U3 worst case - packet number	Integer	---	---
36	U4 worst case - packet number	Integer	---	---
37	Spectrum mask passed limit test	Boolean	---	---
38	RF carrier suppression (DSSS) passed	Boolean	---	---
39	Power spectral density test passed	Boolean	---	---
40	Occupied bandwidth test passed	Boolean	---	---

Test flowchart example



Bluetooth Measurements

Remote command list for Bluetooth Test

Bluetooth transmitter measurement modes

The SRW Bluetooth application (MX887040A) provides two modes of measurement: “Speed Test” mode and “SIG-Compliant” mode.

- Speed Test Mode
- SIG-Compliant Mode

Transmitter test mode – Speed test mode (Fast test mode)

Bluetooth basic rate, EDR and BLE measurements are made in Speed Test mode. In this mode all measurements can be made regardless of the payload type.

	Output power	Initial Carrier	Carrier Drift	Modulation Index	EDR Relative Power	EDR Carrier Modulation
BR PRBS9	✓	✓	✓	✓		
BR 10101010	✓	✓	✓	✓		
BR 11110000	✓	✓	✓	✓		
EDR PRBS9	✓	✓	✓	✓	✓	✓

In Speed Test mode, the system returns results for all enabled measurements for a single capture segment regardless of the packet payload. The Bluetooth measurements that can be performed in Speed Test mode are shown in the table below for each packet type. Supported measurements display a tick (check mark).

Note: Details of Speed Mode measurements that are not fully compliant with the Bluetooth specification.

Flow chart for speed test mode

Basic Rate (BR) TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP AUTOBT	New command for auto detect
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:BT:MODE SPEED	
:CONF:SRW:SEL:BT:POW ON	Power
:CONF:SRW:SEL:BT:ICFT ON	Initial Carrier Frequency
:CONF:SRW:FREQ 2402000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT1,PORT4	Input to 1 and output to 4
:CONF:SRW:ALEV:TIME 0.01	10 msec for auto leveling
Transmit Bluetooth signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 4	
:INIT:SRW	
***WAI**	
:STAT: SRW:MEAS?	
> 1	
:FETC:SRW:SEGM:IDEN? 1, 0	New command for query
> 1,0,0,0,BT,a5f0c3,DH1,PRBS9,27	
:FETC:SRW:SUMM:BT:POW? 1	
> 1,0,4.57,4.71,1,1,1,4.71,1,4	
:FETC:SRW:SUMM:BT:ICFT? 1	
> 1,0,-1551,1,-2474,3	
Stop DUT from transmitting signal.	

Enhanced Data Rate (EDR) TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP AUTOBT	New command for auto detect
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:BT:MODE SPEED	
:CONF:SRW:SEL:BT:ECM ON	EDR Carrier freq. / Modulation
:CONF:SRW:FREQ 2402000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT1,PORT4	Input to 1 and output to 4
:CONF:SRW:ALEV:TIME 0.01	10 msec for auto leveling
Transmit Bluetooth signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 4	
:INIT:SRW	
***WAI**	
:STAT:SRW:MEAS?	
> 1	
:FETC:SRW:SEGM:IDEN? 1, 0	New command for query
> 1,0,0,0,BT,a5f0c3,3DH1,PRBS9,83	
:FETC:SRW:SUMM:BT:ECM? 1	
> ***1,0,-1251,-99,-1406,8DPSK,0.032,0.071,100.00,0.00000501,1,1,1,1,1,-1502,-558,-1439,0.032,0.081,100.00,0.00000502,4,3,1,4,2,1,3***	
Stop DUT from transmitting signal.	

Bluetooth low energy (BLE) TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP AUTOBT	New command for auto detect
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:BT:MODE SPEED	
:CONF:SRW:SEL:BT:CDR ON	Frequency Drift
:CONF:SRW:FREQ 2402000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT1,PORT4	Input to 1 and output to 4
:CONF:SRW:ALEV:TIME 0.01	10 msec for auto leveling
Transmit Bluetooth signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 4	
:INIT:SRW	
***WAI**	
:STAT:SRW:MEAS?	
> 1	
:FETC:SRW:SEGM:IDEN? 1, 0	New command for query
> 1,0,0,0,BT,a5f0c3,DH1,55HEX,27	
:FETC:SRW:SUMM:BT:CDR? 1	
> 1,0,-240,nan,1,0,-2190,nan,4,nan	
Stop DUT from transmitting signal.	

Transmitter test mode – SIG compliant test mode (Standard mode)

Bluetooth basic rate, EDR and BLE measurements are made according to the SIG Standard. In this mode certain measurements are only made when the payload type is as specified by the Bluetooth standard. For this reason it is not possible to extract all measurements from a single capture segment.

	Output power	Initial Carrier	Carrier Drift	Modulation Index	EDR Relative Power	EDR Carrier Modulation	Modulation characteristics	Carrier freq offset and drift
BR PRBS9	✓*1	✓*1						
BR 10101010	✓	✓	✓*1	✓*1				
BR 11110000	✓	✓		✓*1				
EDR PRBS9		✓			✓*2	✓*2		
BLE PRBS9	✓							
BLE 10101010	✓						✓	✓
BLE 11110000	✓						✓	

*1 : DH1, DH3 and DH5 / *2 : 2-DHx and 3-DHx

In SIG Compliant (or Standard) mode, the system returns only measurements that are compatible with the payload type of the captured packets. This means that more than one capture is needed to make all the required measurements. The Bluetooth measurements that can be performed in SIG Compliant mode are shown in the tables above for each packet type. Supported measurements display a tick (check mark).

Flow chart for standard test mode

Basic Rate (BR) TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP BT	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:BT:ADDR *'000000C6967E'*	Bluetooth address of DUT
:CONF:SRW:BT:MODE STANDARD	
:CONF:SRW:BT:PACK DH1	
:CONF:SRW:BT:PLEN 27	DH1:27, DH3:183, DH5:339
:CONF:SRW:BT:PAYL PRBS9 **:CONF:SRW:BT:PAYL FZEROHEX** **:CONF:SRW:BT:PAYL AAHEX**	
:CONF:SRW:SEL:BT:POW ON	Power
:CONF:SRW:SEL:BT:ICFT ON	Initial Carrier Frequency
:CONF:SRW:SEL:BT:CDR ON	Frequency Drift
:CONF:SRW:SEL:BT:MOD ON	Modulation Index
:CONF:SRW:FREQ 2402000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:CONF:SRW:ALEV:TIME 0.01	10 msec for auto leveling
Transmit Bluetooth signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 15	
:INIT:SRW	
***WAI**	
:STAT:SRW:MEAS?	
> 1	
:FETC:SRW:SUMM:BT:POW? 1	
> 1,0,15.68,15.78,1,1,1,15.76,8,4	
:FETC:SRW:SUMM:BT:ICFT? 1	

> 1,0,2880,1,5499,2	
:FETC:SRW:SUMM:BT:CDR? 1	
>1,0,1649,-3603,1,1,5361,-4928,2,3	
:FETC:SRW:SUMM:BT:MOD? 1	ΔF1 and ΔF2
ΔF2 ***>1,0,178523,170716,nan,nan,nan,100.00,0,0,0,1,4,2147483647,2147483647,1***	
ΔF1 ***>1,0,nan,nan,165455,170060,nan,nan,1,1,0,0,2147483647,4,2147483647,2147483647***	
Stop DUT from transmitting signal.	

Enhanced Data Rate (EDR) TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP BT	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:BT:ADDR '*000000C6967E*'	Bluetooth address of DUT
:CONF:SRW:BT:MODE STANDARD	
:CONF:SRW:BT:PACK 3DH5	
:CONF:SRW:BT:PLEN 1021	2DH1:54, 2DH3:367, 2DH5:679 3DH1:83, 3DH3:552, 3DH5:1021
:CONF:SRW:BT:PAYL PRBS9	
:CONF:SRW:SEL:BT:ICFT ON	Initial Carrier Frequency
:CONF:SRW:SEL:BT:ERTP ON	EDR Relative Power
:CONF:SRW:SEL:BT:ECM ON	EDR Carrier freq. / Modulation
:CONF:SRW:FREQ 2402000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:CONF:SRW:ALEV:TIME 0.01	10 msec for auto leveling
Transmit Bluetooth signal from DUT	
:INIT:SRW:ALEV	
***WAI**	
:CONF:SRW:POW?	
> 15	

:INIT:SRW
***WAI**
:STAT:SRW:MEAS?
> 1
:FETC:SRW:SUMM:BT:ICFT? 1
> 1,0,-7205,1,-7919,2
:FETC:SRW:SUMM:BT:ERTP? 1
>1,0,18.52,17.63,-0.89,1,-0.89,-0.89,1,2
:FETC:SRW:SUMM:BT:ECM? 1
>1,0,-6589,-0,-6590,PI4,0.080,0.177,100.00,0.00000500,1,1,1,1,1,-6926,-2,-6927,0.082,0.185,100.00,0.00000499,2,1,2,1,1,1,2
Stop DUT from transmitting signal.

Bluetooth low energy (BLE) TX measurements

Remote commands	Comments
:CONF:SRW:SEGM:CLE	
:CONF:SRW:SEGM:APP BLE	
:CONF:SRW:TRIG LEVEL	
:CONF:SRW:TDEL -1E-05	
:CONF:SRW:TLEV -20	
:CONF:SRW:CAPT:MODE PACKET	
:CONF:SRW:TTIM 1	
:CONF:SRW:PACK 10	Set number of packets to 10
:CONF:SRW:BLE:MODE STANDARD	
:CONF:SRW:BLE:PAYL PRBS9	AAHEX(101010101), FZEROHEX(11110000) or PRBS9
:CONF:SRW:SEL:BLE:POW ON	Power
:CONF:SRW:SEL:BLE:CDR ON	Frequency Drift
:CONF:SRW:SEL:BLE:MOD ON	Modulation Index
:CONF:SRW:FREQ 2402000000	Set center frequency
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:CONF:SRW:ALEV:TIME 0.01	10 msec for auto leveling
Transmit Bluetooth signal from DUT	
:INIT:SRW:ALEV	
***WAI**	

:CONF:SRW:POW?
> 15
:INIT:SRW
***WAI**
:STAT:SRW:MEAS?
> 1
:FETC:SRW:SUMM:BLE:POW? 1
> 1,0,14.47,17.48,1,1,1,17.47,1,2
:FETC:SRW:SUMM:BLE:CDR? 1
>1,0,1274,nan,1,0,1869,nan,1,2147483647
:FETC:SRW:SUMM:BLE:MOD? 1
>1,0,160456,144655,165789,173285,0.97,100.00,1,1,1,1,1,2,2,1
Stop DUT from transmitting signal.

Receiver test

Basic Rate (BR) RX measurements

Remote commands	Comments
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
*WAI	
:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
:SOUR:GPRF:GEN:SEQ:REIN 0	
:SOUR:GPRF:GEN:STAT 1	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:LEV -120	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887040A_DH1'	
*WAI	
:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,1,TRIGGER	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,2,SNUMBER	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,1,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,2,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,1,0.000	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,2,0.000	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,1,NSEGMENT	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,2,LOOP	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,1,ARB	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,2,ARB	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,1,OFF	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,2,OFF	
:SOUR:GPRF:GEN:SEQ:WAV:GEN:DM:POL 1,NORMAL	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-120.0DBM	Set less than -110 dBm
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	

:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'MV887040A_DH1', 1	Select BR pattern
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,100	Number of PKT
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
:SOUR:GPRF:GEN:MODE SEQUENCE	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-55.0DBM	Set PWR LVL
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,1,2402000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,2,2402000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,1,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,2,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:ERR? 1	Error check
>0,0,0	
Set up DUT for RX testing.	
:SOUR:GPRF:GEN:SEQ:EXEC FORCED	Start to test PKT
:SOUR:GPRF:GEN:SEQ:STAT?	
> 1	
:SOUR:GPRF:GEN:SEQ:STAT?	
> 0	*Completed*
Get received packet count from DUT and calculate PER	

Enhanced Data Rate (EDR) RX measurements

Remote commands	Comments
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
*WAI	
:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
:SOUR:GPRF:GEN:SEQ:REIN 0	
:SOUR:GPRF:GEN:STAT 1	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:LEV -120	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887040A_3-DH5'	
*WAI	
:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,1,TRIGGER	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,2,SNUMBER	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,1,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,2,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,1,0.000	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,2,0.000	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,1,NSEGMENT	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,2,LOOP	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,1,ARB	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,2,ARB	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,1,OFF	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,2,OFF	
:SOUR:GPRF:GEN:SEQ:WAV:GEN:DM:POL 1,NORMAL	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-120.0DBM	Set less than -110 dBm
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'MV887040A_3-DH5', 1	Select BR pattern
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	

:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,100	Number of PKT
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
:SOUR:GPRF:GEN:MODE SEQUENCE	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-55.0DBM	Set PWR LVL
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,1,2402000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,2,2402000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,1,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,2,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:ERR? 1	Error check
>0,0,0	
Set up DUT for RX testing.	
:SOUR:GPRF:GEN:SEQ:EXEC FORCED	Start to test PKT
:SOUR:GPRF:GEN:SEQ:STAT?	
> 1	
:SOUR:GPRF:GEN:SEQ:STAT?	
> 0	*Completed*
Get received packet count from DUT and calculate PER	

Bluetooth Low Energy (BLE) RX measurements

Remote commands	Comments
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
*WAI	
:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
:SOUR:GPRF:GEN:SEQ:REIN 0	
:SOUR:GPRF:GEN:STAT 1	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:LEV -100	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887040A_BLE'	
*WAI	
:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	
:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	
:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,1,TRIGGER	
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,2,SNUMBER	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,1,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,2,WFGEND	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,1,0.000	
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,2,0.000	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,1,NSEGMENT	
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,2,LOOP	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,1,ARB	
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,2,ARB	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,1,OFF	
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,2,OFF	
:SOUR:GPRF:GEN:SEQ:WAV:GEN:DM:POL 1,NORMAL	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-120.0DBM	Set less than -110 dBm
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'MV887040A_BLE', 1	Select BR pattern
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	

:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,100	Number of PKT
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	
:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	
:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	
:SOUR:GPRF:GEN:MODE SEQUENCE	
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-55.0DBM	Set PWR LVL
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,1,2402000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,2,2402000000HZ	Set frequency
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,1,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,2,PORT3	Set test port
:SOUR:GPRF:GEN:SEQ:RX:ERR? 1	Error check
>0,0,0	
Set up DUT for RX testing.	
:SOUR:GPRF:GEN:SEQ:EXEC FORCED	Start to test PKT
:SOUR:GPRF:GEN:SEQ:STAT?	
> 1	
:SOUR:GPRF:GEN:SEQ:STAT?	
> 0	*Completed*
Get received packet count from DUT and calculate PER	

GPS Measurements

Remote command list for GPS Test

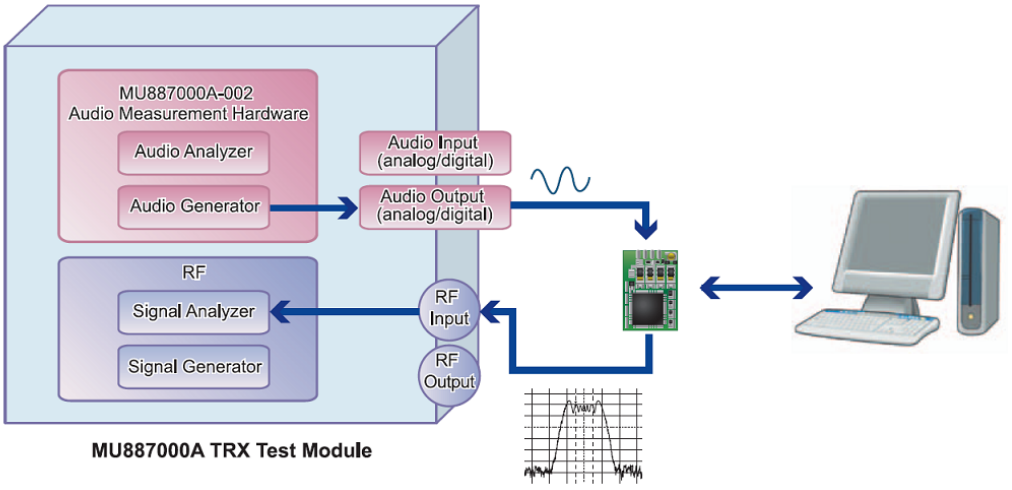
GPS measurements

Remote commands	Comments
:ROUT:PORT:CONN:DIR PORT1,PORT1	Set output port to 1
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:STAT ON	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:FREQ 1575.42MHz	Set frequency for test
:SOUR:GPRF:GEN:RFS:LEV -130DBM	Set output power level
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887100A_GPS_0002'	
SOUR:GPRF:GEN:ARB:FILE:LOAD:STAT?	
>0	
:SOUR:GPRF:GEN:ARB:WAV:PATT:SEL 'MV887100A_GPS_0002',1	Set waveform pattern
Start to synchronize GPS signal of receiver	
:SOUR:GPRF:GEN:BBM ARB	Start to generate waveform
Confirm results of RSSI value, C/N0 etc	

FM/Audio Measurements

FM Transmitter Tests

Installing the MU887000A-002 Audio Measurement Hardware in the MU887000A TRX Test Module outputs either analog or digital format audio signals for up to 8 multi-tones (stereo left and right channels) from the output connector. The audio signal is available for input to the FM transmitter audio input connector.
The MX887070A FM/Audio TRX Measurement software is used with the built-in signal analyzer of the MU887000A TRX Test Module to execute various audio tests, such as measurement of RF frequency, level and frequency deviation of audio FM signals output from FM transmitters, as well as AF signal frequency, level (up to 12 multi-tones), distortion, stereo crosstalk, etc., when using AF signal waveforms, and analysis of internal data and output of RDS data by decoding data when receiving RDS waveforms.



Remote command list for FM Transmitter Tests

(If you use CombiView for FM transmitter tests, please use tab of TX-FM and RX-Audio)

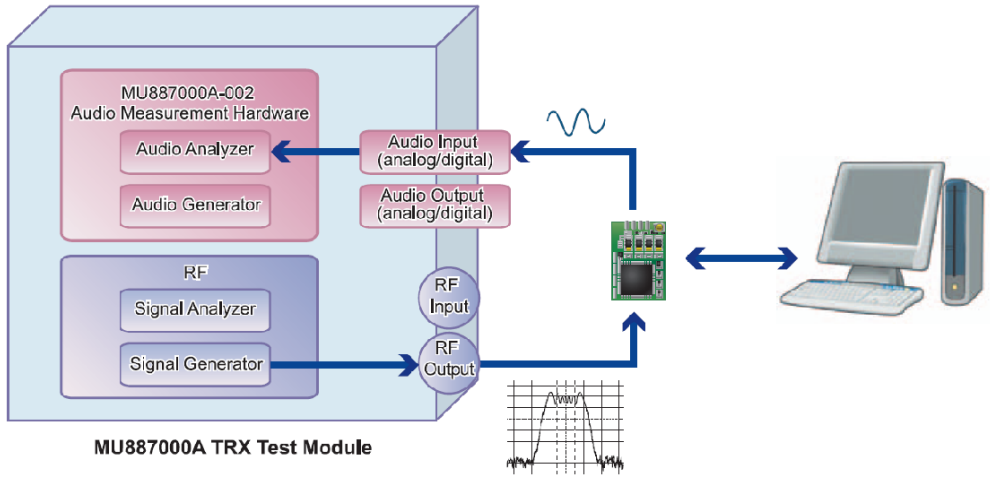
Remote commands	Comments
SYST:LANG SCPI	
INST FMAUDIO	
***RST**	
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:ROUT:PORT:AUD:INP:SEL ANALOG	ANALOG or DIGITAL
:ROUT:PORT:RF:ROLE INPUT	RF input and audio output
:CONF:FMA:MEAS:RFS:FREQ 80000000	Set frequency
:CONF:FMA:MEAS:RFS:LEV -10	Set input level
:CONF:FMA:FM:OBW:RAT 99	
:TRIG:FMA:MEAS:SOUR FREERUN	Freerun or power trigger
:CONF:FMA:FM:STOR:MODE OFF	

:CONF:FMA:FM:MOD STEREO	STEREO or MONO
:CONF:FMA:FM:LEFT:HPF HPF20	
:CONF:FMA:FM:LEFT:LPF LPF15K	
:CONF:FMA:FM:LEFT:DEEM US75	
:CONF:FMA:FM:LEFT:BPF OFF	
:CONF:FMA:FM:RIGH:HPF HPF20	
:CONF:FMA:FM:RIGH:LPF LPF15K	
:CONF:FMA:FM:RIGH:DEEM US75	
:CONF:FMA:FM:RIGH:BPF OFF	
:CONF:FMA:FM:RDS OFF	
:CONF:FMA:AF:ANAL:GEN:LEFT 1,On	
:CONF:FMA:AF:ANAL:GEN:LEFT:FREQ 1,1000	
:CONF:FMA:AF:ANAL:GEN:LEFT:LEV 1,5000	
:CONF:FMA:AF:ANAL:GEN:RIGH 1,On	
:CONF:FMA:AF:ANAL:GEN:RIGH:FREQ 1,2000	
:CONF:FMA:AF:ANAL:GEN:RIGH:LEV 1,5000	
***CLS;INIT:FMA:MEAS:SING;*OPC**	
:FETC:FMA:MEAS:STAT?	
> 9	
:FETC:FMA:FM:RF?	
> 79999995.3,79999995.3,79999995.3,-4.7,-4.7,-4.7,3.85,3.85,3.85	
:FETC:FMA:FM:OBW?	
> 219.920	
:FETC:FMA:FM:OBW:FREQ? UPPER	
> 4.765	
:FETC:FMA:FM:OBW:FREQ? LOWER	
> -6.188	
:FETC:FMA:FM:OBW:FREQ? CENTER	
> -4.974	
:FETC:FMA:FM:DEM:BOTH:DEV?	
>106630.73,-110414.92,108522.82,54090.37	
:FETC:FMA:FM:DEM:LEFT:DEV?	
> 111906.93,-110652.98,111279.95,53996.25	
:FETC:FMA:FM:DEM:RIGH:DEV?	
> 106630.73,-110414.92,108522.82,54090.37	
:FETC:FMA:FM:DEM:LEFT:AF?	

>1000.00,50397.44,1018.65,2554.64,18.87,1498.53,981.54,1437.82,1056.69,1386.69,2018.41,1149.93,4018.23,1035.53,943.33,1009.38,690.55,962.90,57.24,848.56,3018.92,795.32,5980.60,788.01
:FETC:FMA:FM:DEM:RIGH:AF?
>1000.00,50537.97,980.78,1613.73,2981.29,1411.43,1056.64,1314.93,6018.49,1160.07,8018.29,1158.89,3018.36,1157.66,7018.86,1130.535980.83,1017.75,9018.56,1006.79,4980.99,1000.67,943.38,945.23
:FETC:FMA:FM:DEM:CROS?
>0.02,-22.46,-17.66,1.14,-0.56,-11.53,-13.34,-0.51,-3.60,-0.65,1.91,2.63,-0.02,-1.14,-7.65,0.56,-9.86,-18.70,-4.67,-5.40,-2.63,-9.21,-5.79,0.51
:FETC:FMA:FM:DEM:LEFT:ANAL?
>26.47,26.47,26.47,-23.00,-23.00,-23.00,7.0794,7.0794,7.0794,-21.39,-21.39,-21.39,8.5249,8.524,9,8.5249,21.39,21.39,21.39
:FETC:FMA:FM:DEM:RIGH:ANAL?
>29.62,29.62,29.62,-21.55,-21.55,-21.55,8.3686,8.3686,8.3686,-20.92,-20.92,-20.92,8.9974,8.9974,8.9974,20.92,20.92,20.92
:FETC:FMA:FM:DEM:PIL?
> 18.59,18.59,18.59,812.37,812.37,812.37

FM Receiver Tests

To test FM receivers using the MX887070A FM/Audio TRX Measurement software, the specified test audio signal is frequency modulated and a signal is output from the vector signal generator.
Installing the MU887000A-002 Audio Measurement Hardware in the MU887000A TRX Test Module inputs either analog or digital format audio signals output from the FM receiver to the built-in audio analyzer of the MU887000A to perform audio tests including AF signal frequency and level (up to 12 multi-tones), distortion rate, stereo crosstalk, etc.



Remote command list for FM Receiver Tests

(If you use CombiView for FM transmitter tests, please use tab of RX-FM and TX-Audio)

Stereo

Remote commands	Comments
SYST:LANG SCPI	
INST FMAUDIO	
***RST**	
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:ROUT:PORT:AUD:INP:SEL ANALOG	ANALOG or DIGITAL
:ROUT:PORT:RF:ROLE OUTPUT	RF output and Audio input
:CONF:FMA:GEN:RFS:LEV -66	Set level
:CONF:FMA:GEN:RFS:FREQ 80000000	Set frequency
:CONF:FMA:GEN:RFS:STAT ON	
:CONF:FMA:GEN:BBM ON	
:CONF:FMA:FM:GEN ON	
:CONF:FMA:FM:GEN:MOD STEREO	STEREO or MONO

:CONF:FMA:FM:GEN:LEFT:FREQ 1,1000	Set left tone frequency
:CONF:FMA:FM:GEN:LEFT:DEV 1, 68250	Set left tone deviation
:CONF:FMA:FM:GEN:LEFT 1,ON	
:CONF:FMA:FM:GEN:RIGH:FREQ 1,2000	Set right tone frequency
:CONF:FMA:FM:GEN:RIGH:DEV 1, 68250	Set right tone deviation
:CONF:FMA:FM:GEN:RIGH 1,ON	
:CONF:FMA:FM:GEN:PIL:DEV 6750	Pilot deviation*1
:CONF:FMA:FM:GEN:AM OFF	AM On/Off *2
:CONF:FMA:AF:MEAS:ANAL:RANG 5000MV	
~~**:CONF:FMA:AF:MEAS:RATE 48K**~~	Delete
:CONF:FMA:AF:STOR:MODE OFF	
:CONF:FMA:AF:MEAS:MOD STEREO	STEREO or MONO
:CONF:FMA:AF:LEFT:HPF HPF20	
:CONF:FMA:AF:LEFT:LPF LPF15K	
:CONF:FMA:AF:LEFT:DEEM US75	
:CONF:FMA:AF:LEFT:BPF OFF	
:CONF:FMA:AF:RIGH:HPF HPF20	
:CONF:FMA:AF:RIGH:LPF LPF15K	
:CONF:FMA:AF:RIGH:DEEM US75	
:CONF:FMA:AF:RIGH:BPF OFF	
***CLS;:INIT:FMA:MEAS:SING;*OPC**	
:FETC:FMA:MEAS:STAT?	
> 0	Change to 0
:FETC:FMA:AF:AUD:LEFT:TOT?	
> 4942.02,-4939.32,4940.53,3493.14	
:FETC:FMA:AF:AUD:RIGH:TOT?	
> 992.05,-987.40,989.58,699.53	
:FETC:FMA:AF:AUD:LEFT:AF?	
>1000.00,3497.48,50.00,0.25,3000.00,0.13,149.99,0.10,1999.99,0.06,350.00,0.04,1249.94,0.02,549.96,0.02,1150.02,0.02,250.05,0.02,49.98,0.01,850.86,0.01	
:FETC:FMA:AF:AUD:RIGH:AF?	
>2000.00,699.48,50.00,0.27,150.00,0.10,350.00,0.05,1249.97,0.02,14456.72,0.02,549.96,0.02,1149.91,0.02,949.98,0.02,250.02,0.02,49.98,0.01,4000.02,0.01	
:FETC:FMA:AF:AUD:CROS?	
>-112.29,0.50,-41.41,0.51,81.15,0.49,0.43,0.66,0.50,-1.91,0.38,-4.22,-81.15,-0.50,-0.51,-0.49,-0.43,-0.66,-108.10,23.33,-16.18,-0.50,-0.38,-0.44	

:FETC:FMA:AF:AUD:LEFT:ANAL?
>81.71,81.76,81.68,-87.98,-87.93,-88.02,0.0040,0.0040,0.0040,-80.79,-80.76,-80.83,0.0091,0.009,2,0.0091,80.79,80.83,80.76
:FETC:FMA:AF:AUD:RIGH:ANAL?
>67.29,67.31,67.26,-88.37,-88.02,-88.63,0.0038,0.0040,0.0037,-67.25,-67.23,-67.27,0.0434,0.0435,0.0433,67.25,67.27,67.23
:FETC:FMA:AF:AUD:TIME:TRAC:LEFT? 1,0,10
>4940.29,4940.87,4936.01,4925.91,4910.72,4889.96,4864.19,4832.97,4796.96,4755.49
:FETC:FMA:AF:AUD:TIME:TRAC:RIGH? 1,0,10
>-430.31,-371.15,-310.61,-248.24,-185.27,-121.25,-57.00,7.86,72.38,136.77
:FETC:FMA:AF:AUD:FREQ:TRAC:LEFT? 1,0,10
>-59.05,-62.05,-109.26,-113.00,-112.51,-116.65,-115.63,-116.38,-117.23,-120.67
:FETC:FMA:AF:AUD:FREQ:TRAC:RIGH? 1,0,10
>-53.38,-56.39,-119.98,-120.80,-121.52,-123.58,-125.50,-124.59,-125.33,-127.30

*1 : Available firmware version of 01.07.11a or later

*2 : Available firmware version of 01.07.13a or later

Mono

Remote commands	Comments
SYST:LANG SCPI	
INST FMAUDIO	
***RST**	
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:ROUT:PORT:AUD:INP:SEL ANALOG	ANALOG or DIGITAL
:ROUT:PORT:RF:ROLE OUTPUT	RF output and Audio input
:CONF:FMA:GEN:RFS:LEV -66	Set level
:CONF:FMA:GEN:RFS:FREQ 80000000	Set frequency
:CONF:FMA:GEN:RFS:STAT ON	
:CONF:FMA:GEN:BBM ON	
:CONF:FMA:FM:GEN ON	
:CONF:FMA:FM:GEN:MOD MONO	MONO
:CONF:FMA:FM:GEN:LEFT:FREQ 1,1000	Set left tone frequency
:CONF:FMA:FM:GEN:LEFT:DEV 1,22500	Set left tone deviation
:CONF:FMA:FM:GEN:LEFT 1,ON	

:CONF:FMA:FM:GEN:AM:DEPT 30	Set AM Depth[*1]
:CONF:FMA:FM:GEN:AM:FREQ 400	Set AM Freq. [*1]
:CONF:FMA:FM:GEN:AM ON	AM On/Off [*1]
:CONF:FMA:AF:MEAS:ANAL:RANG 5000MV	
:CONF:FMA:AF:STOR:MODE OFF	
:CONF:FMA:AF:MEAS:MOD MONO	STEREO or MONO
:CONF:FMA:AF:LEFT:HPF HPF20	
:CONF:FMA:AF:LEFT:LPF LPF15K	
:CONF:FMA:AF:LEFT:DEEM US75	
:CONF:FMA:AF:LEFT:BPF OFF	
***CLS;:INIT:FMA:MEAS:SING;*OPC**	
:FETC:FMA:MEAS:STAT?	
> 0	
:FETC:FMA:AF:AUD:LEFT:TOT?	
> 4942.02,-4939.32,4940.53,3493.14	
:FETC:FMA:AF:AUD:LEFT:AF?	
>1000.00,3497.48,50.00,0.25,3000.00,0.13,149.99,0.10,1999.99,0.06,350.00,0.04,1249.94,0.02,549.96,0.02,1150.02,0.02,250.05,0.02,49.98,0.01,850.86,0.01	
:FETC:FMA:AF:AUD:LEFT:ANAL?	
>81.71,81.76,81.68,-87.98,-87.93,-88.02,0.0040,0.0040,0.0040,-80.79,-80.76,-80.83,0.0091,0.009,2,0.0091,80.79,80.83,80.76	
:FETC:FMA:AF:AUD:TIME:TRAC:LEFT? 1,0,10	
>4940.29,4940.87,4936.01,4925.91,4910.72,4889.96,4864.19,4832.97,4796.96,4755.49	
:FETC:FMA:AF:AUD:FREQ:TRAC:LEFT? 1,0,10	
>-59.05,-62.05,-109.26,-113.00,-112.51,-116.65,-115.63,-116.38,-117.23,-120.67	

[*1] : Available firmware version of 01.07.13a or later

RDS (Requires MV887070A FM RDS waveforms license)

Remote commands	Comments
SYST:LANG SCPI	
INST FMAUDIO	
***RST**	
:ROUT:PORT:CONN:DIR PORT3,PORT4	Input to 3 and output to 4
:ROUT:PORT:AUD:INP:SEL ANALOG	ANALOG or DIGITAL
:ROUT:PORT:RF:ROLE OUTPUT	RF output and Audio input
:CONF:FMA:GEN:RFS:LEV -66	Set level

:CONF:FMA:GEN:RFS:FREQ 80000000	Set frequency
:CONF:FMA:GEN:RFS:STAT ON	
:CONF:FMA:GEN:BBM ON	
:SOUR:GPRF:GEN:ARB:FILE:LOAD "MV887070A_FMRDS_0001"	Load waveform file to ARB memory
***WAI**	
:SOUR:GPRF:GEN:ARB:WAV:PATT:SEL "MV887070A_FMRDS_0001",1,1	Select waveform pattern
:CONF:FMA:AF:MEAS:ANAL:RANG 5000MV	
:CONF:FMA:AF:STOR:MODE OFF	
:CONF:FMA:AF:MEAS:MOD STEREO	STEREO or MONO
:CONF:FMA:AF:LEFT:HPF HPF20	
:CONF:FMA:AF:LEFT:LPF LPF15K	
:CONF:FMA:AF:LEFT:DEEM US75	
:CONF:FMA:AF:LEFT:BPF OFF	
:CONF:FMA:AF:RIGH:HPF HPF20	
:CONF:FMA:AF: RIGH:LPF LPF15K	
:CONF:FMA:AF: RIGH:DEEM US75	
:CONF:FMA:AF: RIGH:BPF OFF	
***CLS;:INIT:FMA:MEAS:SING;*OPC**	
:FETC:FMA:MEAS:STAT?	
> 0	
:FETC:FMA:AF:AUD:LEFT:TOT?	
> 4942.02,-4939.32,4940.53,3493.14	
:FETC:FMA:AF:AUD:LEFT:AF?	
>1000.00,3497.48,50.00,0.25,3000.00,0.13,149.99,0.10,1999.99,0.06,350.00,0.04,1249.94,0.02,549.96,0.02,1150.02,0.02,250.05,0.02,49.98,0.01,850.86,0.01	
:FETC:FMA:AF:AUD:LEFT:ANAL?	
>81.71,81.76,81.68,-87.98,-87.93,-88.02,0.0040,0.0040,0.0040,-80.79,-80.76,-80.83,0.0091,0.009,2,0.0091,80.79,80.83,80.76	
:FETC:FMA:AF:AUD:TIME:TRAC:LEFT? 1,0,10	
>4940.29,4940.87,4936.01,4925.91,4910.72,4889.96,4864.19,4832.97,4796.96,4755.49	
:FETC:FMA:AF:AUD:FREQ:TRAC:LEFT? 1,0,10	
>-59.05,-62.05,-109.26,-113.00,-112.51,-116.65,-115.63,-116.38,-117.23,-120.67	

WLAN/Bluetooth Receiver Test explanation

This is an explanation of receiver testing for WLAN and Bluetooth that are required to specify number of test packet for PER measurements using signal generator sequencer.

Command list

Remote commands	Explanation
:SOUR:GPRF:GEN:MODE NORMAL	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'ZERO_200000000Hz_100000p'	
***WAI**	
:ROUT:PORT:CONN:DIR PORT4,PORT3	Input 4, Output 3
:SOUR:GPRF:GEN:SEQ:REIN 0	
:SOUR:GPRF:GEN:STAT 1	
:SOUR:GPRF:GEN:BBM CW	
:SOUR:GPRF:GEN:RFS:LEV -100	
:SOUR:GPRF:GEN:ARB:FILE:LOAD 'MV887030A_b_11_1024L'	
***WAI**	
:SOUR:GPRF:GEN:SEQ:RX:GEN:SST 1,1,2	Set start segment to 1, and set stop segment to 2
:SOUR:GPRF:GEN:SEQ:RX:GEN:REP 1,SINGLE	Single mode
:SOUR:GPRF:GEN:SEQ:RX:GEN:GOTO 1,1	(This is used only for continuous mode)
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,1,TRIGGER	Set end condition of segment 1 to trigger
:SOUR:GPRF:GEN:SEQ:RX:ENDC 1,2,SNUMBER	Set end condition of segment 2 to number of steps

:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,1,WFGEND	Set trigger source for SG segment from 1 to 2
:SOUR:GPRF:GEN:SEQ:RX:TRIG:SOUR 1,2,WFGEND	Set trigger source for SG segment from 2 to 3
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,1,0.000	Set delay time of segment 1 to 0 msec
:SOUR:GPRF:GEN:SEQ:RX:TRIG:DEL 1,2,0.000	Set delay time of segment 2 to 0 msec
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,1,NSEGMENT	Set repetition control of segment 1 to next segment
:SOUR:GPRF:GEN:SEQ:RX:NSLC 1,2,LOOP	Set repetition control of segment 2 to Loop control
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,1,ARB	Set baseband mode of segment 1 to ARB
:SOUR:GPRF:GEN:SEQ:RX:BBM 1,2,ARB	Set baseband mode of segment 2 to ARB
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,1,OFF	Does not send any trigger even if waveforms changes
:SOUR:GPRF:GEN:SEQ:RX:WCTR 1,2,OFF	Does not send any trigger even if waveforms changes
:SOUR:GPRF:GEN:SEQ:WAV:GEN:DM:POL 1,NORMAL	Does not invert waveform IQ. Set mode to normal mode.
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,2,-100.0DBM	Set output power of segment 2 to -100 dBm
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	Select pattern of Zero waveforms
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,1,REPEAT	Set to repeat mode of segment 1 to finish waveform generation
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,1,1	Set number of reception of segment 1 to 1
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,1,0	Does not output trigger for next waveforms changes.
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,2,'MV887030A_b_11_1024L', 1	Select pattern of 11b 11 Mbps
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,2,REPEAT	Set to repeat mode of segment 2 to finish waveform generation
:SOUR:GPRF:GEN:SEQ:WAV:IREP 1,2,1000	Set number of reception of segment 1 to 1,000
:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,2,1	Output trigger for next waveforms changes after complete to generate.
:SOUR:GPRF:GEN:SEQ:WAV:PATT:SEL 1,1,'ZERO_200000000Hz_100000p',1	Select pattern of Zero waveforms
:SOUR:GPRF:GEN:SEQ:WAV:ENDC 1,3,REPEAT	Set to repeat mode of segment 3 to finish waveform generation

:SOUR:GPRF:GEN:SEQ:WAV:GETR 1,3,0	Does not output trigger for next waveforms changes.
:SOUR:GPRF:GEN:SEQ:WAV:PATT:DEL 1,4	Delete waveform pattern for segment 4
:SOUR:GPRF:GEN:SEQ:COMB:PATT 1,1	Execute sequence table of 1
:SOUR:GPRF:GEN:MODE SEQUENCE	Set SG mode to sequence mode
:SOUR:GPRF:GEN:SEQ:RX:LEV 1,1,-55.0DBM	Set output power of segment 1 to -55 dBm
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,1,2412000000HZ	Set frequency of segment 1 to 2412 MHz
:SOUR:GPRF:GEN:SEQ:RX:FREQ 1,2,2412000000HZ	Set frequency of segment 2 to 2412 MHz
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,1,PORT3	Set output test port of segment 1 to port 3
:SOUR:GPRF:GEN:SEQ:RX:OUTP:STAT 1,2,PORT3	Set output test port of segment 2 to port 3
:SOUR:GPRF:GEN:SEQ:RX:ERR? 1	Confirm sequence list before transmit.
>0,0,0	
Set up DUT for RX testing.	Configure receiver test on DUT
:SOUR:GPRF:GEN:SEQ:EXEC	Start to transmit test signal from MT8870A in accordance with the sequence configuration
:SOUR:GPRF:GEN:SEQ:STAT?	Confirm status of sequencer
> 1	*Not completed to transmit yet*
:SOUR:GPRF:GEN:SEQ:STAT?	Confirm status of sequencer
> 0	*Completed*
Get received packet count from DUT and calculate PER	*Confirm and calculate PER value*

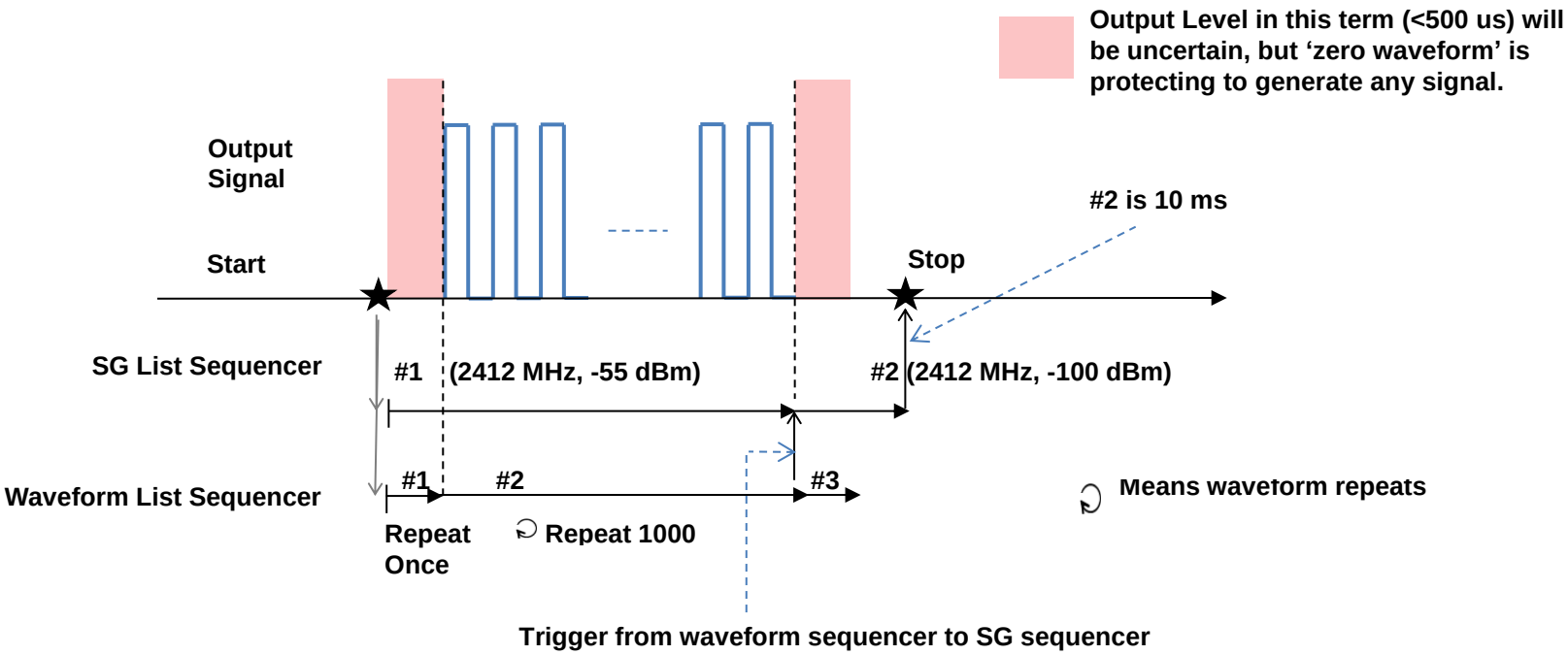
SG Sequencer table

Segment	Frequency	Level	Segment End Condition	Number of Steps	Step Size	Trigger Type	Trigger Delay	Output RF Port	ARB/CW	Trigger Out
1	2412 MHz	-55 dBm	TRIGGER	N/A	N/A	WFGEND	0	PORT3	ARB	OFF
2	2412 MHz	-100 dBm	SNUMBER (number of steps)	1 (default)	10ms (default)	WFGEND	0	PORT3	ARB	OFF

Waveform list

segment	Waveform	End Condition	Repeat Count	Trigger Out
1	zero	Repeat	1	OFF
2	11b_11	Repeat	1000	ON
3	zero	Repeat	1	OFF

Diagram


Output Level in this term (<500 us) will be uncertain, but 'zero waveform' is protecting to generate any signal.
Output Signal
#2 is 10 ms
Start
Stop
SG List Sequencer
#1 (2412 MHz, -55 dBm)
#2 (2412 MHz, -100 dBm)
Waveform List Sequencer
#1
#2
#3
Means waveform repeats
Repeat Once
Repeat 1000
Trigger from waveform sequencer to SG sequencer

Anritsu

Specifications are subject to change without notice.

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