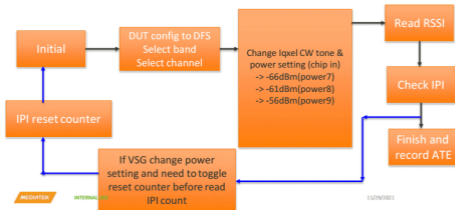




# Reset counter

## IPI CR setting

- Use both HW & SW clear
  - $0x830AF070[28] = 0$  (default)
- Use SW clear only
  - $0x830AF070[28] = 1$
- SW clear trigger
  - $0x830AF070[27] = 0 \rightarrow 1 \rightarrow 0$



# Test flow

## Read RSSI value

- Read ATE command “iwpriv ra0 mac 830AF0E0[7:0]” (in [Hex])
- RSSI calculate = 830AF0E0[7:0] -256 (in [Dec]) (dBm)

## Check IPI counter status as below list

- IPI counter increasing according to RSSI value
- Set VSG power level= -62dBm, verify IPI power8 counter.
  - (ATE Read command “iwpriv ra0 mac 830AF0C8[22:0] ”)
- Without compensated setting, variation range: +/-3dB.

IPI	Ant. Power (dbm)
7	-70 < Power $\leq$ -65
8	-65 < Power $\leq$ -60
9	-60 < Power $\leq$ -55

RO_IRPI_HIST_7	0x830AF0C4[22:0]
RO_IRPI_HIST_8	0x830AF0C8[22:0]
RO_IRPI_HIST_9	0x830AF0CC[22:0]

# Test flow



- Set VSG pattern and power
  - Frequency set, need to **offset 5M**
  - Set **"power level"**
  - Choose **"CW tone"**
  - Press **"RF(on)"** button

The screenshot shows the VSG1 Settings interface with the following elements highlighted:

- (1)** Frequency: 5505 MHz
- (2)** Power Level: -62 dBm/dBv
- (3)** Count: 0
- (4)** Stop button

Other visible controls include: VSA1, VSG1, CHAN1, Offset: 0, Count: 1, Hardware, RX PER, Settings, Wave Gen, VSG1 dropdown, VSG1 Settings dropdown, Low Distortion checkbox, Port: RF1, Waveforms dropdown, Loaded Wave: Load Upload, Play button, CW Wave, RF(off) RF(on).

# Test flow

- Set DUT as DFS configuration
  - Select "Setting Page"
  - Select "Band 1" and choose "Channel"
  - Choose status "Start"
  - Press "Set" button and completely QA mode setting

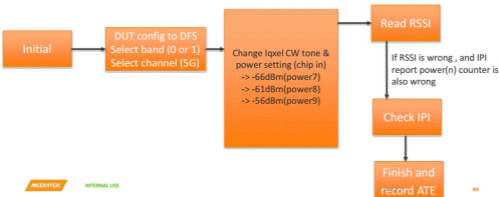


The screenshot shows the MT7915 QA 0.0.2.15 interface. The top navigation bar includes "TX/RX", "TX/RX Band1", "EEPROM", "MAC BBP", "RF Page", "RU Page", "Settings Page", and "About". The "Settings Page" is highlighted with a red box and labeled (1). Below the navigation bar, the "Off Channel Scan" section is visible. It contains several configuration options: "Band" set to "Band 1", "Channel" set to "100 5500-MHz", and "System BW" set to "20". These three options are grouped together in a red box and labeled (2). Below these options are four checkboxes for "TX/RX0", "TX/RX1", "TX/RX2", and "TX/RX3", all of which are unchecked. At the bottom of the "Off Channel Scan" section, the "Status" is set to "Start" and a "Set" button is present. This entire section is highlighted with a red box and labeled (3).

# DFS ATE test flow

## ATE measurement

- RSSI value (dBm)
- Check Idle power indicator (IPI)
- Suggest test range : -62 dBm



# DFS

# BT test items

1DH1

2402 POWER\_AVERAGE\_DBM

2440 POWER\_AVERAGE\_DBM

2480 POWER\_AVERAGE\_DBM

3DH5

2402 POWER\_AVERAGE\_DBM

2440 POWER\_AVERAGE\_DBM

2480 POWER\_AVERAGE\_DBM

1LE

2402 POWER\_AVERAGE\_DBM

2440 POWER\_AVERAGE\_DBM

2480 POWER\_AVERAGE\_DBM

# BT TX Power Calibration (II)

## Fine-tuning: BT TX power calibration

79 channels are divided to 16 groups for BT power.

0.25dB step to adjust TX power for each group.

- **Tuning range:  $\pm 3\text{dB}$**
- **Recommend accuracy:  $\pm 1\text{dB}$  @ antenna side.**

Offset	Bit-field	Description
180h   18fh	7:0	BT power fine-tuning value. Unit: 0.25dB per step Increase: Binary Decrease: 2's complement (Binary).

### L7-0(77&07)

target	0	2.5	2	1.5	1	0.5	-0.5	-1	-1.5	-2	-2.5
effuse setting(0x180~0x18f)	0	A	8	6	4	2	FE	FC	FA	F8	F6

Offset	Description	Write owner	Value Type
0x180	BT TX power by-channel compensation(Group 0, 2402~2405 MHz)	Customer	Option
0x181	BT TX power by-channel compensation(Group 1, 2406~2410 MHz)	Customer	Option
0x182	BT TX power by-channel compensation(Group 2, 2411~2415 MHz)	Customer	Option
0x183	BT TX power by-channel compensation(Group 3, 2416~2420 MHz)	Customer	Option
0x184	BT TX power by-channel compensation(Group 4, 2421~2425 MHz)	Customer	Option
0x185	BT TX power by-channel compensation(Group 5, 2426~2430 MHz)	Customer	Option
0x186	BT TX power by-channel compensation(Group 6, 2431~2435 MHz)	Customer	Option
0x187	BT TX power by-channel compensation(Group 7, 2436~2440 MHz)	Customer	Option

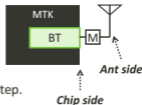
Offset	Description	Write owner	Value Type
0x188	BT TX power by-channel compensation(Group 8, 2441~2445 MHz)	Customer	Option
0x189	BT TX power by-channel compensation(Group 9, 2446~2450 MHz)	Customer	Option
0x18A	BT TX power by-channel compensation(Group 10, 2451~2455 MHz)	Customer	Option
0x18B	BT TX power by-channel compensation(Group 11, 2456~2460 MHz)	Customer	Option
0x18C	BT TX power by-channel compensation(Group 12, 2461~2465 MHz)	Customer	Option
0x18D	BT TX power by-channel compensation(Group 13, 2466~2470 MHz)	Customer	Option
0x18E	BT TX power by-channel compensation(Group 14, 2471~2475 MHz)	Customer	Option
0x18F	BT TX power by-channel compensation(Group 15, 2476~2480 MHz)	Customer	Option

# BT TX Power Calibration (I)

Close-loop power control

Coarse-tuning: Power mode setup

- Mode-1: EDR power = BR power - 3dB
- Mode-2: EDR power = BR power
- Max/Min. BR power level= 15/-19dBm with 1dB step.
- BLE and BR power can individual setting.
- Accuracy:  $\pm 2.0\text{dB}$  @ chip side



Power Mode		Mode-1		Mode-2	
BR(BLE) power level control		EDR power = BR power - 3dB		EDR power = BR power	
Main-Level BR: 0x137 [7:4] BLE: 0x138 [3:0]	Sub-Level 0x138 [5:4]	BR(BLE) Power (dBm)	EDR Power (dBm)	BR (BLE) Power (dBm)	EDR Power (dBm)
7 (111b)	0 (00b)	15	12	12	12
7 (111b)	1 (01b)	14	11	11	11
7 (111b)	2 (10b)	13	10	10	10
7 (111b)	3 (11b)	12	9	9	9

# BT Flash/Efuse format

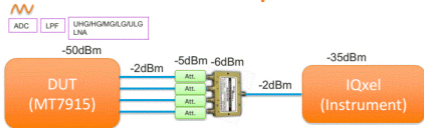
BT

- MAC address
- Target power , channel compensation, rate and BW delta.

0x160	03	0	0	0	0	0	0	0	0	1	Bluetooth Feature Valid Bit 1 [0] Valid of MAC Address [1] Valid of Radio Setting [2] Valid of Sleep Mode Setting [3] Valid of Voice Setting [4] Valid of PCM Codec-Setting [5] RSV [6] RSV [7] RSV
0x161	0	0	0	0	0	0	0	0	0	0	OBT MAC Address [7:0]
0x162	0	0	0	0	0	0	0	0	0	0	OBT MAC Address [15:8]
0x163	0	0	0	0	0	0	0	0	0	0	OBT MAC Address [23:16]
0x164	0	0	0	0	0	0	0	0	0	0	OBT MAC Address [31:24]
0x165	0	0	0	0	0	0	0	0	0	0	OBT MAC Address [39:32]
0x166	0	0	0	0	0	0	0	0	0	0	OBT MAC Address [47:40]
0x167	77	0	1	1	1	0	1	1	1	1	Radio setting [0:3] : Init Power (level) Means Default Power Level, Range: 0-7 Init Power <= Max Power [4:7] : Max Power(level) Means BR/EDR Max Power, Range: 0-7
0x168	07	0	0	0	0	0	1	1	1	1	Radio setting [0:3] : BLE Power(level) Means BLE TX Power, Range: 0-7 BLE power <= Max Power [4:5] : TX Power Sub Level Range:0-3 Use for 1db adjust [6:7] : BDR/EDR Power Mode 0: Default (BDR/EDR different power mode, 3db diff) 1: BDR/EDR 0db diff mode

BT

# Test Setup



- RX Target power: -50dBm with 3dB variation both for MT7915 iLNA and eLNA
- Assume that
  - Cable loss is 2dB
  - Combiner loss is 6dB
  - Attenuator loss is 5dBm
  - RX power = TX power - 2\* cable loss - Combiner loss - Attenuator = -50dBm
  - IQXEL TX power = -35dBm

# TX iBF calibration channel

- Total : 9 group (9 channel , center channel)
  - 5G : 8 group ( 8 channel )
  - 2G : 1 group ( 1 channel )
- Calibrate :
  - 套用 RF 提供 LC tank code (IQM,PGA)
  - UHG/HG/MG/LG/ULG RX phase
  - TX phase
- MT7915 iBF EEPROM location:
  - 2G (Group0) : 0x651~0x678
  - 5G (Group1~8) : 0x679~0x788

Channel	Frequency (MHz)
1	2412
2	2417
3	2422
4	2427
5	2432
6	2437
7	2442
8	2447
9	2452
10	2457
11	2462
12	2467
13	2472
14	2484

	BW20	BW40
group1	11A_0184 4920	0040_0186 4930
	11A_0188 4940	0040_0190 4970
	11A_0192 4960	0040_0194 5050
	11A_0196 4980	
	11A_0198 5040	
group2	11A_0180 5060	
	11A_0184 5080	
	11A_0188 5100	
group3	11A_0184 5180	0040_0188 5190
	11A_0188 5200	0040_0192 5230
	11A_0192 5220	
group5	11A_0188 5240	
	11A_0192 5260	
	11A_0196 5280	
group5	11A_0192 5280	0040_0194 5270
	11A_0196 5280	0040_0197 5300
	11A_0200 5300	0040_0199 5350
group7	11A_0194 5320	
	11A_0198 5340	
	11A_0202 5360	
group8	11A_0196 5380	0040_0199 5390
	11A_0200 5400	0040_0202 5430
	11A_0204 5420	
	11A_0180 5440	
	11A_0184 5460	

	BW20	BW40
group5	11A_0194 5480	0040_0196 5510
	11A_0198 5500	0040_0198 5550
	11A_0202 5520	
group6	11A_0200 5540	
	11A_0204 5560	
	11A_0208 5580	
group6	11A_0204 5600	0040_0206 5630
	11A_0208 5620	0040_0208 5670
	11A_0212 5640	
group7	11A_0208 5660	
	11A_0212 5680	
	11A_0216 5700	
group7	11A_0212 5700	0040_0214 5710
	11A_0216 5720	0040_0216 5755
	11A_0220 5740	0040_0218 5795
group8	11A_0214 5760	
	11A_0218 5780	
	11A_0222 5800	
group8	11A_0216 5820	0040_0218 5835
	11A_0220 5840	0040_0220 5875
	11A_0224 5860	
	11A_0212 5880	
	11A_0216 5900	

# iBF calibration

# LAN/WAN MAC Command

## LAN

- mtk\_factory\_rw.sh -w lan XX XX XX XX XX XX
- mtk\_factory\_rw.sh -w lan 00 0c 43 68 55 59

## WAN

- mtk\_factory\_rw.sh -w wan XX XX XX XX XX XX
- mtk\_factory\_rw.sh -w wan 02 0c 43 68 55 59

# MAC address

0x04	D	0	0	0	0	0	0	0	0	WLAN MAC Address 1 (2G)
0x05	C	0	0	0	0	1	1	0	0	
0x06	43	0	1	0	0	0	0	1	1	
0x07	26	0	0	1	0	0	1	1	0	
0x08	60	0	1	1	0	0	0	0	0	
0x09	0	0	0	0	0	0	0	0	0	

0x161	0	0	0	0	0	0	0	0	0	BT MAC Address
0x162	0	0	0	0	0	0	0	0	0	
0x163	0	0	0	0	0	0	0	0	0	
0x164	0	0	0	0	0	0	0	0	0	
0x165	0	0	0	0	0	0	0	0	0	
0x166	0	0	0	0	0	0	0	0	0	

# WLAN (2G/5G) & BT

MAC address

# Xtal trim

Xtal Trim efuse blank :

- 0x77 :
  - bit[7] is valid bit
  - bit[6:0] is FT cal value
- 0x78
  - bit[7] is valid bit
  - bit[6] : compensate value is add or minus .
    - = 1 is plus.
    - = 0 is minus.
  - bit[5:0] is frequency offset compensate value.

Offset	Description
0x77	Frequency offset (XTAL calibration) (i-cal value)
0x78	XTAL trim 2 compensation (on RFB)

Example 1:

Total Xtal trim code = 0x77[6:0] +/- 0x78[5:0] when 0x77[7] & 0x78[7] = 1

Example 2: (Current ATE method)

Compute the frequency :

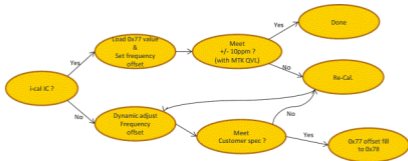
- Default frequency offset : (0x77)
- XTAL trim compensation : (0x78)
- Final frequency = (0x77) + (0x78)

Original i-cal xtal CapID offset = 0x42 → Freq offset = -10 ppm

Target xtal capID offset = 0x62 → Freq offset = 0ppm

$$\underbrace{0x42}_{0x77} + \underbrace{0xC0 + 0x20}_{\substack{0x78[7] = \text{valid bit} \\ 0x78[6] = \text{plus/minus bit} \\ 0x78[5:0] = \text{offset value}}} = 0x42 + \underbrace{0xE0}_{0x78}$$

# Xtal calibration flow



# Frequency offset calibration

# TX Gain Cal CMD - 5G

## iwpriv ra0 set ATE=DNLK5G

```
wrong:~# iwpriv ra0 set ATE=DNLK5G
58.589442 iwpriv: arg = 0x1000000
58.589129 single band : set
58.521215 PMdChannelInit: control_ch1 = 192,control_ch2=0, control_ch3 = 192 000CId= 0, Band= 1
58.521515 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.679829 PMdGetTbAPath: control_ch1 = 192,control_ch2=0, control_ch3 = 192, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(R), Channel_Band = 1
57.240242 PMdChannelInit: control_ch1 = 12,control_ch2=0, control_ch3 = 12 000CId= 0, Band= 1
57.240546 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
57.686994 PMdGetTbAPath: control_ch1 = 11,control_ch2=0, control_ch3 = 11, BW = 4,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(0), Channel_Band = 1
57.621211 PMdChannelInit: control_ch1 = 16,control_ch2=0, control_ch3 = 16 000CId= 0, Band= 1
57.621515 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
57.691287 PMdGetTbAPath: control_ch1 = 36,control_ch2=0, control_ch3 = 36, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(0), Channel_Band = 1
58.601816 PMdChannelInit: control_ch1 = 46,control_ch2=0, control_ch3 = 46 000CId= 0, Band= 1
58.602114 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.179788 PMdGetTbAPath: control_ch1 = 46,control_ch2=0, control_ch3 = 46, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(0), Channel_Band = 1
58.180084 PMdChannelInit: control_ch1 = 52,control_ch2=0, control_ch3 = 52 000CId= 0, Band= 1
58.180374 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.748848 PMdGetTbAPath: control_ch1 = 52,control_ch2=0, control_ch3 = 52, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(0), Channel_Band = 1
58.752199 PMdChannelInit: control_ch1 = 64,control_ch2=0, control_ch3 = 64 000CId= 0, Band= 1
58.752496 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.112123 PMdGetTbAPath: control_ch1 = 64,control_ch2=0, control_ch3 = 64, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(0), Channel_Band = 1
58.112422 PMdChannelInit: control_ch1 = 68,control_ch2=0, control_ch3 = 68 000CId= 0, Band= 1
58.112714 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.528885 PMdGetTbAPath: control_ch1 = 68,control_ch2=0, control_ch3 = 68, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(0), Channel_Band = 1
58.529181 PMdChannelInit: control_ch1 = 76,control_ch2=0, control_ch3 = 76 000CId= 0, Band= 1
58.529479 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.701796 PMdGetTbAPath: control_ch1 = 76,control_ch2=0, control_ch3 = 76, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(0), Channel_Band = 1
58.702094 PMdChannelInit: control_ch1 = 100,control_ch2=0, control_ch3 = 100 000CId= 0, Band= 1
58.702382 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.294316 PMdGetTbAPath: control_ch1 = 100,control_ch2=0, control_ch3 = 100, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(R), Channel_Band = 1
58.294614 PMdChannelInit: control_ch1 = 112,control_ch2=0, control_ch3 = 112 000CId= 0, Band= 1
58.294906 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.676126 PMdGetTbAPath: control_ch1 = 112,control_ch2=0, control_ch3 = 112, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(R), Channel_Band = 1
58.676424 PMdChannelInit: control_ch1 = 116,control_ch2=0, control_ch3 = 116 000CId= 0, Band= 1
58.676717 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.658881 PMdGetTbAPath: control_ch1 = 116,control_ch2=0, control_ch3 = 116, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(R), Channel_Band = 1
58.659179 PMdChannelInit: control_ch1 = 128,control_ch2=0, control_ch3 = 128 000CId= 0, Band= 1
58.659471 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.439944 PMdGetTbAPath: control_ch1 = 128,control_ch2=0, control_ch3 = 128, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(R), Channel_Band = 1
58.440242 PMdChannelInit: control_ch1 = 132,control_ch2=0, control_ch3 = 132 000CId= 0, Band= 1
58.440534 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.622486 PMdGetTbAPath: control_ch1 = 132,control_ch2=0, control_ch3 = 132, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(R), Channel_Band = 1
58.622784 PMdChannelInit: control_ch1 = 144,control_ch2=0, control_ch3 = 144 000CId= 0, Band= 1
58.623076 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.281572 PMdGetTbAPath: control_ch1 = 144,control_ch2=0, control_ch3 = 144, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(R), Channel_Band = 1
58.281870 PMdChannelInit: control_ch1 = 152,control_ch2=0, control_ch3 = 152 000CId= 0, Band= 1
58.282162 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
58.581812 PMdGetTbAPath: control_ch1 = 152,control_ch2=0, control_ch3 = 152, BW = 8,TDStream = 4, R0Stream = 15,RPPath = ff, BandId= 0, scan(R), Channel_Band = 1
58.582110 PMdChannelInit: control_ch1 = 160,control_ch2=0, control_ch3 = 160 000CId= 0, Band= 1
58.582402 BW = 8,TDStream = 4, R0Stream = 4, scan(R)
```

# TX Gain Cal CMD - 2G

iwpriv ra0 set ATE=DNLK2G

```
root@kali:~# iwpriv ra0 set ATE=DNLK2G
338_787284) SetArgs: Arg = 781506K2G
338_720557) Single Band = w1
338_721841) #CacChannelSwDch: control_ch1 = 1,control_ch2=0, control_ch3 = 1 DRC3de= 0, Band= 0
338_722985) M = 0,TXStream = 4, RXStream = 4, scan()
338_749913) #CacTxPathSwDch: control_ch1 = 1,control_ch2=0, control_ch3 = 1, M = 0,TXStream = 4, RXStream = 15,RXPath = 1F, BandIdx =0, scan(), Channel_Band = 0
338_788193) #CacChannelSwDch: control_ch1 = 2,control_ch2=0, control_ch3 = 2,control_ch4 = 0,control_ch5 = 0, Band= 0
338_788194) M = 0,TXStream = 4, RXStream = 4, scan()
338_826360) #CacTxPathSwDch: control_ch1 = 2,control_ch2=0, control_ch3 = 2, M = 0,TXStream = 4, RXStream = 15,RXPath = 1F, BandIdx =0, scan(), Channel_Band = 0
338_841025) #CacChannelSwDch: control_ch1 = 11,control_ch2=0, control_ch3 = 11,control_ch4= 0, control_ch5 = 0, Band= 0
338_846158) M = 0,TXStream = 4, RXStream = 4, scan()
338_280660) #CacTxPathSwDch: control_ch1 = 13,control_ch2=0, control_ch3 = 13, M = 0,TXStream = 4, RXStream = 15,RXPath = 1F, BandIdx =0, scan(), Channel_Band = 0
338_352236) #CacTxPathSwDch: control_ch1 = 13,control_ch2=0, control_ch3 = 13,control_ch4=0, control_ch5=0, Band= 0
338_352236) #CacTxPathSwDch: control_ch1 = 13,control_ch2=0, control_ch3 = 13,control_ch4=0, control_ch5=0, Band= 0
338_323817) Beal: 0.0000000 [17266500]
338_328844) Beal: 0.0000000 [10800010]
338_339670) Beal: 0.0000000 [14630000]
338_334543) Beal: 0.0000000 [7140000]
338_338329) Beal: 0.0000000 [9540210]
338_342156) Beal: 0.0000000 [4407903]
338_341982) Beal: 0.0000000 [4246000]
338_349884) Beal: 0.0000000 [1640000]
338_353635) Beal: 0.0000000 [0020325]
338_357464) Beal: 0.0000000 [Band500]
338_361290) Beal: 0.0000000 [4000472]
338_363117) Beal: 0.0000000 [3761000]
338_368941) Beal: 0.0000000 [1830000]
338_372730) Beal: 0.0000000 [1480000]
338_376565) Beal: 0.0000000 [2735757]
338_380422) Beal: 0.0000000 [4700000]
338_384250) Beal: 0.0000000 [4200710]
338_388076) Beal: 0.0000000 [Band500]
338_391902) Beal: 0.0000000 [1000000]
338_395729) Beal: 0.0000000 [0000000]
338_399555) Beal: 0.0000000 [1100000]
338_403382) Beal: 0.0000000 [0010000]
338_407208) Beal: 0.0000000 [6500000]
338_411037) Beal: 0.0000000 [6245420]
338_414863) Beal: 0.0000000 [0000000]
338_418689) Beal: 0.0000000 [7000000]
338_422525) Beal: 0.0000000 [1050740]
338_426351) Beal: 0.0000000 [7570000]
338_430177) Beal: 0.0000000 [0000000]
338_434002) Beal: 0.0000000 [1310000]
338_437829) Beal: 0.0000000 [0000000]
338_441655) Beal: 0.0000000 [0000000]
```

## iwpriv command

Buffer bin valid immediately

- iwpriv ra0 set bufferMode=2

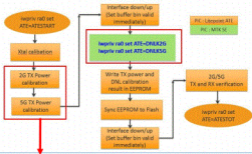
Sync EEPROM to Flash

- ated -i ra0 -c "sync eeprom all"

Sync EEPROM to bin file

-iwpriv ra0 set bufferWriteBack=4

## [ATE] TX fast speed calibration flow



## Difference with traditional TX power cal

1.Reduce 2/5G Channel number for improve ATE time

2.Need to Call fast speed Cal Command as below

```
iwpriv ra0 set ATE=DNLK2G
```

```
iwpriv ra0 set ATE=DNLK5G
```

After Image:OF\_lede-ramips-mt7621-mt7621-rfb-ax-nor-squashfs-sysupgrade-20190904093531.bin

Note: ePA not support Fast Cal.

## Traditional TX Power Cal flow

### Step A

- Set TSSI on
- Set packet LG54M
- Set 2G channel : Ch1 Ch7 Ch13
- Set 5G Channel : Ch192 Ch12 Ch36 Ch48 Ch52 Ch64 Ch68 Ch96 Ch100 Ch112 Ch116 Ch128 Ch132 Ch144 Ch157 Ch169

### Step B

- If ATE config target power=20dBm
- IQXEL measured power =19dBm

### Step C

- H delata0 = 20- (19)=1dB error (0.5dB/ 1step)

### Step D

- CH1 19dBm =>1dB lower, 0x308 0X309 0X30A address fill 0xAA to compensate.
- CH7 20dBm =>No need compensate , 0x308 0X308 0X30C please fill 0x00
- CH11 21dBm =>1dB higher , 0x30E 0X30F 0X310 please fill 0x22 to compensate

Repeat different channel and WF port (2/5G).

## Fast speed TX Power Cal flow

### Step A

- Set TSSI on
- Set packet LG54M
- Set 2G channel : Ch7
- Set 5G Channel : Ch192 Ch36 Ch52 Ch68 Ch100 Ch116 Ch132 Ch157

### Step B

- If ATE config target power=20dBm
- IQXEL measured power =19dBm

### Step C

- H delata0 = 20- (19)=1dB error (0.5dB/ 1step)

### Step D

- CH7 20dBm =>No need compensate , 0x308 0X308 0X30C please fill 0x00

Repeat different channel and WF port (2/5G).

# Channel power offset calibration (Fast speed Cal)

# ePA TC Table Definition (5G part)

0x229	0	0	0	0	0	0	0	0	5G TSSI OFF: -7 step number;
0x22A	0	0	0	0	0	0	0	0	5G TSSI OFF: -6 step number;
0x22B	0	0	0	0	0	0	0	0	5G TSSI OFF: -5 step number
0x22C	0	0	0	0	0	0	0	0	5G TSSI OFF: -4 step number
0x22D	0	0	0	0	0	0	0	0	5G TSSI OFF: -3 step number
0x22E	0	0	0	0	0	0	0	0	5G TSSI OFF: -2 step number
0x22F	0	0	0	0	0	0	0	0	5G TSSI OFF: -1 step number
0x230	0	0	0	0	0	0	0	0	5G TSSI OFF: -0 step number
0x231	0	0	0	0	0	0	0	0	5G TSSI OFF: 5G reference step
0x232	0	0	0	0	0	0	0	0	5G TSSI OFF: 5G reference temp
0x233	0	0	0	0	0	0	0	0	5G TSSI OFF: +1 step number
0x234	0	0	0	0	0	0	0	0	5G TSSI OFF: +2 step number
0x235	0	0	0	0	0	0	0	0	5G TSSI OFF: +3 step number
0x236	0	0	0	0	0	0	0	0	5G TSSI OFF: +4 step number
0x237	0	0	0	0	0	0	0	0	5G TSSI OFF: +5 step number
0x238	0	0	0	0	0	0	0	0	5G TSSI OFF: +6 step number
0x239	0	0	0	0	0	0	0	0	5G TSSI OFF: +7 step number

0x231: (Reference step)

0x01 : 1dB/per step

0x00: 0.5dB/per step

0x229~0x22F

0x233~0x239:

Thermal code boundary for '-n' step

0x230=0x232 : '-0' step number

Thermal code while transmitting OFDM 54M Target power @NT

原创力文档

max.book118.com

预览与原文档一致, 下载高清无水印



# Temperature compensation enable / disable

For AX1800:

5G iPA+ 2.4G iPA ,0x197=15

5G ePA (TC ON) + 2.4G ePA (TC ON), 0x197=2A

5G ePA (TC ON) + 2.4G iPA, 0x197=21

5G ePA (TC OFF) +2.4G ePA (TC OFF) ,0x197=00

For AX3600:

5G iPA, 2.4G iPA, 0x197=15

5G ePA (TC ON) ,2.4G ePA (TC ON) , 0x197=2A

5G ePA (TC ON) , 2.4G iPA, 0x197=29

5G ePA (TC OFF), 2.4G ePA (TC OFF), 0x197=00

## 0x197 =15(default)

Bit0: TSSI\_SELECT\_DBDC\_BAND0\_G\_BAND

(MT7915A/D 2.4G TSSI开关) 1: enable, 0: disable

Bit1: TEMP\_COMP\_SELECT\_DBDC\_BANDG

(MT7915A/D 2.4G TC开关) Bit2:

TSSI\_SELECT\_DBDC\_BAND0\_A\_BAND

(MT7915A 5G TSSI开关)

Bit3: TEMP\_COMP\_SELECT\_DBDC\_BAND0\_A\_BAND

(MT7915A 5G TC开关) Bit4:

TSSI\_SELECT\_DBDC\_BAND1

(MT7915D 5G TSSI开关) Bit5:

TEMP\_COMP\_SELECT\_DBDC\_BAND1

(MT7915D 5G TC开关)

## Read thermal ADC value

- Read thermal ADC value (MAC : 18014000[6:0])

→ iwpriv ra0 mac 18014000 (2G)

e.g. mac[0x18014000] : XXXXXX39

→ iwpriv rai0 mac 18014000 (5G)

e.g. mac[0x18014000] : XXXXXX37

0x221	39	0	0	0	0	0	0	0	0	0	2.4G TSSI OFF:2.4G reference temp
0x232	37	0	0	0	0	0	0	0	0	0	5G TSSI OFF:5G reference temp

# MT7975 chip temperature formula

- Read thermal ADC value (MAC : 18014000[6:0])

→ iwpriv ra0 mac 18014000

e.g. mac[0x18014000] : XXXXXXXX

- Current temperature formula?

Current temp= [HEX2DEC(thermal ADC)-HEX2DEC(Calibration value)]\*1.94+28+CORR[6:0]

\*FT Calibration value = EEPROM 0x9A8[6:0], bit7 is valid bit

\*CORR[6:0] = EEPROM 0x9A9[6:0]. Based on 5A correlation (default 0x00), bit7 is valid bit

EX : Thermal ADC value=54 (HEX), EEPROM: 0x9A8[6:0] = 0x36(HEX), EEPROM: 0x9A9[6:0] = 0x0B(HEX)

Current temp= [HEX2DEC(54)-HEX2DEC(36)]\*1.94+28+11=97.2 °C

Offset	Buffer Bin Address	Value	b7	b6	b5	b4	b3	b2	b1	b0	
0x3A8	0x9A8	B6	1	0	1	1	0	1	1	0	THADC Calibration part
0x3A9	0x9A9	0	0	0	0	0	0	0	0	0	Thermal compensation offset

default : 0x84

# Temperature compensation open loop (ePA)

# 5G Part ( iPA/ePA )-WF3

0x410	5G WF3 Group1 PA ac delta TSSI gain low G2/1(delta, dB) (CH184-196)	0x428	5G WF3 Group5 PA ac delta TSSI gain low G2/1(delta, dB) (CH100-104)
0x411	5G WF3 Group1 PA ac delta TSSI gain low G4/3(delta, dB) (CH184-196)	0x429	5G WF3 Group5 PA ac delta TSSI gain low G4/3(delta, dB) (CH100-104)
0x412	5G WF3 Group1 PA ac delta TSSI gain low G6/5(delta, dB) (CH184-196)	0x42A	5G WF3 Group5 PA ac delta TSSI gain low G6/5(delta, dB) (CH100-104)
0x413	5G WF3 Group1 PA ac delta TSSI gain high (delta, dB) G2/1(CH8-16)	0x42B	5G WF3 Group5 PA ac delta TSSI gain high G2/1(delta, dB) (CH108-112)
0x414	5G WF3 Group1 PA ac delta TSSI gain high (delta, dB) G4/3(CH8-16)	0x42C	5G WF3 Group5 PA ac delta TSSI gain high G4/3(delta, dB) (CH108-112)
0x415	5G WF3 Group1 PA ac delta TSSI gain high(delta, dB) G6/5(CH8-16)	0x42D	5G WF3 Group5 PA ac delta TSSI gain high G6/5(delta, dB) (CH108-112)
0x416	5G WF3 Group2 PA ac delta TSSI gain low (delta, dB) G2/1(CH36-40)	0x42E	5G WF3 Group6 PA ac delta TSSI gain low G2/1(delta, dB) (CH116-120)
0x417	5G WF3 Group2 PA ac delta TSSI gain low(delta, dB) G4/3(CH36-40)	0x42F	5G WF3 Group6 PA ac delta TSSI gain low G4/3(delta, dB) (CH116-120)
0x418	5G WF3 Group2 PA ac delta TSSI gain low (delta, dB) G6/5(CH36-40)	0x430	5G WF3 Group6 PA ac delta TSSI gain low G6/5(delta, dB) (CH116-120)
0x419	5G WF3 Group2 PA ac delta TSSI gain high (delta, dB) G2/1(CH44-48)	0x431	5G WF3 Group6 PA ac delta TSSI gain high G2/1(delta, dB) (CH124-128)
0x41A	5G WF3 Group2 PA ac delta TSSI gain high (delta, dB) G4/3(CH44-48)	0x432	5G WF3 Group6 PA ac delta TSSI gain high G4/3(delta, dB) (CH124-128)
0x41B	5G WF3 Group2 PA ac delta TSSI gain high(delta, dB) G6/5(CH44-48)	0x433	5G WF3 Group6 PA ac delta TSSI gain high G6/5(delta, dB) (CH124-128)
0x41C	5G WF3 Group3 PA ac delta TSSI gain low (delta, dB) G2/1(CH52-56)	0x434	5G WF3 Group7 PA ac delta TSSI gain low G2/1(delta, dB) (CH132-136)
0x41D	5G WF3 Group3 PA ac delta TSSI gain low (delta, dB) G4/3(CH52-56)	0x435	5G WF3 Group7 PA ac delta TSSI gain low G4/3(delta, dB) (CH132-136)
0x41E	5G WF3 Group3 PA ac delta TSSI gain low (delta, dB) G6/5(CH52-56)	0x436	5G WF3 Group7 PA ac delta TSSI gain low G6/5(delta, dB) (CH132-136)
0x41F	5G WF3 Group3 PA ac delta TSSI gain high G2/1(delta, dB) (CH60-64)	0x437	5G WF3 Group7 PA ac delta TSSI gain high G2/1(delta, dB) (CH140-144)
0x420	5G WF3 Group3 PA ac delta TSSI gain high G4/3(delta, dB) (CH60-64)	0x438	5G WF3 Group7 PA ac delta TSSI gain high G4/3(delta, dB) (CH140-144)
0x421	5G WF3 Group3 PA ac delta TSSI gain high G6/5 (delta, dB) (CH60-64)	0x439	5G WF3 Group7 PA ac delta TSSI gain high G6/5(delta, dB) (CH140-144)
0x422	5G WF3 Group4 PA ac delta TSSI gain low G2/1(delta, dB) (CH68-80)	0x43A	5G WF3 Group8 PA ac delta TSSI gain low G2/1(delta, dB) (CH148-161)
0x423	5G WF3 Group4 PA ac delta TSSI gain low G4/3(delta, dB) (CH68-80)	0x43B	5G WF3 Group8 PA ac delta TSSI gain low G4/3(delta, dB) (CH148-161)
0x424	5G WF3 Group4 PA ac delta TSSI gain low G6/5(delta, dB) (CH68-80)	0x43C	5G WF3 Group8 PA ac delta TSSI gain low G6/5(delta, dB) (CH148-161)
0x425	5G WF3 Group4 PA ac delta TSSI gain high G2/1(delta, dB) (CH84-96)	0x43D	5G WF3 Group8 PA ac delta TSSI gain high G2/1(delta, dB) (CH165-181)
0x426	5G WF3 Group4 PA ac delta TSSI gain high G4/3(delta, dB) (CH84-96)	0x43E	5G WF3 Group8 PA ac delta TSSI gain high G4/3(delta, dB) (CH165-181)
0x427	5G WF3 Group4 PA ac delta TSSI gain high G6/5(delta, dB) (CH84-96)	0x43F	5G WF3 Group8 PA ac delta TSSI gain high G6/5(delta, dB) (CH165-181)

# 5G Part ( iPA/ePA )-WF3

## Example: WF3

If ATE configure 54Mbps target power = 19dBm  
19dBm/0.5dB=38(dec)=0x26(hex) also write to e2p 0x36F,370,371,372,373,374,375,376



0x36F	TX2 5G Group1 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x370	TX2 5G Group2 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x371	TX2 5G Group3 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x372	TX2 5G Group4 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x373	TX2 5G Group5 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x374	TX2 5G Group6 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x375	TX2 5G Group7 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x376	TX2 5G Group8 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x377	5G TX2 TSSI off Tx power dBm絕對值 (54M, OFDM)

WF3 please refer to WF0 54Mbps DAC

Power not precise channel, WF2 channel power offset

If WF2 group2 test result is

CH36 18dBm => -1dB lower, 0x416 0x417 0x418 fill 0xAA to compensate  
CH48 20dBm => -1dB higher, 0x419 0x41A 0x41B fill 0x22 to compensate

Repeat other group1~8.

If DUT uses ePA with temperature compensation, please disable TC by EEPROM 0x197=00 before calibration.  
After calibration, change EEPROM 0x197=2A to enable TC for 2.4/5 ePA.

# 5G Part ( iPA/ePA )-WF2

0x3E0	5G WF2 Group1 PA ac delta TSSI gain low G2/1(delta, dB) (CH184-196)	0x3F8	5G WF2 Group5 PA ac delta TSSI gain low G2/1(delta, dB) (CH100-104)
0x3E1	5G WF2 Group1 PA ac delta TSSI gain low G4/3(delta, dB) (CH184-196)	0x3F9	5G WF2 Group5 PA ac delta TSSI gain low G4/3(delta, dB) (CH100-104)
0x3E2	5G WF2 Group1 PA ac delta TSSI gain low G6/5(delta, dB) (CH184-196)	0x3FA	5G WF2 Group5 PA ac delta TSSI gain low G6/5(delta, dB) (CH100-104)
0x3E3	5G WF2 Group1 PA ac delta TSSI gain high (delta, dB) G2/1(CH8-16)	0x3FB	5G WF2 Group5 PA ac delta TSSI gain high G2/1(delta, dB) (CH108-112)
0x3E4	5G WF2 Group1 PA ac delta TSSI gain high (delta, dB) G4/3(CH8-16)	0x3FC	5G WF2 Group5 PA ac delta TSSI gain high G4/3(delta, dB) (CH108-112)
0x3E5	5G WF2 Group1 PA ac delta TSSI gain high(delta, dB) G6/5(CH8-16)	0x3FD	5G WF2 Group5 PA ac delta TSSI gain high G6/5(delta, dB) (CH108-112)
0x3E6	5G WF2 Group2 PA ac delta TSSI gain low (delta, dB) G2/1(CH36-40)	0x3FE	5G WF2 Group6 PA ac delta TSSI gain low G2/1(delta, dB) (CH116-120)
0x3E7	5G WF2 Group2 PA ac delta TSSI gain low(delta, dB) G4/3(CH36-40)	0x3FF	5G WF2 Group6 PA ac delta TSSI gain low G4/3(delta, dB) (CH116-120)
0x3E8	5G WF2 Group2 PA ac delta TSSI gain low (delta, dB) G6/5(CH36-40)	0x400	5G WF2 Group6 PA ac delta TSSI gain low G6/5(delta, dB) (CH116-120)
0x3E9	5G WF2 Group2 PA ac delta TSSI gain high (delta, dB) G2/1(CH44-48)	0x401	5G WF2 Group6 PA ac delta TSSI gain high G2/1(delta, dB) (CH124-128)
0x3EA	5G WF2 Group2 PA ac delta TSSI gain high (delta, dB) G4/3(CH44-48)	0x402	5G WF2 Group6 PA ac delta TSSI gain high G4/3(delta, dB) (CH124-128)
0x3EB	5G WF2 Group2 PA ac delta TSSI gain high(delta, dB) G6/5(CH44-48)	0x403	5G WF2 Group6 PA ac delta TSSI gain high G6/5(delta, dB) (CH124-128)
0x3EC	5G WF2 Group3 PA ac delta TSSI gain low (delta, dB) G2/1(CH52-56)	0x404	5G WF2 Group7 PA ac delta TSSI gain low G2/1(delta, dB) (CH132-136)
0x3ED	5G WF2 Group3 PA ac delta TSSI gain low (delta, dB) G4/3(CH52-56)	0x405	5G WF2 Group7 PA ac delta TSSI gain low G4/3(delta, dB) (CH132-136)
0x3EE	5G WF2 Group3 PA ac delta TSSI gain low (delta, dB) G6/5(CH52-56)	0x406	5G WF2 Group7 PA ac delta TSSI gain low G6/5(delta, dB) (CH132-136)
0x3EF	5G WF2 Group3 PA ac delta TSSI gain high G2/1(delta, dB) (CH60-64)	0x407	5G WF2 Group7 PA ac delta TSSI gain high G2/1(delta, dB) (CH140-144)
0x3F0	5G WF2 Group3 PA ac delta TSSI gain high G4/3(delta, dB) (CH60-64)	0x408	5G WF2 Group7 PA ac delta TSSI gain high G4/3(delta, dB) (CH140-144)
0x3F1	5G WF2 Group3 PA ac delta TSSI gain high G6/5 (delta, dB) (CH60-64)	0x409	5G WF2 Group7 PA ac delta TSSI gain high G6/5(delta, dB) (CH140-144)
0x3F2	5G WF2 Group4 PA ac delta TSSI gain low G2/1(delta, dB) (CH68-80)	0x40A	5G WF2 Group8 PA ac delta TSSI gain low G2/1(delta, dB) (CH148-161)
0x3F3	5G WF2 Group4 PA ac delta TSSI gain low G4/3(delta, dB) (CH68-80)	0x40B	5G WF2 Group8 PA ac delta TSSI gain low G4/3(delta, dB) (CH148-161)
0x3F4	5G WF2 Group4 PA ac delta TSSI gain low G6/5(delta, dB) (CH68-80)	0x40C	5G WF2 Group8 PA ac delta TSSI gain low G6/5(delta, dB) (CH148-161)
0x3F5	5G WF2 Group4 PA ac delta TSSI gain high G2/1(delta, dB) (CH84-96)	0x40D	5G WF2 Group8 PA ac delta TSSI gain high G2/1(delta, dB) (CH165-181)
0x3F6	5G WF2 Group4 PA ac delta TSSI gain high G4/3(delta, dB) (CH84-96)	0x40E	5G WF2 Group8 PA ac delta TSSI gain high G4/3(delta, dB) (CH165-181)
0x3F7	5G WF2 Group4 PA ac delta TSSI gain high G6/5(delta, dB) (CH84-96)	0x40F	5G WF2 Group8 PA ac delta TSSI gain high G6/5(delta, dB) (CH165-181)

# 5G Part ( iPA/ePA )-WF2

## Example: WF2

If ATE configure 54Mbps target power = 19dBm  
19dBm/0.5dB=38(dec)=0x26(hex) also write to e2p 0x363,364,365,366,367,368,369,36A



0x363	TX2 5G Group1 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x364	TX2 5G Group2 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x365	TX2 5G Group3 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x366	TX2 5G Group4 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x367	TX2 5G Group5 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x368	TX2 5G Group6 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x369	TX2 5G Group7 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x36A	TX2 5G Group8 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x36B	5G TX2 TSSI off Tx power dBm絕對值 (54M, OFDM)

WF2 please refer to WF0 54Mbps DAC

Power not precise channel, WF2 channel power offset

If WF2 group2 test result is

CH36 1dBm =>-1dB lower, 0x3E6 0X3E7 0X3E8 fill 0xA to compensate  
CH48 20dBm =>-1dB higher, 0x3E9 0X3EA 0X3EB fill 0x2 to compensate

Repeat other group1~8.

If DUT uses ePA with temperature compensation, please disable TC by EEPROM 0x197=00 before calibration.  
After calibration, change EEPROM 0x197=2A to enable TC for 2.4/5 ePA.

# 5G Part ( iPA/ePA )-WF1

0x3B0	5G WF1 Group1 PA ac delta TSSI gain low G2/1(delta, dB) (CH184-196)	0x3C8	5G WF1 Group5 PA ac delta TSSI gain low G2/1(delta, dB) (CH100-104)
0x3B1	5G WF1 Group1 PA ac delta TSSI gain low G4/3(delta, dB) (CH184-196)	0x3C9	5G WF1 Group5 PA ac delta TSSI gain low G4/3(delta, dB) (CH100-104)
0x3B2	5G WF1 Group1 PA ac delta TSSI gain low G6/5(delta, dB) (CH184-196)	0x3CA	5G WF1 Group5 PA ac delta TSSI gain low G6/5(delta, dB) (CH100-104)
0x3B3	5G WF1 Group1 PA ac delta TSSI gain high (delta, dB) G2/1(CH8-16)	0x3CB	5G WF1 Group5 PA ac delta TSSI gain high G2/1(delta, dB) (CH108-112)
0x3B4	5G WF1 Group1 PA ac delta TSSI gain high (delta, dB) G4/3(CH8-16)	0x3CC	5G WF1 Group5 PA ac delta TSSI gain high G4/3(delta, dB) (CH108-112)
0x3B5	5G WF1 Group1 PA ac delta TSSI gain high(delta, dB) G6/5(CH8-16)	0x3CD	5G WF1 Group5 PA ac delta TSSI gain high G6/5(delta, dB) (CH108-112)
0x3B6	5G WF1 Group2 PA ac delta TSSI gain low (delta, dB) G2/1(CH36-40)	0x3CE	5G WF1 Group6 PA ac delta TSSI gain low G2/1(delta, dB) (CH116-120)
0x3B7	5G WF1 Group2 PA ac delta TSSI gain low(delta, dB) G4/3(CH36-40)	0x3CF	5G WF1 Group6 PA ac delta TSSI gain low G4/3(delta, dB) (CH116-120)
0x3B8	5G WF1 Group2 PA ac delta TSSI gain low (delta, dB) G6/5(CH36-40)	0x3D0	5G WF1 Group6 PA ac delta TSSI gain low G6/5(delta, dB) (CH116-120)
0x3B9	5G WF1 Group2 PA ac delta TSSI gain high (delta, dB) G2/1(CH44-48)	0x3D1	5G WF1 Group6 PA ac delta TSSI gain high G2/1(delta, dB) (CH124-128)
0x3BA	5G WF1 Group2 PA ac delta TSSI gain high (delta, dB) G4/3(CH44-48)	0x3D2	5G WF1 Group6 PA ac delta TSSI gain high G4/3(delta, dB) (CH124-128)
0x3BB	5G WF1 Group2 PA ac delta TSSI gain high(delta, dB) G6/5(CH44-48)	0x3D3	5G WF1 Group6 PA ac delta TSSI gain high G6/5(delta, dB) (CH124-128)
0x3BC	5G WF1 Group3 PA ac delta TSSI gain low (delta, dB) G2/1(CH52-56)	0x3D4	5G WF1 Group7 PA ac delta TSSI gain low G2/1(delta, dB) (CH132-136)
0x3BD	5G WF1 Group3 PA ac delta TSSI gain low (delta, dB) G4/3(CH52-56)	0x3D5	5G WF1 Group7 PA ac delta TSSI gain low G4/3(delta, dB) (CH132-136)
0x3BE	5G WF1 Group3 PA ac delta TSSI gain low (delta, dB) G6/5(CH52-56)	0x3D6	5G WF1 Group7 PA ac delta TSSI gain low G6/5(delta, dB) (CH132-136)
0x3BF	5G WF1 Group3 PA ac delta TSSI gain high G2/1(delta, dB) (CH60-64)	0x3D7	5G WF1 Group7 PA ac delta TSSI gain high G2/1(delta, dB) (CH140-144)
0x3C0	5G WF1 Group3 PA ac delta TSSI gain high G4/3(delta, dB) (CH60-64)	0x3D8	5G WF1 Group7 PA ac delta TSSI gain high G4/3(delta, dB) (CH140-144)
0x3C1	5G WF1 Group3 PA ac delta TSSI gain high G6/5 (delta, dB) (CH60-64)	0x3D9	5G WF1 Group7 PA ac delta TSSI gain high G6/5(delta, dB) (CH140-144)
0x3C2	5G WF1 Group4 PA ac delta TSSI gain low G2/1(delta, dB) (CH68-80)	0x3DA	5G WF1 Group8 PA ac delta TSSI gain low G2/1(delta, dB) (CH148-161)
0x3C3	5G WF1 Group4 PA ac delta TSSI gain low G4/3(delta, dB) (CH68-80)	0x3DB	5G WF1 Group8 PA ac delta TSSI gain low G4/3(delta, dB) (CH148-161)
0x3C4	5G WF1 Group4 PA ac delta TSSI gain low G6/5(delta, dB) (CH68-80)	0x3DC	5G WF1 Group8 PA ac delta TSSI gain low G6/5(delta, dB) (CH148-161)
0x3C5	5G WF1 Group4 PA ac delta TSSI gain high G2/1(delta, dB) (CH84-96)	0x3DD	5G WF1 Group8 PA ac delta TSSI gain high G2/1(delta, dB) (CH165-181)
0x3C6	5G WF1 Group4 PA ac delta TSSI gain high G4/3(delta, dB) (CH84-96)	0x3DE	5G WF1 Group8 PA ac delta TSSI gain high G4/3(delta, dB) (CH165-181)
0x3C7	5G WF1 Group4 PA ac delta TSSI gain high G6/5(delta, dB) (CH84-96)	0x3DF	5G WF1 Group8 PA ac delta TSSI gain high G6/5(delta, dB) (CH165-181)

# 5G Part ( iPA/ePA )-WF1

## Example: WF1

If ATE configure 54Mbps target power = 19dBm  
17dBm/0.5dB=3R(dec)=0x26(hex) also write to e2p 0x357,358,359,35A,35B,35C,35D,35E



0x357	TX1 5G Group1 TX power (54M,dBm,绝对值)	(TSSI on) / TX gain code (TSSI off)
0x358	TX1 5G Group2 TX power (54M,dBm,绝对值)	(TSSI on) / TX gain code (TSSI off)
0x359	TX1 5G Group3 TX power (54M,dBm,绝对值)	(TSSI on) / TX gain code (TSSI off)
0x35A	TX1 5G Group4 TX power (54M,dBm,绝对值)	(TSSI on) / TX gain code (TSSI off)
0x35B	TX1 5G Group5 TX power (54M,dBm,绝对值)	(TSSI on) / TX gain code (TSSI off)
0x35C	TX1 5G Group6 TX power (54M,dBm,绝对值)	(TSSI on) / TX gain code (TSSI off)
0x35D	TX1 5G Group7 TX power (54M,dBm,绝对值)	(TSSI on) / TX gain code (TSSI off)
0x35E	TX1 5G Group8 TX power (54M,dBm,绝对值)	(TSSI on) / TX gain code (TSSI off)
0x35F	5G TX1 TSSI off Tx power dBm绝对值 (54M, OFDM)	

WF1 please refer to WF0 54Mbps DAC  
Power not precise channel , WF1 fill channel power offset  
If WF1 group2 test result is  
CH36 18dBm =>1dB lower, 0x3B6 0x3B7 0x3B8 fill 0xA to compensate  
CH48 20dBm =>1dB higher, 0x3B9 0x3BA 0x3BB fill 0x22 to compensate

Repeat other group1~8.

If DUT uses ePA with temperature compensation, please disable TC by EEPROM 0x197=00 before calibration.  
After calibration, change EEPROM 0x197=2A to enable TC for 2.4/5 ePA.

# 5G Part ( iPA/ePA )-WFO

0x380	5G WFO Group1 PA ac delta TSSI gain low G2/1(delta, dB) (CH184-196)	0x398	5G WFO Group5 PA ac delta TSSI gain low G2/1(delta, dB) (CH100-104)
0x381	5G WFO Group1 PA ac delta TSSI gain low G4/3(delta, dB) (CH184-196)	0x399	5G WFO Group5 PA ac delta TSSI gain low G4/3(delta, dB) (CH100-104)
0x382	5G WFO Group1 PA ac delta TSSI gain low G6/5(delta, dB) (CH184-196)	0x39A	5G WFO Group5 PA ac delta TSSI gain low G6/5(delta, dB) (CH100-104)
0x383	5G WFO Group1 PA ac delta TSSI gain high (delta, dB) G2/1(CH8-16)	0x39B	5G WFO Group5 PA ac delta TSSI gain high G2/1(delta, dB) (CH108-112)
0x384	5G WFO Group1 PA ac delta TSSI gain high (delta, dB) G4/3(CH8-16)	0x39C	5G WFO Group5 PA ac delta TSSI gain high G4/3(delta, dB) (CH108-112)
0x385	5G WFO Group1 PA ac delta TSSI gain high(delta, dB) G6/5(CH8-16)	0x39D	5G WFO Group5 PA ac delta TSSI gain high G6/5(delta, dB) (CH108-112)
0x386	5G WFO Group2 PA ac delta TSSI gain low (delta, dB) G2/1(CH36-40)	0x39E	5G WFO Group6 PA ac delta TSSI gain low G2/1(delta, dB) (CH116-120)
0x387	5G WFO Group2 PA ac delta TSSI gain low(delta, dB) G4/3(CH36-40)	0x39F	5G WFO Group6 PA ac delta TSSI gain low G4/3(delta, dB) (CH116-120)
0x388	5G WFO Group2 PA ac delta TSSI gain low (delta, dB) G6/5(CH36-40)	0x3A0	5G WFO Group6 PA ac delta TSSI gain low G6/5(delta, dB) (CH116-120)
0x389	5G WFO Group2 PA ac delta TSSI gain high (delta, dB) G2/1(CH44-48)	0x3A1	5G WFO Group6 PA ac delta TSSI gain high G2/1(delta, dB) (CH124-128)
0x38A	5G WFO Group2 PA ac delta TSSI gain high (delta, dB) G4/3(CH44-48)	0x3A2	5G WFO Group6 PA ac delta TSSI gain high G4/3(delta, dB) (CH124-128)
0x38B	5G WFO Group2 PA ac delta TSSI gain high(delta, dB) G6/5(CH44-48)	0x3A3	5G WFO Group6 PA ac delta TSSI gain high G6/5(delta, dB) (CH124-128)
0x38C	5G WFO Group3 PA ac delta TSSI gain low (delta, dB) G2/1(CH52-56)	0x3A4	5G WFO Group7 PA ac delta TSSI gain low G2/1(delta, dB) (CH132-136)
0x38D	5G WFO Group3 PA ac delta TSSI gain low (delta, dB) G4/3(CH52-56)	0x3A5	5G WFO Group7 PA ac delta TSSI gain low G4/3(delta, dB) (CH132-136)
0x38E	5G WFO Group3 PA ac delta TSSI gain low (delta, dB) G6/5(CH52-56)	0x3A6	5G WFO Group7 PA ac delta TSSI gain low G6/5(delta, dB) (CH132-136)
0x38F	5G WFO Group3 PA ac delta TSSI gain high G2/1(delta, dB) (CH60-64)	0x3A7	5G WFO Group7 PA ac delta TSSI gain high G2/1(delta, dB) (CH140-144)
0x390	5G WFO Group3 PA ac delta TSSI gain high G4/3(delta, dB) (CH60-64)	0x3A8	5G WFO Group7 PA ac delta TSSI gain high G4/3(delta, dB) (CH140-144)
0x391	5G WFO Group3 PA ac delta TSSI gain high G6/5 (delta, dB) (CH60-64)	0x3A9	5G WFO Group7 PA ac delta TSSI gain high G6/5(delta, dB) (CH140-144)
0x392	5G WFO Group4 PA ac delta TSSI gain low G2/1(delta, dB) (CH68-80)	0x3AA	5G WFO Group8 PA ac delta TSSI gain low G2/1(delta, dB) (CH148-161)
0x393	5G WFO Group4 PA ac delta TSSI gain low G4/3(delta, dB) (CH68-80)	0x3AB	5G WFO Group8 PA ac delta TSSI gain low G4/3(delta, dB) (CH148-161)
0x394	5G WFO Group4 PA ac delta TSSI gain low G6/5(delta, dB) (CH68-80)	0x3AC	5G WFO Group8 PA ac delta TSSI gain low G6/5(delta, dB) (CH148-161)
0x395	5G WFO Group4 PA ac delta TSSI gain high G2/1(delta, dB) (CH84-96)	0x3AD	5G WFO Group8 PA ac delta TSSI gain high G2/1(delta, dB) (CH165-181)
0x396	5G WFO Group4 PA ac delta TSSI gain high G4/3(delta, dB) (CH84-96)	0x3AE	5G WFO Group8 PA ac delta TSSI gain high G4/3(delta, dB) (CH165-181)
0x397	5G WFO Group4 PA ac delta TSSI gain high G6/5(delta, dB) (CH84-96)	0x3AF	5G WFO Group8 PA ac delta TSSI gain high G6/5(delta, dB) (CH165-181)

# 5G Part ( iPA/ePA )-WFO

1. WFO~WF3 OFDM 54Mbps DAC value should be the same.
2. Each path please refer to WFO Group1~8 DAC to cal power,
3. Channel power if not correct, please compensate WFO~WF3 channel power offset , and fill corresponding EEPROM blank.

## Example: WFO

If ATE configure 54Mbps target power = 19dBm  
19dBm/0.5dB=38(dec)=0x26(hex) write e2p 0x34B,34C,34D,34E,34F,350,351,352



0x34B	TX0 5G Group1 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x34C	TX0 5G Group2 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x34D	TX0 5G Group3 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x34E	TX0 5G Group4 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x34F	TX0 5G Group5 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x350	TX0 5G Group6 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x351	TX0 5G Group7 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x352	TX0 5G Group8 TX power (54M,dBm,絕對值) (TSSI on) / TX gain code (TSSI off)
0x353	5G TX0 TSSI off Tx power dBm絕對值 (54M , OFDM)

If WFO group2 test result is  
CH36 18dBm =>1dB lower, 0x386 0x387 0x388 fill 0xAA to compensate  
CH48 20dBm =>1dB higher, 0x389 0x38A 0x38B fill 0x22 to compensate  
Repeat other group1~8.

If DUT uses ePA with temperature compensation, please disable TC by EEPROM 0x197=00 before calibration.  
After calibration, change EEPROM 0x197=2A to enable TC for 2.4/5 ePA.

# Information for Litepoint

- TX gain flash/Efuse definition
  - 5G Example

0x386	0	0	0	0	0	0	0	0	5G WFO Group2 PA ac delta TSSI gain low (delta,dB) G2/1(CH36-40)
0x387	0	0	0	0	0	0	0	0	5G WFO Group2 PA ac delta TSSI gain low(delta,dB) G4/3(CH36-40)
0x388	0	0	0	0	0	0	0	0	5G WFO Group2 PA ac delta TSSI gain low (delta,dB) G6/5(CH36-40)
0x389	0	0	0	0	0	0	0	0	5G WFO Group2 PA ac delta TSSI gain high (delta,dB) G2/1(CH44-48)
0x38A	0	0	0	0	0	0	0	0	5G WFO Group2 PA ac delta TSSI gain high (delta,dB) G4/3(CH44-48)
0x38B	0	0	0	0	0	0	0	0	5G WFO Group2 PA ac delta TSSI gain high(delta,dB) G6/5(CH44-48)

- Litepoint ATE calculation example
  - If 5G WFO PA delta0 at **"TSSI gain low G1"** step is Y, save Y to 0x386[2:0].
    - 0x386[3]: Positive : "1" ; Negative: "0" ; 0x380[2:0]: value
    - If Y= -2, 0x380=0x2
    - If Y= +2, 0x380=0xA
  - If 5G WFO PA delta0 at **"TSSI gain low G2"** step is Y, save Y to 0x386[6:4].
    - 0x386[7]: Positive : "1" ; Negative: "0" ; 0x380[6:4]: value
    - If Y= -2, 0x380=0x2
    - If Y= +2, 0x380=0xA
  - Other cells , like G3, G4, G5, G6 delta, follow the same rule according to corresponding flash location.

原创力文档  
max.book118.com  
预览与原文档一致,下载高清无水印

# 2G Part ( iPA/ePA )-WF3

1. WF0~WF3 OFDM 54Mbps DAC value should be the same.
2. Each path please refer to WF0 DAC (0x305) to cal power .
3. Channel power if not correct, please compensate WF0~WF3 channel power offset , and fill corresponding EEPROM blank.

## Example:

If ATE configure 54Mbps target power = 20dBm  
Please 20dBm/0.5dB=40(dec)=0x28(hex) write to e2p 0X305



0x305	2.4G TX3 TX power (54Mbps, dBm绝对值) (TSSI on) / TX gain code (TSSI off)
0x306	2.4G TX3 TSSI off Tx power dBm绝对值 (54M , OFDM)
0x323	2.4G WF3 PA ax delta TSSI gain low G2/1 (CH1~5)(delta,dB)
0x324	2.4G WF3 PA ax delta TSSI gain low G4/3 (CH1~5)(delta,dB)
0x325	2.4G WF3 PA ax delta TSSI gain low G6/5 (CH1~5)(delta,dB)
0x326	2.4G WF3 PA ax delta TSSI gain middle G2/1 (CH6~10)(delta,dB)
0x327	2.4G WF3 PA ax delta TSSI gain middle G4/3 (CH6~10)(delta,dB)
0x328	2.4G WF3 PA ax delta TSSI gain middle G6/5 (CH6~10)(delta,dB)
0x329	2.4G WF3 PA ax delta TSSI gain high G2/1 (CH11~14)(delta,dB)
0x32A	2.4G WF3 PA ax delta TSSI gain high G4/3 (CH11~14)(delta,dB)
0x32B	2.4G WF3 PA ax delta TSSI gain high G6/5 (CH11~14)(delta,dB)

If WF3 result is

CH1 19dBm =>1dB lower, 0x323 0X324 0X325 address fill 0xAA to compensate.

CH7 20dBm =>No need compensate , 0x326 0X327 0X328 please fill 0x00

CH11 21dBm =>1dB higher , 0x329 0X32A 0X32B please fill 0x22 to compensate

E2Pdefinition, please refer to Harrier E2P document

If DUT uses ePA with temperature compensation, please disable TC by EEPROM 0x197=00 before calibration.  
After calibration, change EEPROM 0x197=2A to enable TC for 2.4/5 ePA.

# 2G Part ( iPA/ePA )-WF2

1. WF0~WF3 OFDM 54Mbps DAC value should be the same.
2. Each path please refer to WF0 DAC (0x302) to cal power .
3. Channel power if not correct, please compensate WF0~WF3 channel power offset , and fill corresponding EEPROM blank.

## Example:

If ATE configure 54Mbps target power = 20dBm  
Please 20dBm/0.5dB=40(dec)=0x28(hex) write to e2p 0x302



0x302	2.4G TX2 TX power (54Mbps, dBm绝对值) (TSSI on) / TX gain code (TSSI off)
0x303	2.4G TX2 TSSI off Tx power dBm绝对值 (54M , OFDM)
0x31A	2.4G WF2 PA ax delta TSSI gain low G2/1 (CH1~5)(delta,dB)
0x31B	2.4G WF2 PA ax delta TSSI gain low G4/3 (CH1~5)(delta,dB)
0x31C	2.4G WF2 PA ax delta TSSI gain low G6/5 (CH1~5)(delta,dB)
0x31D	2.4G WF2 PA ax delta TSSI gain middle G2/1 (CH6~10)(delta,dB)
0x31E	2.4G WF2 PA ax delta TSSI gain middle G4/3 (CH6~10)(delta,dB)
0x31F	2.4G WF2 PA ax delta TSSI gain middle G6/5 (CH6~10)(delta,dB)
0x320	2.4G WF2 PA ax delta TSSI gain high G2/1 (CH11~14)(delta,dB)
0x321	2.4G WF2 PA ax delta TSSI gain high G4/3 (CH11~14)(delta,dB)
0x322	2.4G WF2 PA ax delta TSSI gain high G6/5 (CH11~14)(delta,dB)

If WF2 result is

CH1 19dBm  $\Rightarrow$  1dB lower, 0x31A 0x31B 0x31C address fill 0xAA to compensate.  
CH7 20dBm  $\Rightarrow$  No need compensate , 0x31D 0x31E 0x31F please fill 0x00  
CH11 21dBm  $\Rightarrow$  1dB higher , 0x320 0x321 0x322 please fill 0x22 to compensate  
E2P definition, please refer to Harrier E2P document

If DUT uses ePA with temperature compensation, please disable TC by EEPROM 0x197=00 before calibration.  
After calibration, change EEPROM 0x197=2A to enable TC for 2.4/5 ePA.







原创力文档  
max.book118.com  
预览与源文档一致,下载高清无水印

# 2G Part ( iPA/ePA )-WFO

1. WFO~WF3 OFDM 54Mbps DAC value should be the same.
2. Each path please refer to WFO DAC (0x2FC) to cal power .
3. Channel power if not correct, please compensate WFO~WF3 channel power offset , and fill corresponding EEPROM blank.

## Example:

If ATE configure 54Mbps target power = 20dBm  
Please 20dBm/0.5dB=40(dec)=0x28(hex) write to e2p 0x2FC



0x2FC	2.4G TXD TX power (54Mbps, dBm绝对值) (TSSI on) / TX gain code (TSSI off)
0x2FD	2.4G TXD TSSI off Tx power dBm绝对值 (54M , OFDM)
0x308	2.4G WFO PA ax delta TSSI gain low G2/1 (CH1~5)(delta, dB)
0x309	2.4G WFO PA ax delta TSSI gain low G4/3 (CH1~5)(delta, dB)
0x30A	2.4G WFO PA ax delta TSSI gain low G6/5 (CH1~5)(delta, dB)
0x30B	2.4G WFO PA ax delta TSSI gain middle G2/1 (CH6~10)(delta, dB)
0x30C	2.4G WFO PA ax delta TSSI gain middle G4/3 (CH6~10)(delta, dB)
0x30D	2.4G WFO PA ax delta TSSI gain middle G6/5 (CH6~10)(delta, dB)
0x30E	2.4G WFO PA ax delta TSSI gain high G2/1 (CH11~14)(delta, dB)
0x30F	2.4G WFO PA ax delta TSSI gain high G4/3 (CH11~14)(delta, dB)
0x310	2.4G WFO PA ax delta TSSI gain high G6/5 (CH11~14)(delta, dB)

If WFO result is

CH1 19dBm =>1dB lower, 0x308 0x309 0x30A address fill 0xAA to compensate.

CH7 20dBm =>No need compensate , 0x30B 0x30B 0x30C please fill 0x00

CH11 21dBm =>1dB higher , 0x30E 0x30F 0x310 please fill 0x22 to compensate

E2Pdefinition, please refer to Harrier E2P document

If DUT uses ePA with temperature compensation, please disable TC by EEPROM 0x197=00 before calibration.  
After calibration, change EEPROM 0x197=2A to enable TC for 2.4/5 ePA.

Need more efuse free block = 0

# Information for Litepoint

- TX gain flash/Efuse definition
  - 2G Example

0x308	0	0	0	0	0	0	0	0	2.4G WFO PA ax delta TSSI gain low G2/1(CH1~5)(delta,dB)
0x309	0	0	0	0	0	0	0	0	2.4G WFO PA ax delta TSSI gain low G4/3(CH1~5)(delta,dB)
0x30A	0	0	0	0	0	0	0	0	2.4G WFO PA ax delta TSSI gain low G6/5(CH1~5)(delta,dB)
0x30B	0	0	0	0	0	0	0	0	2.4G WFO PA ax delta TSSI gain middle G2/1 (CH6~10)(delta,dB)
0x30C	0	0	0	0	0	0	0	0	2.4G WFO PA ax delta TSSI gain middle G4/3 (CH6~10)(delta,dB)
0x30D	0	0	0	0	0	0	0	0	2.4G WFO PA ax delta TSSI gain middle G6/5 (CH6~10)(delta,dB)
0x30E	0	0	0	0	0	0	0	0	2.4G WFO PA ax delta TSSI gain high G2/1 (CH11~14)(delta,dB)
0x30F	0	0	0	0	0	0	0	0	2.4G WFO PA ax delta TSSI gain high G4/3 (CH11~14)(delta,dB)
0x310	0	0	0	0	0	0	0	0	2.4G WFO PA ax delta TSSI gain high G6/5 (CH11~14)(delta,dB)

- Litepoint ATE calculation example
  - If 2G WFO PA delta0 at "TSSI gain low G1" step is Y, save Y to 0x308[2:0].
    - 0x308[3]: Positive : "1" ; Negative: "0" ; 0x308[2:0]: value
    - If Y= -2, 0x308=0x2
    - If Y= +2, 0x308=0xA
  - If 2G WFO PA delta0 at "TSSI gain low G2" step is Y, save Y to 0x308[6:4].
    - 0x308[7]: Positive : "1" ; Negative: "0" ; 0x308[6:4]: value
    - If Y= -2, 0x308=0x2
    - If Y= +2, 0x308=0xA
  - Other cells , like G3, G4, G5, G6 delta, follow the same rule according to corresponding flash location.

# Channel power offset calibration (Traditional Cal)

# Customer ATE Flow

1. SW build default bin

2. HW golden bin hard copy

hwpriv ra0 e2p 0=0;  
(Clear flash bin)

Note :

Image default bin

Please base on DUT

HW design to set correctly

- Wifi configuration

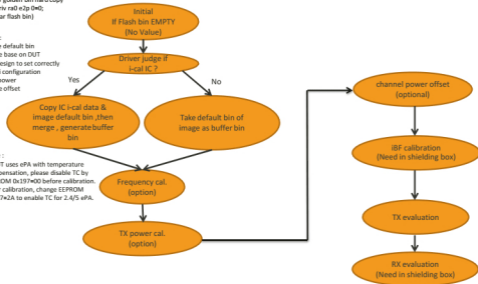
- TX power

- Rate offset

...etc

Note :

if DUT uses ePA with temperature compensation, please disable TC by EEPROM 0x197=00 before calibration. After calibration, change EEPROM 0x197=2A to enable TC for 2.4/5 ePA.



Note:

RX waveform allowed value for  
Max packet extension=16usec

\*HW design to set correct BIN file

# TX power calibration (iPA/ePA)

**HARRIER 4X4**

# MT7915 MFG ATEstatus

ATE combination	MTK ATE ready time	Package
MT7915A (iPA/iPA , 4x4)	Ready	IQfact__MTK_7915_4.0.0.8_Lock
MT7915D (iPA/iPA , DBDC)	Ready	IQfact__MTK_7915_4.0.0.8_Lock
MT7915A (ePA/ePA , 4x4)	Ready	IQfact__MTK_7915_4.0.0.8_Lock
MT7915D (ePA/ePA , DBDC)	Ready	IQfact__MTK_7915_4.0.0.8_Lock

# What is MFGATE?

- MFG ATE briefly name of “ Manufacturing Automatic Test Equipment “

Why do we need it?

Quickly sort mass RFB. Find issue that HQA can not find.

RFB quality control. Mass Pass RFB we can smoothly promote all kinds of IC and product.

Usually, customer get MFG ATE from instrument vendors and lead to MP line for MP product.

- Avoid MFG ATE issue in advance.

PHY Regression for SW release

# Agenda

What is MFG ATE?

MFG ATE status

WiFi

TX power calibration (Traditional)

- iPA/ePA

TX power calibration (Fast speed)

- iPA

Xtal frequency calibration

WLAN & BT MAC address

iBF calibration

BT

DFS

Test plan

# Document Revision History

No.	Description	Edited by	Date of Approval
1.0	Initial Draft	Derek kuo	2019-10-09
2.0	Add BT/DFS/IBF ATE	Derek kuo	2019-12-09
2.1	Fix 5G channel offset typo	Derek kuo	2020-07-03
2.2	1. Modify DNL fast speed calibration flow type (p30~p33) 2. Merge ePA TX calibration and temperature compensation (p6~p28) 3. Add LAN/WAN MAC command (p38~p39)	Derek kuo	2020-08-12
2.3	Note RX waveform need to use Max PE=16us	Derek kuo	2020-11-05
2.4	Correct DNL fast speed Cal Command	Jordan Tsai	2020-12-31
2.5	Note DNL fast speed Cal not support ePA	Derek kuo	2021-05-07
2.6	Note temperature compensation off when TX power calibration	Derek Kuo	2021-11-24

# Harrier iPA/ePA litepoint ATE Plan