INTERNAL USE

MT2503 Low power Issue Debug SOP

Outline

- MT2503 low power reference data
- Low power debug flow chart
- HW Debug skills — Leakage current issue
- SW Debug skills — Leakage current issue

MT2503 BB & RF Low Power Data

VBAT = 4.0v [Unit : mA]

	Test case	Test parameters	Reference Data(mA)
BB	Power off		0.160
	Flight mode suspend		0.580
	Music playback MP3	Flight mode, no backlight	16.265
RF	2G Standby	GSM900 PG2 BA16	1.472
	2G Standby	GSM900 PG9 BA1	0.771
	2G Talking	GSM900 PCL19 without PA	59.236

Note : (1) Avg current for reference only.

MT2503 GPS Low Power Data

VBAT = 4.0v [Unit : mA]

	Test case	Test parameters	Reference Data(mA)				
			MT6261 (4.2V)	MT3333 (3.3V)	LNA (2.8V)	TCXO (2.8V)	Antenna (4.2V)
GPS	GPS off	Flight mode	0.563	0.011	0	0	0
	GPS Acquisition	Flight mode, No GPS signal	1.520	22.275	3.79	0.87	7.89
	GPS Tracking	Flight mode, Under strong signal (CNR>40dB.HZ)	2.037	18.645	3.79	0.87	7.89
	GLP mode	Flight mode, Under strong signal (CNR>40dB.HZ)	1.971	7.458	3.79	0.87	7.89
	LLE periodic mode	Flight mode, Under strong signal (CNR>40dB.HZ)	0.992	3.542	0.66	0.85	1.49

Note :

1. **The total power consumption of MT2503 consists of MT6261 and MT3333.**
2. **LNA/TCXO/Antenna are discrete devices, the power consumption data is for reference only.**

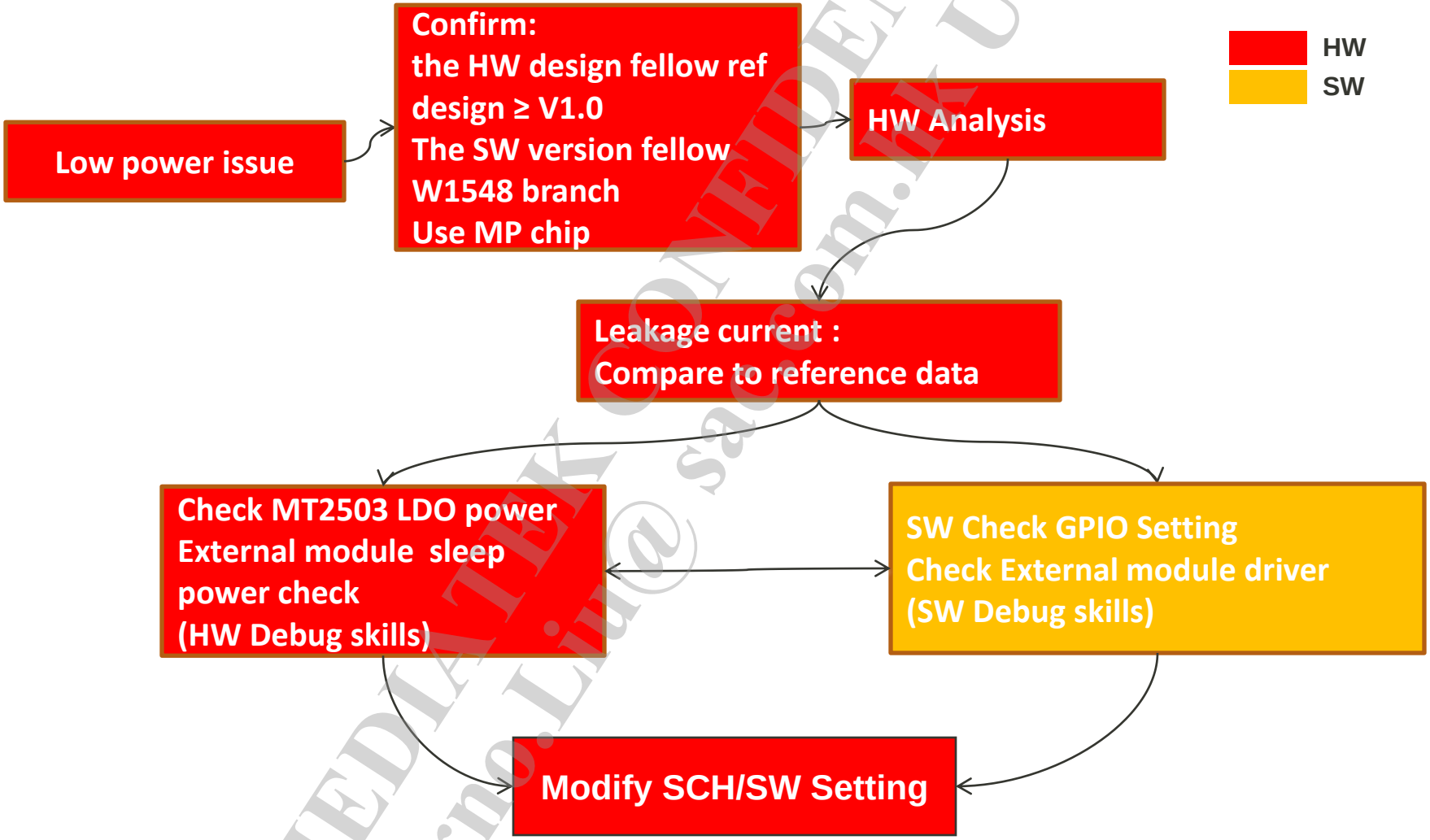
MT2503 BT Low Power Data

VBAT = 4.0v [Unit : mA]

	Test case	Test parameters	Reference Data(mA)
BT	BT on without connect	BT interval = 2.56s, 2G standby (PG9 BA1)	1.265
	BT connect and idle	BT interval = 1.28s, 2G standby (PG9 BA1)	1.7853
	BT voice active	GSM900 PCL19 without PA	72.938
	BT A2DP MP3 active	BT A2DP, 2G standby (PG9 BA1)	35.613

Note : (1) Avg current for reference only.

Low power Debug Flowchart



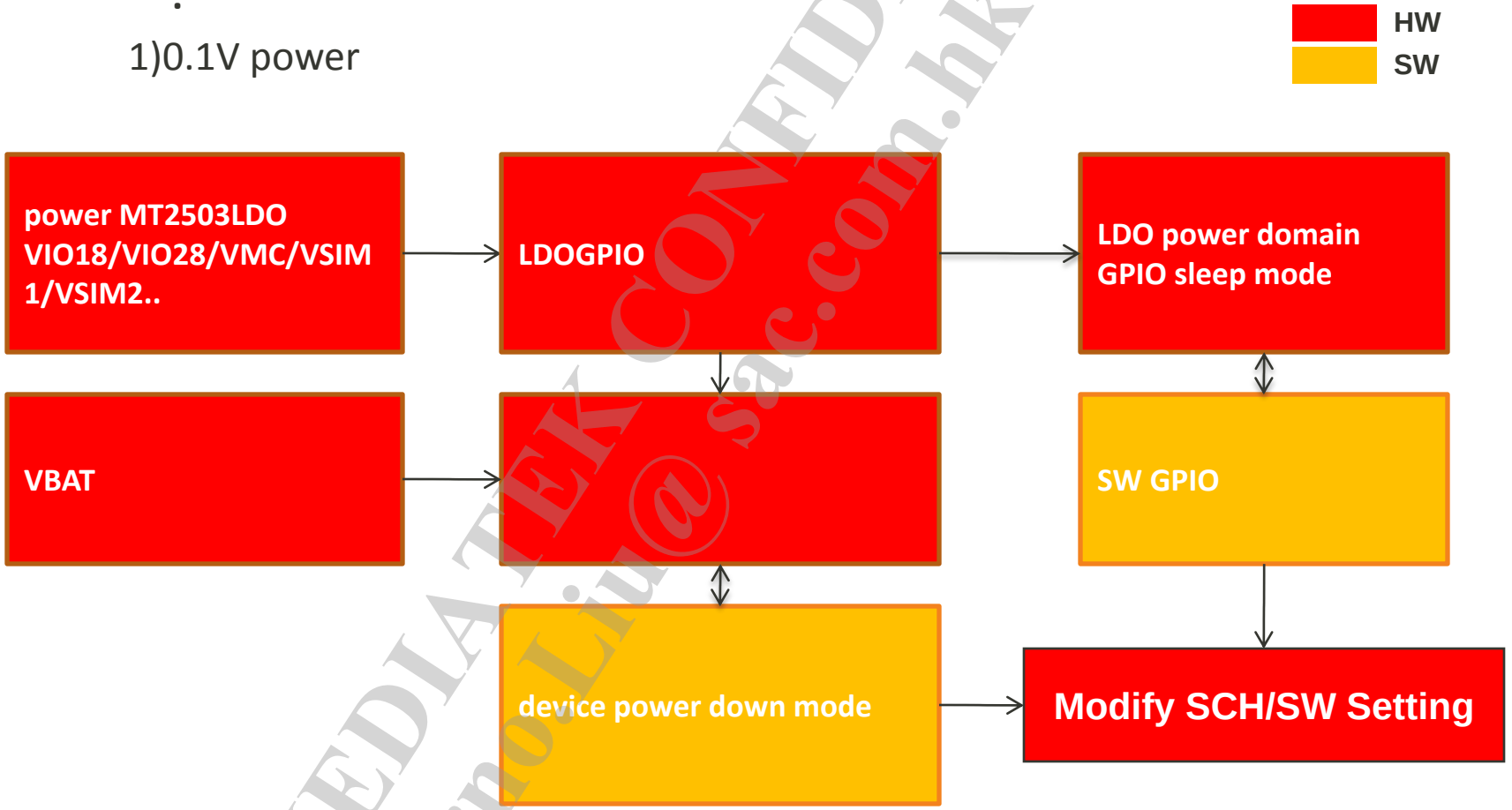
HW Debug skills — Leakage current issue (1)

- Leakage current
  - /
  -
  - BT , FM
  - No Power down (G-sensor, P-sensor, HR sensor , LCM, etc…)
  - Sleep mode
  - GPIO BB IO leakage

HW Debug skills — Leakage current issue (2)

- Leakage issue
  - :

    1)0.1V power



HW Debug skills — Leakage current issue (3)

– **power**

VBAT = 4.0v [Unit : mA]

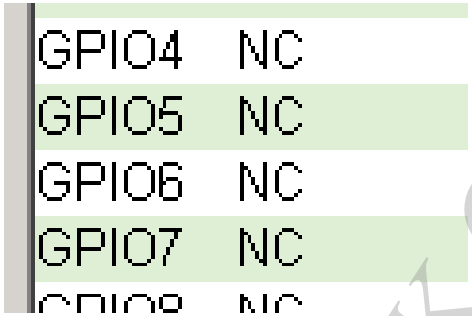
	(V)	(V)	(mA)	(mA)	(mA)	(mA)
Vcore	0.75					0.030
VIO18	1.8					0.069
VIO28	2.8					0.090
VSF	1.86					0.004
VA	2.8					0.038
VREF	1.12					0.001
VRTC	2.74					0.013
VRF	2.8					0.073
VUSB	3.3					0.001
VMC	OFF/1.8/2.8/3/3.3 (def: 3.3)					0.001
VCAMA	OFF/2.8					0
VIBR	OFF/2.8					0
VSIM1	OFF/1.8/3.0 (def: 1.8)					0
VSIM2	OFF/1.8/3.0 (def: 1.8)					0

SW Debug skills — Leakage current issue

- Sensor current consumption
  - **sensor should work in normal while it is not initialized**
  - **If sensors were found cost too much current, just add sensors init in power on stage**
  - **Just refer to macro CFG_MMI_MRE_ALL_SENSOR_INIT in source code and preload load mre application**

SW Debug skills — Leakage current issue

- GPIO current consumption
  - **GPIO should cost several mA current consumption if GPIO work in abnormal mode**
  - **Once GPIO is not used, just set it NC mode in codegen.dws**

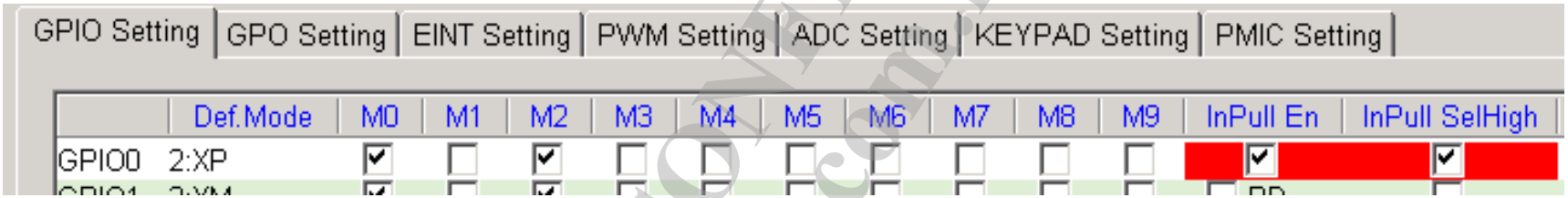


  - **GPIO should stay in the same level while system is sleeping**
    - **once GPIO is pull up external, GPIO should stay in high level while sleeping instead of low level**
    - **Power domain of GPIO should be the same as external pull power**

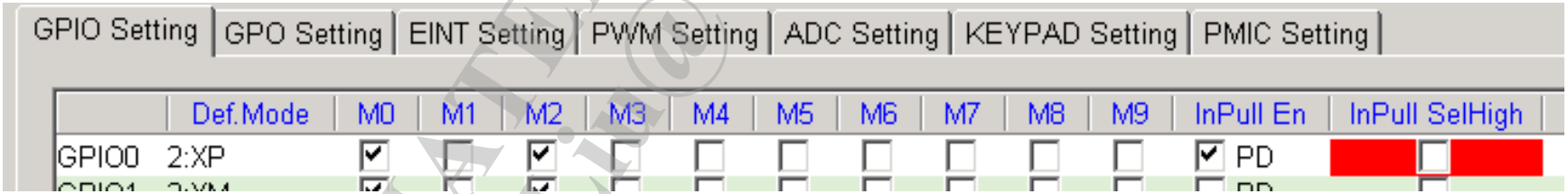
SRCLKENAI —— **GPIO Input PD**

SW Debug skills — Leakage current issue

- Pull a GPIO correctly
  - **You can just select InPull_En & InPull_SelHigh if you want a pull up resistance internal**

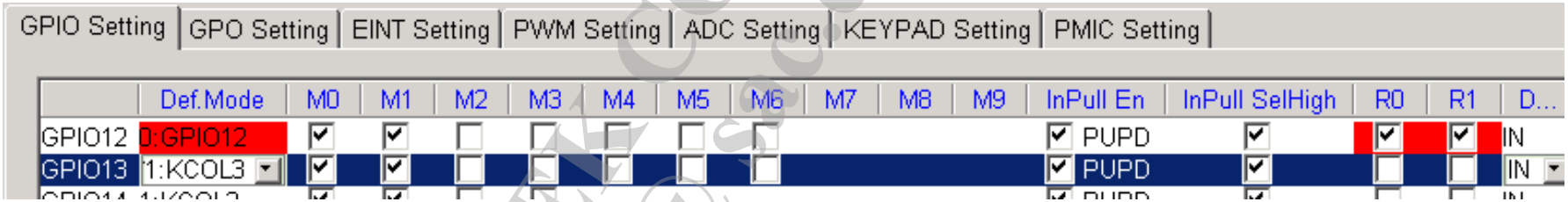


  - **You can just select InPull_En if you want a pull down resistance internal**



SW Debug skills — Leakage current issue

- Pull a GPIO correctly
  - **However, there are 2 internal pull up resistance in some GPIO setting e.g. keypad interface related GPIO**
  - **Pull up resistance R0,R1 should be selected if you want pull up the GPIO, or this GPIO should work in floating status instead**



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