|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Test Items Command-BB station | check\_secureboot\_status | tpm2util sb -status | raw: 0x00000009 disabled: 1 ignorearistacrt: 0 passwdintpm: 0 unlockspiflash: 1 enablespiupdate: 0 measuredboot: 0 Aboot# | tpm2util sb -status | disabled: 1 unlockspiflash: 1 |
| Test Items Command-RF station | Upgrade REL FW | eth\_init | eth\_init MAC0 addr:c4:14:a2:fb:21:80 0701-134533.46 [COM3][RECV] EDMA ver 1 hw init 0701-134535.33 [COM3][RECV] phy firmware read command : mmc read 0xbf1dad40 0x7800 0x800 MMC read: dev # 0, block # 30720, count 2048 ... 2048 blocks read: OK Loaded 30 PHY firmware from flash 0701-134536.10 [COM3][RECV] Using Cisco phy firmware format file image majo,mino,inc,test are 12,1,3,0 Downloading code to PHY RAM, please wait... 0701-134540.47 [COM3][RECV] Download of code to marvell 3610m RAM complete. 0701-134541.46 [COM3][RECV] Firmware version: 12.1.3.0 0701-134542.67 [COM3][RECV] phy firmware read command : mmc read 0xbf3dad80 0x7800 0x800 MMC read: dev # 0, block # 30720, count 2048 ... 0701-134542.80 [COM3][RECV] 2048 blocks read: OK Using Cisco phy firmware format file image majo,mino,inc,test are 12,1,3,0 Downloading code to PHY RAM, please wait... 0701-134547.19 [COM3][RECV] Download of code to marvell 3610m RAM complete. 0701-134548.19 [COM3][RECV] Firmware version: 12.1.3.0 0701-134548.30 [COM3][RECV] ipq9574\_edma\_init success! IPQ9574# | eth\_init | IPQ9574# |
| Test Items Command Final Functional Test (WNC diags) station | EnableSecureBoot | Telnet DUT command: ./fuse\_blower\_wnc\_pvt.sh | BLOWING HD FUSES WNC.... ------------------------------------- DONE ------------------------------------- ------------------------------------- VERIFYING HD FUSES WNC.... ------------------------------------- SUCCESS ------------------------------------- ------------------------------------- BLOWING ID FUSES.... ------------------------------------- DONE ------------------------------------- ------------------------------------- VERIFYING ID FUSES ------------------------------------- SUCCESS ------------------------------------- ------------------------------------- LOCKING ALL ID FUSES.... ------------------------------------- DONE /tmp# | ./fuse\_blower\_wnc\_pvt.sh | DONE DONE DONE /tmp# |
| Test Items Command-RF station | Check ART Partition & cal data | hexdump /dev/caldata | root@R7AQ-C1:/# hexdump /dev/caldata 0000000 0000 0000 0000 0000 0000 0000 0000 0000 \* 0200000 root@R7AQ-C1:/# | hexdump /dev/caldata | \* \* 0000000 0000 0000 0000 0000 0000 0000 0000 0000 0200000 \* 0200000 \* |
| Test Items Command-RF station | Unlock Bootloader | (command to ATOM PC) atom ACT2 SignData --InFile " + $"{MAC}\_zealand\_inputchallengedata.txt --InFormat txt --OutFormat xml > " + $"{MAC}\_zealand\_signdata\_output.xml | 0701-135438.78 [172.16.100.100][CMD] atom ACT2 SignData --InFile C414A2FB2180\_zealand\_inputchallengedata.txt --InFormat txt --OutFormat xml > C414A2FB2180\_zealand\_signdata\_output.xml 0701-135445.77 [172.16.100.100][RECV] atom ACT2 SignData --InFile C414A2FB2180\_zea land\_inputchallengedata.txt --InFormat txt --OutFormat xml > C414A2FB2180\_zealan d\_signdata\_output.xml ]0;C:\WINDOWS\system32\conhost.exe - atom ACT2 SignData --InFile C414A2FB2180\_zealand\_inputchallengedata.txt --InFormat txt --OutFormat xml ]0;C:\WINDOWS\system32\conhost.exe meraki@T1-1-1-Q-51774 C:\Cisco\ATOM> 0701-135445.78 [INFO] meraki@T1-1-1-Q-51774 C:\Cisco\ATOM>atom ACT2 SignData --InFile C414A2FB2180\_zea land\_inputchallengedata.txt --InFormat txt --OutFormat xml > C414A2FB2180\_zealan d\_signdata\_output.xml ]0;C:\WINDOWS\system32\conhost.exe - atom ACT2 SignData --InFile C414A2FB2180\_zealand\_inputchallengedata.txt --InFormat txt --OutFormat xml ]0;C:\WINDOWS\system32\conhost.exe meraki@T1-1-1-Q-51774 C:\Cisco\ATOM> 0701-135445.80 [SUI] UnlockBootloader SPEC:-1~1 Value:0 0701-135446.33 [LOG] Read :     0 SUCCESS   256  | atom ACT2 SignData --InFile " + $"{MAC}\_zealand\_inputchallengedata.txt --InFormat txt --OutFormat xml > " + $"{MAC}\_zealand\_signdata\_output.xml | 256 |
| Test Items Command-RF station | Load card | rmmod ecm\_wifi\_plugin rmmod monitor rmmod wifi\_3\_0 rmmod qca\_ol insmod qca\_ol testmode=1 insmod wifi\_3\_0 diag\_socket\_app -a 192.168.1.254 & /etc/init.d/ftm start usr/sbin/ftm -n -c /tmp/ftm.conf & | root@R7AQ-C1:/# rmmod ecm\_wifi\_plugin rmmod monitor rmmod wifi\_3\_0 rmmod qcmodule is not loaded a\_ol inroot@R7AQ-C1:/# rmmod monitor qca\_ol testmode=1 insmod wifi\_3\_0 diag\_socket\_app -a 192.168.1.254 & /etc/init.d/ftm start usr/sbin/ftm -n -c /tmp/ftm.conf & root@R7AQ-C1:/# rmmod wifi\_3\_0 root@R7AQ-C1:/# rmmod qca\_ol root@R7AQ-C1:/# insmod qca\_ol testmode=1 root@R7AQ-C1:/# insmod wifi\_3\_0 root@R7AQ-C1:/# diag\_socket\_app -a 192.168.1.254 & root@R7AQ-C1:/# /etc/init.d/ftm start diag\_socket\_log: Diag\_LSM\_Init succeeded. diag\_socket\_log: Remote device detected, remote\_ids: 0x7 diag\_socket\_log: socket\_count is: 4 diag: In diag\_register\_socket\_cb, registered socket callback function diag\_socket\_log: Translating address: 192.168.1.254 diag\_socket\_log: Trying to connect to address: 192.168.1.254, port: 2500 4096+0 records in 4096+0 records out 2097152 bytes (2.0MB) copied, 0.012125 seconds, 164.9MB/s root@R7AQ-C1:/# usr/sbin/ftm -n -c /tmp/ftm.conf & root@R7AQ-C1:/# diag\_socket\_log: Successful connect to address: 192.168.1.254, port number: 2500 diag:diag\_switch\_logging: kernel supported: NUM\_PERIPHERALS = 7, DIAG\_CON\_ALL: 255 logging switched  diag\_send\_socket\_data:hdlc: Delimiter found at the middle index 3 root@R7AQ-C1:/# | rmmod ecm\_wifi\_plugin rmmod monitor rmmod wifi\_3\_0 rmmod qca\_ol insmod qca\_ol testmode=1 insmod wifi\_3\_0 diag\_socket\_app -a 192.168.1.254 & /etc/init.d/ftm start usr/sbin/ftm -n -c /tmp/ftm.conf & | logging switched |
| Test Items Command Post Assembly station | Traffic\_Test | Console DUT (9600) command: test interface all seconds 10 fixed | Test on port1.0.1 complete Test on port1.0.2 complete Test on port1.0.3 complete Test on port1.0.4 complete | test interface all seconds 10 fixed | Test on port1.0.1 complete Test on port1.0.2 complete Test on port1.0.3 complete Test on port1.0.4 complete |
| Test Items Command-RF station | Upgrade REL FW | setenv ipaddr {dutIP}  setenv serverip {pcIP} | 0701-134548.30 [COM3][CMD] setenv ipaddr 192.168.1.1 0701-134548.42 [COM3][RECV] setenv ipaddr 192.168.1.1 IPQ9574# 0701-134548.42 [COM3][CMD] setenv serverip 192.168.1.186 0701-134548.55 [COM3][RECV] setenv serverip 192.168.1.186 IPQ9574# | setenv ipaddr {dutIP}  setenv serverip {pcIP} | IPQ9574# IPQ9574# |
| Test Items Command-BB station | check\_rtc | hwclock --show | Thu Jul 7 22:08:54 2022 0.000000 seconds # The DUT RTC deviation should be within the specified deviation: [-12 \* day] - 6 < [SFCS – Read RTC] < [+5 \* day] + 6 The “day” is an integer (unconditional carry) (RTC deviation: -12 ~ +5, SW read / write delay: -6 ~ +6) | hwclock --show | Thu Jul 7 22:08:54 2022 0.000000 seconds |
| Test Items Command-BB station | CheckSPI\_ExtraCert | flashrom -l /etc/spi\_layout -i extra\_cert -r /tmp/extra\_cert.save.2 | flashrom v1.1 on Linux 4.19.142.Ar-27731834.rramaak419xgbeport0.1+ (x86\_64) flashrom is free software, get the source code at https://flashrom.org Using region: "extra\_cert". Using default programmer "internal" with arguments "". Using clock\_gettime for delay loops (clk\_id: 1, resolution: 1ns). Found chipset "AMD FP4". Enabling flash write... OK. Found Macronix flash chip "MX25U12835F" (16384 kB, SPI) mapped at physical address 0xff000000. Unsetting lock bit(s) failed. Reading flash... done. Aboot# | flashrom -l /etc/spi\_layout -i extra\_cert -r /tmp/extra\_cert.save.2 | Unsetting lock bit(s) failed. Reading flash... done. |
| Test Items Command-BB station | check\_eMMC\_info | diag storage emmc info test | SKU=X1\_24P HwRev=10.04 Display eMMC chipset infomation: ======================================================== type: 'MMC' manufacturer: 'Toshiba' '' product: '008GB0' 0.964109625 serial: 0x00000000 manfacturing date: 2001 sep Max Enhanced Area Size [MAX\_ENH\_SIZE\_MULT]: 0x0003a4 Enhanced User Data Area Size [ENH\_SIZE\_MULT]: 0x000000 ======================================================== vendor=Toshiba (SPEC: Toshiba,Toshiba) product=008GB0 (SPEC: 008GB0,008GB1) max\_enh\_size=0x0003a4 (SPEC: 0x0003a4,0x0003a4) enh\_size=0x000000 (SPEC: 0x000000,0x000000) Result: PASS # | diag storage emmc info test | Result: PASS |
| Test Items Command-RF station | Remove i/o expander driver reload script | sed -i 's/\/etc\/i2c\_kmodule\/insert\_i2c\_kmodule.sh/#\/etc\/i2c\_kmodule\/insert\_i2c\_kmodule.sh/g' /usr/sbin/wncgps sync; sync; cat /usr/sbin/wncgps | grep "#/etc/i2c\_kmodule/insert\_i2c\_kmodule.sh" | root@R7AQ-C1:/# sed -i 's/\/etc\/i2c\_kmodule\/insert\_i2c\_kmodule.sh/#\/etc\/i2c\_kmodule\/insert\_i2c\_kmodule.sh/g' /usr/sbin/wncgps root@R7AQ-C1:/# sync; sync; root@R7AQ-C1:/# cat /usr/sbin/wncgps | grep "#/etc/i2c\_kmodule/insert\_i2c\_kmodule.sh" #/etc/i2c\_kmodule/insert\_i2c\_kmodule.sh > /dev/null 2>&1 #/etc/i2c\_kmodule/insert\_i2c\_kmodule.sh > /dev/null 2>&1 | sed -i 's/\/etc\/i2c\_kmodule\/insert\_i2c\_kmodule.sh/#\/etc\/i2c\_kmodule\/insert\_i2c\_kmodule.sh/g' /usr/sbin/wncgps sync; sync; cat /usr/sbin/wncgps | grep "#/etc/i2c\_kmodule/insert\_i2c\_kmodule.sh" | #/etc/i2c\_kmodule/insert\_i2c\_kmodule.sh > /dev/null 2>&1 #/etc/i2c\_kmodule/insert\_i2c\_kmodule.sh > /dev/null 2>&1 |
| Test Items Command-Final station | VerifySecurityConfig | securebootctl mfg –display | Secure Boot: enabled Password default storage: flash 16:00:00:00:03:7C:02:7D:2C:8A:AB:97:4C:00:00:00:00:00:03 28:00:00:00:11:3B:51:91:32:5F:E7:5A:5E:00:00:00:00:00:11 Arista certificate 3: No certificate is configured 28:00:00:00:10:3F:BA:D4:42:9C:84:ED:09:00:00:00:00:00:10 | securebootctl mfg –display | Secure Boot: enabled Password default storage: flash 16:00:00:00:03:7C:02:7D:2C:8A:AB:97:4C:00:00:00:00:00:03 28:00:00:00:11:3B:51:91:32:5F:E7:5A:5E:00:00:00:00:00:11 Arista certificate 3: No certificate is configured 28:00:00:00:10:3F:BA:D4:42:9C:84:ED:09:00:00:00:00:00:10 |
| Test Items Command-RF station | Unlock Bootloader | (command to DUT) 3074 | 0701-135434.33 [COM3][CMD] 3074 0701-135434.47 [COM3][RECV] 3074 Certificate Chain Length: 3074 Enter Cert Chain data: | 3074 | Enter Cert Chain data: |
| Test Items Command- FQC station | RemoveDUTNetwork | MR\_CCT.exe -r “SN” | D:\Projects\Meraki\CM66-VE\Other\MR\_CCT>MR\_CCT.exe -r Q5AF-GRFA-ZPDZ \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* \* Copyright (c) 2022, Cisco Systems, Inc. \* \* For use by WNC Taiwan ONLY \* \* Company Confidential \* \*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Cisco Meraki Cloud Connectivity Test Version 1.0 Removing Device with Serial Q5AF-GRFA-ZPDZ from the CCT Network... Q5AF-GRFA-ZPDZ has been removed [SUCCESS] DUT is not in the CCT Network D:\Projects\Meraki\CM66-VE\Other\MR\_CCT> | MR\_CCT.exe -r “SN” | [SUCCESS] DUT is not in the CCT Network MR\_CCT.exe -r Q5AF-GRFA-ZPDZ |
| Test Items Command-BB station | I2C Bus Check | i2cdetect -r -y 6 | root@R7AQ-C1:/# i2cdetect -r -y 6 0 1 2 3 4 5 6 7 8 9 a b c d e f00: -- -- -- -- -- -- -- -- -- -- -- -- --10: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --20: -- -- UU -- -- -- -- -- -- -- -- -- -- -- UU --30: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --40: 40 41 -- -- -- -- -- -- -- -- -- -- -- -- -- --50: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --60: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --70: -- UU -- -- -- -- -- --root@R7AQ-C1:/# | i2cdetect -r -y 6 | 20: -- -- UU -- -- -- -- -- -- -- -- -- -- -- UU -- |
| Test Items Command Post Assembly station | Check board information | Command 1: rm -f /tmp/devinfo.tmp  Command 2: devinfo\_access show Command 3: ifconfig | grep eth0 | cut -d ' ' -f 11 Command 4: hexdump -C /dev/mtd4 -s 0x4 -n 6 | cut -c 11-27 Command 5: hexdump -C /dev/mtd4 -s 0xa -n 6 | cut -c 11-27 Command 6: hexdump -C /dev/mtd4 -s 0x5004 -n 6 | cut -c 11-27 | Command 2: SKU=VAT-02-000 Serial\_Number=1222146000066 HW\_Rev=3.0 SW\_Rev=3.21.12.DVT-RC.4 Command 3: 84:EB:3E:24:19:4E Command 4: 84 eb 3e 24 19 4f Command 5: 84 eb 3e 24 19 50 Command 6: 84 eb 3e 24 19 51 | rm -f /tmp/devinfo.tmp devinfo\_access show ifconfig | grep eth0 | cut -d ' ' -f 11 hexdump -C /dev/mtd4 -s 0x4 -n 6 | cut -c 11-27 hexdump -C /dev/mtd4 -s 0xa -n 6 | cut -c 11-27 hexdump -C /dev/mtd4 -s 0x5004 -n 6 | cut -c 11-27 | VAT-02-000 1222146000066 3.0 3.21.12.DVT-RC.4 84:EB:3E:24:19:4E 84 eb 3e 24 19 4f 84 eb 3e 24 19 50 84 eb 3e 24 19 51 |
| Test Items Command Post Assembly station | Upgrade to production FW | Command 1: cd /tmp Command 2: tftp -g -r openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtrc1-squashfs-sysupgrade.bin 192.168.1.100 Command 3: md5sum openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtr Command 4: sysupgrade -F -n openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtrc1-squashfs-sysupgrade.bin | Command 3: 53577a59d53742a4321d852aad2c0c83 | cd /tmp tftp -g -r openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtrc1-squashfs-sysupgrade.bin 192.168.1.100 md5sum openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtr sysupgrade -F -n openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtrc1-squashfs-sysupgrade.bin cd /tmp tftp -g -r openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtrc1-squashfs-sysupgrade.bin 192.168.1.100 md5sum openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtr sysupgrade -F -n openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtrc1-squashfs-sysupgrade.bin cd /tmp tftp -g -r openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtrc1-squashfs-sysupgrade.bin 192.168.1.100 md5sum openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtr sysupgrade -F -n openwrt-mediatek-mt7622-mediatek\_mt7622-mesh-node-dvtrc1-squashfs-sysupgrade.bin | 53577a59d53742a4321d852aad2c0c83 53577a59d53742a4321d852aad2c0c83 53577a59d53742a4321d852aad2c0c83 53577a59d53742a4321d852aad2c0c83 53577a59d53742a4321d852aad2c0c83 53577a59d53742a4321d852aad2c0c83 53577a59d53742a4321d852aad2c0c83 53577a59d53742a4321d852aad2c0c83 |
| Test Items Command Post Assembly station | Check board information after upgrading to production FW | Command 1: devinfo\_access show | Command 1: SKU=VAT-02-000 Serial\_Number=1222146000246 HW\_Rev=3.0 SW\_Rev=3.21.12.DVT-RC.4 | devinfo\_access show | VAT-02-000 1222146000246 3.0 3.21.12.DVT-RC.4 |
| Test Items Command Post Assembly station | Check Ethernet and wifi MAC address | Command 1: ifconfig eth0 | grep "HWaddr" | cut -c 39-55 Command 2: iw wlan1 info | grep addr | cut -c 7-23 Command 3: iw wlan0 info | grep addr | cut -c 7-23 Command 4: iw wlan2 info | grep addr | cut -c 7-23 | Command 1: 84:EB:3E:24:19:4E Command 2: 84:eb:3e:24:19:4f Command 3: 84:eb:3e:24:19:50  Command 4: 84:eb:3e:24:19:51 | ifconfig eth0 | grep "HWaddr" | cut -c 39-55 iw wlan1 info | grep addr | cut -c 7-23 iw wlan0 info | grep addr | cut -c 7-23 iw wlan2 info | grep addr | cut -c 7-23 | 84:EB:3E:24:19:4E 84:eb:3e:24:19:4f 84:eb:3e:24:19:50 84:eb:3e:24:19:51 |
| Test Items Command Post Assembly station | Check BT MAC address | Command 1: uart\_launcher -c 921600 -p /dev/ttyS2 -s & Command 2: btservice& Command 3: btmw-rpc-test Command 4: Ctrl+z | Command 3: ps\_dev\_info.bdAddr: 84:EB:3E:24:19:52 | uart\_launcher -c 921600 -p /dev/ttyS2 -s & btservice& btmw-rpc-test Ctrl+z | 84:EB:3E:24:19:52 |
| Test Items Command Post Assembly station | DDR | Command 1: memtester 1 1 | Compare XOR : ok Compare SUB : ok Compare MUL : ok Compare DIV : ok Compare OR : ok Compare AND : ok Sequential Increment : ok | memtester 1 1 | ok ok ok ok ok ok ok ok ok ok ok ok |
| Test Items Command Post Assembly station | THERM\_BAT Thermal | Command 1: cat /sys/devices/platform/soc@0/soc@0:bus@30800000/30a30000.i2c/i2c-1/1-0034/voltages/v\_therm\_batt Command 2: cat /sys/devices/platform/soc@0/soc@0:bus@30800000/30a30000.i2c/i2c-1/1-0034/voltages/v\_therm1 Command 3: cat /sys/devices/platform/soc@0/soc@0:bus@30800000/30a30000.i2c/i2c-1/1-0034/voltages/v\_therm2 | Command 1: Passed if returned value in the 5th column is 500 ~ 650 Command 1: Passed if returned value in the 5th column is 1100 ~ 1600 Command 1: Passed if returned value in the 5th column is 1100 ~ 1600 | cat /sys/devices/platform/soc@0/soc@0:bus@30800000/30a30000.i2c/i2c-1/1-0034/voltages/v\_therm\_batt cat /sys/devices/platform/soc@0/soc@0:bus@30800000/30a30000.i2c/i2c-1/1-0034/voltages/v\_therm1 cat /sys/devices/platform/soc@0/soc@0:bus@30800000/30a30000.i2c/i2c-1/1-0034/voltages/v\_therm2 | 500 ~ 650 1100 ~ 1600 1100 ~ 1600 |
| Test Items Command Post Assembly station | DECT interface check | Command 1: cmbs\_tcx -comname ttymxc0 -baud 921600  Command 2: q | Command 1: ############################################################# # Version: # Application : Version 4.13.2 - Build 8 - RC 18 # Target : Version 4.13.2 - Build 8 - RC 18 # Registration Window CLOSED # ############################################################# | cmbs\_tcx -comname ttymxc0 -baud 921600 q | Version 4.13.2 - Build 8 - RC 18 Version 4.13.2 - Build 8 - RC 18 |
| Test Items Command Post Assembly station | Speaker and Mic loopback test | Command 1: panel-audio-test -m -v -E1 | test\_mics 2345: Testing Mic 1 Gallus or Nene pulseaudio play\_frames\_per\_period 256 test\_mics 2665: Mic data sent. Wait for analysis. fundamental (bin 177 of 1024) frequency 1383: -21.644 dB, THD(f) 0.30% response is OK Issuing cmd dx-socket-cli /tmp/dx-host-sock -a "tc1 2" response is OK arecord: no process found test\_mics 2345: Testing Mic 2 Gallus or Nene pulseaudio play\_frames\_per\_period 256 test\_mics 2665: Mic data sent. Wait for analysis. fundamental (bin 177 of 1024) frequency 1383: -11.684 dB, THD(f) 0.60% main 3588: panel-audio-test microphone test success. Both microphones ok. 12399 ms elapsed for entire test \*\*\*\*\*\*\* panel-audio-test analysis is acceptable \*\*\*\*\*\*\* Testing Mic 1 db value: -9~ -4 Testing Mic 1 THD value: 0 ~ 50 Testing Mic 2 db value: -11~ -4 Testing Mic 2 THD value: 0~ 50 | panel-audio-test -m -v -E1 | fundamental (bin 177 of 1024) frequency 1383: -21.644 dB, THD(f) 0.30% fundamental (bin 177 of 1024) frequency 1383: -11.684 dB, THD(f) 0.60% -9~ -4 0 ~ 50 -11~ -4 0~ 50 |
| Test Items Command Post Assembly station | PIEZO Output Voltage | Command 1: echo 14 > /sys/class/gpio/export; echo out > /sys/class/gpio/gpio14/direction; echo 1 > /sys/class/gpio/gpio14/value Command 2: killall dx-host; /usr/bin/dx-host socket > /dev/null & Command 3: sleep 10 Command 4: dx-socket-cli /tmp/dx-host-sock -a "uc0" Command 5: dx-socket-cli /tmp/dx-host-sock -a "tc1 1" Command 6: sleep 1 Command 7: tonegen -z -t0 -d 2 & Command 8: arecord -D plughw:CARD=dspgDual,DEV=1 -r 16000 -f S16\_LE -d2 -c 2 piezo.wav Command 9: ffmpeg -i piezo.wav -af "volumedetect" -f null /dev/null | video:0kB audio:125kB subtitle:0kB other streams:0kB global headers:0kB muxing overhead: unknown [Parsed\_volumedetect\_0 @ 0xaaaac56e5c20] n\_samples: 64000 [Parsed\_volumedetect\_0 @ 0xaaaad15d0c20] mean\_volume: -7.8 dB [Parsed\_volumedetect\_0 @ 0xaaaad15d0c20] max\_volume: 0.0 dB  [Parsed\_volumedetect\_0 @ 0xaaaac56e5c20] histogram\_2db: 3774 root@imx8mm-magellan:~# mean\_volume: -10 ~ -3  max\_volume: -3 ~ 3 | echo 14 > /sys/class/gpio/export; echo out > /sys/class/gpio/gpio14/direction; echo 1 > /sys/class/gpio/gpio14/value killall dx-host; /usr/bin/dx-host socket > /dev/null & sleep 10 dx-socket-cli /tmp/dx-host-sock -a "uc0" dx-socket-cli /tmp/dx-host-sock -a "tc1 1" sleep 1 tonegen -z -t0 -d 2 & arecord -D plughw:CARD=dspgDual,DEV=1 -r 16000 -f S16\_LE -d2 -c 2 piezo.wav ffmpeg -i piezo.wav -af "volumedetect" -f null /dev/null | mean\_volume: -7.8 dB max\_volume: 0.0 dB -10 ~ -3 -3 ~ 3 |
| Test Items Command Post Assembly station | LTE status test | Command 1: miniterm.py /dev/ttyUSB3 115200 Command 2: AT+QGMR Command 3: AT+CGSN | Command 2: EG91NAXGAR07A03M1G\_01.002.01.002 Command 3: Returned value is 15-digit | miniterm.py /dev/ttyUSB3 115200 AT+QGMR AT+CGSN | EG91NAXGAR07A03M1G\_01.002.01.002 15-digit |
| Test Items Command Post Assembly station | SIM 1 test | Command 1: while [ ! -e /dev/ttyUSB3 ]; do echo "waiting LTE ..."; sleep 1; done; sleep 1 miniterm.py /dev/ttyUSB3 115200  at+qdsim? if (at+qdsim? is 1) at+qdsim=0 quit miniterm.py echo 0 > /sys/class/cell/cell0/enable; sleep 0.5; echo 1 > /sys/class/cell/cell0/enable Command 2: while [ ! -e /dev/ttyUSB3 ]; do echo "waiting LTE ..."; sleep 5; done; sleep 10 Command 3: miniterm.py /dev/ttyUSB3 115200 Command 4: at+qdsim? Command 5: AT+ICCID  Command 6: AT+CIMI  Command 7: at+qdsim=1 | Command 4: +QDSIM: 0 Command 5: 20-digit number  Command 6: 15-digit number | while [ ! -e /dev/ttyUSB3 ]; do echo "waiting LTE ..."; sleep 1; done; sleep 1 miniterm.py /dev/ttyUSB3 115200  at+qdsim? if (at+qdsim? is 1) at+qdsim=0 quit miniterm.py echo 0 > /sys/class/cell/cell0/enable; sleep 0.5; echo 1 > /sys/class/cell/cell0/enable while [ ! -e /dev/ttyUSB3 ]; do echo "waiting LTE ..."; sleep 5; done; sleep 10 miniterm.py /dev/ttyUSB3 115200 at+qdsim? AT+ICCID AT+CIMI at+qdsim=1 | +QDSIM: 0 20-digit number 15-digit number |
| Test Items Command Post Assembly station | SIM 2 test | Command 1: sleep 35 Command 2: miniterm.py /dev/ttyUSB4 115200 Command 3: at+qdsim? Command 4: AT+ICCID  Command 5: AT+CIMI  Command 6: at+qdsim=0 | Command 3: +QDSIM: 1 Command 4: 20-digit number  Command 5: 15-digit number | sleep 35 miniterm.py /dev/ttyUSB4 115200 at+qdsim? AT+ICCID AT+CIMI at+qdsim=0 | +QDSIM: 1 20-digit number 15-digit number |
| Test Items Command Post Assembly station | Write SKU number | Command 1: skunumset; umount /media/bootscript; mount /media/bootscript Command 2: VS-SHP000-001 Command 3: cat /media/bootscript/sku.txt | Command 1: skunumset: boardcheck succeeded Command 2: skunumset: Done setting SKU Command 3: VS-SHP000-001 | skunumset; umount /media/bootscript; mount /media/bootscript VS-SHP000-001 cat /media/bootscript/sku.txt | skunumset: boardcheck succeeded skunumset: Done setting SKU VS-SHP000-001 |
| Test Items Command Post Assembly station | G sensor test | Command 1: grep -r "" /sys/bus/iio/devices/iio:device0/in\*raw | /sys/bus/iio/devices/iio:device0/in\_accel\_x\_raw:108 /sys/bus/iio/devices/iio:device0/in\_accel\_y\_raw:-32 /sys/bus/iio/devices/iio:device0/in\_accel\_z\_raw: 1040 -100 < x < 100 -100 < y < 100 -1200 < z < -800 | grep -r "" /sys/bus/iio/devices/iio:device0/in\*raw | in\_accel\_x\_raw:108 in\_accel\_y\_raw:-32 in\_accel\_z\_raw: 1040 |
| Test Items Command Post Assembly station | I2C device check | Command 1: i2cdetect -r -y 0 | grep -o UU | wc -l  Command 2: i2cdetect -r -y 1 | grep -o UU | wc -l  Command 3: i2cdetect -r -y 2 | grep -o UU | wc –l Command 4: i2cdetect -r -y 3 | grep -o UU | wc -l | Command 1: 1 Command 2: 2 Command 3: 2 Command 4: 2 | i2cdetect -r -y 0 | grep -o UU | wc -l i2cdetect -r -y 1 | grep -o UU | wc -l i2cdetect -r -y 2 | grep -o UU | wc –l i2cdetect -r -y 3 | grep -o UU | wc -l | 1 2 2 2 |
| Test Items Command Post Assembly station | Speaker and Microphone Test | Command 1: cmbs\_tcx -comname ttymxc0 -baud 921600 Command 2: s Command 3: 2 Command 4: S Command 5: 0 Command 6: Enter Command 7: q Command 8: q Command 9: sleep 1;echo 0 > /sys/class/gpio/gpio52/value;sleep 0.5;echo 1 > /sys/class/gpio/gpio52/value;sleep 1 Command 10: cmbs\_tcx -comname ttymxc0 -baud 921600 Command 10: s Command 11: 1 Command 12: S Command 13: q Command 14: q Command 15: q Command 16: killall dx-host; /usr/bin/dx-host socket > /dev/null & Command 17: sleep 10 Command 18: panel-audio-test -m -v -E1 -V 5 | Command 18: test\_mics 2345: Testing Mic 1 Gallus or Nene pulseaudio play\_frames\_per\_period 256 test\_mics 2665: Mic data sent. Wait for analysis. fundamental (bin 177 of 1024) frequency 1383: -21.644 dB, THD(f) 0.30% response is OK Issuing cmd dx-socket-cli /tmp/dx-host-sock -a "tc1 2" response is OK arecord: no process found test\_mics 2345: Testing Mic 2 Gallus or Nene pulseaudio play\_frames\_per\_period 256 test\_mics 2665: Mic data sent. Wait for analysis. fundamental (bin 177 of 1024) frequency 1383: -11.684 dB, THD(f) 0.60% main 3588: panel-audio-test microphone test success. Both microphones ok. 12399 ms elapsed for entire test \*\*\*\*\*\*\* panel-audio-test analysis is acceptable \*\*\*\*\*\*\* Testing Mic 1 db value: -12 ~ -4 Testing Mic 1 THD value: 0 ~ 20 Testing Mic 2 db value: -10 ~ -2 Testing Mic 2 THD value: 15 ~ 35 | cmbs\_tcx -comname ttymxc0 -baud 921600 s 2 S 0 Enter q q sleep 1;echo 0 > /sys/class/gpio/gpio52/value;sleep 0.5;echo 1 > /sys/class/gpio/gpio52/value;sleep 1 cmbs\_tcx -comname ttymxc0 -baud 921600 s 1 S q q q killall dx-host; /usr/bin/dx-host socket > /dev/null & sleep 10 panel-audio-test -m -v -E1 -V 5 | fundamental (bin 177 of 1024) frequency 1383: -21.644 dB, THD(f) 0.30% fundamental (bin 177 of 1024) frequency 1383: -11.684 dB, THD(f) 0.60% -12 ~ -4 0 ~ 20 -10 ~ -2 15 ~ 35 |
| Test Items Command Post Assembly station | PIEZO Alarm Test | Command 1: cd /tmp; tar xvf /usr/sbin/ffmpeg.tar > /dev/null; cp ffmpeg/ffmpeg /usr/sbin/; cp ffmpeg/lib/\* /usr/lib; sync; cd Command 2: killall dx-host; /usr/bin/dx-host socket > /dev/null & Command 3: sleep 10 Command 4: dx-socket-cli /tmp/dx-host-sock -a "uc0" Command 5: dx-socket-cli /tmp/dx-host-sock -a "tc1 2" Command 6: sleep 1 Command 7: tonegen -z -t0 -d 2 & Command 8: arecord -D plughw:CARD=dspgDual,DEV=1 -r 16000 -f S16\_LE -d2 -c 2 piezo.wav Command 9: ffmpeg -i piezo.wav -af "volumedetect" -f null /dev/null | video:0kB audio:125kB subtitle:0kB other streams:0kB global headers:0kB muxing overhead: unknown [Parsed\_volumedetect\_0 @ 0xaaaafed5bc20] n\_samples: 64000 [Parsed\_volumedetect\_0 @ 0xaaaafed5bc20] mean\_volume: -4.0 dB [Parsed\_volumedetect\_0 @ 0xaaaafed5bc20] max\_volume: 0.0 dB [Parsed\_volumedetect\_0 @ 0xaaaafed5bc20] histogram\_24db: 4 [Parsed\_volumedetect\_0 @ 0xaaaafed5bc20] histogram\_25db: 10 [Parsed\_volumedetect\_0 @ 0xaaaafed5bc20] histogram\_26db: 17 [Parsed\_volumedetect\_0 @ 0xaaaafed5bc20] histogram\_27db: 15 [Parsed\_volumedetect\_0 @ 0xaaaafed5bc20] histogram\_28db: 21 root@imx8mn-nene:~# mean\_volume: -6 ~ 0 dB max\_volume: -6 ~ 0 dB | cd /tmp; tar xvf /usr/sbin/ffmpeg.tar > /dev/null; cp ffmpeg/ffmpeg /usr/sbin/; cp ffmpeg/lib/\* /usr/lib; sync; cd killall dx-host; /usr/bin/dx-host socket > /dev/null & sleep 10 dx-socket-cli /tmp/dx-host-sock -a "uc0" dx-socket-cli /tmp/dx-host-sock -a "tc1 2" sleep 1 tonegen -z -t0 -d 2 & arecord -D plughw:CARD=dspgDual,DEV=1 -r 16000 -f S16\_LE -d2 -c 2 piezo.wav ffmpeg -i piezo.wav -af "volumedetect" -f null /dev/null | mean\_volume: -4.0 dB max\_volume: 0.0 dB -6 ~ 0 -6 ~ 0 |
| Test Items Command Post Assembly station | Verify BT MAC | Command 1: modprobe btmtk\_usb Command 2: boots -c raddr | [boots] User(7) <-> Socket(4) <-> server [boots\_osi] Command: pidof boots\_srv > /dev/null  CMD: 09 10 00  Event: 0E 0A 01 09 10 00 AC 99 23 3E EB 84 (Read BDADD: 0x 84-EB-3E-23-99-AC) | modprobe btmtk\_usb boots -c raddr | 84-EB-3E-23-99-AC |
| Test Items Command Post Assembly station | Backup WiFi Calibration Data | Command 1: cp /lib/firmware/EEPROM\_MT7663.bin /media/bootscript;sync Command 2: md5sum /media/bootscript/EEPROM\_MT7663.bin && echo PASS || echo NG | Get “PASS” response | cp /lib/firmware/EEPROM\_MT7663.bin /media/bootscript;sync md5sum /media/bootscript/EEPROM\_MT7663.bin && echo PASS || echo NG | PASS |
| Test Items Command Post Assembly station | Verify EMMC partitions | Command 1: mount | grep mmcblk2p4 | wc -l | Verify returned value is "1" to indicate the partition exists | mount | grep mmcblk2p4 | wc -l | 1 |
| Test Items Command Post Assembly station | G sensor test | Command 1: grep -r "" /sys/bus/iio/devices/iio:device0/in\*raw | sys/bus/iio/devices/iio:device0/in\_accel\_x\_raw:108 /sys/bus/iio/devices/iio:device0/in\_accel\_y\_raw:-32 /sys/bus/iio/devices/iio:device0/in\_accel\_z\_raw:-1040 root@imx8mn-nene:~# x: -100 ~ 100 y: -1200 ~ -900  z: -100 ~ 100 | grep -r "" /sys/bus/iio/devices/iio:device0/in\*raw | in\_accel\_x\_raw:108 in\_accel\_y\_raw:-32 in\_accel\_z\_raw:-1040 -100 ~ 100 -1200 ~ -900 -100 ~ 100 |
| Test Items Command Post Assembly station | Check FW version | Command 1: cat /etc/version | Get “20210118091636” response | cat /etc/version | 20210118091636 |
| Test Items Command Post Assembly station | Check HW version | Command 1: cat /sys/fsl\_otp/HW\_OCOTP\_GP10 | Get “0x3” response | cat /sys/fsl\_otp/HW\_OCOTP\_GP10 | 0x3 |
| Test Items Command Post Assembly station | ADC test | Command 1: Cat /sys/bus/iio/devices/iio\:device3/in\_voltage0\_raw Command 2: Cat /sys/bus/iio/devices/iio\:device3/in\_voltage1\_raw Command 3: Cat /sys/bus/iio/devices/iio\:device3/in\_voltage2\_raw Command 4: Cat /sys/bus/iio/devices/iio\:device3/in\_voltage3\_raw | Command 1: Read value: 3900 +/- 50 Command 2: Read value: 3900 +/- 50 Command 3: Read value: 2700 +/- 200 Command 4: Read value: 1650 +/- 200 | Cat /sys/bus/iio/devices/iio\:device3/in\_voltage0\_raw Cat /sys/bus/iio/devices/iio\:device3/in\_voltage1\_raw Cat /sys/bus/iio/devices/iio\:device3/in\_voltage2\_raw Cat /sys/bus/iio/devices/iio\:device3/in\_voltage3\_raw | 3900 +/- 50 3900 +/- 50 2700 +/- 200 1650 +/- 200 |
| Test Items Command Post Assembly station | Speaker/Mic loopback test | Command 1: python3 /usr/bin/cmnd\_python3x.py Command 2: ttymxc2 Command 3: b Command 4: b Command 5: a Command 6: 2 Command 7: 0 Command 8: a Command 9: r Command 10: Ctrl+z Command 10: dx-host Command 11: ver Command 12: panel-audio-test -m -v -E1 -V5 | Command 11: Check the D2 fw\_version and D8 fw\_version. D2 fw\_version=461.7 D8 fw\_version=465.1 Command 12: Need to meet all conditions below. Keywords: panel-audio-test analysis is acceptable Testing Mic 1 THD value: < 20 Testing Mic 2 THD value: < 20 | python3 /usr/bin/cmnd\_python3x.py ttymxc2 b b a 2 0 a r Ctrl+z dx-host ver panel-audio-test -m -v -E1 -V5 | D2 fw\_version=461.7 D8 fw\_version=465.1 panel-audio-test analysis is acceptable < 20 < 20 |
| Test Items Command Post Assembly station | BT interface check | Command 1: modprobe btmtk\_usb dmesg | grep "usb registration success" | Get “btmtk\_usb\_init: usb registration success.” response. | modprobe btmtk\_usb dmesg | grep "usb registration success" | btmtk\_usb\_init: usb registration success. |
| Test Items Command Post Assembly station | eSIM Test | Command 1: test\_comport -agc 'AT+QUIMSLOT=2' Command 2: test\_comport -agc 'AT+QUIMSLOT?' Command 3: test\_comport -agc 'AT+CFUN=1' Command 4: test\_comport -agc 'AT+CFUN?' Command 5: test\_comport -agc 'AT+CSIM=10,"0070000001"' Command 6: test\_comport –agc 'AT+CSIM=44,"01A4040010A0000005591010FFFFFFFF890000010000"' Command 7: test\_comport -agc 'AT+CSIM=10,"01C0000074"' Command 8: test\_comport -agc 'AT+CSIM=24,"81E2910006BF3E035C015A00"' Command 9: test\_comport -agc 'AT+CSIM=10,"01C0000015"' Command 10: test\_comport -agc 'AT+CSIM=10,"0070800100"' Command 11: test\_comport -agc 'AT+QUIMSLOT=1' | Command 1: AT+QUIMSLOT=2 Command 5: 46-digit CIMI | test\_comport -agc 'AT+QUIMSLOT=2' test\_comport -agc 'AT+QUIMSLOT?' test\_comport -agc 'AT+CFUN=1' test\_comport -agc 'AT+CFUN?' test\_comport -agc 'AT+CSIM=10,"0070000001"' test\_comport –agc 'AT+CSIM=44,"01A4040010A0000005591010FFFFFFFF890000010000"' test\_comport -agc 'AT+CSIM=10,"01C0000074"' test\_comport -agc 'AT+CSIM=24,"81E2910006BF3E035C015A00"' test\_comport -agc 'AT+CSIM=10,"01C0000015"' test\_comport -agc 'AT+CSIM=10,"0070800100"' test\_comport -agc 'AT+QUIMSLOT=1' | AT+QUIMSLOT=2 46-digit |
| Test Items Command-BB station | Verify Ethernet MAC | Command 1: cat /factory/eth\_mac | The MAC is the same as what we set in BFT station. | cat /factory/eth\_mac | The MAC is the same as what we set in BFT station. |
| Test Items Command Post Assembly station | Write and check EEPROM Data | gpio 15 1 rom\_sn set WB2223DA001102 gpio 15 0 rom\_sn show | Write and check EEPROM Data(Please make sure the test fixture SAQF-D1 FW has upgraded rom\_sn file) 1. Send command gpio 15 1 to disable write protection of EEPROM. 2. Send command rom\_sn set WBYYWWDBSN to write manufacture information in EEPROMWB – Two-Char ID for WNC S2 Factory production line manufactureYY – Two digits, it means year of Manufacture ex: 2020 years, it should be keyed in 20.WW - Two digits, it means work week of Manufacture ex: 8/31 is 36rd work week, it should be keyed in 36.DB - Two-char product ID and fixed for Binary v2 as "DB"SN – Six digits, it means the Manufacture number of product.For example:92nd unit manufactured in the 43rd work week in 2020, it should key in rom\_sn set WB2043DB0000923. Send command gpio 15 0 to enable write protection of EEPROM. 4. Send command rom\_sn show to check the manufacture information we write in EEPROMFor example: 92nd unit manufactured in the 43rd work week in 2020, dumped result should be “WB2043DB000092”, the checksum of WB2043DB000092 should be 82CHECKSUM – Two digits, the checksum is the 2’s complement of the 8-bit sum of all bytes except the checksum byte. (Factory need to calculate the checksum after scanned the barcode while starting functional test). | gpio 15 1 rom\_sn set WB2223DA001102 gpio 15 0 rom\_sn show | WB2043DB000092 82 |
| Test Items Command Post Assembly station | Write and check EEPROM Data | 10 | =========================================================================Enter the option to test: 10=== PWM LED Test Start ====== PWM Blue led test ====== PWM Green led test ====== PWM RED led test ====== PWM WiFi led test ====== PWM LED Test End ============================================================================ | 10 | === PWM LED Test End === |
| Test Items Command Post Assembly station | Write and check EEPROM Data | Press “ESC” to stop to boot mode when message - “Hit any key to stop autoboot:” appears and “CM66#” prompt will be displayed. Check information by each of them. | U-Boot 2016.01 - R6AQ-C4 V1.0.0.10 (May 22 2023 - 12:27:17 +0800) environmentPCI Link Intialized  PCI Link Intialized  In: serial@78B3000Out: serial@78B3000Err: serial@78B3000machid: 801000eMMC Device 0 not foundeth0 MAC Address from ART is not valideth1 MAC Address from ART is not valideth2 MAC Address from ART is not valideth3 MAC Address from ART is not valideth4 MAC Address from ART is not valideth5 MAC Address from ART is not validHit any key to stop autoboot: 0Net: MAC0 addr:0:3:7f:ba:db:adPHY ID: 0x31c31c231 NAND read: device 0 offset 0x1280000, size 0x100000 1048576 bytes read: OKCRC check good on phy fw file (0x3B1A)PHYFW:Loading IRAM...........done.PHYFW:Loading DRAM..............done.phy fw image load good CRC-16 matches (0xE2C3)EDMA ver 1 hw initNum rings - TxDesc:1 (0-0) TxCmpl:1 (7-7)RxDesc:1 (15-15) RxFill:1 (7-7)ipq807x\_edma\_alloc\_rings: successfullipq807x\_edma\_setup\_ring\_resources: successfullipq807x\_edma\_configure\_rings: successfullipq807x\_edma\_hw\_init: successfulleth0CM66# | Press “ESC” to stop to boot mode when message - “Hit any key to stop autoboot:” appears and “CM66#” prompt will be displayed. Check information by each of them. | R6AQ-C4 V1.0.0.10 PCI Link Intialized PCI Link Intialized |
| Test Items Command Post Assembly station | Write and check EEPROM Data | cat /proc/sys/kernel/version | mD67415BC4B0E:/# cat /proc/sys/kernel/version#1 SMP Fri Jul 8 14:52:10 PDT 2022 | cat /proc/sys/kernel/version | #1 SMP Fri Jul 8 14:52:10 PDT 2022 |
| Test Items Command Post Assembly station | Write and check EEPROM Data | tecro 0 1 5 1 | root@R7AQ-C1:/# tecro 0 1 5 1=> 0. Diagnostic Test=> 1. I2C Test=> 4. 0x41 LTC9105 POWER\_MONITOR Test=> 1. Display voltage/current/power53.560V0.324A17.353Wroot@R7AQ-C1:/# | tecro 0 1 5 1 | 0x41 LTC9105 POWER\_MONITOR Test 53.560V 17.353W |