

PRODUCT SPECIFICATION

Wi-Fi (11a/b/g/n/ac 2Tx2R)+BT (V4.1+HS) M.2 Type 2230

Combo Module

WCBN807A-L6

Qualcomm Atheros NFA344A

Liteon P/N	A7Z000004D0
Lenovo P/N	SW10K97465
FRU P/N	01AX713
Header Code	L1CZ
EC number	295610

Version 1.4

Change History

Revision	Rev	Date	Author	Change List
Version 1.0	V00	2016/01/27	Kaysa Lee	Preliminary
Version 1.1	V00	2016/02/03	Kaysa Lee	Update Product Picture
Version 1.2	V00	2016/03/14	Bryant Chen	Modify POWER SEQUENCE(Add Tpvram to define 3.3V ramp up time)
Version 1.3	V00	2016/04/28	Bryant Chen	Update Safety Label
Version 1.4	V00	2016/7/27	Kaysa Lee	Add Platform ASPM Configuration Update Mechanical to correct typo Update safety label drawing (running change from 2016/08/01)

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Networking B.U.

Lite-on Technology Corporation

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Customer Approval: _____ (Signature)

_____ (Title)

_____ (Company)

_____ (Date)

(Please Sign Back by FAX. For Confirming the Spec Only, not an Official Agreement for OEM/ODM Business)

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PRODUCT FEATURES

BT Feature:

- Bluetooth V4.1, V4.0 LE, V3.0+HS, Bluetooth V2.1+EDR system, backwards compatible with BT version of 1.1, 1.2 and 2.0
- Support Class II (TX power maximum to +4dBm)
- BT transmission speed including 1M, 2M and 3Mbps EDR operations
- Support for Simple Pairing (SP) and Enhanced Inquiry Response (EIR) function
- Support for SCATTERNET and PICONET
- HCI USB interface to work with Windows upper layer stack

Wi-Fi Feature:

- Operate at ISM frequency Band(2.4/5GHz)
- IEEE Standards Support, 802.11a, 802.11b, 802.11g, 802.11n and 802.11ac
- Wi-Fi using mini PCIe interface
- Enterprise level security supporting: WPA, WPA2
- Two-stream spatial multiplexing up to 867Mbps data rate
- Supports 20/40MHz at 2.4GHz and supports 20/40/80MHz at 5GHz
- Support MU-MO

Common Feature:

- Form Factor: M.2(NGFF) 2230-S3-A-E
- Support OS: Microsoft Windows
- Support for BT & WLAN Co-existence
- RoHS Compliance
- Low Halogen Compliance

PRODUCT SPECIFICATIONS

Main Chipset

Qualcomm Atheros QCA6174A-5

FUNCTIONAL SPECIFICATIONS

BT Function	
Standard	Bluetooth V4.1,V4.0LE, V3.0+HS, V2.1+EDR,
Bus Interface	USB 2.0
Data Rate	1 Mbps, 2Mbps and Up to 3Mbps
Modulation Scheme	GFSK, $\pi/4$ -DQPSK and 8-DPSK
Frequency Range	2.402~2.480 GHz
Transmit Output Power	$0 \leq \text{Output Power} \leq +4$; Class II Device
Receiver Sensitivity	< 0.1% BER at -70dBm
Software	Bluetooth Suite
Wi-Fi Function	
Standard	IEEE802.11a;IEEE802.11b; IEEE 802.11g; IEEE 802.11n; IEEE802.11ac
Bus Interface	PCI Express
Data Rate	802.11a: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
	802.11b: 11, 5.5, 2, 1 Mbps
	802.11g: 54, 48, 36, 24, 18, 12, 9, 6 Mbps
	802.11n: MCS 0 to 15 for HT20MHz MCS 0 to 15 for HT40MHz
	802.11ac: MCS 0 to 8 for HT20MHz MCS 0 to 9 for HT40MHz MCS 0 to 9 for HT80MHz
Media Access Control	CSMA/CA with ACK
Modulation Techniques	802.11a: 64QAM, 16QAM, QPSK, BPSK
	802.11b: CCK, DQPSK, DBPSK
	802.11g: 64QAM, 16QAM, QPSK, BPSK
	802.11n: 64QAM, 16QAM, QPSK, BPSK
	802.11ac:

256QAM, 64QAM, 16QAM, QPSK, BPSK

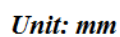
Network Architecture	Ad-hoc mode (Peer-to-Peer) Infrastructure mode
Operation Channel	2.4GHz 11: (Ch. 1-11) – United States 13: (Ch. 1-13) – Europe 14: (Ch. 1-14) – Japan 5GHz 12: USA 19: EU 8: Japan
Frequency Range	802.11a/ac 5.15~5.85 GHz 802.11bg 2.412 ~ 2.484 GHz
Transmit Output Power – 2x2 (Tolerance: ±2dBm)	802.11a: 13dBm@6-36Mbps 12dBm@48Mbps 11dBm@54Mbps 802.11b: 19dBm@1-11Mbps 802.11g: 18dBm@6-24Mbps 17dBm@36Mbps 16dBm@48Mbps 16dBm@54Mbps 802.11n(2.4GHz): 20MHz: 18dBm@MCS0-2 17dBm@MCS3,4 16dBm@MCS5-7 15dBm@MCS8 40MHz: 17dBm@MCS0-2 15dBm@MCS3-7 13dBm@MCS8,9 802.11n(5GHz): 20MHz: 13dBm@MCS0-5 11dBm@MCS6 10dBm@MCS7 9dBm@MCS8 40MHz: 12.5dBm@MCS0-5 11dBm@MCS6 10dBm@MCS7 9dBm@MCS8 8dBm@MCS9 802.11ac: 20MHz: 13dBm@MCS0 9 dBm@MCS8 40MHz: 12.5 dBm@MCS0

	9 dBm@MCS8 8 dBm@MCS9 80MHz: 12.5 dBm@MCS0 9 dBm@MCS8 8 dBm@MCS9
Receiver Sensitivity	802.11a: -66dBm@54Mbps 802.11b: -81dBm@11Mbps 802.11g: -82dBm@6Mbps -66dBm@54Mbps 802.11n(2.4GHz): 20MHz -79dBm@MCS0 -65dBm@MCS7 40MHz -79dBm@MCS0 -61dBm@MCS7 802.11n(5GHz): 20MHz -79dBm@MCS0 -65dBm@MCS7 40MHz -79dBm@MCS0 -61dBm@MCS7 802.11ac: 20MHz -62 dBm@MCS8 40MHz -59 dBm@MCS9 80MHz -56 dBm@MCS9
Security	WEP 64&128bit, WPA, WPA-PSK, WPA2, WPA2-PSK, WPS, IEEE 802.1X, IEEE 802.11i
Common Function	
Operating Voltage	3.3 V ±9% I/O supply voltage
OS Supported	Microsoft Windows
Power Consumption (Average)	TX Mode: 405mA RX Mode: 200mA Idle(associated): 30mA Idle(associated): 8mA Radio Off: 1mA
Antenna Type	Dual MHF4 Antenna Connectors

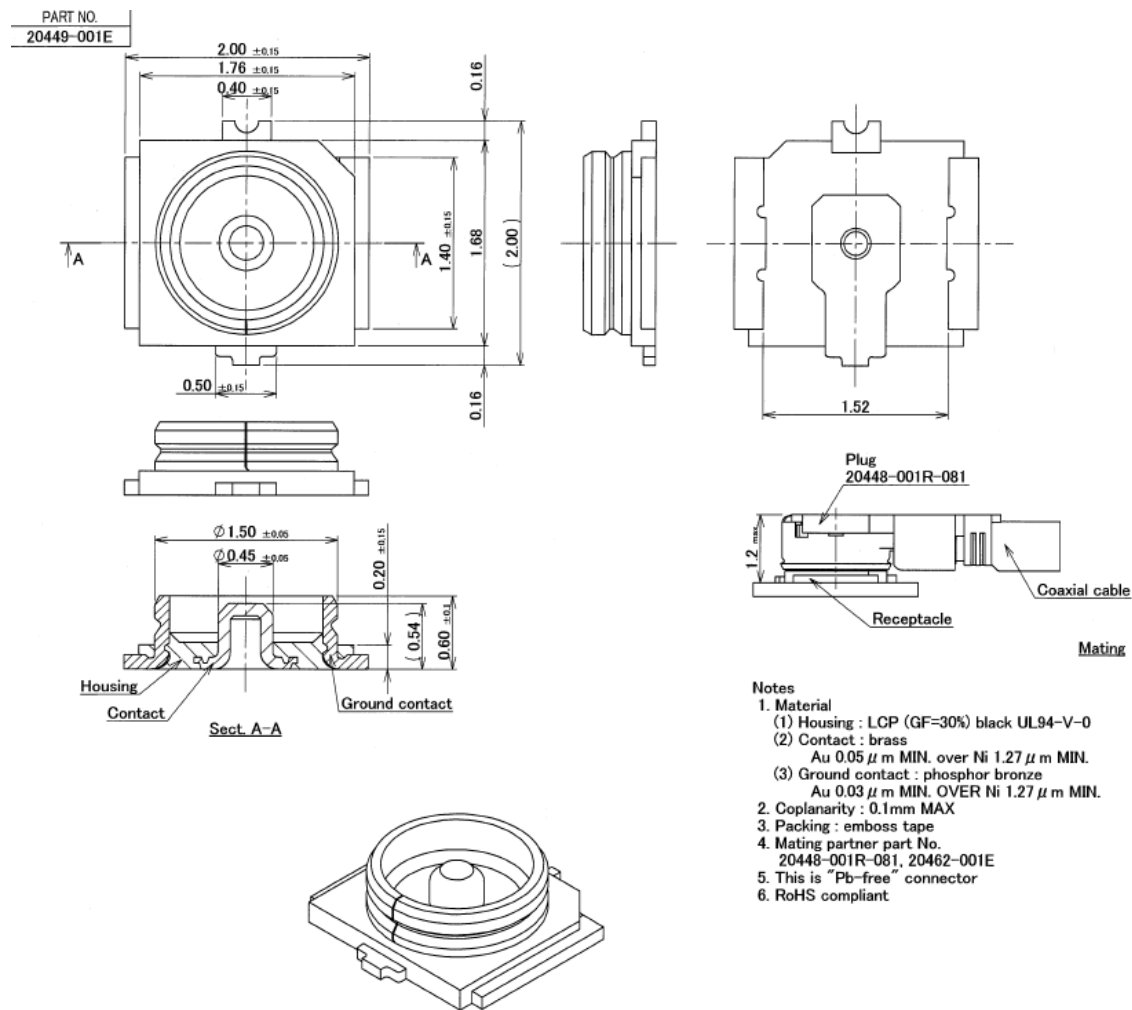
PIN ASSIGNMENT(MODULE KEY A-E)

Pin.	Pin Define	Status	Pin.	Pin Define	Status
1	GND	YES	2	3.3V	YES
3	USB_D+	YES	4	3.3V	YES
5	USB_D-	YES	6	LED_WLAN#	YES
7	GND	YES	8	NOTCH	NC
9	NOTCH	NC	10	NOTCH	NC
11	NOTCH	NC	12	NOTCH	NC
13	NOTCH	NC	14	NOTCH	NC
15	NOTCH	NC	16	LED_BT#	YES
17	NC	NC	18	GND	YES
19	NC	NC	20	NC	NC
21	NC	NC	22	NC	NC
23	NC	NC	24	NOTCH	NC
25	NOTCH	NC	26	NOTCH	NC
27	NOTCH	NC	28	NOTCH	NC
29	NOTCH	NC	30	NOTCH	NC
31	NOTCH	NC	32	NC	NC
33	GND	YES	34	NC	NC
35	PERp0	YES	36	NC	NC
37	PERn0	YES	38	RESERVED	NC
39	GND	YES	40	RESERVED	NC
41	PETp0	YES	42	RESERVED	NC
43	PETn0	YES	44	COEX3 (LTE_ACTIVE)	YES
45	GND	YES	46	COEX2 (LTE_PRI)	YES
47	REFCLK+	YES	48	COEX2 (LTEE_SYNC)	YES
49	REFCLK-	YES	50	SUSCLK(32kHz)	NC
51	GND	YES	52	PERST#	YES
53	CLKREQ#	YES	54	BT_DISABLE#	YES
55	PEWAKE#	YES	56	W_DISABLE#	YES
57	GND	YES	58	I2C DATA	NC
59	RESERVED	NC	60	I2C CLK	NC
61	RESERVED	NC	62	ALERT	NC
63	GND	YES	64	RESERVED	NC
65	RESERVED	NC	66	RESERVED	NC
67	RESERVED	NC	68	RESERVED	NC
69	GND	YES	70	RESERVED	NC
71	RESERVED	NC	72	3.3V	Yes

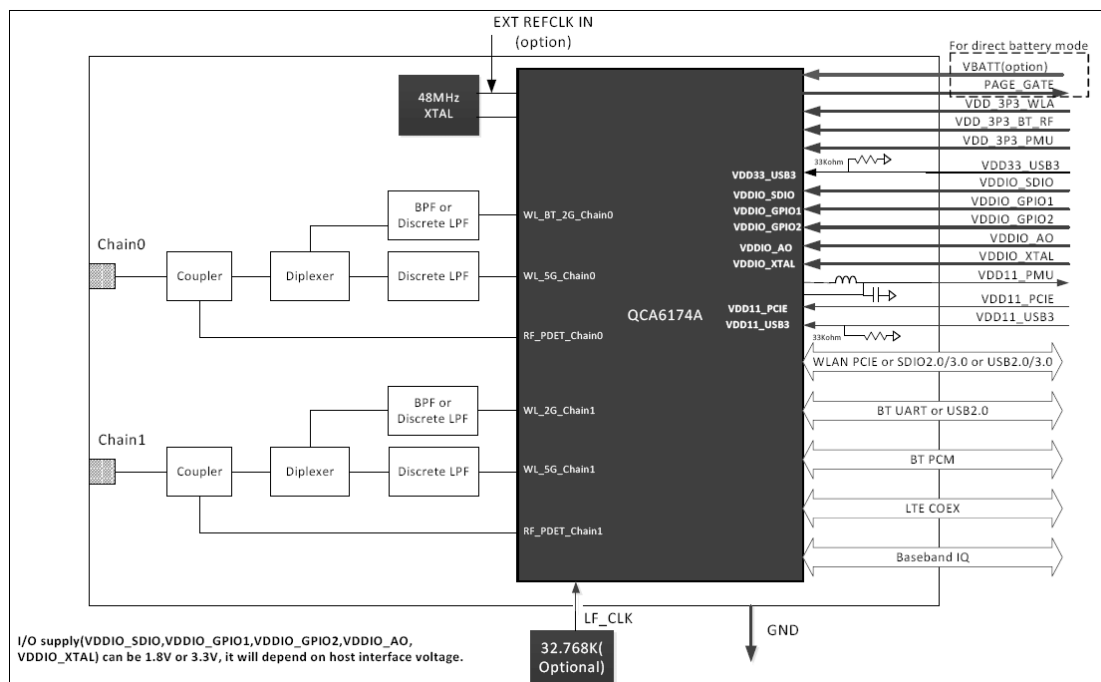
MECHANICAL



MHF4 CONNECTOR SPEC

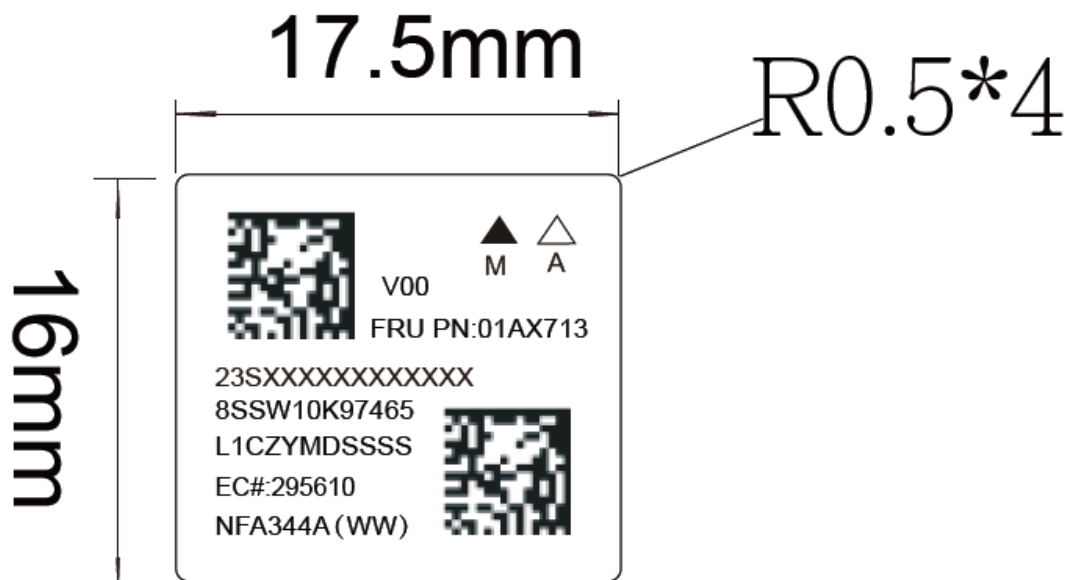


BLOCK DIAGRAM

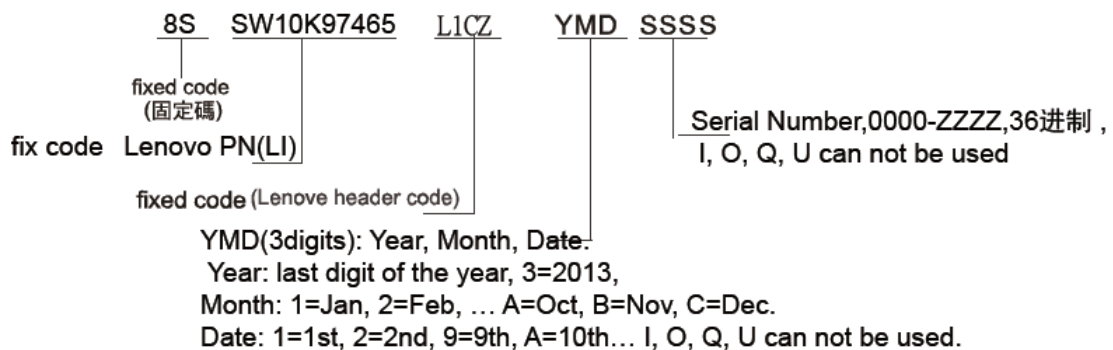


LABEL DRAWING

MAC ID Label



1. Barcode format is: 2D Code (LI)
2. barcode display content is: 8SSW10K97465L1CZYMDSSSS



※ Barcode format is: 2D Code

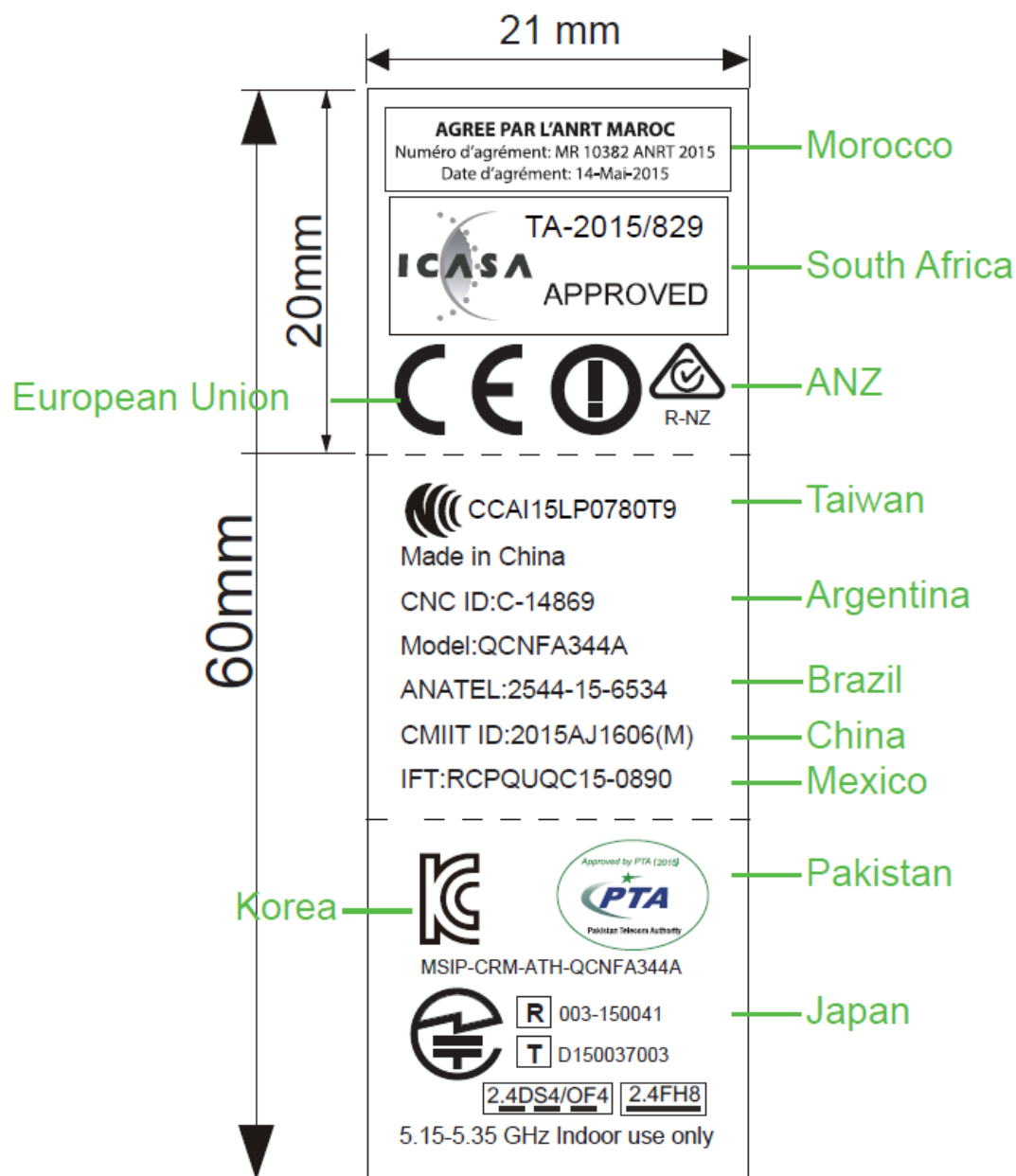
MAC ID: 23S XXXXXXXXXXXX

fixed code
(固定碼)

MAC ID

BD为MAC+1

Safety Label



MODULE PHOTO

Top Side



Bottom Side



EEPROM INFORMATION

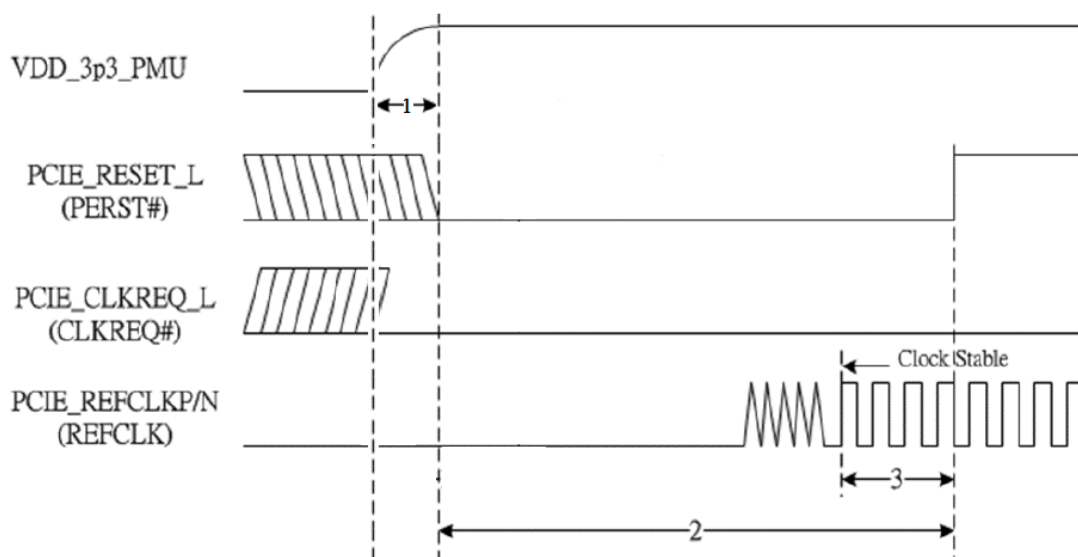
BT

Vendor ID	0x0CF3
Product ID	0xE300

Wi-Fi

Reg Domain	Most of World SKU 2.4GHz Channels 1-11 with active scan, Channels 12,13 with passive scan 5GHz : (all passive scan) 5.15-5.35,5.47-5.725, 5.725-5.850
	0x006C
Vendor ID	0x168C
Device ID	0x003E
SubDevice ID	0x0827
SubVendor ID	0x17AA

POWER SEQUENCE



See 1. TPVRAMP 2. TPVPGL and 3. TPERST-CLK timing requirement

Symbol	Parameter	Min	Max	Units
TPVRAMP	Power Supply Ramp on 3.3V		100	mS
TPVPGL	Power(VDD_3p3_PMU) valid to PERST# Input inactive	10		mS
TPERST-CLK	REFCLK stable before PERST# inactive	100		µS

PLATFORM ASPM CONFIGURATION

QCA NFA344A supports all ASPM capabilities as L0, L0s, L1 and LTR for L1.1 and L1.2 sub-states. All new UEFI BIOS can auto detect Capabilities Register of Root Complex and Endpoint then set proper value into each Link Control Register depending on product configurations.

ENVIRONMENTAL

Operating

Operating Temperature: 0 to 70 °C

Relative Humidity: 5-90% (non-condensing)

Storage

Temperature: -40 to 80 °C

Relative Humidity: 5-95% (non-condensing)