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<h1>Approval Sheet</h1>
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Customer Name: Sony Corporation

Project Name	WLAN/BT Module
Approval Sheet Rev.	V02
Foxconn Part No.	J20H095
SONY Part No.	1-510-041-11

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# 1 Revision History

Date	Document revision	Change Description
2017/06/27	01	Initial release
2017/09/04	02	Add customer PN



## 2 Manufacturing Information

**Manufacture Country:**

Made in China

**Manufacturer:**

NANNING FUGUI PRECISION INDUSTRIAL CO.,LTD.

**Manufacture Address:**

NO.51,Tongle Road, Foxconn Industrial Park, District Jiangnan, Nanning, Guangxi China.



### 3 Product Overview

J20H095.00 is based on MTK MT7668BUN, MT7668BUN is highly integrated single chip which features a low power 2x2 11a/b/g/n/ac dual-band WiFi subsystem and a Bluetooth subsystem. The WiFi subsystem contains the 802.11a/b/g/n/ac radio, baseband, and MAC that are designed to meet both the low power and high throughput application. MT7668BUN has a 32-bit RISC MCU that handles WiFi and Bluetooth tasks, and an ARM Cortex-R4 MCU that could offload data frame processing in WiFi host driver. The Bluetooth subsystem contains the Bluetooth radio, baseband, link controller. It also uses the 32-bit RISC MCU for the Bluetooth protocols.

#### 3.1 Application scope

The wireless LAN is compliant to IEEE 802.11n, IEEE 802.11 a/b/g and IEEE 802.11 ac standards.

Channel Spacing

2.4GHz -> 5MHz, 5GHz-> 20MHz (BW on 20MHz), 40MHz (BW on 40MHz), 80MHz (BW on 80MHz)

Data rate:

1, 2, 5.5, 11Mbps for 802.11b;

6, 9, 12, 18, 24, 36, 48 and 54Mbps for 802.11a/g;

MCS0(6.5Mbps)~MCS7(65Mbps) for 802.11n HT20 mode (single chain)

MCS8(13Mbps)~MCS15(130Mbps) for 802.11n HT20 mode (dual chains)

MCS0(13.5Mbps)~MCS7(135Mbps) for 802.11n HT40 (5G only) mode (single chain)

MCS8(27Mbps)~MCS15(270Mbps) for 802.11n HT40 (5G only) mode (dual chains);

MCS0(6.5Mbps)~MCS8(78Mbps) for 802.11ac VHT20 mode (single chain)\*

MCS0(13Mbps)~MCS8(156Mbps) for 802.11ac VHT20 mode (dual chains)\*

MCS0(13.5Mbps)~MCS9(180Mbps) for 802.11ac VHT40 mode (single chain)\*

MCS0(27Mbps)~MCS9(360Mbps) for 802.11ac VHT40 mode (dual chains)\*

MCS0(29.3Mbps)~MCS9(390Mbps) for 802.11ac VHT80 mode (single chain)\*

MCS0(58.5Mbps)~MCS9(866.7Mbps) for 802.11ac VHT80 mode (dual chains)\*

BT:

The BT Module is compliant to Bluetooth 4.2 and EDR standard:

Carrier Frequency: 2402MHz ~ 2480 MHz

Carrier Spacing: 1.0MHz (classic), 2MHz (LE)

Duplexing: TDD

Modulation: FHSS

1Mbps (GFSK), 2Mbps ( $\pi/4$ -DQPSK), 3Mbps (8DPSK), LE (GFSK)



### 3.2 Regulation of each countries

Country	Approval	Certification	Certification No.	Remark
USA				
Canada				
EU				
Japan				
Taiwan				
Singapore				
Argentina				
Ecuador				
Mexico				
Thailand				
Malaysia				
Panama				
Peru				
Philippine				
Russia				
UAE				
Vietnam				
India				
China				

## 4 Module Hardware Overview

### 4.1 Block Diagram

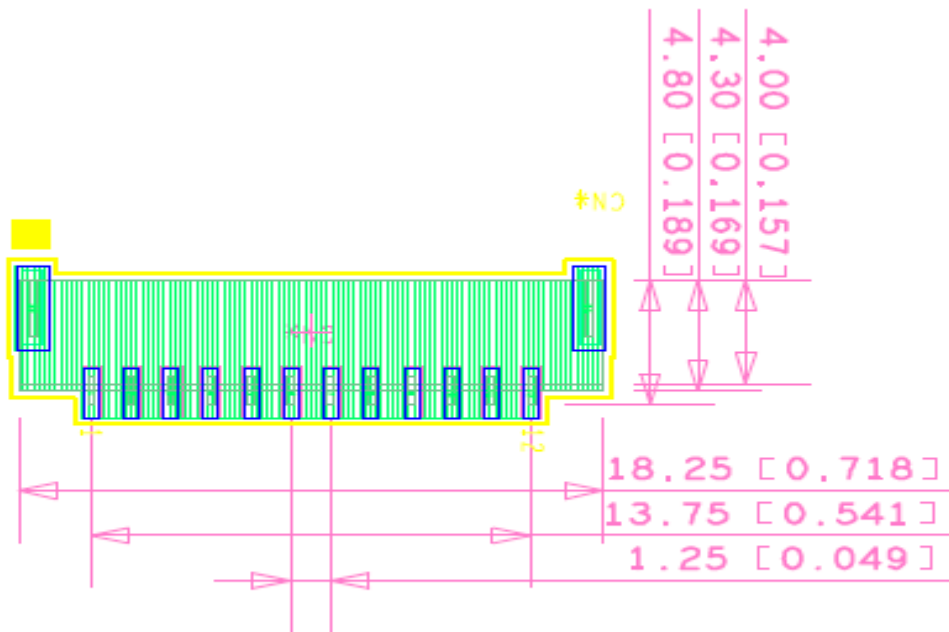
The general HW architecture is shown below Figure:  
.NA

### 4.2 Features

- ◆ J20H095.00: IEEE802.11a/b/g/n/ac (2X2) based on MTK MT7668BUN version.
- ◆ Support BT4.2+LE
- ◆ USB 2.0 Interface, High and Full Speeds supported.
- ◆ Module is powered by the host with a 3.3V +/- 10% supply.
- ◆ Metal antennas.
- ◆ 4 layers through hole PCB design with Tg-140 material.

### 4.3 Interface and Connector

- ◆ Pin definition:
- ◆ Vendor: J.A.M
- ◆ Vendor P/N: STA12-12WH-ET



Pin Number	Symbol Name	Status	Pin definition
1	GND	-	Ground
2	DM	I/O	USB_DATA-
3	DP	I/O	USB_DATA+
4	GND	-	Ground





5	VCC	PWR	DC +3.3V
6	VCC	PWR	DC +3.3V
7	VCC	PWR	DC +3.3V
8	GND	-	Ground
9	GND	-	Ground
10	WOW_L	Output	Wake on WLAN signal output "L"-drive is hoped when awake Host
11	RST_L	Input	"L"-drive reset signal input from Host
12	GND	-	Ground
S1	GND	-	Ground
S2	GND	-	Ground



## 5 General Specification

Item		Specification
Frequency Range		2412MHz~2462MHz
		5180MHz~5240MHz
		5260MHz~5320MHz
		5500MHz~5700MHz
		5745MHz~5825MHz
Shielding Case Temperature (Figure 1)		~83.46°C @Ta=65°C
PCB Case Temperature (Figure 2)		~97.92°C @Ta=65°C
IC Case Measurement Temperature (Figure 3)		~102.33°C @Ta=65°C
Maximum Ripple on Supplied Voltage		TBD
Antenna Port Impedance		50 ohm typ.
VSWR (with TV platform)	Antenna 1	<3
	Antenna 2	<3
	Antenna 3	<3
Temperature	Operating Temperature	-10°C~65°C
	Storage Temperature	-40°C~85°C
Humidity	Storage Humidity	45%~70% (Non-condensing)



## 6 Electrical Specification

### 6.1 Absolute maximum rating

Element	Parameter	Maximum rating	Unit
VDD33	3.3V Supply Voltage	-0.3 to 3.63	(V)

### 6.2 Recommended operating rating

Element	Symbol	Min	Typ	Max	Unit
DC supply voltage	VDD33	2.97	3.3	3.63	(V)

### 6.3 DC Characteristics

Parameter	Min	Typ.	Max	Unit
Supply voltage	2.97	3.3	3.63	(V)
2.412GHz Tx Current(1M/16dBm)		483.3		(mA)
2.412GHz Tx Current(MCS0/15dBm)		460.6		(mA)
5.18GHz Tx Current(6M/13Bm/HT20)		500.6		(mA)
5.19GHz Tx Current(MCS0/13dBm/HT40)		502.5		(mA)
Rx(2G/5GHz) Current		150.3		(mA)
5.21GHz Tx Current(MCS9/11dBm/VHT80)*		375.4		(mA)
Standby		23.9		(mA)

### 6.4 ESD Information

Mode	Level	Unit
HBM	+/-1500	V



## 7 RF Specification

### 7.1 IEEE802.11b

Items	Contents			
Specification	IEEE802.11b			
Mode	DSSS / CCK			
Channel	CH1 to CH13			
Data rate	1, 2, 5.5, 11Mbps			
Temperature	-10°C~65°C			
Voltage	3.3V+/-10%			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Power Levels				
1) Target Power@1Mbps			28	dBm
2) Target Power@2Mbps			28	dBm
3) Target Power@5.5Mbps			28	dBm
4) Target Power@11Mbps			28	dBm
2. Spectrum Mask @ target power				
1) $f_c - 33\text{MHz} < f < f_c - 22\text{MHz}$			-50	dBr
2) $f_c - 22\text{MHz} < f < f_c - 11\text{MHz}$			-30	dBr
3) $f_c + 11\text{MHz} < f < f_c + 22\text{MHz}$			-30	dBr
4) $f_c + 22\text{MHz} < f < f_c + 33\text{MHz}$			-50	dBr
3. Frequency Error*			+20	ppm
4 Modulation Accuracy(EVM)@ target power				
1) 1Mbps(peak)			-10	dB
2) 2Mbps(peak)			-10	dB
3) 5.5Mbps(peak)			-10	dB
4) 11Mbps(peak)	-	-	-10	dB
5. Tx spurious emission for all out of band	-	-	-50	dBm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Minimum Input Level Sensitivity				
1) 1Mbps (FER ≤ 8%)	-	-97	-92	dBm
2) 2Mbps (FER ≤ 8%)	-	-94	-89	dBm
3) 5.5Mbps (FER ≤ 8%)	-	-92	-87	dBm
4) 11Mbps (FER ≤ 8%)	-	-89	-85	dBm
2. Maximum Input Level (FER ≤ 8%)	-10	0	-	dBm
3. Adjacent channel rejection				
1) 1Mbps (FER ≤ 8%)	35	39		dB
2) 11Mbps (FER ≤ 8%)	35	35		dB
4. Rx spurious emission			-63	dBm

## 7.2 IEEE802.11g

Items	Contents			
Specification	IEEE802.11g			
Mode	OFDM			
Channel	CH1 to CH13			
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps			
Temperature	-10°C~65°C			
Voltage	3.3V+/-10%			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Power Levels				
1) Target Power@6Mbps			27	dBm
2) Target Power@9Mbps			27	dBm
3) Target Power@12Mbps			27	dBm
4) Target Power@18Mbps			27	dBm
5) Target Power@24Mbps			26	dBm
6) Target Power@36Mbps			26	dBm
7) Target Power@48Mbps			26	dBm
8) Target Power@54Mbps			26	dBm
2. Spectrum Mask @ target power				
1) at fc +/- 11MHz	-	-	-20	dBr
2) at fc +/- 20MHz	-	-	-28	dBr
3) at fc > +/-30MHz	-	-	-40	dBr
3 Modulation Accuracy(EVM)@ target power				
1) 6Mbps	-	-29	-5	dB
2) 9Mbps	-	-29	-8	dB
3) 12Mbps	-	-30	-10	dB
4) 18Mbps	-	-30	-13	dB
5) 24Mbps	-	-30	-16	dB
6) 36Mbps	-	-31	-19	dB
7) 48Mbps	-	-31	-22	dB
8) 54Mbps	-	-31	-25	dB
4 Frequency Error*	-20	-	+20	ppm
5.Tx spurious emission for all out of band	-	-	-50	dBm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Minimum Input Level Sensitivity				
1) 6Mbps (PER <10%)	-	-94	-83	dBm
2) 9Mbps (PER < 10%)	-	-92	-81	dBm
3) 12Mbps (PER < 10%)	-	-91	-79	dBm
4) 18Mbps (PER < 10%)	-	-87	-77	dBm
5) 24Mbps (PER < 10%)	-	-85	-75	dBm
6) 36Mbps (PER < 10%)	-	-80	-73	dBm
7) 48Mbps (PER < 10%)	-	-77	-71	dBm
8) 54Mbps (PER < 10%)	-	-75	-69	dBm
2. Maximum Input Level (PER < 10%)	-20	-11	-	dBm
3. Adjacent channel rejection				
1) 6Mbps (PER <10%)	16	39		dB
2) 54Mbps (PER < 10%)	-1	23		dB
4. Rx spurious emission			-63	dBm

### 7.3 IEEE 802.11n HT20

Items	Contents			
Specification	IEEE802.11n HT20			
Mode	OFDM			
Channel	CH1 ~CH13			
Data rate (MCS index)	MCS0~MCS15			
Temperature	-10°C~65°C			
Voltage	3.3V+/-10%			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Power Levels				
1) Target Power@MCS0			27	dBm
2) Target Power@ MCS1			27	dBm
3) Target Power@ MCS2			27	dBm
4) Target Power@ MCS3			27	dBm
5) Target Power@ MCS4			27	dBm
6) Target Power@ MCS5			26	dBm
7) Target Power@ MCS6			26	dBm
8) Target Power@ MCS7			26	dBm
2. Spectrum Mask @ target power				
1) at fc +/- 11MHz	-	-	-20	dBr
2) at fc +/- 20MHz	-	-	-28	dBr
3) at fc > +/-30MHz	-	-	-45	dBr
3. Modulation Accuracy(EVM)@target power				
1) MCS0	-	-29	-5	dB
2) MCS1	-	-29	-10	dB
3) MCS2	-	-30	-13	dB
4) MCS3	-	-30	-16	dB
5) MCS4	-	-30	-19	dB
6) MCS5	-	-31	-22	dB
7) MCS6	-	-31	-25	dB
8) MCS7	-	-31	-28	dB
4. Frequency Error*	-20	-	+20	ppm
5. Tx spurious emission for all out of band			-50	dBm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Minimum Input Level Sensitivity				
1) MCS0 (PER < 10%)	-	-94	-81	dBm
2) MCS1 (PER < 10%)	-	-92	-79	dBm
3) MCS2 (PER < 10%)	-	-90	-77	dBm
4) MCS3 (PER < 10%)	-	-86	-75	dBm
5) MCS4 (PER < 10%)	-	-83	-73	dBm
6) MCS5 (PER < 10%)	-	-78	-71	dBm
7) MCS6 (PER < 10%)	-	-76	-69	dBm
8) MCS7 (PER < 10%)	-	-75	-67	dBm
2. Maximum Input Level (PER < 10%)	-20	-10	-	dBm
3 Adjacent channel rejection				
1) MCS0 (PER <10%)	16	35		dB
2) MCS7 (PER < 10%)	-2	8		dB
4. Rx spurious emission			-63	dBm



## 7.4 IEEE 802.11a

Items	Contents			
Specification	IEEE802.11a			
Mode	OFDM			
Channel	CH36 to CH165			
Data rate	6, 9, 12, 18, 24, 36, 48, 54Mbps			
Temperature	-10°C~65°C			
Voltage	3.3V+/-10%			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Power Levels				
1) Target Power@6Mbps			23	dBm
2) Target Power@9Mbps			23	dBm
3) Target Power@12Mbps			23	dBm
4) Target Power@18Mbps			23	dBm
5) Target Power@24Mbps			23	dBm
6) Target Power@36Mbps			23	dBm
7) Target Power@48Mbps			23	dBm
8) Target Power@54Mbps			23	dBm
2. Spectrum Mask @ target power				
1) at fc +/- 11MHz	-	-	-20	dBr
2) at fc +/- 20MHz	-	-	-28	dBr
3) at fc > +/-30MHz	-	-	-40	dBr
3 Modulation Accuracy(EVM)@ target power				
1) 6Mbps	-	-30	-5	dB
2) 9Mbps	-	-30	-8	dB
3) 12Mbps	-	-31	-10	dB
4) 18Mbps	-	-31	-13	dB
5) 24Mbps	-	-31	-16	dB
6) 36Mbps	-	-32	-19	dB
7) 48Mbps	-	-32	-22	dB
8) 54Mbps	-	-32	-25	dB
4 Frequency Error*	-20	-	+20	ppm
5. Tx spurious emission for all out of band			-50	dBm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Minimum Input Level Sensitivity				
1) 6Mbps (PER <10%)	-	-92	-83	dBm
2) 9Mbps (PER < 10%)	-	-91	-81	dBm
3) 12Mbps (PER < 10%)	-	-90	-79	dBm
4) 18Mbps (PER < 10%)	-	-87	-77	dBm
5) 24Mbps (PER < 10%)	-	-85	-75	dBm
6) 36Mbps (PER < 10%)	-	-80	-73	dBm
7) 48Mbps (PER < 10%)	-	-77	-71	dBm
8) 54Mbps (PER < 10%)	-	-75	-69	dBm
2. Maximum Input Level (PER < 10%)	-20	-11	-	dBm
3. Adjacent channel rejection				
1) 6M (PER <10%)	16	29		dB
2) 54M (PER < 10%)	-1	15		dB
4. Rx spurious emission			-57	dBm

## 7.5 IEEE 802.11an HT20

Items	Contents			
Specification	IEEE802.11an HT20			
Mode	OFDM			
Channel	CH36 to CH165			
Data rate (MCS index)	MCS0~MCS15			
Temperature	-10°C~65°C			
Voltage	3.3V+/-10%			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Power Levels				
1) Target Power@MCS0			23	dBm
2) Target Power@ MCS1			23	dBm
3) Target Power@ MCS2			23	dBm
4) Target Power@ MCS3			23	dBm
5) Target Power@ MCS4			23	dBm
6) Target Power@ MCS5			23	dBm
7) Target Power@ MCS6			23	dBm
8) Target Power@ MCS7			23	dBm
2. Spectrum Mask @ target power				
1) at fc +/- 11MHz	-	-	-20	dB
2) at fc +/- 20MHz	-	-	-28	dB
3) at fc > +/-30MHz	-	-	-45	dB
3. Modulation Accuracy(EVM)@ target power				
1) MCS0	-	-30	-5	dB
2) MCS1	-	-30	-10	dB
3) MCS2	-	-31	-13	dB
4) MCS3	-	-31	-16	dB
5) MCS4	-	-31	-19	dB
6) MCS5	-	-32	-22	dB
7) MCS6	-	-32	-25	dB
8) MCS7	-	-32	-28	dB
4. Frequency Error*	-20	-	+20	ppm
5. Tx spurious emission for all out of band			-50	dBm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Minimum Input Level Sensitivity				
1) MCS0 (PER < 10%)	-	-91	-81	dBm
2) MCS1 (PER < 10%)	-	-89	-79	dBm
3) MCS2 (PER < 10%)	-	-87	-77	dBm
4) MCS3 (PER < 10%)	-	-84	-75	dBm
5) MCS4 (PER < 10%)	-	-80	-73	dBm
6) MCS5 (PER < 10%)	-	-76	-71	dBm
7) MCS6 (PER < 10%)	-	-74	-69	dBm
8) MCS7 (PER < 10%)	-	-72	-67	dBm
2. Maximum Input Level (PER < 10%)	-20	-10	-	dBm
3. Adjacent channel rejection				
1) MCS0 (PER <10%)	16	24		dB
2) MCS7 (PER < 10%)	-2	3		dB
4. Rx spurious emission			-57	dBm



## 7.6 IEEE 802.11an HT40

Items	Contents			
Specification	IEEE802.11an HT40			
Mode	OFDM			
Channel	CH38 to CH159			
Data rate (MCS index)	MCS0~MCS15			
Temperature	-10°C~65°C			
Voltage	3.3V+/-10%			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Power Levels				
1) Target Power@MCS0			23	dBm
2) Target Power@ MCS1			23	dBm
3) Target Power@ MCS2			23	dBm
4) Target Power@ MCS3			23	dBm
5) Target Power@ MCS4			23	dBm
6) Target Power@ MCS5			23	dBm
7) Target Power@ MCS6			23	dBm
8) Target Power@ MCS7			23	dBm
2. Spectrum Mask @ target power				
1) at fc +/- 21MHz	-	-	-20	dB
2) at fc +/- 40MHz	-	-	-28	dB
3) at fc > +/-60MHz	-	-	-45	dB
3. Modulation Accuracy(EVM)@ target power				
1) MCS0	-	-30	-5	dB
2) MCS1	-	-30	-10	dB
3) MCS2	-	-31	-13	dB
4) MCS3	-	-31	-16	dB
5) MCS4	-	-31	-19	dB
6) MCS5	-	-32	-22	dB
7) MCS6	-	-32	-25	dB
8) MCS7	-	-32	-28	dB
4. Frequency Error*	-20	-	+20	ppm
5. Tx spurious emission for all out of band			-50	dBm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Minimum Input Level Sensitivity				
1) MCS0 (PER < 10%)	-	-89	-78	dBm
2) MCS1 (PER < 10%)	-	-86	-76	dBm
3) MCS2 (PER < 10%)	-	-84	-74	dBm
4) MCS3 (PER < 10%)	-	-81	-72	dBm
5) MCS4 (PER < 10%)	-	-77	-70	dBm
6) MCS5 (PER < 10%)	-	-72	-68	dBm
7) MCS6 (PER < 10%)	-	-71	-66	dBm
8) MCS7 (PER < 10%)	-	-69	-64	dBm
2. Maximum Input Level (PER < 10%)	-20	-10	-	dBm
3. Adjacent channel rejection				
1) MCS0 (PER <10%)	16	28		dB
2) MCS7 (PER < 10%)	-2	5		dB
4. Rx spurious emission			-57	dBm

## 7.7 IEEE 802.11ac VHT20

Items	Contents			
Specification	IEEE802.11ac VHT20			
Mode	OFDM			
Channel	CH36 to CH165			
Data rate (MCS index)	MCS0~MCS8 (Nss=1)			
Temperature	-10°C~65°C			
Voltage	3.3V+/-10%			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Power Levels				
1) Target Power@MCS0			23	dBm
2) Target Power@ MCS1			23	dBm
3) Target Power@ MCS2			23	dBm
4) Target Power@ MCS3			23	dBm
5) Target Power@ MCS4			23	dBm
6) Target Power@ MCS5			23	dBm
7) Target Power@ MCS6			23	dBm
8) Target Power@ MCS7			23	dBm
9) Target Power@ MCS8			23	dBm
2. Spectrum Mask @ target power				
1) at fc +/- 11MHz	-	-	-20	dBr
2) at fc +/- 20MHz	-	-	-28	dBr
3) at fc > +/-30MHz	-	-	-45	dBr
3. Modulation Accuracy(EVM)@ target power				
1) MCS0	-	-30	-5	dB
2) MCS1	-	-30	-10	dB
3) MCS2	-	-31	-13	dB
4) MCS3	-	-31	-16	dB
5) MCS4	-	-31	-19	dB
6) MCS5	-	-32	-22	dB
7) MCS6	-	-32	-25	dB
8) MCS7	-	-32	-27	dB
9) MCS8	-	-32	-30	dB
4. Frequency Error*	-20		+20	ppm
5. Tx spurious emission for all out of band			-50	dBm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Minimum Input Level Sensitivity				
1) MCS0 (PER < 10%)	-	-91	-81	dBm
2) MCS1 (PER < 10%)	-	-88	-79	dBm
3) MCS2 (PER < 10%)	-	-87	-77	dBm
4) MCS3 (PER < 10%)	-	-84	-75	dBm
5) MCS4 (PER < 10%)	-	-80	-73	dBm
6) MCS5 (PER < 10%)	-	-75	-71	dBm
7) MCS6 (PER < 10%)	-	-74	-69	dBm
8) MCS7 (PER < 10%)	-	-72	-67	dBm
8) MCS8 (PER < 10%)	-	-68	-58	dBm
2. Maximum Input Level (PER < 10%)	-20	-10	-	dBm
3. Adjacent channel rejection				
1) MCS0 (PER <10%)	16	22		dB
2) MCS8 (PER < 10%)	-7	3		dB
4. Rx spurious emission			-57	dBm



## 7.8 IEEE 802.11ac VHT40

Items	Contents			
Specification	IEEE802.11ac VHT40			
Mode	OFDM			
Channel	CH38 to CH159			
Data rate (MCS index)	MCS0~MCS9 (Nss=1)			
Temperature	-10°C~65°C			
Voltage	3.3V+/-10%			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Power Levels				
1) Target Power@MCS0			23	dBm
2) Target Power@ MCS1			23	dBm
3) Target Power@ MCS2			23	dBm
4) Target Power@ MCS3			23	dBm
5) Target Power@ MCS4			23	dBm
6) Target Power@ MCS5			23	dBm
7) Target Power@ MCS6			23	dBm
8) Target Power@ MCS7			23	dBm
9) Target Power@ MCS8			23	dBm
10) Target Power@ MCS9			23	dBm
2. Spectrum Mask @ target power				
1) at fc +/- 21MHz	-	-	-20	dBr
2) at fc +/- 40MHz	-	-	-28	dBr
3) at fc > +/- 60MHz	-	-	-45	dBr
3. Modulation Accuracy(EVM)@ target power				
1) MCS0	-	-30	-5	dB
2) MCS1	-	-30	-10	dB
3) MCS2	-	-31	-13	dB
4) MCS3	-	-31	-16	dB
5) MCS4	-	-31	-19	dB
6) MCS5	-	-32	-22	dB
7) MCS6	-	-32	-25	dB
8) MCS7	-	-32	-27	dB
9) MCS8	-	-32	-30	dB
10) MCS9	-	-32	-32	dB
4. Frequency Error*	-20	-	+20	ppm
5. Tx spurious emission for all out of band			-50	dBm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Minimum Input Level Sensitivity				
1) MCS0 (PER < 10%)	-	-88	-78	dBm
2) MCS1 (PER < 10%)	-	-86	-76	dBm
3) MCS2 (PER < 10%)	-	-84	-74	dBm
4) MCS3 (PER < 10%)	-	-81	-72	dBm
5) MCS4 (PER < 10%)	-	-77	-70	dBm
6) MCS5 (PER < 10%)	-	-72	-68	dBm
7) MCS6 (PER < 10%)	-	-71	-66	dBm
8) MCS7 (PER < 10%)	-	-69	-64	dBm
7) MCS8 (PER < 10%)	-	-65	-59	dBm
8) MCS9 (PER < 10%)	-	-63	-57	dBm
2. Maximum Input Level (PER < 10%)	-20	-10	-	dBm
3. Adjacent channel rejection				
1) MCS0 (PER <10%)	16	28		dB
2) MCS9 (PER < 10%)	-9	5		dB
4. Rx spurious emission			-57	dBm



## 7.9 IEEE 802.11ac VHT80

Items	Contents			
Specification	IEEE802.11ac VHT80			
Mode	OFDM			
Channel	CH42 to CH155			
Data rate (MCS index)	MCS0~MCS9 (Nss=1)			
Temperature	-10°C~65°C			
Voltage	3.3V+/-10%			
<b>TX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Power Levels				
1) Target Power@ MCS0			23	dBm
2) Target Power@ MCS1			23	dBm
3) Target Power@ MCS2			23	dBm
4) Target Power@ MCS3			23	dBm
5) Target Power@ MCS4			23	dBm
6) Target Power@ MCS5			23	dBm
7) Target Power@ MCS6			23	dBm
8) Target Power@ MCS7			23	dBm
9) Target Power@ MCS8			23	dBm
10) Target Power@ MCS9			23	dBm
2. Spectrum Mask @ target power				
1) at fc +/- 41MHz	-	-	-20	dBr
2) at fc +/- 80MHz	-	-	-28	dBr
3) at fc > +/- 120MHz	-	-	-45	dBr
3. Modulation Accuracy(EVM)@ target power				
1) MCS0	-	-30	-5	dB
2) MCS1	-	-30	-10	dB
3) MCS2	-	-31	-13	dB
4) MCS3	-	-31	-16	dB
5) MCS4	-	-31	-19	dB
6) MCS5	-	-32	-22	dB
7) MCS6	-	-32	-25	dB
8) MCS7	-	-32	-27	dB
9) MCS8	-	-32	-30	dB
10) MCS9	-	-32	-32	dB
4. Frequency Error*	-20	-	+20	ppm
5. Tx spurious emission for all out of band			-50	dBm
<b>RX Characteristics</b>	<b>Min.</b>	<b>Typ.</b>	<b>Max.</b>	<b>Unit</b>
1. Minimum Input Level Sensitivity				
1) MCS0 (PER < 10%)	-	-85	-75	dBm
2) MCS1 (PER < 10%)	-	-80	-73	dBm
3) MCS2 (PER < 10%)	-	-79	-71	dBm
4) MCS3 (PER < 10%)	-	-76	-69	dBm
5) MCS4 (PER < 10%)	-	-73	-67	dBm
6) MCS5 (PER < 10%)	-	-70	-65	dBm
7) MCS6 (PER < 10%)	-	-68	-63	dBm
8) MCS7 (PER < 10%)	-	-66	-61	dBm
9) MCS8 (PER < 10%)	-	-63	-58	dBm
10) MCS9 (PER < 10%)	-	-60	-54	dBm
2. Maximum Input Level (PER < 10%)	-20	-10	-	dBm
3. Adjacent channel rejection				
1) MCS0 (PER <10%)	16	28		dB
2) MCS9 (PER < 10%)	-9	-3		dB
4. Rx spurious emission			-57	dBm



## 7.10 Bluetooth

### BDR TX

PARAMETER	DESCRIPTION	PERFORMANCE			
		MIN	TYP	MAX	Unit
Frequency range		2402	-	2480	MHz
Output power	At maximum power output level	-1.5	1	3	dBm
Modulation characteristics	$\Delta f1_{avg}$	140	157	175	KHz
ICFT	$\Delta f2_{max}$ (For at least 99.9% of all $\Delta f2_{max}$ )	115	148	-	KHz
	$\Delta f1_{avg}/\Delta f2_{avg}$	0.8	0.98	-	KHz
	Initial carrier frequency tolerance	-25		25	KHz
Carrier frequency drift	One slot packet(DH1)	-25		25	KHz
TX output spectrum	Three slot packet(DH3)	-40		40	KHz
	Five slot packet(DH5)	-40		40	KHz
	Max drift	-20		20	KHz/50us
	20dB bandwidth		917	1000	KHz
In-Band spurious emission	$\pm 2$ MHz offset		-45	-20	dBm
	$\pm 3$ MHz offset		-48	-40	dBm
	$>\pm 3$ MHz offset		-48	-40	dBm

### BDR RX

PARAMETER	DESCRIPTION	PERFORMANCE			
		MIN	TYP	MAX	Unit
Frequency range		2402	-	2480	MHz
Receiver sensitivity	BER<0.1%		-93	-86	dBm
Maximum usable signal	BER<0.1%		-5		dBm
C/I co-channel (BER<0.1%)	Co channel selectivity		4	11	dB
C/I 1MHz (BER<0.1%)	Adjacent channel selectivity		-14	0	dB
C/I 2MHz (BER<0.1%)	2nd adjacent channel selectivity		-42	-30	dB
C/I $\geq 3$ MHz (BER<0.1%)	3rd adjacent channel selectivity		-49	-40	dB
C/I Image channel (BER<0.1%)	Image channel selectivity		-25	-9	dB
C/I Image 1MHz (BER<0.1%)	1MHz adjacent to image channel selectivity		-50	-20	dB
Inter-modulation			-13		dBm
Out-of-band blocking	30MHz to 2000MHz	-10			dBm
	2000MHz to 2399MHz	-27			dBm
	2498MHz to 3000MHz	-27			dBm
	3000MHz to 12.75GHz	-10			dBm

EDR TX

PARAMETER	DESCRIPTION	PERFORMANCE				
		MIN	TYP	MAX	Unit	
Frequency range		2402	0	2480	MHz	
Power average	$\pi/4$ DQPSK	-1.5	1	3.5	dBm	
	8PSK	-1.5	1	3.5	dBm	
Frequency stability	Maximum carrier frequency stability, $\omega_0$	$\pi/4$ DQPSK	-10	0	10	
	8PSK	8PSK	-10	0	10	
Modulation accuracy	Maximum carrier frequency stability, $\omega_i$	$\pi/4$ DQPSK	-25	5	25	KHz
		8PSK	-25	5	25	KHz
	Maximum carrier frequency stability, $ \omega_i+\omega_0 $	$\pi/4$ DQPSK	-25	5	25	KHz
		8PSK	-25	5	25	KHz
	RMS DEVM	$\pi/4$ DQPSK	-	5	30	KHz
		8PSK	-	5	20	KHz
In-Band spurious emission	99% DEVM	$\pi/4$ DQPSK	-	9	-	%
		8PSK	-	9	-	%
	Peak DEVM	$\pi/4$ DQPSK	-	14	35	%
		8PSK	-	15	25	%
	$\pm 1$ MHz offset $\pm 1$ MHz offset	$\pi/4$ DQPSK	-	-37	-26	%
		8PSK	-	-36	-26	%
	$\pm 2$ MHz offset	$\pi/4$ DQPSK	-	-33	-20	dB
	$\pm 2$ MHz offset	8PSK	-	-32	-20	dB
	$\pm 3$ MHz offset	$\pi/4$ DQPSK	-	-44	-40	dBm
	$\pm 3$ MHz offset	8PSK	-	-45	-40	dBm

EDR RX

PARAMETER	DESCRIPTION	PERFORMANCE			
		MIN	TYP	MAX	Unit
Frequency range		2402	-	2480	MHz
Receiver sensitivity(BER<0.01%)	$\pi/4$ DQPSK	-	-93	-86	dBm
	8PSK	-	-89	-80	dBm
Maximum usable signal(BER<0.01%)	$\pi/4$ DQPSK	-	-5	-	dBm
	8PSK	-	-5	-	dBm
C/I co-channel(BER<0.1%)	$\pi/4$ DQPSK	-	8	13	dB
	8PSK	-	14	21	dB
C/I 1MHz(BER<0.1%)	$\pi/4$ DQPSK	-	-13	0	dB
	8PSK	-	-7	5	dB
C/I 2MHz(BER<0.1%)	$\pi/4$ DQPSK	-	-44	-30	dB
	8PSK	-	-42	-33	dB
C/I >= 3MHz(BER<0.1%)	$\pi/4$ DQPSK	-	-52	-40	dB
	8PSK	-	-44	-33	dB
C/I Image channel (BER<0.1%)	$\pi/4$ DQPSK	-	-30	-7	dB
	8PSK	-	-25	0	dB
C/I Image 1MHz (BER<0.1%)	$\pi/4$ DQPSK	-	-53	-20	dB
	8PSK	-	-47	-13	dB



### LE TX

Parameter	Description	Min.	Typ.	Max.	Unit
Frequency Range		2402	-	2480	MHz
Output Power(*)	At max power output level	-1.5	1	3.5	dBm
Carrier Frequency Offset and Drift	Frequency offset	-150	±6	150	kHz
	Frequency drift	-50	±6	50	kHz
	Max. drift rate	-20	±3	20	Hz/us
Modulation Characteristic	Δf1avg	225	243	275	kHz
	Δf2max(For at least 99% of all Δf2max)	185	237	-	kHz
	Δf2avg/f1avg	0.8	0.94	-	Hz/us
In-band Spurious Emission	±2M offset	-	-49	-20	dBm
	>±3MHz offset	-	-50	-30	dBm

### LE RX

Parameter	Description	Min.	Typ.	Max.	Unit
Frequency Range		2402	-	2480	MHz
Receiver Sensitivity (*)	PER<30.8%	-	-98	-92	dBm
Max. Usable Signal	PER<30.8%	-10	-5	-	dBm
C/I Co-channel	Co-channel selectivity (PER<30.8%)	-	6	21	dB
C/I 1MHz	Adjacent channel selectivity (PER<30.8%)	-	-8	15	dB
C/I 2MHz	2nd adjacent channel selectivity (PER<30.8%)	-	-32	-17	dB
C/I >=3MHz	3rd adjacent channel selectivity (PER<30.8%)	-	-35	-27	dB
C/I Image channel	Image channel selectivity (PER<30.8%)	-	-26	-9	dB
C/I Image 1MHz	1MHz adjacent to image channel selectivity (PER<30.8%)	-	-28	-15	dB
Out-of-band Blocking	30MHz to 2000MHz	-30	-	-	dBm
	2001MHz to 2339MHz	-35	-	-	dBm
	2501MHz to 3000MHz	-35	-	-	dBm
	3001MHz to 12.75GHz	-30	-	-	dBm

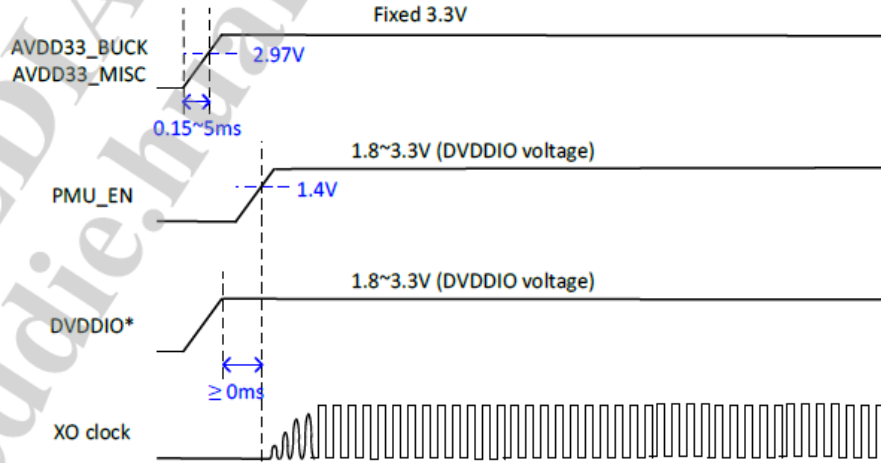
## 7.11 Power consumption

Description	Performance		
	Average	Max	Unit
Sleep mode	TBD		mA
2.4GHz RX Active,VHT40,MCS15	TBD		mA
5GHz RX Active,VHT80,MCS9,Nss=2,	TBD		mA
RX Power saving,DTIM=1	TBD		mA
RX Listen	TBD		mA
2.4GHz TX HT20,MCS0, 15dBm	566	720	mA
5GHz TX Active,VHT20,MCS0,Nss=2, 13dBm	680	848	mA
5GHz TX Active,VHT40,MCS0,Nss=2, 13dBm	637	912	mA
5GHz TX Active,VHT80,MCS0,Nss=2, 13dBm	462	864	mA
5GHz TX HT20 MCS0,13dBm	687	848	mA

## 7.12 Power ON and power off sequence

### 7.12.1 Power on sequence

The figure below shows the chip power on sequence.

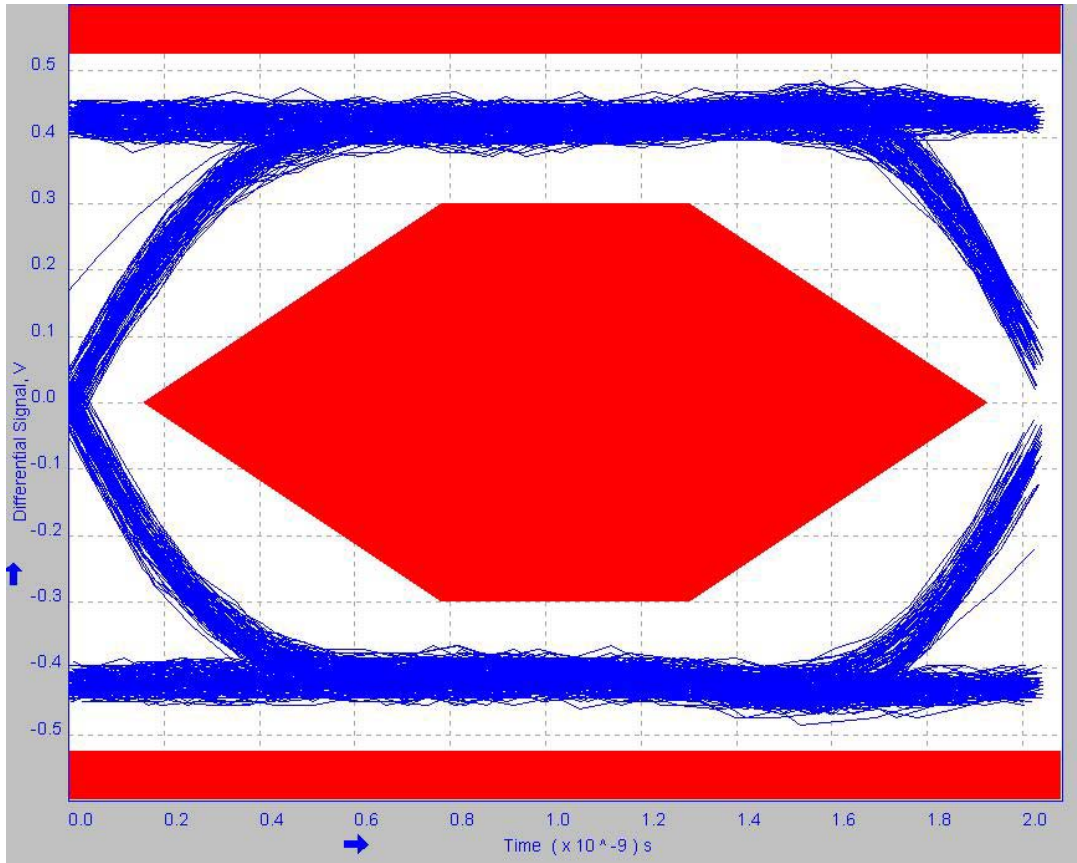




7.12.2 Power off sequence  
TBD

### 7.13 USB Eye Diagram

1)USB 2.0

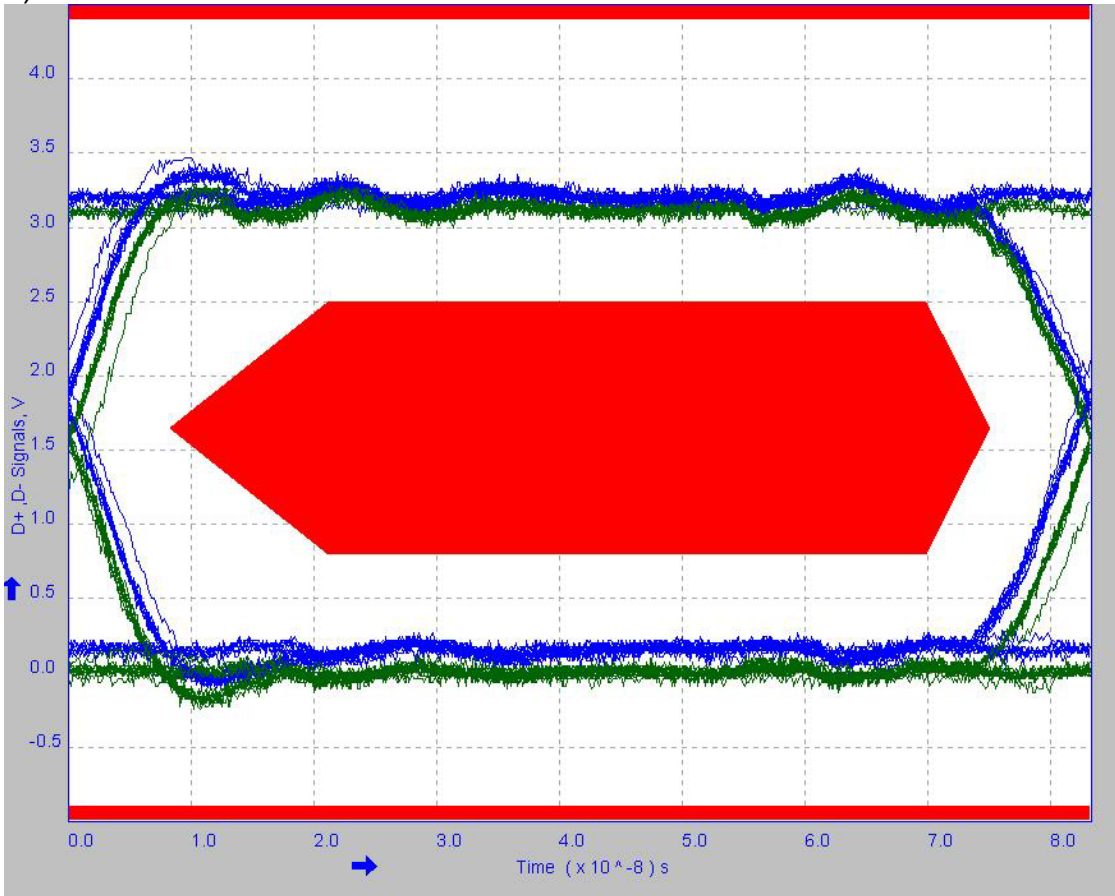


Results based on USB-IF / Waiver Limits :

Measurement Name	Minimum	Maximum	Mean	pk-pk	Standard Deviation	RMS	Population	Status
Monotonic Property	-	-	-	-	-	-	0	Pass
Eye Diagram Test	-	-	-	-	-	-	-	Pass
Signal Rate	472.8132 Mbps	486.6180 Mbps	480.0075 Mbps	0.0000bps	1.946978 Mbps	480.1003 Mbps	509	Pass
EOP Width	-	-	16.59637 ns	-	-	-	1	Pass
EOP Width (Bits)	-	-	7.966383	-	-	-	1	Pass

Falling Edge Rate	1.131366 kV/us	1.475609 kV/us	1.311112 kV/us	344.2424 V/us	87.85163 V/us	1.314025 kV/us	108	Pass
Rising Edge Rate	1.423693 V/us	1.511445 kV/us	1.256864 kV/us	1.510021 kV/us	143.8853 V/us	1.264998 kV/us	108	Pass

2)USB1.1



Results based on USB-IF / Waiver Limits :

Measurement Name	Minimum	Maximum	Mean	pk-pk	Standard Deviation	RMS	Population	Status
Eye Diagram Test	-	-	-	-	-	-	-	Pass
Signal Rate	11.82135 Mbps	12.20779 Mbps	12.00406 Mbps	0.0000b ps	143.7864 kbps	12.01181 Mbps	28	Pass
Crossover Voltage	1.635992 V	1.788064 V	1.713677 V	152.072 mV	40.44978 mV	1.714130 V	19	Pass
EOP Width	-	-	165.8765 ns	-	-	-	1	Pass
Consecutive Jitter	-838.4332 ps	652.0862 ps	-133.4152 ps	1.49051 ns	610.5417 ps	607.1521 ps	17	Pass

Paired JK Jitter	-419.5018 ps	301.5176 ps	5.597451 ps	721.019 5ps	242.5373 ps	221.4760 ps	6	Pass
Paired KJ Jitter	-408.5133 ps	331.1229 ps	0.0000s	739.636 2ps	250.7989 ps	234.6009 ps	8	Pass

### 7.14 Antenna Electrical Specification



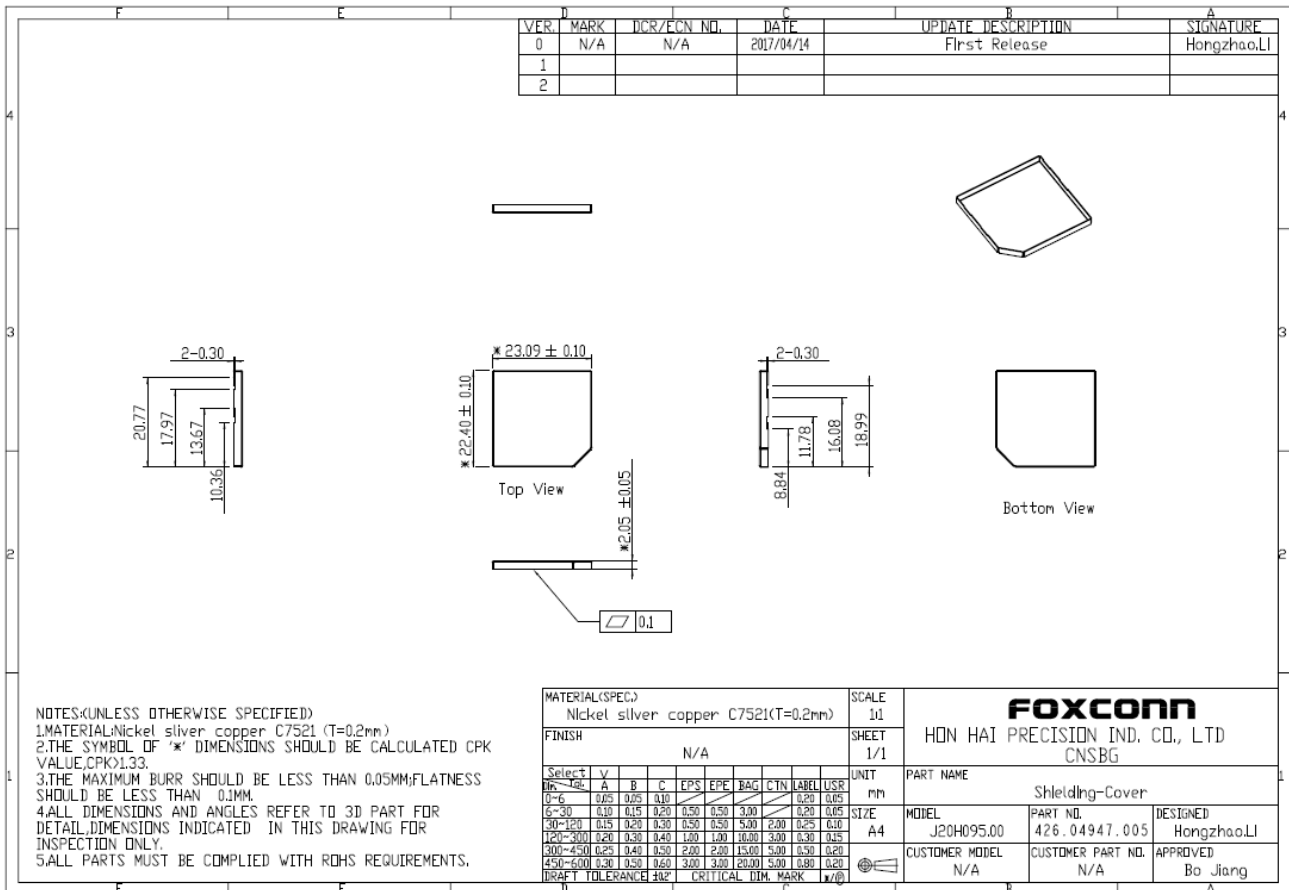
Wi-Fi ANT2						Wi-Fi ANT1						Bluetooth										
2.4GHz帯			5GHz帯			2.4GHz帯			5GHz帯			Bluetooth										
ch	Freq [MHz]	Peak Gain	ch	Freq [MHz]	Peak Gain	ch	Freq [MHz]	Peak Gain	ch	Freq [MHz]	Peak Gain	ch	Freq [MHz]	Peak Gain	ch	Freq [MHz]	Peak Gain	ch	Freq [MHz]	Peak Gain		
1	2412	0.96	W52	36	5180	1.74	1	2412	-2.69	W52	36	5180	-0.62	1	2402	4.23	28	2429	3.80	55	2456	3.22
2	2417	1.42		40	5200	2.06	2	2417	-2.49		40	5200	-0.35	2	2403	4.20	29	2430	3.78	56	2457	3.19
3	2422	1.70		44	5220	2.61	3	2422	-2.37		44	5220	0.33	3	2404	4.18	30	2431	3.76	57	2458	3.16
4	2427	2.12		48	5240	3.21	4	2427	-2.25		48	5240	0.45	4	2405	4.17	31	2432	3.73	58	2459	3.11
5	2432	2.46	W53	52	5260	3.67	5	2432	-2.19	W53	52	5260	0.87	5	2406	4.16	32	2433	3.71	59	2460	3.04
6	2437	2.64		56	5280	3.67	6	2437	-2.20		56	5280	1.14	6	2407	4.16	33	2434	3.69	60	2461	2.98
7	2442	2.99		60	5300	3.32	7	2442	-2.08		60	5300	0.99	7	2408	4.15	34	2435	3.67	61	2462	2.90
8	2447	3.27		64	5320	3.19	8	2447	-1.94		64	5320	0.69	8	2409	4.05	35	2436	3.64	62	2463	2.83
9	2452	3.35	W56	100	5500	2.90	9	2452	-1.81	W56	100	5500	0.33	9	2410	4.05	36	2437	3.63	63	2464	2.77
10	2457	3.63		104	5520	3.23	10	2457	-1.72		104	5520	0.34	10	2411	4.08	37	2438	3.61	64	2465	2.74
11	2462	3.58		108	5540	3.56	11	2462	-1.38		108	5540	0.27	11	2412	4.09	38	2439	3.61	65	2466	2.72
12	2467	3.72		112	5560	3.56	12	2467	-1.10		112	5560	0.17	12	2413	4.11	39	2440	3.61	66	2467	2.73
13	2472	3.87		116	5580	3.36	13	2472	-0.84		116	5580	-0.01	13	2414	4.11	40	2441	3.61	67	2468	2.73
				120	5600	2.99					120	5600	-0.60	14	2415	4.10	41	2442	3.59	68	2469	2.72
				124	5620	2.81					124	5620	-1.21	15	2416	4.07	42	2443	3.58	69	2470	2.72
				128	5640	2.67					128	5640	-1.85	16	2417	4.03	43	2444	3.57	70	2471	2.69
				132	5660	2.68					132	5660	-2.07	17	2418	3.99	44	2445	3.55	71	2472	2.65
				136	5680	2.80					136	5680	-1.67	18	2419	3.95	45	2446	3.52	72	2473	2.61
				140	5700	2.81					140	5700	-1.26	19	2420	3.92	46	2447	3.49	73	2474	2.55
				149	5745	2.84					149	5745	-1.14	20	2421	3.90	47	2448	3.44	74	2475	2.49
				153	5765	2.78					153	5765	-0.66	21	2422	3.86	48	2449	3.40	75	2476	2.43
			157	5785	3.04				157	5785	-0.44	22	2423	3.82	49	2450	3.35	76	2477	2.37		
			161	5805	3.38				161	5805	-0.13	23	2424	3.81	50	2451	3.31	77	2478	2.38		
			165	5825	3.25				165	5825	-0.64	24	2425	3.80	51	2452	3.29	78	2479	2.37		
												25	2426	3.81	52	2453	3.28	79	2480	2.37		
												26	2427	3.82	53	2454	3.26					
												27	2428	3.81	54	2455	3.24					

## 8 Mechanical Specifications

### 8.1 Shielding Cover Dimension

Dimension (LxWxH): 22.04mm x 27.26mm x 2.05mm

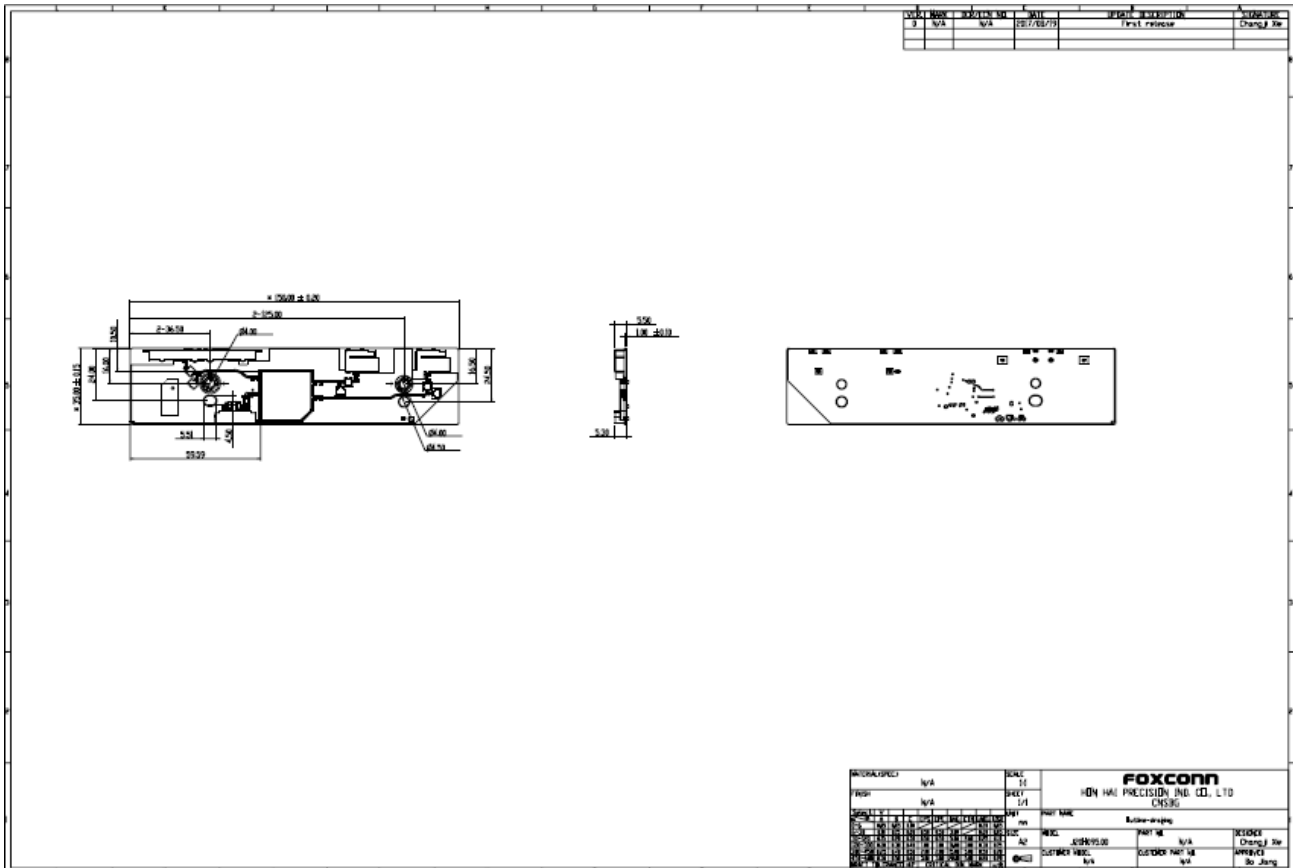
Thickness: 0.2mm



## 8.2 PCB Assembly Dimension

Dimension (W x L x H ): 95mmx32mmx1.0mm

PCB: 4 layer FR4 design



### 8.3 Mount Position of Materials

All materials should be populated on a side.

Quantity	Reference	Vendor	Vendor PN	Description
11	R9,R10,R34,L111,L112,C7,C20,C29,C34,R21,R61	Yageo	RC0402JR-070RL	RES C SMD 0402 0ohm 5% GP/HF
		TA-I	RM04JTN0	
		WALSIN	WR04X000 PTL	
		TA-I	RM04JLN0	
		YAGEO	RC0402JR-7D0RL	
4	C24,C58,C60,C61	MURATA	GRM155R71C104MA88D	CAP CER 100nF 20% 16V SMD 0402 GP/HF X7R 0.5mm
4	C2,C4,C67,C69	MURATA	GJM1555C1HR30WB01D	CAP CER 0.3pF +-0.05pF 50V SMD 0402 GP/HF NPO T=0.5mm HI-Q
1	C16	MURATA	GRM0335C1HR50BA01D	CAP CER 0.5pF +-0.1pF 50V SMD 0201 GP/HF NPO T=0.3mm
1	C53	MURATA	LQP03TN0N8B02D	IND TF 0.8nH 0.1nH 800mA 0.08ohm Q=14 SMD 0201 GP/HF
1	L22	MURATA	GRM0335C1ER80BA01D	CAP CER 0.8pF +-0.1pF 25V SMD 0201 GP/HF NPO 0.3mm
1	C14	MURATA	GJM0335C1ER90BB01D	CAP CER 0.9pF +-0.1pF 25V SMD 0201 GP/HF NPO 0.3mm HI-Q
1	L4	MURATA	LQP03TN1N3B02D	IND TF 1.3nH 0.1nH 600mA 0.15ohm Q=14 SMD 0201 GP/HF
1	L5	MURATA	LQP03TN1N5B02D	IND TF 1.5nH 0.1nH 600mA 0.15ohm Q=14 SMD 0201 GP/HF
1	C28	MURATA	LQP03TG1N6B02D	IND TF 1.6nH 0.1nH 600mA 0.15ohm Q=13 SMD 0201 GP/HF
2	C166,C167	MURATA	GRM0335C1E101JA01D	CAP CER 100pF 5% 25V SMD 0201 GP/HF NPO T=0.3mm
2	R2,R32	YAGEO	RC0201JR-0710KL	RES C SMD 0201 10Kohm 5% GP/HF 1/20W
		WALSIN	WR02X103JAL	
		TA-I	RM02JTN103	
2	C18,C25	MURATA	GRM033R70J103KA01D	CAP CER 10nF 10% 6.3V SMD 0201 GP/HF X7R T=0.3mm
		WALSIN	0201B103K6R3CT	
		YAGEO	CC0201KRX7R5BB103	
5	C37,C39,C41,C42,C128	MURATA	GJM0336C1E100JB01D	CAP CER 10pF 5% 25V SMD 0201 GP/HF C0H T=0.3mm HI-Q
1	C26	MURATA	GRM188C80G106ME47D	CAP CER 10uF 20% 4V SMD 0603 GP/HF X6S 0.8mm
		SAMSUNG	CL10X106MR8NNNC	
1	C55	MURATA	LQP03TN1N0B02D	IND TF 1.0nH 0.1nH 750mA 0.1ohm Q=14 SMD 0201 GP/HF
2	C21,C22	TA-I	RM02JTN0	RES C SMD 0201 0ohm 5% GP/HF 1/20W
		YAGEO	RC0201JR-070RL	
		WALSIN	WR02X000 PAL	
2	L7,L8	MURATA	GJM0335C1ER20WB01D	CAP CER 0.2pF +-0.05pF 25V SMD 0201 GP/HF NPO T=0.3mm HI-Q
7	C27,C31,C32,C46,C47,C51,C52	MURATA	GRM155C80J105KE15D	CAP CER 1uF 10% 6.3V SMD 0402 GP/HF X6S 0.5mm
		TAIYO	JMK105C6105KV-F	
1	C62	MURATA	LQP03TN2N2B02D	IND TF 2.2nH 0.1nH 600mA 0.15ohm Q=14 SMD 0201 GP/HF
3	C45,C70,C71	SAMSUNG	CL10B225KP8NNNC	CAP CER 2.2uF 10% 10V SMD 0603 GP/HF X7R T=0.8mm
		MURATA	GRM188R71A225KE	



			15D	
		TAIYO	LMK107B7225KA-TR	
1	L10	TAIYO	NR3015T2R2M	IND WW 2.2uH 20% 1.5A 0.06ohm SMD GP/HF
1	C15	MURATA	LQP03TN2N7B02D	IND TF 2.7nH 0.1nH 500mA 0.2ohm Q=14 SMD 0201 GP/HF
1	L21	MURATA	LQP03TN3N9B02D	IND TF 3.9nH 0.1nH 400mA 0.3ohm Q=14 SMD 0201 GP/HF
2	C30,C165	MURATA	GRM188C71A475KE11D	CAP CER 4.7uF 10% 10V SMD 0603 GP X7S T=0.8mm
2	C63,C64	MURATA	GRM21BR60J476ME15L	CAP CER 47uF 20% 6.3V SMD 0805 GP/HF X5R 1.25mm
		TAIYO	JMK212BJ476MG-T	
		SAMSUNG	CL21A476MQYNNNE	
1	R31	Murata	GJM1555C1H2R2BB01D	CAP CER 2.2pF +-0.1pF 50V SMD 0402 GP/HF NPO T=0.5mm HI-Q
1	R33	MURATA	GJM1555C1H4R7BB01D	CAP CER 4.7pF +-0.1pF 50V SMD 0402 GP/HF NPO T=0.5mm HI-Q
1	C1	Murata	LQG15HS3N0B02	IND C 3.0nH 0.1nH 800mA 0.125ohm Q=8 SMD 0402 GP/HF
1	C3	Murata	LQG15HS1N6B02	IND C 1.6nH 0.1NH 1000mA 0.07ohm Q=8 SMD 0402 GP/HF
2	C84,C85	MURATA	GRM1555C1H6R8CA01D	CAP CER 6.8pF +-0.25pF 50V SMD 0402 GP/HF NPO T=0.5mm
1	U7	TXC	7M40000127	XTAL 40MHz 10PPM 12pF 20ohm SMD GP 3.2*2.5MM -10~+95DegC
		Hosonic	E3SB40E00010DE	
2	U2,U3	ACX	DP1608-A2455DTA2T/LF	FILTER DIPLEXER 2400~2500/4900~5950MHz 0.75/1.1dB SMD 0603 GP/HF
3	CON1,CON2,CON3	MURATA	MM8430-2610RA1	HEADER RF 1*1PORT D=0.6mm SMD FEMALE ST GP/HF
1	CON4	J.A.M.	STA12-12WH-ET	CONN WTB 12PIN 1.25mm SMD FEMALE RT GP
1	U6	MEDIATEK	MT7668BUN	IC PER 3.3V SMD QFN76 GP/HF WI-FI/BLUETOOTH MT7668BUN
1	ANT1/WiFi1	Foxconn	ANTSR02-CSGTB-EF	BRACKET 15.3*9.8*5.3mm T=0.3mm REV.X4 J20H095.00 C7701 GP
1	ANT2/WiFi2	Foxconn	ANTSR02-CSGTC-EF	BRACKET 15.3*9.8*5.3mm T=0.3mm REV.X4 J20H095.00 C7701 GP
1	ANT3/BT	Foxconn	ANTSR01-CSGTA-EF	BRACKET 53*4.6*5.3mm T=0.3mm REV.X4 J20H095.00 C7701 GP
1	PCB	APCB ZDT	308.02838.025	EU-GP PCB 4L OSP REV.025 10PCS GP/HF 150*35
1	SC1	FOXCONN	426.04947.005	SHIELD COVER 23.09*22.40*2.05mm REV.0 J20H095.00 C7521 T=0.2mm GP
0.1	Label			LABEL BLANK 19.05*5mm REV.1 WHITE GP/HF T77H470.00
0.3	solder			SOLDER PASTE S3X58 M500 GP/HF

J20H095.00-Bottom layer (Top view):





## 9 PCB Specification

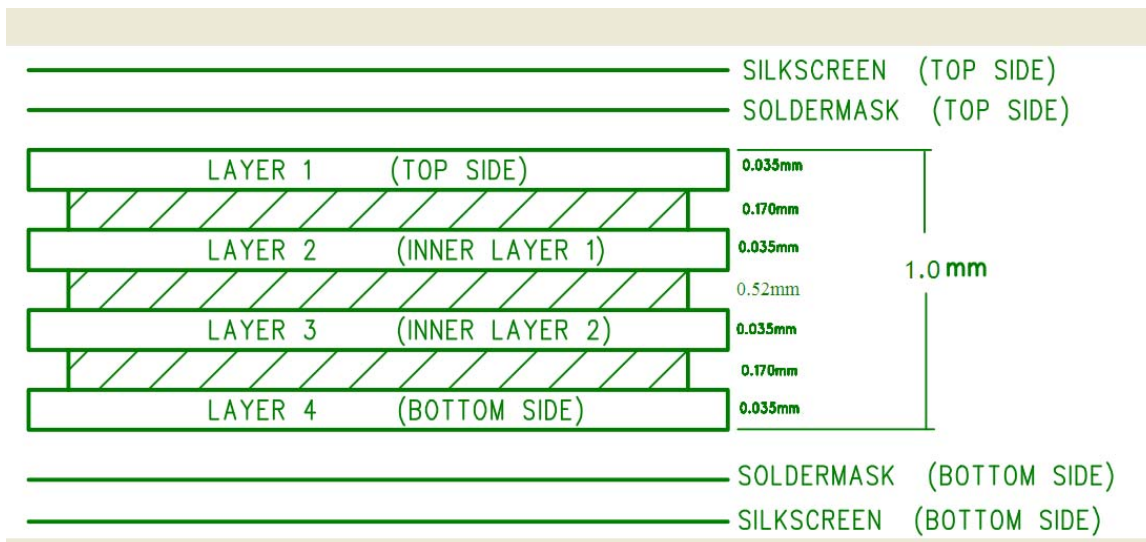
### PCB Stack-up:

PCB Thickness : 1.0mm+/-10%

PCB Layers : 4 Layers

Material: FR-4 Middle Tg:140 (Min135)

Layer	Typical layer thickness (mm)	Typical layer thickness (mil)
L1	0.035	1.3780
	0.170	6.6929
L2	0.035	1.3780
	0.520	20.4724
L3	0.035	1.3780
	0.170	6.6929
L4	0.035	1.3780



**J20H095.00 (PCB color: Green)**

## Transmission Line:

### RF Line (50ohm)

www.polarinstruments.com

			Tolerance	Minimum	Maximum	
Substrate 1 Height	H1	<input type="text" value="28.5433"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="28.5433"/>	<input type="text" value="28.5433"/>	<input type="button" value="Calculate"/>
Substrate 1 Dielectric	Er1	<input type="text" value="4.2000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="4.2000"/>	<input type="text" value="4.2000"/>	<input type="button" value="Calculate"/>
Lower Trace Width	W1	<input type="text" value="20.0000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="20.0000"/>	<input type="text" value="20.0000"/>	
Upper Trace Width	W2	<input type="text" value="19.0000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="19.0000"/>	<input type="text" value="19.0000"/>	<input type="button" value="Calculate"/>
Ground Strip Separation	D1	<input type="text" value="5.0000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="5.0000"/>	<input type="text" value="5.0000"/>	<input type="button" value="Calculate"/>
Trace Thickness	T1	<input type="text" value="1.2000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="1.2000"/>	<input type="text" value="1.2000"/>	<input type="button" value="Calculate"/>
Coating Above Substrate	C1	<input type="text" value="1.0000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="1.0000"/>	<input type="text" value="1.0000"/>	
Coating Above Trace	C2	<input type="text" value="0.4000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="0.4000"/>	<input type="text" value="0.4000"/>	
Coating Dielectric	CEr	<input type="text" value="4.1000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="4.1000"/>	<input type="text" value="4.1000"/>	
Notes						
Impedance	Zo	<input type="text" value="50.77"/>		<input type="text" value="50.77"/>	<input type="text" value="50.77"/>	<input type="button" value="Calculate"/>

### USB T/R Line (90ohm)

www.polarinstruments.com

			Tolerance	Minimum	Maximum	
Substrate 1 Height	H1	<input type="text" value="6.6929"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="6.6929"/>	<input type="text" value="6.6929"/>	<input type="button" value="Calculate"/>
Substrate 1 Dielectric	Er1	<input type="text" value="4.2000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="4.2000"/>	<input type="text" value="4.2000"/>	<input type="button" value="Calculate"/>
Lower Trace Width	W1	<input type="text" value="11.0000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="11.0000"/>	<input type="text" value="11.0000"/>	
Upper Trace Width	W2	<input type="text" value="10.0000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="10.0000"/>	<input type="text" value="10.0000"/>	<input type="button" value="Calculate"/>
Trace Separation	S1	<input type="text" value="7.0000"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="7.0000"/>	<input type="text" value="7.0000"/>	<input type="button" value="Calculate"/>
Trace Thickness	T1	<input type="text" value="1.3780"/>	+/- <input type="text" value="0.0000"/>	<input type="text" value="1.3780"/>	<input type="text" value="1.3780"/>	<input type="button" value="Calculate"/>
Differential Impedance	Zdiff	<input type="text" value="90.37"/>		<input type="text" value="90.37"/>	<input type="text" value="90.37"/>	<input type="button" value="Calculate"/>
						<input type="button" value="More..."/>



## 12 OTP content

User Area (0x138~0X13F)

Index	Description	Value	Efuse Location	content
ZZ	Serial Number (High)	It starts from 1 in each line every morning. It will be incremented by one.	0x138	TBD
ZZ	Serial Number (Low)	Ex. Serial Number = 32 (Decade) 0xZZ=0x00, 0xZZ=0x20,range:0001-FFFF	0x139	TBD
YY	Year	Year (0x11=>2017,0x12=>2018,0x13=>2019)	0x13A	11
MM	Month	Month (range : 0x01-0x0C)	0x13B	07
DD	Date	Date (range : 0x01-0x1F)	0x13C	TBD
LL	Line Number	Line Number (range : 0x01 -0xFF)	0x13D	TBD
N	Module Identification	Print "0"	0x13E	00
C	Region code	Print "0"		
HH	Hardware Version 2	Trial and Revision Number for TV Module	0x13F	04
		00=ES1 01=ES2 02=ES3 03=ES4 04=MVT 05=MP 06~0FF=Reserved		

## Efuse Map

Offset	Description	value	value Type
0x00	Chip ID	68	Defined in BIN
0x01		76	Defined in BIN
0x02	E-fuse Version	00	Defined in BIN
0x03		00	Defined in BIN
0x04	1st WLAN Mac Address [7:0]		match with laser making
0x05	1st WLAN Mac Address [15:8]		match with laser making
0x06	1st WLAN Mac Address [23:16]		match with laser making
0x07	1st WLAN Mac Address [31:24]		match with laser making
0x08	1st WLAN Mac Address [39:32]		match with laser making
0x09	1st WLAN Mac Address [47:40]		match with laser making
0x0A	Reserved	68	Defined in BIN
0x0B	Reserved	76	Defined in BIN
0x0C	Reserved	C3	Defined in BIN
0x0D	Reserved	14	Defined in BIN
0x0E	Reserved	00	Defined in BIN
0x0F	Reserved	00	Defined in BIN
0x10	Reserved	80	Defined in BIN
0x11	Reserved	02	Defined in BIN
0x12	Reserved	C3	Defined in BIN
0x13	Reserved	14	Defined in BIN
0x14	Reserved	15	Defined in BIN
0x15	Reserved	76	Defined in BIN
0x16	Reserved	03	Defined in BIN
0x17	Reserved	22	Defined in BIN
0x18	Reserved	FF	Defined in BIN
0x19	Reserved	FF	Defined in BIN
0x1A	Reserved	23	Defined in BIN

0x1B	Reserved	04	Defined in BIN
0x1C	Reserved	0D	Defined in BIN
0x1D	Reserved	F2	Defined in BIN
0x1E	Reserved	8F	Defined in BIN
0x1F	Reserved	02	Defined in BIN
0x20	Reserved	00	Defined in BIN
0x21	Reserved	80	Defined in BIN
0x22	Reserved	0A	Defined in BIN
0x23	Reserved	20	Defined in BIN
0x24	Reserved	00	Defined in BIN
0x25	Reserved	02	Defined in BIN
0x26	Reserved	00	Defined in BIN
0x27	Reserved	00	Defined in BIN
0x28	Reserved	00	Defined in BIN
0x29	Reserved	00	Defined in BIN
0x2A	Reserved	00	Defined in BIN
0x2B	Reserved	00	Defined in BIN
0x2C	Reserved	00	Defined in BIN
0x2D	Reserved	00	Defined in BIN
0x2E	Reserved	00	Defined in BIN
0x2F	Reserved	00	Defined in BIN
0x30	HW configuration-0 option (Cfg0_opt)	00	Defined in BIN
0x31		00	Defined in BIN
0x32	HW configuration-1 option (Cfg1_opt)	20	Defined in BIN
0x33		A0	Defined in BIN
0x34	NIC Configure 0	22	Defined in BIN
0x35		00	Defined in BIN
0x36	NIC Configure 1	04	Defined in BIN
0x37		60	Defined in BIN
0x38	Reserved	83	Defined in BIN
0x39		00	Defined in BIN
0x3A	TX BBP Configuration	20	Defined in BIN
0x3B	LED MODE	00	Defined in BIN
0x3C	ePA/eLNA control polarity	00	Defined in BIN
0x3D	Reserved	00	Defined in BIN
0x3E	ePA/eLNA Antenna control	00	Defined in BIN
0x3F	Reserved	00	Defined in BIN
0x40	Reserved	00	Defined in BIN
0x41	Reserved	00	Defined in BIN
0x42	NIC Configure 2	22	Defined in BIN
0x43	NIC Configure 3	00	Defined in BIN
0x44	Reserved	00	Defined in BIN
0x45	Reserved	00	Defined in BIN
0x46	Reserved	00	Defined in BIN
0x47		00	Defined in BIN
0x48		00	Defined in BIN
0x49		00	Defined in BIN
0x4A	Reserved	00	Defined in BIN

0x4B	Reserved	00	Defined in BIN
0x4C	Reserved	00	Defined in BIN
0x4D	Reserved	00	Defined in BIN
0x4E	Reserved	00	Defined in BIN
0x4F	Reserved	00	Defined in BIN
0x50	COEX isolation index	00	Defined in BIN
0x51	Reserved	00	Defined in BIN
0x52	Reserved	00	Defined in BIN
0x53	Reserved		IC
0x54	Reserved		IC
0x55	Temperature sensor calibration		IC
0x56	TX0 2.4G PA TSSI slope	42	Defined in BIN
0x57	TX0 2.4G PA TSSI offset	C2	Defined in BIN
0x58	TX0 2.4G TX power (54Mbps, dBm absolute value)	1C	Defined in BIN
0x59	TX0 2.4G TX power offset low group (CH1~5) (delta, dB)		Write in FT
0x5A	TX0 2.4G TX power offset middle group (CH6~10) (delta, dB)		Write in FT
0x5B	TX0 2.4G TX power offset high group (CH11~14) (delta, dB)		Write in FT
0x5C	TX1 2.4G PA TSSI slope	C2	Defined in BIN
0x5D	TX1 2.4G PA TSSI offset	C4	Defined in BIN
0x5E	TX1 2.4G TX power (54Mbps,dBm, absolute value)	1C	Defined in BIN
0x5F	TX1 2.4G TX power offset low group (CH1~5) (delta, dB)		Write in FT
0x60	TX1 2.4G TX power offset middle group (CH6~10) (delta, dB)		Write in FT
0x61	TX1 2.4G TX power offset high group (CH11~14) (delta, dB)		Write in FT
0x62 ~ 0x68	Reserved	00	Defined in BIN
0x69	Reserved	08	Defined in BIN
0x6A~0x6D	Reserved	00	Defined in BIN
0x6E	TX0 5G PA TSSI slope Group0: 4910 ~ 5140MHz (CH184, 188, 192, 196, 8, 12, 16)	B9	Defined in BIN
0x6F	TX0 5G PA TSSI offset Group0: 4910 ~ 5140MHz (CH184, 188, 192, 196, 8, 12, 16)	C6	Defined in BIN
0x70	TX0 5G Target power of Group0: 4910 ~ 5140MHz (54M,dBm,Abs-value)(CH184, 188, 192, 196, 8, 12, 16)	18	Defined in BIN
0x71	TX0 5G TX power offset low Group0: 4910 ~ 4970MHz (delta, dB) (CH184, 188, 192)		Write in FT
0x72	TX0 5G TX power offset high Group0: 4970 ~ 5140MHz (delta, dB) (CH196, 8, 12, 16)		Write in FT
0x73	TX0 5G PA TSSI slope Group1: 5140 ~ 5250MHz (CH36, 40, 44, 48)	B9	Defined in BIN
0x74	TX0 5G PA TSSI offset Group1: 5140 ~ 5250MHz (CH36, 40, 44, 48)	C6	Defined in BIN
0x75	TX0 5G Target power of Group1: 5140 ~ 5250MHz (54M,dBm, Abs-value)(CH36, 40, 44, 48)	18	Defined in BIN
0x76	TX0 5G TX power offset low Group1: 5140 ~ 5210MHz (delta,dB)(CH36,40)		Write in FT

0x77	TX0 5G TX power offset high Group1: 5210 ~ 5250MHz (delta, dB) (CH44, 48)		Write in FT
0x78	TX0 5G PA TSSI slope Group2: 5250 ~ 5360MHz (CH52, 56, 60, 64)	B9	Defined in BIN
0x79	TX0 5G PA TSSI offset Group2: 5250 ~ 5360MHz (CH52, 56, 60, 64)	C6	Defined in BIN
0x7A	TX0 5G Target power of Group2: 5250 ~ 5360MHz (54M,dBm, Abs-value) CH52, 56, 60, 64)	18	Defined in BIN
0x7B	TX0 5G TX power offset low Group2: 5250 ~ 5290MHz (delta, dB) (CH52, 56)		Write in FT
0x7C	TX0 5G TX power offset high Group2: 5290 ~ 5360MHz (delta, dB) (CH60, 64)		Write in FT
0x7D	TX0 5G PA TSSI slope Group3:5360 ~ 5470MHz (Reserved)	39	Defined in BIN
0x7E	TX0 5G PA TSSI offset Group3: 5360 ~ 5470MHz(Reserved)	C5	Defined in BIN
0x7F	TX0 5G Target power of Group3: 5360 ~ 5490MHz (54M,dBm, Abs-value) (Reserved)	18	Defined in BIN
0x80	TX0 5G TX power offset low Group3: 5360 ~ 5430MHz (delta, dB) (Reserved)		Write in FT
0x81	TX0 5G TX power offset high Group3 : 5430 ~ 5470MHz (delta, dB) (Reserved)		Write in FT
0x82	TX0 5G PA TSSI slope Group4: 5470 ~ 5580MHz (CH100, 104, 108, 112, 116)	39	Defined in BIN
0x83	TX0 5G PA TSSI offset Group4: 5470 ~ 5580MHz (CH100, 104, 108, 112, 116)	C5	Defined in BIN
0x84	TX0 5G Target power of Group4: 5470 ~ 5580MHz (54M,dBm, Abs-value) (CH100, 104, 108, 112, 116)	18	Defined in BIN
0x85	TX0 5G TX power offset low Group4: 5470 ~ 5530MHz (delta, dB) (CH100, 104)		Write in FT
0x86	TX0 5G TX power offset high Group4: 5530 ~ 5580MHz (delta, dB) (CH108, 112, 116)		Write in FT
0x87	TX0 5G PA TSSI slope Group5: 5580 ~ 5690MHz (CH120, 124, 128, 132, 136)	39	Defined in BIN
0x88	TX0 5G PA TSSI offset Group5: 5580 ~ 5690MHz (CH120, 124, 128, 132, 136)	C4	Defined in BIN
0x89	TX0 5G Target power of Group5: 5580 ~ 5690MHz (54M,dBm, Abs-value) (CH120, 124, 128, 132, 136)	18	Defined in BIN
0x8A	TX0 5G TX power offset low Group5: 5580 ~ 5690MHz (delta, dB) (CH120, 124)		Write in FT
0x8B	TX0 5G TX power offset high Group5: 5580 ~ 5690MHz (delta, dB) (CH128, 132, 136)		Write in FT
0x8C	TX0 5G PA TSSI slope Group6: 5690 ~ 5800MHz (CH140, 144, 149, 153, 157)	B9	Defined in BIN
0x8D	TX0 5G PA TSSI offset Group6: 5690 ~ 5800MHz (CH140, 144, 149, 153, 157)	C3	Defined in BIN
0x8E	TX0 5G Target power of Group6: 5690 ~ 5800MHz (54M,dBm, Abs-value)(CH140, 144, 149, 153, 157)	18	Defined in BIN
0x8F	TX0 5G TX power offset low Group6: 5690 ~ 5730MHz (delta, dB) (CH4140, CH144)		Write in FT



0x90	TX0 5G TX power offset high Group6: 5730 ~ 5800MHz (delta, dB) (CH4149, 153, 157)		Write in FT
0x91	TX0 5G PA TSSI slope Group7: 5800 ~ 5925MHz (CH161, 165)	39	Defined in BIN
0x92	TX0 5G PA TSSI offset Group7: 5800 ~ 5925MHz (CH161, 165)	C3	Defined in BIN
0x93	TX0 5G Target power of Group7: 5800 ~ 5925MHz (54M,dBm, Abs-value) (CH161, 165)	18	Defined in BIN
0x94	TX0 5G TX power offset low Group7: 5800 ~5815 (delta, dB) (CH161)		Write in FT
0x95	TX0 5G TX power offset high Group7: 5815 ~5925 (delta, dB) (CH165)		Write in FT
0x96	TX1 5G PA TSSI slope Group0: 4910 ~ 5140MHz (CH184, 188, 192, 196, 8, 12, 16)	B9	Defined in BIN
0x97	TX1 5G PA TSSI offset Group0: 4910 ~ 5140MHz (CH184, 188, 192, 196, 8, 12, 16)	C5	Defined in BIN
0x98	TX1 5G Target power of Group0: 4910 ~ 5140MHz (54M,dBm,Abs-value)(CH184, 188, 192, 196, 8, 12, 16)	18	Defined in BIN
0x99	TX1 5G TX power offset low Group0: 4910 ~ 4970MHz (delta, dB) (CH184, 188, 192)		Write in FT
0x9A	TX1 5G TX power offset high Group0: 4970 ~ 5140MHz (delta, dB) (CH196, 8, 12, 16)		Write in FT
0x9B	TX1 5G PA TSSI slope Group1: 5140 ~ 5250MHz (CH36, 40, 44, 48)	39	Defined in BIN
0x9C	TX1 5G PA TSSI offset Group1: 5140 ~ 5250MHz (CH36, 40, 44, 48)	C5	Defined in BIN
0x9D	TX1 5G Target power of Group1: 5140 ~ 5250MHz (54M,dBm, Abs-value)(CH36, 40, 44, 48)	18	Defined in BIN
0x9E	TX1 5G TX power offset low Group1: 5140 ~ 5210MHz (delta,dB)(CH36,40)		Write in FT
0x9F	TX1 5G TX power offset high Group1: 5210 ~ 5250MHz (delta, dB) (CH44, 48)		Write in FT
0xA0	TX1 5G PA TSSI slope Group2: 5250 ~ 5360MHz (CH52, 56, 60, 64)	B9	Defined in BIN
0xA1	TX1 5G PA TSSI offset Group2: 5250 ~ 5360MHz (CH52, 56, 60, 64)	C4	Defined in BIN
0xA2	TX1 5G Target power of Group2: 5250 ~ 5360MHz (54M,dBm, Abs-value) (CH52, 56, 60, 64)	18	Defined in BIN
0xA3	TX1 5G TX power offset low Group2: 5250 ~ 5290MHz (delta, dB) (CH52, 56)		Write in FT
0xA4	TX1 5G TX power offset high Group2: 5290 ~ 5360MHz (delta, dB) (CH60, 64)		Write in FT
0xA5	TX1 5G PA TSSI slope Group3:5360 ~ 5470MHz (Reserved)	39	Defined in BIN
0xA6	TX1 5G PA TSSI offset Group3: 5360 ~ 5470MHz (Reserved)	C4	Defined in BIN
0xA7	TX1 5G Target power of Group3: 5360 ~ 5490MHz (54M,dBm, Abs-value) (Reserved)	18	Defined in BIN
0xA8	TX1 5G TX power offset low Group3: 5360 ~ 5430MHz (delta, dB) (Reserved)		Write in FT
0xA9	TX1 5G TX power offset high Group3 : 5430 ~ 5470MHz (delta, dB) (Reserved)		Write in FT



0xAA	TX1 5G PA TSSI slope Group4: 5470 ~ 5580MHz(CH100, 104, 108, 112, 116)	B9	Defined in BIN
0xAB	TX1 5G PA TSSI offset Group4: 5470 ~ 5580MHz(CH100, 104, 108, 112, 116)	C3	Defined in BIN
0xAC	TX1 5G Target power of Group4: 5470 ~ 5580MHz(5490MHz (54M,dBm, Abs-value) (CH100, 104, 108, 112, 116)	18	Defined in BIN
0xAD	TX1 5G TX power offset low Group4: 5470 ~ 5530MHz (delta, dB) (CH100, 104)		Write in FT
0xAE	TX1 5G TX power offset high Group4: 5530 ~ 5580MHz (delta, dB) (CH108, 112, 116)		Write in FT
0xAF	TX1 5G PA TSSI slope Group5: 5580 ~ 5690MHz (CH120, 124, 128, 132, 136)	39	Defined in BIN
0xB0	TX1 5G PA TSSI offset Group5: 5580 ~ 5690MHz (CH120, 124, 128, 132, 136)	C3	Defined in BIN
0xB1	TX1 5G Target power of Group5: 5580 ~ 5690MHz (54M,dBm, Abs-value) (CH120, 124, 128, 132, 136)	18	Defined in BIN
0xB2	TX1 5G TX power offset low Group5: 5580 ~ 5690MHz (delta, dB) (CH120, 124)		Write in FT
0xB3	TX1 5G TX power offset high Group5: 5580 ~ 5690MHz (delta, dB) (CH128, 132, 136)		Write in FT
0xB4	TX1 5G PA TSSI slope Group6: 5690 ~ 5800MHz (CH140, 144, 149, 153, 157)	39	Defined in BIN
0xB5	TX1 5G PA TSSI offset Group6: 5690 ~ 5800MHz (CH140, 144, 149, 153, 157)	C3	Defined in BIN
0xB6	TX1 5G Target power of Group6: 5690 ~ 5800MHz (54M,dBm, Abs-value) (CH140, 144, 149, 153, 157)	18	Defined in BIN
0xB7	TX1 5G TX power offset low Group6: 5690 ~ 5730MHz (delta, dB) (CH140, CH144)		Write in FT
0xB8	TX1 5G TX power offset high Group6: 5730 ~ 5800MHz (delta, dB) (CH149, 153, 157)		Write in FT
0xB9	TX1 5G PA TSSI slope Group7: 5800 ~ 59250MHz (CH161, 165)	B9	Defined in BIN
0xBA	TX1 5G PA TSSI offset Group7: 5800 ~ 59250MHz (CH161, 165)	C2	Defined in BIN
0xBB	TX1 5G Target power of Group7: 5800 ~ 59250MHz (54M,dBm, Abs-value) (CH161, 165)	18	Defined in BIN
0xBC	TX1 5G TX power offset low Group7: 5800 ~5815 (delta, dB) (CH161)		Write in FT
0xBD	TX1 5G TX power offset high Group7: 5815 ~5925 (delta, dB) (CH165)		Write in FT
0xBE	2.4GHz TX power for CCK 1M/2M (delta, dB)	C4	Defined in BIN
0xBF	2.4GHz TX power for CCK 5.5M/11M (delta, dB)	C4	Defined in BIN
0xC0	2.4GHz TX power for OFDM 6M/9M (delta, dB)	C2	Defined in BIN
0xC1	2.4GHz TX power for OFDM 12M/18M (delta, dB)	C2	Defined in BIN
0xC2	2.4GHz TX power for OFDM 24M/36M (delta, dB)	00	Defined in BIN
0xC3	2.4GHz TX power for OFDM 48M (delta, dB)	00	Defined in BIN
0xC4	2.4GHz TX power for OFDM 54M (delta, dB)	00	Defined in BIN
0xC5	2.4G TX power for HT20 MCS=0(delta, dB)	C2	Defined in BIN
	2.4G TX power for VHT20 MCS=0(delta, dB)		

0xC6	2.4G TX power for HT40 MCS=32(delta, dB)	C2	Defined in BIN
0xC7	2.4G TX power for HT20 MCS=1,2(delta, dB)	C2	Defined in BIN
	2.4G TX power for VHT20 MCS=1,2(delta, dB)		
0xC8	2.4G TX power for HT20 MCS=3,4(delta, dB)	C2	Defined in BIN
	2.4G TX power for VHT20 MCS=3,4(delta, dB)		
0xC9	2.4G TX power for HT20 MCS=5(delta, dB)	00	Defined in BIN
	2.4G TX power for VHT20 MCS=5(delta, dB)		
0xCA	2.4G TX power for HT20 MCS=6(delta, dB)	00	Defined in BIN
	2.4G TX power for VHT20 MCS=6(delta, dB)		
0xCB	2.4G TX power for HT20 MCS=7(delta, dB)	00	Defined in BIN
	2.4G TX power for VHT20 MCS=7(delta, dB)		
0xCC	2.4G TX power for VHT20 MCS=8(delta, dB)	82	Defined in BIN
0xCD	2.4G TX power for HT40 MCS=0(delta, dB)	00	Defined in BIN
0xCE	2.4G TX power for HT40 MCS=1, 2(delta, dB)	00	Defined in BIN
0xCF	2.4G TX power for HT40 MCS=3, 4(delta, dB)	00	Defined in BIN
0xD0	2.4G TX power for HT40 MCS=5(delta, dB)	00	Defined in BIN
0xD1	2.4G TX power for HT40 MCS=6(delta, dB)	00	Defined in BIN
0xD2	2.4G TX power for HT40 MCS=7(delta, dB)	00	Defined in BIN
0xD3	2.4G TX power delta for VHT40 (delta, dB) reference point VHT20	00	Defined in BIN
0xD4	2.4G TX power delta for LG VHT40 duplicate mode (delta, dB)	00	Defined in BIN
0xD5	5G TX power for OFDM6M/9M (delta, dB)	C2	Defined in BIN
0xD6	5G TX power for OFDM12M/18M (delta, dB)	C2	Defined in BIN
0xD7	5G TX power for OFDM24M/36M (delta, dB)	00	Defined in BIN
0xD8	5G TX power for OFDM48M (delta, dB)	00	Defined in BIN
0xD9	5G TX power for OFDM54M (delta, dB)	00	Defined in BIN
0xDA	5G TX power for HT20 MCS=0(delta, dB)	C2	Defined in BIN
	5G TX power for VHT20 MCS=0(delta, dB)		
0xDB	5G TX power for HT40 MCS=32(delta, dB)	C2	Defined in BIN
0xDC	5G TX power for HT20 MCS=1, 2/9,10(delta, dB)	C2	Defined in BIN
	5G TX power for VHT20 MCS=0(delta, dB)		
0xDD	5G TX power for HT20 MCS=3, 4/11, 12(delta, dB)	C2	Defined in BIN
	5G TX power for VHT20 MCS=3, 4(delta, dB)		
0xDE	5G TX power for HT20 MCS=5/13, dB)	00	Defined in BIN
	5G TX power for VHT20 MCS=5(delta, dB)		
0xDF	5G TX power for HT20 MCS=6/14(delta, dB)	00	Defined in BIN
	5G TX power for VHT20 MCS=6(delta, dB)		
0xE0	5G TX power for HT20 MCS=7/15(delta, dB)	00	Defined in BIN
	5G TX power for VHT20 MCS=7(delta, dB)		
0xE1	5G TX power for VHT20 MCS=8(delta, dB)	82	Defined in BIN
0xE2	5G TX power for VHT20 MCS=9(delta, dB)	82	Defined in BIN
0xE3	5G TX power for HT40 MCS=0(delta, dB)	C2	Defined in BIN
0xE4	5G TX power for HT40 MCS=1,2/9,10 (delta, dB)	C2	Defined in BIN
0xE5	5G TX power for HT40 MCS=3,4/11,12 (delta, dB)	C2	Defined in BIN
0xE6	5G TX power for HT40 MCS=5/13 (delta, dB)	00	Defined in BIN
0xE7	5G TX power for HT40 MCS=6/14 (delta, dB)	00	Defined in BIN
0xE8	5G TX power for HT40 MCS=7/15 (delta, dB)	00	Defined in BIN
0xE9	5G TX VHT40 power (delta, dB) referring to VHT20	00	Defined in BIN

0xEA	5G TX VHT80 power (delta, dB) referring to VHT20	00	Defined in BIN
0xEB	5G TX VHT80+80 power (delta, dB) referring to VHT20	00	Defined in BIN
0xEC	Reserved	00	Defined in BIN
0xED	Reserved	00	Defined in BIN
0xEE	2.4G TX power for VHT20 MCS9 (delta, dB)	82	Defined in BIN
0xEF	Reserved	22	Defined in BIN
0xF0	Reserved	22	Defined in BIN
0xF1	Reserved		IC
0xF2	Reserved	00	Defined in BIN
0xF3	Reserved	00	Defined in BIN
0xF4	Frequency offset (XTAL calibration)		Write in FT
0xF5	XTAL trim compensation	00	Defined in BIN
0xF6	Reserved	00	Defined in BIN
0xF7	Reserved		IC
0xF8	Reserved	00	Defined in BIN
0xF9 ~ 0xFD	Reserved	00	Defined in BIN
0xFE	Reserved	00	Defined in BIN
0xFF	Reserved	40	Defined in BIN
0x100 ~ 0x12B	Reserved	00	Defined in BIN
0x12C	iPA/ePA 2.4GHz band FE(Front End) loss between Ant and Chip port	02	Defined in BIN
0x12D	iPA/ePA 5GHz band FE(Front End) loss between Ant and Chip port	03	Defined in BIN
0x12E ~ 0x137	Reserved	00	Defined in BIN
0x138~0x13F	Reserved for Customer Specific Request		match with laser making
0x140 ~ 0x14F	Reserved	00	Defined in BIN
0x150	Reserved	06	Defined in BIN
0x151	Reserved	10	Defined in BIN
0x152	Reserved	00	Defined in BIN
0x153	Reserved	00	Defined in BIN
0x154	Reserved	08	Defined in BIN
0x155	Reserved	00	Defined in BIN
0x156	Reserved	E0	Defined in BIN
0x157	Reserved	01	Defined in BIN
0x158	bcdUSB	00	Defined in BIN
0x159		00	Defined in BIN
0x15A	idVendor	8D	Defined in BIN
0x15B		0E	Defined in BIN
0x15C	idProduct	68	Defined in BIN
0x15D		76	Defined in BIN
0x15E	bcdDevice	00	Defined in BIN
0x15F		00	Defined in BIN
0x160 ~ 0x177	Reserved	00	Defined in BIN
0x178	Reserved		IC
0x179	Reserved		IC
0x17A	Reserved		IC
0x17B	Reserved		IC
0x17C ~ 0x18E	Reserved	00	Defined in BIN

0x18F	Reserved	CA	Defined in BIN
0x190	Reserved	CE	Defined in BIN
0x191	Reserved	CE	Defined in BIN
0x192	Reserved	CE	Defined in BIN
0x193	Reserved	CD	Defined in BIN
0x194	Reserved	CE	Defined in BIN
0x195	Reserved	CE	Defined in BIN
0x196	Reserved	CE	Defined in BIN
0x197	Reserved	CE	Defined in BIN
0x198	Reserved	D4	Defined in BIN
0x199	Reserved	D0	Defined in BIN
0x19A	Reserved	D0	Defined in BIN
0x19B	Reserved	D0	Defined in BIN
0x19C	Reserved	CF	Defined in BIN
0x19D	Reserved	D0	Defined in BIN
0x19E	Reserved	D0	Defined in BIN
0x19F	Reserved	CF	Defined in BIN
0x1A0	Reserved	D0	Defined in BIN
0x1A1	Reserved	CA	Defined in BIN
0x1A2	Reserved	CE	Defined in BIN
0x1A3	Reserved	CD	Defined in BIN
0x1A4	Reserved	CD	Defined in BIN
0x1A5	Reserved	CE	Defined in BIN
0x1A6	Reserved	CE	Defined in BIN
0x1A7	Reserved	CE	Defined in BIN
0x1A8	Reserved	CE	Defined in BIN
0x1A9	Reserved	CE	Defined in BIN
0x1AA	Reserved	CE	Defined in BIN
0x1AB	Reserved	CF	Defined in BIN
0x1AC	Reserved	CF	Defined in BIN
0x1AD	Reserved	CF	Defined in BIN
0x1AE	Reserved	D0	Defined in BIN
0x1AF	Reserved	D0	Defined in BIN
0x1B0	Reserved	D0	Defined in BIN
0x1B1	Reserved	D0	Defined in BIN
0x1B2	Reserved	CF	Defined in BIN
0x1B3	Reserved		IC
0x1B4	Reserved		IC
0x1B5	Reserved		IC
0x1B6	Reserved		IC
0x1B7	Reserved		IC
0x1B8	Reserved	00	Defined in BIN
0x1B9	Reserved	00	Defined in BIN
0x1BA ~ 0x1CB	Reserved	00	Defined in BIN
0x1CC ~ 0x1E1	Reserved	00	Defined in BIN
0x1E2	Reserved		IC

0x1E3	Reserved		IC
0x1E4 ~ 0x2FF	Reserved	00	Defined in BIN
0x300	Reserved		IC
0x301 ~ 0x304	Reserved	00	Defined in BIN
0x305	Reserved		IC
0x306	Reserved		IC
0x307	Reserved		IC
0x308	Reserved		IC
0x309	Reserved		IC
0x30A	2 <sup>nd</sup> WLAN Mac Address [7:0]	00	Defined in BIN
0x30B	2 <sup>nd</sup> WLAN Mac Address [15:8]	00	Defined in BIN
0x30C	2 <sup>nd</sup> WLAN Mac Address [23:16]	00	Defined in BIN
0x30D	2 <sup>nd</sup> WLAN Mac Address [31:24]	00	Defined in BIN
0x30E	2 <sup>nd</sup> WLAN Mac Address [39:32]	00	Defined in BIN
0x30F	2 <sup>nd</sup> WLAN Mac Address [47:40]	00	Defined in BIN
0x310 ~ 0x33F	Reserved	00	Defined in BIN
0x340~0x343	Reserved	02	Defined in BIN
0x344	Reserved	24	Defined in BIN
0x345~0x347	Reserved	04	Defined in BIN
0x348	Reserved	40	Defined in BIN
0x349~0x34B	Reserved	03	Defined in BIN
0x34C	Reserved	40	Defined in BIN
0x34D~0x34F	Reserved	20	Defined in BIN
0x350~0x365	Reserved	00	Defined in BIN
0x366 ~ 0x36C	Reserved		IC
0x36D	BT TX power by-channel compensation (Group 1, 2400~2414 MHz)		Write in FT
0x36E	BT TX power by-channel compensation (Group 2, 2415~2427 MHz)		Write in FT
0x36F	BT TX power by-channel compensation (Group 3, 2428~2440 MHz)		Write in FT
0x370	BT TX power by-channel compensation (Group 4, 2441~2453 MHz)		Write in FT
0x371	BT TX power by-channel compensation (Group 5, 2454~2466 MHz)		Write in FT
0x372	BT TX power by-channel compensation (Group 6, 2467~2484 MHz)		Write in FT
0x373 ~ 0x381	Reserved	00	Defined in BIN
0x382	BT TX Power level setting	66	Defined in BIN
0x383	BR/EDR/BLE TX Power setting	76	Defined in BIN
0x384	BT MAC Address [7:0]		match with laser making
0x385	BT MAC Address [15:8]		match with laser making
0x386	BT MAC Address [23:16]		match with laser making
0x387	BT MAC Address [31:24]		match with laser making
0x388	BT MAC Address [39:32]		match with laser making
0x389	BT MAC Address [47:40]		match with laser making
0x38A ~ 0x38B	Reserved	00	Defined in BIN
0x38C	Reserved		IC
0x38D	Reserved		IC



0x38E	Reserved		IC
0x38F	Reserved	00	Defined in BIN
0x390 ~ 0x3BF	USB String descriptor	00	Defined in BIN
0x3C0 ~ 0x3FF	Reserved	00	Defined in BIN
	Fix		
	need match with laser making		
	not Fix		

# 13 Label Information

## 13.1 MAC ID Label (for ES4,Pre- MP)

Laser marking : China factory

REV.	MARK	ECR/ECN NO.	DATE	UPDATE DESCRIPTION	SIGNATURE
0.0	N/A	N/A	2017.06.16	First Release	Hongzhao.Li

Shielding cover laser

- 1 ES4
- 2 XXXXXXXXXXXXX
- 3 J20H095.00-VVSS
- 4 XXXXXXXXXXXXX
- 5 ZZZZYMMDDLNCCH
- 6

Notices  
0. Font: Keyence Standard

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1. ES4
2. XXXXXXXXXXXXX— WiFi MAC ID(12 digits) follow Foxconn rule .Odd number for Wifi MAC Even number for BT MAC (Namely wifi MAC +1=BT MAC).
3. J20H095.00-VVSS  
J20H095.00 — Model name (fix)  
VV: the engineering version (refer to Foxconn label Rev in the cover of the MFG document)  
SS: the version of A300/A400 product (refer to Doc Rev.in the cover of MFG document)
4. XXXXXXXXXXXXX — MO.No (10 digits)
- 5:2D Barcode Format: Mirco QR code (12 digits MAC + Serial Number)  
Barcode content : XXXXXXXXXXXXX/ZZZZYMMDDLNCCH
6. Serial Number

"ZZZZYMMDDLNCCH" see below table

Index	Description	Value
ZZ	Serial Number (High)	It starts from 1 in each line every morning. It will be incremented by one.
ZZ	Serial Number (Low)	Ex. Serial Number = 32 (Decade) 0xZZ=0x00, 0xZZ=0x20.range:0001-FFFF
YY	Year	Year (0x11=>2017,0x12=>2018,0x13=>2019)
MM	Month	Month (range : 0x01-0x0C)
DD	Date	Date (range : 0x01-0x1F)
LL	Line Number	Line Number (range : 0x01 -0xFF)
N	Module Identification	Print '0'
C	Region code	Print '0'
HH	Hardware Version 2	Trial and Revision Number for TV Module 00=ES1 01=ES2 02=ES3 03=ES4 04=MVT 05=MP 06-0FF=Reserved

MATERIAL (SPEC.)		SCALE	FOXCONN	
FINISH		1:1		
SHEET		HON HAI PRECISION IND. CO., LTD		
1/1		CNBSBG		
PART NAME		Shielding cover laser		
UNIT	MM	MODEL	PART NO.	DESIGNED
SIZE	A4	J20H095.00		Hongzhao.Li
CUSTOMER MODEL		CUSTOMER PART NO.		APPROVED
				Zheng.Tan



# 14 Package and Stack Information

## 14.1 Carton ASSY

REV.	MARK	ECR/ECN NO.	DATE	UPDATE DESCRIPTION	SIGNATURE
0	N/A	N/A	2017.08.02	First Release	Changji Xie

tray  
the top layer used as shielding cover, without products.

paper board

paper board

carton label

carton

Notes:

1. Qty: 1 carton=14+1 trays=16pcs\*14trays=224pcs
2. The top layer used as shielding cover, without products
3. The two neighboring layers always laid reversely.
4. Carton outsize: 476\*387\*158mm
5. Tray size:459\*370\*12.5mm

Tray  
513.00454.005

Product  
J20H095.00

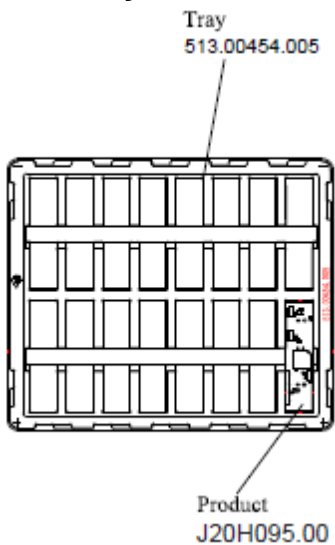
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MATERIAL (SPEC.)		SCALE	<b>FOXCONN</b> HON HAI PRECISION IND. CO., LTD. CNSBG		
FINISH		1: 1			
3	tray	513.00454.005	15/224		
2	paper board	520.01748.005	2/224		
1	carton	520.01728.015	1/224		

Select	PS	Label	A	B	C	EPS	EPE	BAG	CTN	Label	USR	UNIT	PART NAME	MODEL	PART NO.	DESIGNED
0-6	0.25	0.25	0.20								0.20	MM	Carton Assy	J20H095.00		Changji Xie
6-30	0.40	0.45	0.30	0.50	0.50	3.00					0.20	MM		J20H095.00		
30-120	0.45	0.50	0.40	0.50	0.50	5.00	2.00	0.25			0.25	MM		J20H095.00		
120-300	0.20	0.30	0.40	1.00	1.00	10.00	3.00	0.30			0.30	MM		J20H095.00		
300-450	0.25	0.40	0.50	2.00	2.00	15.00	5.00	0.50			0.50	MM		J20H095.00		
450-600	0.30	0.50	0.60	3.00	3.00	20.00	5.00	0.80			0.80	MM		J20H095.00		

TRAFFIC TOLERANCE	±0.2*	CRITICAL DIM MARK	*
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## 14.2 Tray



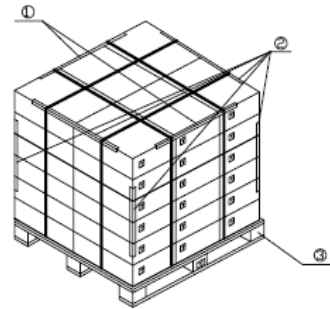
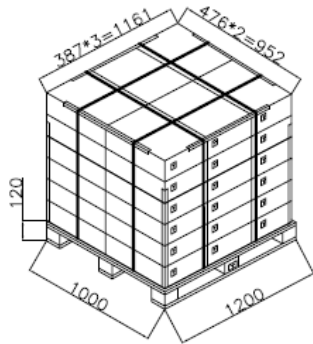


### 14.3 Pallet ASSY

REV.	MARK	ECR/ECN NR	DATE	UPDATE DESCRIPTION	SIGNATURE
0	N/A	N/A	2017/06/02	First Release	Changji Xie

**Notes:**

1. Carton Outsize: 476\*387\*158mm
2. Qty: 1 pallet=6\*6cartons=36\*224pcs=8064pcs
3. Each carton label shoud be face out



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Item	Description	P/N	QTY
3	Pallet	527.00011.025	1/8064
2	Paper board bezel	522.00216.005	6/8064
1	Paper board bezel	522.00215.005	2/8064

MATERIAL (SPEC.)										SCALE	FOXCONN		
FINISH										1: 1	HON HAI PRECISION IND. CO., LTD.		
Select										SHEET	CNSBG		
Dim. Tol.										1/1	PART NAME		
A	B	C	EPS	EPE	BAG	CTN	Label	USR	UNIT	Palite Assembly			
0~6	0.05	0.05	0.10	0.10	0.10	0.50	3.00	0.20	MM	MODEL	PART NO.	DESIGNED	
6~30	0.10	0.15	0.20	0.30	0.50	3.00	2.00	0.25	SIZE	J20H095.00		Changji Xie	
30~120	0.15	0.20	0.30	0.50	1.00	5.00	2.00	0.25	A4				
120~300	0.20	0.30	0.40	1.00	1.00	10.00	3.00	0.30		CUSTOMER MODEL	CUSTOMER PART NO.	APPROVED	
300~450	0.25	0.40	0.50	2.00	2.00	15.00	5.00	0.50				Youli He	
450~600	0.30	0.50	0.60	3.00	3.00	20.00	5.00	0.80					
DRAFT TOLERANCE										±0.2* CRITICAL DIM. MARK *			

### 14.4 Tray ID Label

REV.	MARK	ECR/ECN NO.	DATE	UPDATE DESCRIPTION	SIGNATURE
0	N/A	N/A	2017.06.16	First Release	Changji Xie

3. Tray ID label

Label size:45\*8mm

TF748XXXX

Barcode:128code, height:4mm  
Text:Arial, height:1.5mm

Barcode content

TF748XXXX

T+F+Year+Week+Serial number (Base on 36)

T:Tray

F:Foxconn

7:The last digit of year

48:week

XXXX:serial number

MATERIAL (SPEC.)	SCALE	<b>FOXCONN</b>																																																																															
FINISH	1:1	HON HAI PRECISION IND. CO., LTD.																																																																															
	SHEET	CNSBG																																																																															
	1/1																																																																																
<table border="1" style="width:100%; border-collapse: collapse; font-size: 8px;"> <thead> <tr> <th>Select</th> <th>A</th> <th>B</th> <th>C</th> <th>EPS</th> <th>CPE</th> <th>BAG</th> <th>CTN</th> <th>Label</th> <th>USR</th> <th>UNIT</th> </tr> </thead> <tbody> <tr> <td>06-30</td> <td>0.05</td> <td>0.05</td> <td>0.10</td> <td>0.50</td> <td>0.50</td> <td>3.00</td> <td>0.20</td> <td></td> <td></td> <td>MM</td> </tr> <tr> <td>06-30</td> <td>0.10</td> <td>0.15</td> <td>0.30</td> <td>0.50</td> <td>0.50</td> <td>3.00</td> <td>0.20</td> <td></td> <td></td> <td>MM</td> </tr> <tr> <td>30-120</td> <td>0.15</td> <td>0.20</td> <td>0.30</td> <td>0.50</td> <td>0.50</td> <td>3.00</td> <td>0.25</td> <td></td> <td></td> <td>MM</td> </tr> <tr> <td>120-300</td> <td>0.20</td> <td>0.30</td> <td>0.40</td> <td>1.00</td> <td>1.00</td> <td>3.00</td> <td>0.30</td> <td></td> <td></td> <td>MM</td> </tr> <tr> <td>300-450</td> <td>0.25</td> <td>0.40</td> <td>0.50</td> <td>2.00</td> <td>2.00</td> <td>3.00</td> <td>0.50</td> <td></td> <td></td> <td>MM</td> </tr> <tr> <td>450-600</td> <td>0.30</td> <td>0.50</td> <td>0.60</td> <td>3.00</td> <td>3.00</td> <td>3.00</td> <td>0.80</td> <td></td> <td></td> <td>MM</td> </tr> </tbody> </table>	Select	A	B	C	EPS	CPE	BAG	CTN	Label	USR	UNIT	06-30	0.05	0.05	0.10	0.50	0.50	3.00	0.20			MM	06-30	0.10	0.15	0.30	0.50	0.50	3.00	0.20			MM	30-120	0.15	0.20	0.30	0.50	0.50	3.00	0.25			MM	120-300	0.20	0.30	0.40	1.00	1.00	3.00	0.30			MM	300-450	0.25	0.40	0.50	2.00	2.00	3.00	0.50			MM	450-600	0.30	0.50	0.60	3.00	3.00	3.00	0.80			MM	SIZE	PART NAME		
Select	A	B	C	EPS	CPE	BAG	CTN	Label	USR	UNIT																																																																							
06-30	0.05	0.05	0.10	0.50	0.50	3.00	0.20			MM																																																																							
06-30	0.10	0.15	0.30	0.50	0.50	3.00	0.20			MM																																																																							
30-120	0.15	0.20	0.30	0.50	0.50	3.00	0.25			MM																																																																							
120-300	0.20	0.30	0.40	1.00	1.00	3.00	0.30			MM																																																																							
300-450	0.25	0.40	0.50	2.00	2.00	3.00	0.50			MM																																																																							
450-600	0.30	0.50	0.60	3.00	3.00	3.00	0.80			MM																																																																							
	A4	Tray ID label																																																																															
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		CUSTOMER MODEL	CUSTOMER PART NO.	APPROVED																																																																													
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標籤製作黏貼方式/J20H095.00/03/4 of 7

### 14.5 Carton Label

Instruction For Location Code

LOCATION	LOCATION NAME
0	Hsinchu
1	Zhongshan
2	Futian
3	Tucheng
4	Taiyoung
5	Jingyang
6	Guangchuan
7	Taibiao
8	Hongju
9	Xinjin
A	Hongkong
B	Guolian
C	Chongqing CBT
D	Dummy Lable
E	Ambit
F	Longhua E5 database
G	Longhua E5A database

H	Longhua E6 database
I	RESERVE
J	RESERVE
K	Nanning
L	Huandian
M	EASTAR
N	Mexico
P	Longhua RMA
Q	Chongqing CPEI
R	Shanghai RMA
S	Shanghai CPEII
T	Yantai(S-customer)
U	Vietnam(Bac Ninh,CMB)
V	Yantai(RTT-customer)
Y	Vietnam(Bac Giang)
Z	Vietnam(Bac Ninh,CPEII)

### 14.6 Pallet Label

REV.	MARK	ECR/EDN NR.	DATE	UPDATE DESCRIPTION	SIGNATURE
0	N/A	N/A	2017.06.16	First Release	Changji Xie

110mm

P/N: J20H095.00

PIPPYWWSSSS      REV: VVSS

36mm

5. Pallet label

Barcode Format: Code 39; height:8mm;  
Barcode content: PIPPYWWSSSS  
Word: Font:Arial Bold.

Rule:

- PIPPYWWSSSS:
  - P: Pallet
  - I: Product line
  - PP:Package line
  - Y: the last digit of year
  - WW:week
  - SSSS: Serial number, every two week reset to 0001
- REV : VVSS
  - VV:the engineering version(refer to Foxconn label Rev column in the cover of the MFG document)
  - SS:the version of A300/A400 product(refer to Doc Rev. in the cover of MFG document)

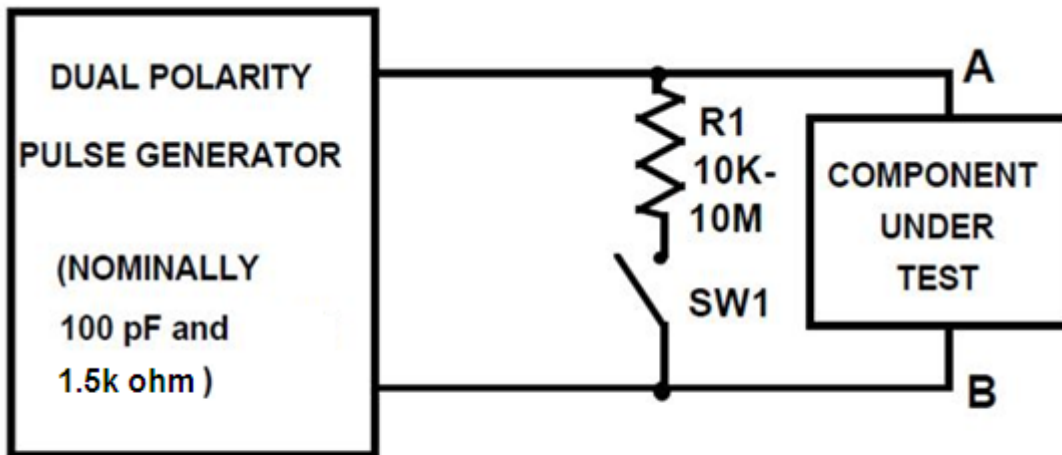
MATERIAL (SPEC.)										SCALE	<b>FOXCONN</b> HON HAI PRECISION IND. CO., LTD. CNSBG		
FINISH										1:1			
UNIT										SHEET	PART NAME Pallet label		
MM										1/1			
SIZE										MODEL	PART NO.	DESIGNED	
A4										J20H095.00	503.00089.005	Changji Xie	
CUSTOMER MODEL										CUSTOMER PART NO.	APPROVED		
											Youli He		

標籤製作黏貼方式/J20H095.00/03/6 of 7

## 15 Handling Notice

### 1) ESD

There are semiconductors on the module, please handle the module under ESD protected and well-controlled environment (<1500V).



HBM ESD TESTER

## 16 Reliability Test Result

No.	Testing	Chamber	Location	Qty	Test Duration	Status
1	High Temperature Load Test	HT15	NN-SQA	A:2pcs B:2pcs	2 days	Pass
2	Low Temperature Load Test	TBD	NN-SQA	A:2pcs B:2pcs	2 days	Pass
3	Low Temperature Storage Test	HT06	NN-SQA	A:2pcs B:2pcs	45 days	TBD
4	High Temperature and Humidity Storage Test	HT06	NN-SQA	A:2pcs B:2pcs	45 days	TBD
5	High Temperature and Humidity Cycle Test	HT06	NN-SQA	A:4pcs B:4pcs	6 days	TBD
6	High Temperature and Operation Test	HT11	NN-SQA	A:2pcs B:2pcs	45 days	TBD
7	High Temperature and Humidity Operation Test	HT11	NN-SQA	A:2pcs B:2pcs	45 days	TBD
8	Thermal Shock Test & Cross section inspection	Thermal shock chamber	NN-SQA	A:5pcs B:5pcs	29 days	Pass
		Cross-section			7 days	Pass
9	Vibration Test	Vibration tester	NN-SQA	A:2pcs B:2pcs	2 days	TBD
		Cross-section			7 days	TBD
10	Impact Test	Shock tester	LH	A:2pcs B:2pcs	14 days	TBD
		Cross-section			7 days	TBD
11	Atmospheric Preconditioning	TBD	NN-SQA	1 Carton	4 days	TBD
12	Compression Test(with package)	/	NN-SQA	1 Carton	3 days	TBD
13	Random Vibration Test (with package)	/	NN-SQA	1 Carton	3 days	TBD
14	Drop Test (with package)	/	NN-SQA	1 Carton	1 day	TBD
15	Sinus Vibration Test (with package)	/	NN-SQA	1 Carton	1 day	TBD

## **Federal Communication Commission Interference Statement**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

FCC Caution: Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

### **Radiation Exposure Statement:**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

**This device is intended only for OEM integrators under the following conditions:**

The antenna must be installed such that 20 cm is maintained between the antenna and users, and

The transmitter module may not be co-located with any other transmitter or antenna.

As long as **2** conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed

**IMPORTANT NOTE:** In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the FCC authorization is no longer considered valid and the FCC ID can not be used on the final product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate FCC authorization.

**End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains FCC ID: AK8J20H095". The grantee's FCC ID can be used only when all FCC compliance requirements are met.

**Manual Information To the End User**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

**Industry Canada statement:**

This device complies with ISED's licence-exempt RSSs. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Le présent appareil est conforme aux CNR d'ISED applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) le

dispositif ne doit pas produire de brouillage préjudiciable, et (2) ce dispositif doit accepter tout brouillage reçu, y compris un brouillage susceptible de provoquer un fonctionnement indésirable.

**Radiation Exposure Statement:**

This equipment complies with ISED radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator & your body.

**Déclaration d'exposition aux radiations:**

Cet équipement est conforme aux limites d'exposition aux rayonnements ISED établies pour un environnement non contrôlé. Cet équipement doit être installé et utilisé avec un minimum de 20 cm de distance entre la source de rayonnement et votre corps.

This device is intended only for OEM integrators under the following conditions: (For module device use)

- 1) The antenna must be installed such that 20 cm is maintained between the antenna and users, and
- 2) The transmitter module may not be co-located with any other transmitter or antenna.

As long as **2** conditions above are met, further transmitter test will not be required. However, the OEM integrator is still responsible for testing their end-product for any additional compliance requirements required with this module installed.

Cet appareil est conçu uniquement pour les intégrateurs OEM dans les conditions suivantes: (Pour utilisation de dispositif module)

- 1) L'antenne doit être installée de telle sorte qu'une distance de 20 cm est respectée entre l'antenne et les utilisateurs, et
- 2) Le module émetteur peut ne pas être coïmplanté avec un autre émetteur ou antenne.

Tant que les **2** conditions ci-dessus sont remplies, des essais supplémentaires sur l'émetteur ne seront pas nécessaires. Toutefois, l'intégrateur OEM est toujours responsable des essais sur son produit final pour toutes exigences de conformité supplémentaires requis pour ce module installé.

**IMPORTANT NOTE:**

In the event that these conditions can not be met (for example certain laptop configurations or co-location with another transmitter), then the Canada authorization is no longer considered valid and the IC ID can not be used on the final



product. In these circumstances, the OEM integrator will be responsible for re-evaluating the end product (including the transmitter) and obtaining a separate Canada authorization.

**NOTE IMPORTANTE:**

Dans le cas où ces conditions ne peuvent être satisfaites (par exemple pour certaines configurations d'ordinateur portable ou de certaines co-localisation avec un autre émetteur), l'autorisation du Canada n'est plus considéré comme valide et l'ID IC ne peut pas être utilisé sur le produit final. Dans ces circonstances, l'intégrateur OEM sera chargé de réévaluer le produit final (y compris l'émetteur) et l'obtention d'une autorisation distincte au Canada.

**End Product Labeling**

This transmitter module is authorized only for use in device where the antenna may be installed such that 20 cm may be maintained between the antenna and users. The final end product must be labeled in a visible area with the following: "Contains IC: 409B-J20H095".

**Plaque signalétique du produit final**

Ce module émetteur est autorisé uniquement pour une utilisation dans un dispositif où l'antenne peut être installée de telle sorte qu'une distance de 20cm peut être maintenue entre l'antenne et les utilisateurs. Le produit final doit être étiqueté dans un endroit visible avec l'inscription suivante: "Contient des IC: 409B-J20H095".

**Manual Information To the End User**

The OEM integrator has to be aware not to provide information to the end user regarding how to install or remove this RF module in the user's manual of the end product which integrates this module.

The end user manual shall include all required regulatory information/warning as show in this manual.

**Manuel d'information à l'utilisateur final**

L'intégrateur OEM doit être conscient de ne pas fournir des informations à l'utilisateur final quant à la façon d'installer ou de supprimer ce module RF dans le manuel de l'utilisateur du produit final qui intègre ce module.

Le manuel de l'utilisateur final doit inclure toutes les informations réglementaires requises et avertissements comme indiqué dans ce manuel.

**Caution :**

(i) the device for operation in the band 5150-5250 MHz is only for indoor use to reduce the potential for harmful interference to co-channel mobile satellite systems;

- (ii) the maximum antenna gain permitted for devices in the bands 5250-5350 MHz and 5470-5725 MHz shall be such that the equipment still complies with the e.i.r.p. limit;
- (iii) the maximum antenna gain permitted for devices in the band 5725-5850 MHz shall be such that the equipment still complies with the e.i.r.p. limits specified for point-to-point and non-point-to-point operation as appropriate; and
- (iv) the worst-case tilt angle(s) necessary to remain compliant with the e.i.r.p. elevation mask requirement set forth in Section 6.2.2(3) shall be clearly indicated.
- (v) Users should also be advised that high-power radars are allocated as primary users (i.e. priority users) of the bands 5250-5350 MHz and 5650-5850 MHz and that these radars could cause interference and/or damage to LE-LAN devices.

**Avertissement:**

Le guide d'utilisation des dispositifs pour réseaux locaux doit inclure des instructions précises sur les restrictions susmentionnées, notamment :

- (i) les dispositifs fonctionnant dans la bande 5150-5250 MHz sont réservés uniquement pour une utilisation à l'intérieur afin de réduire les risques de brouillage préjudiciable aux systèmes de satellites mobiles utilisant les mêmes canaux;
- (ii) le gain maximal d'antenne permis pour les dispositifs utilisant les bandes de 5250 à 5350 MHz et de 5470 à 5725 MHz doit être conforme à la limite de la p.i.r.e.;
- (iii) le gain maximal d'antenne permis (pour les dispositifs utilisant la bande de 5725 à 5850 MHz) doit être conforme à la limite de la p.i.r.e. spécifiée pour l'exploitation point à point et l'exploitation non point à point, selon le cas;
- (iv) les pires angles d'inclinaison nécessaires pour rester conforme à l'exigence de la p.i.r.e. applicable au masque d'élévation, et énoncée à la section 6.2.2 3), doivent être clairement indiqués.
- (v) De plus, les utilisateurs devraient aussi être avisés que les utilisateurs de radars de haute puissance sont désignés utilisateurs principaux (c.-à-d., qu'ils ont la priorité) pour les bandes 5250-5350 MHz et 5650-5850 MHz et que ces radars pourraient causer du brouillage et/ou des dommages aux dispositifs LAN-EL.

## 低功率電波輻射性電機管理辦法


第十二條 經型式認證合格之低功率射頻電機，非經許可，公司、商號或使用者均不得擅自變更頻率、加大功率或變更原設計之特性及功能。

第十四條 低功率射頻電機之使用不得影響飛航安全及干擾合法通信；經發現有干擾現象時，應立即停用，並改善至無干擾時方得繼續使用。

前項合法通信，指依電信法規定作業之無線電通信。

低功率射頻電機須忍受合法通信或工業、科學及醫療用電波輻射性電機設備之干擾。

### 模組認證：

1. 本模組於取得認證後將依規定於模組本體標示審驗合格標籤。
2. 系統廠商應於平台上標示「本產品內含射頻模組：XXXyyyLPDzzzz-x」字樣。