

Manufacturing Specification for BFX-UA300

Document revision: 1.0

Effectivity

- BFX-UA300 first mass production

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Revision History

Revision	Description of Change	Date
0.1	Draft release	2021.07.02
1.0	Release	2022.07.20

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1 Purpose of this document

This specification is for manufacturing BFX-UA300. This spec is forced on mass production process, HW component functionality check and validation.

2 Manufacturing Specification

Purpose:

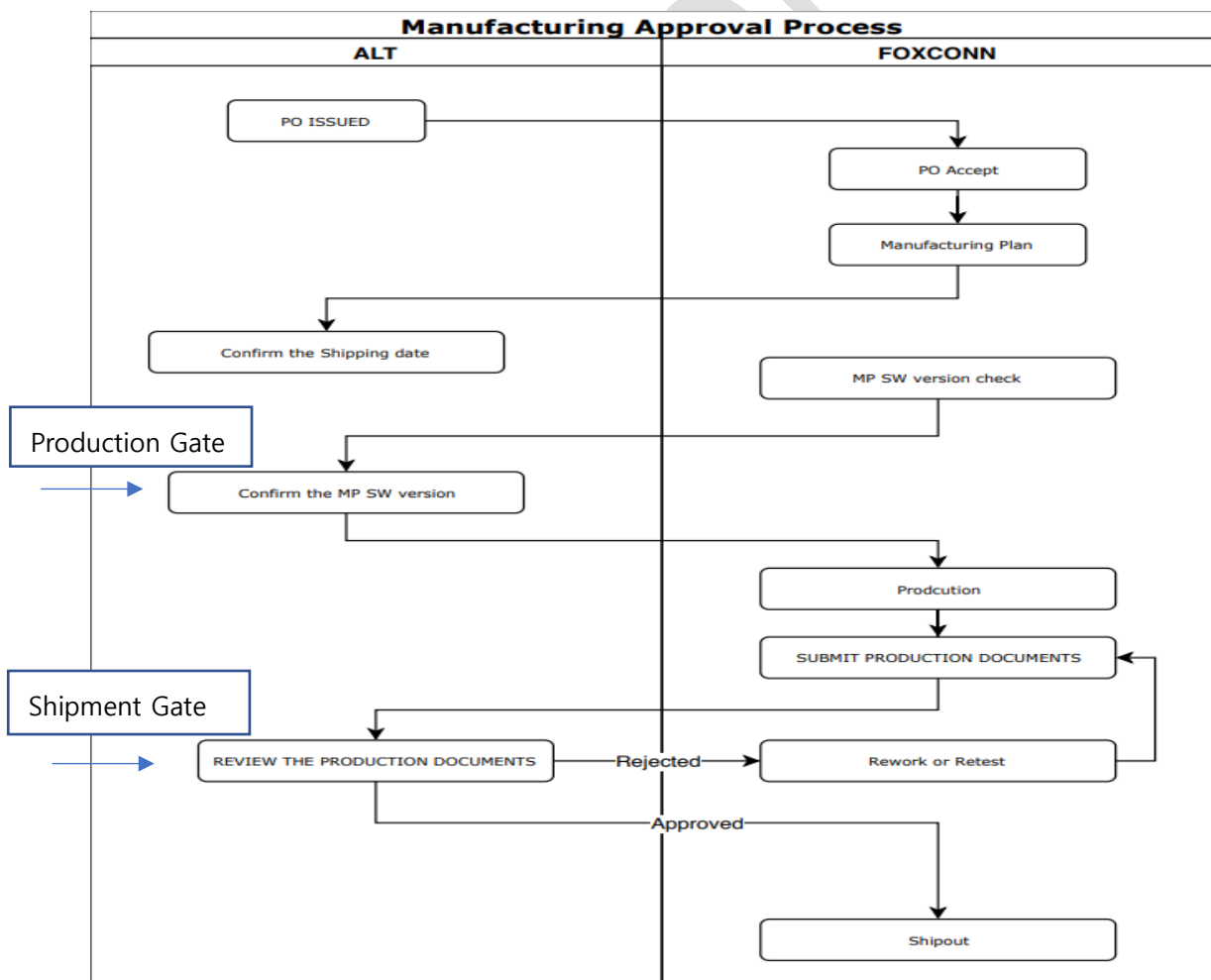
Defines the overall specifications of the mass production and manufacturing process of BFX-UA300 . Unspecified items follow the Foxconn's standards. But, some of specifications may be changed upon request by the customer.

2.1 Manufacturing process

Purpose:

To define the confirmation process of production conditions for each PO or Lot, and Shipment approval process

Process flow:



see more details following documents.

Attachment 1. "Manufacturing Approval Process_Rev1.0"

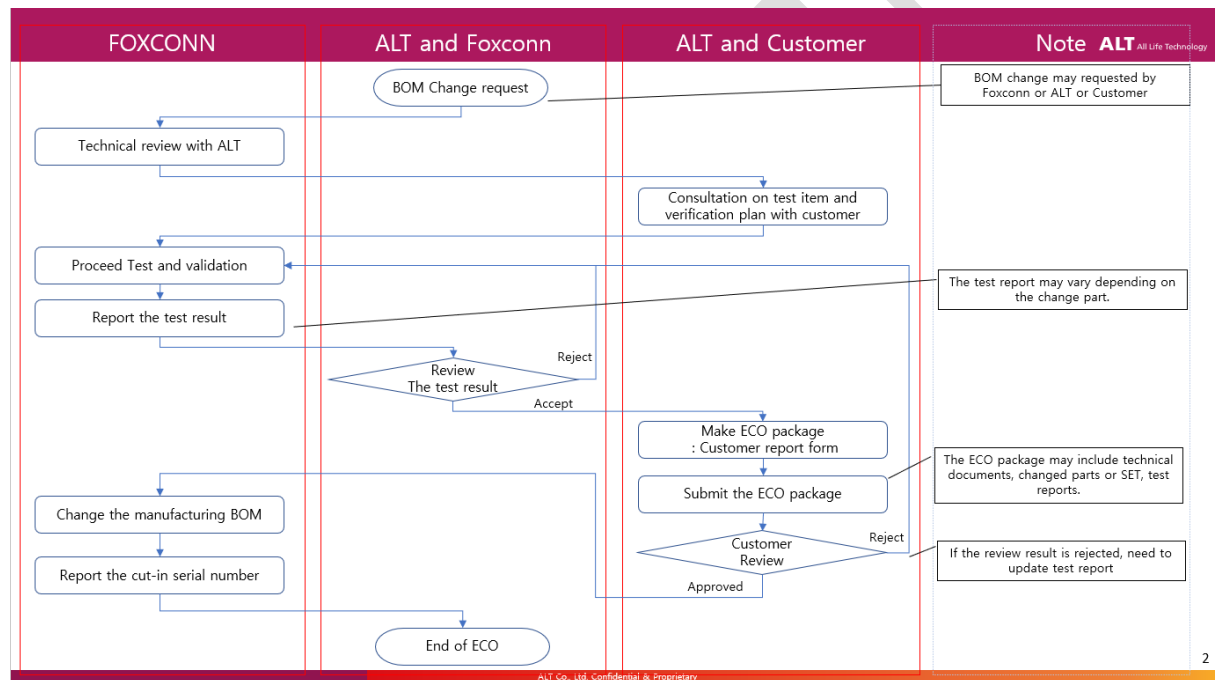
2.2 ECO Process (Engineering Change Order)

: Change the manufacturing BOM

Purpose:

Define the procedures that should be followed when the reason for the part change occurs. Basically, all of design and parts changes have to customer approval process and be approved by the customer.

Process flow:



2.3 Production data Traceability

Purpose:

Production data will be used maintain product and quality Prediction. In some cases, production data may be requested by the customer

Criteria:

All production data should be kept up to 3 years after EOL of this product.

2.4 PCBA Process

Purpose:

Define the inspection criteria for the PCBA production process.

Criteria:

IPC-A-610 Class 2. Acceptable Condition. More details, please find the IPC-A-610 rev G.

Such as - Soldering and mount, insert conduction, PTH fill up, BGA void, assembly visual inspection.

But, some of acceptable condition may be changed upon request by the customer.

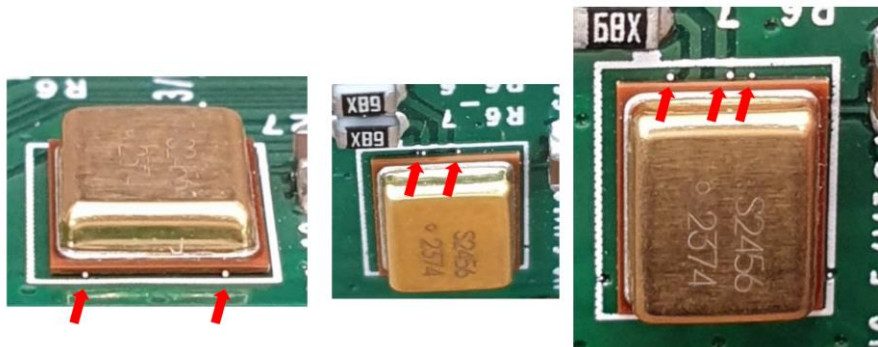
2.4.1 MIC PCBA

Purpose:

Define the special inspection criteria for the MIC PCBA

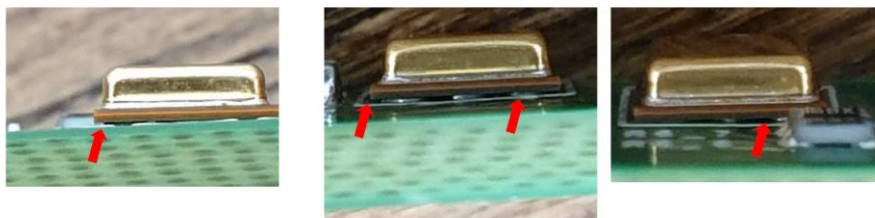
Criteria:

- Solderball is not allowed around MIC component.



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- MIC component is not allowed the floating



<NG>

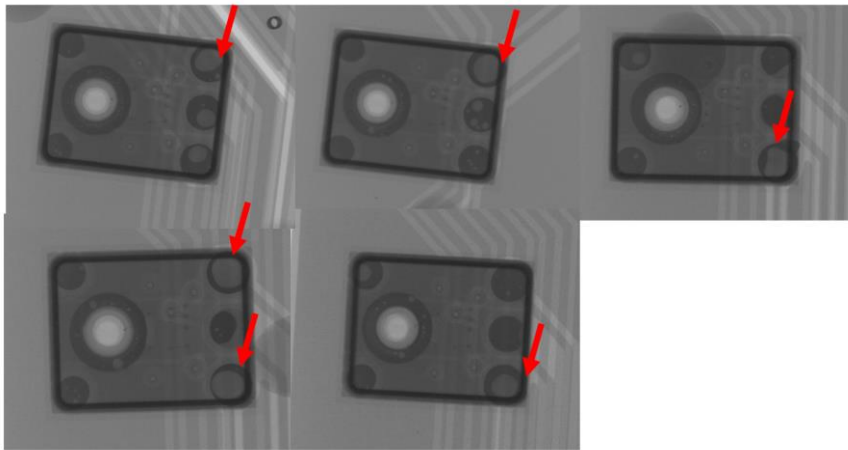
- O-ring(inside) is not allowed opened area.
- The void should be less than 30% of the solder pad size.
if the following below conditions, Up to 35% is acceptable

: Enhanced X-ray inspection

- first finished SMD board (10pcs, MIC 40pcs) must X-ray inspection for MIC void every SMD lot
- Every 1 hour per 5% inspection (Only MIC component)

OBA report attached X-ray inspection result and x-ray image

Please use refer to the Attachment#4_OBA Inspection report_Rev1.1.pptx



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2.5 Packing

Purpose:

Define the requirements for product packaging.

2.5.1 Labels and Serial number

Criteria:

Should be manufactured according to customer's requirements.

- Each serial number - SET. GIFT, CARTON and Pallet
- Each Labels - SET. GIFT, CARTON and Pallet

Refer to the [SWAN] AI Soundbar Set-top Box_UADS in details

2.5.2 Gift packing

Criteria:

The packing accessory (in-box items) shall not be missing.

Refer to the production spec document in details - In-Box items

2.5.3 Carton packing

Criteria:

One carton box shall be packed in order of SKB number.
 Such as 1 carton packed SKB S/N in numerical order 4 pcs.
 (AAABBBB001YYYYMMXXXX01 ~ AAABBBB001YYYYMMXXXX04)
 (AAABBBB001YYYYMMXXXX05 ~ AAABBBB001YYYYMMXXXX08)
 <reference>

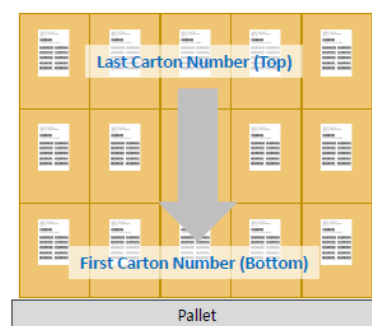
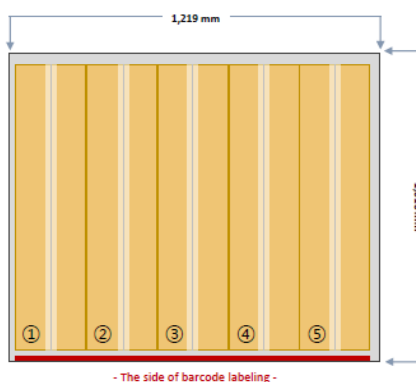
2.5.4 Pallet packing

Criteria:

- When pallet packing the carton, carton label barcode should be visible and can be scan

Refer to the [SWAN] AI Soundbar Set-top Box_UADS in details

<reference>



3 Test specification

Purpose:

Based on HW requirements form the customer, all product should be tested requirements functions in the factory.

More details, please find the Mantis history.

3.1 System

	Part	Test item	Criteria
System	SoC	Secure boot	Enabled
		OTP Lock	locked
		CPU temperature	measurement CPU temperature - Spec: TBD
	DRAM	DRAM size check	DDR4 SDRAM 3G - 1GB*2, 512MB*2

	Flash memory	Check Firmware	Checksum
	information	MAC : Ethernet, BT	should be unique
		Serial number	should be unique
		SKB Serial number	should be unique
		HDCP 1.4	should be unique and key validation
		HDCP 2.2 TX / RX	should be unique and key validation
		Widevine LV1	should be unique and key validation
		Playready	should be unique and key validation
		FW version	Check SW version
		Amp version	Check SW version
		Factory test SW version	Check SW version
	Software	SKBB SW booting check	Check SKBB Software booting OK

3.2 Peripheral

	Part	Test item	Criteria
Peripheral	HDMI	A/V play output	Check Video resolution: 4Kp60
			Check the Video and Audio HPD
		CEC	Check CEC
	USB	link speed	Check 2.0 link speed
			Check 3.0 link speed
	RJ45	link speed	Check 100M/1Gbps link speed
		Link and Active LED	Check LED (link and active) on/off
		data speed	Check iperf3 test *Test criteria will be update
	3.5mm MIC Jack	Audio Record	Check Record sound
	3.5mm AUX Jack	Audio Record	Check Record sound
	DC Jack	Connector	Check Adaptor insert
	Power switch	Power switch	Check Power On/Off
	LED*	Red	Check Red on/off
		Green	Check Green on/off

		Blue	Check Blue on/off
		White	Check All(RGB) led on/off
	IR	IR sensor	Check IR Receive
	KEY	Power	Check KEY operation
		CH down	Check KEY operation
		CH up	Check KEY operation
		Volume down	Check KEY operation
		Volume up	Check KEY operation
		Mic mute	Check KEY operation
		Bluetooth paring	Check KEY operation
		Sound effect	Check KEY operation
	Bluetooth	RF Radiation	Check RSSI check
		BT paring	Check paring to BT 4.2 device
	FFV	Far field mic	Recording audio Play back

* LED Test should be test all of LEDs. – Nugu, Google, Status, Left side LED, Right side LED.

3.3 Acoustic test specification

No	Test Title	Test Spec
1	DUT Connection Test	(1, 1)
2	Full Range Speaker_Frequency Response - 550 Hz	(70, 90) db
3	Full Range Speaker_Frequency Response - 800 Hz	(70, 90) db
4	Full Range Speaker_Frequency Response - 1k Hz	(70, 95) db
5	Full Range Speaker_Frequency Response - 4k Hz	(70, 95) db
6	Full Range Speaker_Frequency Response - 10k Hz	(40, 80) db
7	Full Range Speaker_THD - 1k Hz	(0.0015, 5) %
8	Full Range Speaker_Balance_Left - 1k Hz	(70, 95) db
9	Full Range Speaker_Balance_Right - 1k Hz	(70, 95) db
10	Full Range Speaker_Left to Right Radio	(0.8, 1.2) %
11	Woofer Speaker_Frequency Response - 100 Hz	(75, 98) db
12	Woofer Speaker_Frequency Response - 400 Hz	(80, 98) db
13	Woofer Speaker_Frequency Response - 550 Hz	(70, 98) db
14	Woofer Speaker_THD - 400 Hz	(0.0015, 5) %
15	Woofer Speaker_Balance_Left - 400 Hz	(80, 120) db
16	Woofer Speaker_Balance_Right - 400 Hz	(80, 120) db
17	Woofer Speaker_Left to Right Radio	(0.7, 1.4) %

18	Woofer Speaker_Air Leakage Test_Pushing - 850 Hz	(-120, -67) db
19	Mic1_Sensitivity - 1k Hz	(10, 50) mV/Pa
20	Mic2_Sensitivity - 1k Hz	(10, 50) mV/Pa
21	Mic3_Sensitivity - 1k Hz	(10, 50) mV/Pa
22	Mic4_Sensitivity - 1k Hz	(10, 50) mV/Pa
23	Mic1_Isolation - 1k Hz	(0, 5) mV/Pa
24	Mic2_Isolation - 1k Hz	(0, 5) mV/Pa
25	Mic3_Isolation - 1k Hz	(0, 5) mV/Pa
26	Mic4_Isolation - 1k Hz	(0, 5) mV/Pa

for more details, please find the Mantis ticket below

<https://mantis.cnsbg.foxconn.com/vaas/view.php?id=911>

3.4 Burning

As is proceed the FXN standard. It can be changed below test condition upon request by the customer.

: Environment and Conditions and burning Q'ty

4 Quality specification.

4.1 Inspection criteria

Purpose:

Define defects and acceptable standards.

Criteria:

Please refer to the following document.

Attachment 2 "BFX-UA300 Visual inspection criteria

4.2 AQL LEVEL and OBA

Purpose:

All STB function should be double checked from quality point of view.

As is proceed the FXN standard. It can be changed upon request by the customer.

Criteria:

AQL Level – 0.65 each lot should be passed.

4.3 OBA TEST ITEM

Purpose:

All STB function should be double checked from quality point of view.

The OBA test should proceed with the gift box components.

Output:

OBA Test report should be submitted before shipment.

4.1.1 Visual inspection

Criteria:

This inspection criteria following the 4.1 Cosmetic criteria. Including accessory package.

4.1.2 Check front KEY (Power, CH-/+, Volume+/-, BT, FFV, Sound effect Key)

Criteria:

All Key should be work and feel the push sound and feeling of being pressed.

Please refer to the BFX-UA300_Visual inspection criteria_Rev0.3 in details,

"8.3 Tact switch (Button feeling) test method (택감 검사 기준)"

4.1.3 Check LED (Power ON and boot or standby)

Criteria:

All LED Color should be turn on the light each color – Red, Green, Blue, White

- on the front side: Nugu, Status

- on the each side: BTV logo

LED light uniformity on housing should be uniform

4.1.4 Check IR Remote Control function (Key Control)

Criteria:

RCU IR transmit and STB IR receive work properly

4.1.5 Check Bluetooth Remote Control function (Pairing/Un-Pairing and Key Control)

Criteria:

Bluetooth function should be work properly. – STB volume control, Voice input, Audio streaming

Bluetooth paring and unpairing work properly.

4.1.6 Check SW version

Criteria:

For Main board

Default language: KOREAN

Model name:

Android TV - BFX-UA300

Software version: depend on each PO or Lot.

For Amp board

DSP version: depend on each PO or Lot.

4.1.7 Check YouTube APP for stream video test.

Criteria:

Stream video play working properly.

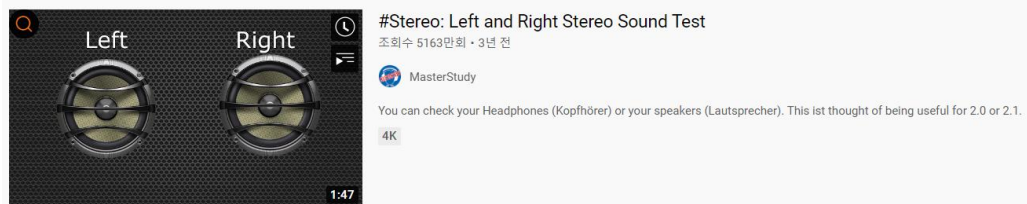
: Youtube 4K video play - VP9 codec check, Speed check

: Output resolution check – 3840 x 2160 @ 60hz

Sound test video

: Sound left / Right / Penning test

Search “#Stereo: Left and Right Stereo Sound Test” on youtube



<https://www.youtube.com/watch?v=6TWJaFD6R2s>

4.1.8 Check USB port.

Criteria:

USB port should be work properly.

: Check USB 2.0 / 3.0 device detection and device access

4.1.9 Check 3.5PI Microphone test

Criteria:

Smart Karakoapp –Downing Everyising App form internet for microphone test

-> Skip due to SKB network is not available

4.1.10 Check 3.5PI AUX test

Criteria:

AUX input should be work properly.

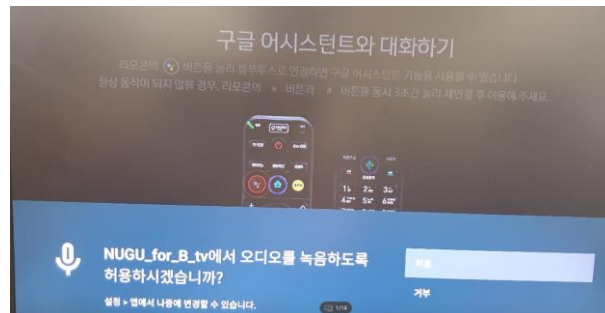
4.1.11 Check Far-Field Mic test

Criteria:

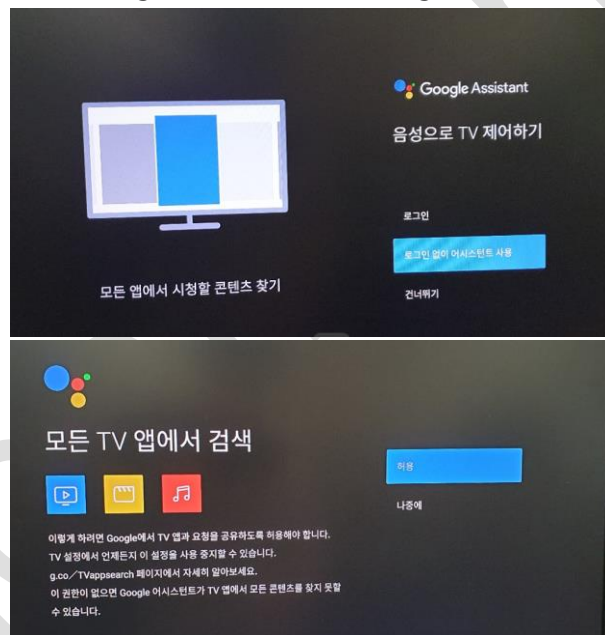
Far-field MIC input should be work properly.

Please follow below steps.

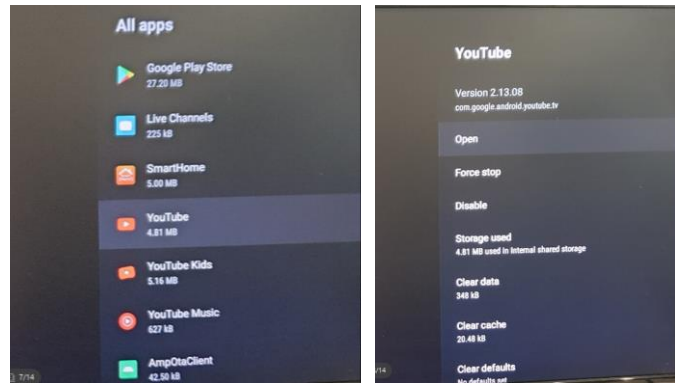
A. Allow NUGU Mic access.



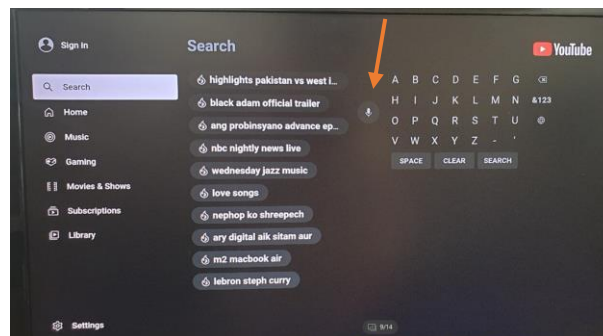
B. Allow Google assistant without login



C. Run the Youtube



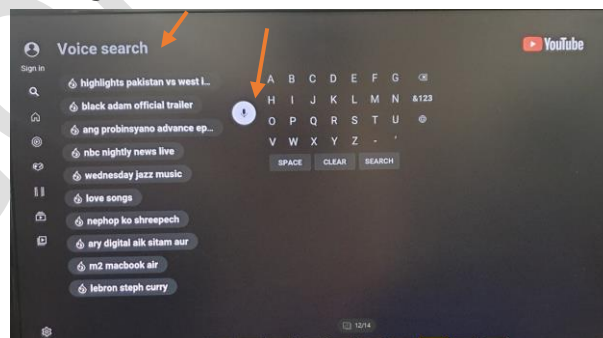
D. Move to Search and click "Mic" button



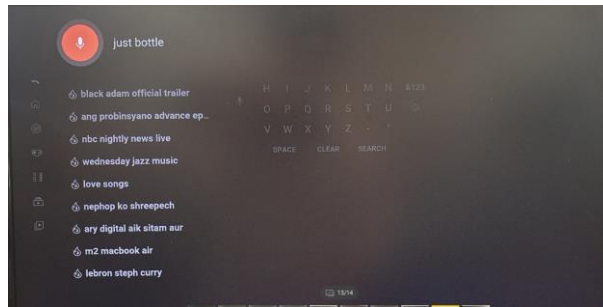
E. Allow record MIC, , will be activate Voice search



F. Click again "Mic" button.



G. Can search FFV Mic input



4.1.12 Check Reset to default function

Criteria:

Factory reset should be work properly.

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5 Customer special requirements.

This customer requirements should be applied commonly.

: BFX-AT100 and BFX-UH200 and BFX-UA300.

5.1 SKB serial number

Purpose:

This serial number management is mandatory requirement from the customer.

More details, please see the Mantis issue ID: 746. ([Link](#))

Criteria:

The SKB serial number range should be matched as ALT noticed serial number range.

5.2 Mac address OUI

Purpose:

A product's OUI should be limited to a specific range

Criteria:

Fix OUI for MP,

1 OUI is recommended, maximum 2 range is allowed.

5.3 TOP housing protection.

Purpose:

-TBD

Will be update after first MP.

5.4 Serial number for Sample production

Purpose:

To define SKB S/N range about additional sample PO besides MP PO.

Only use SKB Serial number for sample production.

Each first 16 digit is prefixed value, next 6 digit in order sample production quantity.

Prefix: 2149695001 (10 digit, model code)

Year code: YYYY99 (6 digit, i.g : 202099, last 2 digit "99" is fixed number)

Sequential number: xxxxxx (6 digit, i.g: 000001, Sample production cumulative number by year)

For RMA production

Each first 16 digit is prefixed value, next 6 digit in order sample production quantity.

Prefix: 2149695001 (10 digit, model code)

Year code: YYYY98(6 digit, i.g : 202099, last 2 digit "98" is fixed number)

Sequential number: xxxxxx (6 digit, i.g: 000001, Sample production cumulative number by year)

5.5 Production documents.

Purpose:

To define production output documents after manufacturing. Factory should be submitted these documents before shipment.

5.5.1 Method of transferring

5.5.1.1 e-mailto:

bylee@altech.kr

jwkim@altech.kr

hylee@altech.kr

syyoon@altech.kr

shson@altech.kr

neotech1973@altech.kr

5.5.1.2 when

Every shipment

5.5.1.3 Output document list (sample)

Attachment 3 "SN Report"

Attachment 4 "OBA Inspection report_Rev1.1"

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