

BFX-AT100/BFX-UH200 Test Results

—add BT RCU Sensitivity test result

Date	2019/8/28
Revision	A2

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1 Document Control

1.1 Document Information

For approval by:	Position	Name
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Distribution/Access:	Internal and External	
Filename(s):	BFX-AT100/BFX-UH200 4K OTT Test Report .doc	

1.2 Document Revision History

Version	Date	Author	Comments
A1	2019/5/17	Catherine Chen	
A2	2019/8/28	Catherine Chen	Add AOSP BT Sensitivity Test

2 Introduction

The purpose of this document is to ensure that results obtained from testing the product to the Acceptance Test Procedure (ATP) are captured along with all other relevant information such as software versions and equipment lists etc. This can then be used to show compliance to the Product Requirement Specification.

2.1 Scope

This procedure should only be used for STB products and variants thereof, as the requirements are specific as declared in the Product SPEC.

2.2 Related Information

Date Test Completed	2019/8/28
Name of Eng./Tech. Performing Tests; Org/Dept	Catherine Chen
Model Name	BFX-AT100/BFX-UH200

2.3 Equipment list

Item Number	Description
1	BFX-AT100/BFX-UH200 4K OTT
2	BT Remote Controller
3	Monitor w/ HDMI port
4	AAA battery 2x

3 Test Results

3.1 BT Antenna S-parameter/Efficiency/Peak Gain

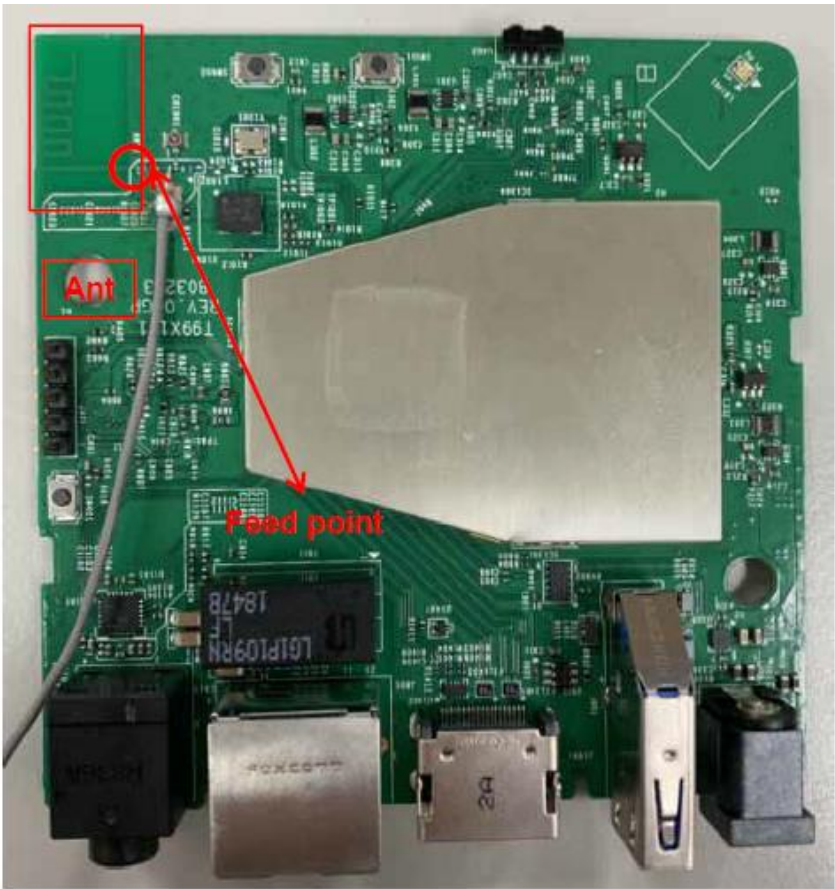


Figure 1. Antenna Placement

- S-parameter

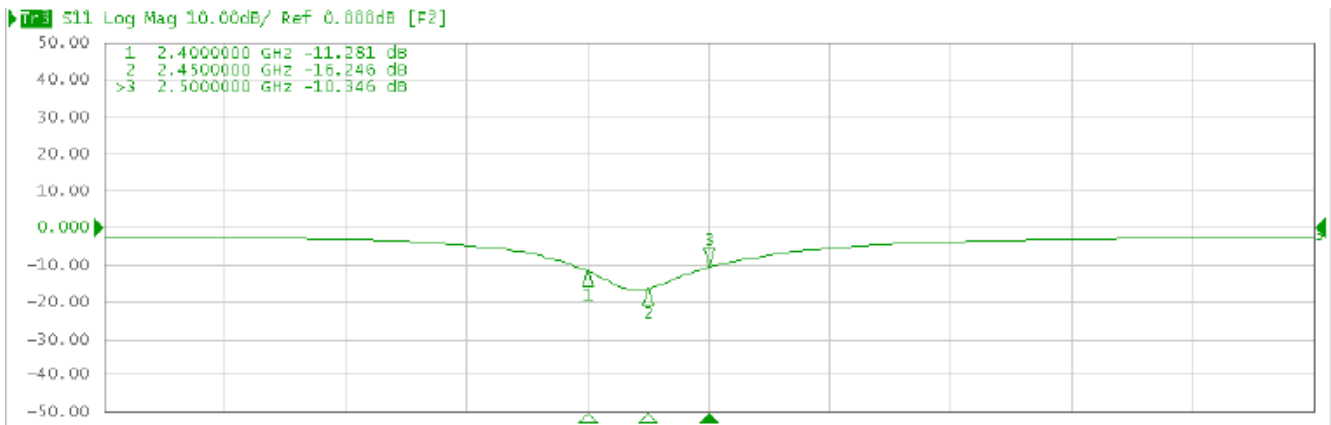


Figure 2. Antenna S-parameter

- Efficiency / Peak Gain

Table 1. BT Antenna Efficiency/Peak Gain

Frequency(GHz)	2.4	2.45	2.5
Efficiency (%)	65	67	63
Peak Gain (dBi)	2.96	3.05	2.87

3.2 BT Chipset Conductive Power

● Tx Power

Power Class 1 is defined at 0dBm~20dBm, and test result within of the scope at the power class 1, so it meet specification

Power Class	Maximum Output Power (Pmax)	Nominal Output Power	Minimum Output Power ¹⁾
1	100 mW (20 dBm)	N/A	1 mW (0 dBm)

Table 2. BT Conductive Power Test Result

BT/ LE										
Frequency	Modulation	Channel	Data Rate	Power Setting	Conducted Avg power	Conducted Avg power	Conducted Avg power	Measured Output Power (mW) (maximum)	Output Power Limit (mW)	restrict
					20°C	-20°C	50°C			
					dBm	dBm	dBm			
2402MHz	GFSK	Ch00	1M	Default	10.06	10.16	9.88	0.13	3	Maximum power index
2441MHz	GFSK	Ch39	1M	Default	10.14	10.24	9.89	0.13	3	Maximum power index
2480MHz	GFSK	Ch78	1M	Default	9.55	9.67	9.31	0.12	3	Maximum power index
2402MHz	8-DPSK	Ch0	3M	Default	7.35	7.42	7.16	0.07	3	Maximum power index
2441MHz	8-DPSK	Ch39	3M	Default	7.59	7.65	7.34	0.07	3	Maximum power index
2480MHz	8-DPSK	Ch78	3M	Default	6.43	6.46	6.39	0.06	3	Maximum power index
2402MHz	LE	Ch00	1M	Default	6.38	6.46	6.28	0.06	3	Maximum power index
2440MHz	LE	Ch19	1M	Default	7.66	7.74	7.47	0.08	3	Maximum power index
2480MHz	LE	Ch39	1M	Default	7.7	7.89	7.43	0.08	3	Maximum power index

● Frequency Tolerance

BLE				
Frequency	Temperature(℃)	Limit(ppm)	Data(ppm)	Test Result
2402	-20	50	15.48	Pass
	25		10.56	Pass
	50		1.87	Pass
2440	-20	50	16.46	Pass
	25		11.44	Pass
	50		2.83	Pass
2480	-20	50	17.41	Pass
	25		12.37	Pass
	50		3.81	Pass
BR-GFSK				
Frequency	Temperature(℃)	Limit(ppm)	Data(ppm)	Test Result
2402	-20	50	15.49	Pass
	25		10.44	Pass
	50		1.87	Pass
2440	-20	50	16.47	Pass
	25		11.42	Pass
	50		2.86	Pass
2480	-20	50	17.41	Pass
	25		12.35	Pass
	50		3.81	Pass
EDR - 8DPSK				
Frequency	Temperature(℃)	Limit(ppm)	Data(ppm)	Test Result
2402	-20	50	15.50	Pass
	25		10.43	Pass
	50		1.88	Pass
2440	-20	50	16.47	Pass
	25		11.40	Pass
	50		2.86	Pass
2480	-20	50	17.42	Pass
	25		12.35	Pass
	50		3.80	Pass

3.3 Bluetooth Sensitivity Test

- Test Step

1. Test location : office
Test environment setting : Box and RCU distance at least keep 15m
2. Box horizontal and vertical deflection at 0° , $\pm 30^\circ$, $\pm 45^\circ$...
3. Measure RCU each function key can work 0° , $\pm 30^\circ$, $\pm 45^\circ$...
4. Repeat step 2,3 and test all degree

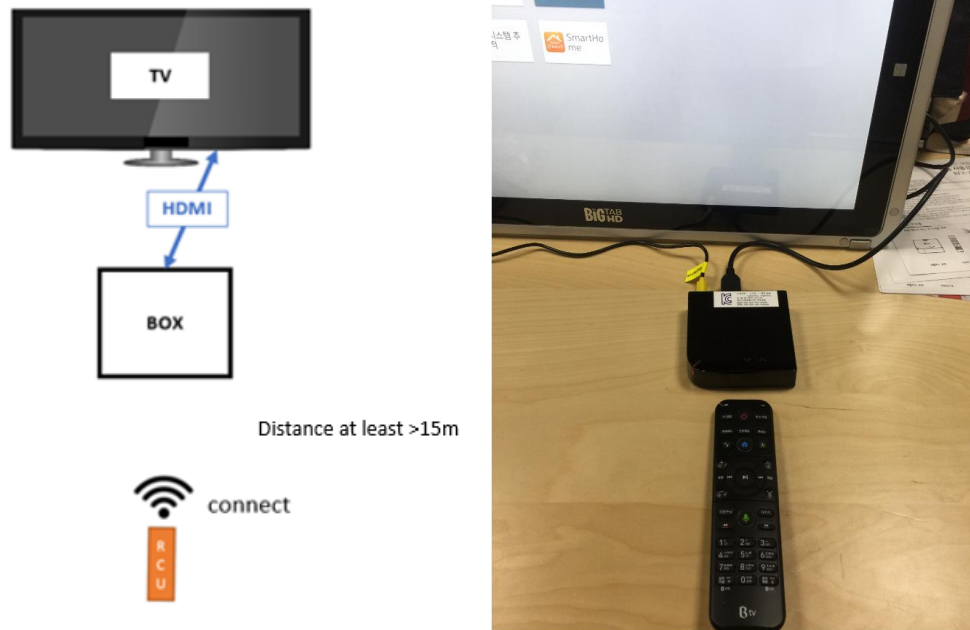


Figure 3. Test diagram

● Test Result

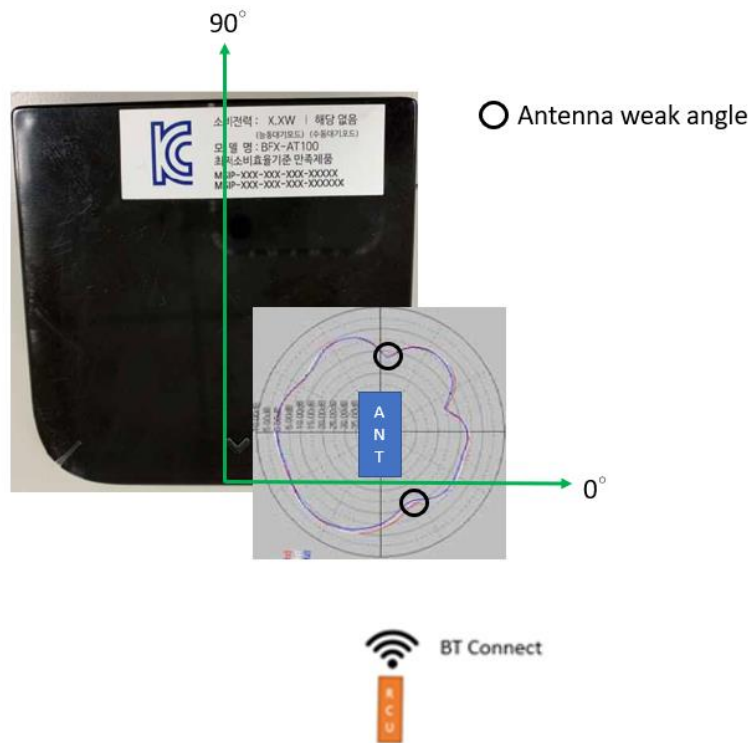


Figure 4. 2D Radiation Pattern

(1) Android TV Version : BMM-BA01

Table 3. BT Sensitivity Test Result

Measurement Positions	Distance	Actual Test Distance	Result	RCU key function
Nearby	> 20cm	> 50cm	PASS	Functional key: Power on/off Change channel key TV key Home key Up/Down/Left/Right/OK key Back key Menu key Vol. Up/Down key
Front (0°)	> 15m	> 17m	PASS	
Horizontal Deflection (+30°)			PASS	
Horizontal Deflection (-30°)			PASS	
Horizontal Deflection (+45°)			PASS	
Horizontal Deflection (-45°)			PASS	
Horizontal Deflection (180°)			PASS	
Vertical Deflection (+30°)			PASS	
Vertical Deflection (-30°)			PASS	

(2) Android TV Version : BRM-BA01

Table 4. BT Sensitivity Test Result

Measurement Positions	Distance	Actual Test Distance	Result	RCU key function
Nearby	> 20cm	> 50cm	PASS	Functional key: Power on/off Change channel key TV key Home key Up/Down/Left/Right/OK key Back key Menu key Vol. Up/Down key
Front (0°)	> 15m	> 17m	PASS	
Horizontal Deflection (+30°)			PASS	
Horizontal Deflection (-30°)			PASS	
Horizontal Deflection (+45°)			PASS	
Horizontal Deflection (-45°)			PASS	
Horizontal Deflection (180°)			PASS	
Vertical Deflection (+30°)			PASS	
Vertical Deflection (-30°)			PASS	

(3) AOSP Version : BRM-BT10

Table 5. AOSP BT Sensitivity Test Result

Measurement Positions	Distance	Actual Test Distance	Result	RCU key function
Nearby	> 20cm	> 50cm	PASS	Functional key: Power on/off Change channel key TV key Home key Up/Down/Left/Right/OK key Back key Menu key Vol. Up/Down key
Front (0°)	> 15m	> 17m	PASS	
Horizontal Deflection (+30°)			PASS	
Horizontal Deflection (-30°)			PASS	
Horizontal Deflection (+45°)			PASS	
Horizontal Deflection (-45°)			PASS	
Horizontal Deflection (180°)			PASS	
Vertical Deflection (+30°)			PASS	
Vertical Deflection (-30°)			PASS	

(4) AOSP Version : BMM-BT10

Table 6. AOSP BT Sensitivity Test Result

Measurement Positions	Distance	Actual Test Distance	Result	RCU key function
Nearby	> 20cm	> 50cm	PASS	Functional key: Power on/off Change channel key TV key Home key Up/Down/Left/Right/OK key Back key Menu key Vol. Up/Down key
Front (0°)	> 15m	> 17m	PASS	
Horizontal Deflection (+30°)			PASS	
Horizontal Deflection (-30°)			PASS	
Horizontal Deflection (+45°)			PASS	
Horizontal Deflection (-45°)			PASS	
Horizontal Deflection (180°)			PASS	
Vertical Deflection (+30°)			PASS	
Vertical Deflection (-30°)			PASS	