

HYPERP	Product Requirements		Model No: Bell Frog	Page 1 of 72
Prepared by:		Approved by:		
HyperX				Revision H

REVISION AND UPDATES

REV	ECN NO. ECN	DESCRIPTION	DATE	BY
A	---	Initial	2023/11/15	
B	---	<ul style="list-style-type: none"> 1. Updated firmware portion 2. CMF update 3. ME adjusted according to new CMF 4. ME adjusted earpad material for Black and Red version 5. ME adjusted battery tape size and quantity 6. ME added mode slide button holder 	2023/11/24	
C	---	Remove the extra deco plate Remove wire mode, compatibility with Xbox Package update accordingly	2024/1/12	
D	---	<ul style="list-style-type: none"> 1. Update the reliability requirement 2. Update the packaging The Traceability label has changed its position on the ear shell &new protective film has been added. 3. Remove the white version from ME part list. 	2024/1/26	
E	---	<ul style="list-style-type: none"> 1. Update the P/N of ECM mic unit 2. Mic boom length increased by 20mm from 70mm to 90mm. 3. The material of mode slide button holder is changed from ABS to POM. 4. Update the dimensions of Accessory box/Accessory box insert 5. Update the logo color on earcup logo plate and Fork color 6. Add more detail inf. on CMF  <p style="text-align: right;">Earcup logo inner plate Material: Plastic Color: Black (#CPN-90-08-21-31-0001) Finish: Matte #HMT11007</p>	2024/3/18	
F	---	Update compliance requirement Update Tone Notification Update Button Functionality (Headset) Update DEVICE API REQUIREMENTS	2024/6/12	

		Product Requirements		Model No: Bell Frog	Page 2 of 72
Prepared by:		Approved by:			
HyperX					Revision H
G	---	MDE :	2024/6/25		
		<ol style="list-style-type: none"> 1. Mic boom length changed from 90mm to 80mm. 2. Reduce magnet to 2pc on the logo plate (location on top and bottom). Keep magnet holder on left and right side. 			
H	---	<ol style="list-style-type: none"> 1. Add White rev. 2. Update ear cup printing color for black and red version 3. Headband cable changed from 9C to 10C. 4. Update Battery spec 5. Add white color to packaging version 	2024/7/25		
Product Name: Bell Frog					
Product Description: Dual mode wireless headset					
Revision.: H					

内容

1 GENERAL:	5
2 Project Core Team	6
3 ACOUSTIC REQUIREMENT:	6
3.1 Speaker Driver Spec	6
3.2 Mic Unit Spec for Voice Mic and Second Mic.....	8
3.3 Microphone boom assembled spec.....	9
3.4 Product Level performance.....	9
4 Accessories:	12
4.1 Detachable Mic Boom	12
4.2 Dongle- USB type C Male, LED indicator.....	12
4.3 Adapter- USB type C Female to USB type A Male	12
4.4 Charging cable / data transmission cable- USB Type C to Type C	12
4.4.1 CORD LENGTH: 0.5m.....	12

	Product Requirements	Model No: Bell Frog	Page 3 of 72
Prepared by: HyperX	Approved by:		Revision H

4.4.2	DIAMETER: D=3.7mm.....	12
4.4.3	COLOR: Black Version and Red Version: HX Black, White Version: White, TPE 75A, non-Braided.	12
4.4.4	MOLDING: Black Version and Red Version: HX Black, White Version: White, TPE 80A	12
4.4.5	MEMORY FACTOR: Please advise your standard as proposal.	12
4.5	Pouch- Black fabric for Black and Black/Red, White fabric for White	12
5	WEIGHT:	12
6	Acceptance criteria.....	13
6.1	Traceability Requirement: Refer to HWC-QACI-018	13
6.2	Shipping requirement: Refer to HWC-IES-001.002	13
6.3	Label requirement: Refer to HWC-MES-001	13
6.4	Production QA gate: Refer to vendor PMP. To be confirmed	13
6.5	Defect definition:.....	13
6.6	Sampling plan:.....	13
6.7	S Inspection Instruction: Refer to Product inspection instruction or vendor OQC SIP. To be confirmed	14
6.8	Visual inspection criteria: Refer to vendor VI spec. To be confirmed.....	14
7	RELIABILITY REQUIREMENT:	14
7.1	According to HYPERX PRODUCT VALIDATION PLAN HWC-MDEF-001.002, HWC-MDEF-001.001.	14
7.2	HyperX QA will define test items/samples for PVT build.	14
8	Block DIAGRAM: (for reference)	15
9	ESD/EMI Requirement:	15
10	Compatibility	16
11	Electrical Specification;	16
12	RF Specification.....	17
13	Battery Specification	18
	PCM Specification	19
14	Firmware Features.....	20
14.1	Firmware Behavior and Requirement	20
	14.2 Default State for Headset Function.....	23
15	Firmware I/O Behavior.....	24
15.1	Headset Switch/Button/Wheel Behavior.....	24

	Product Requirements		Model No: Bell Frog	Page 4 of 72
	Prepared by: HyperX	Approved by:		Revision H

15.2	Dongle Interactions.....	25
16	Firmware LED Behavior	26
16.1	Headset LED	26
16.2	Dongle LED.....	27
17	Firmware Audio Cues	28
17.1	Headset behavior	28
17.2	Tone Notifications	29
17.3	Voice Prompt.....	29
18	DEVICE API REQUIREMENTS	30
18.1	Custom Desktop APIs via Case	30
19	Mechanical Specification	32
19.1	Headphone specification.....	32
19.2	Microphone specification:	33
19.3	Earpads specification:.....	34
19.4	Accessory specification:	35
20	DIMENSION	35
20.1	Headphone.....	35
20.2	Mic Boom.....	36
20.3	Dongle	36
20.4	Adapter	36
20.5	Charging cable.....	36
21	Part List	37
22	CMF	50
23	Packaging.....	55
24	Compliance and Regional requirement	64
25	Product Environmental Requirement	66
26	Product Test Report Requirement	66
27	Reliability Requirement.....	66

	Product Requirements		Model No: Bell Frog	Page 5 of 72
Prepared by:		Approved by:		
HyperX				Revision H

1 GENERAL:

Description	Product Requirement
Main Features	<ul style="list-style-type: none"> • Dual Mode Dual Wireless – 2.4GHz with Bluetooth • Compatible with the OMEN Better Together Strategy • Best in Class Battery Life – 120 hours • Signature HyperX Comfort and Durability • Angled 53mm Drivers • Ultra-Clear Boom Mic with LED Mute Indicator • Internal Mic • Removable Ear Cup Plates • DTS® Headphone:X® Spatial Audio • USB-C with USB-C to USB-A Adapter • USB-C Charge Cable
Retail Box Content	<ul style="list-style-type: none"> • Headset • Detachable Mic Boom • USB-C Wireless Dongle • USB-C to USB-A Adapter • USB-C Charge Cable • Carrying Bag • QSG
System Compatibility	<input checked="" type="checkbox"/> PC/Windows [Win 10+] <input checked="" type="checkbox"/> OMEN Gaming Laptop [Latest Firmware, Direct Pairing on Select Models] <input checked="" type="checkbox"/> PS5 [Latest Firmware] <input checked="" type="checkbox"/> PS4 & PS4 Pro [Latest Firmware] <input checked="" type="checkbox"/> Nintendo Switch [Latest Firmware] <input checked="" type="checkbox"/> Mac OS <input checked="" type="checkbox"/> Chromebook <input checked="" type="checkbox"/> Steamdeck <input checked="" type="checkbox"/> Other: NGENUITY Software using Win 10 Support
Application Compatibility	<input checked="" type="checkbox"/> Discord <input checked="" type="checkbox"/> TeamSpeak <input checked="" type="checkbox"/> Zoom

	Product Requirements		Model No: Bell Frog	Page 6 of 72
Prepared by:		Approved by:		
HyperX				Revision H
Warranty	2-Year Warranty			

2 Project Core Team

Function	Name
Product Manager	Linh Wu
Product Launch Manager (FV)	Alicia Langrios
Product Launch Manager (FE)	Anita Lo
Mechanical Engineer	Kevin Lin
Acoustic Engineer	Benson Huang
Electrical Engineer	JiaHao Su
Firmware Engineer	Ryan Lan
Software Engineer	Jerry Chan
Validation Engineer	David Ko
ID	Kyle Huang / Carol wu
Packaging Engineer	Cinzia Liu / Ella Peng
Sourcing	Gary Xu
Quality Engineer	Linda Yu
NPS	Jay Huang
Reliability test	Jally Huang

3 ACOUSTIC REQUIREMENT:

Speaker Driver Spec

Source 1

Driver vendor	TRANSOUND
Driver P/N	TSK-Y5308-060N01-HF
Sensitivity	111.94±3dB with IEC-318, at 1mW (0.253V), 1KHz
THD	<2%, 200~3.4KHz, 1mW
Impedance	64Ω±15%
Power (Rated/Maximum)	30mW/750mW



Product Requirements

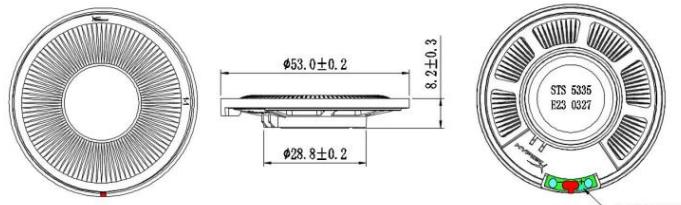
Prepared by:

HyperX

Approved by:

Model No:
Bell FrogPage
7 of 72Revision
H

Size:



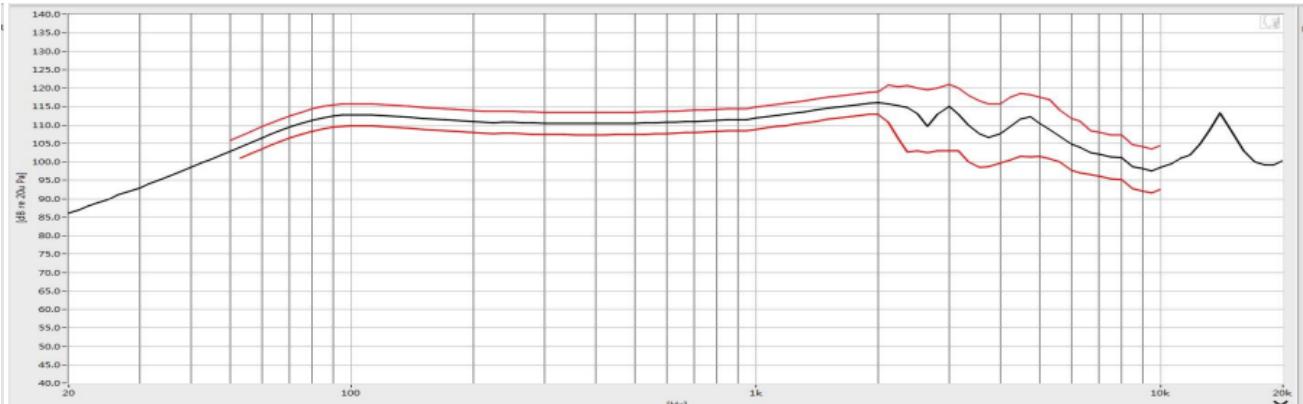
S 代表所有权, TS 代表制造商, 53 代表尺寸, 3 代表型号,
5 代表版次, E 代表档位, 23 代表年, 03 代表月, 27 代表日

Unit: mm

Accessories 5:BOM material list:

零件料厚	零件品名	規格型号	单位	标准用量
TS-ZM-Y5308-KP03	振膜	Φ50.0xΦ44.95, PET (LD1381L)	PCS	1
TS-YQ-Y5308-KS01	音圈	Φ21.65x0.055x64 Ω x2Fx2.83H, 大黑 DCCA	PCS	1
TS-ZJ-Y5308-KA01	支架	Φ53xΦ50.1x8.0H, 黑色 ABS	PCS	1
TS-UT-Y5308-KG01	轭铁	Φ25.7xΦ22.7x4.5H, SPCC	PCS	1
TS-HS-Y5308-KG01	华司	Φ20.8xΦ11.0x1.0T, SPCC	PCS	1
TS-CT-Y5308-KN01	磁铁	Φ19.8xΦ11.0x2.0T, N42	PCS	1
TS-XL-Y4015-KA01	基板	Φ37.8xΦ31.7x0.8T, 绿油, 喷锡	PCS	1
TS-TY-Y5308-KZ01	调音纸	Φ19xΦ11.6, Y5 调音纸+黑色背胶	PCS	1

Frequency response (IEC-318 High Leak):



Source 2

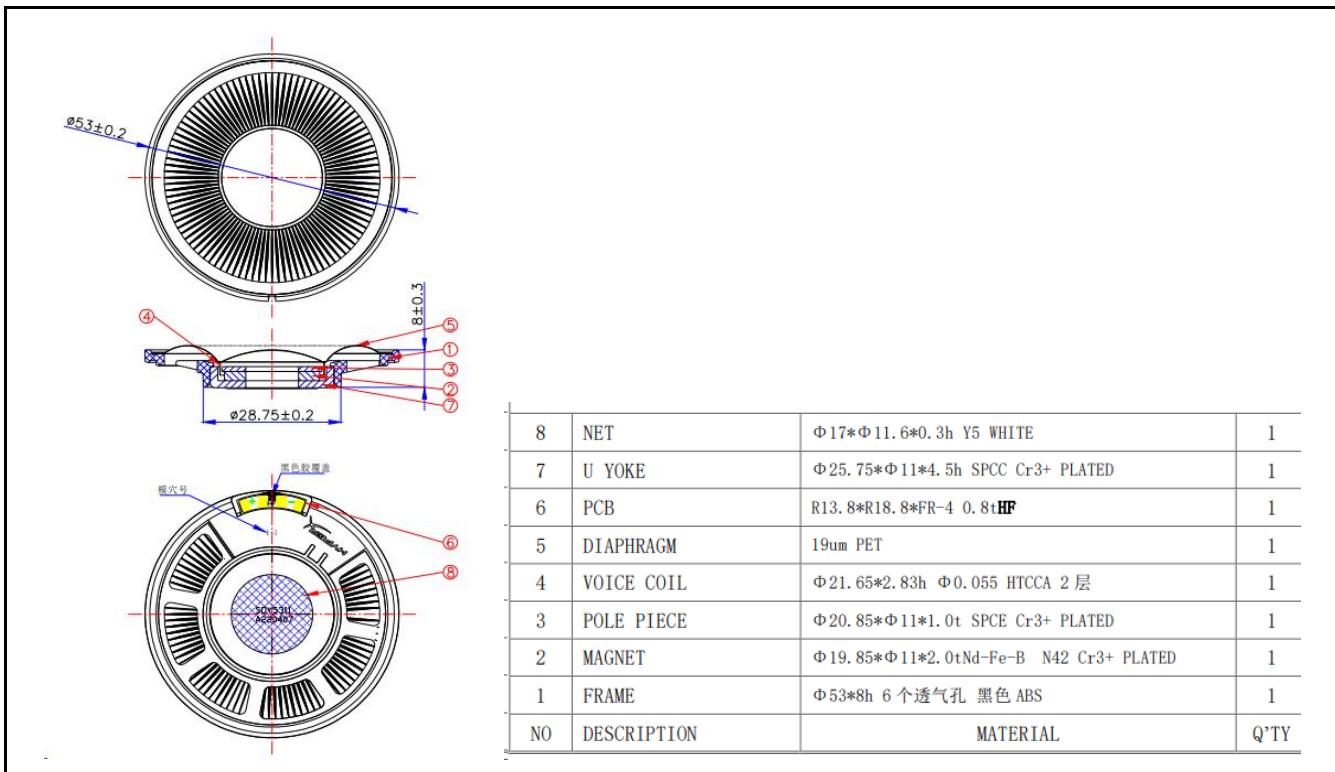
Driver vendor	OUYING
Driver P/N	101-0053-002001
Sensitivity	112.15±3dB with IEC-318, at 0.265V, 1KHz
THD	<2%, 200~3.4KHz, 1mW
Impedance	64Ω±15%
Power (Rated/Maximum)	10mW/30mW

Size:

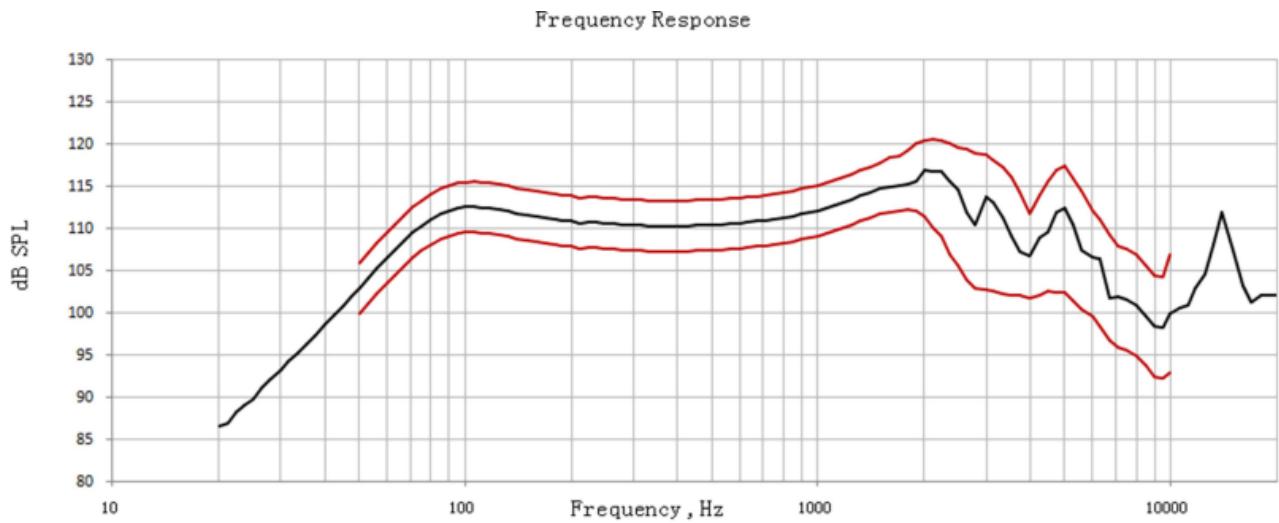


Product Requirements

Prepared by:	Approved by:	Model No: Bell Frog	Page 8 of 72
HyperX			Revision H



Frequency response (IEC-318 High Leak):



Mic Unit Spec for Voice Mic and Second Mic

Unit vendor	Knowles
Unit P/N	SPV61A0LR5H-1
Supply Voltage	2.3 - 3.6 V
Current Consumption	180uA
Sensitivity	-40±1 dBV/Pa
SNR	66 dBV/Pa (f=1KHz, S.P.L=1Pa, A-Weighted curve).
AOP (THD: 1%/10%)	130/132dB SPL



Product Requirements

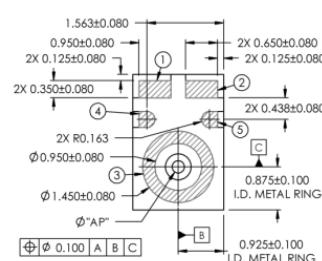
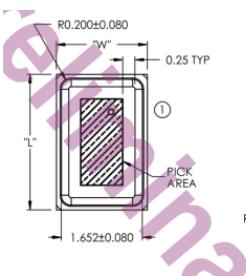
Prepared by:

HyperX

Approved by:

Model No:
Bell FrogPage
9 of 72Revision
H

Diameter



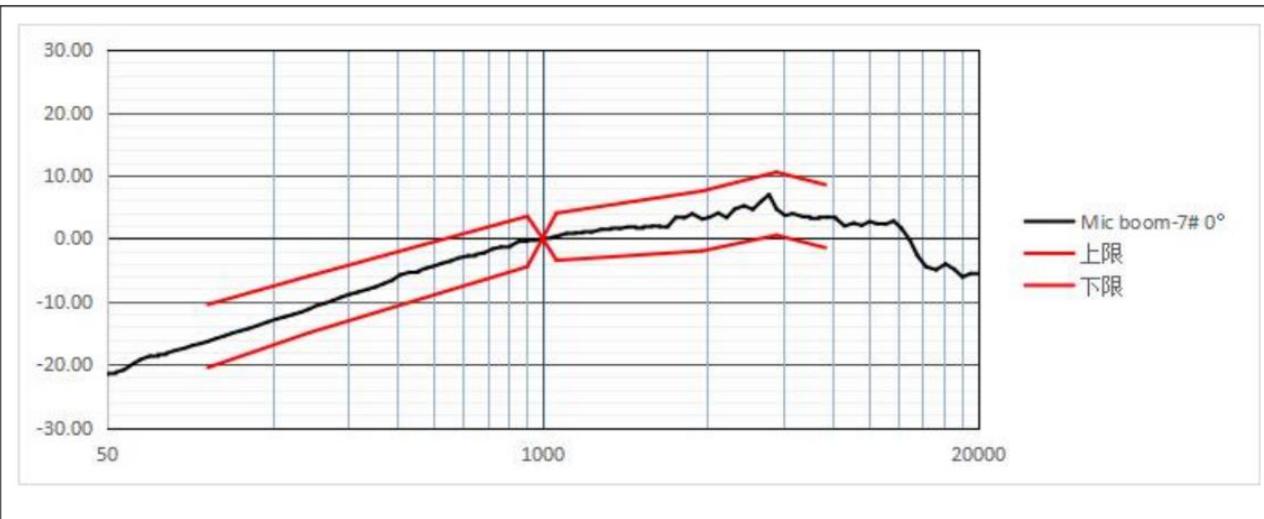
Item	Dimension	Tolerance
Length (L)	2.75	±0.10
Width (W)	1.85	±0.10
Height (H)	0.90	±0.10
Acoustic Port (AP)	Ø0.25	±0.05
PCB Thickness (T)	0.285	-0.035, +0.05

Note: .

Microphone boom assembled spec.

Unit vendor	Gettop
Unit P/N	BUM1045L-n422AC
Supply Voltage	1.0 – 5.0 V
Current Consumption	400uA
Sensitivity	-42±2 dBV/Pa
SNR	65 dBV/Pa (f=1KHz, S.P.L=1Pa, A-Weighted curve).
AOP (THD: 1%/3%)	94/115dBSPL

Frequency response: 50cm far field test, Octave=1/12oct, Curve Smoothing=off



Note:

Product Level performance

3.4.1 Receive Path



Product Requirements

Model No:
Bell Frog

Page
10 of 72

Prepared by:

HyperX

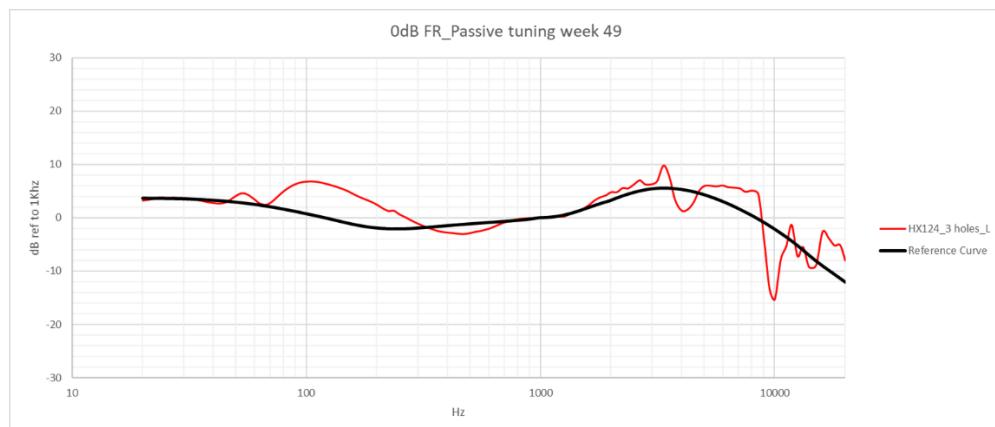
Approved by:

Revision
H

Test Equipment	GRAS 45CA-9, with SoundCheck
Sensitivity	TBD ± 3 dB SPL at 1kHz
THD	<2% from 100 to 2.8KHz

Frequency Response: 20Hz - 20k Hz, 1/12 octave. (Aligned 1kHz limits)

Passive mode:



EQ mode:

It will be defined after EVT

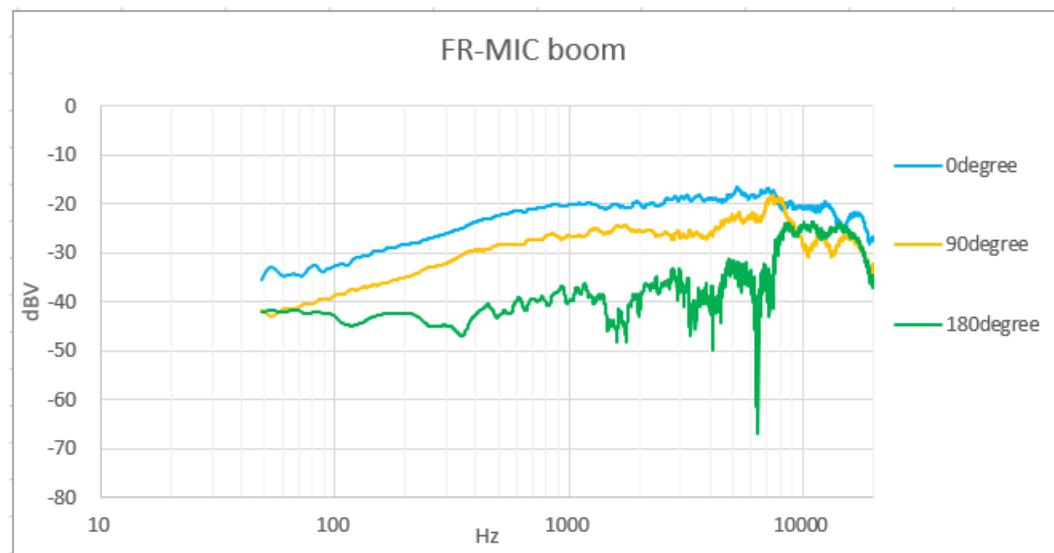
Note:

3.4.2 Transmit Path

3.4.2.1 Microphone boom

Test Equipment	1 Pa at 50cm in free field test
Sensitivity	-20 dBFS at 1kHz (1Pa @ 50cm in free field)

Frequency Response: 0, 90 and 180



3.4.2.2 Internal voice microphone

Test Equipment	1 Pa at 50cm in free field test
Sensitivity	TBD dBFS at 1kHz (1Pa @ 50cm in free field)

Frequency Response:

It will be defined after EVT



Product Requirements

Model No:
Bell Frog

Page
11 of 72

Prepared by:

HyperX

Approved by:

Revision
H

Voice Quality (Test Equipment: ACQUA)	3Quest noBGN: G-MOS ≥ 4.0 N-MOS ≥ 4.0 S-MOS ≥ 4.0
	3Quest Mensa: G-MOS ≥ 3.5 N-MOS ≥ 3.5 S-MOS ≥ 3.5
	3Quest CallCenter: G-MOS ≥ 3.0 N-MOS ≥ 3.0 S-MOS ≥ 3.0
	3Quest VoiceDistr: G-MOS ≥ 3.0 N-MOS ≥ 3.0 S-MOS ≥ 3.0
Microphone sealing (Included ANC and Voice Mic)	> 20dB from 100 to 8KHz Microphone sealing = Mic sensitivity – Mic sensitivity that sealed the mic hole For voice mic and feed-forward mic

3.4.3 Other Acoustic Performance Requirement

Crosstalk (L & R channel)	> 65dB@1KHz, at max output for wireless mode
Crosstalk (SPK to Internal Mic)	> 80dB@1KHz, at max output for wireless mode
Crosstalk (SPK to Boom Mic)	> 80dB@1KHz, at max output for wireless mode
EN50332	95~97 dBA (refer to Bells)
Echo Cancellation	Compatible with TEAMS standard
Side tone	Compatible with TEAMS standard
Idle noise	Compatible with TEAMS standard
Double talk	Compatible with TEAMS standard
Latency	Compatible with TEAMS standard

Left and Right earphones in the same headset shall be matched to each other.

Frequency	50	100	101	2500	2501	6300	6301	10000
Upper limit	4	4	3	3	8	8	13	13
Lower limit	-4	-4	-3	-3	-8	-8	-13	-13

3.4.4 Audio block diagram and corresponding user scenarios



Product Requirements

Model No:
Bell Frog

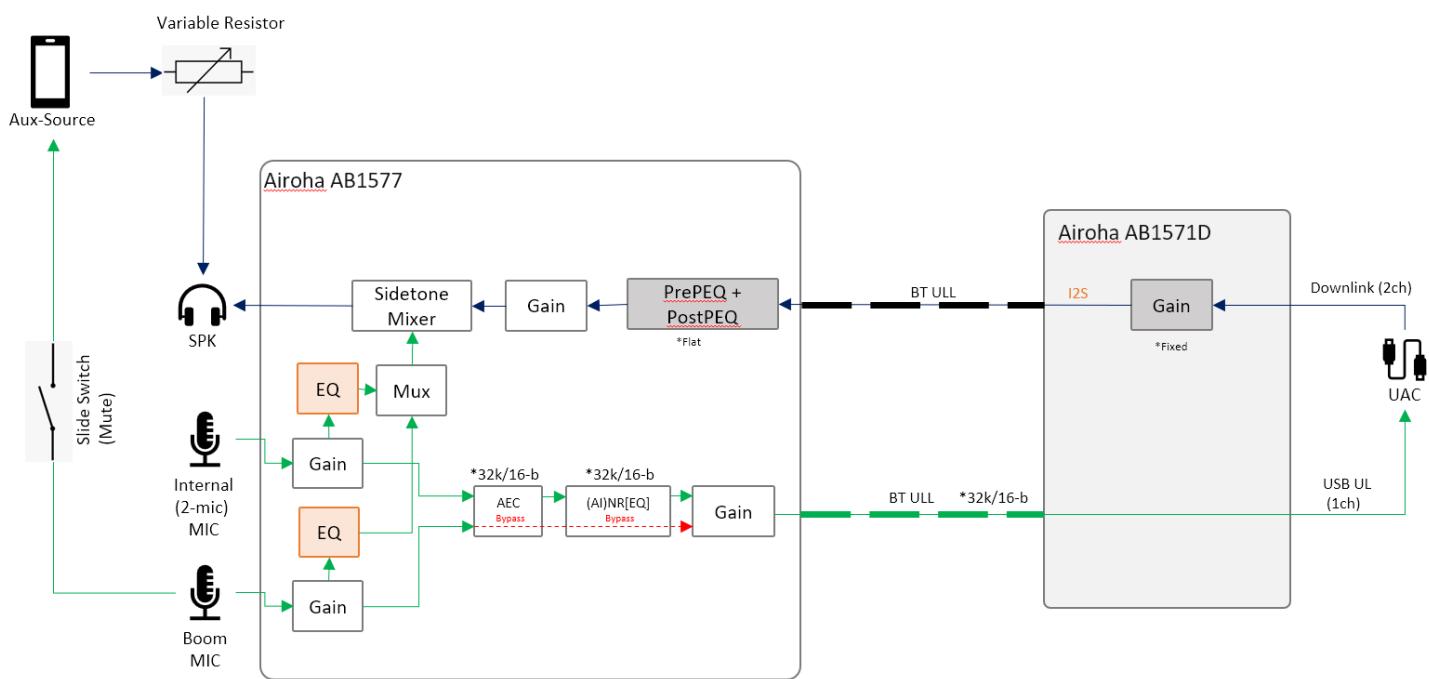
Page
12 of 72

Prepared by:

HyperX

Approved by:

Revision
H



*Flat: Default is flat before EVT phase.

- When BOOM MIC is inserted, AEC and AINR are interrupted.
- When BOOM MIC is inserted, Internal Mic is off.

Accessories:

Detachable Mic Boom

Dongle- USB type C Male, LED indicator

Adapter- USB type C Female to USB type A Male

Charging cable / data transmission cable- USB Type C to Type C

3.1.1 CORD LENGTH: 0.5m.

3.1.2 DIAMETER: D=3.7mm

3.1.3 COLOR: Black Version and Red Version: HX Black / White Version: Ceramic white, TPE 75A, non-Braided.

3.1.4 MOLDING: Black Version and Red Version: HX Black / White Version: Ceramic white, TPE 80A

3.1.5 MEMORY FACTOR: Please advise your standard as proposal.

Pouch- Black fabric for Black and Black/Red, White fabric for White

WEIGHT:

ASSEMBLY, cable excluded: Less than 355g +/- 10g (target)

HYPERP	Product Requirements		Model No: Bell Frog	Page 13 of 72
Prepared by: HyperX	Approved by:			Revision H

Acceptance criteria

Traceability Requirement: Refer to HWC-QACI-018

Shipping requirement: Refer to HWC-IES-001.002

Label requirement: Refer to HWC-MES-001

Production QA gate: Refer to vendor PMP. **To be confirmed**

Defect definition:

Defect of Cri:

The main features of products can't meet the quality requirement and have potential hazard on human safety and health.

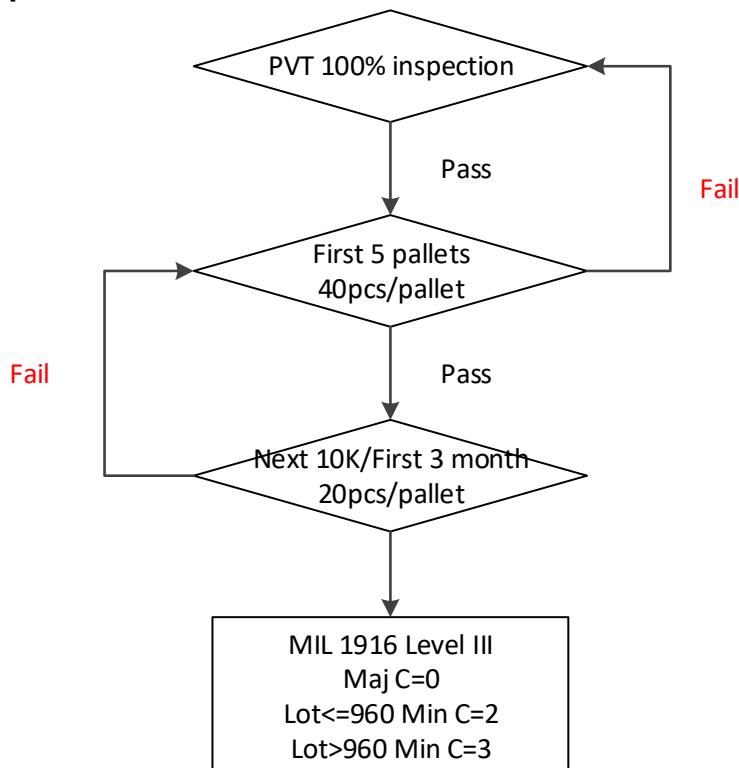
Defect of Maj:

The main features of products can't meet the quality requirement and can't work normally.

Defect of Min:

The general features of products can't meet the quality requirement, but it doesn't affect the normal operation.

Sampling plan:



PVT stage: 100% function and visual inspection

NPI stage:

- First 5 pallets: 40pcs/pallet
- Next 10K/First 3 month: 20pcs/pallet

MP stage: MIL 1916 Level III

	Product Requirements		Model No: Bell Frog	Page 14 of 72
Prepared by:		Approved by:		
HyperX				

S Inspection Instruction: Refer to Product inspection instruction or vendor OQC SIP. **To be confirmed**

Visual inspection criteria: Refer to vendor VI spec. **To be confirmed**

RELIABILITY REQUIREMENT:

According to HYPERX PRODUCT VALIDATION PLAN HWC-MDEF-001.002, HWC-MDEF-001.001.

HyperX QA will define test items/samples for PVT build.



Product Requirements

Model No:
Bell Frog

Page
15 of 72

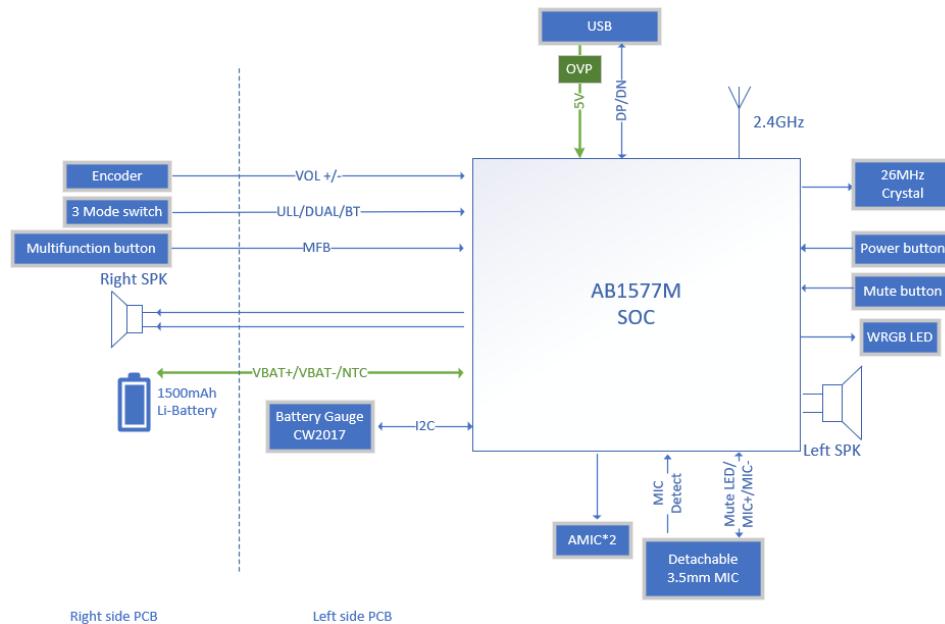
Prepared by:
HyperX

Approved by:
[Blank]

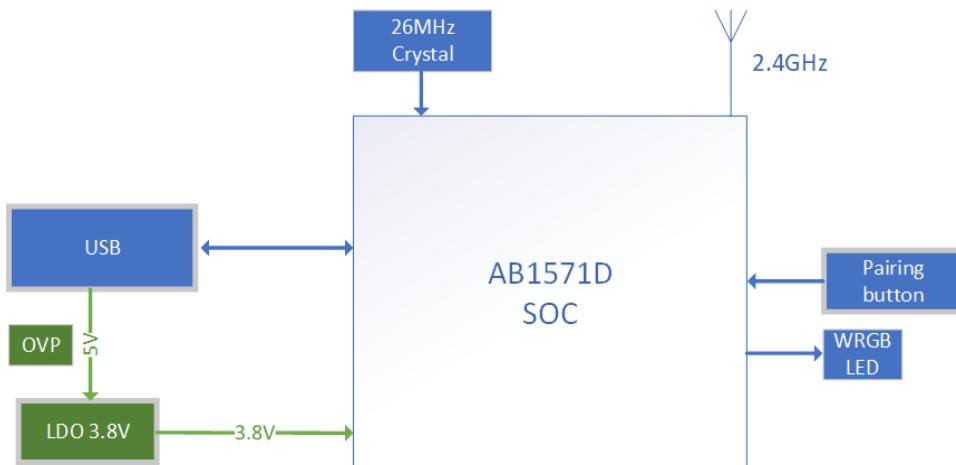
Revision
H

Block DIAGRAM: (for reference)

Headset



Dongle



ESD/EMI Requirement:

	Criteria	Remark
Electrostatic Discharge (ESD) Air Discharge Contact Discharge	+/-12 KV +/- 8 KV	
EMI	CISPR 22 levels + 4dB margin	



Product Requirements

Model No:
Bell Frog

Page
16 of 72

Prepared by:

HyperX

Approved by:

Revision
H

Compatibility

Feature	Remark
System Compatibility (USB dongle mode)	PC Win10+, Mac OS, PS4, PS4 pro, PS5, Nintendo Switch
System Compatibility (Bluetooth mode)	PC Win 10+, Mac OS, IOS, Android, Nintendo Switch, Steam Deck, and Chrome OS
Application Compatibility	HyperX NGENUITY Gaming Software, Discord, TeamSpeak, Zoom

Electrical Specification;

Headset

Feature	Remark
Main Chipset Solution	Airoha AB1577M
20m Wireless Range	Open field testing in all angles (0°, 90°, 180°, and 270°)
120+ Hours Battery Life	Could hit up to 120+ hours with defined scenario. By 50% volume configured and continue music streaming with "Batterylife.mp3"
Battery information	Need to hit 120+ hours battery life. Suggest using 1,500mAh Battery as below options. 1,500mAh: Apower AEC624052B With connector Meet HP BDR requirement
Battery Gauge	Gauge IC: CW2017, or equivalent. Battery level monitoring with 1% granularity.
Power Button	
Power LED Indicator	To indicate battery level status. WRGB to indicate headset status.
USB Connector	Type-C, 5V/500mA max with data pins
OVP (Over Voltage Protection)	Protect USB input up to 20V and system clamp at 6.5V max
Detachable Mic Boom	4 pole mic boom with LED indicator on mic boom. Mic Mute LED only supports Wireless mode.
Internal Microphone X2	2 pcs analog internal microphone

	Product Requirements		Model No: Bell Frog	Page 17 of 72
Prepared by:		Approved by:		
HyperX				Revision H

Mic Mute Control Button (on L-earcup)	By mic mute button to toggle mic mute/unmute and shows the corresponding status on mic mute LED.
Multifunction Button X1	
3 mode slide switches	3 stage switch to toggle ULL only / Dual mode / BT only
Volume Control (on R-earcup)	By encoder (Adjusting volume control should not have any significant impact on battery level notification)
Charging time	Reach out fully charged within 5 hours by USB charging.
Charging Temperature Protection	< 0°C & > 45°C need to stop charging (Recommend setting 3°C as low temp threshold & 42°C as high temp threshold)
Fast Partial Charge	Charge 10mins can use 6 hours w/BT and music on or 5 hours in ULL mode
Type-C to Type-C USB cable	Type-C to C cable (0.5m)
PCB	PCB Halogen Free; Need to have "HF" logo on all PCBs. Chlorine< 900 ppm; Bromine< 900 ppm; Total Chlorine and Bromine< 1500 ppm

Dongle

Feature	Remark
USB Connector	Type-C, 5V/500mA max with data pins
Chip Solution	Airoha AB1571D
OVP (Over Voltage Protection)	OVP 20V
USB-C/USB-A Connector	Connection between dongle and PC/PS5/PS4 Pro/PS4/Switch
Button	Multi-function button
LED indicator	WRGB
PCB	PCB Halogen Free; Need to have "HF" logo on all PCBs. Chlorine< 900 ppm; Bromine< 900 ppm; Total Chlorine and Bromine< 1500 ppm

RF Specification

Feature	Criteria	Remarks
Conducted TX Power	$8 \pm 2\text{dBm}$	On H/M/L channels
Conducted Power Difference	< 2dBm	Power difference between H/M/L channels
Harmonic	< -35dBm	On 2nd and 3rd harmonic and pass compliance requirement



Product Requirements

Model No:
Bell Frog

Page
18 of 72

Prepared by:
HyperX

Approved by:

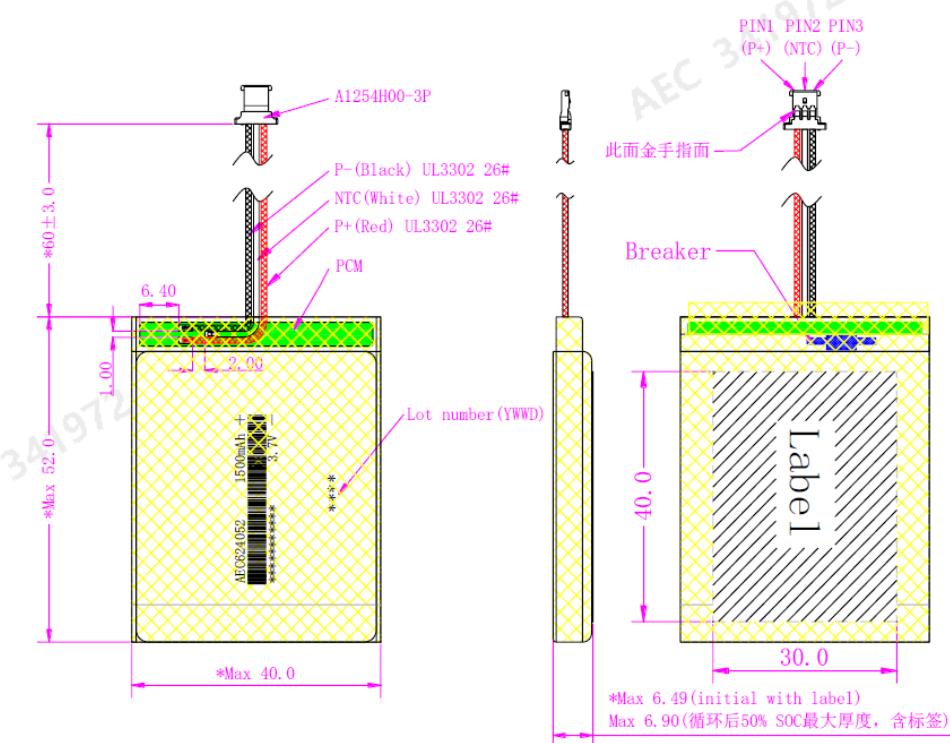
Revision
H

Conducted RX Sensitivity	< -96± 2 dBm	On H/M/L channels (Refer to Airoha Bluetooth LE 2M receiver spec.)
Antenna Efficiency	> 45%	On H/M/L channels in free space
Transmitting Range	> 20 Meters (ULL mode)	- Open field testing with clear music streaming in all angles (0°, 90°, 180°, and 270°)

Battery Specification

Feature	Remark
Nominal Voltage	3.7V
Rated capacity	1,500mAh
Maximum Charging Current	0°C~15°C : 0.2 C 15°C~45°C : 1 C
Recommendation Charging Current	0.5 C
Recommendation Discharging Current	0.5 C
Maximum Discharging Current	1 C
Limited charging voltage	4.2V
Discharge cut-off voltage	3.0V
Life cycles	500 cycles, >80% capacity

Battery Dimension:





Product Requirements

Model No:
Bell Frog

Page
19 of 72

Prepared by:	Approved by:
--------------	--------------

HyperX

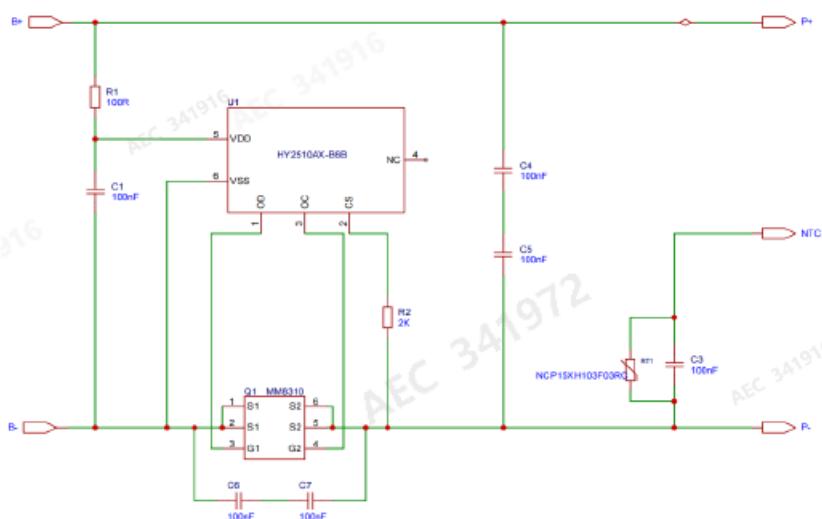
Revision H

PCM Specification

4.1 PCM SPECIFICATION (Testing condition: TEM=25°C, RH≤75%)/保护板规格(测试条件：25°C，相对湿度≤75%)

No. 序号	Items 项目	Specifications/规格			Unit 单位
		Min.	Typical	Max.	
一级保护					
1	Overcharge detection voltage 过充电检测电压	4.260	4.280	4.300	V
2	Overcharge release voltage 过充解除电压	4.050	4.080	4.110	V
3	Overdischarge detection voltage 过放电检测电压	2.750	2.800	2.850	V
4	Overdischarge release voltage 过放电解除电压	2.950	3.000	3.050	V
5	Discharge overcurrent detection current 放电过电流检测电流	2.50	3.70	5.00	A
6	Charge overcurrent detection current 充电过电流检测电流	2.50	3.70	5.00	A
7	Overcharge detection delay time 过充电检测延迟时间	800	1000	1200	ms
8	Overdischarge detection delay time 过放电检测延迟时间	115.2	144.0	172.8	ms
9	Discharge overcurrent detection delay time 放电过电流检测延迟时间	9.6	12.0	14.4	ms
10	Charge overcurrent detection delay time 充电过电流检测延迟时间	6.4	6.0	9.6	ms
11	Load short-circuiting detection delay time 负载短路检测延迟时间	200	350	500	μs
12	Current consumption during operation (VDD=4.0V) 工作时消耗电流 (VDD=4.0V)	-	3	6	μA
13	Current consumption at stand-by (VDD=1.5V) 待机消耗电流 (VDD=1.5V)	-	-	0.5	μA
14	Breaker trip temperature Breaker动作温度	67	72	77	°C
15	0V battery charge function 0V电池充电功能	Available/允许			/

4.2 PCM SCH/保护板原理图



	Product Requirements		Model No: Bell Frog	Page 20 of 72
Prepared by:		Approved by:		
HyperX				Revision H

4.3 Main bill of PCM/保护板主要元件清单

No. 序号	Description 描述	Symbol 标识	Model 型号	Vendor 厂商	Qty 数量
1.00	IC	U1	HY2510AX-B6B (M)*	Hycon	1pcs
			S-8261DAX-M6T1U (S)	ABLIC	
2.00	MOSFET	Q1	CJCD2007 (M)	JSCJ	1pcs
			MS8310 (S)	Moores	
3.00	NTC	RT1	10k±1% B=3435k 0402	仙桥	1pcs

Firmware Features

Firmware Behavior and Requirement

Feature	Remark
Low Latency Mode	Headset Thru USB dongle Achieve ~50ms for playback latency (full system)
Equalizer	Minimum 5 band equalization
Connection Priority	ULL > BT (Dual Mode)
Standard Bluetooth Audio Profiles	Support standard Bluetooth 5.2 (Client) Profiles: <ul style="list-style-type: none">• A2DP 1.3 and AVDTP 1.3• AVRCP 1.6 and AVCTP 1.4• HFP 1.8 and RFCOMM 1.2• DI 1.3
Multi-link under Bluetooth Mode	Headset ability to connect with 2 Bluetooth devices simultaneously
Dual Connection Mode	Headset should be able to establish connection with USB dongle and Bluetooth device under HFP standby mode
Audio Codec (Dongle Mode)	LC3 Plus
Audio Codec (Bluetooth Mode)	Playback: SBC / MPEG-2 AAC Recording: HFP Decoder
Volume Setting on Headset	Volume should sync with PC Default volume setting should be 50% on PC, Mac, PS5 and PS4 under both ULL and Bluetooth connection Headset should always remember volume setting on PC
Speaker Configuration Support	Stereo
Equalizer	Required 4 preset setting under different use case Minimum 5 bands equalization
Packet Loss Concealment	Packet loss should cause minimal impact

	Product Requirements		Model No: Bell Frog	Page 21 of 72
	Prepared by: HyperX	Approved by:		Revision H
Microphone Input Processing	Noise Reduction (AINR, TBD)			
Tone Notification / Voice Prompt	Default behavior on headset is Tone Notification			
Sidetone	<ul style="list-style-type: none"> • Default “Off”, can be disabled thru software. • Should stay the same as the state before power cycle, unless factory resetting. 			
Battery Level Reporting	Headset ability to report battery level thru HID / BLE command with 1% interval			
Low Battery Alert	While battery hits below 10%, voice prompt: “Battery level low”			
Power Saving	<p>Automatic shutoff mechanism will be triggered if the headset is under below listed modes with mentioned conditions met,</p> <p>Searching Mode The headset shall automatically shut off if it stays in searching mode for over 3minutes.</p> <p>Connected Mode The headset shall automatically shut off if there is no signal output from device for 20 minutes. There shall be a counting loop for auto shutoff triggering. Firmware detects by seconds if there is any playback audio data, as in over a pre-set gain threshold. (test with 20-min ‘pure silence’ audio clip, headset should be auto shutoff after 20-min)</p> <p>If there is playback audio data detected for 2 consecutive seconds, counter resets. (test with 20-min audio clip with 19 min 57 second silence and 3 seconds audio, headset should not be powered off unless other condition is triggered)</p> <p>While in Low Battery When battery level is low (either detected/reported through gauge IC or main chipset), the headset should auto shutoff immediately.</p>			
Noise gate	<ul style="list-style-type: none"> • Default ON • HID commands are required to turn on/off noise gate using HyperX NGENUITY Gaming Software 			
Detachable microphone Detection	Need 1 GPIO pin to detect mic boom plug status			
Headset re-connected behavior	<ul style="list-style-type: none"> • Will need the HID command for this feature. • Dongle needs to notify OS status 			
Wireless Connection	When the dongle is powered on, the wireless link between the headset and dongle shall be automatically established if the headset is switched on and nearby.			

	Product Requirements		Model No: Bell Frog	Page 22 of 72
	Prepared by: HyperX	Approved by:		Revision H
Pairing Mode Timeout	Once the Dongle enters pairing mode, it will remain active for pairing inquiries for at most 1 minute. After 1 minute, it will exit pairing mode and revert to searching mode.			
Suspend Mode	When PC or MAC enters suspend mode, the dongle will enter suspend mode as well. It will turn off RF and LED so that the headset and dongle shall be disconnected. Once the PC or MAC resume, the dongle will automatically resume from suspend mode.			
Link Loss Reconnection	Once the headset is out of range (Link Loss). Dongle shall try to reconnect it back continuously.			
Headset Volume Setting	<ul style="list-style-type: none"> • Volume should sync with PC and BT device. Default setting should be 50% on PC. • Default volume setting should be 70% on PS5, PS4, and Mac. • Headset should always remember volume setting on PC and Mac 			
USB / HID Stack	<ul style="list-style-type: none"> • USB Audio Class (UAC) 1.0 • Enumerates as Stereo for Playback at 24bit 96kHz • Enumerates as Mono for Recording at 16bit 44.1kHz (TBD) • Endpoint for HID Class for Desktop App Control (HID API commands requirements in separate document) 			
Firmware Update	Firmware update via USB			
NTC Temperature	<0°C and >45°C need to stop charging (recommend setting 2°C as low temp threshold & 43°C as high temp threshold)			
Omen Connection	Required			
Audio Mixing (Dongle+BT)	Not Support			
Color Code	<ul style="list-style-type: none"> • Black: 0x00 • White: 0x01 • Red: 0x02 			
Mic Switch (Boom Mic / Internal Mic)	Based on boom mic status: <ul style="list-style-type: none"> • Plugged: boom mic • Unplugged: internal mic 			
Playback				
Output	Gain level: Maximum level output while complying with EN50332			
Sampling Rate (ULL)	ULL Mode: 48kHz / 96kHz (TBD), Default: 48kHz			
Bit Depth (ULL)	ULL Mode: 16/24bit (TBD)			
Channel Number setting	Stereo			

	Product Requirements		Model No: Bell Frog	Page 23 of 72
	Prepared by: HyperX	Approved by:		Revision H
Playback Volume Scale	2% Level difference in one step			
Minimum Power Output	Mute			
Default Playback Volume on Windows	50%			
Recording				
Mic Bias Voltage	> 2V			
Sampling Rate	ULL Mode: 16/48KHz (TBD) BT Mode: 16kHz			
Channel Number setting	Mono			
Bit Depth	16bit			
Default Recording Volume on Windows	100%			

14.2 Default State for Headset Function

Item	State
Mic	Default Unmute
Sidetone	Default Off
Connection Mode	ULL Mode
Device Function	Device State
Mic un-mute	LED Off

14.3 Headset Connection/Re-connection Events

Re-connection	Expected State
Headset Out of Range	<ul style="list-style-type: none"> Dongle needs to notify and update Headset device status to Host when Headset gets re-connected from out of range. All functions remain the same states as previous before connection lost.
Headset Power Cycle	<ul style="list-style-type: none"> Dongle needs to notify and update Headset device status to Host when Headset gets re-connected from powered off (to power on) All functions are set back to default.
Dongle Power On	<ul style="list-style-type: none"> When Dongle is powered on, the wireless link between Headset and Dongle shall be automatically established if the Headset is active and within range. All functions are set back to default

14.4 Headset Connection Behavior

14.4.1 Pure Dongle Mode

	Product Requirements		Model No: Bell Frog	Page 24 of 72
Prepared by:		Approved by:		
HyperX				Revision H

14.4.2 Pure BT Mode

14.4.3 Dual Mode

Firmware I/O Behavior

Headset Switch/Button/Wheel Behavior

Buttons & Switches (ULL)			
Event	Functions	Button Press Duration	Button
Power	Toggle headset on/off	Long Press (2s)	Power
Pairing Mode Dongle	To enter ULL pairing mode when connection mode is ULL and dual, while HS is off	Very Long Press (10s)	Power
Battery level	Toggle voice prompt for battery level status check	Single Press	Power
Mode Switching	Switch through 3 connection mode <ul style="list-style-type: none"> • Dongle mode • Dual mode • BT mode 	Slide (3positions)	Slider Switch
ULL Switching	Toggle between external dongle and transceiver (OMEN), if DIB flag is 0 and no Ralphie's paired information, will disable this function.	Double Press	Power
Mic Mute	Toggle mic mute/unmute	Single Press	Mic Mute
Sidetone	Toggle mic monitoring on/off	Long press (3s)	Mic Mute
Volume Wheel	Adjust playback gain	Wheel/Dial Rotation	Volume Wheel
Factory Reset	To initiate factory reset	Very Long Press (10s)	Power + MFB

*When long press power/mic mute button, headset should change power/sidetone status immediately without waiting for button release.

*There is no difference between modes, aside from controls for calls and media through BT A2DP and HFP

Buttons & Switches (BT A2DP/HFP, ULL + BT HFP)			
Event	Functions	Button Press Duration	Button
Pairing	While HS off, enter dongle pairing mode during slider is in Dual Mode.	Very Long Press (10s)	Power
Power	Toggle Headset on/off	Long Press (2s)	Power

	Product Requirements		Model No: Bell Frog	Page 25 of 72
	Prepared by:		Approved by:	
	HyperX			Revision H

Pairing Mode BT	To enter BT pairing mode	Long Press (2s)	Power + MFB
Battery Level	Toggle voice prompt for battery level check	Single Press (300ms)	Power
Mode Switch	Switch through 3 connection mode <ul style="list-style-type: none"> • Dongle mode • Dual mode • BT mode 	Slide (3positions)	Slider Switch
Mic Mute	Toggle mic mute/unmute	Single Press (300ms)	Mic mute
Sidetone	Toggle sidetone on/off	Long Press (3s)	Mic mute
Volume	Adjust playback gain	Wheel/Dial Rotation	Volume wheel
Answer Call	Answer Call	Single Press (300ms)	MFB
End Call	End Call (while call in progress)	Double Press (300ms)	MFB
Reject Call	Reject Call	Double Press (300ms)	MFB
Play/Pause	Play/Pause music (BT Mode)	Single Press (300ms)	MFB
Next Song	Skips to next song (BT Mode)	Double Press (300ms)	MFB
Previous Song	Skips to last song (BT Mode)	Triple Press (300ms)	MFB
Voice Assistant	Activates device voice assistant (BT Mode)	Long Press (2s)	MFB
Factory Reset	All functions are reset to default	Very Long Press (10s)	Power + MFB

Dongle Interactions

Buttons & Switches (BT A2DP/HFP, ULL + BT HFP)			
Event	Functions	Button Press Duration	Button
Pairing	While HS off, enter RF Pairing mode	Long Press (3s)	Pairing

15.3 Button Functionality (Headset)

Functionality when headset loses connection

Button Type	Functionality
Power	Default
Slider	Default
MFB	<ul style="list-style-type: none"> • Disabled media and phone control • Enabled to allow BT pairing
Mute	Disabled
Volume	Disabled

	Product Requirements		Model No: Bell Frog	Page 26 of 72
Prepared by:		Approved by:		
HyperX				Revision H

Firmware LED Behavior

Headset LED

Case	Conditions	Behavior
Searching	Searching mode	Blinking (remains until connected) Dual mode: Blinking Purple BT mode: Blinking Blue ULL mode: Blinking White
Connected	Connection successful	Dual mode: Solid Fade Purple BT mode: Solid Fade Blue ULL mode: Solid Fade White
Charge_H	Power Level (High): 100% (Charging mode)	Solid Green
Charge_M	Power Level (Medium): 10%~99% (Charging mode)	Breathing Green
Charge_L	Power Level (Low): <10% (Charging mode)	Breathing Red
Battery Status High	Power Level (High): 90%-100% (Discharged mode)	Solid Fade Green
Battery Status Med	Power Level (Medium): 10%~90% (Discharged mode)	Solid Fade Yellow
Battery Status Low	Power Level (Low): <10% (Discharged mode)	Solid Fade Red
Battery Status Very Low	Power Level: <10%	Blink Short Red
ULL Pairing	Under dongle pairing mode	Blinking Fast White
ULL Pairing Success	dongle pairing successful connection	Solid Fade White
BT Pairing	Under BT pairing mode	Blinking Fast Blue
BT Pairing Success	BT pairing successful connection	Solid Fade Blue

	Product Requirements		Model No: Bell Frog	Page 27 of 72
Prepared by: HyperX		Approved by:		Revision H

Power On	Power button pressed for 3s	Solid Fade White
Power Off	Power button pressed for 3s	Blink Short white to LED Off
Factory Reset	As soon as factory reset is initiated. Lighting behavior will end when the factory reset has been completed or interrupted.	Blinking Double Red-White
Firmware Update	As soon as firmware update is initiated. Lighting behavior will end when the firmware update has been completed or interrupted.	Solid Yellow
Update Success	As soon as update is complete	Solid Fade White
Update Fail	As soon as the update is interrupted or ends without completing.	Solid Fade Red
MIC LED		
Mic mute	Microphone is mute	LED on
Mic unmute	Microphone is unmute	LED off

Dongle LED

Case	LED Behavior
Searching	Blinking White (remains until connected)
Connected	Solid White (remains on until disconnected or suspended)
Pairing	Blinking Fast White
Suspend	LED Off
Resume	LED Off
Firmware Update	Solid Yellow (As soon as the firmware update is initiated. Lighting behavior will end when the firmware update has been completed or interrupted.)
Update Success	Solid Fade White (As soon as the update is complete)

	Product Requirements		Model No: Bell Frog	Page 28 of 72
	Prepared by: HyperX		Approved by:	Revision H

Update Fail	Solid Fade Red (As soon as the update is interrupted or ends without completing the task)
-------------	---

16.3 LED Timing Behavior

Name	Pattern
Solid	LED on
Solid-50	On at limited power (to conserve energy)
Solid-Fade	On 4s – Falling 1s
Solid-Double	Color A 500ms – Color B 500ms (repeating)
Breathing	Rising 2s – On 500ms – Falling 2s – Off 500ms (repeating)
Breathing 5s	Rising 2s – On 500ms – Falling 2s – Off 5s (repeating)
Blinking	On 500ms – Off 500ms (repeating)
Blinking Fast	On 100ms – Off 100ms (repeating)
Blinking-Hold	On 250ms – Off 250ms – On 2s
Blinking-Short	On 250ms – Off 250ms – On 250ms
Blinking-Double	Color A 250ms – Off 250ms – Color B 250ms – Off 250ms (repeating)
Cycle	Continuous color transition – 250ms for each defined color (repeating)

Firmware Audio Cues

Headset behavior

Function	Event	Behavior on Headset	Timing	Note
Fade Out	Entering Notifications	Source will fade out from current volume within 100ms.	Before playing notifications	Should save current volume level
Fade In	Exiting Notifications	Source will fade in from current volume within 400ms.	After notifications are played.	Should restore previous current volume level
Playback Volume during voice prompt	Playback volume	Fix playback volume as 10% during playing voice prompt/tone		
Playback Levels for Voice prompts	Voice prompt levels	if playback is <40%, play voice prompt at 30% If playback is <70%, play voice prompt at 50% If playback is >70%, play voice prompt at 70%		

	Product Requirements		Model No: Bell Frog	Page 29 of 72
	Prepared by:	Approved by:		
	HyperX			

Tone Notifications

State	Behavior	Conditions
Power On	Tap Long.mp3	As soon as headset is powered on.
Power Off	Power Off.mp3	As soon as headset is powered off.
Muted	Mic Off.mp3	As soon as mic is muted.
Unmuted	Mic On.mp3	As soon as mic is unmuted.
Sidetone On	Sidetone On.mp3	As soon as sidetone is turned on.
Sidetone Off	Sidetone Off.mp3	As soon as sidetone is turned off.
Connected	Connected.mp3	As soon as any connection is successful.
Disconnected	Disconnected.mp3	As soon as the connection is lost.
Low Battery	Low Battery.mp3	As soon as battery reaches <10%.
%Battery Status	Use voice prompts.	Use voice prompts.
Volume Max	Volume Max.mp3	As soon as volume maximum reached.
Volume Min	Volume Min.mp3	As soon as volume minimum reached.

Voice Prompt

State	Behavior	Conditions
Power On	Power On.mp3	As soon as headset is powered on.
Power off	Power Off.mp3	Just before headset shuts down.
Disconnected	Disconnected.mp3	As soon as when both adapter and BT connections are lost.
Connected to Dongle	Connected to Adapter.mp3	As soon as headset establish connection.
Connected to BT	Connected to Bluetooth.mp3	As soon as headset establish connection.
Mic Mute	Mute On.mp3	As soon as mic is muted.
Mic Unmute	Mute Off.mp3	As soon as mic is unmuted.
Low Battery	Low Battery.mp3	As soon as battery reaches <10%.
100% Battery	100% Battery.mp3	Reporting level: 95%-100%=>100%.
90% Battery	90% Battery.mp3	Reporting level: 85%-94%=>90%
80% Battery	80% Battery.mp3	Reporting level: 75%-84%=>80%
70% Battery	70% Battery.mp3	Reporting level: 65%-74%=>70%
60% Battery	60% Battery.mp3	Reporting level: 55%-64%=>60%
50% Battery	50% Battery.mp3	Reporting level: 45%-54%=>50%
40% Battery	40% Battery.mp3	Reporting level: 35%-44%=>40%
30% Battery	30% Battery.mp3	Reporting level: 25%-34%=>30%
20% Battery	20% Battery.mp3	Reporting level: 15%-24%=>20%
10% Battery	10% Battery.mp3	Reporting level: 10%-14%=>10%

	Product Requirements		Model No: Bell Frog	Page 30 of 72
Prepared by: HyperX		Approved by:		Revision H

DEVICE API REQUIREMENTS

Custom Desktop APIs via Case

Device supports the following functions needed for a desktop factory application via vendor commands. It is preferred to utilize Set/Get Reports.

** All set commands require notification to indicate commands are set successfully

Feature	Remark
Get Device Information (One command to fetch required device info)	<p>One command to get devices descriptions below:</p> <ol style="list-style-type: none"> 1. Headset Firmware version 2. Manufacturing string 3. Device name 4. Connection info for ULL <ul style="list-style-type: none"> • Disconnect • ULL Pairing • Connected • Searching 5. Connection info for BT <ul style="list-style-type: none"> • Disconnect • BT Pairing • HFP Standby 6. Noise gate status <ul style="list-style-type: none"> • On • Off 7. Sidetone status <ul style="list-style-type: none"> • Mute • Unmute 8. Mic status <ul style="list-style-type: none"> • Mute • Unmute 9. Charging status <ul style="list-style-type: none"> • Discharging • Charging • Fully charged 10. Boom mic status <ul style="list-style-type: none"> • Plugged • Unplugged 11. Connection Mode <ul style="list-style-type: none"> • ULL Mode • BT Mode

	Product Requirements		Model No: Bell Frog	Page 31 of 72
Prepared by:		Approved by:		Revision H
HyperX				
	<ul style="list-style-type: none"> • Dual Mode 			
Dongle status	<p>Set/get commands are both required:</p> <ul style="list-style-type: none"> • Searching • Pairing • Paired 			
Battery status	<p>Current battery level % (1% interval)</p> <ul style="list-style-type: none"> • Battery Voltage • Battery Level % 			
Charging status	<ul style="list-style-type: none"> • Fully charged • Charging • Discharging 			
Sidetone volume	<ul style="list-style-type: none"> • Set sidetone volume • Get current sidetone volume 			
Sidetone status	<p>Set/get sidetone status:</p> <ul style="list-style-type: none"> • On • Off 			
Pairing mode	<p>Set pairing mode</p> <ul style="list-style-type: none"> • Entering ULL pairing mode • Exiting ULL pairing mode • Entering BT pairing mode • Exiting BT pairing mode 			
Dongle ID	Able to fetch dongle ID			
Auto shut-off timing	<p>Set/get auto shut off timing</p> <ul style="list-style-type: none"> • Default 20min • Support: off, 10mins, 20mins, 30mins 			
Microphone status	<p>Set/get mic status</p> <ul style="list-style-type: none"> • Mute • Unmute 			
Microphone volume	Set/get mic volume			
Firmware update	Required			
Noise gate On and Off toggle	To turn on/off noise gate			
Set/get noise gate volume	Able to adjust/read noise gate volume			
Mic Boom status	<p>Get command</p> <ul style="list-style-type: none"> • Plugged • Unplugged 			
Playback Mute On/Off	<p>Set/get playback mute</p> <ul style="list-style-type: none"> • Mute • Unmute 			

HYPERX	Product Requirements		Model No: Bell Frog	Page 32 of 72
Prepared by: HyperX		Approved by:		Revision H

Set/get EQ Gain	Set/get the gain of EQ
Set/get EQ Profiles	Set/get current EQ profile
Set/Get Notification Type	Set/Get Notification Type <ul style="list-style-type: none"> • Tone Notification • Voice Prompt

18.2 Required Firmware Notification

Feature	Remark
Low battery mode	While battery hits defined level (9%), there shall be a notification sent from device to host therefore HyperX NGENUITY can update GUI accordingly
Microphone mute status changed	Device should inform host if mic is on or off triggered by users so HyperX NGENUITY software can update GUI accordingly
Sidetone on/off status changed	Device should inform host if sidetone is on or off triggered by users so HyperX NGENUITY software can update GUI accordingly
Mic boom status	<ul style="list-style-type: none"> • While boom mic is plugged in • While boom mic is unplugged
Connection mode	Device should inform host if connection mode is triggered by users so HyperX NGENUITY software can update GUI accordingly <ul style="list-style-type: none"> • ULL mode • BT mode • Dual mode
Charging Status	Device should inform host if charging status is changed by users so HyperX NGENUITY software can update GUI accordingly <ul style="list-style-type: none"> • Charging • Discharging

Mechanical Specification

Headphone specification

No	Item	Specification	Conditions/References /Comments
1	Type of Ear Cup	Over ear	
2	Ear Cup Tilt Angle	Ear cup upward/ downward tilt (default + 5° / - 30°)	



Product Requirements

Model No:
Bell Frog

Page
33 of 72

Prepared by:

HyperX

Approved by:

Revision
H

3	Ear Cup Thickness	From edge of the earcup to the bottom of the ear cushion should be < 2.25 inches	
4	Ear Cup L Controls	a. Mute button b. Power LED indicator c. Power button d. USB type C socket e. Mute LED indicator on mic boom	
5	Ear Cup R Controls	a. Multi-function button b. Volume wheel c. Mode slide button	
6	Driver Tilt Angle	10 degrees	
7	Headband	Extendable Design Maximum length: 40mm Foam: 6503 Foam (Ref. cloud III) Cover Material: PU leather DE-123# lip Logo Style: Heat stamping logo	
8	Clamping Force (N)	3.75N+/-0.75N	
9	Fork Sliding Force	5.5+/-2N	
10	Acoustic Type	Closed Back	
11	Weight	Less than 355 ± 10% g (Headset 343 g + Boom 12g)	

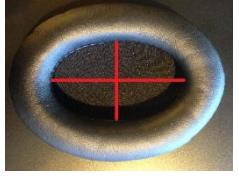
Microphone specification:

No	Item	Specification	Conditions/References /Comments
1	Mic Boom Design	Detachable (thin tube covered gooseneck) Bendable (gooseneck needs to be able to bend vertically)	
2	LED	LED mute indicator on Mic boom	

HYPERP	Product Requirements		Model No: Bell Frog	Page 34 of 72
Prepared by:		Approved by:		
HyperX				Revision H

3	Mic Boom Foam	No need	
4	Size of Microphone Unit	10mm	
5	Condenser Type	ECM, BUM1045L-n422AC- (Gettop Acoustic CO., LTD.)	
6	Polar Pattern	Uni-directional	

Earpads specification:

No	Item	Specification	Conditions/References /Comments
1	Design	Over Cup	Approved vendor: UBO
2	Model	HX138	Center mesh: 小眼網布 Center foam: YR50PPI
3	Dimension	Outer dimensions: Length: 110.12mm Width: 87.97mm Inner dimensions: Length: 66.87mm. Width: 44.43mm.	
		Thickness: 21.5mm	
		Height: 25mm Minimum(external)	
4	Material (outer leather)	M: Black Version and Red Version: AR74 Korea protein / White Version: Silk Leather SY002	
5	Material (inner foam)	Foam: 622C-24mm	
6	Inner holes	3	



Product Requirements

Model No:
Bell Frog

Page
35 of 72

Prepared by:

HyperX

Approved by:

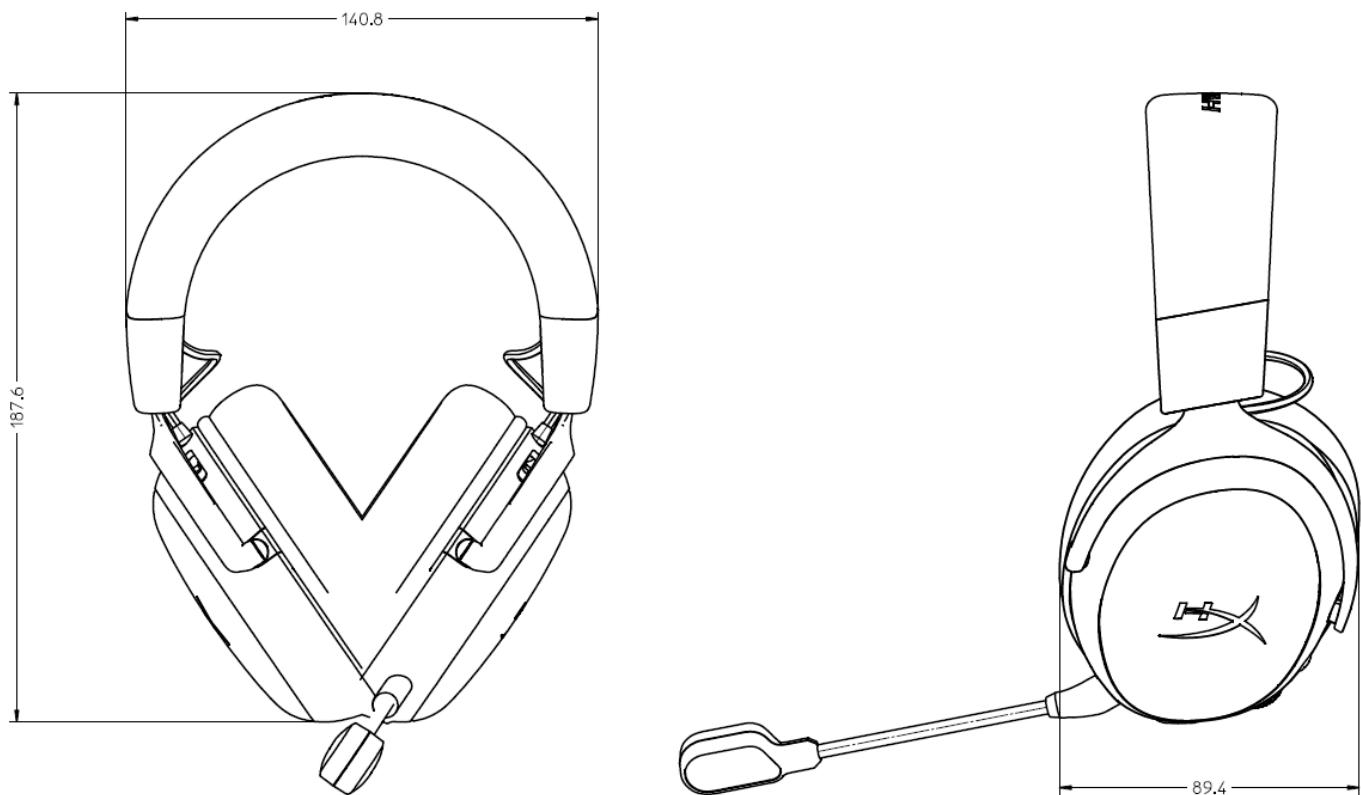
Revision
H

Accessory specification:

No	Item	Specification	Conditions/References /Comments
1	Dongle	USB type C Male, LED indicator	
2	Adapter	USB type C Female to USB type A Male	
3	Charging Cable	USB type C Male to USB type C Male Non-Braided cable Length – 0.5M / OD: 3.7mm	

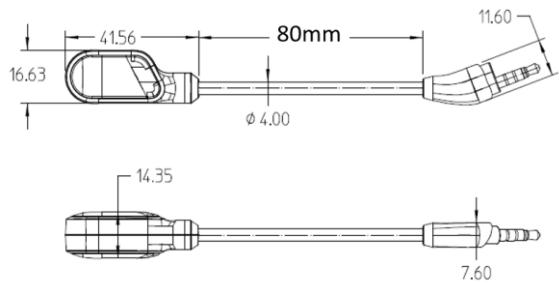
DIMENSION

Headphone

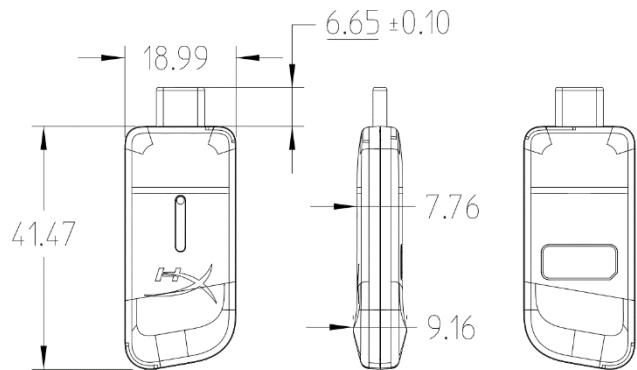


HYPERX	Product Requirements		Model No: Bell Frog	Page 36 of 72
Prepared by: HyperX		Approved by:		Revision H

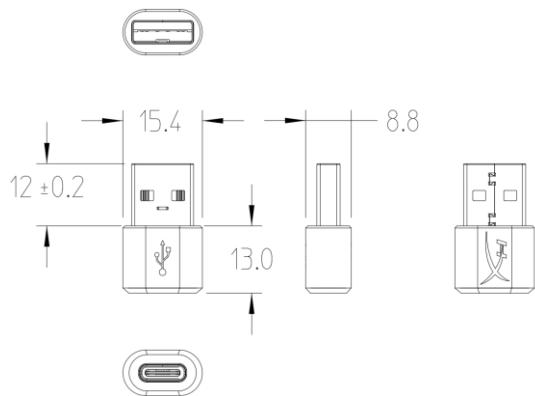
Mic Boom



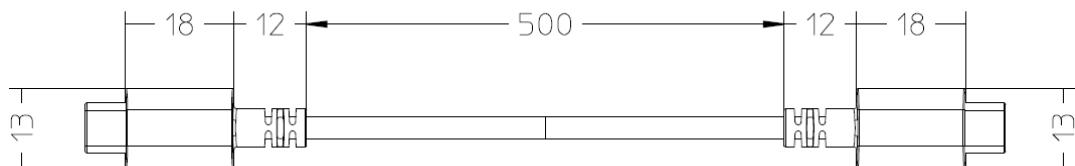
Dongle



Adapter

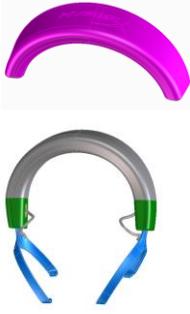


Charging cable



HYPERX	Product Requirements		Model No: Bell Frog	Page 37 of 72
Prepared by:		Approved by:		
HyperX				Revision H

Part List

Item	Picture	Parts Name	Commodity Class	Material (CMF)	Usage Q'ty
Headband Ass'y					1
1		Headband PAD	Cushion	C: Black Version and Red Version: HX Black, White Version: Ceramic white M: PU leather DE-123# lip+ memory foam 6503 + EVA (The foam on logo side and EVA inside the headband pad need to fabricate by hot-pressed.) F: Satined Matte / Heatstamped HyperX logo on synthetic leather (debossed) glossy than headband Semi-finished headband will be assembled by UBO	1
2		Headband Metal	Metal	65#manganese steel ED / BLACK	1
3		Headband cable	Cable	Φ2.7X10CX600mm C: Black Version: Black / Red Version: HX Black and HX Red / White Version: Angel silver M: Braided cable F: Matte	1

		Product Requirements		Model No: Bell Frog	Page 38 of 72
Prepared by:	Approved by:				Revision H
HyperX					
4		Buckle Metal L	Metal	C: Black Version and Red Version: HX Black / White Version: Ceramic white M: AL 1070 F: Black Version and Red Version: Anodized/ Sandblasting # 150 (metallic satin) / White Version: Painting, Satin matte L icon: Black Version and Red Version: Black, Laser marking / White Version: Angle silver, Laser marking	1
5		Buckle inner L	Plastic	C: PMS Black M: PC+ABS	1
6		Buckle outer L	Plastic	C: PMS Black M: PC+ABS	1
7		Buckle Inlay	Rubber	C: Black Version and Red Version: HX Black / White Version: Ceramic white M: Silicone Rubber Shore A60 F: Matte / HMT11007	2
8		Buckle Metal R	Metal	C: Black Version and Red Version: HX Black / White Version: Ceramic white M: AL 1070 F: Black Version and Red Version: Anodized/ Sandblasting # 150 (metallic satin) / White Version: Painting, Satin matte R icon: Black Version and Red Version: Black, Laser marking /	1



Product Requirements

Model No:
Bell Frog

Page
39 of 72

Prepared by:

HyperX

Approved by:

Revision
H

				White Version: Angle silver, Laser marking	
9		Buckle inner R	Plastic	C: PMS Black M: PC+ABS	1
10		Buckle outer R	Plastic	C: PMS Black M: PC+ABS	1
11		Slider Clip L	Plastic	C: Black Version and Red Version: PMS Black / White Version: White M: POM F: Matte / HMT11007	1
12		Slider Clip R	Plastic	C: Black Version and Red Version: PMS Black / White Version: White M: POM F: Matte / HMT11007	1
13		Slider Click L	Plastic	C: Nature (White) M: POM F: Polished #1500	1
14		Slider Click R	Plastic	C: Nature (White) M: POM F: Polished #1500	1

HYPER		Product Requirements			Model No: Bell Frog	Page 40 of 72
Prepared by: HyperX		Approved by:				Revision H
15		Fork L	Metal	C: Black Version: HX Black, Red Version: HX Red, White Version: Angel silver M: AL 5052 F: Anodized/ Sandblasting # 150 (metallic satin)	1	
16		Fork R	Metal	C: Black Version: HX Black, Red Version: HX Red, White Version: Angel silver M: AL 5052 F: Anodized/ Sandblasting # 150 (metallic satin)	1	
17		Screw PB T1.7*L8mm	Screw	PBT1.7*L8mm, OD ⌀ 3.0 Cross groove Black Zinc Plated	4	
18		Screw KB T1.7*L6mm	Screw	KB 1.7X6mm OD ⌀ 3.0 Quincunx groove T5, Black Version and Red Version: Black Zn, White Version: White Version: Silver, Nickel plated	4	
Earcup Ass'y					1	
19		Ear Cup Housing L (New tooling part for Bell Frog)	Plastic	C: Black Version and Red Version: HX Black / White Version: Ceramic white M: ABS757 F: Matte HMT11007 / Matte HMT11007 (HMI Zone) Approved vendor: Mold – Tech	1	

		Product Requirements		Model No: Bell Frog	Page 41 of 72
Prepared by:	Approved by:				Revision H
HyperX					
20		Ear Cup Housing R <i>(New tooling part for Bell Frog)</i>	Plastic	C: Black Version and Red Version: HX Black / White Version: Ceramic white M: ABS757 F: Matte HMT11007 / Matte HMT11007 (HMI Zone) Approved vendor: Mold - Tech Printing for BT/2.4G/Dual mode: Black Version and Red Version: PMS 8401C / White Version: PMS COOL GREY 7C	1
21		Logo Plate Outer Cover L <i>(New tooling part for Bell Frog)</i>	Metal	Logo plate C: Black Version and Red Version: HX Black, White Version: Ceramic White M: AL 1100 F: Black Version and Red Version: Anodized / Sandblasting # 150 (metallic satin), White Version: Painting / Satin matte Logo C: Black Version: Metallic Grey PMS 8401C, Red Version: HX RED, White Version: Angel silver F: Black Version and Red Version: Anodized / Sandblasting # 150, White Version: Printing / metallic satin	1
22		Logo Plate Inner Cover L <i>(New tooling part for Bell Frog)</i>	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: Option 1 - ABS 85% PCR GAR-011(H85) ZY S2B-G1732, Option 2 - ABS 95% PCR GAR-011(H95) ZY S2B-G1732 F: Matte HMT11007	1

		Product Requirements		Model No: Bell Frog	Page 42 of 72
Prepared by:	Approved by:				Revision H
HyperX					
23		Logo Plate Outer Cover R <i>(New tooling part for Bell Frog)</i>	Metal	<p>Logo plate</p> <p>C: Black Version and Red Version: HX Black, White Version: Ceramic White</p> <p>M: AL 1100</p> <p>F: Black Version and Red Version: Anodized / Sandblasting # 150 (metallic satin) , White Version: Painting / Satin matte</p> <p>Logo</p> <p>C: Black Version: Metallic Grey PMS 8401C, Red Version: HX RED, White Version: Angel silver</p> <p>F: Black Version and Red Version: Anodized / Sandblasting # 150, White Version: Printing / metallic satin</p>	1
24		Logo Plate Inner Cover R <i>(New tooling part for Bell Frog)</i>	Plastic	<p>C: Black Version and Red Version: HX Black, White Version: Ceramic White</p> <p>M: Option 1 - ABS 85% PCR GAR-011(H85) ZY S2B-G1732, Option 2 - ABS 95% PCR GAR-011(H95) ZY S2B-G1732</p> <p>F: Matte HMT11007</p>	1
25		Magnet Ø5*2mm	Magnet	N52 Magnet Ø5*2mm Silver, Nickel plated	12
26		Chamber L <i>(New tooling part for Bell Frog)</i>	Plastic	<p>C: HX Black</p> <p>M: Option 1 - ABS 85% PCR GAR-011(H85) ZY S2B-G1732, Option 2 - ABS 95% PCR GAR-011(H95) ZY S2B-G1732</p>	1

HYPER	Product Requirements		Model No: Bell Frog	Page 43 of 72
	Prepared by: HyperX	Approved by:		Revision H

				F: Matte	
27		Chamber R (New tooling part for Bell Frog)	Plastic	C: HX Black M: Option 1 - ABS 85% PCR GAR-011(H85) ZY S2B-G1732, Option 2 - ABS 95% PCR GAR-011(H95) ZY S2B-G1732 F: Matte	1
28		SPK Plate L (New tooling part for Bell Frog)	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: Option 1 - ABS 85% PCR GAR-011(H85) ZY S2B-G1732, Option 2 - ABS 95% PCR GAR-011(H95) ZY S2B-G1732 F: Matte	1
29		SPK Plate R (New tooling part for Bell Frog)	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: Option 1 - ABS 85% PCR GAR-011(H85) ZY S2B-G1732, Option 2 - ABS 95% PCR GAR-011(H95) ZY S2B-G1732 F: Matte	1
30		SPK Cable	Cable	OD: Ø 1.0mm ; 2C ; Length:110mm	2
31		SPK Plate Acoustic Paper	Acoustic Paper	Y4 Mesh + 3M9448 tape 27.5mm*9.8mm C: White	4

		Product Requirements		Model No: Bell Frog	Page 44 of 72
Prepared by:	Approved by:				Revision H
HyperX					
32		Chamber EVA mesh	Acoustic Paper	B145HY Mesh+ EVA + 3M9448 tape+ 1035B + 3M9448 tape 23.5mm*9.3mm*0.85mm Black C: Black Version and Red Version: Black, White Version: White	6
33		Chamber Inner Mesh	Acoustic Paper	B145HY Mesh + 1035B+ 3M9448 tape 21.8mm*8.0mm C: Black Version and Red Version: Black, White Version: White	4
34		Hinge	Plastic	C: Black Version and Red Version: HX Black, White Version: Angel silver (match to Fork) M: POM F: Matte HMT11007	4
35		Ear Pad	Cushion	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: Black Version and Red Version: AR74 Korea protein White Version: Silk Leather SY002 Foam: 622C-24mm Speaker foam: YR50991-2mm / Black Version and Red Version: HX Black, White Version: Ceramic White (stitch in the bottom) Inner Mesh: Color: Black Version and Red Version: HX Black, White Version: Angle Silver Material: Fabric Finish: Matte Approved vendor: UBO	2

		Product Requirements			Model No: Bell Frog	Page 45 of 72
		Prepared by: HyperX	Approved by:			Revision H
36		Tube	Rubber	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: Silicone Rubber Shore A60 F: Matte		2
37		Volume Wheel	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: ABS757 F: Matte HMT11007 Approved vendor: Mold - Tech		1
38		Mute Button	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: ABS757 F: Matte HMT11007 / icon Polish # 3000		1
39		Power Button	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: ABS757 F: Matte HMT11007 / icon Polish # 3000		1
40		Multi-function button (New tooling part for Bell Frog)	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: ABS757 F: Matte HMT11007 / icon Polish # 3000		1
41		Mode slide button (New tooling part for Bell Frog)	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: ABS757 F: Matte HMT11007		1

	Product Requirements			Model No: Bell Frog	Page 46 of 72
	Prepared by:	Approved by:			Revision H
	HyperX				

42		Mode slide button holder	Plastic	C: Nature (White) M: POM F: Matte HMT11007	1
43		Power Status LED Light Guide	Plastic	C: Translucent M: ABS758 F: Matte	1
44		Battery tape	EVA	3M 3M9448 tape 30.0mm*12mm*1mm	2
45		Battery EVA	EVA	EVA + 3M9448 tape ¢ 30.0mm*0.5mm	1
46		Screw KB T2*L7mm	Screw	KB2X7mm OD ¢ 3.6 Cross groove Black Zinc Plated	4
47		Screw PWA T1.6*L6mm	Screw	PWA1.6X6mm OD ¢ 4.7 Cross groove Nickel plated	7
48		Screw PB T2*L5mm	Screw	PB2X5mm OD ¢ 3.5 Cross groove Black Zinc Plated	6
49		Screw PA T2*L8mm	Screw	PA2X8mm OD ¢ 3.6 Cross groove Black Zinc Plated	8

HYPERP		Product Requirements			Model No: Bell Frog	Page 47 of 72
Prepared by: HyperX		Approved by:				Revision H
50		Built-in microphone mesh	Mesh	3M9448 tape + SAATI mesh + 3M9448 tape C: Black 7.625mm*4mm*0.35mm		2
51		Built-in microphone Cable	Cable	OD: Ø 1.5mm ; 4C ; Length:80mm		2
MIC BOOM Ass'y						1
52		Boom MIC Molding - sub	Cable	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: DC 3.5 plug/ OD4.0mm Gooseneck + heat shrink tube/ SR molding (PP/TPE) / MIC cable OD: Ø 1.2mm ; 4C, Mic boom length: 80mm F: Matte HMT11007		1
53		Microphone Outer Housing	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: ABS PA-758 translucent F: Matte HMT11007 Approved vendor: Mold - Tech		1
54		Microphone Sponge	Sponge	C: Black Version and Red Version: PMS Black C, White Version: Silver (match as possible) M: Sponge F: Matte		2
55		Microphone Inner Housing	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: ABS PA-758 translucent F: Matte HMT11007 Approved vendor: Mold - Tech		1

HYPERP		Product Requirements			Model No: Bell Frog	Page 48 of 72
Prepared by:		Approved by:				Revision H
HyperX						

56		MIC Rubber	Rubber	C: PMS Black M: Silicone Rubber Shore A60 F: Matte	1
57		Microphone Outer Mesh	Metal	C: Black Version and Red Version: HX Black, White Version: Angle silver M: Metal Mesh SUS304 Finish: metallic satin (PVD+Painting)	1
58		Microphone Inner Mesh	Metal	C: Black Version and Red Version: HX Black, White Version: Angle silver M: Metal Mesh SUS304 Finish: metallic satin (PVD+Painting)	1
59		Microphone Nylon Mesh	Mesh	C: Black Version and Red Version: HX Black, White Version: Silver (match as possible) M: Nylon Mesh 150 # F: Matte	2
60		Shading EVA	EVA	C: PMS Black C M: EVA+3M9448A tape F: Matte	1
Dongle					1
61		Wireless Dongle Top Cover	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: ABS PA-758 translucent F: Matte HMT11007 / HX logo and LED area Polish # 3000	1

HYPERX		Product Requirements			Model No: Bell Frog	Page 49 of 72
Prepared by: HyperX		Approved by:				Revision H
62		Wireless Dongle Rear Cover	Plastic	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: ABS PA-758 translucent Black F: Matte HMT11007 / Compliance Logo Polish # 3000 Tooling Marking (Glossy)+Laser carving	1	
63		Wireless Dongle Sponge	EVA	EVA+3M9448B Black	1	
Adapter						1
64		USB Adapter (Type-C to Type-A)	Adapter	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: type-A USB & type-C USB SUS304 silver + TPE + PP molding F: Matte HMT11007 / HyperX logo and USB logo Polish	1	
Cable						1
65		USB C to C Charging cable	Cable	C: Black Version and Red Version: HX Black, White Version: Ceramic White M: TPE 80A + PP F: Matte HMT11007 / HyperX logo & TYPE C logo &USB LOGO Polished, Length – 0.5M / Diameter – OD.3.7mm / with Cable tie	1	
Others						1

HYPERX®	Product Requirements		Model No: Bell Frog	Page 50 of 72
Prepared by: HyperX		Approved by:		Revision H

66		Damping oil	lubricating oil	LWD-3241	0.2g
----	--	-------------	-----------------	----------	------

*The table excludes EE, AE components, inner cables, lubricating oil, glue and other additional die cut parts.

CMF





Product Requirements

Prepared by:

HyperX

Approved by:

Model No:
Bell Frog

Page
51 of 72

Revision
H



PERX CONFIDENTIAL

— PART
- - - FINISH





Product Requirements

Model No:
Bell Frog

Page
52 of 72

Prepared by:

HyperX

Approved by:

Revision
H



Saved to this PC





Product Requirements

Prepared by:

HyperX

Approved by:

Model No:
Bell FrogPage
53 of 72Revision
H

Front view

Plug
Color : Black (#CPN-90-08-21-31-0001)
Material : TPE
Finish : HMT11007HX logo
PolishedUSB logo
Polished

SR

SR
Color : Black (#CPN-90-08-21-31-0001)
Material : TPE
Finish : HMT11007Plug
Color : Black (#CPN-90-08-21-31-0001)
Material : TPE
Finish : HMT11007

CONFIDENTIAL

PART
ADDITIONAL TREATMENTHEADBAND PAD
Color : Ceramic white
Material : Leatherette
Finish : Satin matteHOT STAMPING LOGO
Finish : GlossyBUCKLE INLAY
Color : Ceramic white
Material : Silicone rubber shoreA 60
Finish : Satin matte / HMT11007 (L)BUCKLE
Color : Ceramic white
Material : Metal (Al)
Finish : Painting / Satin matteL / R ICON
Color : Angel silver
Finish : Laser etchingFORK
Color : Angel silver
Material: Metal (Al)
Finish : Anodized / SandblastedHEADBAND WIRE
Color : match to Angel silver
Material: Woven textile cable
Finish : Braided / Satin matteEARPAD
Color : Ceramic white
Material: Leatherette
Finish : Satin matte
INNER MESH
Color : Angel Silver(Match)
Material: Fabric
Finish : MatteEARCUP
Color : Ceramic white
Material: Plastic
Finish : Satin matte / HMT11007 (L)POWER LED:
Color : Translucent
Material: Plastic
Finish : matteEARCUP LOGO PLATE
Color : Ceramic white
Material: Metal (Al)
Finish : Paint / Satin matte
LOGO
Color : match to Angel silver
Finish: Printing / metallic satinVOL. WHEEL
Color : Ceramic white
Material: Plastic
Finish : Satin matte / HMT11007 (L)EARCUP LOGO INNER PLATE
Color : Ceramic white
Material: Plastic
Finish : Satin matte / HMT11007 (L)
MO DAY YEAR | PROJECT



Product Requirements

Model No:
Bell Frog

Page
54 of 72

Prepared by:

HyperX

Approved by:

MENDEZ SKU_002

CMF

PART
ADDITIONAL TREATMENT

3

HX DESIGN STUDIO
ID TEAM

MUTE BUTTON
Color : Ceramic white
Material: Plastic
Finish : Satin matte / HMT11007 (L)

MUTE BUTTON ICON
Finish : Polish #3000

POWER BUTTON
Color : Ceramic white
Material: Plastic
Finish : Satin matte / HMT11007 (L)

POWER BUTTON ICON
Finish : Polish #3000

MULTIFUNCTION BUTTON
Color : Ceramic white
Material: Plastic
Finish : Satin matte / HMT11007 (L)

MULTIFUNCTION BUTTON ICON
Finish : Polish #3000

MIC OUTER HOUSING
Color : Ceramic white
Material: Plastic
Finish : Satin matte / HMT11007 (L)

MIC OUTER MESH
Color : Angle silver
Material: Metal mesh
Finish : Satin matte

GOOSENECK
Color : Ceramic white (match as possible)
Material: Heat-shrink tube

MODE BUTTON
Color : Ceramic white
Material: Plastic
Finish : Satin matte / HMT11007 (L)

MODE BUTTON INDICATOR
Color : PMS COOL GREY 7C
Finish : printing

> CONFIDENTIAL

11.15.2018

Dongle bottom cover
C: Ceramic White
M: Plastic
F: Matching to HMT-11007 (Satin Matte)

Polished
* As long as label can stick on.

Polish #3000

WRGB led

HX LOGO / Polish #3000

Dongle front cover

C: Ceramic White
M: Plastic
F: Matching to HMT-11007 (Satin Matte)
(Matching with bottom cover)



Product Requirements

Model No:
Bell Frog

Page
55 of 72

Prepared by:

HyperX

Approved by:

Revision
H



BELL FROG (WHITE)
CMF

PART
ADDITIONAL TREATMENT

SR
Color : Ceramic white
Material: Plastic (TPE)
Finish : HMT-11007 #18 (L)

Cable
Color :: Ceramic white
Material: TPE

Type-C to Type-A Adapter
Color : Ceramic white
Material: Plastic (TPE)
Finish : HMT-11007 (L) Matte

HX Logo/All Icons
Finish : Polish



22.1 Sustainable material validation: Product will validate new PCR plastics in earcup (ABS) and PIR metal in earcup logo plate & fork (Alu alloy). Here are recommended grades for validation.

PCR ABS: 95% PCR contain

PIR metal: AL5052 (PIR50%+PCR5%) and AL1060 (PIR85%)

Packaging

Bell Frog PKG CMF_ RFQ

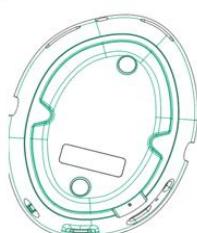
Label Plan

On Headset



X00000XXXX Assy P/N: XXXXXXXXXX
Spare Part No.: XXXXXXXX-XXXX
Model/Name: XXXXXXXX-X
Made in China/中国制造
Cloud XXXXXX XXXXX
XXXXXXXXXXXX

13. SKU label



0123456789
M/D:YYMM
reg@hp.com

12. Traceability label

On Dongle

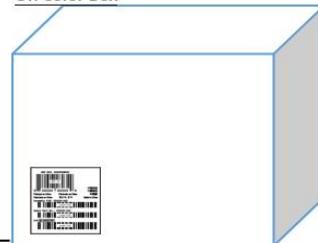


Spare Part No: X00000XXXX
Model/Name: XXXXXXXX
Made in China/中国制造
Cloud XXXXXX XXXXX
XXXXXXXXXXXX

13. SKU label

7. UPC Label

On Color Box





Product Requirements

Prepared by:	Approved by:
HyperX	

Model No:
Bell Frog

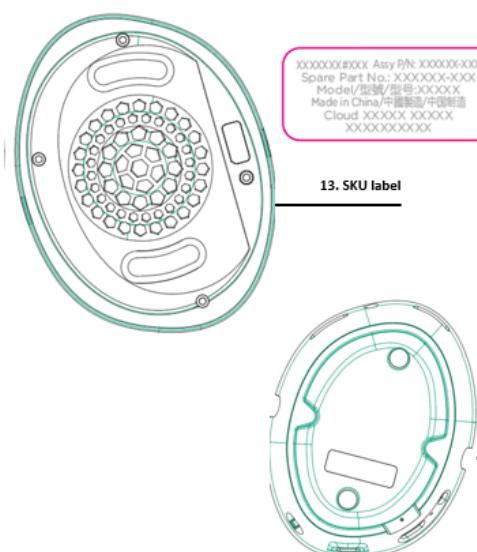
Page
56 of 72

Revision
H

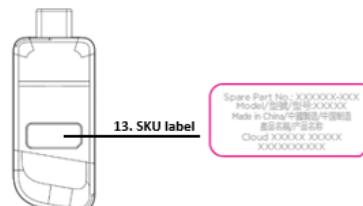
Bellfrog (White)PKG CMF_RFQ

Label Plan

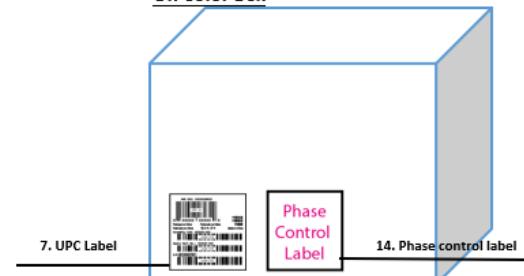
On Headset



On Dongle



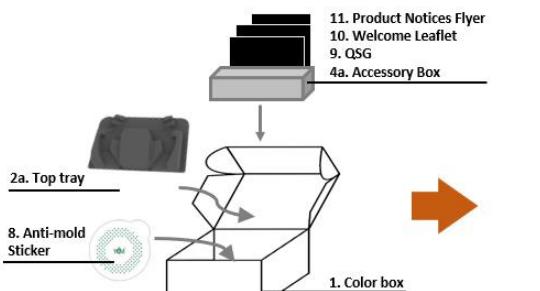
On Color Box



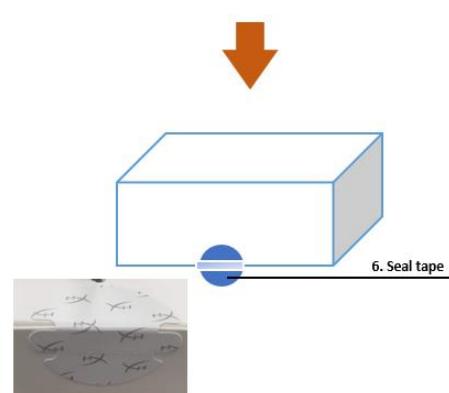
HYPERX CONFIDENTIAL

Bell Frog PKG CMF_RFQ

Pack Plan



Accessory Packaging



HYPERX CONFIDENTIAL



Product Requirements

Prepared by:	Approved by:
HyperX	

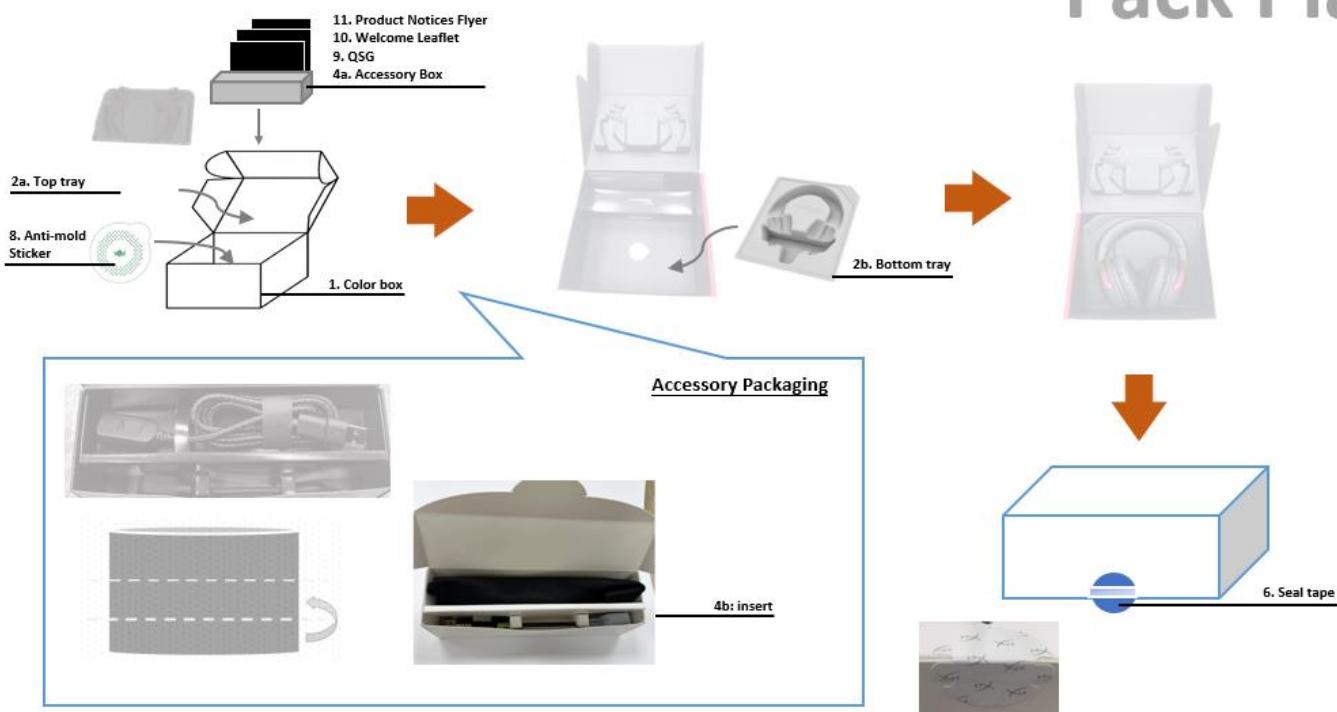
Model No:
Bell Frog

Page
57 of 72

Revision
H

Bellfrog (White)PKG CMF_RFQ

Pack Plan



HYPERX CONFIDENTIAL

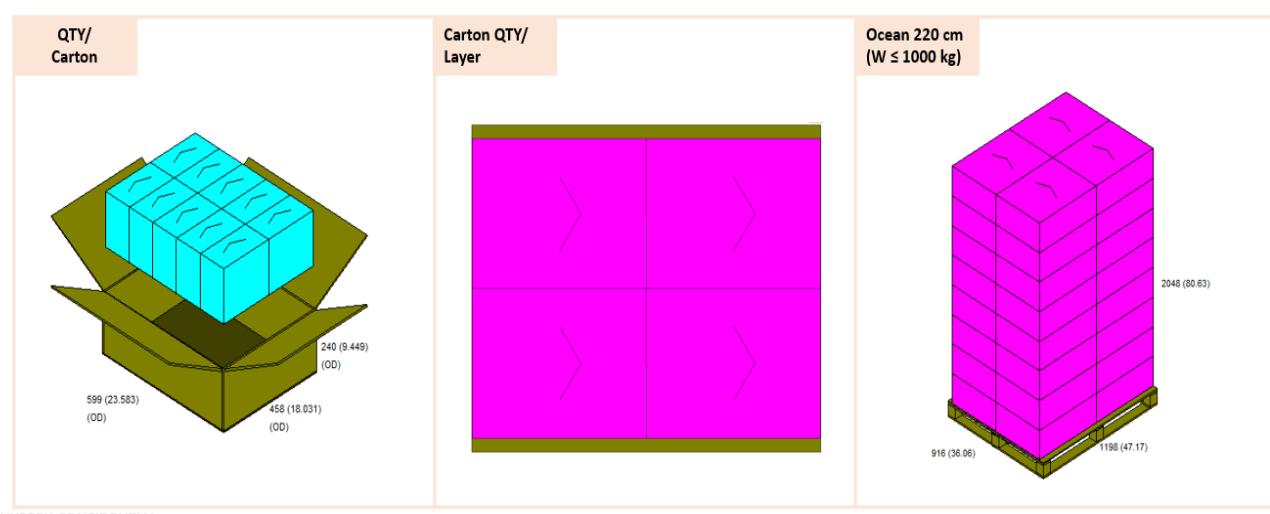
6

Bell Frog PKG CMF_RFQ

Pallet Plan

Single Box O. Dimension	
Length (mm)	117.00
Width (mm)	222.00
Height (mm)	212.00

MOT	Pallet QTY	QTY/Carton	Carton/Layer	Layer/Pallet	Carton/Pallet
Ocean 220cm	320			8	32
Ocean 250cm	360	10	4	9	36
Air 160cm	200			5	20



HYPERX CONFIDENTIAL

5



Product Requirements

Model No:
Bell Frog

Page
58 of 72

Prepared by:

HyperX

Approved by:

Revision
H

Bell Frog PKG CMF_RFQ

Using items in Project

Packaging

No.	Item	Bells
	Sleeve	0
1	Color Box	1
	Inner Box	0
2	Inner Structure (a:Top tray/ b:Bottom tray)	2
3	Hanger	Embed
4	Accessory Box (a:Box/ b:Insert)	2
5	Tie (in-Line/ Cable)	2
6	Seal Tape	1
7	UPC Label (Blank Label + DCMS)	1
8	Anti-Mold Sticker	1

Attendant

No.	Item	Bells
9	QSG	1
10	Welcome Leaflet	1
11	Product Notices Flyer	1
	Coupon Leaflet	0
	Product Label (Label + DCMS)	0
12	Traceability Label	1
13	SKU Label (Audio)	2
14	Accessory (Pouch)	1
15	Paper Film for Ear Cup	2

Items

- QTY = Plus: adding component
- QTY = Embed: have the feature
- P/N and BOM refer to appendix

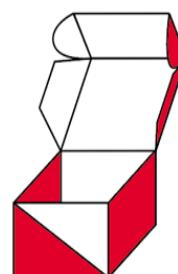
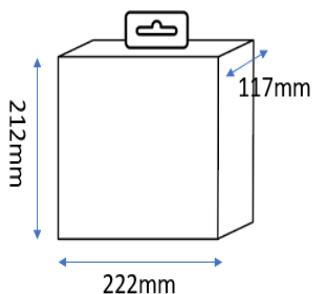
HYPERX CONFIDENTIAL

8

Bell Frog PKG CMF_RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
1	Color Box	Outer: CMYK + 1PMS Inner: n/a	350g CCNB + brown E-flute + Black inner paper	Outer: DP coated film(無塑塗層膜) Outer Spot UV: YES Inner: n/a	Dieline: 210 x 220 x 115 mm O.D.: L212 x W222 x H117 mm(± 2)	Including Recycled Content Thresholds 35% or above.



HYPERX CONFIDENTIAL

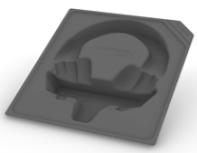
9

HYPERX®	Product Requirements			Model No: Bell Frog	Page 59 of 72
Prepared by:		Approved by:			
HyperX					

Bell Frog PKG CMF_RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
2a	Top tray	n/a	Black PULP, wet press.	n/a	(L)204x(W)135x(H)54mm (± 1)	Marking: 1. P/N 2. Recycle marking 3. Cavity# Including Recycled Content Thresholds 40% or above.
2b	Bottom tray	n/a	Black PULP, wet press.	n/a	(L)225x(W)205x(H)47.5mm (± 1)	Marking: 1. P/N 2. Recycle marking 3. Cavity# Including Recycled Content Thresholds 40% or above.



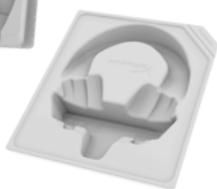
HYPERX CONFIDENTIAL

10

Bellfrog (White)PKG CMF_RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
2a	Top tray	n/a	White PULP, wet press	n/a	(L)204x(W)135x(H)54mm (± 1)	Marking: 1. P/N 2. Recycle marking 3. Cavity# Including Recycled Content Thresholds 40% or above.
2b	Bottom tray	n/a	White PULP, wet press	n/a	(L)225x(W)205x(H)47.5mm (± 1)	Marking: 1. P/N 2. Recycle marking 3. Cavity# Including Recycled Content Thresholds 40% or above.



HYPERX CONFIDENTIAL

10



Product Requirements

Model No:
Bell Frog

Page
60 of 72

Prepared by:

HyperX

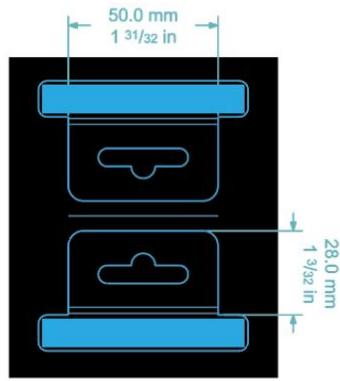
Approved by:

Revision
H

Bell Frog PKG CMF_ RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
3	Hanger	Black	350G black card + yellow Eflute + 350G black card	N/A	L 80 x W 40 mm (± 0.2)	<ol style="list-style-type: none">1. Embedded on the box.2. Including Recycled Content Thresholds 35% or above.



HYPERX CONFIDENTIAL

9



Product Requirements

Model No:
Bell Frog

Page
61 of 72

Prepared by:

HyperX

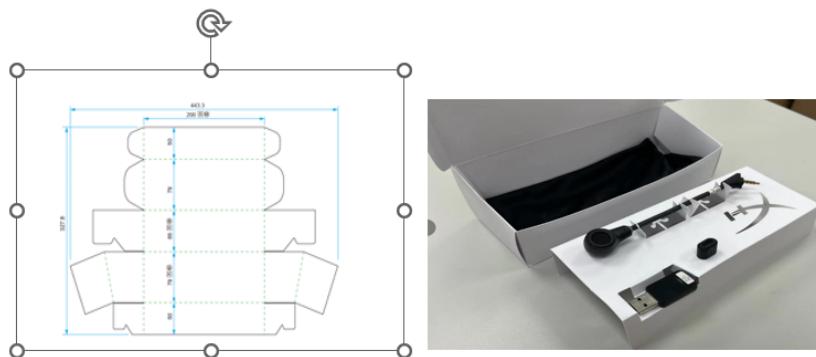
Approved by:

Revision
H

Bell Frog PKG CMF_ RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
4a	Accessory box	Inside: Black Outside: Black	350G C1S FBB	Aqueous varnish on both sides.	Die-line: 成型尺寸 : L200*W79*H65mm 展开尺寸 : L443.3*W327.8mm	Including Recycled Content Thresholds 40% or above.
4b	Accessory box insert	Inside: Black Outside: Black	350G C1S FBB	Aqueous varnish on both sides.	Die-line: 成型尺寸 : L196*W77*H35mm 展开尺寸 : L196*W147mm	Including Recycled Content Thresholds 40% or above.



Bell Frog PKG CMF_ RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
5b	Tie-cable	n/a	200G black card	n/a	Width: 20mm	Including Recycled Content Thresholds, please feedback on BOM list.

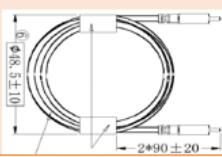
HYPERX CONFIDENTIAL

13

HYPERP	Product Requirements			Model No: Bell Frog	Page 62 of 72
	Prepared by:		Approved by:		
	HyperX				Revision H

Bellfrog (White)PKG CMF_RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
5a	Tie for dongle	n/a	牛油紙	n/a	Width: 20mm 	Including Recycled Content Thresholds, please feedback on BOM list.

HYPERX CONFIDENTIAL

13

Bell Frog PKG CMF_RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
6	Seal Tape	Cool gray 6C	157G art paper 180° release force \geq 1200gf.	Aqueous varnish	$\Phi 49mm (\pm 0.2)$ 	Including Recycled Content Thresholds, please feedback on BOM list.
7	UPC Label	Pre-Print: N/A Second-Print : Black	80g Coated Paper	N/A	L38 x W38, R=1.5 (± 0.2)	<ol style="list-style-type: none"> Traceability: HWC-QACI-018.xxx Material spec and printing spec: HWC-MDEG-003.xxx Including Recycled Content Thresholds, please feedback on BOM list.
8	Anti mold sticker	N/A	N/A	N/A	35.5*35.5mm 	

HYPERX CONFIDENTIAL

12

HYPERP	Product Requirements	Model No: Bell Frog	Page 63 of 72
Prepared by: HyperX	Approved by:		Revision H

Bell Frog PKG CMF_ RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
9	QSG	Front: K Back: K	60g Text Paper	Front: N/A Back: N/A	O.D. L139.7 x W107.95 mm (± 1) Die-Cut: L698.5 x W215.90 mm (± 1)	1. Folding: 5 times 2. DieLine: HWC-MES-005.XXX (8 Panel) 3. May need 2 version for both Black and White version. 4. Including Recycled Content Thresholds, please feedback on BOM list.
10	Welcome Leaflet	Front: K+PMS 877C Back: K+PMS 977C+CMYK	200G Coated Paper C2S	Outer: Matte PP Outer Spot UV: N/A Inner: Matte PP	L140 * W108mm (± 1)	1. Folding: 0 time. 2. Including Recycled Content Thresholds, please feedback on BOM list.
11	Product Notices Flyer	Front: K Back: K	60g Text Paper	Front: N/A Back: N/A	O.D. L106.0 x W106.0 mm (± 1) Die-Cut: L318.0 x W106.0 mm (± 1)	1. Folding: 2 times 2. Including Recycled Content Thresholds, please feedback on BOM list.
12	SKU label	Pre-Print: PMS black 6C + Black	50# 乳白 PET	Matte film	L12.4 x W5.4 mm (± 0.2)	HWC-MDEG-003-003,5.11
13	Traceability Label	Black	50# white PET	N/A	L27 x W8 mm (± 0.2)	HWC-MDEG-003-003,5.2

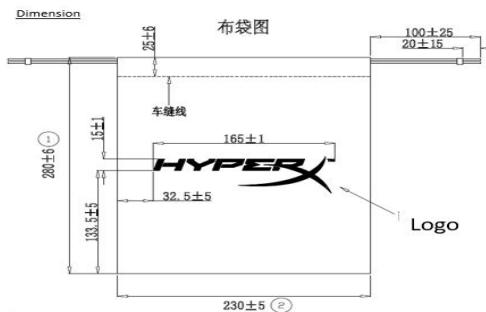
HYPERX CONFIDENTIAL

15

Bell Frog PKG CMF_ RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
14	Bag	Black.	Refer to Alpha Pouch.	Refer to Alpha pouch	L280 x W230 mm	
15	Paper Film for Ear Cup	100g art paper(黑色)	材質：100g		L92*W56 mm	



HYPERX CONFIDENTIAL

16



Product Requirements

Model No:
Bell Frog

Page
64 of 72

Prepared by:

HyperX

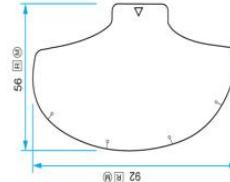
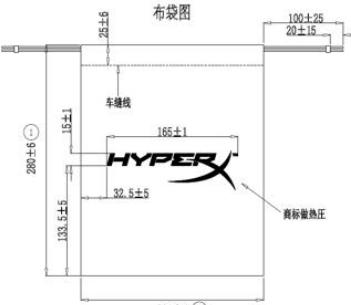
Approved by:

Revision
H

Bellfrog (White)PKG CMF_RFQ

SPEC

No.	Items	Color/Print	Material	Finish	Dimension	Others
14	Phase control label	Pre-Print: N/A Second-Print : Black	80g Coated Paper	N/A	L38 x W38, R=1.5 (± 0.2)	1. Traceability: HWC-QACI-018.xxx 2. Material spec and printing spec: HWC-MDEG-003.xxx 3. Including Recycled Content Thresholds, please feedback on BOM list.
15	Bag	White	Refer to <u>Alpha Pouch.</u>	Refer to <u>Alpha Pouch.</u>	L280 x W230 mm	
16	Paper Film for Ear Cup	100g art paper(黑色)	材質 : 100g			



HYPERX CONFIDENTIAL

16

Compliance and Regional requirement

SATETY:

NRTL Certification shall be issued by Nationally Recognized Laboratory i.e. TUV, etc.

A Competent Body CB certification report and Certificate will be created based on the requirements of IEC standard with all National Deviations.

ITEMS	STANDARDS	CERTIFICATIONS
Safety (Host)	UL 62368-1 / CAN/CSA C22.2 No. 62368-1-14	NRTL Certification
	IEC 62368-1 / EN 62368-1	CB Certification
Acoustic for personal music player (PMP)	EN 50332-1 (Sound system equipment) EN 50332-2 (Headphones and earphones) * Evaluated separately or under IEC/EN 62368-1	CB Certification

EMC:

Products subject to EMC regulations in any country must have an EMC test report to the latest officially accepted version of the standards.

FCC CFR 47 Part 15 / ICES-003, Class B

EN 55032 / CISPR 32 Class B ;EN 55035 / CISPR 35 ;EN 61000-3-2; EN 61000-3-3 ;EN 301 489-x

*All EMC test reports must be obtained from a HP TCOP approved test lab.

RF:

HYPERX	Product Requirements		Model No: Bell Frog	Page 65 of 72
	Prepared by: HyperX			Revision H

Products having a radio transmitter must have a radio test report to the latest officially accepted version of FCC or EU standard, or target country requirements.

ITEMS	STANDARDS	CERTIFICATIONS
Telecom	EN 300 328; EN 300 440	EU RED Directive
SAR	EN 50663; EN 62479; EN 50360; EN 50556 FCC 47 CFR Part 2 & ANSI/IEEE C95.1-1999/IEEE C95.3-2002/IEEE P1528-2003	EU RED Directive FCC Grant
	IC RSS-102, RSS-210	IC Certificate
Products with radios shall only be shipped to countries where their frequency bands are legally permitted.		

BATTERY:

The Battery Pack shall comply with HP BDR (Battery Design Requirements) for construction and Component Requirements.

Target country requirements: Taiwan BSMI / CNS 15364:102 ; Japan PSE Appendix 9 ; Korea KC / K62133-2 ; China GB 31241-2022 ; India IS 16046 (PART 2) /IEC 62133-2

The battery pack polymeric parts shall be constructed of UL "Recognized" plastic.

External parts shall be flame rated of 94V-0, 75°C or better.

Internal polymeric parts shall be flame rated of 94V-2, 75°C or better.

ITEMS	STANDARDS	CERTIFICATIONS
Cell	UL 1642 (Cell)	UL Recognized Component *
Battery Pack	UL2054 (Battery Pack)	UL Recognized Component *
Cell / Battery Pack	IEC/EN 62133-2 (Battery Lithium Systems)	CB Certification
Battery	UN Transportation Testing (UN38.3) and PI96X for Lithium Batteries	Report Check with HX PLM

The component shall comply with the latest version of the following specifications:

Object/part no.	Technical Data	Standard
Plastic Enclosure	HB or better, 60°C	UL 94, UL 746C CAN/CSA C22.2 No. 0.17

	Product Requirements		Model No: Bell Frog	Page 66 of 72
	Prepared by: HyperX	Approved by:		Revision H
PCB	V-1 or better, 105°C	UL 796 CAN/CSA C22.2 No. 0.17		
USB cable (Type C)	--	EN IEC 62680-1-2/ EN IEC 62680-1-3		
LED sensor	--	IEC62471		
USB cable	VW-1	UL2556/ IEC60332		

Product Environmental Requirement

- Follow WW Channel HyperX Peripheral Product Environmental Compliance Specification (**HWC-COMS-001.xxx**)
- Be compliant with US The Consumer Product Safety Improvement Act (CPSIA)
- Be compliant with Canada SOR/2011-17, SOR/2016-188, SOR/2018-83

Product Test Report Requirement

For products to sell in China, supplier needs to apply for certification with report that contains CMA, ilac-MRA and CNAS (as logos below).



中国认可
国际互认
检测
TESTING
CNAS L0296

Reliability Requirement

Will do Reliability for both Normal Plastic & PCR Plastic in DVTx stage



Product Requirements

Model No:
Bell Frog

Page
67 of 72

Prepared by:

HyperX

Approved by:

Revision
H

Pre-condition

No	Item	Condition	Specification	Specimen
1	Frequency response	* Initial * Record the FR data	AE Curve not exceed to the limit	Sample for Drop test, Ramdon vibration test, HTS, LTS, TCT,
2	Function check	Initial	Function as normal	all samples
3	Appearance	* FG Color/ Scratch / Damage / Gap /Contamination / burr... not allowed * Printing/Coating Color/ Pin hole/Ilegible/contamination/Shift...not allowed * L/M, label Clear and no brust * LED lightness LED lighting	No problem	all samples

Mechanical test

Generic items

No	Item	Condition	Specification	Specimen
1	Drop test	*Headset (with microphone) 1.5m, one time per face, total : 6 times on metal floor which thicker than 3mm. *Dongle/Control box 1.0m, one time per face, total : 6 times on metal floor which thicker than 3mm.	Mechanical Check - Fitting parts were not bust, crack. - Loose standard can be defined by Engineer team -Tear down d-check for DOE incl. Screw, Soldering, gluing, pressing Acoustic Check - FR discrepancy (Before/ After testing): 1. Headset :100-2KHz (± 3 dB); After 2KHz (FR in spec.) 2. Microphone :100-2KHz (± 3 dB); After 2KHz (FR in spec.) - Listening test: No noise - Recording function normal	3pcs
2	Ramdon Vibration test(without package)	PS.D : 5~100 Hz 0.015G^2/Hz, 100~200Hz -6dB/oct (0.0038 G^2/Hz at 200Hz) Overall Grms: 1.48grms Frequency : 5~200HZ Direction: 3 axis (X,Y,Z direction) Duration:1 hour per direction	Mechanical Check - Fitting parts were not bust, crack. - Loose standard can be defined by Engineer team -Tear down d-check for DOE incl. Screw, Soldering, gluing, pressing Acoustic Check - FR discrepancy (Before/ After testing): 1. Headset :100-2KHz (± 3 dB); After 2KHz (FR in spec.) 2. Microphone :100-2KHz (± 3 dB); After 2KHz (FR in spec.) - Listening test: No noise - Recording function normal	3pcs
3	Switch force	Encoder VR Sliding switch Tact switch	Encoder: 175+/-125g-cm VR: 175+/-125g-cm Slideing switch: 3~5N Tactility switch: 3~5N	3pcs
4	Knob/Switch/Button durability	Encoder: 10000 times with 360-degree, 20cycles/min VR: 10000 times , 20cycles/min Sliding switch: Loading: 300g, Frequency: 25-30 time/min, testing cycle: 5000 cycles Tactility Switch: Initial pushing force is 500g +/-100g, testing cycle is 10000 times, about 15 times per minute. Pushing force: average force + 100 grams Class I: 50000 cycles , 20cycles/min (vol+/- , chat and playing music) Class II: 5000 cycles , 20cycles/min (Mute, Dolby, Pairing and Battery checking button)	No functional question No noise Force Difference after test < +/-30%	3pcs
5	Button press force test	30N , 10sec	No damage Functional test	3pcs
6	Kid safety requirement	Follow EN71-1, ASTM 963 standard. In order to prevent tiny components are swallowed from kids. Small part has to guarantee its attached ability. clip the testing part then pull it out with 10mm/min.	>3kg	3pcs

	Product Requirements		Model No: Bell Frog	Page 68 of 72
Prepared by:		Approved by:		Revision H
HyperX				

Headset

No	Item	Condition	Specification	Specimen
1	Clamping force	open the headset to W160 mm, H130mm Stay for 1 minute then test the clamping force Head pad doesn't be supported, ear pad need fitting jig during test.	5N	3pcs
2	Clamping force durability	Enlarge the headset, and open from 100 to 210mm, 3000 times, 20 times/min	initial - 30% off function test	3pcs
4	Lateral over expansion cycle test	Enlarge the headset at full extraction status, and open to 300mm, 20 times, 10 times/min	Slider function has to be normal	3pcs
5	Sliding lock force	Initial locker force Validate by manual	700 ~800g	3pcs
6	Sliding lock force durability	5000 cycles, 10 times/min	1. Ear cup wouldn't drop down when take headband hanging a 100g weight. 2. Functional test inspection	3pcs
7	Sliding pulling against	Step 1: Pulling force: 150N, 10sec Step 2 : Measurement limit	Step 1: No damage Step 2: Record the breaking force	3pcs
9	Fork and spk rear cover rotate torque test	50N	function test	3pcs
10	Ear cup torque test	250N-cm	Breaking torque needs to over 250N-cm.	3pcs
11	Mic. Boom bending durability	Rotaring radius is 3 cm Step 1 : 500 times, +60 degree, 10 times/min Step 2 : Step 2 :1000 times, ±90 degree, 10 times/min	Step 1: No noise and flex pipe should be hold position. Step2: Function normal	3pcs
12	Mic. Housing twisting durability	1000 times, +90/-90 degree, 10 times/min 1 time means + 90 and -90 degrees"	1. No noise on pipe housing can't split from boom 2. Mic Housing should be able to move back after twisting to limited position.	3pcs
13	Static pull force of MIC tube	Step 1: 10kg , 10sec Step2 : Measurement limit	Functional test No noise	3pcs
15	Mic torque force	Mic rotating point from 90 to 135 degrees	3.8+/-2.6N. Mic boom falls automatically is not allowed at lower limit, Mic boom should be normally rotated at upper limit.	3pcs
16	Mic torque force durability	Step 1 : 3000 cycles, locker force, 10 times/min Step 2 : 5000 cycles , only check Functionality should be normal	initial - 30% off function test	3pcs
24	Ball drop test for wheel (VR/encoder)	Steel ball weight : 250 g Height : 150 cm Ball drop times : 1 time	1. Listening test: No noise 2. Wheel function normal 3. No damage	3pcs
26	Pushing force against for metal part.	Use Dia, 3cm steel stick with 50N force pushing on center of metal part for 30 seconds. (on product) Less than 3cm. Can be discard.	Deformation/ Dent is not allowed	3pcs
27	Earcup deco cover magnet force	Initial magnet force	Magnet force : Defined by Engineering	3pcs
28	Earcup deco cover durability	Opne the deco cover > Close the deco cover 3000 cycles, 20 cycles/min	Deco cover magnet function as normal	3pcs

Cable / SR /Audio plug/ USB connector / Audio jack /USB Receptacle

No	Item	Condition	Specification	Specimen
1	Swing test of cable & SR	*Audio cable (Audio plug) Step 1 : +/- 90 degree, R3 , 20 times/min, 10000 cycles Cable diameter 1.0 ~ 2.4mm , 100g 2.5 ~ 3.0mm , 150g 3.1 ~ 4.0mm , 300g Step 2 : Measurement limit or achieve 20000 cycles ° *USB cable (Standard A, Type C) +/- 90 degree, R3 , 20 times/min, 5000 cycles Cable diameter 1.0 ~ 2.4mm , 100g 2.5 ~ 3.0mm , 150g 3.1 ~ 4.0mm , 300g	Function test Impedance increase should not be greater than 50%. (Each wire must be individually recorded, but does not include shielding.)	3pcs

		Product Requirements		Model No: Bell Frog	Page 69 of 72
		Prepared by: HyperX	Approved by:		Revision H
2	SR Shock test	*Headset -Cable length: 50 cm, 10 times -Plug direction: vertical & horizontal -Weight: base on headset's weight *Dongle & Cable plug -Cable length: 50 cm, 10 times -Plug direction: vertical & horizontal -Weight: 250g	Plug: No damage Functional existed		3+3pcs
3	Static pulling test for SR	Apply 8kg with 10 sec; Direction : 180 degree Cable length: 50 cm	No mechanical damage found Functionality should be normal		3pcs
4	Bending Test - Audio plug pin	1. Fix the last pin of the plug on the fixture, the jig width: d2.5mm plug, width is 4mm. d3.5mm plug, width is 5mm. 2. Apply a pushing force in tip of plug remaining 10 seconds. Speed is 25mm/min. 3. Inspect appearance, construction and function.	After pushing force with 8kgf, plug function should be normal, no permanent deformation, each joint can't be loosened. After pushing force with 10kgf, Plug can't be broken.		3pcs
5	Pulling test- Audio plug	*20N, 10 sec	No damage		3pcs
6	Bending test - (Audio/USB) Plug	*Plug of cable (Audio plug/ standard A/ type C) Plug (Fix Headset then press Audio plug) 25N, 20mm, 4 direction, 3 cycles with 10 seconds *Tx dongle (Standard A) 20N, 40mm, 4 direction, Velocity is 10mm/min provide the maximum strength force. *Tx dongle (type C) 23N, 35mm, 4 direction, Velocity is 10mm/min provide the maximum strength force.	No damage Function test		3pcs
7	Torque test - USB connector	*Tx dongle only (Standard A/Type C) +/- 3 degree, 500 cycles, 10 time/min	No damage Functional test		3pcs
8	Plug insertion/extraction force test	Removal /Insertion speed – at a maximum rate of 12.5 mm(0.492") per minute	*Stand A connector Removal Force – 10-25N Insertion Force – 10-35N *Type C connector Removal Force – 8-20N Insertion Force – 5-20N *Audio plug Removal/Insertion Force – 6-30N		3pcs
9	Plug Insertion/extraction durability test	*Stand A connector Test cycle: 1500 insertion/extraction cycles at a maximum rate of 200 cycles/hrs *Type C connector Test cycle: 10000 insertion/extraction cycles at a maximum rate of 500 cycles/hrs *Audio plug Test cycle: 1500 insertion/extraction cycles at a maximum rate of 1200 cycles/hrs	Functionality should be normal No mechanical damage found *Stand A connector Removal Force > 10N at a maximum rate of 12.5 mm(0.492") per minute Insertion Force <35N at a maximum rate of 12.5 mm(0.492") per minute *Type C connector Removal Force > 6N at a maximum rate of 12.5 mm(0.492") per minute Insertion Force <20N at a maximum rate of 12.5 mm(0.492") per minute *Audio plug Removal/Insertion Force 6~30N at a maximum rate of 12.5 mm(0.492") per minute		3pcs

	Product Requirements		Model No: Bell Frog	Page 70 of 72
Prepared by:		Approved by:		Revision H
HyperX				

10	Pushing test- Audio Jack/ USB Receptacle	Pushing force 70N	Functional test	3pcs
11	Bending test -Audio Jack/USB Receptacle	50N at 15mm from the edge of the receptavle : each directions(4 directions)	Function test	3pcs

Environmental stress

No	Item	Condition	Specification	Specimen
1	HTS (High Temperature Storage)	55°C, 85%RH Duration : 48 hours	Mechanical Check - Fitting parts were not bust, crack. - Loose standard can be defined by Engineer team -Tear down d-check for DOE incl. Screw, Soldering, gluing, pressing Acoustic Check - FR discrepancy: 100-2KHz (± 3 dB); After 2KHz (FR in spec.) - Listening test: No noise - Recording function normal	3pcs
2	LTS (Low Temperature Storage)	-10°C Duration: 48 hours	Mechanical Check - Fitting parts were not bust, crack. - Loose standard can be defined by Engineer team -Tear down d-check for DOE incl. Screw, Soldering, gluing, pressing Acoustic Check - FR discrepancy: 100-2KHz (± 3 dB); After 2KHz (FR in spec.) - Listening test: No noise - Recording function normal	3pcs
3	TCT (Temperature Cycle Test)	-10°C ~ 55 °C Duration: 5 cycles Zone 1: 60 min. Zone 2: <= 60 min Zone 3: 60 min, Zone 4: <=30 min	Mechanical Check - Fitting parts were not bust, crack. - Loose standard can be defined by Engineer team -Tear down d-check for DOE incl. Screw, Soldering, gluing, pressing Acoustic Check - FR discrepancy: 100-2KHz (± 3 dB); After 2KHz (FR in spec.) - Listening test: No noise - Recording function normal	3pcs
4	HTO (High Temperature Operation)	40+/-3°C, 60+/-5 %RH Duration : 24 hours Input rated power with Pink Noise bandwidth rated power	Mechanical Check - Fitting parts were not bust, crack. - Loose standard can be defined by Engineer team -Tear down d-check for DOE incl. Screw, Soldering, gluing, pressing Acoustic Check - FR discrepancy: 100-2KHz (± 3 dB); After 2KHz (FR in spec.) - Listening test: No noise - Recording function normal	3pcs
5	LTO (Low Temperature Operation)	-10°C Duration : 24 hours Input rated power with Pink Noise bandwidth rated power Wireless headset need to be connected to the power cord for this test	Mechanical Check - Fitting parts were not bust, crack. - Loose standard can be defined by Engineer team -Tear down d-check for DOE incl. Screw, Soldering, gluing, pressing Acoustic Check - FR discrepancy: 100-2KHz (± 3 dB); After 2KHz (FR in spec.) - Listening test: No noise - Recording function normal	3pcs
6	UV Light Resistance Test	For finish good, 1. Light Source : UVA-340 2. Irradiance : 0.72w/m ² 3. Wavelength : 340nm 4. Irradiation (dry) : 70oC 5. Distance : 5cm 6. Testing time : For all cosmetic parts :72 hours	1.Color shifts less than 4 of 5 according to grey scale ISO 105-A02 for dark colors 2.Color shifts less than 4.5 of 5 according to grey scale ISO 105 - A03 for light colors	3pcs
7	Salt Spray Test (metal parts)	ASTM B117 Temperature : 35°C Salt concentration: 5% PH value:6.5~7.5 Test time:24hr	No cosmetic issue found No peeling off or any visual defect observed on tested surface. Discoloration is unacceptable.	3pcs

	Product Requirements		Model No: Bell Frog	Page 71 of 72
	Prepared by: HyperX	Approved by:		Revision H

8	ESD	Internal/ODM testing SPEC Contact Discharge: +/- 8kV Air Discharge: +/- 12kV Discharge ten (10) times who focus on gap and opening.	Function and Visual must meet requirement of Headset product inspection criteria. Acoustic Check - FR discrepancy: 100-2KHz (± 3 dB); After 2KHz (FR in spec.); - Listening test: No noise - Recording function normal	3pcs
9	Chemical Test (finish good)	Temperature: 45°C Humidity: 90% Testing period: 24 hours Chemicals: sunscreen lotion (SPF 50), olive oil, Hand cream, Hair Gel, Human Perspiration($\text{PH } 6.50 \pm 0.10$) 1. Using the pipette to apply chemicals as below onto the surface of product 2. Leave the chemical on the surface for 24 hours at room temperature 3. After the 24 hours, wipe off the chemical from the surface with cloth lightly 4. Check the sample visually after two hours recovery time	Acceptance Criteria Product should function normally after test Any change in color, surface roughness, blistering or cracking is a fail.	1pcs (Each of chemicals)
10	移形試驗 (migration)	For leather and fabric 72 hrs., Weight with 500g , 50mm diameter of Contact area, test board material: ABS, PC 55°C, 50%RH	No change	3pcs

Acoustic : Input Power capability				
No	Item	Condition	Specification	Specimen
1	Rated input power	100% of rated input power for specification, 100hr	1. Functional test 2. No damage 3. FR check: Headset : 100 ~ 2K Hz(± 3 dB) / After 2KHz (FR in spec.) Microphone: 100 ~ 2K Hz(± 3 dB) / After 2KHz (FR in spec.)	3pcs
2	Maximum input power	100% / 150% of maximum input power for specification, 1min ON/2min Off as 1cycle, 10cycle for minimum requirement.	1. Functional test 2. No damage 3. FR check: Headset : 100 ~ 2K Hz(± 3 dB) / After 2KHz (FR in spec.) Microphone: 100 ~ 2K Hz(± 3 dB) / After 2KHz (FR in spec.)	3pcs

Painting / Printing Test (For cosmetic parts with surface treatment)				
No	Item	Condition	Specification	Specimen
1	Tape adhesive	Tape : Scotch No.600, peel it quickly, 3 times	No peeled off	3pcs
2	Cross cutting	Hundred square test: electroplating, rubber coating, painting	<= 5% Refer ASTM-D3359	3pcs
3	Alcohol test	99%, Load: 500gf, , Stroke: 25.4mm, Speed : 1time(to and from) 2 sec, total 30 times Cable printing, 200g, 10 times	Appearance change is not allowed	3pcs
4	Wear test (Rubber Eraser)	Rubber Eraser : TABER CS-10F Load : 150gf, Stroke: 25.4mm, Speed : 1time(to and from) 2 sec, total 70 times	Exposing base material is not allowed	3pcs

	Product Requirements		Model No: Bell Frog	Page 72 of 72
	Prepared by:	Approved by:		
	HyperX			Revision H

5	Hardness Test by Pencil	Use Mitsubishi UNI/2H, Angle : 45 degree, Load : 500gf, 5 times	Exposing base material is not allowed	3pcs
6	RCA	RCA Abrasion machine 175 grams load counter weight 11/16" Abrasion tape 15 times/min with 15 cycles. travelling 16 mm per cycle.	Exposing base material is not allowed	3pcs
7	Palm perspiration	Apply on the surface, 24 hrs - synthetic sweat (PH6.5&PH10).	No significant or noticeable changes to the surface are allowable, such as; blisters, spots, chips, deviation in brightness, bleeding or change of color.	3pcs

Package test

No	Item	Condition	Specification	Specimen
1	Product Label Abradant Test	Abradant Test, a. Alcohol, 2pcs, - Alcohol type: Isopropanol Alcohol - Load: 100 gf - Rubbing Rate: 30 cycles (2 sec/cycle) b. Rubber, 2pcs - Abradant type: TABER CS-10F - Load: 80 gf - Rubbing Rate: 70 cycles (2 sec/cycle) for 2nd print, 30 cycles (2 sec/cycle) for pre-print.	1.No visible damage or peeling. 2. Barcode is readable by smart phone (APP) before and after abradant test.	4 pcs (2pcs/each item)
2	Seal sticker	1. Single box drop , 97cm , 10 times (1 corner, 3 dages, 6 faces) 2. Environment test in below 3 conditions. Hanger & label affected should be hanging with 120% of content weight to validate. a.Temp. 55 degree C, Hum. 85%, 48hrs -> room temp. 6hrs b.Temp.-10~55 degree C, 5cycle, -> room temp. 6hrs c.Temp.-10 degree C, 48hrs -> room temp. 6hrs	No visible damage or peeling. Provide clear sticker picture of before / after test.	2 pcs
3	Hanger Durability Test	1. Bending 50 times 2. Apply weight, 120% of the content weight. 3. Room temperature, 6 hours 4. 38°C; 85%RH; ±5%, 5 days	Hanger function review, no visible damage or peeling on both Hanger or Box.	1pcs
4	Drop test - AMZ SIOC self test [Single box]	Step 1, Packaging Sealing: All open edges must be adequately sealed to ensure the product remains protected. Step 2, follow the procedure from below 2 videos to perform drop test Step 3, Record picture / testing result in amazon template if test is passed.	1. Function test 2. Package structure check 3. No hazardous on user during unboxing. 4. No visible damage on Label and product	1 Box
5	ISTA 2A Test [Shipping Box]	(Pre Test: Drop + Vibration 3 face, 30mins) Follow ISTA 2A sequence S2 Atmospheric conditioning: 38°C , 85%RH, 72 hrs S3 Compression: Machine Apply and Hold S: stack q'ty of ocean ship F: use 5 S4 Vibration : Random S5 Drop S6 Vibration : Random	1. Function test 2. Package structure check 3. No hazardous on user during unboxing. 4. No visible damage on Label and product	1 Carton

-----End of Document-----