



Bishop
Product Requirement Document

PHORUS-BIS-PRD-0001

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Revision 9

| Document Change Summary | | | |
|--------------------------------|-----------|--|-----------|
| Date: | Revision: | Changes: | Author: |
| 08/28/10 | X1 | Initial Release | DL |
| 09/17/10 | X2 | Revised with new block diagram | DL |
| 09/19/10 | X3 | Inserted ID, and BT RX requirements. Updated codename. | DL |
| 09/21/10 | X4 | Erroneous battery charging was removed | DL |
| 09/22/10 | X5 | Added subwoofer out. Removed hotkey. Specified 2 transducer configuration | DL |
| 11/23/10 | X6 | Added rechargeable battery attachment. Removed subwoofer out. Specified bi-color LEDs for system status and power/battery indication. Revised hardware block diagram to include rechargeable battery and wireless module. | DJ |
| 03/20/11 | X7 | Updated Power/LED status section Minor changes per LTC request Updated block diagram Added remote control button layout | DJ |
| 03/29/11 | X8 | Updated document format Moved LED feedback to UI spec Empty Bluetooth section removed from state summary | D O'Brien |
| 04/12/11 | X9 | Bluetooth LED changed to single color Blue. Aux Input LED changed to single color White. USB cable length changed to 12". Other minor updates. | D O'Brien |
| | | | |

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1 Document Scope

This document describes in engineering development terms the definition of Bishop. This document will define the engineering platform with enough detail to meet the initial product concept while not constraining the execution team on specific intricate design details.

This document is also a description of the functional behavior with sufficient detail in order to achieve an accurate quotation, begin writing user guides and to begin developing test methods.

1.1 Definition of Terms

Shall – Term indicates a required element, e.g., "the unit shall play MP3 files".

Should – Term indicates a suggestion or preference, e.g., "the unit should attempt to read ID3V1 tags".

May – Term indicates an allowance, e.g., "the unit may play FLAC files".

Will – Term indicates a statement of fact. This is typically information used for clarity, such as "the unit will be sold in France".

1.2 Notation

Requirements are divided into sub-sections based on system division and implementation conventions. Each requirement is labeled as [Rx], where 'R' represents the 'Requirement' and 'x' marks the serial number of each requirement.

1.3 Highlight Color Codes

| Color: | Meaning: |
|------------------------------|--|
| Blue Highlight | Indication of changes since the <i>last</i> revision |
| Green Highlight | Known open issues needing further clarification |
| Purple Highlight | Questions or notes for reviewers |
| Red Highlight | Incomplete sections |
| Gray text with strikethrough | Deleted sections |



2 Applicable Documents

2.1 Reference Design Documents

The following documents form a part of this specification. Each utilized and referenced document shall be the most recent released issue.

| |
|--|
| Phorus Reference Documentation |
| Reliability Test Specification |
| Idle Noise Test Procedure |
| Transition Noise Test Procedure |
| User Interface Specification |
| Industrial Design Screen Print Specification |
| Remote Control Art |
| Mechanical Documents |
| Colors, Materials and Finishes (CMF) |
| Drivers |
| HiBox MS-203 Design Specification |
| Reference Specifications |
| Bluetooth.org Qualification Program Reference Document V1.0 |
| Bluetooth.org Advanced Audio Distribution Profile Specification V1.2 |
| Bluetooth.org White Paper on Usage of Multiple Headphones V1.0RC5 |

2.2 Order of Precedence

In the event of a conflict between this specification and the references cited herein, the order of precedence shall be this specification, then any Phorus reference documents, and finally any appendices.

3 Product Overview

3.1 Features List

- [R1]. Optimized acoustics with DSP and Class D amplifier
- [R2]. Minimum 7.5W per channel power amplification
- [R3]. Two Transducers: HiBox MS-2003
- [R4]. Bluetooth Advanced Audio Distribution Profile (A2DP) sink for wireless stereo audio streaming
- [R5]. Use of SBC audio codec for, for A2DP
- [R6]. Availability of ~~apt-x~~ AAC codec is highly desirable
- [R7]. Support pairing with a minimum of 8 devices
- [R8]. On board power and volume +/- buttons
- [R9]. System status LED (bi-color: White, Amber)
- [R10]. Bluetooth status LED (single color: Blue)
- [R11]. Aux input status LED (single color: White)
- [R12]. Aux Input (3.5mm Stereo Mini)
- [R13]. World Wide Switching power supply technology (First SKU: USA)
- [R14]. Low standby power (<0.5W) EuP Requirement 2013
- [R15]. USB charging of external devices while in AC operating mode
- [R16]. Expansion port for docking optional rechargeable battery pack
- [R17]. Firmware update via USB

3.1.1 Product Description

Bishop is a desktop Bluetooth speaker system, has a high level of performance in the portable desktop category, operates on AC power and offers wireless connectivity to any Bluetooth-enabled media device.

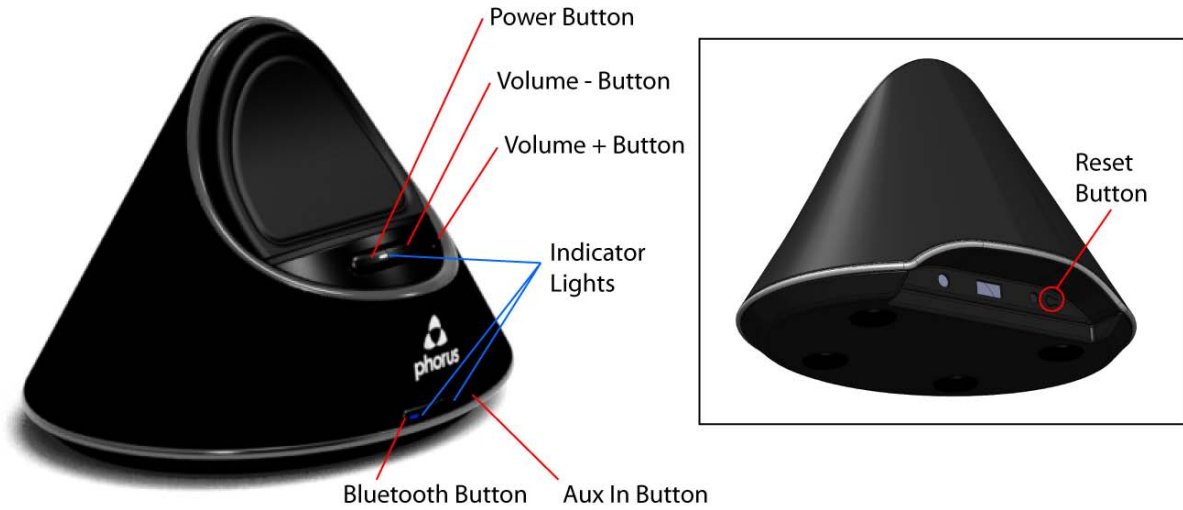
3.2 What is in the Box

- [R18]. The following are the accessories that are included with the product.

| Item: | Requirement: |
|--------------------------------|---|
| Bishop | Mandatory |
| AC Power Supply | Mandatory |
| Interchangeable Plugs | Highly Desirable for EMEA (First SKU: Fixed pin for USA) |
| ♀ 12" USB A to USB mini Cable | Mandatory |
| ♀ 12" USB A to USB micro Cable | Mandatory |
| Owner's Manual | Mandatory |
| Warranty Card | Mandatory |

4 User Interface (UI)

4.1 Input Methods



4.1.1 Buttons

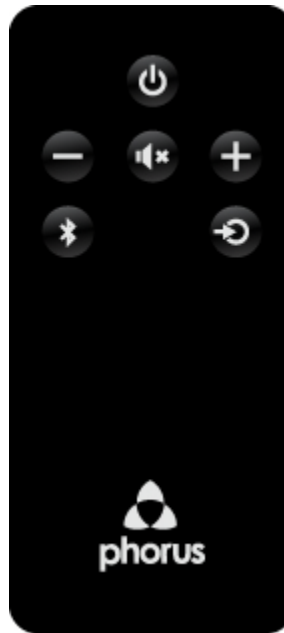
- [R19]. Power: ON/OFF
- [R20]. Volume Down
- [R21]. Volume Up
- [R22]. Reset
- [R23]. Bluetooth Control
- [R24]. Aux Input Control



4.1.2 Remote Control

[R25]. Dock shall have an IR receiver, able to receive ~~RC5~~ NEC codes.

[R26]. Transmission distance shall be 20 feet (7 m).



4.1.3 User Input Feedback Methods

[R27]. LEDs (The functionality of the LEDs can be found [here](#))

[R28]. Audible Sounds for connect and disconnect

5 Localization

[R29]. This product shall be engineered such that localization involves the fewest possible variables.

5.1 Product SKUs

[R30]. The product shall have the following SKUs. These SKUs are differentiated by the power supply plugs. (see section 9.1).

[R31]. Americas (Suffix: AM) – Fixed US Plug

[R32]. EMEA (Suffix: EU) – two replaceable plugs: UK and EU (Highly desirable)

5.2 Languages

[R33]. The following languages are required for the beauty carton (Except Japan SKU):

- a. English
- b. French (Français)
- c. Spanish (Español)
- d. German (Deutsch)
- e. Dutch (Nederlands)
- f. Italian (Italiano)

[R34]. The following languages are required for the owner's manual (approx 8 pgs/language):

- a. English
- b. French (Français)
- c. Spanish (Español)
- d. German (Deutsch)



- e. Dutch (Nederlands)
- f. Italian (Italiano)

6 Hardware

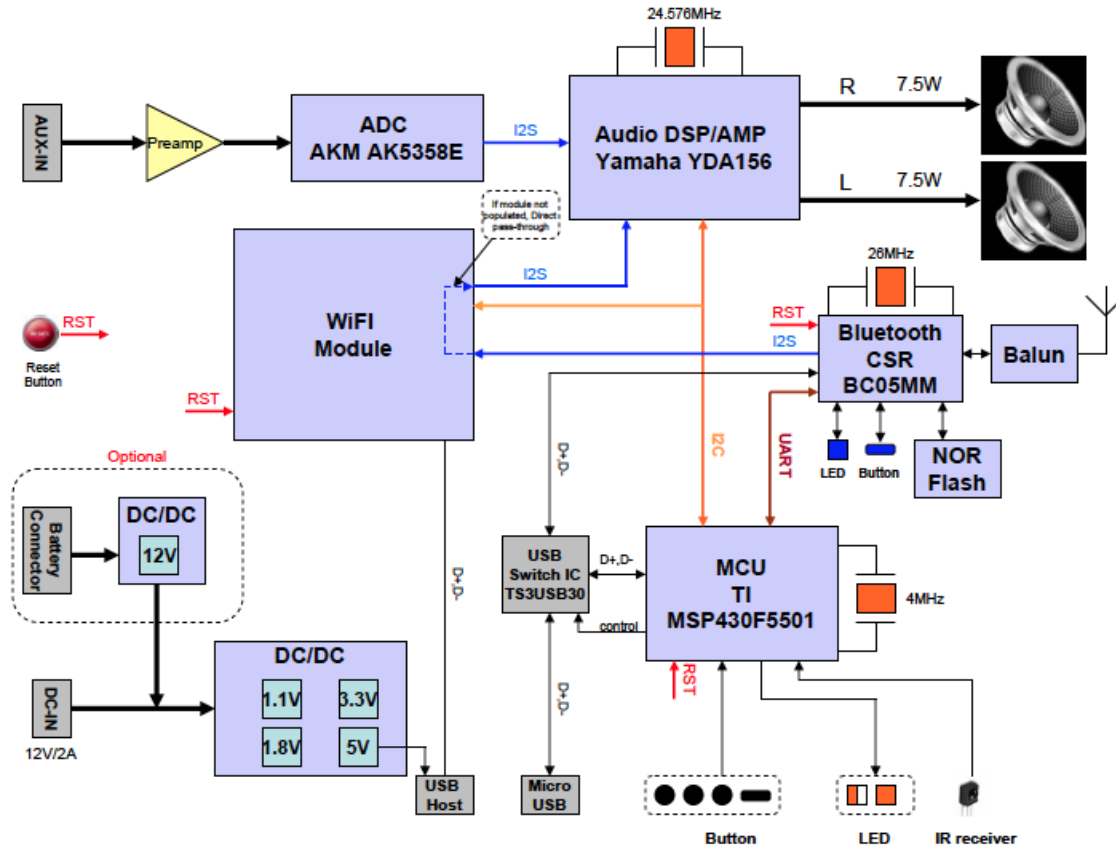


Figure 1: Main System Block Diagram

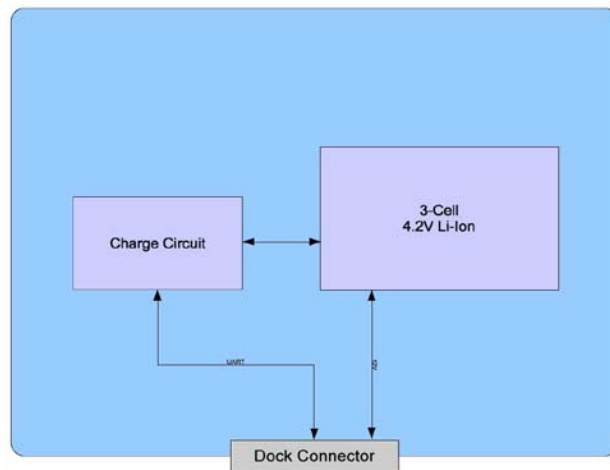


Figure 2: Rechargeable Battery Module

NOTE: I2S may require routing topology to support all use cases:

1. BT to Phorus Wireless Module
2. Phorus Wireless Module to DSP
3. BT to DSP, if Phorus Wireless Module is not populated

4. DSP to Phorus Wireless Module for streaming aux-in audio

6.1 Mechanical Arrangement / Industrial Design

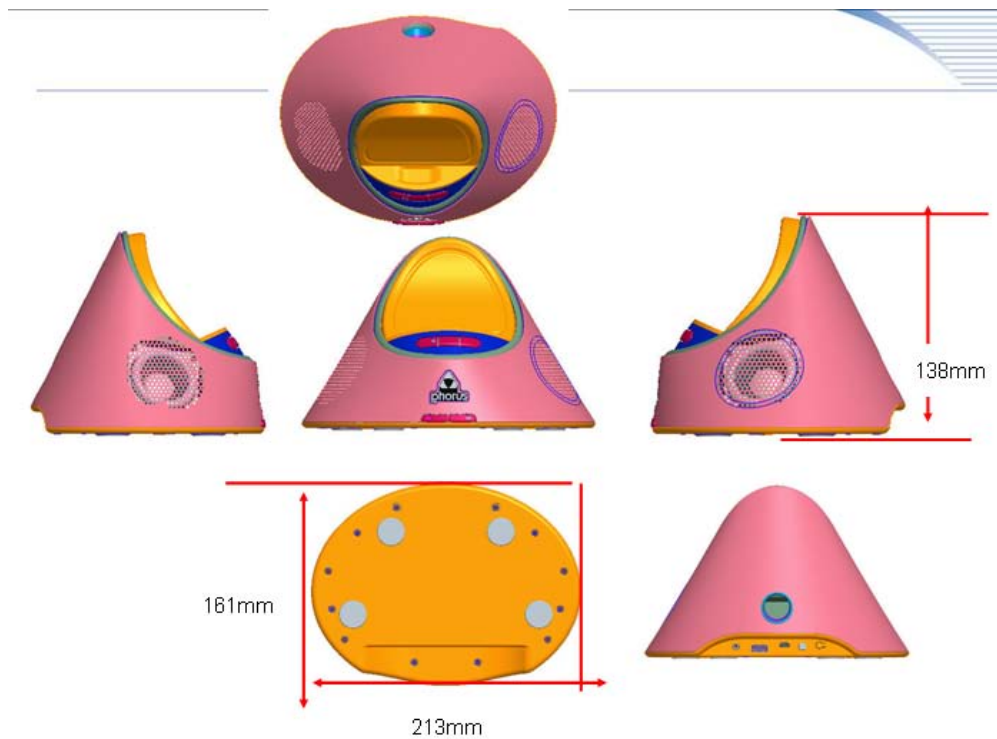


Figure 3: Industrial Design (not to be used for production)

[R35]. Dimensions indicated above.

[R36]. The system shall conform to the design language specified by the ID guidelines.

6.2 Rear Panel

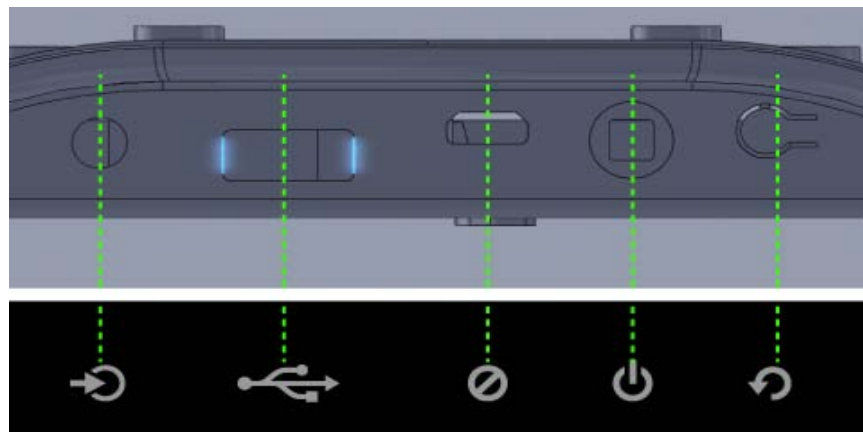





Figure 4: 2D drawing of the back and bottom panel (not to be used for production)

6.2.1 Connectors

The input and output sections of the rear panel are as follows:

| Connector: | Number #: | Type (Images for informational use only): |
|--|-----------|--|
| [R37]. Mini Audio Jack (Aux In) 3.5mm | 1 |  |
| [R38]. Power plug | 1 | 3.5mm power connector  |
| [R39]. USB | 1 | Micro USB |
| [R40]. USB | 1 | Type A  |

6.3 Front Panel



Figure 5: Top panel (not to be used for production)



Figure 6: Front panel (not to be used for production)

6.3.1 Buttons and Switches

The top panel shall have the following buttons:

- [R41]. Power
- [R42]. Volume Down
- [R43]. Volume Up



The front panel shall have the following buttons:

[R44]. Bluetooth Multifunction button for discoverability, connecting, disconnecting

[R45]. Aux-In button

6.3.2 LEDs

[R46]. The top panel shall have one bi-color System/Power Status LED (White and Amber) sharing one light pipe

[R47]. The front panel shall have one single color Bluetooth LED (Blue)

[R48]. The front panel shall have one single color Aux In LED (White)

6.4 Printed Material

6.4.1 Owner's Manual

[R49]. The owner's manual shall be black and white

[R50]. The owner's manual shall have approximately 8 pages per language.

6.4.2 Beauty Carton

[R51]. The carton shall be four color.

[R52]. The carton shall have varnish.

[R53]. The carton shall use recycled/recaptured materials where possible.

[R54]. The carton shall be 0.08 Pt. or better card stock, 250 lb. or better C Kraft.

[R55]. The carton shall meet all Phorus validation and reliability requirements, e.g. pass drop tests, environmental tests.

6.4.3 Master Carton

[R56]. The quantity requirement is 8 units per master carton.

[R57]. The master carton artwork is to follow Phorus standard template for multimedia products.

[R58]. Versions are to be differentiated by different master carton labels.

6.5 Serviceability

[R59]. This product shall be designed for serviceability. The device shall allow reasonable ease of access to internal components for service and/or repair.

6.6 Recyclability

[R60]. The system shall conform to all recyclability rules (ease of disassembly) required of each region defined in the Localization section.

7 Features

7.1 System Features

7.1.1 Bluetooth Audio Subsystem

- [R61]. The system shall wirelessly pair to a Bluetooth-enabled device.
- [R62]. The system shall be up to date with the latest version of the Bluetooth protocol specification v2.1 and be compatible with the Enhanced Data Rate (EDR) specification (Data Rate: 3 Mbit/s).
- [R63]. The operating range of the system shall meet or exceed the requirement of a Bluetooth Class 2 device (Maximum permitted power: 2.5mW – 4dBm, Range: 30 feet).
- [R64]. The BT test protocol shall demonstrate better than 0.1% BER (as a note this should correspond to a receiver with better than -85dBm sensitivity) over a free air range of at least 12 meters
- [R65]. Less than 0.1% BER shall be verified at 432 test points.

The test area is described as 360 degree radial cone, -15degrees to +40 degrees in elevation, 12 meters from the unit under test.

Each test point is within this cone at both -15 degree declination and +40 degree elevation, at 10 degree radial intervals. This yields a total of 72 test points (36 radial points * 2 elevation angles).

At each test point, the Class 2 transmitting device shall be oriented orthogonally in all 3 axis, 180 degrees in each axis (yielding a total of 6 orientations).

Up to 3 commercially available Class 2 transmitting devices will be used during this test.

- [R66]. The system shall pair with a Bluetooth enabled device in order to wirelessly stream audio content from a Bluetooth audio source device. Advanced Audio Distribution Profile (A2DP) version 1.2 allows the use of the mandatory Sub Band Coding (SBC) codec for compressing audio for efficient streaming.
- [R67]. For superior audio listening experience, apt.x codecs should be implemented. Specification on apt.x shall be further detailed at a later time.
- [R68]. The Bluetooth subsystem shall be capable of pairing with a minimum of 8 source devices.

7.1.2 WiFi Audio Subsystem (For Caprica Module Only)

- [R69]. The system shall be able to accept audio from the WiFi subsystem
- [R70]. The WiFi Audio subsystem shall employ 802.11n
- [R71]. The WiFi Audio subsystem shall also include BT A2DP Sink capability with similar performance to the standalone BT module
- [R72]. The WiFi Audio subsystem shall have a minimum 400MHz ARM9 or equivalent performance
- [R73]. The WiFi Audio subsystem shall have a minimum of 16MB of Flash memory and 64MB of DRAM
- [R74]. The WiFi Audio subsystem shall run the Linux operating system
- [R75]. The WiFi Audio subsystem shall be able to accept a I2S input from the Bluetooth Subsystem and/or the incorporated BT A2DP sink system of the BT/WiFi module

7.1.3 Power

- [R76]. The system shall have the following power modes:
 - a. Normal operational mode (front panel standby LED is white).
 - b. Off mode (front panel power LED is off).
 - c. Standby Mode (power LED is off).
- [R77]. When the system is off, power commands shall have no effect.
- [R78]. When the system is in standby mode, a power command shall transition the unit from standby to operational mode.
- [R79]. When the system is in operational mode, a power command shall transition the unit from operational mode to standby.



[R80]. The system shall support an auto-standby mode which causes the system to transition to standby after 10 minutes of inactivity (i.e. no user input or no audio). The system shall maintain BT connection, but power down DSP and other peripheral circuitry.

[R81]. Low Battery Mode

[R82]. Battery Charging Mode

7.1.4 LEDs

[R83]. The system shall have one LED located on the top panel of the system. If the system is power from the AC supply, White LED shall indicate system status.

[R84]. If the system is running off of battery power and (power supply is not connected to an AC outlet) then the system is in the Battery state. If the battery voltage level is above the “low battery” threshold, white LED shall indicate system status, as described in the table below.

[R85]. If the battery voltage level is below the “low battery” threshold, amber LED shall indicate system status, as described in the table below.

| Battery Power: | Capacity (%): | LED Status: |
|----------------|---------------|-------------|
| Good | > 30% | White On |
| Low | 10 – 30% | Amber On |
| None | < 10% | Off |

[R86]. If the power supply is connected to an AC outlet and the DC jack is connected to the unit while the system is in battery state, the system shall transition to the AC state and white LED shall indicate system status.

[R87]. The Blue LED shall indicate Bluetooth status.

[R88]. The Bluetooth LED status shall be as defined in the Bishop User Interface document.

7.1.5 Auxiliary Input

[R89]. There shall be an analog auxiliary input (3.5mm stereo mini).

[R90]. The auxiliary input shall be capable of handling up to 2Vrms without clipping the preamp stage.

7.1.6 USB Charge

[R91]. The system shall provide a charge port for USB devices. Per section 6.2.1, the USB connector shall be of Type A.

[R92]. Charge current and voltage shall be in compliance with USB requirements.

[R93]. Charging shall only be available when in AC operating mode.

7.1.7 Rechargeable Battery Option

[R94]. The system shall include a expansion port that will allow a rechargeable battery module to be attached.

[R95]. The rechargeable battery shall have a capacity of 11.1V (3.7V/cell x 3 cells), 1500mAH as per 3-cell Lithium-Ion configuration.

[R96]. The rechargeable battery module shall communicate with the system in order to update the battery charge level data.

7.1.8 Device Firmware Update

[R97]. The system shall incorporate a device firmware update feature via the USB port.

[R98]. Firmwares in BT subsystem, system controller MCU, and the Phorus Wireless Module shall be updated.

[R99]. Appropriate fail-safe mechanisms shall be enforced.

7.1.9 Sources

[R100]. The unit shall have the following sources:



- [R101]. Analog Auxiliary Input via ~~USB~~ 3.5 mm connector
- [R102]. Bluetooth Audio
- [R103]. WiFi Audio (For Caprica Module Only)
- [R104]. System Audio from uC or BT

8 Product Options Matrix

| Codename: | BT Chipset: | WiFi Chipset: | BT+WiFi Combo Chipset: |
|-------------------|-------------|---------------|------------------------|
| Bishop | Yes | No | No |
| Caprica version A | Yes | Yes | No |
| Caprica version B | No | Yes | Yes |

Though Bishop is envisioned as a BT-only system, future derivatives will include WiFi.

9 State Summary

9.1 Power On/Off/Standby

9.2 Power Transitions

[R105]. The unit is in power off mode when the AC power is disconnected.

[R106]. When AC power is connected the unit transitions to standby mode.

[R107]. The system shall transition from power off to standby mode (reaching an idle state ready for user input) within 1 second.

[R108]. The unit shall transition from standby to operational mode instantly.

[R109]. The unit shall transition from operational mode to standby instantly.

9.2.1 Buttons

[R110]. The system shall transition from standby to operational mode via the following actions:

- a. Front panel standby button is pressed
- b. Any source button is pressed

[R111]. The system shall transition from operational mode to standby via the following actions:

- a. Top panel standby button is pressed

9.3 Volume States

[R112]. The factory default volume setting shall be -20 dB.

[R113]. When the system transitions from standby to operational mode, the last volume setting when the system was previously in operational mode shall again be the volume setting.

[R114]. When transitioning from one source to another, the current volume setting shall persist.

[R115]. When the system transitions from standby to operational mode, the volume should ramp from minus infinity to the current volume setting in 250 ms.

[R116]. When the system transitions from operational mode to standby, the volume should ramp from the current volume setting to minus infinity in 250 ms.

[R117]. When the current source is changed, the volume should ramp from the current volume setting to minus infinity, the source should switch, and then the volume should ramp from minus infinity to the current setting. The entire process should occur within 500 ms.

9.4 Mute State

[R118]. In operational mode, the system shall always be in one of two mute states: mute on or mute off.

[R119]. When the system transitions from standby mode to operational mode, the mute state shall always be mute off.

[R120]. When the current mute state is mute off, pressing the mute button or pressing the top panel volume + and volume – buttons simultaneously shall cause the mute state to transition to mute on.

[R121]. When the current mute state is mute on, pressing the mute button or pressing the top panel volume + and volume – buttons simultaneously shall cause the mute state to transition to mute off.

[R122]. When the current mute state is mute on, pressing the mute button or pressing the top panel volume + and volume – buttons simultaneously shall cause the mute state to transition to mute off.

- [R123]. When the current mute state is mute on, pressing the volume + button on the top panel shall cause the mute state to transition to mute off.
- [R124]. When the current mute state is mute on, pressing the volume - button on the top panel shall cause the mute state to transition to mute off.


10 Technical Requirements

10.1 Power

- [R125]. The main shall conform to local Energy Efficiency laws and regulations in the country of destination.
- [R126]. For the European Union this requires compliance with "DIRECTIVE 2005/32/EC on Energy Using Products" (as amended) as implemented by "COMMISSION REGULATION (EC) No 1275/2008" and / or "COMMISSION REGULATION (EC) No 278 2009". When in Standby State, the power amplifier, DSP are turned off and the MCU is in low power consumption mode. In standby state, the EuP requirement for power consumption is 0.5W for 2013. The 2013 standard is mandatory.
- [R127]. Countries outside the European Union also have requirements. Examples include, but are not limited to, Australia, Canada, Korea, Switzerland, USA
- [R128]. The power supply shall be a wall-wart type universal switching power supply in order to accommodate world wide use.
- [R129]. The captured 1.5 meter long 2-conductor power output cable shall terminate in a barrel type connector with the power input jack on the rear of the Pan unit (see section 6.3.1.1)
- [R130]. The power supply shall have the following characteristics:

| | |
|--------|-----------------------|
| Input | 100-240 V AC 50/60 Hz |
| Output | 12V DC 2A |

- [R131]. It is highly desired for the AC power cord to be as thin and flexible and also to have a small as possible connector. This way the user can elegantly route the power cord to their desire. If possible, the power cord should have 2 conductors and no ground as long as it passes all regulatory requirements.
- [R132]. The EMEA power supply shall have interchangeable plugs for EU and UK.
- [R133]. The following images are descriptions for each power supply type. They are grouped by SKU. The images are for informational use only:

| SKU: | Power Supply Type: |
|----------|---|
| Americas | Fixed Pins |
| Asia | Show interchangeable pins |
| Japan | Show interchangeable pins |
| EMEA |  |

10.2 Audio

The goal of the system is to optimize the performance while minimizing the enclosure volume.

- [R134]. The enclosure shall be as small as possible (priority to the width and depth) while capable of providing at least 80dB maximum SPL (measured at 1 meter in a room with all channels driven at maximum power per noise test standards) and having a frequency response where the -10dB value is below 120Hz **150Hz**.



[R135]. The system shall be a ported enclosure design. It is expected that the closed system will have highly optimized equalization and implement a limiter for increased bass output. The system will be a closed system where the amplifier and loudspeakers are expected to be optimized power, impedance load, equalization, and limiter settings.

10.3 DSP

10.3.1 Audio Routing

[R136]. The unit shall support playback of any one audio source at any time. The sources are:

[R137]. Auxiliary Input

[R138]. Bluetooth Subsystem

[R139]. WiFi Subsystems (For Caprica Module Only)

[R140]. System Sounds

10.3.2 Filters and Limiter / Compressor

[R141]. The signal processing block of the system shall be capable of processing a minimum of 5 biquads per channel. Provisions shall be made for Phorus to access the DSP to modify the filter coefficients for acoustic tuning.

[R142]. The amplifier response shall be capable of being flat between 20Hz to 20kHz. In the audio path a DSP shall be used in order to correct for any linear acoustic distortion.

[R143]. The system shall also have a limiter in order to optimize the max power max bandwidth parameters.

10.3.3 System Volume

[R144]. The main system volume shall have 30 steps, representing gain of -40 dB to 0 dB.

10.4 Acoustical

10.4.1 Amplifiers

[R145]. The amplifiers should include overload protection circuitry.

[R146]. The amplifier shall have two output channels.

[R147]. The primary pass-band power shall be at least 10 watts per channel.

[R148]. The table below summarized the power Amplifier requirements

| Specification | Value (TBD) |
|---------------------------|-------------------------------|
| Number of Channels | 2 |
| Power @ 1% THD+N | 7.5W per channel (4 ohm load) |
| Noise Floor | < 0.1mVrms (A weighted) |
| Cross Talk (L&R Channels) | >35dB @ 1kHz |
| Minimum Drive Impedance | 4 Ohms |

10.4.2 Transducers

[R149]. The system shall utilize two transducers.

[R150]. The transducer color shall not differ significantly from the front panel grille color such that the transducers are visually distracting when the unit is viewed from the front.

10.4.3 Performance

[R151]. There shall be no pops, clicks, or other forms of audio distortion or noise under normal operation, including audio playback, source switching, volume adjustment, mute transitions, and power transitions.



10.5 Testability

[R152]. PCB shall feature test points that allow for 100% nodal coverage.

[R153]. FMEA shall be conducted and addressed.

11 Environmental and Reliability Requirements

[R154]. This product shall conform to the standard environmental and reliability requirements and guidelines as identified by the operations/quality assurance team.

12 Certification and Agency Compliance

12.1 Intellectual Property Certifications

12.1.1 Certification

[R155]. The system shall adhere to the Bluetooth Qualification Program Requirements, as defined in the Bluetooth Qualification Program Reference Document and be certified by a testing facility (BQTF) and an expert (BQE).

12.1.2 Royalties

[R156]. The following royalties will be required, if apt.x is used in A2DP streaming. This list is not necessarily comprehensive:

apt.x: **TBD**

12.2 Safety Compliance

[R157]. VCCI

[R158]. PSE

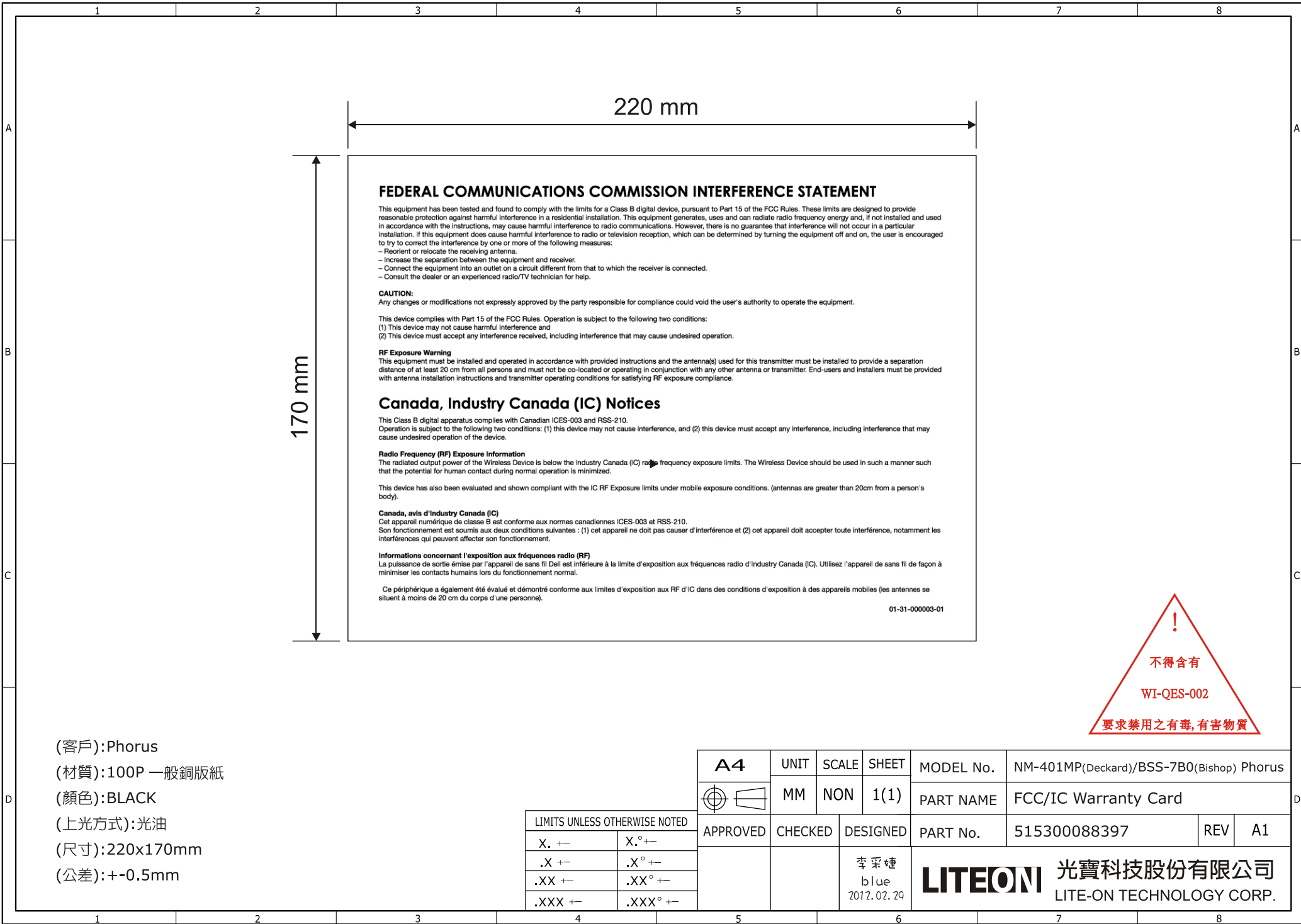
[R159]. TUV (Germany)

[R160]. EuP

[R161]. RoHS Compliance

[R162]. Safety and emissions requirements for the following countries are required:

- a. Europe (CE)
- b. USA (FCC, UL)



220 mm

170 mm

FEDERAL COMMUNICATIONS COMMISSION INTERFERENCE STATEMENT

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

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

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

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

RF Exposure Warning
This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

Canada, Industry Canada (IC) Notices

This Class B digital apparatus complies with Canadian ICES-003 and RSS-210. Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Radio Frequency (RF) Exposure Information
The radiated output power of the Wireless Device is below the Industry Canada (IC) radio frequency exposure limits. The Wireless Device should be used in such a manner such that the potential for human contact during normal operation is minimized.

This device has also been evaluated and shown compliant with the IC RF Exposure limits under mobile exposure conditions. (antennas are greater than 20cm from a person's body).

Canada, avis d'Industry Canada (IC)
Cet appareil numérique de classe B est conforme aux normes canadiennes ICES-003 et RSS-210. Son fonctionnement est soumis aux deux conditions suivantes : (1) cet appareil ne doit pas causer d'interférence et (2) cet appareil doit accepter toute interférence, notamment les interférences qui peuvent affecter son fonctionnement.

Informations concernant l'exposition aux fréquences radio (RF)
La puissance de sortie émise par l'appareil de sans fil Dell est inférieure à la limite d'exposition aux fréquences radio d'Industry Canada (IC). Utilisez l'appareil de sans fil de façon à minimiser les contacts humains lors du fonctionnement normal.

Ce périphérique a également été évalué et démontré conforme aux limites d'exposition aux RF d'IC dans des conditions d'exposition à des appareils mobiles (les antennes se situent à moins de 20 cm du corps d'une personne).

01-31-000003-01



(客戶):Phorus
(材質):100P 一般銅版紙
(顏色):BLACK
(上光方式):光油
(尺寸):220x170mm
(公差):+-0.5mm

LIMITS UNLESS OTHERWISE NOTED

| | |
|---------|-----------|
| X. +- | X. ° +- |
| .X +- | .X ° +- |
| .XX +- | .XX ° +- |
| .XXX +- | .XXX ° +- |

| | | | | | | | |
|----|----------|---------|----------|---------------------------|--|----------------------|----|
| A4 | UNIT | SCALE | SHEET | MODEL No. | NM-401MP(Deckard)/BSS-7B0(Bishop) Phorus | | |
| | | MM | NON | 1(1) | PART NAME | FCC/IC Warranty Card | |
| | APPROVED | CHECKED | DESIGNED | PART No. | 515300088397 | REV | A1 |
| | | | | 李采燴 blue 2017.02.29 | 光寶科技股份有限公司 LITE-ON TECHNOLOGY CORP. | | |