# Source of the second state of the second state

Exclusively designed and assembled in Canada 120821

audril

#### 1. Introduction

Thank you for choosing Aquarius speakers by Dillinger Labs. You are now the owner of flagship wireless speakers built with leading edge SKAA wireless technology. SKAA wireless technology has been invented on the basis of the following three pillars: *Flexibility*, *Ease of Use*, and *Pristine Audio Quality*.

We know you are eager to fire up your new speakers and we don't want to keep you waiting. Please refer to **3. Quick Start Guide** to have your speakers up and running in no time. Check out the rest of the manual to find out cool info about Aquarius and what we have done to set us a part from the rest.

#### Few important bytes of information

Have you seen the following icon before?



The SKAA Compatible Badge found on the Product certifies that this Product has been tested and is fully compliant with all of the requirements of the SKAA Standard and has been granted SKAA Certification. This Product will work seamlessly with other products in the SKAA ecosystem of audio transmitting and receiving devices. For more information on the SKAA Standard, please visit www.SKAA.com. The SKAA® name as well as its associated marks, logos and icons are trademarks or registered trademarks of Eleven Engineering Incorporated.

#### 2. Only ONE User Control Element !!!

As depicted in the image below, Aquarius speakers integrate a single User Interface (UI) Element for the user to interact with. The UI integrates a Bond Button and built-in rotary knob for volume control. Keep this info in mind – it will come in very handy as we traverse through the manual.



#### 3. Quick Start Guide

**Step 1:** Connect SKAA Transmitter into a phone, tablet, Mac, or PC. If you use Mac, navigate to System Preferences >> Sound, and set the output device to SKAA Transmitter. If you use PC, navigate to Sound Settings and select SKAA Transmitter as your output device.



#### Step 2: Play audio on your device!

Step 3: Power up your speaker by pressing the power switch for two seconds. Aquarius will instantly Bond to the Transmitter and the Bond Indicator will light bright amber. You should now hear audio playing.



**Step 3.1:** If the Bond Indicator stays dim amber and you don't hear any audio, carry out a factory reset by six clicking the Bond Button. Six clicks are done in a similar fashion to a computer mouse.

**Step 4:** Adjust audio volume by rotating.

**Bonus:** Check out <u>SKAA Wireless Audio Beginner's</u> <u>Guide</u> video on our YouTube channel !!!

## Computer with a pair of Aquarius speakers









## 2.1 Home Theatre System





## **Cluster of speakers**





## Home-brew Party





## DJ House Party







## Hybrid Speaker DJ Set-up



## DJ with Mic & Headphones











#### 4. Ginseng<sup>™</sup>



SKAA technology is known for robustness and reliability. This was possible to achieve by taking a ground-up approach in designing a microcontroller to meet our robustness and reliability goals. Hence we present our creation – Ginseng<sup>™</sup>. Unlike most microcontrollers which utilize task switching architecture, Ginseng<sup>™</sup> utilizes multithread architecture to process audio data. The ability to run multiple tasks simultaneously is a key technology responsible for reliability and robustness of high fidelity audio transmission in SKAA.

#### 5. Flush External (FE) Antenna

Wireless range is just as important as computing power. Ginseng<sup>™</sup> is connected to an in-house engineered classleading bow-tie antenna. The excitement does not stop there... Look carefully at the location of the antenna! It is that black flat thingy displayed in the picture below. Part of the top acrylic (shown by the shaded region in the picture below) is machined-off to allow antenna mounting to be as high in the enclosure as possible without sacrificing the acrylic's structural integrity. The combination of aforementioned engineering choices result in 50 meter wireless range when Bonded to a SKAA Transmitter (actual range will depend on the type of SKAA Transmitter used).



#### 6. Digital Signal Processing (DSP)





Analog Devices is a world leader in Digital Signal Processing technology. Hence, our engineers have chosen the Analog Devices's DSP chip. The DSP enables us to have surgical control of how the audio sounds! The crossover between the Woofer and Tweeter is digitally processed in the DSP. This is the approach to take to preserve audio-fidelity. Moreover, the DSP is programmed with a flat EQ response. This is done so to give the Aquarius listener an audio experience that is as close to recording studio quality as reasonably possible. Finally, we utilize dynamic processing in the DSP to actualize very loud speaker volume.

#### 7. Class-D Amplifier



Being a valuable partner to Infineon, we are proud to use Merus<sup>™</sup> - Infineon's most efficient audio amplifier. This amplifier is *expensive* and yet it is worth every penny! Merus exemplifies *no compromise* approach to audio amplifier design with class-leading 92% power conversion efficiency. This leads to 20 hours battery life in Aquarius speakers. Furthermore, Merus is configured to Bi-Amp a Woofer and a Tweeter resulting in pristine audio fidelity. With the cutting edge amplifier technology from Infineon, Dillinger Labs is on the forefront of adopting greener technologies in the audio industry.

#### 8. Film Capacitor

Film capacitors are an audio-engineer's best friend! What's the deal with film caps you might say? When an amplifier demands instantaneous power, not all capacitors are capable of supplying instantaneous flow of charge; this is where a film capacitor comes to the rescue. Next time you hear a kick drum in your Aquarius speakers, remember the film capacitor makes it happen with an extra punch.

#### 9. Drivers: Woofer/Tweeter



We have carefully selected the Drivers for Aquarius speakers. The Woofer's frame is manufactured by casting an aluminium basket, while cone is made out of carbon fibre. The magnetic core in the Woofer is composed of ceramic material. The Tweeter on the other hand, is manufactured from an elegant, yet strong silk material.

Besides the quality of the Woofer and Tweeter, the mounting location of Tweeter plays an important role. Namely, Tweeters are pushed to extreme left and right in its own respective speaker in order to widen the stereo image Aquarius speakers produces.

#### 10. Feet



Take a look at the rubber feet on your Aquarius. Whatever surface you place these speakers on, the feet will never allow the speaker to creep. Even at maximum volume, Aquarius speakers will stay exactly where you placed them!

#### 11. The Back Plate

Our team worked diligently to maximize utility from every component. The back plate (shown on the bottom right) has been blessed with plenty of it.

Back plate is manufactured by machining a large block of aluminium into its final shape. This manufacturing technique is deliberately chosen to achieve a rigid structure. The rigid structure is required to cope with the extensive vibration the speaker will endure throughout its lifetime.

The back plate acts as a two pound aluminium heatsink for integrated circuits – especially the Class-D Amp. Thanks to the large surface contact between amps and the back plate, any heat dissipated in the amp is effortlessly diverted into the aluminium plate. Such low resistance to heat transfer allows us to drive the amp at maximum power level indefinitely.

SKAA's four card logo is machined into the back plate. Next time you see this logo, you know good things are coming ;)

#### **12. One User Interface Element**

Elegance comes in simplicity. Well, Aquarius takes this notion to the stratosphere by offering its owner ONE simple User Interface Element (circled in the picture below). Want to change volume? – rotate the knob. Want to play audio from a new Transmitter? – simply double click the Bond Button. Want to rotate through your saved list (Green List)? - single click the Bond Button. Check out SKAA Receiver's User Guide at the end of this manual for a complete list of SKAA commands.



#### 13. The Tuned Port

The Port tube features a 45 degree cut as shown in the picture below. Upon careful inspection, you will observe that the tube is cut at a 45 degree angle while the opening on the back plate is machined to a have a gentle slope.

The careful design choices of the Tuned Port allowed our engineers to achieve four goals (1) improve base performance – all the way down to 37Hz (2) minimize the resonant frequency, (3) near perfect elimination of chuffing, and (4) prevent Port turbulence.



#### 14. Charging

Each Aquarius speaker is shipped with a dedicated charging adapter such as the one shown below.



The charging port is located on the back side, below the power switch as shown in the following picture.



When the battery's capacity approaches 45 minutes of remaining run time, an orange LED will begin flashing on the charging circuit. The flashing LED lets the user know to plug in the charging adapter.

From a depleted state, the battery requires 4-5 hours to be fully recharged.

During the charging process, an orange LED will stay illuminated indicating that charging circuit is accepting current. Once your Aquarius speakers are fully charged, the orange LED will turn off.

PRO TIP: leaving the charger plugged-in while music is playing will supply an additional 3-6 Volts to the amplifier resulting in more power to the amp.

#### **15. The Gravity Lock**<sup>™</sup>

The Gravity Lock<sup>™</sup> feature allows you to conveniently carry a pair of Aquarius speakers in each hand. Simply interlock two speakers back to back as shown in the image below.

As you bring the two speakers together, notice the rubber protrusions align with grooves on the opposite metal plate (circled in the image). Once they interlock, they stay firmly in place while you carry your speakers.





#### 16. SKAA cmd App

The SKAA cmd App provides a useful set of additional features to your Aquarius speakers. For example, you can add custom names to each speaker, easily mute all speakers or adjust individual volumes. Furthermore, it also lets you quickly identify which speakers are currently bonded to your phone's transmitter and much more.

The SKAA cmd App is available for iOS, Android, Mac, and Windows platforms. It can be download from the Apple App Store, Google Play Store, and on <u>www.skaa.com/tlc/</u> <u>skaa-cmd/</u>

Check out <u>www.skaa.com/tlc/support/</u> for the dedicated SKAA cmd App user's guide.



 The receiver bay shows you when a SKAA receiver or Cluster is bonded.

**2.** Move this slider to modify the volume of each individual speaker.

**3.** Click "*i*" to see the App Info Screen. App Info Screen will show you the app version, app license, libraries used, transmitter firmware, and screen size.

**4.** Master volume control. Use this slider to change volume on all Aquarius speakers simultaneously.

**5.** Master volume mute. Press on triangle and a laser beam straight out of sci-fi movies will mute all bonded speakers.

6. This button allows you to customize the power mode.
 RED: keep transmitter always ON
 WHITE: turn OFF transmitter after 2.5min of no audio
 GREY: keep transmitter OFF even when audio is being transmitted.

7. Customize a name of your Transmitter.

8. IMPORTANT: The green bond block lets you choose whether a receiver is playing left, right, or both channels. By default, audio routing in Aquarius speakers are configured as follows: Left speaker is plays left channel, right speaker plays right channel. If you only use one speaker to play audio, you may want to reconfigure your speaker to play Mono output.

**9.** Press to mute individual speaker. Press again to unmute.

**10.** Customize the name of your Aquarius. Like "Aquarius almighty"...or something along those lines.

#### 17. Cluster of Speakers

Clustering is a power user feature which allows you to take a group of SKAA speakers and make them act as a single unit. Check out our YouTube video explaining the Clustering feature at <a href="http://www.youtube.com/wepisode16">www.youtube.com/wepisode16</a>.

The following Cluster example sets-up Left Aquarius as a master and Right Aquarius as a slave.

**Step 1:** Place two Aquarius speakers adjacent to each other and ensure both of them are turned OFF.



**Step 2:** With your master speaker, while holding down the Bond Button, press n' hold the power switch.



Step3.1 - press n' hold

**Step 3:** Once the Bond Indicator begins to flash red colour, release the Bond Button, but keep holding the power switch.



**Step 4:** While holding down the power switch on the master speaker, turn ON the slave (right) speaker. You should now see the Bond Indicator on Slave and Master speaker both flashing red. Wait 10 seconds.



**Step 5:** Once the Bond Indicators turn solid red colour, release the power switch button on the Master speaker.

**Step 6:** Turn OFF and ON both speakers. Congratulation, you have made a Cluster of two speakers!

**Step 7:** When you connect the master speaker to the SKAA cmd app, you will see a similar window as the one shown below. Notice how a SKAA cell is made using two speakers with the left speaker being the master.

	SKAA cmd
Aquarius Left	: Speaker
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Antonenko's	Tx
0 🛆	<u></u>

#### **18. Specifications**

	Battery capacity	20 Wh
	Battery life	20 hours
	Charge time	5 hours
	Amplifier power	60 Watts
	Woofer diameter	4''
	Tweeter diameter	0.76″
	Woofer impedance	8 Ohm
	Tweeter impedance	6 Ohm
	-3bB Frequency Response Re: 997 Hz @ 1W	37Hz - 20 kHz
	THD+N (Bi-Amp Out)	0.05 % @ 1W
	SNR A-weighted	> 80 dB Re 1W
	Digital resolution	48 kSamples/s, 16 bit
	SKAA transport latency	36.72 +/- 1.5 samples
	SKAA Pro transport latency	19.39 +/- 1.5 samples
	Crossover frequency	3 kHz
	Antenna type	bow-tie
	RF power	15 dBm
	Dimensions (W*L*H)	12.8*15.2*24.8 cm
	Weight (each)	4.5 kg

#### **19. Important Information**

Please read the following information carefully. Failure to follow the safety guidelines may result in personal injury or user dissatisfaction.

- 1. Do not poke woofer and tweeter cones. They don't like it.
- 2. Never place anything into the tuned port on the back side of the speaker.
- 3. Only use the provided power adapter for charging.
- 4. Never operate speakers in close proximity to a heat source.
- 5. Do not operate Aquarius speakers in rain. Speakers are not water-resistant.
- 6. Do not charge speakers during lightning.
- 7. Do not leave speaker plugged-in charging for extending periods of time.
- 8. Listening to speakers at maximum volume in close proximity may lead to partial hearing loss. To preserve your hearing, we do not recommend listening at volumes beyond 90% within 3 meters of the speaker.
- 9. Do not let children under the age of 12 operate these speakers
- 10. Do not take speaker apart. Warranty will be voided.
- 11. The acrylic material can be brittle. Handle speaker with great care.
- 12. Do not operate the speakers on the roof of your house.

Dillinger Labs advices the reader that this owner's manual is being continuously updated to reflect the most up-to-date and accurate information regarding the Aquarius speakers. Please check our website periodically for the most recent version of this manual.

Should you have any comments or questions about SKAA or Dillinger Labs products, we invite you to write to us at <u>www.dillingerlabs.com/contact/</u>.

Check out our <u>YouTube channel</u> to familiarize yourself with an array of fantastic SKAA products.

#### SKAA® RECEIVER USER'S GUIDE

Each SKAA receiver uses a *Green List* to remember your *favourite* audio sources (SKAA transmitters). A Green glowing Indicator on your receiver means you are listening to a favourite, or hunting for one. You can also *explore* to find new transmitters—an Amber Indicator means you are *exploring* for transmitters which are not on your Green List. The

Essentials					
C Button	Command	Indic	ator		
Hold a few seconds	<u>Add / Delete</u> Manually add / delete the current transmitter to / from your Green List	<pre>     to =         (flash) = </pre>	Added Deleted		
-	<u>Auto Add</u> SKAA will automatically add the current Amber transmitter to your Green List if you listen to it for 30 minutes	O to ● =	Added		
1 Click	<u>Green Mode</u> Rotate through your list of <i>favourite</i> transmitters (Green List) — when a favourite transmitter is found, the search stops and audio plays from that transmitter	<ul> <li>(dim) =</li> <li>(flash) =</li> <li>(bright) =</li> </ul>	Hunting Next one Bonded		
2 Clicks	<u>Amber Mode</u> <i>Explore</i> for new, unknown transmitters (ones which are not already on your Green List)	<pre>(dim) =  (bright) =</pre>	Hunting Bonded		

#### More Commands

Sutton	Command	Indicator
3 Clicks	Mute do again to Unmute; any Click command will first Unmute and then do its function	○, ● or ● = Muted (slow flash)
4 Clicks	<u>Red Mode</u> If you have 2 or more transmitters on your Green List, power on just the one you want to hear and it plays automatically.	<pre>(dim) = Hunting (bright) = Bonded</pre>
6 Clicks	Factory Reset Clear Green List. Start Over!	🔴 (flash) = Reset Done
Hold during power on	<ul> <li><u>Make a Cluster of Receivers</u>:</li> <li>1. Power off all transmitters and receivers</li> <li>2. Power on the Master receiver while holding down its Bond Button—hold the button down until the Indicator begins to flash Red</li> <li>3. With the remaining receivers within 3 meters of the Master receiver, power on the first one, wait for its Indicator to flash Red and then power on the second one; continue until all of them are powered on</li> <li>4. Once all of the Indicators stop flashing (turn solid Red), power off all of the receivers</li> </ul>	<ul> <li>(flash) = Receiver has entered 'Cluster Up' mode</li> <li>(bright) = The Cluster has been successfully made</li> </ul>

#### **QUESTIONS AND ANSWERS**

Question	Answer
How does the Green List work?	You can store up to 10 SKAA transmitters on your Green List. These are your "favourite" audio sources. Every time you add a transmitter, it is assigned the first open spot on the Green List. When you single click the I be and Button, the receiver hunts through the Green List much like a car radio hunts for radio stations when you press seek. If the Indicator is dim Green and flashes every few seconds, this tells you the receiver is hunting through the Green List. Say you have 5 transmitters on your Green List; your receiver will hunt through the list one by one: 1, 2, 3, 4, 5 and then back to 1 and so on. The dim Green Indicator flashes every time the receiver moves to the next spot on the list. This hunting goes on for up to 1 minute. If your receiver doesn't find any of your favourite transmitters, it stops hunting and just waits for the last bonded favourite. If your receiver does find one of your favourite transmitters, the hunting stops, the Indicator turns bright green, and your receiver starts playing audio from that favourite. A dim Green Indicator that is NOT flashing means the receiver is just sitting on one spot, waiting for a specific favourite transmitter to show up.
How do I bond with a specific Green transmitter?	Play audio from your source device and ensure it has a SKAA transmitter connected. Click the Ibs Bond Button on your receiver. The receiver hunts through the Green List, flashing the Indicator as it goes. Once your receiver finds one of your favourite transmitters, it bonds to it and plays audio from that transmitter. If that isn't the transmitter you wanted, click the Bond Button once more. Repeat until your receiver bonds with the transmitter you want and you're hearing the correct audio playing.
How do I select transmitters if I can't reach my Bond Button?	Say you want to put your receiver on a high shelf where you can't reach the Bond Button easily. First, set up your Green List: add all of the transmitters you'll want to use. Then 4-click the <>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
How do I delete a transmitter from my Green List?	Factory Reset (6 Clicks of the Bond Button) clears the Green List and lets you start over from scratch. If however, you'd like to delete just one transmitter from your Green List, first bond your receiver to the transmitter you wish to delete. See the section above: <u>How do I bond with a specific Green</u> <u>transmitter?</u> . Once you are bonded to it, hold down the <b>()</b> Bond Button for a few seconds until you see the Indicator flash Red –this Red flash means the transmitter has been deleted.
What is a Cluster?	Clusters are an optional convenience for "power users". A Cluster is several SKAA receivers behaving as one product. A left & right speaker pair, for example, or a sound bar and subwoofer.
What is the Master receiver?	In any Cluster, there is a single Master receiver, and all of the other receivers in the Cluster follow its behaviour. You can control the entire Cluster by operating the <>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>>
How do I "uncluster" several receivers?	Do the <u>Make a Cluster of Receivers</u> procedure once for each receiver, but omit Step 3. Do them one at a time. This gives each of the receivers a functioning $ \subset $ Bond Button, and each of them will thereafter operate independently.
What are some tips for making Clusters?	Each step in the Make a Cluster of Receivers procedure has a 10-second time limit. When you see the Master's Indicator start to flash Red, you have 10 seconds to power on the next receiver. When that receiver's Indicator starts to flash Red, you have 10 more seconds to power on the next one, and so on.
Why does only one of my Bond Buttons work?	When you make a Cluster from several receivers, the first one powered on in the Make a Cluster of Receivers procedure becomes the Master of the Cluster. Only the Master's I Bond Button works because a Cluster uses just one Green List –the Master's Green List. The Bond Button of each of the other receivers will work only for the Mute / Unmute function (3-Click of the Bond Button).
Can any group of receivers be made into a Cluster?	No. The receivers must be members of the same product family. If they are not, the Make a Cluster of Receivers procedure won't work. This is because only receivers which were designed to work together (as a single product) can be made into a Cluster.