BTRGB.200 - SHORT USER GUIDE

COLORS, LIGHT, FORMS and MUSIC

WATCH YOUR MUSIC PLAY - ART of ENTERTAINMENT via COLORS OF MUSIC

A NEW BRIGHTTONE BTRGB.200 is a sound activated device that includes a microcontroller with configurable band pass frequency filter as well as RGB LED's light source. BTRGB.200 has a WiFi module that allows to connect your BRIGHTTONE device to a WiFi network and control it using iPhone or Android smartphone BRIGHTTONE app.

Pic. 1 BrighTTone BTRGB.200

BrighTTone device receives sound signal via an embedded high sensitivity microphone. Embedded microcontroller supports multilevel manual signal gain control as well as incorporates automatic gain control circuitry (AGC).
Combination of both controls, allowing adjusting sensitivity level reflected into the best LED brightness for different levels of external sound.

BTRGB.200 is very similar to the BTRGB.100 but instead of using IR remote all control is done via WiFi network using application on a smart phone – both iPhone and Android devices are supported and applications for both operation systems are available for free and can be downloaded directly from Apple App store and Googleplay for Android.

o   Unit supports two main modes of operations – Static and Sound Activated.

o   Unit can be used in the single Ball Display installations as well as multiple units can be controlled from the same smart phone application – single application can control all devices in the set as long as they connected to the same WiFi network.

o If setup consists of the only one Ball Display - no device address programming or selection is requires – unit can accept all the commands after been powered on and connected to the WiFi network.

o Unit has an embedded Li-Ion rechargeable battery and uses wireless inductive base for the battery charging.

For the best performance please make sure the Ball Display is installed with the microphone pointing to the direction from the sound as well as the direction from the location of the IR remote control.

Below is the short description of the supported commands and modes of operations. This device is controlled over WiFi network, and it needs to be configured first before it can be connected to your WiFi access point (AP).

When you receive your device (one or multiple) you will need to follow simple configuration steps required for the device to be connected to your WiFI network. This configuration needs to be done only once as long as your WiFi router (AP) have not changed, but independently for every device you have purchased.

Before you proceed you will need to download and install BRIGHTTONE app on your smartphone – we provide both for iPhone and Android OS's.

For the iPhone you can download it from Apple store using iTune – just look for the Application called – **Brighttone**. And for the Android it is provided as a direct download.

STEP 1

Power-on one device (don't power multiple), by pressing the button at the bottom of the ball. Unit will turned on with a green light. (Pic.2).
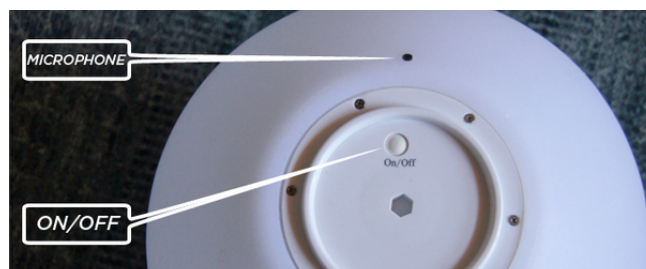

Pic.2 BrighTTone BTRGB.200

Connect to WiFi Network. Go to your computer or smart phone and make sure your device is connected to the WiFi network called: **BrighTTone-RGB**, you should be able connect to this AP without any password.

IP Address. When your computer or smart phone (iPhone or Android) is connected to the BrighTTone-RGB access point, please go to any web browser of your choice and type the following IP address "10.10.100.254" and press Enter. (Pic.3)
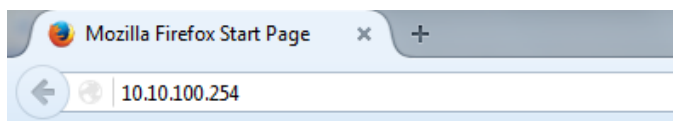

Pic.3 IP Address

Login. In order to login into BrighTTone web configurator, you will be prompt to enter user name and password (Pic.4). Defaul User Name: *admin*, password: *admin*
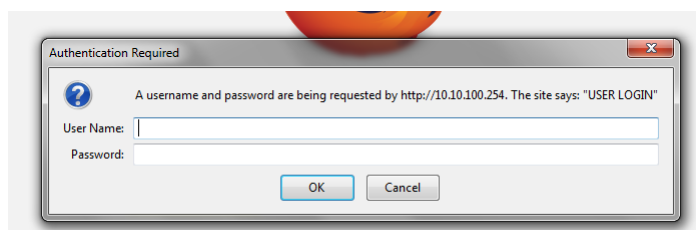
Pic. 4 Login into BrighTTone configurator
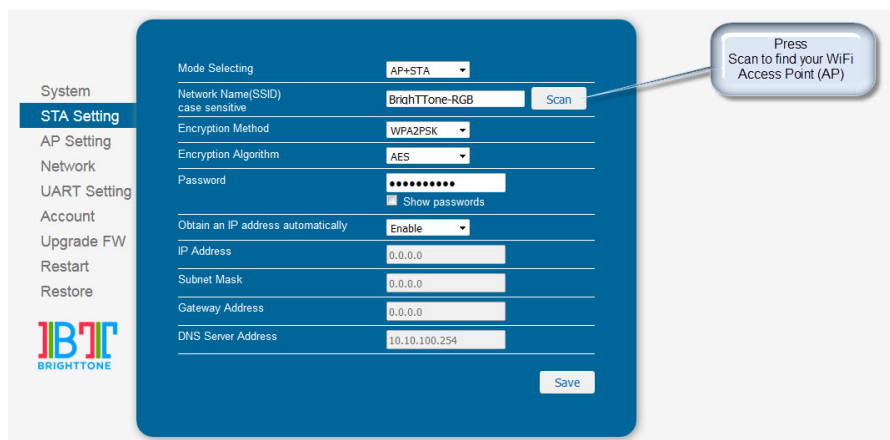
Successful connection.
After you press OK, you should see this screen (Pic.5). Now you are conencted to the web configurator where you will specify your WiFi Access point (AP)/ router.
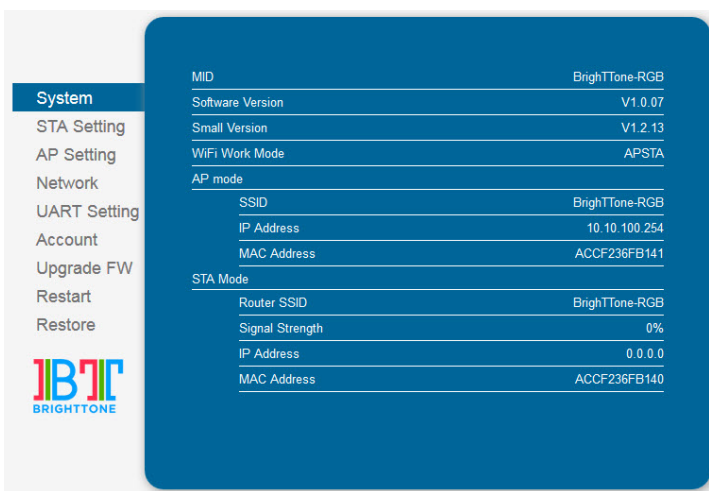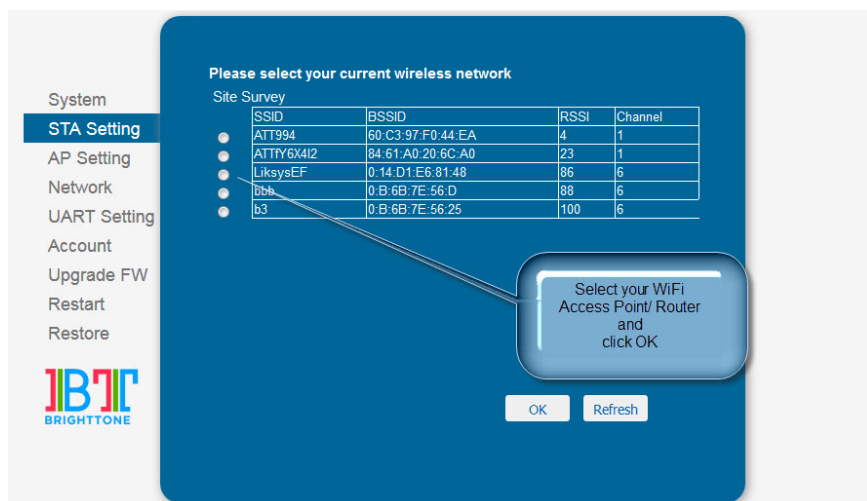

Pic. 5 BrighTTone web configurator screen

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STEP 2

Click on the "STA Setting" (left menu) and you should see this screen (Pic.6).
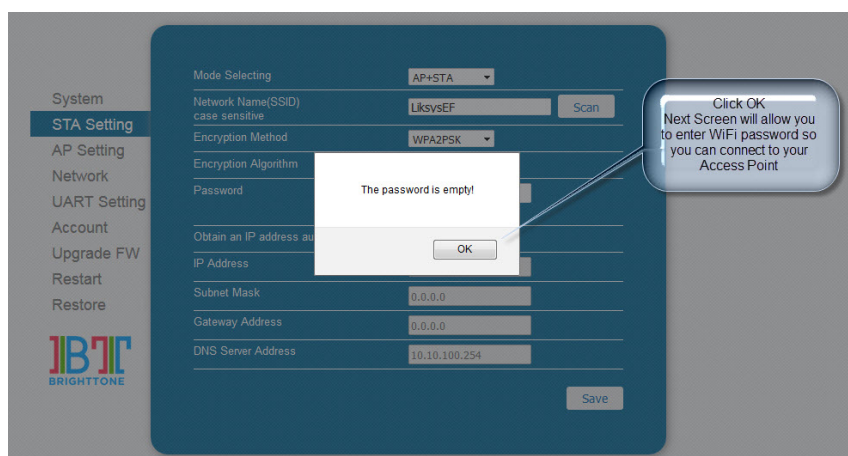

Pic. 6

Press "SCAN" and unit will show the WiFi networks around you. (Pic.7)

Select the name of your WiFi router / Access point (network) to which device should be connected.


Pic. 7

Click "OK" and you should see the following screen advising that you need to enter the password of your WiFi point. Click "OK".


Pic. 8

After you clicked "OK", select your encryption and the password which you have used when configured your WiFi Access point (Pic. 9).
After you have selected correct encryption and entered your password *please click SAVE!*
Do not forget to save otherwise you will have to go through the configuration steps again!
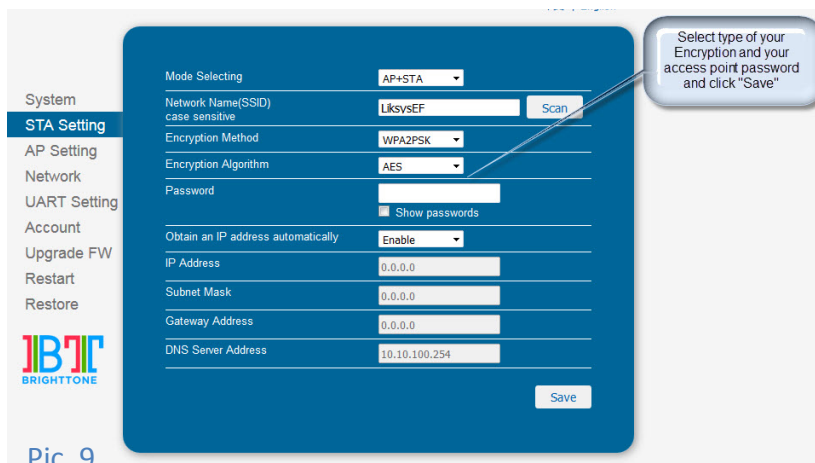
Pic. 9

Now go to the "Network" menu so you see this screen (Pic.10).
The only thing you really need to update is the Server Address - use your AP IP address. Click "SAVE"!
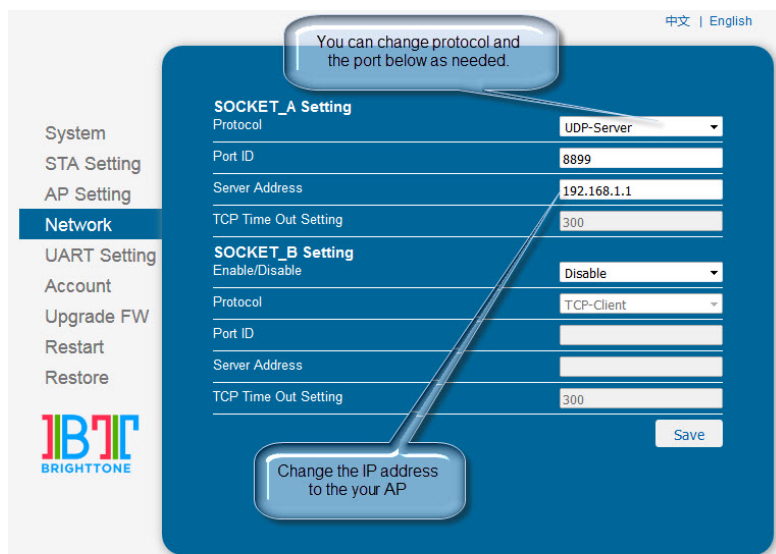
Pic. 10

You do not need to change anything else in the configuration and now you may click restart and this will complete the WiFi configuration process. (Pic.11)

If you have one device it may be easier to select TCP or UDP protocol since UDP_B is a broadcast protocol and usually used when you have multiple devices that need to be controlled. So for the one device in the set we recommend to select UDP or TCP in the protocol field. Both should work.
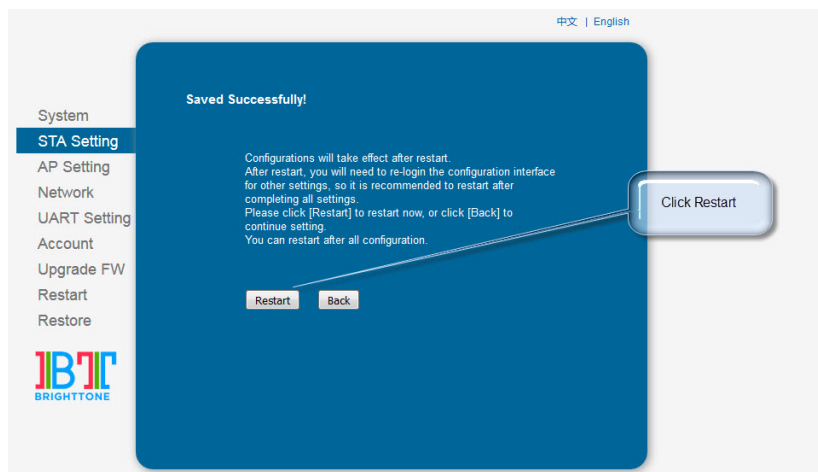
Pic. 11

You should see this screen (Pic.12).

At this point your device should be connected to your WiFi access point.

If you only have one Brighttone device you may proceed to the Step 3.

If you have multiple devices you will need to power-off the device you have already configured (Press and hold for about 3 sec button at the bottom of the device), then power-on the next device in the set and go through the Step 1 - 2 again for each device in the set.
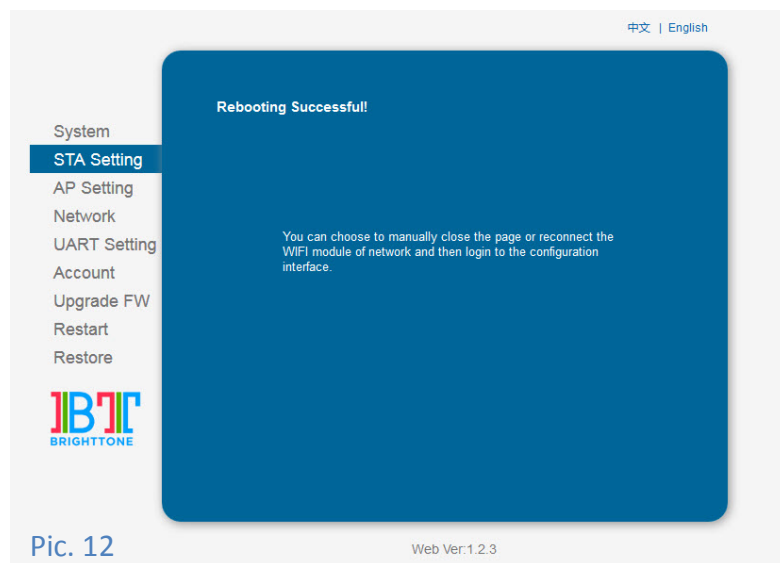

Pic. 12

If you have more than one device you would need to change one more thing to make each AP to have dedicated IP address so instead of default 10.10.100.254 better to make these addresses unique to each device this way you will be able to access them individually. So you may use 10.10.100.253, 10.10.100.252 etc.

So while configure the second and subsequent devices in the set you may want to assign unique Brighttone AP address to each of the devices. To do it go to the "AP Setting" screen and change the AP IP address to the unique one for each subsequent device in the set and write it down so you remember which address you have assigned to which device. Again if you have only one device you do not need to do it at all.
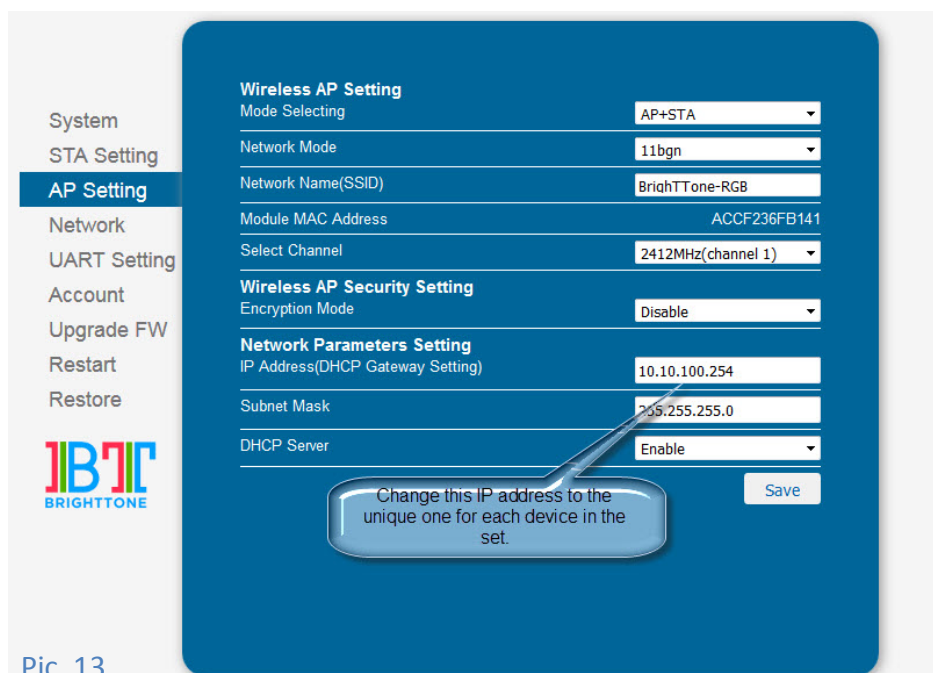

Pic. 13

This is not required operation but more like a convenience step. In most cases you will never need to access the configurator again so you still can access each device with the same address of 10.10.100.254 but one by one.

STEP 3

Now when your first device (or all the devices in the set) is connected to your WiFi network you can control it from your smart phone Application which you have already installed. Run the BRIGHTTONE Application._ Both iPhone and Android application have very similar look and feel so you should see the following screen. (Pic.14)

Pic. 14
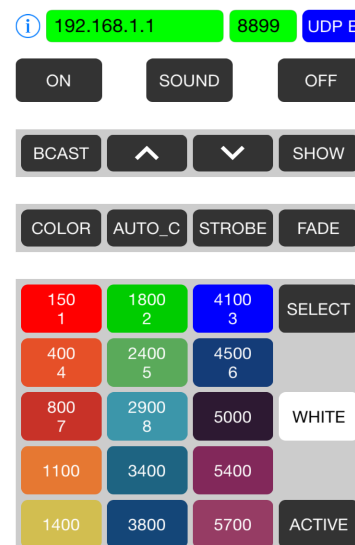
On this screen (Pic.15) you will need to change the IP address pointing it to you WiFI AP/ router.
And if you change the port in the web configurator you'll have to match to the one you have used in the Web configuration.
If you did not change port you may leave it as default 8899!

Match the port in case you have change the default

Change to the IP address if your WiFi AP

Pic. 15
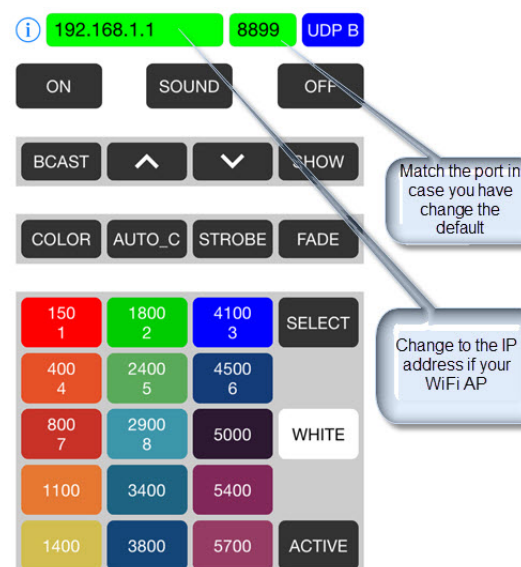
Now you need select the protocol to be used (the default one is UDP_B – means broadcast, which will work with single device as well as with multiple devices in the set To do it: click right top corner blue button UDP_B and on the screen (Pic.16). Select UDP B.

Pic. 16

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If IP address and port become green you have correctly configured your application and ready to control your BrighTTone devices. If it's red then you need to check your configuration – something is not matching or you not connected to the correct WiFi network!

Please make sure your smart phone is connected to the correct WiFi network – for example you may have multiple networks so you need to make sure your smart phone and Brighttone devices are located on the same WiFi network as your AP/router you've used in the Brighttone web configurator.

CHECK IF YOU COMPLETED CONFIGURATION STEPS:

- o *Install smart phone Application*
- o *Connect to the BrighTTone device AP*
- o *Configure BrighTTone device via web configurator following the steps allowing the device to be connect to your WiFi network*
- o *Configure smart phone application making sure smart phone is connected to the same WiFi network as BrighTTone and your Access point*
- o *Start playing using the device and control it from the smart phone application.*

RESET WIFI CONFIGURATION TO THE FACTORY DEFAULT

In case you have made a mistake and cannot access the device over WiFi any more you always can reset the Brighttone WiFi configuration.

Press 5 times power button at the bottom of the device (need to be competed in 10 sec or so) – if sequence is correct device will respond with solid blue color (should take about 5 - 7 sec) and then device is ready to be configured again.

MODES OF OPERATIONS

Your BrighTTone devices and your smart phone application are configured and ready to be used.

If you have more than one device in your set, you need to assign unique address to each device so you will be able to control each of them together or individually from one control panel.

(If you have only one device you may skip device address programming instructions below)

In order to assign the device address you need to turn on only one BrighTTone device, others need to be turned off completely (pressing and holding power button at the bottom of the device for 3 sec).

Pic. 16

Now you have one device powered and in green color and your smart phone application is configured and running.

On the second screen (Pic.17), touch ADDR/SAVE button and then one of the buttons 1 – 8 (whatever address you want to assign to the device), start with 1 since it's easy to remember.

Device should respond with one blink. If you have assigned number 2 – it will respond with two blinks etc You have about 7 sec between initializing address programming sequence and the time you need to press ADDR/SAVE again to store the assigned address otherwise sequence will reset and you will need to press ADD/SAVE again to start it over.

Follow this sequence of programming address:

- Press **ADDR/SAVE** button
- Select desirable **address number 1 – 8**
- Press **ADDR/Save again** to program the address.

Now the device has its own unique address that you will need to use in order for the device to accept the commands. If you forgot the addresses you have assigned use button **"SHOW"** and each device will show the addresses assigned to them.

The rest of the commands are shown in the table with respect to the appropriate buttons on the application screens.

Pic. 17 Screen 1

Pic. 18 Screen 2

Screen #1 (Pic 17) is the main operational screen and Screen #2 (Pic 18) is mostly a configuration screen, "i" at the left top corner provides short help as well.

All the buttons (Pic 19) are self-explanatory and only these ones have multiple functions:

o These buttons used to select a particular Brighttone device to be controlled – so you need to use SELECT and then one of the buttons 1 − 8 to select address of the specific Brighttone device you about to control.

o In the static mode it will select appropriate color for the selected Brighttone display

o In the Sound Activation mode it will select one of the filter frequencies where the value of the appropriate frequency is shown on the button in Hz, so 1800 means 1800 Hz etc.

Pic. 19

1. <u>Ball Display Address selection</u> (only for the setups with multiple units)
   Every time you need to control the Ball Display it needs to be activated/selected through the address selection.

      - Press **"SELECT" then one of the buttons 1 – 8** which would be equal the Ball Display previously assigned (programmed) address. Selected unit should respond with the slow white blink and it's ready to be controlled from the application screen of you smart phone.

2. <u>Turning the Ball Display OFF</u> – press and **hold for about 3 sec** the button at the bottom of the device. *If you hold this button for more then 10 sec* it will reset all the programmed parameters to the factory default.

   In order for the unit to be operational press the same bottom button once briefly – unit is ready to accept the commands from the smart phone application. "OFF" on the screen will put the unit into the low power consumption mode and *if not operational for more then 1.5 hours unit will go to the deep sleep mode and will require pressing power button at the bottom again.*

SUPPORTED COMMANDS AND MODES OF OPERATIONS

Table 1 below shows all the allowed commands and commands sequences based on the mode of operations. Every press of a button will be acknowledged by the distinct white blink, successful acceptance of the command sequence will be acknowledged via distinctive blinks as well.

MODE OF OPERATIONS	CONTROL BUTTONS	COMMAND DESCRIPTION
ALL MODES	**"OFF"**	Switches Display off, unit enters power down mode and will automatically enter deep sleep mode if non-operational for more than 1.5 hours.
	"ON"	Turns on Ball Display if unit has been off but not in deep sleep mode. If unit has been in deep sleep mode it requires first to press briefly On/Off button at the bottom of the display.
	"BCAST"	Pressing the button will select broadcast mode of operations for all the units in the set. Successful mode selection will be acknowledged via slow white blink by the units that have accepted the command. Exit from the broadcast mode can be done via selecting unicast address of one of the devices. Can repeat the command in case some of the units have not accepted it.
	SELECT + (1 -8)	Pressing the sequence of "SELECT" and then one of the buttons (1 to 8) selects the unicast mode address for unit with the matching address that has been assigned to the unit and makes it active. Repeating the same sequence will turn active status for his unit off.
	"SHOW"	Will show the current Ball Display address, one or multiple units will respond with the blinks numbers showing currently assigned address of the appropriate active display.
	"ACTIVE"	Shows the active status for the units. The active Display (Displays) will respond with the slow white blink.

MODE OF OPERATIONS	APPLICATION BUTTONS	COMMAND DESCRIPTION
STATIC MODE	"UP_Arrow"　▲ "Down_Arrow"▼	Pressing these buttons will Increase or Decrease brightness of the Display. Every press will be acknowledged with the short white blink. If the press of a button has not been acknowledged - the level is at min/max.
	"ADDR/SAVE"	Will enter the device address programming mode, display will be dimming the brightness and will wait for the new address - (1 – 8) selection. ADDR/SAVE again will store the selected address. So the programming sequence as following: ADDR/SAVE, new address in the range of <1 to 8>, ADDR/SAVE You have about 7 sec between the last pressed address selection and the ADDR/SAVE otherwise sequence will be stopped and user will require to repeat it from the beginning.
	"COLOR"	Every click will change the color of the Display out of 7 main colors in a circle.
	"AUTO_C"	The 7 colors will be automatically switching in a circle with 1 sec interval. It can be stopped by pressing it again, pressing any color button or changing the mode.
	"STROBE"	Every click will change the light blinking pattern in a circle from slow to the fast.
	"FADE"	Select the Fade mode, The speed of the fade can be changed using UP or Down Arrows.
	"1 – 15" color selection	Pressing one of the buttons will select the new static color for the Display.
	"WHITE"	Selects the static white color for the Display
	"SOUND"	Will switch to the sound activation mode. The following parameters will be restored from the memory: Frequency, color, scale, signal gain. If have not been saved – will use default values.
	"RESET_ADDR"	Will reset the display address to the broadcast

MODE OF OPERATIONS	APPLICATION BUTTONS	COMMAND DESCRIPTION
SOUND ACTIVATION MODE	"UP_Arrow" ▲ "Down_Arrow"▼	Manual Increase or Decrease signal amplification gain. Will blink with short white while not min/max.
	"COLOR"	Every click will change the color of the Ball Display without changing the currently selected filter frequency – helps to associate any color to any frequency.
	"AUTO_C"	Will turn on automatic color change without changing the frequency. Colors will roll in 1 sec interval in a circle out of 7 main colors.
	"STROBE"	Will enter the special mode of rolling three frequencies (Low/Red, Medium/ Green, High/ Blue) in a circle.
	"FADE"	Will enter color fading mode. The speed of the fade is the one is defined in the static mode, so in order to change fade speed need to enter static mode define the fade speed and then enter sound mode again
	"SOUND"	Will switch to the Static mode of operations and restore last color scheme, pressing it again will enter sound activation mode again.
	"BLIGHT"	Will turn On/ Off silent back light. If this mode is "On" Ball Display will have dimmed light while sound level is below threshold level. Repeated sequence will turn this function "Off".
	"AUTO-1", "AUTO-2", "AUTO-3"	Will start the signal auto calibration cycle: if "-1" – the scale is 1, if "2" – the scale is x 2, if "3" – the scale is x 4, Display will be in red color while cycle is in progress. Can be repeated as many time as needed, parameters can be stored using "SAVE"
	"SAVE"	Will save (store) sound parameters on all active / selected units - units can be either in broadcast or unicast modes. The following parameters will be stored: Filter frequency, color, scale, signal gain.

Table 1. BTRGB.200 set of commands

<u>Press one of the buttons to change the center band pass filter frequency (Table 2).</u> *(Sound Activation mode only)*

	LOW, Hz	MEDIUM, Hz	HIGH, Hz
	150	1800	4100
	400	2400	4500
	800	2900	5000
	1100	3400	5400
	1400	3800	5700

Table 2. Filter center frequencies/default colors association (Sound Activation mode)

BATTERY CHARGING OPERATION

In addition to the control electronic, Ball Display consists of the embedded Li-ion rechargeable battery and charging circuitry monitoring many battery parameters making sure the battery is charged in compliance with the manufacture specification. In order for the battery to be changed Ball Display needs to be placed on the inductive wireless base that needs to be connected to the wall AC outlet using supplied AC-DC adapter.

When Ball display is turned off and placed on the AC connected charging base the charging process begins and base LED will indicate the charging status. *If the LED is RED it means battery is charging and if the LED is Green it means that battery is fully charged.* You can operate Ball Display while charging as well but based on mode of operations charging time will be extended significantly. The unit will be charged while it's off or while it's in the deep sleep mode much faster!

RESET TO FACTORY DEFAULT:
Unit has two different manufacture default resets:

o   Press and Hold power button for more than 10 sec will reset all Brighttone parameters to factory default (unit address, all sound filtering and color association parameters)
o   Pressing the power button 5 times during 10 sec period of time will reset WiFi configuration to the factory default, unit will have to be configure again in order be able to be controlled from smart phone application.

TECHNICAL DATA

LED's	x 8 , RGB type
Charging time	4 – 6 hours
Battery operating time (fully charged battery)	4 – 8 hours The operation time will depend on the overage brightness of the display over the time.
Power Adapter	Universal 100 – 240V, 5V, 1A
Environmental	0 – 40C, Indoor or Outdoor use, please avoid direct sun or water contact. Unit should be operated in the non condensed humidity and not intend to be floating or submerged!
Charging indicator	LED, (RED – charging is in progress, GREEN – battery is fully charged)

Table 3. Technical data