

# SPECIFICATION SHEET



BLUFI™  
VER 1.3



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## HARDWARE SPECIFICATION

AC Input	100-240 VAC, 50/60 Hz
AC Plugs	US type: NEMA 1-15 ungrounded (Type A) European: CEE 7/16 "Europlug" (Type C) British Standard BS 1363 (Type G) China/Australia: AS/NZS 3112 (Type I ungrounded)
Size	Ultra Small: 2" x 1.5" x 1.5" (50mm x 38mm x 38mm)
Temperature Range	-25°C to 65°C
Bluetooth Type	Bluetooth Low Energy 4.1
Bluetooth Sensitivity	-98dBm
Bluetooth Max Power Output	+5dBm
Bluetooth Antenna	-3dBm Single Antenna, Omni Directional
Frequency Supported	<ul style="list-style-type: none"><li>• 2.4 Ghz ISM</li><li>• Bluetooth LE channels: 1-40 &amp; Adv Ch: 37;38;39</li><li>• Non Bluetooth Channels: SDR from 2400Mhz to 2500Mhz</li></ul>
Bluetooth Data Rate	1Mbit/s (2Mbit/s)
Bluetooth Security	128 bit AES
WiFi Type	802.11 b/g/n

<b>WiFi Security</b>	WPA2 Personal and Enterprise Security
<b>WiFi TX Power</b>	20.5dBm @ 1DSSS and 11 CCK 15.0dBm @ 54 OFDM
<b>WiFi RX Sensitivity</b>	-97.5dBm @ 1DSSS -88.5dBm @ 11 CCK
<b>WiFi Frequency</b>	2.4 Ghz with coexistence built-in with Bluetooth
<b>WiFi Antenna</b>	0dBm Single Antenna, Omni Directional
<b>Power Consumption</b>	200mA when TX 20mA on sleep
<b>Power Consumption - TX</b>	9mA at 0dBm
<b>Power Consumption – Sleep</b>	1.2 $\mu$ A (SRAM retention and RTC running)
<b>CPU</b>	ARM Cortex M4 and ARM Cortex M3
<b>Memory</b>	256KB Flash (100KB free for custom applications)
<b>Manage services</b>	Cloud realtime managed
<b>Data output to cloud</b>	0.1 to 1Mbit Up data
<b>Certifications</b>	FCC/CE/UL/FRE

## SOFTWARE SPECIFICATION

### Embedded RTOS running on both ARM Cortex M4 and M3

#### WiFi:

- Real-time RAW sockets to Bluzone cloud
- Easy to setup WiFi Security Key. No need for ad hoc setup; rapid setup and wireless provisioning

#### Bluetooth:

- Simultaneous support iBeacon + full Eddystone frames
- Bluetooth band support and Out-Of-Band (2.4Ghz ISM) support with auto scan for noise
- Fully compliant with Bluetooth Smart 4.1
- Dual Mode Support: Central and Peripheral
- Central supports multiple BLE connections at the same time with peripherals (Supports connecting at the same time to multiple beacons)

# SOFTWARE SPECIFICATION

- Peripheral supports multiple BLE connections at the same time with Central devices (Supports connecting at the same time to multiple phones)
- Supports Multiple Peripheral Protocols (iBeacon, Eddystone, sBeacon, etc. in same frames)
- Supports Peripheral Reverse RSSI
- Fully configurable

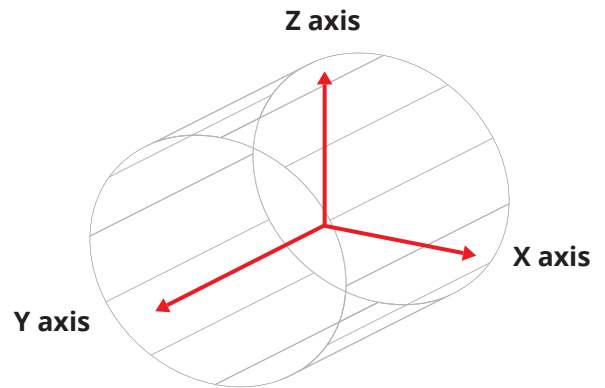
## Security

- Bluzone Cloud – Key-vault managed security
- Unique internal key per individual beacon
- Unique Device ID per individual beacon (sBV2 ID)
- Internal Unix time clock/timer since 'On' (Manufacture)
- RSA Private/Public (With Bluzone Cloud Key-vault) - Communication from/to beacon encrypted using RSA

## RTLS Mode:

- RTLS Mode with per beacon advertisement millisecond Unix time
- Out-Of-Band adaptive scan advertisement
- 1dB TX Output Accuracy

# BLUFI ANTENNA CHARACTERISTICS



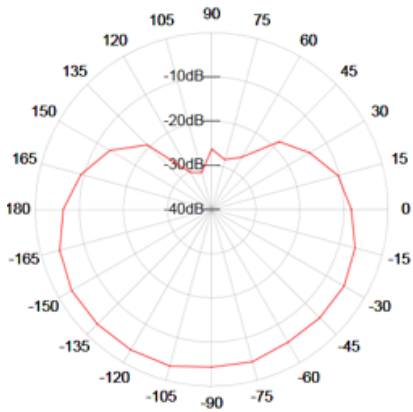
## Summary

### 1. Antenna Specification

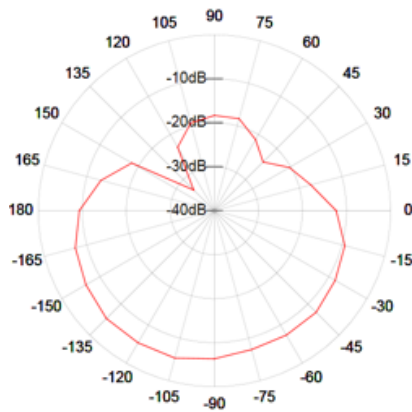
Items	Spec	
Model Number		
Center Frequency	2402MHz	-3.34dBi
	2438MHz	-5.34dBi
	2478MHz	-6.34dBi
Max Gain	-3.34dBi	

# 1. Orientation 1, Beacon - XY

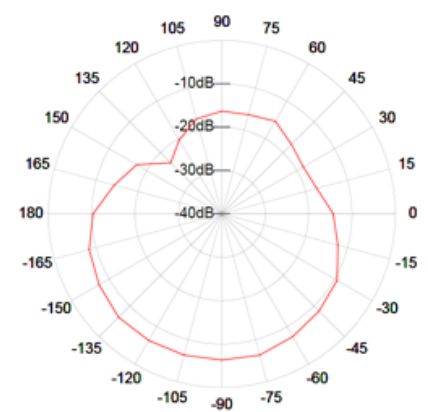
## 1.1 Antenna Polarity - H



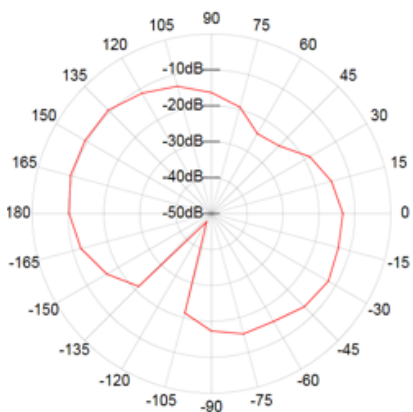
Frequency (Mhz): 2402  
Maximum Gain (dBi): -3.34  
Minimum Gain (dBi): -31.34  
Average Gain (dBi): -12.13



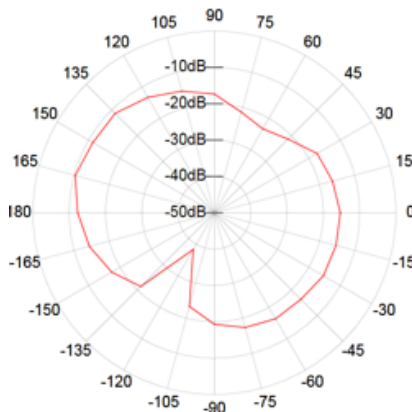
Frequency (Mhz): 2438  
Maximum Gain (dBi): -5.34  
Minimum Gain (dBi): -33.34  
Average Gain (dBi): -13.54



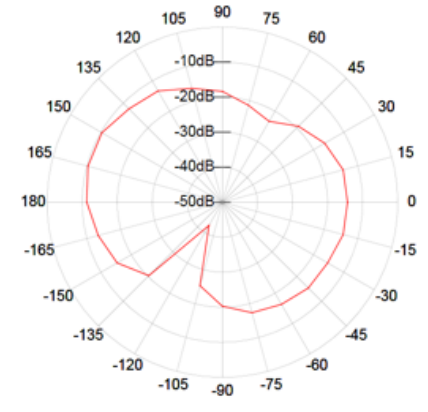
Frequency (Mhz): 2478  
Maximum Gain (dBi): -6.34  
Minimum Gain (dBi): -23.34  
Average Gain (dBi): -12.63



Frequency (Mhz): 2402  
Maximum Gain (dBi): -9.34  
Minimum Gain (dBi): -47.34  
Average Gain (dBi): -16.63



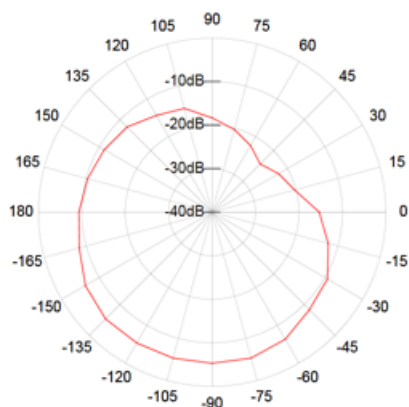
Frequency (Mhz): 2438  
Maximum Gain (dBi): -10.34  
Minimum Gain (dBi): -38.34  
Average Gain (dBi): -17.54



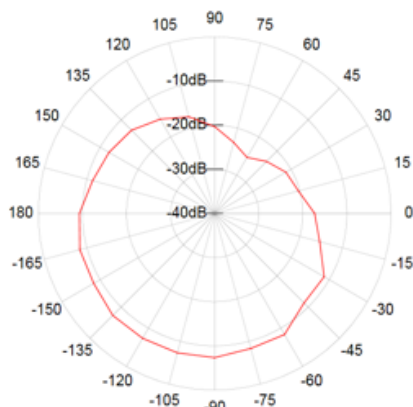
Frequency (Mhz): 2478  
Maximum Gain (dBi): -10.34  
Minimum Gain (dBi): -42.34  
Average Gain (dBi): -17.38

## 2. Orientation 2, Beacon - YZ

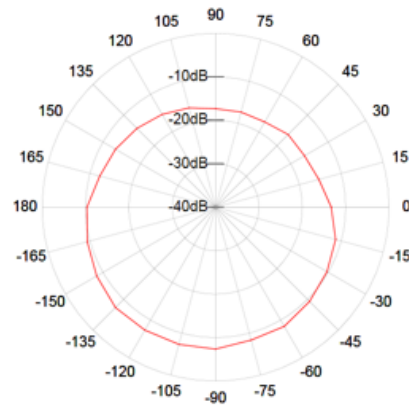
### 2.1 Antenna Polarity - H



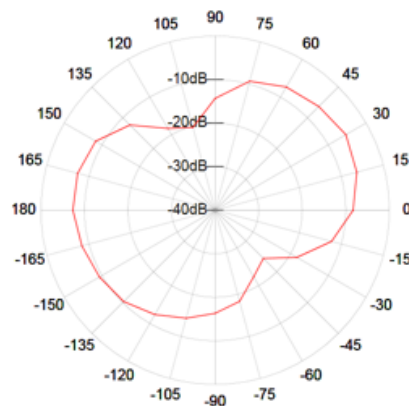
Frequency (Mhz): 2402  
 Maximum Gain (dBi): -5.34  
 Minimum Gain (dBi): -24.34  
 Average Gain (dBi): -12.25



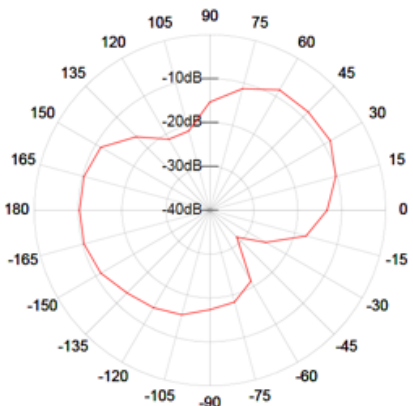
Frequency (Mhz): 2438  
 Maximum Gain (dBi): -7.34  
 Minimum Gain (dBi): -25.34  
 Average Gain (dBi): -13.79



Frequency (Mhz): 2478  
 Maximum Gain (dBi): -7.34  
 Minimum Gain (dBi): -17.34  
 Average Gain (dBi): -12.09



Frequency (Mhz): 2402  
 Maximum Gain (dBi): -5.34  
 Minimum Gain (dBi): -24.34  
 Average Gain (dBi): -12.42



Frequency (Mhz): 2438  
 Maximum Gain (dBi): -8.34  
 Minimum Gain (dBi): -31.34  
 Average Gain (dBi): -15.09



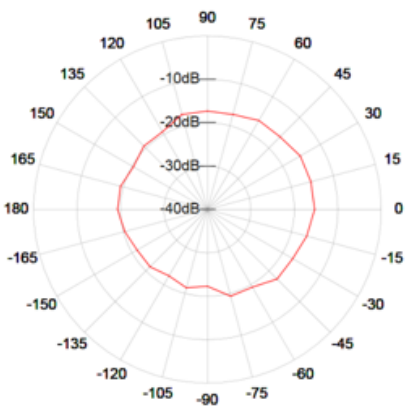
Frequency (Mhz): 2478  
 Maximum Gain (dBi): -9.34  
 Minimum Gain (dBi): -24.34  
 Average Gain (dBi): -14.92

3. Orientation 2, Beacon - ZX

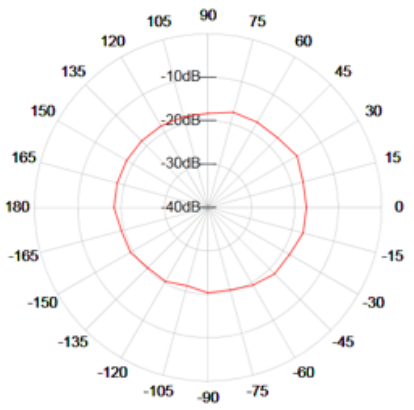
3.1 Antenna Polarity - H



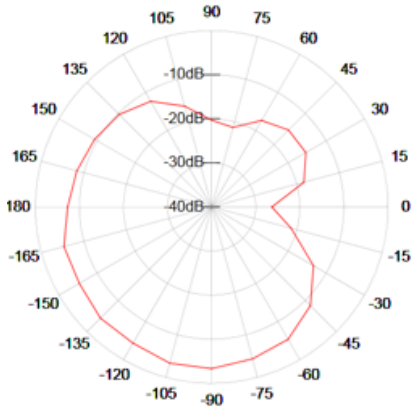
Frequency (Mhz): 2402  
 Maximum Gain (dBi): -12.34  
 Minimum Gain (dBi): -21.34  
 Average Gain (dBi): -16.88



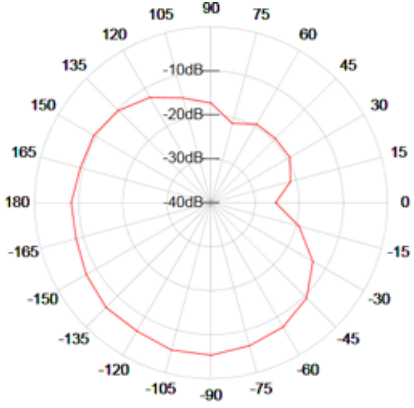
Frequency (Mhz): 2438  
 Maximum Gain (dBi): -15.34  
 Minimum Gain (dBi): -22.34  
 Average Gain (dBi): -18.63



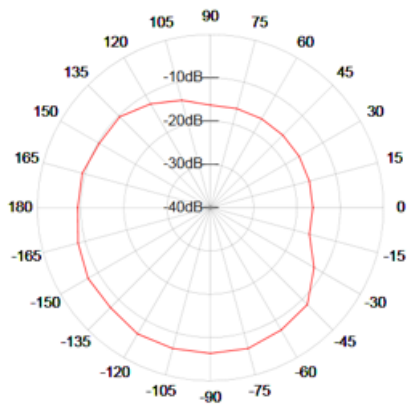
Frequency (Mhz): 2478  
 Maximum Gain (dBi): -16.34  
 Minimum Gain (dBi): -21.34  
 Average Gain (dBi): -18.59



Frequency (Mhz): 2402  
 Maximum Gain (dBi): -3.34  
 Minimum Gain (dBi): -26.34  
 Average Gain (dBi): -11.54



Frequency (Mhz): 2438  
 Maximum Gain (dBi): -5.34  
 Minimum Gain (dBi): -25.34  
 Average Gain (dBi): -12.63



Frequency (Mhz): 2478  
 Maximum Gain (dBi): -6.34  
 Minimum Gain (dBi): -16.34  
 Average Gain (dBi): -11.38