

# NXP AIM - 2024

## Dos and Don'ts KIT - B3RB

### 1. Kit Box

- The complete kit must be **submitted** back to NXP office after the end of the Grand Finale.
- **Dimensions:**
  - Length: 50 cm (1.6 ft).
  - Width: 47 cm (1.5 ft).
  - Height: 32 cm (1 ft).
- **Weight:** 6 kg
- The box contains 3 small boxes inside.
- The Kit contains a battery, battery charger, sharp metal parts of buggy chassis, plastic parts, processing boards, wires, camera, 2-D Lidar, various sensors, and other required items.
- Parts are protected using bubbled plastic wraps and foam (do not throw them).
- **Battery** information and precautions are given in **Chapter 1**.
- Please ensure to follow **unboxing** and **repackaging** guidelines mentioned in **Chapter 2**.
- To **assemble** the Kit, please follow **Chapter 3**.
- Please follow **travel guidelines** as per **Chapter 4**.
- The **list of the complete parts** is given in **Annex – A**.

## Chapter 1: Battery

### 1-a: Battery specifications

- Battery Make and Model: Bonka 11.1V 2200mAh 25C 3S Lithium Polymer Battery Pack
- Charger: IMAX B3 AC Compact Balance Charger for 2S-3S LiPo
- Length: 106 mm.
- Width: 34 mm.
- Height: 23 mm.
- Weight: 175 g.
- Voltage: 11.1 V.
- Capacity: 2200 mAh.
- Power: 24.64Wh
  - $\text{Power} = \text{Voltage} * \text{Capacity}$
- Lithium Content: ~0.6grams
  - Lithium content of the battery is estimated as  $(0.3 * \text{Capacity (in Ah)})$  grams.

### 1-b: Battery Do's and Don'ts

- The batteries/battery charger needs to be carried separately (will be given along with the kit box on the day of regional finale).
- Consider charging the battery after 30 to 40 minutes of standby time (buggy not moving) and 20 minutes of runtime (buggy moving).
- Before connecting the battery please make sure ground and voltage pin is not shorted.
- Please attach the battery only after all connections are made. Don't change the connections when battery is supplying power to buggy.
- Do not overcharge the battery, nor discharge it fully, it may affect battery health and performance.
- Use only provided battery and charger.
- Life of one fully charge battery will provide 30 mins of active time, when attached to the buggy.
- Do not charge and drain the battery at the same time.
- If you see the battery getting swollen or leaking, please discard it immediately.
- In any case, do **NOT** short the terminals of the battery. Keep them well separated.
- Handle the battery with care, as faulty battery may cause **an explosion**.
- Keep the battery away from moisture, water, and fire as it may damage.

### 1-c: Battery travel guidelines

Refer to Chapter 4.

## Chapter 2: Kit unboxing and repacking:

- Unpack the boxes carefully, do not damage any box, bubble wrap or any other parts of kit.
- Do not throw any items of the kit (whether of use or not).
- The assembled kits need to be repacked carefully along with other left parts and boxes.
- While repacking, use bubble wraps and foam to protect the buggy from travel damage.
- Handle the kit with care, it contains breakable and explosive(battery) items.
- Keep the kit away from moisture, water, and fire as it may damage.
- The complete kit content must be **submitted** back to NXP office after the end of the Grand Finale.

## Chapter 3: Kit Assembly

- Handle all parts with immense care.
- Take help from the provided Gitbook page: <https://nxp.gitbook.io/nxp-aim> (to be made available post 5<sup>th</sup> Aug) and assembly videos to assemble the kit.
- Please wait until the gitbook is available and updated before starting the assembly of kit.
- Do not forcefully insert any plug or wire. Some wires may be tight that will be mentioned in the Gitbook.
- Do not apply much pressure while tightening the screws as well as while unscrewing them.
- Do not use any external tool or parts in buggy. Only use the mentioned screws, turners, and drivers in each step, as using distinct size tools while assembling may damage the buggy.
- In case of any query or damage, contact **AIM core team over Discord/email**.
- Do not experiment with buggy by changing position of parts or wires.

## Chapter 4: Travel guidelines

- Kindly check with your travel agent before planning to avoid any inconvenience during travel.
- Please follow proper travel guidelines of air, water, rail, or road travel to carry Battery operated circuits. Battery specifications are mentioned in Chapter 1.
- The battery inside the kit can have travel restrictions (specifically airways).
- Handle the kit with care, it contains breakable and explosive(battery) items.
- Keep the kit away from moisture, water, and fire as it may damage.
- Kits have screws and sharp objects which need to be taken care of for air travel.

## Annex-A

Refer to below table for all parts included in the kit

Total items: **83**

S.No.	Item Number	Description	Quantity	Category	Sub- Item Number
1	901-10008	HW ACCESSORY, WLTOYS WL124017 CAR WITHOUT RADIO CONTROLLER, WITHOUT BATTERY AND WITHOUT RADIO RECEIVER and 1:12 Electric 4WD Climbing Car Instruction Manual for Model No. 124017 and USB Charger KX7V4-200 7.4V 2S with 3 Pin Connector	1	Base Mechanical Frame Components	
2	901-77273	HW ACCESSORY, J-LINK EDU MINI DEBUGGER	1	Base Mechanical Frame Components	
3	700-31354	PWA, DCD-LZ-ADAPT	1	Base Mechanical Frame Components	
4	600-77370	CABLE, USB-TTL, FTDI TTL-232R-3V3, 6 PIN CONNECTOR, +3.3V, 0.70 M	1	Base Mechanical Frame Components	
5	901-77364	RC TOOLS 7 IN 1 HEX SCREWDRIVER SET HEXAGONAL	1	Base Mechanical Frame Components	
6	280-77408	PRE-CUT DOUBLE-SIDED FOAM SQUARES - 1/16" thick, 1/2 x 1/2"	10	Base Mechanical Frame Components	
7	901-77659	HW ACCESSORY RC XT60 FEMALE TO MALE DEANS T PLUG ADAPTER	1	Base Mechanical Frame Components	
8	600-77612	CABLE TIES, BLACK UV STABILIZED NYLON - 4", 18 LB	10	Base Mechanical Frame Components	
9	700-47472	PX4ARMINGBRD Board	1	Base Mechanical Frame Components	
10	600-77546	Cable for PX4ARMINGBRD (10-Pin JST-GH)	1	Base Mechanical Frame Components	
11	901-10005	HW ACCESSORY, DIRECT TIME OF FLIGHT LIDAR	1	Base Mechanical Frame Components	
12	280-10004	FASTENER, SCREW M2.5x10MM BLACK HEX SOCKET HEAD CAP	3	Base Mechanical Frame Components	
13	280-10006	NUT, M2.5 x 0.45MM NYLON INSERTED HEX SELF LOCK NUT, BLACK ZINC PLATED, DIN985	3	Base Mechanical Frame Components	
14	280-10007	FASTENER, SCREW M3 X 0.5 X 8.0MM LONG, HEX DRIVE, BUTTON HEAD, PASSIVATED 18-8 SS	3	Base Mechanical Frame Components	

15	280-10008	NUT, M3 X 0.5 X 4MM NYLON INSERTED HEX SELF LOCK NUT, BLACK ZINC PLATED	3	Base Mechanical Frame Components	
16	280-10009	FASTENER, SCREW M3 X 0.5 X 5.0MM LONG, HEX DRIVE, BUTTON HEAD, PASSIVATED 18-8 SS	16	Base Mechanical Frame Components	
17	280-10012	FASTENER, SCREW M3 X 0.5 X 10MM LONG, HEX DRIVE, SOCKET HEAD, 18-8 SS	8	Base Mechanical Frame Components	
18	280-10013	FASTENER, SCREW M3 X 0.5 X 14MM LONG, HEX DRIVE, SOCKET HEAD, 18-8 SS	4	Base Mechanical Frame Components	
19	280-10014	FASTENER, SCREW M2.5 X 0.5 X 8MM LONG, PHILLIPS, FLAT HEAD TAPPING, 18-8 SS	4	Base Mechanical Frame Components	
20	805-77575	THE HOVERGAMES; COLOR LABEL Die Cut Sticker: 3.0" X 2.91"	1	Base Mechanical Frame Components	
21	805-10002	LABEL, COGNIPLOT SMALL LOGO STICKER, 1" X 1"	2	Base Mechanical Frame Components	
22	805-10001	LABEL, NXP COLOR LOGO STICKER, 75MM" X 30MM	1	Base Mechanical Frame Components	
23	805-10003	LABEL, COGNIPLOT LARGE LOGO STICKER, 50MM X 30MM	1	Base Mechanical Frame Components	
24	901-77605	HW ACCESSORY, M3 NYLON SPACER KIT 180PCS M3 NYLON M-F HEX SPACERS SCREW NUT ASSORTMENT SET	1	Base Mechanical Frame Components	
25	901-77606	HW ACCESSORY, M2/M2.5/M3 SCREW FASTENER KIT FOR WLTOYS 144001 1/14 RC	1	Base Mechanical Frame Components	
26	600-10006	CABLE, SERVO EXTENSION LEAD WIRING CABLE MALE TO MALE, 300 MM	2	Base Mechanical Frame Components	
27	600-77359	CABLE, CUSTOM FOR DCD-LZ-ADAPT, 7 POSITION, JST-GH CONNECTOR, 100 MM	1	Base Mechanical Frame Components	
28	901-10012	HW ACCESSORY, XT60 PANEL MOUNT ADAPTER	1	Base Mechanical Frame Components	
29	600-10009	CABLE, CUSTOM PDB TO CANHUBK3 CABLE, 6 POSITION, JST-CH CONNECTOR, 10 INCHES	1	Base Mechanical Frame Components	
30	590-10002	FOAM, BLOCK 400MM WIDTH 600MM LENGTH X 200MM THICKNESS	1	Base Mechanical Frame Components	

31	280-77781	FASTENER STANDOFFS 6x35MM & (TOP/BOTTOM) 3MMx5 SOCKET HEAD	1	Base Mechanical Frame Components	
32	901-10038	HW ACCESORY, RECLOSABLE FASTENER HOOK AND LOOP, ADHESIVE 1" X 0.5"	8	Base Mechanical Frame Components	
33	91352	X-MR-B3RB-S	1	X-MR-B3RB-M LIST	
34	91354	X-MR-B3RB-MUK, Mech Upgrade Kit (MUK)	1	X-MR-B3RB-M LIST	
35	91353	X-MR-B3RB-BMF and includes X-MR-LIDAR-STL-27	1	X-MR-B3RB-M LIST	
36	926-10002	MR-B3RB Pre-Production Prototype PAPER	1	X-MR-B3RB-M LIST	
37	901-10015	HW ACCESSORY, 2-in-1 — 1-8s Lipo Li-ion Battery Voltage Tester Check, Monitor RC Low-Voltage Buzzer Alarm (Hardware - BX100)	1	X-MR-B3RB-M LIST	
38	600-10004	CUSTOM B3RB LED CABLE	1	X-MR-B3RB-M LIST	
39	600-10003	STEMMA QT Cable	1	X-MR-B3RB-M LIST	
40	600-10002	28 AWG cables (Red, Black, Black, Yellow) 30cm length ZH1.5T-4P1.5mm connector	1	X-MR-B3RB-M LIST	
41	600-10005	RC Remote to CANHUBK3 UART Custom Cable	1	X-MR-B3RB-M LIST	
42	600-10008	CABLE XT-60 EXTENSION CABLE	1	X-MR-B3RB-M LIST	
43	801-10016	ADAPTER, BATTERY CONNECTOR POST MOUNT FOR B3RB	1	X-MR-B3RB-M LIST	
44	801-10017	BRACKET, LIDAR MOUNT JACK FOR B3RB	1	X-MR-B3RB-M LIST	
45	901-10050	HW ACCESSORY, NEURALPROBE MODULE	1	X-MR-B3RB-M LIST	
46	600-10012	CABLE, S PIN POWER CABLE, 10 IN, FOR MR-CANHUBK344-MIN	1	X-MR-B3RB-M LIST	
47		Battery	1	X-MR-B3RB-M LIST	
48		Charger	1	X-MR-B3RB-M LIST	
49	700-89377	PWA, MR-CANHUBK344	1	MR-CANHUBK344 Components	
50	700-47294	PWA, DRONE-CAN-TERM (CAN Bus Termination Resistor)	1	MR-CANHUBK344 Components	
51	336-77458	HW ACCESSORY, 0.91-inch OLED Display Module IIC SSD1306 128x32 OLED	1	MR-CANHUBK344 Components	
52	600-77466	CABLE, 4 PIN JST-GH TO 4 PIN JST-GH 300 MM	1	MR-CANHUBK344 Components	

53	600-77467	CABLE, ASSY, 4 PIN JST-GH TO 4 PIN JST-GH 50 MM	1	MR-CANHUBK344 Components	
54	600-77521	DATA CABLE, 2 PIN JST-GH TO 2 PIN JST-GH 254 MM	1	MR-CANHUBK344 Components	
55	600-77602	HW ACCESSORY, 5 PIN TO 5 PIN POWER INPUT CABLE	1	MR-CANHUBK344 Components	
56	600-77603	HW ACCESSORY, POWER INPUT CABLE SYP TO DC5.5, 2.1 JACK	1	MR-CANHUBK344 Components	
57	600-77604	HW ACCESSORY, POWER INPUT CABLE, SYR 2 PINS TO GHR 5 PINS	1	MR-CANHUBK344 Components	
58	600-77625	HW ACCESSORY, XT60 Male to XT60 Female with SYP in parallel	1	MR-CANHUBK344 Components	
59	926-79071	POSTCARD, MR-CANHUBK344, 6" X 4"	1	MR-CANHUBK344 Components	
60	700-88954	PWA, NAVQ-PLUS-2A	1	HW ASSY, 8MPNAVQ-8GB-G KIT	
61	700-89912	PWA, 8MPNAVQ-808-G	1	HW ASSY, 8MPNAVQ-8GB-G KIT	
62	800-76568	ENCLOSURE, NAVOPLUS ENCLOSURE KIT WITH HEATSINK	1	HW ASSY, 8MPNAVQ-8GB-G KIT	
63	901-77809	HW ACCESSORY, FIXED FOCUS CAMERA MODULE, CMOS S.MMP	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
64	800-78571	ENCLOSURE, ASSY, SCOOR Resin, NRR-NOCAM-CIV5648	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
65	700-87692	PWA, 8MPNAVQ-USBSER	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
66	334-77918	Micro SDCS2 32GB, Class 10 UHS-I, Canvas Select Plus	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
67	600-77602	HW ACCESSORY, 5 PIN TO 5 PIN POWER INPUT CABLE	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
68	600-77604	HW ACCESSORY, POWER INPUT CABLE, SYR 2 PINS TO GHR 5 PINS	1	HW ASSY, INNOCAM KIT WITH	

				ENCLOSURE AND SCREWS	
69	600-77625	HW ACCESSORY, XT60 Male to XT60 Female with SYP in parallel	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
70	600-77521	DATA CABLE, 2 PIN JST-GH TO 2 PIN JST-GH 254 MM	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
71	600-77456	CABLE, 4 PIN JST-GH TO 4 PIN JST-GH 300 MM	2	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
72	600-77370	CABLE, USB-TTL, FTDI TTL-232R-3V3, 6 PIN CONNECTOR, +3.3V, 0.70 M	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
73	650-77719	HW CABLE GH 5 PIN TO GH 5 PIN, 100 MM	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
74	600-77212	USB CABLE, USB 3.0 A/M TO TYPE C CABLE, 1M	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
75	600-77658	CABLE, IX INDUSTRIAL IP20 CABLE, IX TO RJ45	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
76	928-79059	QSG, Quick Start Guide For NAVQPLUSPC	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
77	926-79301	FLYER, INNOWAVE DESIGN MARKETING FLYER	1	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	
78	926-79302	EMCRAFT QR CODE STICKER	3	HW ASSY, INNOCAM KIT WITH ENCLOSURE AND SCREWS	



79	280-78113	FASTENER, SCREW, M3-0.5X12, SOCKET HEAD, SS	4	HW ACCESSORY, ZIPLOCK BAG CONTAINING MOUNTING ACCESSORIES FOR SMPNAVQ-8GB-G AND MR-NOCAM- OV5646	901-77834
80	280-78116	FASTENER, SCREW, 10-02x3/4", SOCKET HEAD, ss	1	HW ACCESSORY, ZIPLOCK BAG CONTAINING MOUNTING ACCESSORIES FOR SMPNAVQ-8GB-G AND MR-NOCAM- OV5646	901-77834
81	269-78117	FASTENER, NUT, 10-32, HEX, 55	1	HW ACCESSORY, ZIPLOCK BAG CONTAINING MOUNTING ACCESSORIES FOR SMPNAVQ-8GB-G AND MR-NOCAM- OV5646	901-77834
82	801-77546	BRACKET, MOUNT, White Resin, MR-NQCAM-OV5645	1	HW ACCESSORY, ZIPLOCK BAG CONTAINING MOUNTING ACCESSORIES FOR SMPNAVQ-8GB-G AND MR-NOCAM- OV5646	901-77834
83	260-77408	PRE-CUT DOUBLE-SIDED FOAM SQUARES # 1/16" thick, 1/2 x 1/2"	4	HW ACCESSORY, ZIPLOCK BAG CONTAINING MOUNTING ACCESSORIES FOR SMPNAVQ-8GB-G AND MR-NOCAM- OV5646	901-77834