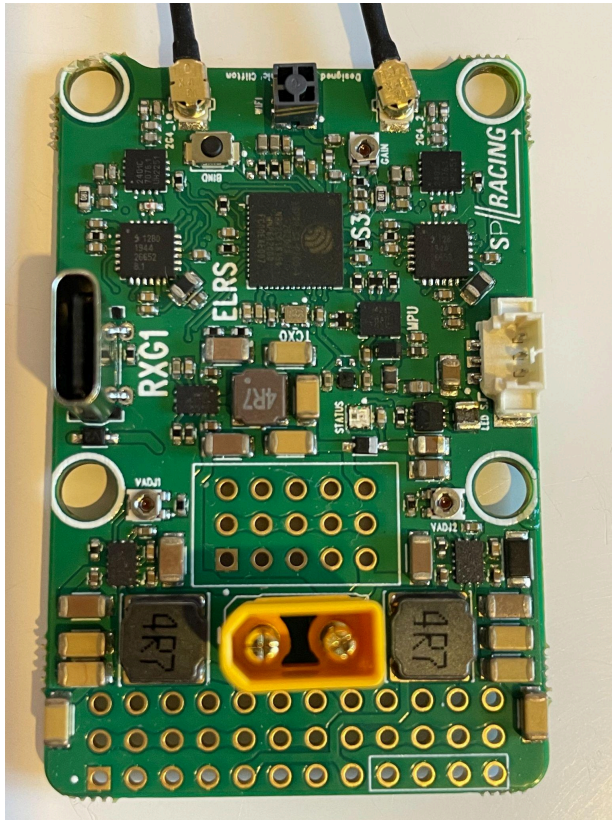# ExpressLRS Receiver Type Approval Checklist

Product Name: **SPRacing RXG1 Gyro 2.4GHz RX/GYRO (S3)**

Lua Device Name: **SPR RXG1 S3**

Summary of results	
SUGGESTION	

Legend	
Passed ▾	Item meets the requirement
Suggestion ▾	Item could be improved, still acceptable
Fail ▾	Item failed and device will not be approved
Not tested ▾	

Visual Inspection

Test	Result	Tester	Notes
Pad layout **must** use standard crossfire receiver ordering (RX, TX, 5V, GND; as seen from the side where the antenna is) with 2.54mm pitch spacing	Not applicable ▾	PK schugabe	PWM Based receiver with a USB-C connector
If a button is onboard, it is connected to BOOT0. If no button, BOOT0 pad is provided	Passed ▾	PK schugabe	
Antenna connector is u.FL (IPEX1), not smaller MHF4/IPEX4 (suggested)	Passed ▾	PK schugabe	
VREG supports required current for wifi (>=500mA)	Passed ▾	PK schugabe	

First Boot

Test	Result	Tester	Notes
Firmware does not have a binding phrase (boots to traditional binding mode)	Passed ▾	PK schugabe	
LED is operating with expected polarity (on/off correct for single color LEDs, RGB/GRB set correctly for ARGB)	Passed ▾	PK schugabe	
LED on same side as antenna (suggested)	Passed ▾	PK schugabe	
Wifi range for firmware updates is at least 2m (10m suggested)	Passed ▾	PK schugabe	

Flashing/Firmware updates

Test	Result	Tester	Notes
Via UART	Passed ⌄	schugabe PK	
Via Betaflight Passthrough	Not applicable ⌄		
Via Wifi (access point or home network)	Passed ⌄	schugabe PK	

Connectivity and RF Performance

Test	Result	Tester	Notes
If LNA/PA is onboard, measured power output matches expected output. If no PA, measured power output is ~17mW Max must be within 0.5dBm of expected.	Passed ▾	PK	Note: | Expected	Ant1	Ant2
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10mW	11	15
25mW	29	37
50mW	60	71
100mW	107	113	
RX can operate at full power on 150Hz (2.4G), 200Hz (900M), 1:2 TLM, for at least 1 hour	Passed ▾	PK	
RSSI/LQ for both uplink and downlink checked and compared against known good data	Passed ▾	schugabe	**250Hz TPWR=10mW @ 1m:** **Receiver power 10mW:** 1RSS=-10dB 2RSS=-13dB RQly=100% RSNR=11dB TRSS=-4dB TQly=100% TSNR=12dB
	Passed ▾	PK	**250Hz TPWR=25mW @ 1m:** **Receiver power 100mW:** 1RSS=-23dB 2RSS=-27dB

Test	Result	Tester	Notes
			RQly=100% RSNR=12dB TRSS=-18dB TQly=100% TSNR=13dB
Frequency offset of XTAL checked for compliance (SX1280 <100kHz, SX127x <50kHz)	Passed ▾	schugabe	2.440.002.600 2439 2440 24 52000055 0.055 1.0576923076923077 2.6 ✓ For both radios

Test	Result	Tester	Notes
	Passed ▾	PK	 Center Frequency 2439979520 Calculated XO Freq — 51999564 Calculated XO Offset (kHz) — -0.436 Calculated XO Offset (PPM) — 8.384615384615385 Raw Offset (kHz) — -20.48 TL;DR ✅
Diversity RX: Antenna switching works i.e. covering an antenna switches to the other and back again, RSSI visibly changes	Passed ▾	schugabe	
	Passed ▾	PK	
True Diversity RX: Interference between the two radios is minimal, compare SNRs and LQs between Diversity mode vs. Gemini mode	Passed ▾	schugabe	Lora 500Hz: Gemini: 10dB Diversity: 10dB F1000LQ: LQ 100%

Test	Result	Tester	Notes
• LoRa 500Hz SNR (good ref: Diversity 10-11dB, Gemini 11-12 dB) • F1000 LQ: (ref: Stable 100 all the time)	Passed ▾	PK	Lora 500Hz: Gemini: 12/13dB Diversity: 11/12dB F1000LQ: LQ 100%

PWM Tests

Test	Result	Tester	Notes
Jitter-free PWM output on all channels	Passed ▾	PK	Tested on the servo jig.
Receiver has proper strength pull-ups to boot with servo <10k ohm impedance to ground on all channels	Passed ▾	PK	
VBAT scale/offset valid for specified input voltage range (<0.5% error)	Passed ▾	PK	Tested between 3 and 28V

Notes

Parts marked in RED are not required and should be removed

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{
  "//": "LED",
  "button": 0,
  "serial_tx": 43,
  "serial_rx": 44,
  "radio_dcdc": true,
  "radio_miso": 13,
  "radio_mosi": 11,
  "radio_sck": 12,
  "radio_rst": 9,
  "radio_rst_2": 46,
  "radio_busy": 7,
  "radio_busy_2": 5,
  "radio_dio1": 6,
  "radio_dio1_2": 4,
  "radio_nss": 10,
  "radio_nss_2": 8,
  "power_txen": 14,
  "power_txen_2": 45,
  "_power_rxen": "N/A",
  "_power_rxen_2": "N/A",
  "power_lna_gain": 12,
  "power_min": 0,
  "power_high": 3,
  "power_max": 3,
  "power_default": 3,
  "power_control": 0,
  "power_values": [-10, -6, -3, 1],
  "pwm_outputs": [39, 40, 41, 42, 15, 16, 21, 3, 44, 43, 18, 17],
  "vbat": 2,
  "vbat_offset": 12,
  "vbat_scale": 410,
  "led_rgb": 38,
  "led_rgb_isgrb": true,
  "ledidx_rgb_status": [0],
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    "ledidx_rgb_vtx": [1],
    "ledidx_rgb_boot": [0, 1],
    "gyro_nss": 34,
    "gyro_sck": 36,
    "gyro_miso": 37,
    "gyro_mosi": 35,
    "gyro_int": 33
}
```