Testing Script Parameters

| Value | 1 Range | 1

		Testing Script Paramete	درخ
<i>c</i> 1	Lu		Remark Before Use:
<u>Comman d</u>	Meaning Set Modem/Packet type	Valne_I Range O=GFSK	Each value must be seperated
•	Set flowery tacket type	1 = LORA	by a space when entered
I	Set transmit Power	0 = 10 (D8M)	
		[= 14	into the Ardvino IDE Serial
		2 = 15	Monitor. There is a limit
		3 = 17	of 9 values which can be
		4 = 20 5 = 30	I I I
2	Set Frequency	5 = 22 150 000 000 - 960 000 000 (H2)	entered using the Serial
3	Calibrate	0 = 64 KHz RC Oscillator	Monito C
<u> </u>		1 = 13 MHz RC Oscillator	
		2 = Phase - lacked loop	Ex. 37 2 3 4 5 6 7 8 9
			Will transmit the message
		3 = Analog-to-Digital pulse 4 = Analog-to-Digital BulkN	1-2-3-4-5-6-7-8-9
		5 = Analog-to-Digital Bulk P	1-2-2-4-2-0-7
		6 = Image	Value_2 Range
4	Calibrate image	7 = A11 150 - 960 (Lower bound)	150-960 (Upper barnd)
5		0-63 (Multiply by 2.5 for mA)	150 100 (tippe: Gookley
6	Set trimming capacitors	0-47 [xTA=11.3+value_1 × 0.47]	0-47 [xTA = 11.3 + value 2 × 0.47]
7	Set Lora CRC	O = CRC Disabled	
		1= CRC Active	
8	Set Lora invent iq	0= Invert ia Disable	
	(for gateway compatability)		
9	Set Lora header type	0 = Explicit	
10	Set Lorg Payload length	1 = Implicit 0-255 (butes)	
11	Set Lora Preamble length		
12	Set Lora Spreadfactor	5-12	
13	Set Lora Bandwidth	6 = 500 (kHz)	
		5 = 250	
		4 = 125	
		3 = 62	
		10 = 41 2 = 31	
		9 = 20	
		i = 15	
		8 = 10	
		0 = 7	
14	Forward error correction	1 = 4/5	
	code rate	2 = 4/6	
		3 = 4/7 4 = 4/8	
15	1 01 01	0 = 1dro Disabled	
.3	Low Pata Rate Optimization	1 = Idro Active	
16	Luto Low Data Rate	0 = auto Idro Disabled	
	Optimization	1 = acto Idro Active	
17	GFSK Preamble length	8-65535 (bits)	
18	GFSK Preamble Detection	0 = Dectector off	
		4 = Detect minimum 8 bits	
		5 = Detect minimum 16 bits	
		6 * Detect minimum 24 bits	
	I	7 = Detect minimum 32 bits	I

Command	Meaning	Value_1 Range
19	Set GFSK Node Address	0-255
20	Set GFSK Broadcast Address	
21	Set Address Filtering	0 = Address filtering disabled
		1 = Address filtering (Node)
		2 = Address filtering (Node+Broadcast)
22	Set GFSK header type	
_	or sign today type	1 = Variable Packet length
23	Set GFSK Ricket length	0-255 (254 : f address filtering on)
24	Set GFSK Cyclic	I = CRC Off
	Redundancy Check (CRC)	
		2=2 byte CRC
		4 = 1 byte inverted CRC
		6=2 bute inverted CRC
25	Set GFSK DC free	0 = DC Free Whitening off
	Whitening	1 = DC Free Whitening
26	Set GFSK bit rate	600 - 300 000 (bps)
27	Set GFSK frequency deviation	600-200 000 (Hz)
28	Set GFSK pulse shape	0 = Pulse shape off
	` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` ` `	8 = Gaussian BT 0.3
		9 Gaussian BT 0.5
		10 Gaussian BT 0.7
		11 Gaussian BT 1
29	Set GFSK bandwidth	31 = 4800 (Hz)
		23 = 5800
		15 = 7300
		30 = 9700
		22 = 11 700
		14 = 14 600
		29 = 19 500
		21 = 23 400 Reference Equation
		13 = 29 300
		28 = 39 000 BW > 2× Fdev × 225 (32 × XTAL) 20 = 46 900 BW > 2× Fdev × 2 ¹⁵ bit rate + 2× Frequency Error
		MA TO SERVICE TO SERVI
		12 = 58 600
		27 = 78 200 XTAL = 32 000 000
		19=93 800 Frequency error = Crystal Frequency error 11=117 300 in start - params
		11 Gian 1 = pq1 q/10
		26 = 156 200 18 = 187 200
		10=234 300
		25 = 312 000
		17 = 373 600
		9 = 467 000
30	Set GFSK Sync word	value - 1 value - 2 value - 3 value + value - 5 value - 6 value - 7 value - 8 value - 9
30	Jei MIZIV DAVE MOLO	0-255 0-255 0-255 0-255 0-255 0-255 0-255 0-255 0-8 (length)
31	Set GFSK CRC Seed	
32	Set GFSK CRC Polymonial	
33	Set GFSK Whitening seed	
34	Set Transmit Timeout	0-262 142 (ms)
35		N/A
36	Set Transmit Buffer	
-	Base Address	0-255
37	Transmit	value_1 value_2 value_3 value_4 value_5 value_6 value_7 value_8 value_9
		0-255 0-255 0-255 0-255 0-255 0-255 0-255 0-255

Command	Meaning	Value -1	Range			ı	
38	Set Lora Symbol Timeoct						
39	Set Receive Timeout	0-262 142	(ms) or	16 777 215	for rx-a	antinuous	
40	Read Receive Buffer	N/A					
41	Set Receive Buffer	0-255					
	Base Address						
42	Set chip to Receive made						
43	Set thip to Receive mode	value_ = Re		time			
	with duty cycling	value_2 = SI					
44	Set chip to Standby mode	0 = 13 MHz 1 = XOSC	RC Oscilla	ator			
45	Set Receive/Transmit	32 = Standb	(13 MH2	Desillat -			
2	Fallback Mode	48 = Standb.	(\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	الرامد)			
	I direct libe	64 = Frequer	y (Nose)	sis Mada			
46	Set chip into sleep	0= Cold Sta	et	3.3 11000			
	mode mode	4 = Warn (
47	Wakeup chip	N/A	<u> </u>				
48	Set personalized	Value	Value_2	Value_3	Value_4	Value-	5
•	CAD Parameters	0=1 (symbol)		0-255	0 = CAD only	= cad times	
	Refer to section 13.4.7	1=2	(cad detect	(Cad detect	1 = R _×	(32 bit int	eger
		2 = 4	peak)	min)	16 = LBT	maximum)	3
		3 = 8	' '	·	(fallback		
		4 = 16			mode)		
49	Channel Activity	0= with pe	rsonalized	cad para	meters		
	detection	1= with be	st known p	parameters			
		(Note: only	bandwidths	500 kHz	and 125 k	He have b	est
	C C . II .	known setti	as tor s	preadfactor	s 7 through	1 12 (AN1)	200.48))
50	Set Frequency Synthesis		sheet: 13.1				
51	Set TX continuous wave		sheet: 13.1				
<u>52</u> 53	Set TX infinite preamble. Get interrupts	N/A Data	sheet: 13.1	. 10			
54	Get interrupts Clear interrupts	N/Å					
55	Get time on air	N/A					
56	Get API States		K I = Unsu	posited Fee	- 2 = U	nknown Value	3 = Ecco
57	Get Chip Status		sheet: 13.5				
58	Get Pevice Errors		sheet: 13.6				
59	Check Receive Buffer	N/L					
60	Check Lora Packet	N/A					
61	Check GFSK Packet	N/A Data	sheet : 13.5.	3			
62	Check Payload Length	N/L					
<u>63</u>	Check Preamble Length	NJA					
64	Get Lara Parameters	N/A					
	from header of received						
1.5	packet	11/2					
<u>65</u>	Get Packet type / Modern						
66	Get Lora statistics	N/A					
<u>67</u>	Get GFSK Statistics	NJA					
<u>68</u>	Reset Statistics	N/A					
69	Get Lara Sync Word						
70	Get GFSK Sync Word	N/A					

Default Settings after Initialization

Parameter	Setting
Transmit buffer base address	0
Receive buffer base address	0
Transmit Timeout	SX126X-MAX_TIMEOUT_IN_MS
Receive Timeout	SX126X_RX_SINGLE_MODE
Frequency	915 000 000 (Hz)
If TCXO → dio3 set as contral	1.7V with timeact 320 ms
Calibration	All
cfg_rx_boosted	ON
Receive / Transmit Fallback Mode	Standby (XOSC)
Startup Mode	Standby (XOSC)
Transmit Power	14 (DBM)
	ı

Startup Recommendations

Set Modern (Command 0)

Set Payload Length According to the modern (Command 10 or 23)

Set Receive Mode for Receiver (Command 42)

Transmit with Transmitter (Command 37)

Note for GFSK Modulation:

- -Use Rx-continuous by executing command 39 16777215
- -Sync Word must be configured, or else received data will be incorrect
- Gaussian Filter must be configured, the largest is the safest option
- Syna word connot be all zero's
- All Sync word bytes must be filled

The GFSK Modern tended to be unpredictable when I was testing it. These recommendations made it work for me, don't interpret them as requirements.

Lora Parameters	Setting
Luto bu data rate optimization	OFF
Sync Word	0×14 (20)
Spreadfactor	7
Bandwidth	500 (KHZ)
Code Rate	4/8
Low Data Rate Optimization	OFF
Preamble Length	lb (symbols)
Header Type	Expl:cit
Payload Length	O (bytes)
CRC	ON
Invert IQ	OFF
Symbol Number Timeaut	0
GFSK Parameters	Setting
B:t Rate	600 (bps)
Frequency Deviation	900 (H³)
Pulse Shape	OFF
Bandwidth	373 600 (H≥)
Preamble Length	32(bits)
Preamble Detector	0FF
Sync Word Length	64 (b:ts)
Address Filtering	OFF
Header Type	Fixed Packet Length
Payload Length	(bytes)
CRC	OFF
DC Free Whitening	OFF
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