



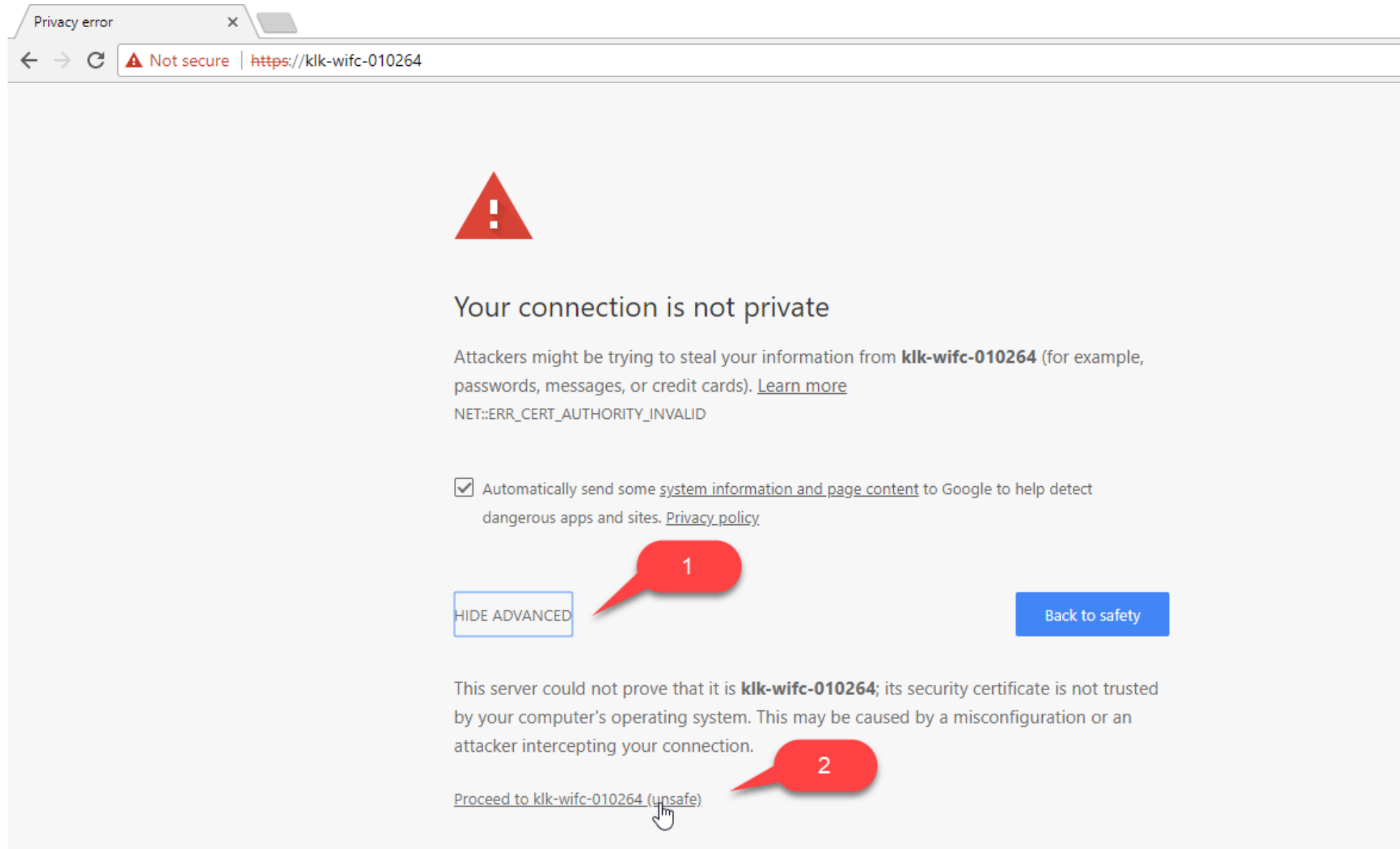
KERLINK IS A GLOBAL LEADING PROVIDER OF INFRASTRUCTURE AND VALUE ADDED SERVICES FOR
Internet of Things Networks
BASED ON A 15 YEAR-EXPERIENCE, KERLINK PARTNERS WITH TIER ONE IOT PLAYERS WORLDWIDE



Ifemto Setup and Configuration

REV 2.0

ขั้นตอนการเข้า SPN บน Ifemto



- 1) spn
- 2) spnpwd



ขั้นตอนการ ตั้งค่า Ifemto CELL

ตั้งค่า Region

kerlink
communication is everything

- Fleet
- Endpoints
- Received data
- Send data
- Configuration
 - Region**
 - Rx configuration
 - Tx configuration
 - LoRa network
 - Services
- Administration
- Logs

Region

Region *

AS 923MHz

SAVE CONFIGURATION

1

3

2

ตั้งค่าย่านความถี่ดังรูป

kerlink

Fleet

Endpoints

Received data

Send data

Configuration

Region

Rx configuration

Tx configuration

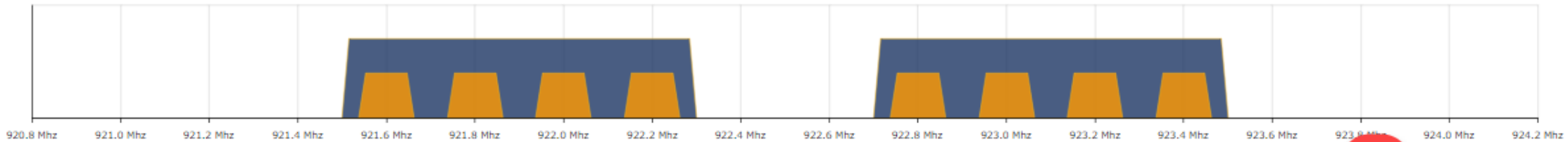
LoRa network

Services

Administration

Logs

Rx configuration



1

Radio	Effective	Frequency
Radio 0	<input checked="" type="checkbox"/>	915.000 MHz • 923.100 MHz • 928.000 MHz
Radio 1	<input checked="" type="checkbox"/>	915.000 MHz • 921.900 MHz • 928.000 MHz

2

3

Channels

Name	Effective	Radio	Frequency	Bandwidth	Spread factor
Multi SF0	<input checked="" type="checkbox"/>	Radio 0	922.700 MHz • 923.200 MHz • 923.500 MHz	125 kHz	
Multi SF1	<input checked="" type="checkbox"/>	Radio 0	922.700 MHz • 923.400 MHz • 923.500 MHz	125 kHz	
Multi SF2	<input checked="" type="checkbox"/>	Radio 0	922.700 MHz • 923.000 MHz • 923.500 MHz	125 kHz	
Multi SF3	<input checked="" type="checkbox"/>	Radio 0	922.700 MHz • 922.800 MHz • 923.500 MHz	125 kHz	
Multi SF4	<input checked="" type="checkbox"/>	Radio 1	921.500 MHz • 921.600 MHz • 922.300 MHz	125 kHz	
Multi SF5	<input checked="" type="checkbox"/>	Radio 1	921.500 MHz • 921.800 MHz • 922.300 MHz	125 kHz	
Multi SF6	<input checked="" type="checkbox"/>	Radio 1	921.500 MHz • 922.000 MHz • 922.300 MHz	125 kHz	
Multi SF7	<input checked="" type="checkbox"/>	Radio 1	921.500 MHz • 922.200 MHz • 922.300 MHz	125 kHz	
Mono SF	<input type="checkbox"/>	Radio 0	922.700 MHz • 923.100 MHz • 923.500 MHz	500 kHz	8

SAVE CONFIGURATION

เราสามารถดูการทำงานของ ifemto cell ได้จากเมนู logs

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Fleet

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LoRa network

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Logs

LoRa MAC server

Packet forwarder

Public

Internal

LoRa MAC server logs

REFRESH

DOWNLOAD

```

Oct 26 13:39:22 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:39:32 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:39:43 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:39:50 NS: Gateway 72-76-ff-08-45-01-02-64 seen
Oct 26 13:39:50 NS: JSON msg rx {"stat":{"time":"2017-10-26 11:39:50 GMT","rxnb":0,"rxok":0,"rxfw":0,"ackr":100.0,"dwnb":0,"txnb":0}}
Oct 26 13:39:50 NS: SQL query = UPDATE gateways SET downpacketsreceived = 2, gooduppacketsreceived = 11, packetstransmitted = 2, uppacketsforwarded = 11, uppacketsreceived = 15 WHERE HEX(eui) = '7276ff0845010264'
Oct 26 13:39:50 NS: SQL query = UPDATE gateways SET time = '2017-10-26 11:39:50' WHERE hex(eui) = '7276ff0845010264'
Oct 26 13:39:53 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:40:03 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:40:13 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:40:13 NS: Tx JSON msg to Connection 1 || {"gw":{"eui":"7276ff0845010264","loraregion":"AS923"}}
Oct 26 13:40:13 NC: JSON msg rx {"gw":{"eui":"7276ff0845010264","loraregion":"AS923"}} from Connection 1
Oct 26 13:40:20 NS: Gateway 72-76-ff-08-45-01-02-64 seen
Oct 26 13:40:20 NS: JSON msg rx {"stat":{"time":"2017-10-26 11:40:20 GMT","rxnb":0,"rxok":0,"rxfw":0,"ackr":100.0,"dwnb":0,"txnb":0}}
Oct 26 13:40:23 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:40:34 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:40:44 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:40:50 NS: Gateway 72-76-ff-08-45-01-02-64 seen
Oct 26 13:40:50 NS: JSON msg rx {"stat":{"time":"2017-10-26 11:40:50 GMT","rxnb":0,"rxok":0,"rxfw":0,"ackr":100.0,"dwnb":0,"txnb":0}}
Oct 26 13:40:50 NS: SQL query = UPDATE gateways SET downpacketsreceived = 2, gooduppacketsreceived = 11, packetstransmitted = 2, uppacketsforwarded = 11, uppacketsreceived = 15 WHERE HEX(eui) = '7276ff0845010264'
Oct 26 13:40:50 NS: SQL query = UPDATE gateways SET time = '2017-10-26 11:40:50' WHERE hex(eui) = '7276ff0845010264'
Oct 26 13:40:54 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:41:04 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:41:14 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:41:14 NS: Tx JSON msg to Connection 1 || {"gw":{"eui":"7276ff0845010264","loraregion":"AS923"}}
Oct 26 13:41:14 NC: JSON msg rx {"gw":{"eui":"7276ff0845010264","loraregion":"AS923"}} from Connection 1
Oct 26 13:41:20 NS: Gateway 72-76-ff-08-45-01-02-64 seen
Oct 26 13:41:20 NS: JSON msg rx {"stat":{"time":"2017-10-26 11:41:20 GMT","rxnb":0,"rxok":0,"rxfw":0,"ackr":100.0,"dwnb":0,"txnb":0}}
Oct 26 13:41:25 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:41:35 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:41:45 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:41:50 NS: Gateway 72-76-ff-08-45-01-02-64 seen
Oct 26 13:41:50 NS: JSON msg rx {"stat":{"time":"2017-10-26 11:41:50 GMT","rxnb":0,"rxok":0,"rxfw":0,"ackr":100.0,"dwnb":0,"txnb":0}}
Oct 26 13:41:50 NS: SQL query = UPDATE gateways SET downpacketsreceived = 2, gooduppacketsreceived = 11, packetstransmitted = 2, uppacketsforwarded = 11, uppacketsreceived = 15 WHERE HEX(eui) = '7276ff0845010264'
Oct 26 13:41:50 NS: SQL query = UPDATE gateways SET time = '2017-10-26 11:41:50' WHERE hex(eui) = '7276ff0845010264'
Oct 26 13:41:55 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944
Oct 26 13:42:05 NS: Gateway 72-76-ff-08-45-01-02-64 seen IP address 127.0.0.1:54944

```


ขั้นตอนการ **import end-device** หรือ การ **ACTIVATION**

ขั้นตอนการใส่ Activation ของ mote board

Fleet

Endpoints

Received data

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OTAAABPManage endpoints

Add endpoint

Class

Class *☒ A☐ C

Activation

Type *☒ OTAA☐ ABP

Device EUI *AAABBBCCDDDE001

Application EUI *10203040A0B0C0D0

Application key *10002000300040005000600070008000

LoRa RF parameters

Override default Rx parameters☐

ADD ENDPOINT

1

2

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Fleet ^

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OTAA ABP Manage endpoints

List of OTAA endpoints

Device EUI	Application EUI	Application key	Rx window	Rx2 frequency	Rx2 Data Rate	Class	
AAABBBCCDDDE001	10203040A0B0C0D0	10002000300040005000600070008000	Auto	923.200 MHz	2	A	🗑️

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หลังจากเพิ่ม mote

file .csv

การนำไฟล์เข้ามาเพิ่มใน ifemto ลากวาง แล้วกด **import fleet** ดังรูป

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Class

Class * ☐ A ☐ C

Activation


Type * ☐ OTAA ☐ ABP

LoRa RF parameters

Override default Rx parameters ☐

ADD ENDPOINT

Import fleet


DRAG & DROP YOUR
FILE HERE

IMPORT FLEET


DOWNLOAD FLEET

Delete endpoints

This will delete all endpoints in your fleet. Warning, this action is irreversible!

DELETE ALL ENDPOINTS

หลังจากทำการ **import** ไฟล์จะได้ **mote** ที่ทำการ **activation** ดังรูป



- Fleet
- Endpoints
- Received data
- Send data
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- Logs

Received data

DOWNLOAD

Id	Endpoint ID	Received time	Sequence number	Port	Radio ID	Channel	SNR	RSSI	Frequency	Modulation	Data Rate	Coding rate	Payload	HEX
8	AAABBBCCDDDE001	10/26/2017 06:29:06 PM	7	125	0	1	8.8 dB	-28 dBm	923.400 MHz	LoRa	SF12BW125	4/5	3136362030323500	
7	AAABBBCCDDDE001	10/26/2017 06:28:32 PM	6	41	0	7	9.8 dB	-31 dBm	922.200 MHz	LoRa	SF12BW125	4/5	3138362030323400	
6	AAABBBCCDDDE001	10/26/2017 06:27:58 PM	5	97	0	0	9.5 dB	-28 dBm	923.200 MHz	LoRa	SF12BW125	4/5	3137352030323500	
5	AAABBBCCDDDE001	10/26/2017 06:27:23 PM	4	94	0	3	9.5 dB	-29 dBm	922.800 MHz	LoRa	SF12BW125	4/5	3137362030323500	
4	AAABBBCCDDDE001	10/26/2017 06:26:49 PM	3	29	0	5	9.8 dB	-24 dBm	921.800 MHz	LoRa	SF12BW125	4/5	3138382030323500	
3	AAABBBCCDDDE001	10/26/2017 06:26:14 PM	2	67	0	6	9.8 dB	-29 dBm	922.000 MHz	LoRa	SF12BW125	4/5	3138362030323500	
2	AAABBBCCDDDE001	10/26/2017 06:25:40 PM	1	152	0	2	10.5 dB	-26 dBm	923.000 MHz	LoRa	SF12BW125	4/5	3138342030323400	
1	AAABBBCCDDDE001	10/26/2017 06:24:59 PM	0	63	0	4	9.2 dB	-8 dBm	921.600 MHz	LoRa	SF12BW125	4/5	3835203032340000	

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communication is everything

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Add endpoint

Class

Class *☒ A☐ C

Activation

Type *☐ OTAA☒ ABP

Device address *AABBCCDD

Network session key *10002000300040005000600070008000

Application session key *A000B000C000D000E000F000A000B000

LoRa RF parameters

Override default Rx parameters☐

ADD ENDPOINT

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communication is everything

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OTAA

ABP

Manage endpoints

List of ABP endpoints

Device address	Network session key	Application session key	Rx window	Rx2 frequency	Rx2 Data Rate	Class	
AABBCCDD	10002000300040005000600070008000	A000B000C000D000E000F000A000B000	Auto	923.200 MHz	2	A	

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ผลการรับค่าที่ส่งจาก **mote board** หรือ **End-device**

OTAA mode

Received data														DOWNLOAD
Id	Endpoint ID	Received time	Sequence number	Port	Radio ID	Channel	SNR	RSSI	Frequency	Modulation	Data Rate	Coding rate	Payload	HEX
17	AAABBBCCDDDE001	10/26/2017 05:56:24 PM	6	114	0	1	9 dB	-40 dBm	923.400 MHz	LoRa	SF12BW125	4/5	3138312030323600	
16	AAABBBCCDDDE001	10/26/2017 05:55:49 PM	5	124	0	3	11.2 dB	5 dBm	922.800 MHz	LoRa	SF12BW125	4/5	3130312030323500	
15	AAABBBCCDDDE001	10/26/2017 05:55:15 PM	4	110	0	6	7.5 dB	-11 dBm	922.000 MHz	LoRa	SF12BW125	4/5	3237203032360000	
14	AAABBBCCDDDE001	10/26/2017 05:54:41 PM	3	82	0	7	8.5 dB	-32 dBm	922.200 MHz	LoRa	SF12BW125	4/5	3136342030323600	
13	AAABBBCCDDDE001	10/26/2017 05:54:06 PM	2	79	0	2	9.2 dB	-45 dBm	923.000 MHz	LoRa	SF12BW125	4/5	3137342030323400	
12	AAABBBCCDDDE001	10/26/2017 05:53:32 PM	1	112	0	4	8.2 dB	-29 dBm	921.600 MHz	LoRa	SF12BW125	4/5	3138322030323600	
11	AAABBBCCDDDE001	10/26/2017 05:52:50 PM	0	13	0	5	9 dB	-13 dBm	921.800 MHz	LoRa	SF12BW125	4/5	3232203032350000	

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ABP mode

kerlink
communication is everything

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ABP

DOWNLOAD

Id	Endpoint ID	Received time	Sequence number	Port	Radio ID	Channel	SNR	RSSI	Frequency	Modulation	Data Rate	Coding rate	Payload	HEX
31	AABBCCDD	10/26/2017 07:16:10 PM	0	123	0	0	9 dB	-16 dBm	923.200 MHz	LoRa	SF12BW125	4/5	3138203032360000	
30	AABBCCDD	10/26/2017 07:11:17 PM	7	110	0	1	8.8 dB	-33 dBm	923.400 MHz	LoRa	SF12BW125	4/5	3138362030323400	
29	AABBCCDD	10/26/2017 07:10:43 PM	6	37	0	2	8 dB	-35 dBm	923.000 MHz	LoRa	SF12BW125	4/5	3136372030323400	
28	AABBCCDD	10/26/2017 07:10:08 PM	5	124	0	0	8.8 dB	-31 dBm	923.200 MHz	LoRa	SF12BW125	4/5	3138302030323500	
27	AABBCCDD	10/26/2017 07:09:34 PM	4	98	0	4	9.8 dB	-37 dBm	921.600 MHz	LoRa	SF12BW125	4/5	3137392030323700	
26	AABBCCDD	10/26/2017 07:09:00 PM	3	57	0	3	8.2 dB	-3 dBm	922.800 MHz	LoRa	SF12BW125	4/5	3134342030323700	
25	AABBCCDD	10/26/2017 07:08:25 PM	2	132	0	7	10.2 dB	-5 dBm	922.200 MHz	LoRa	SF12BW125	4/5	3133362030323400	
24	AABBCCDD	10/26/2017 07:07:51 PM	1	15	0	6	8 dB	1 dBm	922.000 MHz	LoRa	SF12BW125	4/5	3133352030323500	
23	AABBCCDD	10/26/2017 07:07:09 PM	0	132	0	5	9.2 dB	-2 dBm	921.800 MHz	LoRa	SF12BW125	4/5	3135203032360000	
22	AAABBBCCDDDE001	10/26/2017 07:01:49 PM	21	118	0	1	8.2 dB	-27 dBm	923.400 MHz	LoRa	SF12BW125	4/5	3138322030323200	

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THANK YOU