HYC – 542

Radio PMPT TDMA COFDM Space Diversity

Ethernet vidéo audio data + RS232-RS485

USER MANUAL

MANUEL DE L'UTILISATEUR

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HYC-542 User Manual

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Specifications

- **2 Antennes mobiles embarquées :**
  - **Hélice, Quadrifilaire**
  - **Zeppelin**
  - **Blade**
  - **Demi-onde**
- **Emetteur Récepteur IP TDD COFDM** ultra léger en boitier aluminium usiné.
- **Full Duplex** transmet et reçoit de la vidéo HD ou SD en H264 et des data.
- Configuration du menu pour opérations en temps réel avec préréglages.
- Hautes performances de la modulation COFDM et de la diversité d'espace.
- Longue portées sans pointage d'antennes (Quadrafilaires Omnidirectionnelles)
- Récepteurs Emetteurs multiples en PMPT et monitoring selon les applications.
- Fonctionne en mode non à vue en mobile à haute vitesse de déplacement.
- 2 antennes en diversité d'espace

- **Fréquences:** 2402 – 2488 MHz (Pas de 1 Mhz)
- **Puissance:** 30 dBm – 1 watt
- **Seuil de sensibilité:** -95 dBm
- **Latence :** < à 2 Ms
- **Débit total** : 20 Mbps Débit IP, allocation de flux adaptatif
- **Alimentation:** 7/17 VDC 6 watts
- **Modulation:** COFDM Time Division Duplex mode
- **Canaux:** de 2, 4, 8, MHz au pas de 1 MHz
- **Ethernet:** 10/100 BaseT Auto-MDI/X IEEE 802.3 TCP , UDP,TCP/IP,TFTP,ARP,ICMP,DHCP,HTTP,SNMP,FTP,DNS
- **Encryption:** AES 128 bit (AES 256 bits sur demande)
- **Correction d'erreurs:** CRC-ARQ 32 bits
- **Température de service:** -35° +75° C
- **Dimensions poids:** 74x52x20 mm 90 grammes
- **Réglages:** écran de contrôle OLCD
- **RF interface antenne**: MMCX

Product features:

●Support for up to 20Mbps data flow, adaptive dynamic stream allocation technology

●Support multiple bandwidth regulation (2M/4M/8M), adaptive modulation and manual modulation mode selection

●Support diversity antenna receiver

●Support 128 bit AES encryption

● Support transparent PTP&PMD network transmission technology

● Support non line of sight (NLOS), high-speed mobile transmission

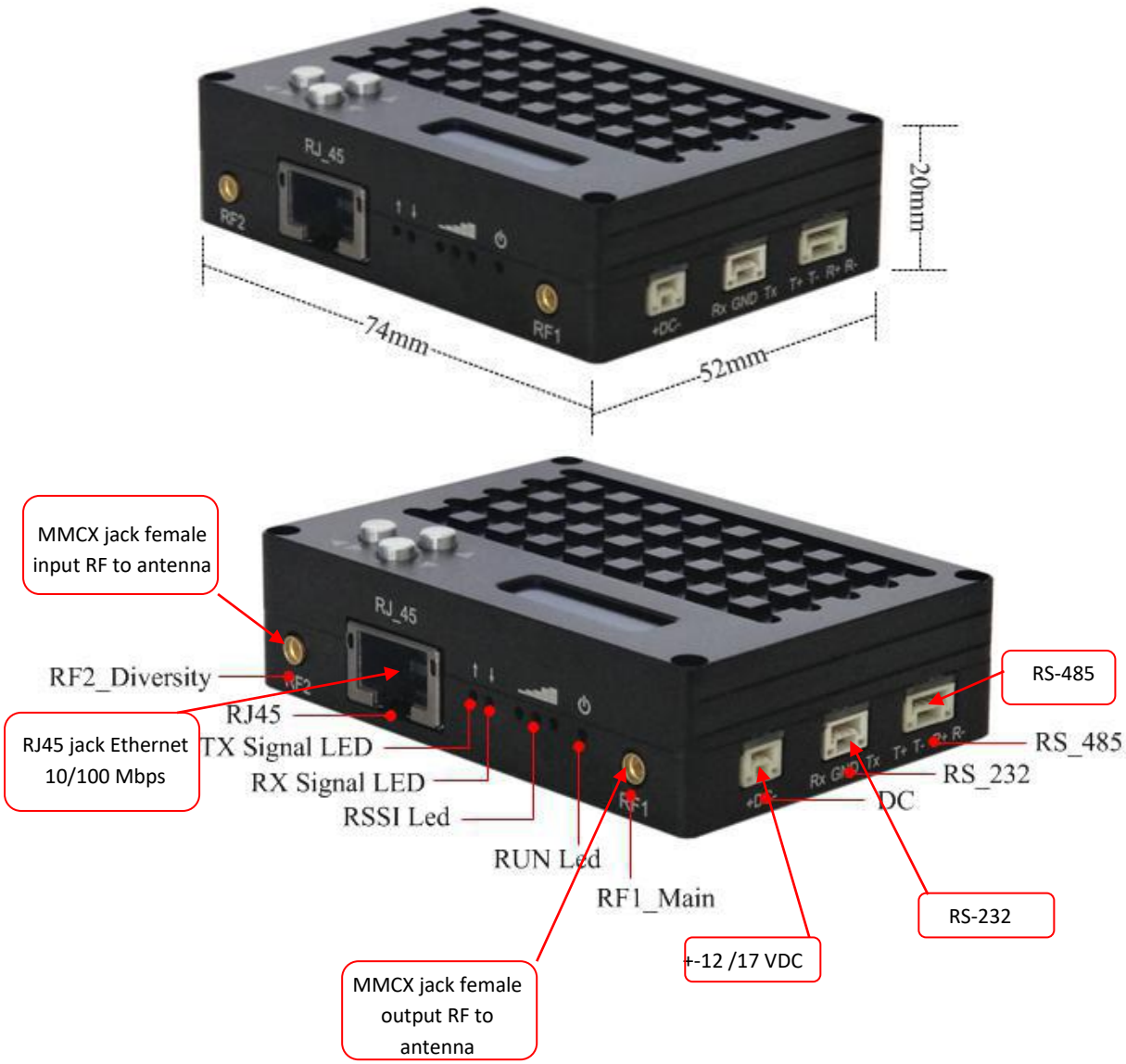
● Support high standard industrial applications

● Provide standard RS-232 & RS-485 + RJ45 interface

● High definition OLED panel digital display, simple interface easy to operation

● Small size, light weight, low power consumption

01 – HYC-542 Description



WARNING

Ne jamais mettre l'appareil sous tension sans une antenne ou une charge adaptée connectée à la prise SMA.
Ne jamais déconnecter l'antenne, l'équipement étant sous tension.
Ne pas inverser la polarité de l'alimentation 12/17 VDC.

Remark:

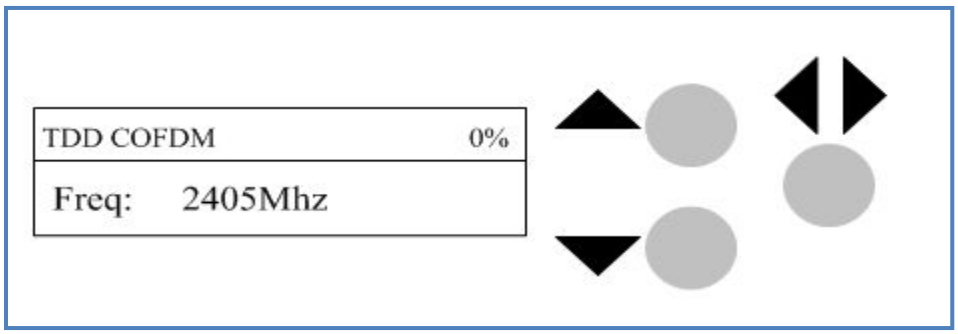
The system start up must completed the connected the antenna.
The system must be shutdown / disconnect the power before remove the antenna.
Do not reverse the +12 VDC polarity

02-Transmitter control panel instruction:

Transmitter control panel is composed of LED screen display

“ ◀ ▶ ”menu key “ ▲ ”increase key and “ ▼ ”decrease key

Display function description:



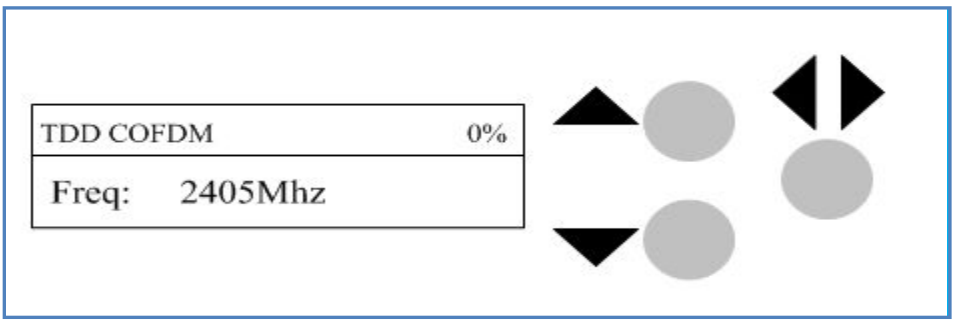
0% this is the signal strength, if receive the signal indicates communication is no problem.

Note： Start up the system need 45 seconds (connected power supply can start the Radio)

ID user name:	User
RF Master:	master / slave to set
Freq:	frequency 2405-2470MHz, step 1MHz
The Band:	bandwidth of 2.0MHz/2.5MHz/4.0MHz/8.0MHz
Level:	output power installation, stepping 1dB
AES-128:	encryption OFF/ON optional
Encryption key:	need to open the encryption can use it. Encryption key of values and the encryption key of corresponding receiver values must have the same.
Com Mode:	RS232/RS485 channel selection
Bit rate:	data transmission rate setting
Data Format:	data format
Poe:	standby
Success:	parameter set success **(appeared after modify and save parameters)**

According to the below picture to set the relevant operation, that can be change the Transmitter parameters through the control panel.

Function and Usage Method of this device:



1> Forexample, equipment power system frequency from 2405MHz to 2440MHz

2> Long press " ◀ ▶ " key and keep 3 seconds, enter setting state, at this time LCD screen of the first parameter is black character shading, press " ▼ "or" ▲ " move to the position of modify the parameters.

3> Press " ▲ "or " ▼ " to adjust numerical of the parameters, at this time LCD is adjusted stepping by 1MHz , until to the required numerical.

4> Adjusted to the required data, long press " ◀ ▶ " key and keep 3 seconds, black character shading disappear, on the LCD display show "**Success**" it indicates that the adjustment has been finished, other parameters setting method, please refer to the above method.

5> If you don't want to save the parameters, lightly press " ◀ ▶ "button, give up to modification the exit parameters setting mode, return to normal display interface.
The master need to connect the computer, the slave need to connect the webcam. If no problem please open your IE browser and enter your Webcam address.
Then you can got amazing video.

Remark:
LED display frequency range is decided by Transmitter working frequency, Transmitter frequency must consistent with Receiver frequency.

Use the matters needing attention:

1> Before power on the device, must be check the antenna interface whether is load, in order to avoid antenna interface short circuit or open circuit.
Note: Before the device is switched on the power, the device should be first connect with antenna then connect with the power supply, removal of device should be first turn off the power. If you use the device, first switched on the power, connect antenna later, it may cause the device damage.

2>Antenna selection, should be selected according to the use of the frequency band.If you want for long distance transmission, choose the directional antenna to improve the system gain.

The control panel is composed of OLED LCD screen and three buttons:

Which are "◀ ▶"menu key、"▲"increase key and"▼"decrease key

RF Mode: RF mode, Master /Slave (one of the radio must setting master mode,another setting as slave mode will be workable)
Freq: operating frequency work as 2402-2488MHz
Band: working bandwidth 2.0MHz/4.0MHz/8.0MHz
Level: output power adjustable range 7dBm-30dBm, step 1dB
Modem: modulation and demodulation mode;
AES: 128 AES encryption and key settings

Diversity: diversity receiver settings; ON/OFF selection
ComMode: Port mode RS232/RS485-H/RS485-F
Baud rate: data transfer rate setting
Local ID: local ID settings, 1-48 (master ID and slave ID can not be the same)
Remote ID: remote ID settings, 1-48 (data transfer needs to be set to other side of the ID)

According to the following picture to set the relevant operation, that can be change the HYC-542 parameters through the control panel.
1>Modified user's RF Mode master and slave settings
Firstly,power on the radio.

Press"◀ ▶"key and keep 3 seconds to enter the parameter setting mode, then the OLED LCD screen of the "Master" option is white character shading, as shown below:

2>press“▲”or“▼”switch to the desired mode and press "◀ ▶" , wait for 5 seconds LCD screen transform prompt "Success" means that the adjustment has been completed, as shown below:

3> Other parameter settings
Power on the radio at this time the OLED LCD screen displays the RF
Mode option,adjust the system frequency from 2405MHz to 2425MHz for example;When the radio is powered on, the OLED LCD panel
displays the RF Mode option.

4>Press " ▼ " or “▲” switch to Freq option

5>Long press“◀ ▶”key and keep 3 seconds to enter the parameter setting mode,the OLED LCD screen of the first parameter is white character shading, then press "◀ ▶" key to move to the location you want to modify the parameters.

6>press“ ▲ ”or“ ▼ ”to adjust the parameter values,then OLED to be adjusted in steps of 1MHz,until it is adjusted to the desired value.

7> When adjusted to the required value,long press “◀ ▶ ” key for 3 seconds, white character shading disappear, the LCD screen transform prompt “Success” it indicates that the adjustment has been finished, the other parameters setting, please refer to the above method.

8> If you don’t want to save the parameters, lightly press “◀ ▶ ” button, give up to modification and exit parameters setting mode, return to normal display interface.

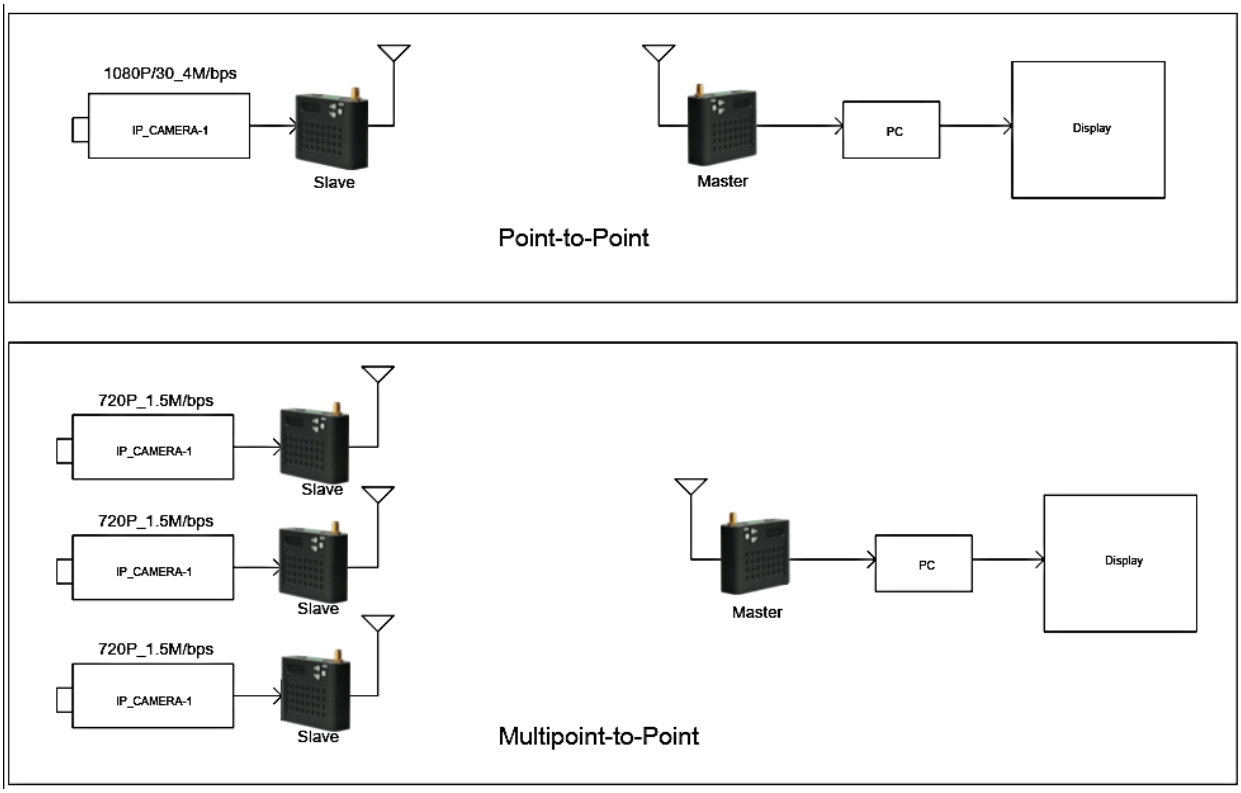
Remark:

OLED display frequency range is determined by the working frequency of transmitter,the specific value please refer to the device shown on the label. TX parameters (frequency, bandwidth, AES) settings must keep consistent with RX,otherwise the device can not work.
Use the device needing attention:

1> Before power on the device, be sure to check the antenna interface whether is load, in order to avoid antenna interface short circuit or open circuit.
Note: Before powering on the device, should be first connect with antenna then connected to power supply, removal of device should be turn off the power at first. If you first connect the power or remove the device before powered up,it may cause the device damage.
2>Antenna selection, should be selected according to the use of the frequency band.If you required for long-distance transmission, had better to chose directional antenna improve the system gain.
Note:

- The system powered on must connected the antenna completely.
- The system must be powered off / disconnect the power before remove the antenna.

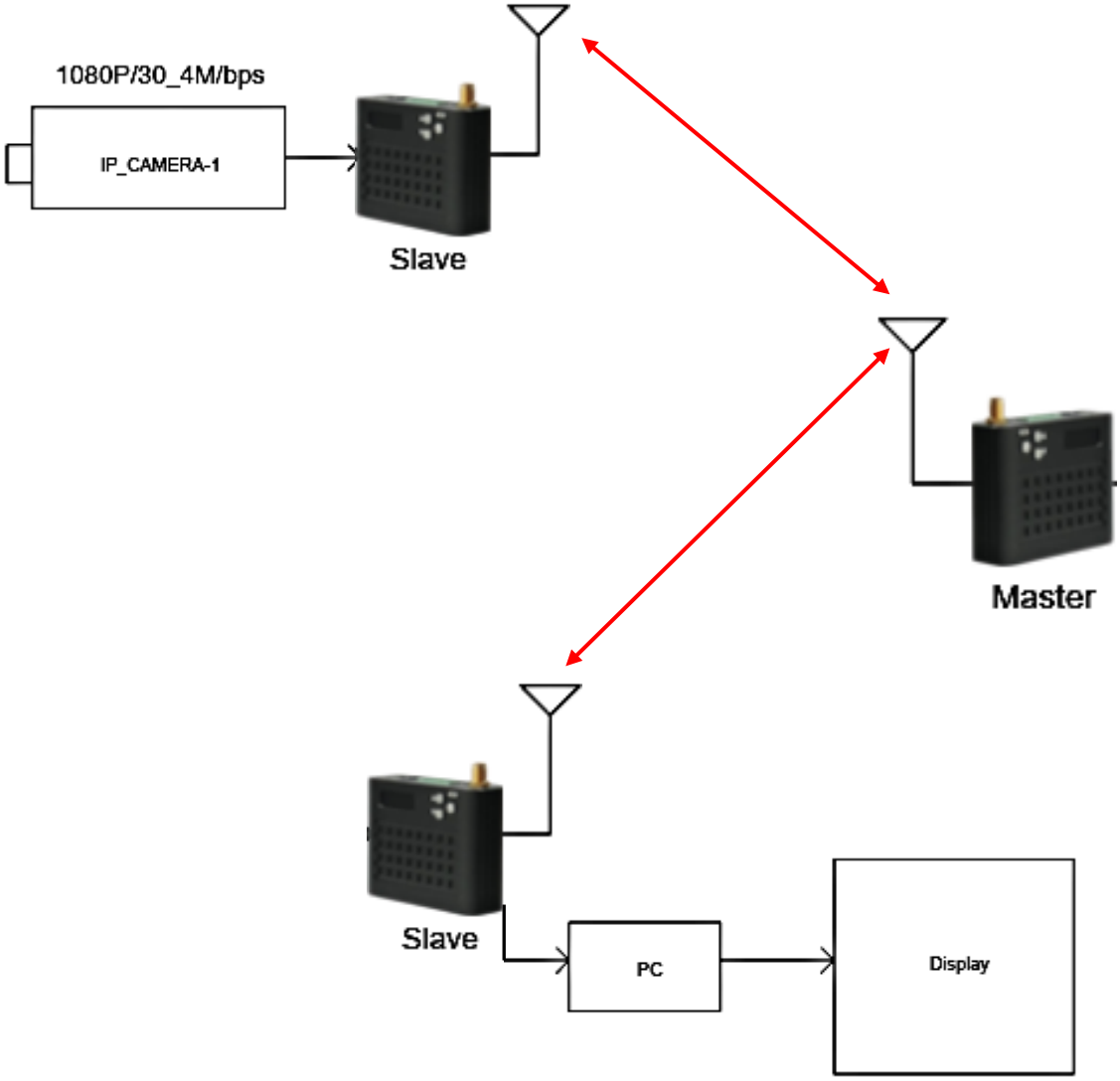
04- Configuration PTP et PMPT



Model HYC-542

Power input DC 7~17V
Ethernet 10/100 BaseT、Auto-MDI/X、IEEE 802.3
TCP,UDP,TCP/IP,ARP,ICMP,DHCP,HTTP,SNMP,FTP,DNS
Data input: RS-232&RS-485-H/RS-485-F, RJ45
Output frequency 2402MHz-2482MHz,Step 1MHz adjustable
Output power 30dBm/1W
Bandwidth 2.0 MHz /4.0MHz/8.0MHz
Encryption 128 bit AES (can customized 256 bit AES)
Correction mechanism 32 bit of CRC,ARQ
Modulation TDD-COFDM,Time division duplex mode
RF Antenna interface MMCX
Parameter control By adjusting the parameters of OLED control
Dimensions 74 nm 52mm 20mm
Weight 90g

04- Configuration PMPT with relay



04- Images de la mise en service HYC540 (id HYC 542)

A la mise sous tension attendre 30 secondes la fin de l'initialisation

Choisir le N° du terminal de 1 à 256

Choisir la fonction Master ou Slave

Choisir le mode Slave

Choisir la Fréquence de trafic

Choisir le niveau de puissance à utiliser (27 dBm recommandé) et le débit Radio

Choisir la bande passante du canal

Choisir la clef de cryptage

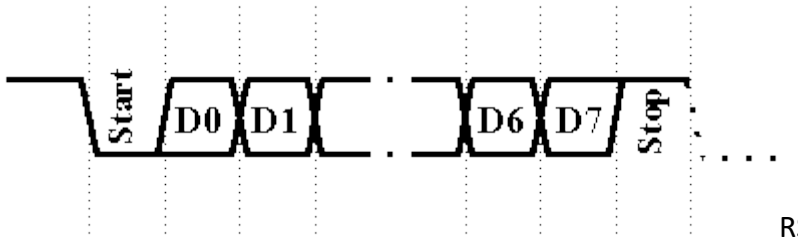
Choisir le type de Port Com RS 232 ou RS 485 et le débit souhaité

Choisir le format de parité du port de données RS232

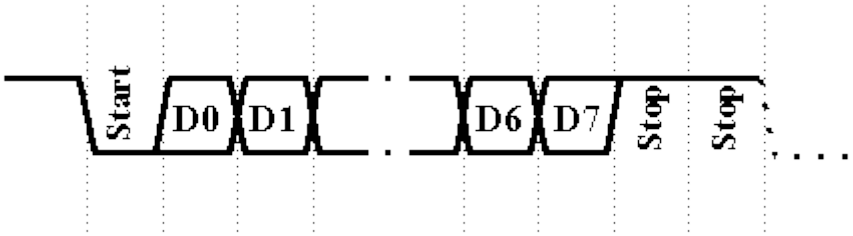
Format des trames :

La transmission des données peut se faire suivant plusieurs formats (7 ou 8 bits) avec ou sans contrôle de parité (celle-ci) pouvant être gérée comme paire ou impaire); une trame commence par 1 bit de *start* ("0" logique) et se termine par 1 ou 2 bits de *stop* ("1" logique).

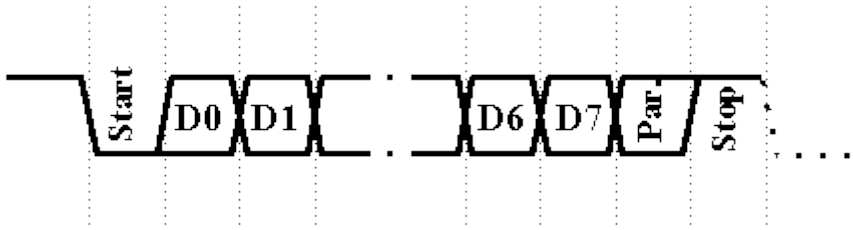
Les figures suivantes présentent l'allure de quelques formats :



RS232 **8N1** : 8 bits de données, pas de parité, 1 bit de stop



RS232 8N2 : 8 bits de données, pas de parité, 2 bits de stop



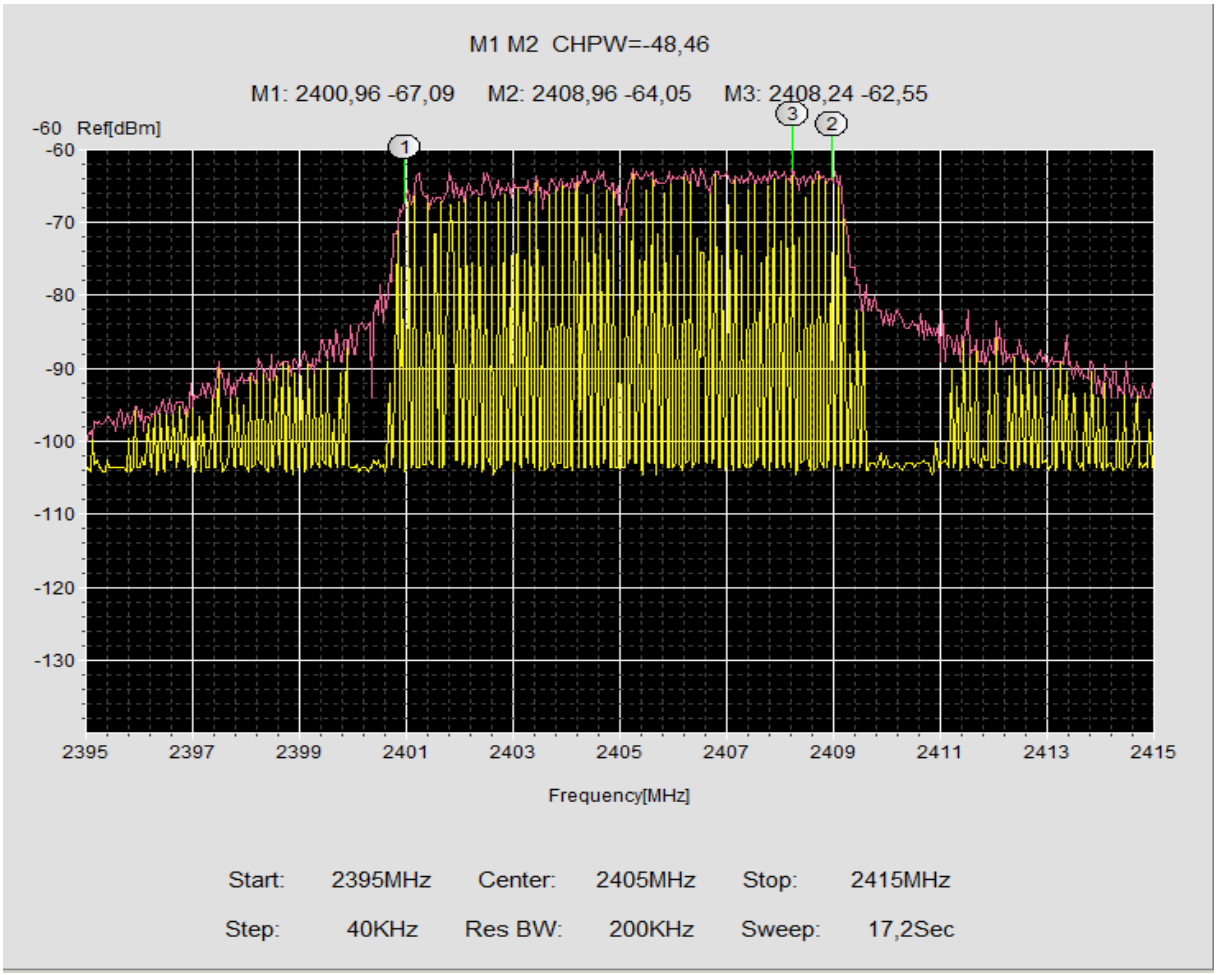
RS232 8P1 : 8 bits de données, avec parité, 1 bit de stop
(Parité paire : Par. = 1 si D(7:0) a un nombre pair de "1")
(Parité impaire : Par. = 1 si D(7:0) a un nombre impair de "1")

05- Mesures débit IP sur RJ45 HYC540

Pour 12 Mbps débit radio sur HYC540 Débit utile 8.4 Mbps

Pour 20 Mbps Débit radio sur HYC542 Débit utile 17 Mbps en canal 8 Mhz

HYC-540 Conducted test with -90 dB and -110 dB path budget losses					
Cable Noise -120 dBm - RF Noise -105 dBm					
Atténuation - 90 dB					
TX power displayed dBm	Theorical level dBm	Data stream IP Mbps	Performance%	SNR conducted Cable	SNR Spectrum
30	-60	8,73	37	60	45
27	-63	8,83	44	57	42
24	-66	8,40	40	54	39
20	-70	7,62	34	50	35
Atténuation - 110 dB					
30	-80	3,19	10	40	25
27	-83	4,82	12	37	22
24	-86	4,19	7	34	19
21	-89	0,62	4	31	16
20	-90	0,56	3	28	15



06 – HYC-540/542/550 EC Declaration of Conformity

Declaration of conformity

We **Hypercable s.a.r.l.**

Of **Innoveum - 74 Avenue Paul Sabatier**
11.100 NARBONNE - FRANCE
- N° SIRET : 384 007 894 00031 – Code TVA CEE: FR90384007894

Hereby declare that the following products:

Model Name **SkyMesh COFDM TDMA 2400 MHz radio PMPT**
Model Numbers **HYC-540/HYC-542/ HYC-550**

Conform to the essential requirements of the following EC Directives and FCC Regulations

ENC Directive 2004/108/EC
FCC CFR 47: Part 15.B:2012

This declaration is based on compliance of the product with the following standards:

EN61326.1:2006
EN55011:2009 + A1:2010
EN61000.3-2:2006 + A2:2009
EN61000.3-3:2008
EN61000.4-2:2009
EN61000.4-3:2006 + A1 :2008 + A2 :2010
EN61000.4-4 :2004 + A1 :2010
EN61000.4-5:2006
EN61000.4-6:2009
EN61000.4-11:2004

Signed by:

Name: **Ducasse Jean-Claude**

Position: **CEO** *(Gérant)*

Date: **15th july 2017**

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