STD-302 869MHz test data for half duplex communication

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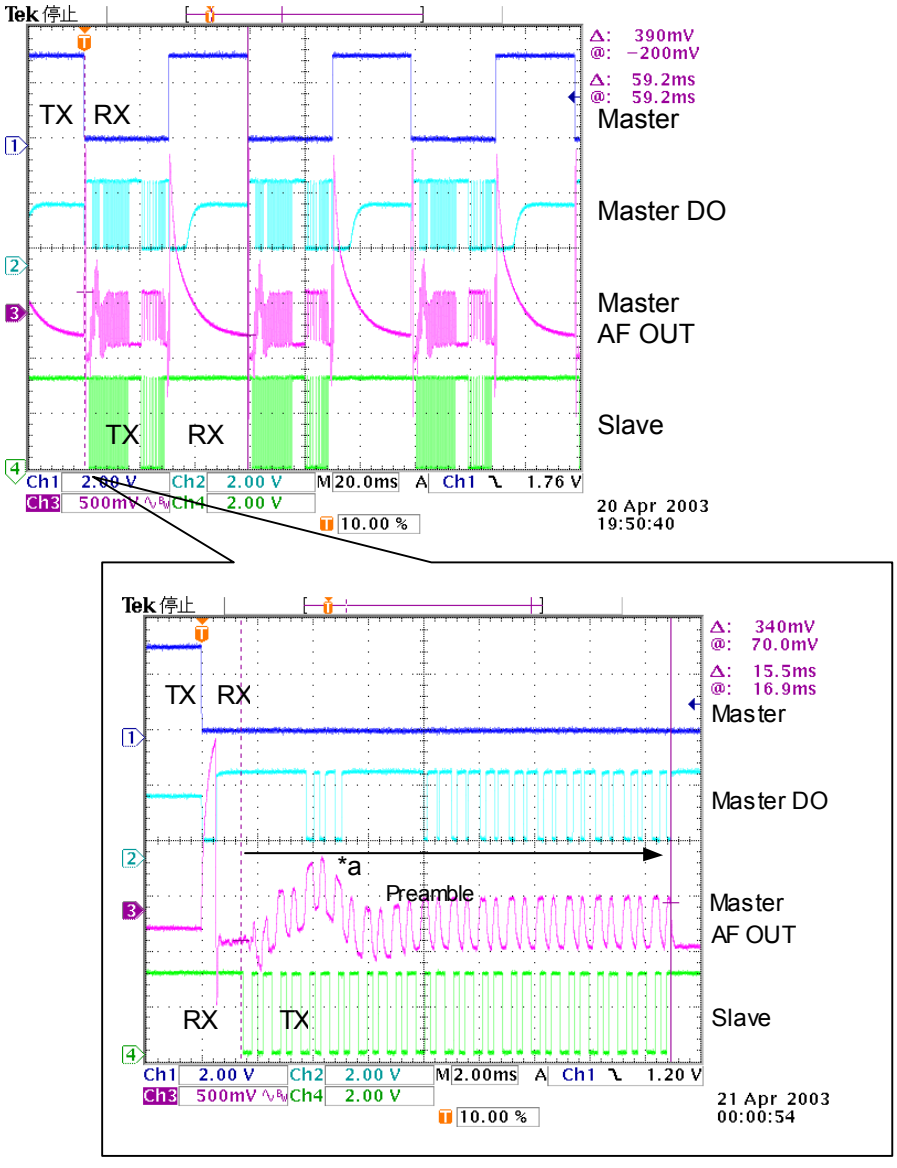
1. Half-duplex data communication test (Data rate 9600bps)

TEST procedure:
Transmission DATA is fed following 15 ms preamble (11001100..repeated 144 bits) and 5ms Sync signal in a master unit.
Slave unit returns received data to the master unit after performing data frame confirmation (Loop back function).

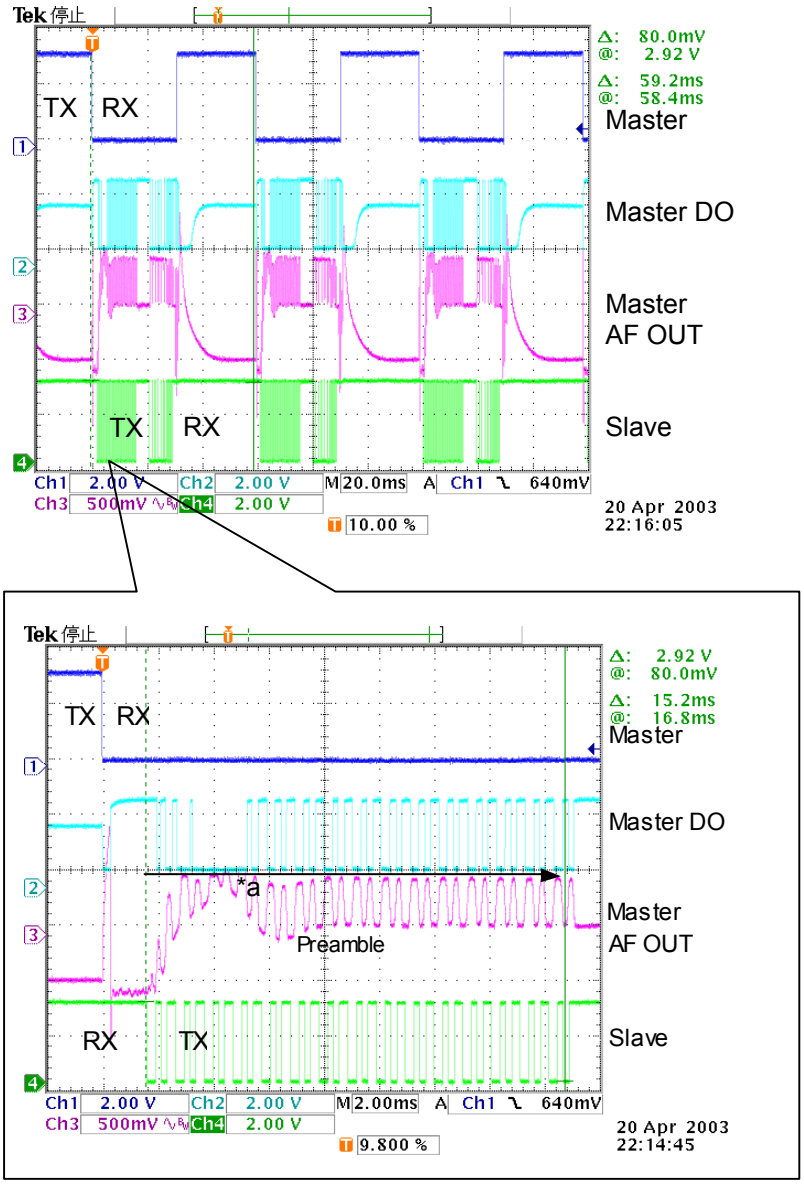
Temperature Condition: Master: at -20°C*1 Slave: In the room temperature (+28 +/-5°C)
Frequency drift at the temperature: Master: -4.5 kHz Slave: 0 kHz
(Total 4.5 kHz difference is considered as the worst condition when the units work within –10°C to +55°C)
Test result: OK: 0(zero) error occur during 10,000 packets transmission.

*1: -20 °C temperature was set to create 4.5 kHz frequency drift. This does not ensure the operation of STD-302 at this temperature.



Temperature Condition: Master: at +75°C Slave: In the room temperature (+28 +/-5°C)
Frequency drift at the temperature: Master: -1 kHz Slave: 0kHz

Test result: OK: 0(zero) error occur during 10,000 packets transmission.



Time required for the data becomes valid at TX -> RX, RX-> TX operation varies by ambient temperature. **Recommended preamble periods (≈ Time required for the data from DO becomes valid.** Marked with *a in figures**) are shown in below.**

Same preamble periods are recommended even the transceiver in the system is set continuous receiving.

-10°C to +55°C: 15 ms or more

-15°C to +60°C (excluding the above range): 40 ms or more

Timing may change by setting method of PLL and/or antenna location. User is recommended to check and verify the operation behavior and optimize the timing.

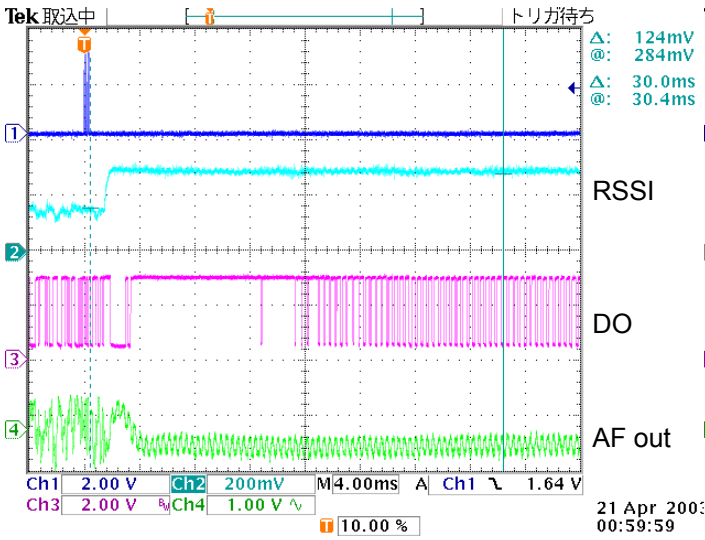
2. Receiver frequency change timing (25kHz & 100kHz change)

Test signal: 9600bps 110011001100….repeated signal

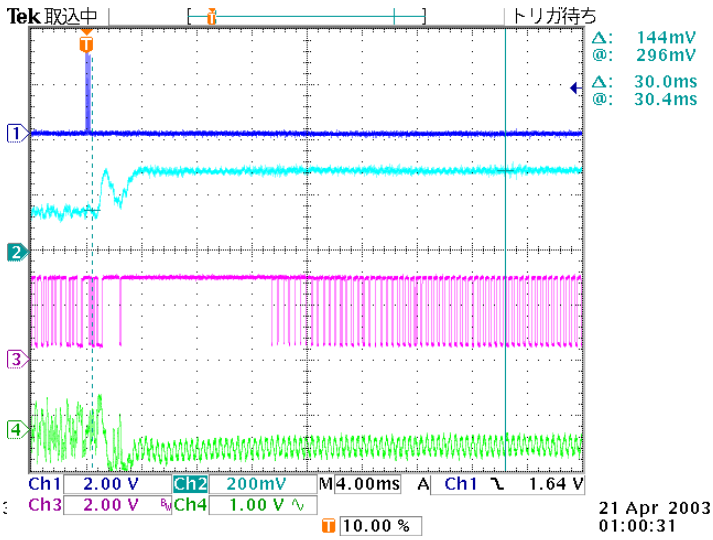
A. Temperature condition: -20°C
Frequency drift: –4.5 kHz

RX frequency change:

868.000 MHz -> 868.025 MHz (+25 kHz)

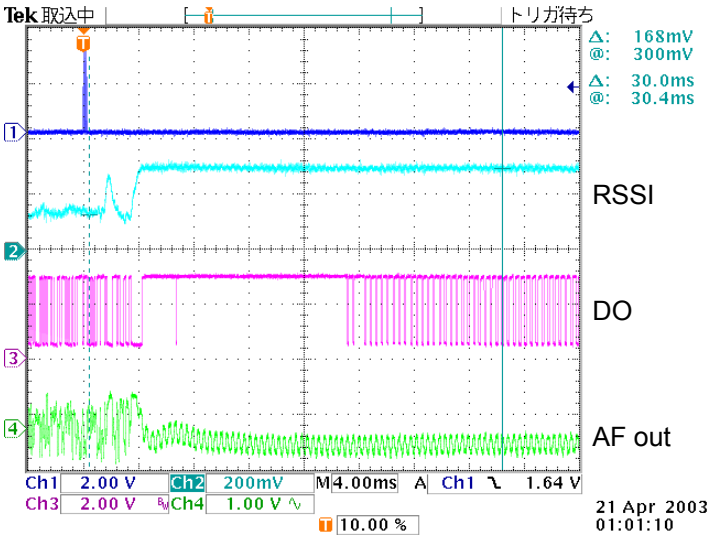


869.025 MHz -> 868.000MHz (+25kHz)

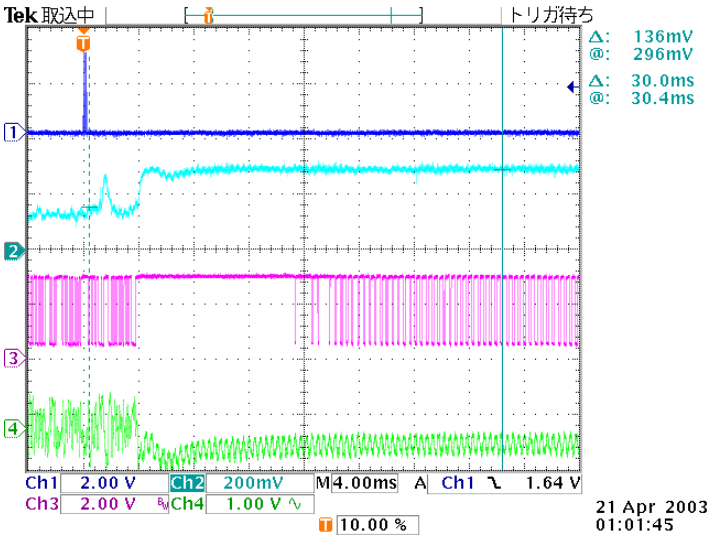


RX frequency change:

868.000 MHz -> 868.100 MHz (+100 kHz)



868.100 MHz -> 868.000 MHz (-100 kHz)



Recommended timing for RX frequency shift

*** RSSI rise (12.5kHz or 100kHz shift)**

-15°C to +60°C 15 ms

*** Valid output data (12.5kHz shift)**

-10°C to +55°C: 30ms or more

-15°C to +60°C (excluding the above range): 50ms or more

Timing may change by setting method of PLL and/or antenna location. User is recommended to check and verify the operation behavior and optimize the timing.

3. Temperature vs Frequency drift

Fig. Crystal frequency drift data