Scanning algorithm:


```
        KY_TALKON,
        KY_MEMORY
             |
        - RF tx on
        - tx RFC_LINKHS
             | Y
        E_RFDone ? ──── Y ──→ i = 0
             | N
        E_RFFail ? ──── N
             | Y
        LINK_ERROR

        PLL_Ch = CTRL_CH + i + 1
             |
        Prog PLL to PLL_Ch
             |
        Wait 30ms
             |
   N ──── Noisy ?
   |         | Y
Ch8_Scanrx.i = 1   Ch8_Scanrx.i = 0
             |
        i++ = 8 ? ──── N
             | Y
        PLL back to CTRL_CH
             |
  x = HS Ch8_Scanrx AND BS Ch8_Scanrx
  if x ≠ 0 then
      COMM_CH = CTRL_CH + num_bit(x);
  else
      COMM_CH = CTRL_CH;
             |
      - Go to the new COMM_CH
      - Confirm success by tx-ack
             |
        LINK DONE
```
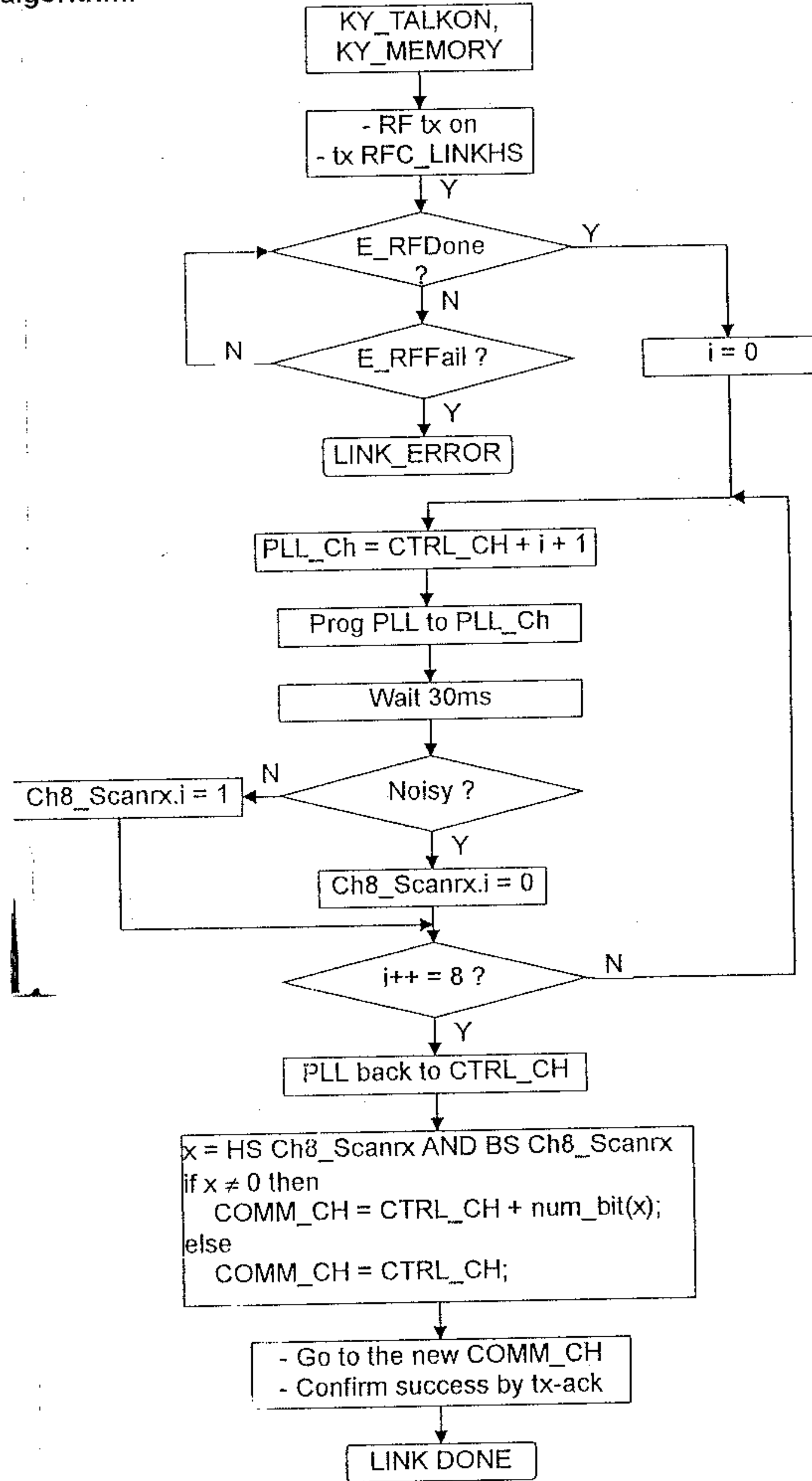
BS request HS's Link (Single-handset version)

BS request a link to HS, this communication is a one-to-one communication. To shorten the link-up time, there is no channel scanning as HS link BS does. So, this linkage will only success if both HS & BS are in the same CTRL_CH pair.-
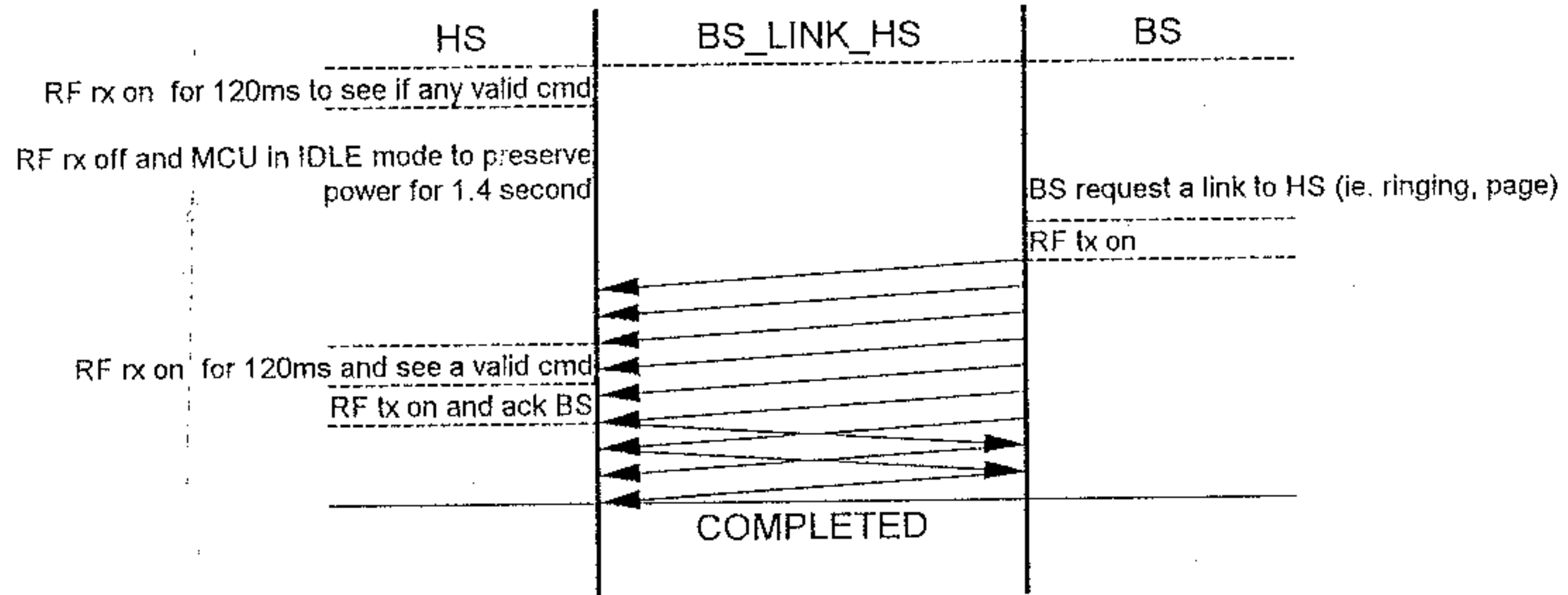

Figure 2

Terms Definition

HIGH_BAND - HIGH_BAND channels are defined as channel 15 to 24, total 10 channels. These channels are the original 10 channel for CT-0 and they locates at 49MHz.

LOW_BAND - LOW_BAND channels are defined as channel 0 to 14, total 15 channels. These add-in channels are on top of the original's 10 HIGH_BAND channels.

LOW_BAND	HIGH_BAND
ch 0 - 14	ch 15 - 24
BS: 43.72 - 44.48	BS: 46.61 - 46.97
HS: 48.76 - 49.5	HS: 49.67 - 49.97

Physical & logical channels are mapped as the following:

Logical ch	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25
Physical ch	1	3	5	7	9	11	13	15	2	4	6	8	10	12	14	16	18	20	22	24	17	19	21	23	25

HS Request BS's Link

Hand-set request a link to BS, this communication is a one-to-one communication. To insure security, HS will request a link in CTRL_CH. Then both HS & BS will scan for a free COMM_CH and go to the COMM_CH.
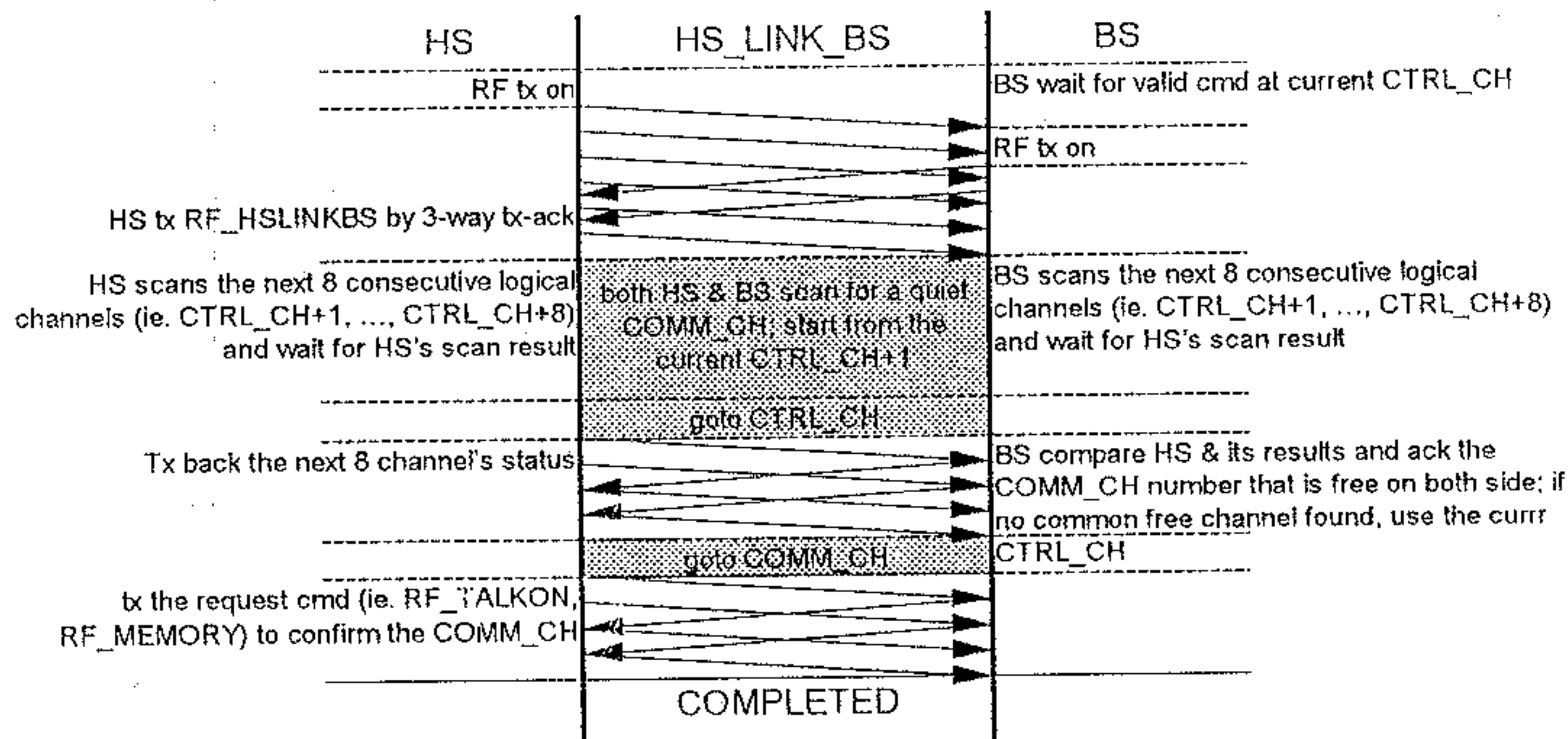
Process: CTRL_CH -> scan next 8 channels -> CTRL_CH -> COMM_CH

Figure 1

After the first tx-ack command success, both HS & BS start to scan for empty channel start from CTRL_CH + 1 to CTRL_CH + 8 (where the CTRL_CH is the last communicate channel that could be any low or high band channel). It allows 30ms to lock-up and check for the RSSI signal from PLL if the channel is busy. This procedure will repeat for next 7 consecutive logical channel (total 8 channel). Then both HS & BS will go back to CTRL_CH, exchange the result and search for an empty channel pair as the COMM_CH. If no empty channel pair is found, use the current CTRL_CH as COMM_CH. After HS & BS go to the COMM_CH, another tx-ack command is exchanged to confirm success. If any receive error occur in this process, they will go back to IDLE state and stay at the CTRL_CH. If both HS & BS go to the COMM_CH successfully, after the end of communication (ie. talk off, finish storing memory), they will use the COMM_CH as the new CTRL_CH. And any further communication will base on this CTRL_CH.

The above change channel procedure will be performed whenever HS request a link to BS (ie. go to TALK_ON, store memory); user request to change channel in TALK mode (press KY_CHANNEL); or BS find the current CTRL_CH noisy while HS is on-charge.

--The test condition of channel scanning
    Two signal generators which connected with passive antenna is used to
    act as another cordless phone that it transmits one pair of the transmmision
    frequency (e.g. 43.72MHz, 48.76MHz). The field strength of these signals
    set to 5000microvolt/meter at 3 meters away from the cordless phone
    and the modulation of these signals is +/-2.5khz deviation with 1khz tone.
    The channel scanning operation is under tested.

--Testing procedure and result
    Once the testing set-up has already prepared, the 25CH cordless phone
    under test (EUT) is powered on. EUT is switched to "Talk ON",
    therefore RF link is established. The "CH" key is pressed to make a
    channel scanning operation. The communication Frequency of EUT is
    measured and the receiver output is also monitored to identify existence
    of the 1khz tone. the "CH" key is pressed again and repeat the measuring.

    After channel scanning operation process more than 50 times, the output
    signals of the signal generators are changed to another channel frequency.
    And it will do the channel scanning 50 times again. Finally, it will finish the
    whole testing after ch1 to ch25 are tested. The results shown that the EUT
    is never established a communication channel at the signal generators.
    Output frequency and the receiver of the handset keep silence on whole
    test.

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