

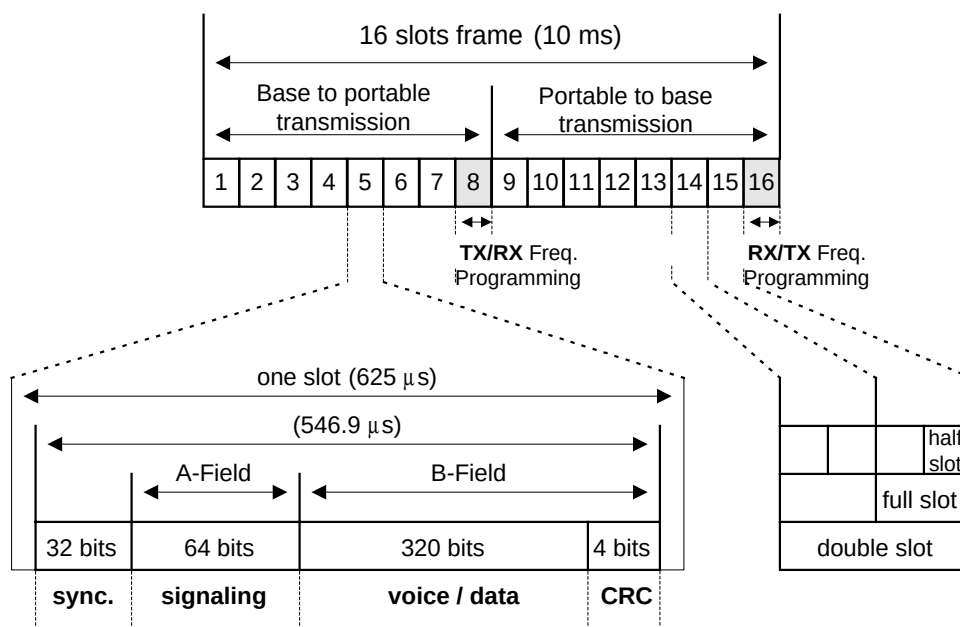
# ISM DECT Protocol Description

The standard DECT protocol has been modified to comply with the ISM band requirements. This new protocol's characteristics are:

|                                    |                                        |
|------------------------------------|----------------------------------------|
| Number of bi-directional channels  | 7                                      |
| Access                             | TDMA / TDD, FH                         |
| Channel bit rate                   | 32 kbit/s (voice) / 25.6 kbit/s (data) |
| Bit rate to/from RF module         | 768 kbit/s                             |
| Number of carriers                 | 75                                     |
| Modulation                         | GFSK                                   |
| Frequency band                     | 2.400 - 2.483 GHz                      |
| Carrier spacing                    | 1.063 385 MHz                          |
| First transmit carrier             | 2.401 122 GHz                          |
| Peak power                         | 250 mW                                 |
| Average power (per active channel) | 10 mW                                  |
| Range                              | 30m (indoors) / 300m (outdoors)        |

ISM DECT Characteristics

The contents of each slot are identical to standard DECT. Carrier spacing has been defined to allocate 75 carriers in the available bandwidth.



ISM DECT Frame Structure

For ISM DECT the firmware supports frequency hopping. Carrier is changed every 2 frames which means 50 hops/sec. 75 carriers are used in the sequence, as described in the following table:

| i  | C <sub>i</sub> | i  | C <sub>i</sub> | i  | C <sub>i</sub> | i  | C <sub>i</sub> | i  | C <sub>i</sub> | i  | C <sub>i</sub> | i  | C <sub>i</sub> | i  | C <sub>i</sub> |
|----|----------------|----|----------------|----|----------------|----|----------------|----|----------------|----|----------------|----|----------------|----|----------------|
| 1  | 35             | 2  | 72             | 3  | 17             | 4  | 36             | 5  | 74             | 6  | 22             | 7  | 45             | 8  | 58             |
| 9  | 26             | 10 | 53             | 11 | 73             | 12 | 20             | 13 | 42             | 14 | 52             | 15 | 61             | 16 | 5              |
| 17 | 11             | 18 | 23             | 19 | 48             | 20 | 67             | 21 | 7              | 22 | 16             | 23 | 33             | 24 | 68             |
| 25 | 9              | 26 | 19             | 27 | 40             | 28 | 24             | 29 | 50             | 30 | 29             | 31 | 60             | 32 | 41             |
| 33 | 70             | 34 | 14             | 35 | 30             | 36 | 62             | 37 | 71             | 38 | 15             | 39 | 31             | 40 | 63             |
| 41 | 0              | 42 | 10             | 43 | 21             | 44 | 43             | 45 | 64             | 46 | 2              | 47 | 13             | 48 | 28             |
| 49 | 57             | 50 | 32             | 51 | 65             | 52 | 3              | 53 | 18             | 54 | 38             | 55 | 27             | 56 | 55             |
| 57 | 69             | 58 | 12             | 59 | 25             | 60 | 51             | 61 | 59             | 62 | 66             | 63 | 37             | 64 | 1              |
| 65 | 47             | 66 | 6              | 67 | 54             | 68 | 44             | 69 | 34             | 70 | 4              | 71 | 56             | 72 | 46             |
| 73 | 8              | 74 | 49             | 75 | 39             |    |                |    |                |    |                |    |                |    |                |

Carrier Sequence for Frequency Hopping

The actual frequency for each carrier is the following:

| Carrier | Frequency | Carrier | Frequency | Carrier | Frequency |
|---------|-----------|---------|-----------|---------|-----------|
| 0       | 2.401.122 | 25      | 2.427.707 | 50      | 2.454.292 |
| 1       | 2.402.186 | 26      | 2.428.770 | 51      | 2.455.355 |
| 2       | 2.403.249 | 27      | 2.429.834 | 52      | 2.456.418 |
| 3       | 2.404.313 | 28      | 2.430.897 | 53      | 2.457.482 |
| 4       | 2.405.376 | 29      | 2.431.961 | 54      | 2.458.545 |
| 5       | 2.406.439 | 30      | 2.433.024 | 55      | 2.459.609 |
| 6       | 2.407.503 | 31      | 2.434.087 | 56      | 2.460.672 |
| 7       | 2.408.566 | 32      | 2.435.151 | 57      | 2.461.735 |
| 8       | 2.409.630 | 33      | 2.436.214 | 58      | 2.462.799 |
| 9       | 2.410.693 | 34      | 2.437.278 | 59      | 2.463.862 |
| 10      | 2.411.756 | 35      | 2.438.341 | 60      | 2.464.926 |
| 11      | 2.412.820 | 36      | 2.439.404 | 61      | 2.465.989 |
| 12      | 2.413.883 | 37      | 2.440.468 | 62      | 2.467.052 |
| 13      | 2.414.946 | 38      | 2.441.531 | 63      | 2.468.116 |
| 14      | 2.416.010 | 39      | 2.442.594 | 64      | 2.469.179 |
| 15      | 2.417.073 | 40      | 2.443.658 | 65      | 2.470.242 |
| 16      | 2.418.137 | 41      | 2.444.721 | 66      | 2.471.306 |
| 17      | 2.419.200 | 42      | 2.445.785 | 67      | 2.472.369 |
| 18      | 2.420.263 | 43      | 2.446.848 | 68      | 2.473.433 |
| 19      | 2.421.327 | 44      | 2.447.911 | 69      | 2.474.496 |
| 20      | 2.422.390 | 45      | 2.448.975 | 70      | 2.475.559 |
| 21      | 2.423.454 | 46      | 2.450.038 | 71      | 2.476.623 |
| 22      | 2.424.517 | 47      | 2.451.102 | 72      | 2.477.686 |
| 23      | 2.425.580 | 48      | 2.452.165 | 73      | 2.478.750 |
| 24      | 2.426.644 | 49      | 2.453.228 | 74      | 2.479.813 |