



## FCC/ISED RF Exposure report

### 1. Product information

|                              |                                          |
|------------------------------|------------------------------------------|
| FCC ID                       | WCH99954226-7                            |
| Product                      | Digital Transmission System              |
| Model No.                    | RCU Dynamic 2010                         |
| Power supply                 | 2 x 1.5 Vdc batteries                    |
| Antenna type                 | Printed                                  |
| Antenna gain                 | 7.4 dBi (max.)                           |
| Assigned frequency           | 2,433 MHz                                |
| Operating frequency          | 2,433 MHz                                |
| Transmit power (conducted)   | -5.9 dBm                                 |
| Modulation bandwidth         | 476.0 kHz                                |
| Bit rate                     | 1 Mbit/s                                 |
| SAR exclusion considerations | A worst-case separation distance of 5 mm |

### 2. Evaluation Method and Limit

FCC: Part 1, Subpart I, Section 1.1310(e)(1), RSS 102, Issue 5, Section 2.5.2 (Table 4 requirements), KDB447498 D01 V06 (October 23, 2015)

According to KDB447498 D01 General RF Exposure Guidance v06 Section 4.3.1, the standalone SAR test exclusion considerations are: "Unless specifically required by the published RF exposure KDB procedures, standalone 1-g head or body and 10-g extremity SAR evaluation for general population exposure conditions, by measurement or numerical simulation, is not required when the corresponding SAR Test Exclusion Threshold condition, listed below, is satisfied.

The minimum test separation distance is determined by the smallest distance from the antenna and radiating structures or outer surface of the device, according to the host form factor, exposure conditions and platform requirements, to any part of the body or extremity of a user or bystander (see 5) of section 4.1)."



### **FCC Test Limit**

Limits for General Population/Uncontrolled Exposure:

Table 1 to § 1.1310(e)(1) - Limits for Maximum Permissible Exposure (MPE)

| Frequency range (MHz)                                    | Electric field strength (V/m) | Magnetic field strength (A/m) | Power density (mW/cm <sup>2</sup> ) | Averaging time (minutes) |
|----------------------------------------------------------|-------------------------------|-------------------------------|-------------------------------------|--------------------------|
| (i) Limits for Occupational/Controlled Exposure          |                               |                               |                                     |                          |
| 0.3-3.0                                                  | 614                           | 1.63                          | *(100)                              | ≤6                       |
| 3.0-30                                                   | 1842/f                        | 4.89/f                        | *(900/f <sup>2</sup> )              | <6                       |
| 30-300                                                   | 61.4                          | 0.163                         | 1.0                                 | <6                       |
| 300-1,500                                                |                               |                               | f/300                               | <6                       |
| 1,500-100,000                                            |                               |                               | 5                                   | <6                       |
| (ii) Limits for General Population/Uncontrolled Exposure |                               |                               |                                     |                          |
| 0.3-1.34                                                 | 614                           | 1.63                          | *(100)                              | <30                      |
| 1.34-30                                                  | 824/f                         | 2.19/f                        | *(180/f <sup>2</sup> )              | <30                      |
| 30-300                                                   | 27.5                          | 0.073                         | 0.2                                 | <30                      |
| 300-1,500                                                |                               |                               | f/1500                              | <30                      |
| 1,500-100,000                                            |                               |                               | 1.0                                 | <30                      |



### 3. MPE calculation

1. Max. power (conducted)=-5.9 dBm = 0.26 mW
2. Antenna gain = 7.4 dBi = 5.5 Numeric
3. Minimum distance from human body: 5 mm = 0.5 cm
4. Power density (calculated): 0.45 mW/cm<sup>2</sup>

Power density calculation equation: 
$$S = \frac{P_t G_t}{4\pi R^2}$$

Where:

S: Power density (mW/cm<sup>2</sup>)

P<sub>t</sub>: Conducted Transmitted Power (mW)

G<sub>t</sub>: Antenna Gain (numeric)

R: Distance from transmitter (cm)

### 5. Test Results

| Frequency (MHz) | FCC calculation (mW/cm <sup>2</sup> )                                                          | FCC limit (mW/cm <sup>2</sup> ) | Verdict |
|-----------------|------------------------------------------------------------------------------------------------|---------------------------------|---------|
| 2,433           | $S = \frac{P_t G_t}{4\pi R^2} = \frac{0.26 * 5.5}{4 * \pi * 0.5^2} = \frac{1.43}{3.14} = 0.45$ | <1.0                            | Pass    |

Figure 1 Test Results

### 6. Conclusion

The measurement results comply with the Limit per FCC, Part 1, Subpart I, Section 1.1310(e)(1),and KDB447498 D01 V06 (October 23, 2015)

**End of Report**