



Figure (d): MRF24J40 Microchip

Parameter of MRF24J40 Microchip

Parameter Name	Value
Power Output (db m)	0.00
Family	Wireless
Interface	4-wire SPI
Clock	20 MHz
Pin Count	40
Int OSC	20MHz, 32kHz
Max Speed (MHz)	5
IO Pins	2
RF Transceiver	Yes
Max Speed (MHz)1	20
Vdd Min (V)	2.4
Vdd Min (V)1	3.6
Zig-Bee Stack	Yes
MiWi Stack	Yes
Digital Comm. Peripheral	SPI
Rf Data Rate	250
Freq. Range	2.405-2.48
Input Sensitivity (mVpp)	-95.00
RSSI	Yes
Tx Power Consumption (mA)	23.00
f Rx Power Consumption (mA)	19.00
Sleep	Yes
MAC	Yes
MAC Features	CSMA-CA
Encryption	AES128
Encrypt	AES128
Ethernet Type	10Base-T
Comments	IEEE 802.15.4 dutiful, Transceiver

WPAN

Wireless Personal Area Network (LR-WPAN) is used for Irremovable, portable and moving devices within a personal operating space. Wireless networking protocol based on IEEE.802.15.4 (LR-WPAN) running at 2.4 GHz. The major purpose of IEEE 802.15.3 is to provide low cost, low power circulation, low complexity and high data rate connectivity for wireless personal devices. Thus, it is designed for support at least 11 Mbps data rate within at least 10 meters range. The IEEE 802.15.3 standard is operated in 2.4GHz ISM (Industrial, Scientific and Medical) frequency band [3].

RSSI

RSSI is a generic radio receiver technology, which is usually invisible to the user of the device containing the receiver, but RSSI is known to users of wireless networking of IEEE 802.11 protocol family which is basically used for

measurement of the received RF power [4 & 5]. Currently, there are three types of RSSI signal propagation model for wireless sensor network (WSN), free space model, 2-ray ground model and log-normal shadowing model (LNSM). The first two models have special requirements for the application environment, while the third model is a more general signal propagation model [6].

MiWi

MiWi is wireless protocols designed by Microchip Technology that is for use short range, low-power digital radios based on the IEEE 802.15.4 standard for WPAN. It is designed for low data transmission rates and short distance, low cost networks, such as industrial monitoring and control, lighting of home and building automation, automated meter reading and remote control low-power wireless sensors [7]. In this project, MiWi is used to established connections between MRF24J40 Microchip transceiver and PIC Microcontroller. The MiWi Peer to Peer protocol modifies the IEEE 802.15.4 specification's MAC (Media Access Control) layer by adding commands that simplify the hand shaking process. It simplifies link detachment and channel hopping by providing supplementary MAC commands. However, application distinct decisions, such as when to perform energy detect scan, are not defined in the protocol [8]. Show in figure (e)



Figure (e) MiWi

4. Conclusion

In this paper, we are going to developed a mobility platform using embedded system. Where each train is connected with RF transceiver, which will send a data of arrival before it reaches the platform. Where data received by Transceiver and signal goes through matching circuit in which frequency matches, if frequency matches then it pass through physical layer and MAC protocol which is interface with microcontroller. Microcontroller set command to dc motor where dc motor control the movable rostrum. This project help old age peoples and psychically challenge peoples to reach the desired platforms.

References

[1] Microchip, "PIC18F4XJ11 Datasheet" <http://www.microchip.com/pagehandler/en-us/products/picmicrocontrollers>

- [2] M.Shankar,A Microchip Wireless Based WearablePhysiological Parameters Monitoring System, *Volume 2, Issue2: Page No.71-74, March - April (2013)*
- [3] I.Howitt, J. A. Gutierrez, "IEEE 802.15.4 low rate-wireless Personal area network coexistence issues," *Wireless Communications and Networking*, vol.3 , March 2003, pp.1481 – 1486.
- [4] "IEEE 802.11-2012" IEEE. 2012-03-29. Retrieved 2013-02-11.
- [5] G. Eason, B. Noble and I. N. Sneddon, "On Certain Integrals of Lipschitz-Hankel Type Involving Products of Bessel Functions," *Philosophical Transactions of Royal Society*, London, Vol. A247, April 1955, pp. 529-551.
- [6] H. Laitinen *et al*, "Experimental Evaluation of Location Methods Based on Signal-Strength Measurements",*IEEE Trans. on Vehicular Technology*, vol.56, no.1, pp.287-296, Jan.2007
- [7] <http://en.wikipedia.org/wiki/MiWi>
- [8] T. S. Rappaport, "*Wireless Communications: Principles &Practices*," Prentice-Hall Inc., 1996

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