

## Reference Design Note / Antenna Design

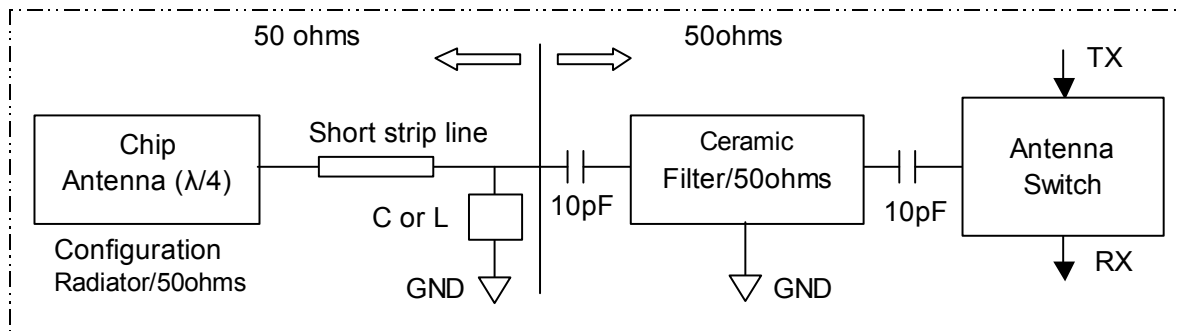
### Reference Antenna Matching Design

Model Number: All modules

Revision: 5.0

1. Integrated antenna module “WML-CXXA” series

(A) - Antenna portion block diagram of module with antenna.



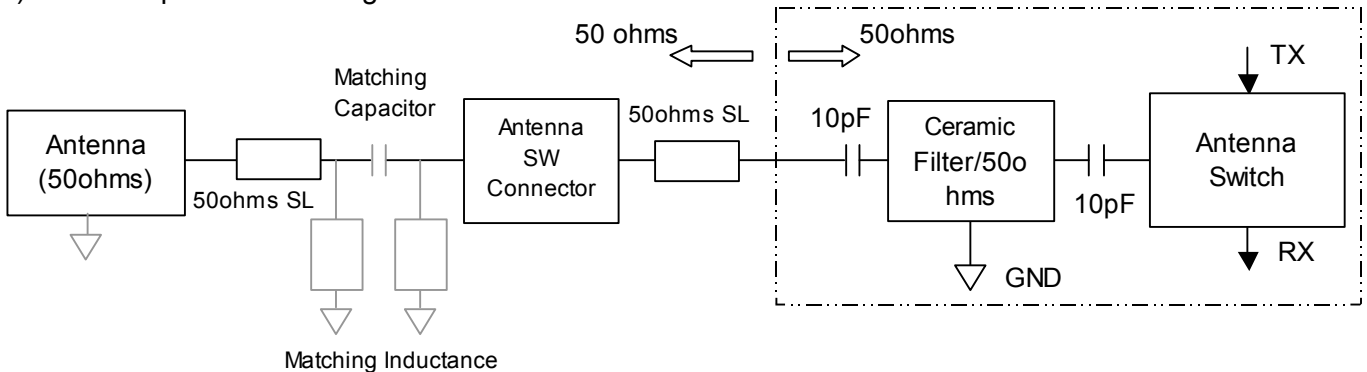
Mitsumi modules (WML-CXXA Series) embed a ceramic antenna on PWB.

The antenna portion works like a non-dipole antenna.

A Matching part C or L is required in order to match up to 50 ohms impedance with the ceramic antenna + short strip line.

2. NOT Integrated antenna module “WML-CXXN” Series

(B) - Antenna portion block diagram of module without antenna.



Mitsumi modules (WML-CXXN Series) have no antenna.

Several types of antennas match to our modules like following examples.

- 1) In customer application PWB, the antenna circuit (antenna + short strip line) should be 50ohms impedance. For the best results, use properly matched a capacitor and an inductor. The antenna portion may work like dipole antenna.

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- 2) Antenna switch connector should be placed between the module and an antenna in order to measure connected performance easily.
- 3) There are many kinds of combination with many types of antenna. You could have good matching conditions by referring the above block diagram (B).

## Recode of Changes

Date	Revision	Description
9 <sup>th</sup> May, 2001	R1.0	Original
15 <sup>th</sup> May 2001	R2.0	Add the description of antenna switch connector.
24 <sup>th</sup> Apr, 2002	R3.0	Add the type of WML-C09, WML-10, WML-C11 module. Revise the descriptions.
18 <sup>th</sup> Aug, 2002	R4.0	Minor amendments to text.
26 <sup>th</sup> Sep, 2002	R5.0	Minor amendments to text.

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