APPROVAL SHEET

CERAMIC ANTENNA

2.4 GHz ISM Band Working Frequency **P/N:**

RFANT5220110A0T

Manufacturer:Walsin Technology Corporation

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*Contents in this sheet are subject to change without prior notice.

FEATURES

- ☐ Surface Mounted Devices with a small dimension of 5.2 x 2.0 x 1.1 mm^3 meet future miniaturization trend.
- ☐ Embedded and LTCC (Low Temperature Co-fired Ceramic) technology is able to future integrate with system design as well as beautifying the housing of final product.
- ☐ High Stability in Temperature / Humidity Change

APPLICATIONS

- ☐ Bluetooth
- ☐ Wireless LAN
- ☐ HormRF
- ☐ ISM band 2.4GHz wireless applications

DESCRIPTION

Walsin Technology Corporation develops a new ceramic embedded antenna specified for 2.4 GHz ISM Band application, as shown in below "CONSTRUCTION". Both of Wireless LAN IEEE 802.11b and Bluetooth™ typically located on this unlicensed frequency band which range covers from 2.4GHz to 2.4835GHz. To fulfil the friendly usage for antenna, this antenna has been designed to a typical 150MHz bandwidth through Walsin's advanced LTCC (Low Temperature Co-fired Ceramic) technology and superior product design via 3D EM Simulation Skill.

This antenna has a rectangular ceramic body with a tiny dimension of 5.2x 2.0 x 1.1 mm^3 meet the future SMT automation and miniaturization requirements on modern portable devices.

CONSTRUCTION

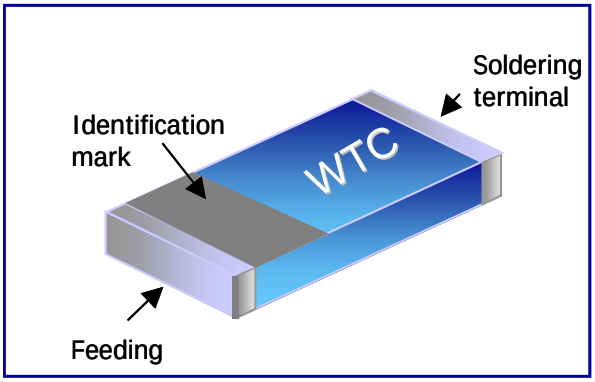


Fig 1. Outline of 2.4GHz Antenna – RFANT5220110A0T

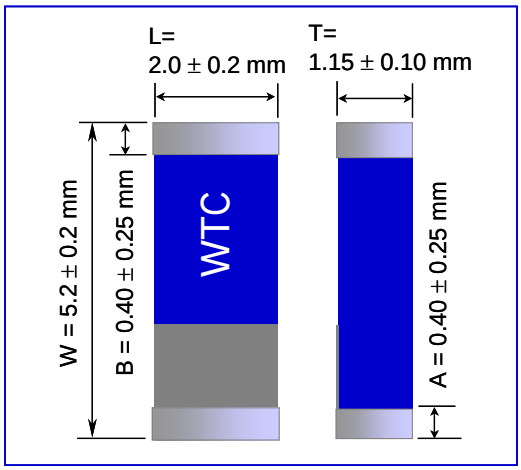
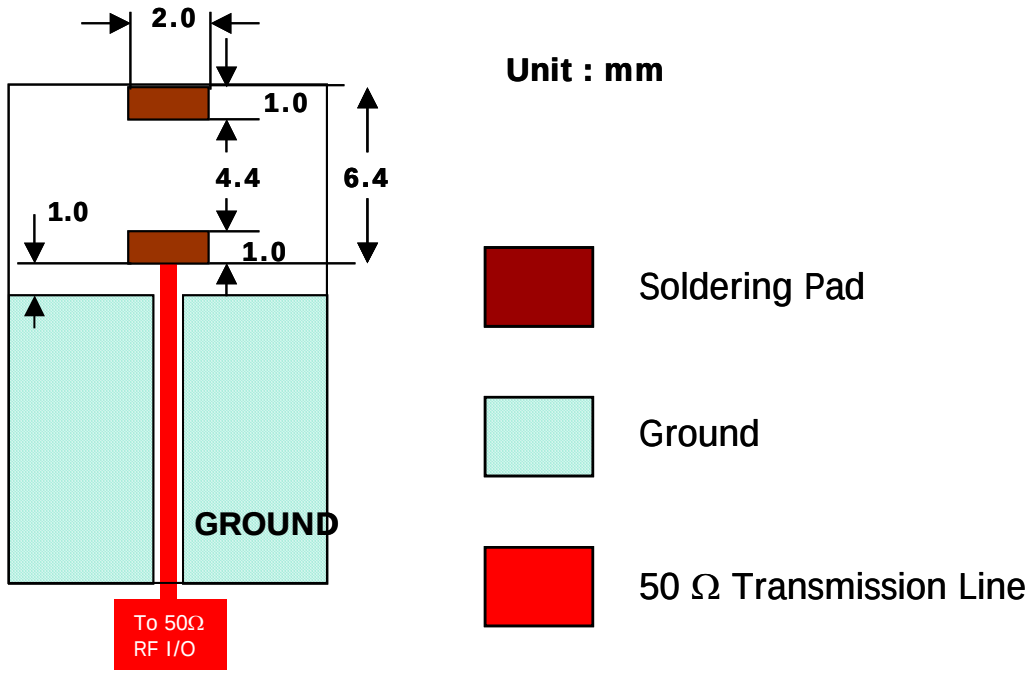


Fig 2. Dimension

SOLDER LAND PATTERN DESIGN

Figure

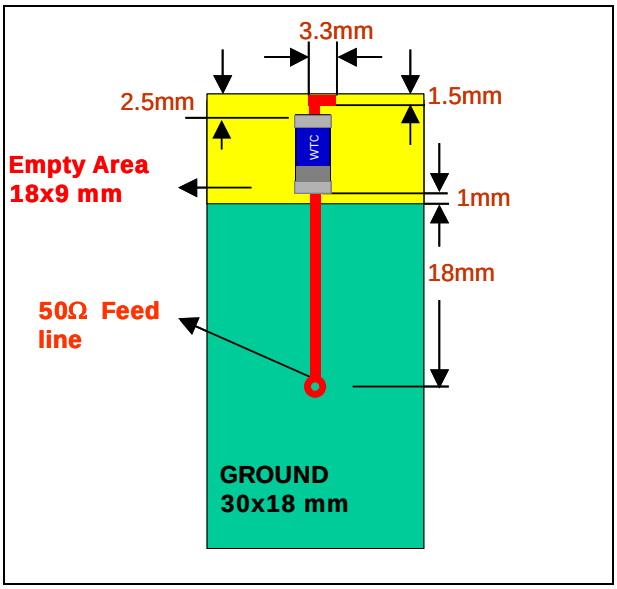


ELECTRICAL CHARACTERISTICS

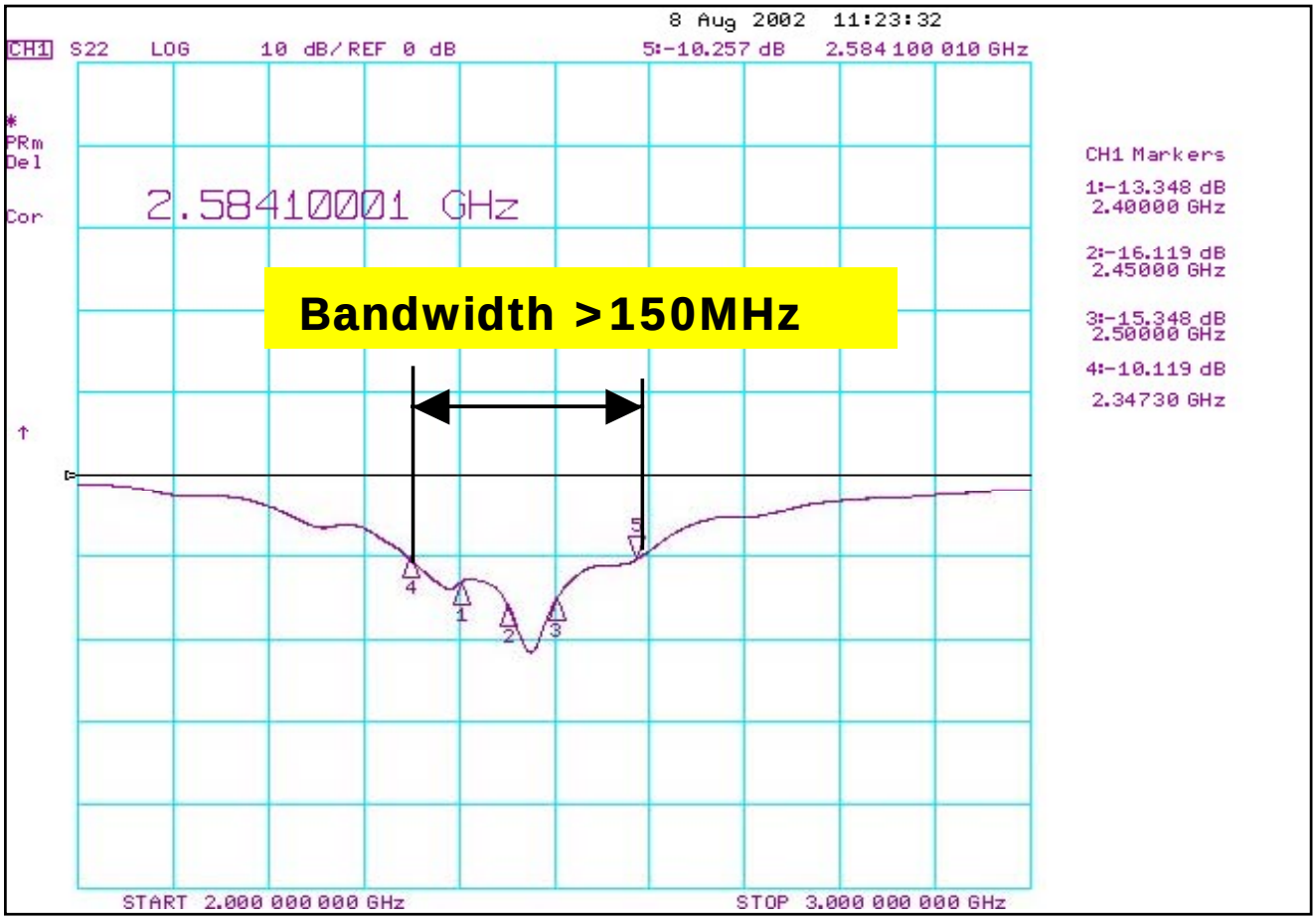
Item	Specification
Working Frequency Range	2.4 GHz ～ 2.5GHz
Antenna Gain	2.66 dBi (max)
Antenna model	ANT5220110A0T
Polarization	Linear
Azimuth Beamwidth	Omni-directional
Impedance	50Ω
Rated Power (max.)	3 Watts
Maximum Input Power	5 Watts for 5 minutes
Operation Temperature	-40°C ~ +85°C

Remark: The specification is defined based on the test board dimension as in below

Antenna on Test Board (FR4 Thickness 0.8mm)

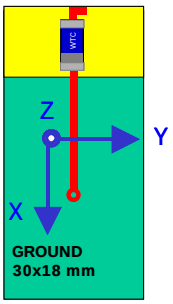


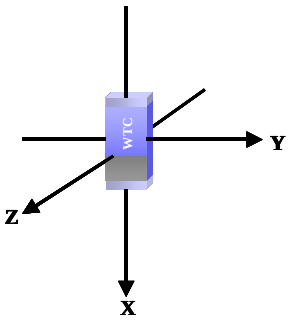
Antenna S11 on Test Board

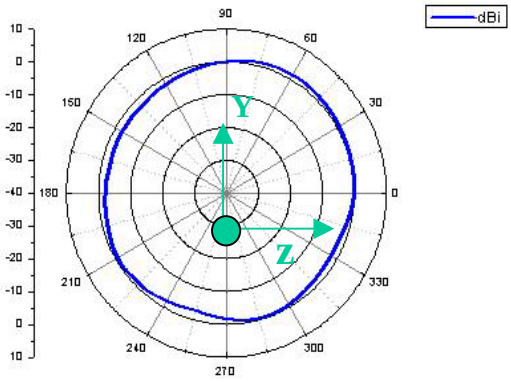
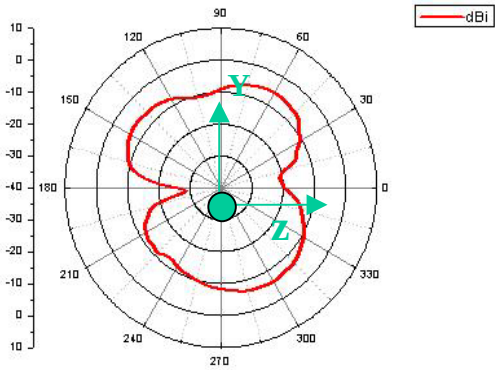
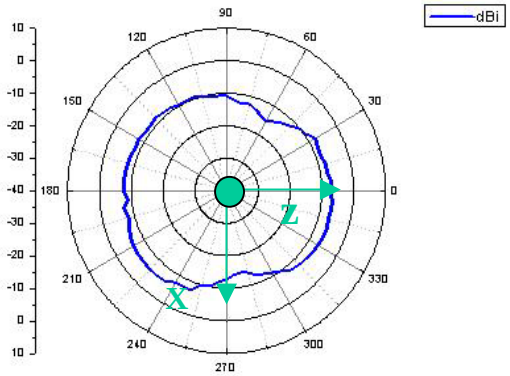
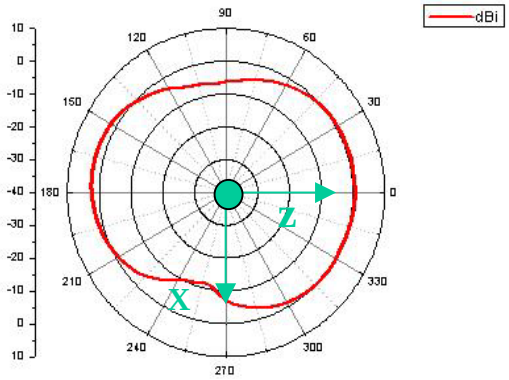
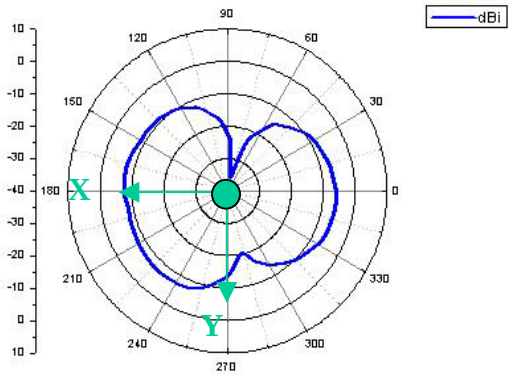
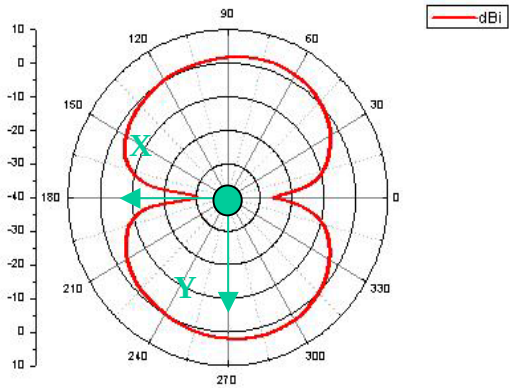


RADIATION PATTERN

Radiation Pattern and Gain were dependent on measurement board design. The specification of RFANT5220110A0T antenna was measured based on the PCB size and installation position as shown in the below figure Test Board





	Vertical	Horizontal
Y - Z Plane Average Gain= -3.22 dBi	 Peak Gain = 1.69 dBi Average Gain = -0.82 dBi	 Peak Gain= -5.42 dBi Average Gain=-8.98 dBi
X - Z Plane Average Gain= -3.24 dBi	 Peak Gain= -5.97 dBi Average Gain= -8.61dBi	 Peak Gain= 2.66 dBi Average Gain= -0.91 dBi
X - Y Plane Average Gain= -3.12 dBi	 Peak Gain= -5.97 dBi Average Gain= -9.24dBi	 Peak Gain= 2.59 dBi Average Gain= -0.68 dBi

■ RELIABILITY TEST

■ Mechanical performance

Test item	Test condition / Test method	Specification
Solderability	Solder temp. : 235 ± 5°C Immersion time: 2 ± 1 sec Solder: SN63	95% min. coverage of all metabolised area
Resistance to soldering heat	Solder: Sn63 Preheating temperature: 150 ± 10°C Solder Temperature: 260 ± 5°C Immersion time: 10 ± 1 sec Measurement to be made after keeping at room temp. for 24±2 hrs.	No mechanical damage. Ceramic surface shall not be exposed in the middle of the termination or on the terminated product edge by leaching.
Drop test	Height : 75 cm Direction : 3 directions Times : 3 times.	No mechanical damage. Samples shall satisfy electrical specification after test..

Environmental characteristics

Test item	Test condition / Test method	Specification
Humidity Resistance	Humidity:90% to 95% R.H. Tempertaure:40±2°C Time: 500±24 hours. Measurement: After placing for 24 hours Minimum.	No mechanical damage. Samples shall satisfy electrical specification after test.
Temperature cycle	1. 30±3 minutes at -40°C±3°C, 2. 10~15 minutes at room temperature, 3. 30±3 minutes at +85°±3°C, 4. 10~15 minutes at room temperature, Total 100 continuous cycles Measurement after placing for 48±2 hrs min.	No mechanical damage. Samples shall satisfy electrical specification after test.
High temperature	Temperature: 85°C±2°C Test duration: 24 hours Measurement must be taken after subjection to the above conditions, followed by exposure in room environment for 1 to 2 hours.	No mechanical damage. Samples shall satisfy electrical specification after test.
Low temperature	Temperature: -40°C±3°C Test duration: 24 hours Measurement must be taken after subjection to the above conditions, followed by exposure in room environment for 1 to 2 hours.	No mechanical damage. Samples shall satisfy electrical specification after test.

SOLDERING CONDITION