

No. TPQ-20D01N

Apr. 17, 2020

TO : Digi-Key Electronics

TECHNICAL REPORT

Product name : Antenna unit

Part number : UB14CP-100ST01

Interim Specification

This document describes targeted specifications based on a new product under development. Therefore it DOES NOT warrant the new product's specifications.

A separate "SPECIFICATION" will be issued for approval of the final product.

MITSUBISHI MATERIALS CORPORATION CERAMICS PLANT
QUALITY ASSURANCE DEPARTMENT / MANAGER

Matsumoto

J. MATSUMOTO

(Drawn K. KANAI)

2270 YOKOZE CHICHIBU SAITAMA PREF. 368-8502. JAPAN

Antenna Unit UB14CP-100ST01 Specification		Drawing No.	RJC-AP-0091F	Page	1/4
Part number	UB14CP-100ST01	Date of issue	<div style="border: 2px solid red; padding: 5px; display: inline-block;"> REFERENCE DRAWING </div>		

1. Scope of application

The specification is applied to Antenna unit UB14CP-100ST01.

2. Product outline

This product is modular type antenna with mounted chip antenna AM11DP-ST01 made by Mitsubishi Materials on PCB, the circuit to tune resonance frequency and input impedance, the coaxial cable and connector to connect the communication module.

3. Part number

UB 14 CP - 100 ST01

(1) (2) (3) (4) (5) (6)

(1)	Series	UB : Antenna Unit
(2)	Frequency band	14 : 915MHz to 928MHz
(3)	Cable and Connector	CP : With coaxial cable
(4)	Reserved code	- : Option
(5)	Cable length	100 : Coaxial cable length 100mm
(6)	MMC internal code	ST01 : Control code

Table 1. Part number

4. Environmentally Hazardous Substance

This product is compliant with RoHS.

5. Specifications

5.1. Electrical specifications

Item	Specification
Frequency range	915MHz to 928MHz
Input impedance	50 ohm
V.S.W.R.	3 or less (*1)
Polarized wave	Linearly polarized wave
Directivity	Omnidirectional

Table 2. Electrical specifications

*1 See 7.1 Method of measuring VSWR.

Depending on the condition of use, there is a possible that frequency and impedance are shifted.

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5.2. Structure and dimensions

1) Size and dimensions

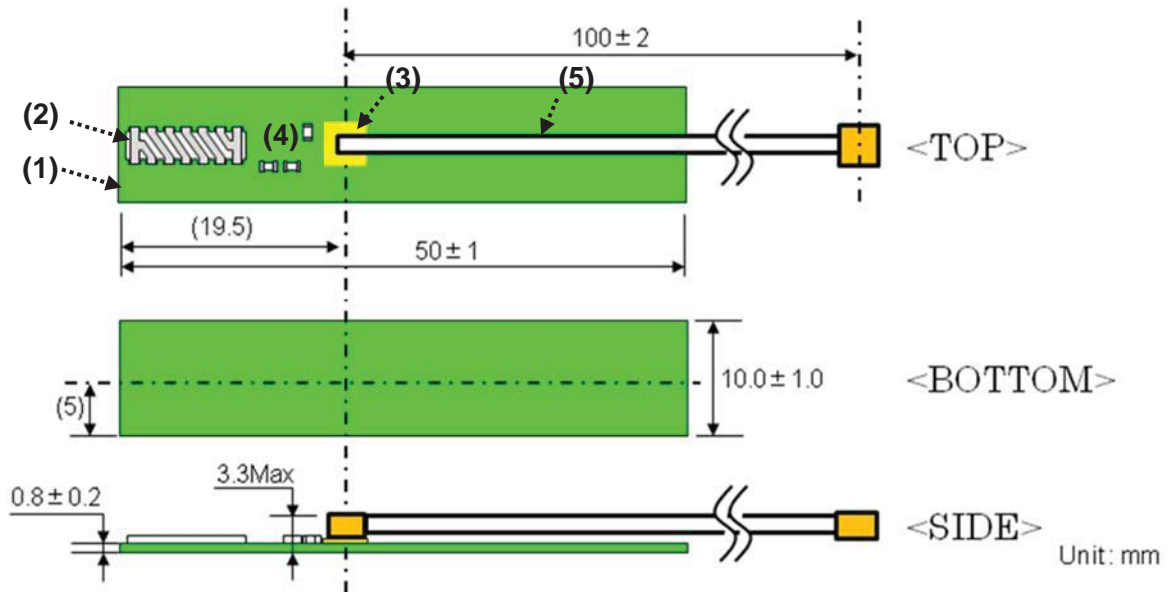


Fig. 1. Size and dimensions

2) Components

(1)	PCB	FR-4, 50 x 10 x 0.8t mm
(2)	Chip antenna: ANT1	AM11DP-ST01 (Mitsubishi Materials)
(3)	Connector: CN1	MHF II series (I-PEX)
(4)	Tuning elements: L1, L2, L3	Chip inductors
(5)	Coaxial cable: J1	φ0.81mm, 100mm length, both end connector MHF II

Table 3. Components

3) Equivalent circuit

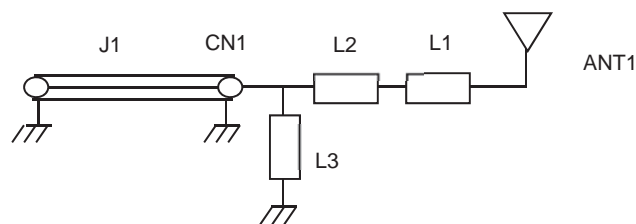


Fig. 2. Equivalent circuit

6. Temperature range

Operation temperature: -40°C to +85°C (with no dew condensation)

Storage temperature: -25°C to +60°C, Humidity 85% or less (with no dew condensation)

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7. Performance

7.1. Method of measuring VSWR

Connect this product to port 1 of network analyzer, and measure the S parameter (S11).

Use the specified SMA connector when connecting a coaxial cable.

- (1) SMA Connector
- (2) Coaxial Cable
- (3) Isolation Cable
- (4) Network Analyzer
- (5) Support base for antenna to be measured: use Styrofoam

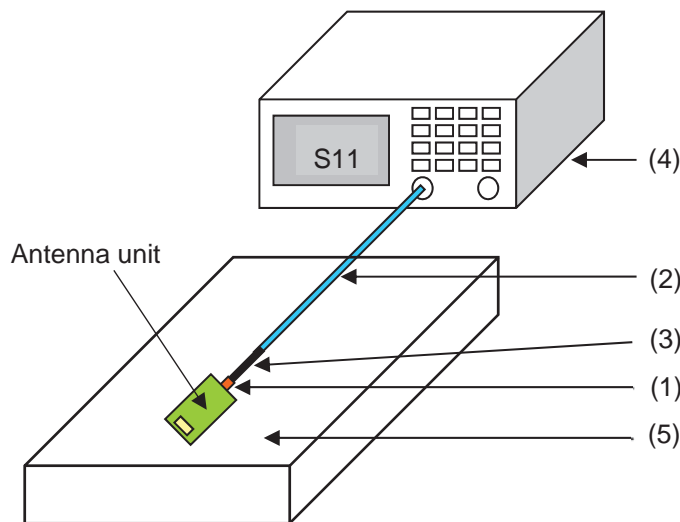


Fig. 3. Method of measuring VSWR

7.2. Electrical characteristics

Shall be satisfied electrical characteristics (see Table 2).

No.	Item	Characteristics
1	Input impedance	50 ohm
2	Frequency range	915MHz to 928MHz
3	V.S.W.R.	3 or less

Table 4. Electrical characteristics

7.3. Visual

Not detected: Scratches, cracks, stains, deformation etc. that would impair the product quality and/or reliability.

Not detected: Unmounted parts, misalignment of mounted parts, soldering failures etc..

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8. The cautions on use

8.1. Handling

Excessive stress or mechanical shock may damage to the products, therefore, please be careful in handling, transporting and assembling.

8.2. Coaxial cable

Do not apply a tensile stress of 7N or more to coaxial cable. It may cause cable disconnection.

Do not apply a load to the cable and connector the value or more specified in Fig. 4. It may cause pulling out connector and cable, deformation of connector and cable disconnection.

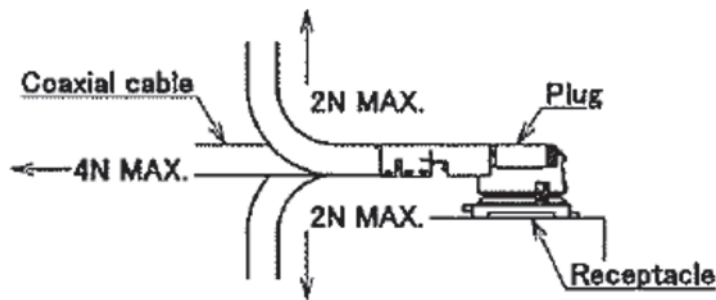


Fig. 4. Maximum load to cable and connector

8.3. RF Waves

Shall be complied with the regulations and laws related to radio waves in each country.

Antenna Unit UB series Characteristic Specification		Drawing No.	RJC-AG-0045F	Page	1/1
Part number	UB series	Date of issue	<div style="border: 2px solid red; padding: 5px; text-align: center;"> REFERENCE DRAWING <small>April 11, 2019</small> </div>		

1. Scope of application

The specification is applied to Antenna unit UB series. Applicable products are as follows.

- UB18CP-100ST01
- UB23CP-100ST01
- UB14CP-100ST01

2. Climatic Quality

Description	Test Method	Performance
Cold test	Test temperature : $-40^{\circ}\text{C} \pm 3^{\circ}\text{C}$ Test duration : 96hrs After completion of the test, allow the sample to stand under the standard condition for at 2hrs.	After the test, shall satisfy the electrical characteristics(*1).
Dry heat test	Test temperature : $+85^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Test duration : 96hrs After completion of the test, allow the sample to stand under the standard condition for at 2hrs.	After the test, shall satisfy the electrical characteristics(*1).
Damp heat test	Test temperature : $+40^{\circ}\text{C} \pm 2^{\circ}\text{C}$ Test relative humidity : 90%-95% Test duration : 96hrs After completion of the test, allow the sample to stand under the standard condition for at 2hrs.	After the test, shall satisfy the electrical characteristics(*1).
Temperature cycle test	Test cycle : $-40 \pm 3^{\circ}\text{C}$ (30min)→Ordinary temp.(3min)→ $+85 \pm 2^{\circ}\text{C}$ (30min) Cycles : 5 cycles After completion of the test, allow the sample to stand under the standard condition for at 2hrs.	After the test, shall satisfy the electrical characteristics(*1).
Vibration test	Condition : 10-50-10Hz 1 minute Amplitude : 1.5mm Cycles : 5 cycles Orientations : Each of 3 orientations	After the test, shall satisfy the electrical characteristics(*1).

*1 Specified in specification of each products.