



# SPECIFICATION

<b>SPEC NO.</b>	<b>:</b>	<b>SP03AC00980-0010</b>
<b>PART NO.</b>	<b>:</b>	<b>03K78F5B0000140</b>
<b>PRODUCT NAME</b>	<b>:</b>	<b>MMA098A</b>
<b>DESCRIPTION</b>	<b>:</b>	<b>FM Antenna</b> <b>ROHS Compliant Product</b>

## 1.0 Gneral

### 1.1 SCOPE

This specification is applied to the antenna use for Ground-based digital broadcasting.

### 1.2 Operating temperature

Satisfy an electric, mechanical characteristic at -10 to +60°C.

### 1.3 Storage temperature

There must be neither abnormal externals nor a permanent transformation at -40 to +85°C.

### 1.4 Test conditions

Standard test conditions shall be 5 to 35°C in temperature, 45 to 85%RH and 860 to 1060hpa in barometric pressure. Should any doubt arise in judgment, test shall be conducted at 20±2°C, 65±5%RH and 860 to 1060hpa.

## 2.0 Appearance, structure and dimension

### 2.1 Appearance

Finish on each part should be good , functionally free rust, crack and bad plating.

### 2.2 structure and dimension

According to the drawing or individual product.



### 3.0 Electrical characteristics

#### 3.1 Electrical characteristics of antenna

The antenna has the electrical characteristics given in Table 1 under the Cirootmm standard installation conditions shown in the figure of Evaluation Board.

Table 1

No	Parameter	Specification
1	Working Frequency	<b>88~108 MHz</b>
2	VSWR	5.0max (94~102MHz)
3	Gain	-10±5dBi
4	Polarization	Linear
5	Azimuth	Omni-directional
6	Impedance	50 Ω
7	Operating Temperature	-10°C~60°C
8	Termination	Ni / Au (Environmentally-Friendly Pb Free )
9	PLUG	φ 3.5mm
10	PLUG POLES	3 Pole

Actual value will depend on customer ground plane size

Table2

No	Guarantee item	Test condition	Performance
1	VSWR	The antenna is measured in the lengthened and standing state in the center of conductive-grounded plate(300x300mm)	There is a resonance point equal to or less than the an VSWR 5.0 in 98±4MHz
2	Sliding power (Initial value)	Fixing the base of and antenna, load of the pull out and the storage of antenna is measured.	Antenna upper row part, at pullout and at storage. 0.59±0.29N(60±60gf) Antenna case, at pull out and at storage. UPPER:5.88±2.94N(600±300gf) LOWER:9.70±3.92N(990±400gf)
3	Rotation torque (Initial value)	Fixing the base of antenna, rotating torque is measured with the antenna extended.	0.0147±0.0049Nm(150±50gf · Cm) Don't fall by the deadweight.
4	Hinge rising torque (Initial value)	Fixing the base of antenna, turn right and left torque is measured when it stand up from the state that an antenna fell down.	Rising:0.1568±0.00392Nm(160±40gf · cm) Falling:0.0196±0.0049 Nm(200±50gf · cm)



		Similarly it is measured from a rising state.	
5	Sustain	Fixing the base of antenna, self is confirmed with the extension antenna.	Angle: $\pm 3$ degrees or less.
6	The durability of Sliding power	Fixing the base of antenna and rotating 10,000 times at the rate of per minute 30 times by pull out and storage of antenna into 1cycle. Afterwards, sliding power is measured.	Antenna upper row part, at pull out and at storage. Antenna case, at each pull out and at each storage. There be resonance point equal or less than VSWR2.5 in 98 $\pm$ 4MHz.
7	Rotation life	Fixing the base of antenna and rotation operation is done. Rotate 10,000 times per 20 times/minute for rotation at 360° left and right.	Don't fall by the deadweight.
8	Pullout strength	Fixing the base of antenna and adds the fixed load of 78.4n (8Kgf) in the direction of pullout of antenna for 10seconds.	There must not be omission. There be a resonance point equal to or less than VSWR 2.5 in 98 $\pm$ 4MHz
9	Flexuous at flexible part	Applying testing jig with R25 fixing flexible base and holding cap at fully extended element, rotate 1,000 time per 20 times/minute for flexuous at 90° left and right.	Antenna upper row part, at pull out and at storage. 0.20~0.98N(20~100gf) Antenna case, at pull out and at storage. UPPER:5.88 $\pm$ 2.94N(600 $\pm$ 300gf) LOWER:9.70 $\pm$ 3.92N(990 $\pm$ 400gf) There be a resonance point equal to or less than VSWR 2.5 in 98 $\pm$ 4MHz
10	Hinge part Refractiveness-resistant	Fixing the base of antenna and winding direction of the hinge part winding. Wind 10,000 times per 20 times/minute for winding at 90° left and right. Afterwards, the rotating torque of the antenna is measured right and left, it stands up from the state that the antenna falls.	The must be a click feeling. There be a resonance point equal to or less than VSWR 2.5 in 98 $\pm$ 4MHz
11	Cold proof	After leaving 96 hours at temperature -30 $\pm$ 2°C, leave 1 hour in a normal ambient condition and measure. Additionally, it conforms to JIS0020	Antenna upper row part, at pull out and at storage. 0. 20~0.99N(20~100gf) Antenna case, at pull out and at storage. UPPER:5.88 $\pm$ 2.94N(600 $\pm$ 300gf) LOWER:9.70 $\pm$ 3.92N(990 $\pm$ 400gf)
12	Dry heat proof	After leaving 96 hours at temperature +70 $\pm$ 2°C, leave 1 hour in a normal ambient condition and measure. Additionally, it conforms to JIS0020	There be a resonance point equal to or less than VSWR 2.5 in 98 $\pm$ 4MHz
13	Damp heat proof	After leaving 96 hours at temperature +70 $\pm$ 2°C, and 90 to 95%RH, leave 1 hour in a normal ambient condition and measure. Additionally, it conforms to JIS0022.	

14	Temperature cycle	-30°C 1H, +60°C 1H is assumed to be 1 cycle, and 11 cycles are examined.	
----	-------------------	--	--

\* Actual value will depend on customer ground plane size