

# TECHNICAL SPECIFICATION

20-Port, Green Sector Antenna, Integrated RET  
FDD: 2×698-960 & 4×1695-2690MHz, TDD: 4×2300-2690MHz



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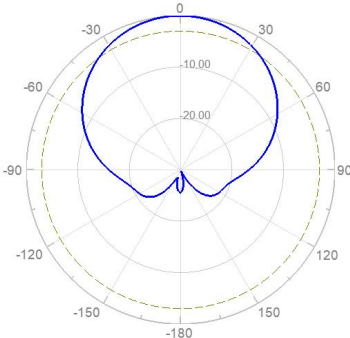
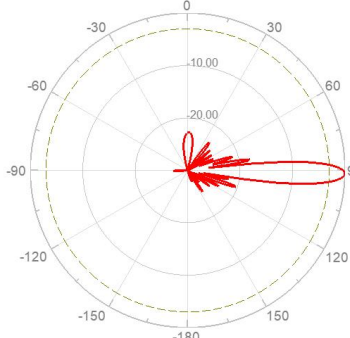
A.0	Dec 19, 2024	Zack	Michael	Mr. Wang
<b>Version</b>	<b>Date</b>	<b>Prepared</b>	<b>Reviewed</b>	<b>Approved</b>

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<b>Electrical Specifications</b>						
Description	20-Port, Green Sector Antenna, Integrated RET FDD:2×698-960&4×1695-2690MHz, TDD:4×2300-2690MHz					
ZTT Product Code	<b>HBZ488J6617C</b>					
Frequency Range	MHz	FDD:2×698-960( <b>R1/R2</b> )				
Frequency Band	MHz	698-806	790-896	880-960		
Gain Over All Tilts	dBi	15.9±0.7	16.7±0.5	17±0.5		
Gain by Tilt Average Min	dBi	16.1	16.9	17.3		
Gain by Tilt Average Mid		16.0	16.8	17.1		
Gain by Tilt Average Max		15.7	16.4	16.7		
Radiation Efficiency	%	≥80				
Horizontal 3dB Beam Width	Deg	69±7	66±5	60±8		
Vertical 3dB Beam Width	Deg	12±0.6	10.8±0.6	10±0.4		
1 <sup>st</sup> Upper Side Lobe Suppression Above Main Beam	dB	≥15				
Front to Back Ratio at 180Deg ±30Deg	dB	≥25				
Cross-Polar Ratio at 0Deg	dB	≥16				
Electrical Downtilt	Deg	<b>2-12, Continuously adjustable</b>				
VSWR	/	≤1.5				
Cross Polar Isolation	dB	≥26				
Interband Isolation	dB	≥26				
Intermodulation IM3	dBc	≤-150(2×43 dBm carrier)				
Max. Power Per Port	Watt	350(at 50℃ ambient temperature)				
Frequency Range	MHz	FDD:4×1695-2690( <b>Y1/Y2/Y3/Y4</b> )				
Frequency Band	MHz	1710-1880	1850-1990	1920-2180	2300-2500	2500-2690
Gain Over All Tilts	dBi	16.7±0.7	16.8±0.7	17.0±0.8	16.8±0.8	17.1±0.8
Gain by Tilt Average Min	dBi	17.0	17.2	17.3	17.2	17.4
Gain by Tilt Average Mid		16.9	17.0	17.0	17.1	17.2
Gain by Tilt Average Max		16.3	16.4	16.5	16.6	16.6
Radiation Efficiency	%	≥75				
Horizontal 3dB Beam Width	Deg	69±8	66±6	67±5	61±6	60±8
Vertical 3dB Beam Width	Deg	7.8±0.5	7.1±0.4	6.7±0.5	6.2±0.4	5.8±0.4
1 <sup>st</sup> Upper Side Lobe Suppression Above Main Beam	dB	≥15				

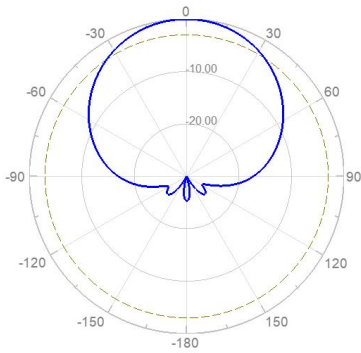
Front to Back Ratio at 180Deg ±30Deg	dB	≥25		
Cross-Polar Ratio 0Deg	dB	≥16		
Electrical Downtilt	Deg	2-12, Continuously adjustable		
VSWR	/	≤1.5		
Cross Polar Isolation	dB	≥25		
Interband Isolation	dB	≥25		
Intermodulation IM3	dBc	≤-150(2×43 dBc carrier)		
Max. Power Per Port	Watt	250(at 50°C ambient temperature)		
Impedance	Ohm	50		
Polarization	Deg	±45		
<b>Electrical Specifications</b>				
Frequency Range	MHz	TDD:4×2300-2690(Y5)		
Frequency Band	MHz	2300-2490	2490-2690	
Coupling Factor between Calibration Port and Each Antenna Port	dB	-26±2		
Max.Amplitude Tolerance from Calibration Port to Input Ports	dB	≤0.9		
Max.Phase Tolerance from Calibration Port to Input Ports	Deg	≤9		
VSWR	/	≤1.5		
Electrical Downtilt	Deg	2-12, Continuously adjustable		
Maximum Power	Watt	80(at 50°C ambient temperature)		
Co-polarization Isolation Between Ports	dB	≥19		
Cross-polarization Isolation Between Ports	dB	≥24		
Single Column Beam	Horizontal 3dB Beam Width	Deg	95±15	85±15
	Vertical 3dB Beam Width	Deg	6.8±1.3	6.1±1.4
	Gain Over All Tilts	dB	15.1±0.7	15.4±0.7
	Gain by Tilt Average Min	dB	15.6	15.9
	Gain by Tilt Average Mid	dB	15.3	15.6
	Gain by Tilt Average Max	dB	14.7	15.0
	Cross-Polar Ratio 0Deg	dB	≥15	
	1st Upper Side Lobe Suppression Above Main Beam	dB	≥15	
	Front to Back Ratio at 180Deg ±30Deg	dB	≥23	
Broadcast	Horizontal 3dB Beam Width	Deg	63±5	58±6

Beam	Vertical 3dB Beam Width	Deg	6.8±0.7	6.1±0.7
	Gain Over All Tilts	Deg	16.0±0.6	16.5±0.7
	Gain by Tilt Average Min	dBi	16.4	16.8
	Gain by Tilt Average Mid	dBi	16.1	16.6
	Gain by Tilt Average Max	dBi	15.7	16.0
	Cross-Polar Ratio 0Deg	dB	≥16	
	1st Upper Side Lobe Suppression Above Main Beam	dB	≥15	
	Front to Back Ratio at 180Deg ±30Deg	dB	≥25	
Service Beam	0° Beam Gain Over All Tilts	dBi	19.9±0.4	20.8±0.6
	0° Beam Gain by Tilt Average Min	dBi	20.3	21.0
	0° Beam Gain by Tilt Average Mid	dBi	19.9	20.8
	0° Beam Gain by Tilt Average Max	dBi	19.6	20.6
	0° Beam Horizontal 3dB Beam Width	Deg	25±2	21±2
	0° Beam Horizontal Sidelobe	dB	12	
	0° Beam Front to Back Ratio	dB	≥28	
	0° Beam Cross-Polar Ratio 0Deg	dB	≥15	
	±30° Beam Gain Over All Tilts	dBi	18.5±0.5	19.3±0.6
	±30° Beam Gain by Tilt Average Min	dBi	18.9	19.7
	±30° Beam Gain by Tilt Average Mid	dBi	18.6	19.4
	±30° Beam Gain by Tilt Average Max	dBi	18.2	19.0
	±30° Beam Horizontal 3dB Beam Width	Deg	29±1	26±2
	0° Beam Front to Back Ratio	dB	≥25	
<b>Mechanical Specifications</b>				
Antenna Dimensions	mm	2000×498×192		
Antenna Net Weight	kg	41kg		
Packing Dimensions	mm	2300×570×280		
Antenna Gross Weight	kg	54kg		
Connector Type	/	12×4.3-10 Female + 1×MQ4&MQ5		
Connector Position	/	Bottom		
Radiator Material	/	Aluminum&Low loss circuit broad		
Radome Material / Color	/	Fiberglass / Light Grey RAL7035		
Reflector Material	/	Aluminum		
Storage Temperature	°C	-40 to +60		

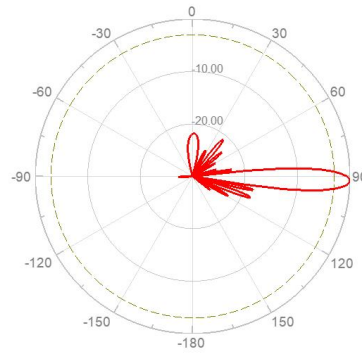
<b>Operating Temperature</b>	°C	-40 to +60
<b>Humidity</b>	/	5% to 95%
<b>Max. operational Wind Speed</b>	km/h	200
<b>Wind Load @Rated Wind Front</b>	N	1254
<b>Wind Load @Rated Wind Side</b>	N	200
<b>Wind Load @Rated Wind Rear</b>	N	1405
<b>Lightning Protection</b>	/	DC ground
<b>Accessories</b>		
<b>Downtilt Kit (mechanical)</b>	Deg	0-12
<b>Mounting Accessories (clamp)</b>	/	Included with antenna
<b>Mounting Pipe Diameter</b>	mm	50-115
<b>Internal RET Specifications</b>		
<b>RCU (remote control unit)</b>	/	Replaceable RET (can be exchangeable without exchanging antenna)
		AISG2.0 /3GPP
<b>Input Voltage Range</b>	V	10-30 DC
<b>Power Consumption</b>	W	< 10 (motor activated , single RET) < 2 (stand by, single RET)
<b>Adjustment Time (full range)</b>	s	< 120 (typically, depending on antenna type)
<b>RET Connector</b>	/	1 pair of AISG 5 pin male & female
<b>Pin Assignment According AISG</b>	/	5-pin circular connector conforming to IEC 60130-9 - Ed. 3.0
<b>Lightning Protection</b>	kA	5 (8/20 $\mu$ s differential mode), 8 (8/20 $\mu$ s common mode)
<b>Reference Pattern</b>		
FDD:698-960MHz		
<b>Horizontal Pattern</b>		<b>Vertical Pattern</b>
		

FDD:1695-2690MHz

Horizontal Pattern



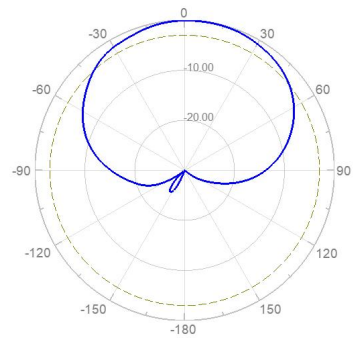
Vertical Pattern



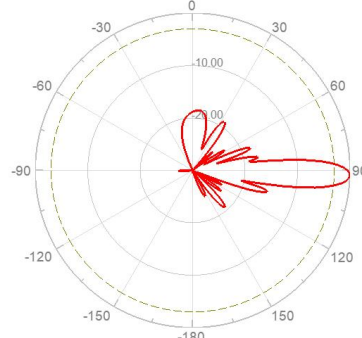
TDD:2300-2690MHz

Single Column Beam

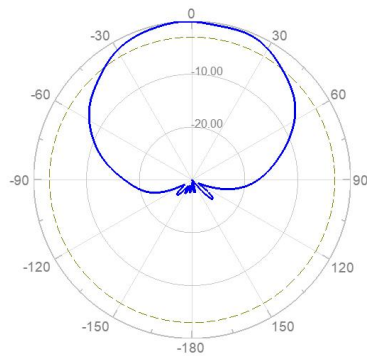
Horizontal Pattern



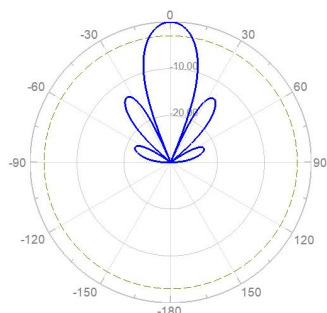
Vertical Pattern



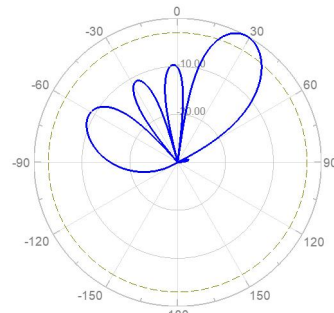
Broadcast Beam



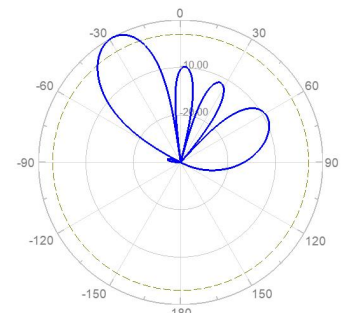
0° Service Beam



+30° Service Beam

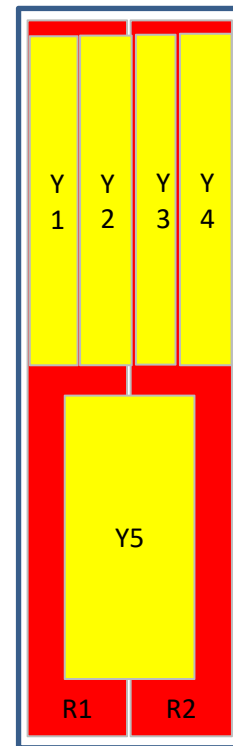


-30° Service Beam

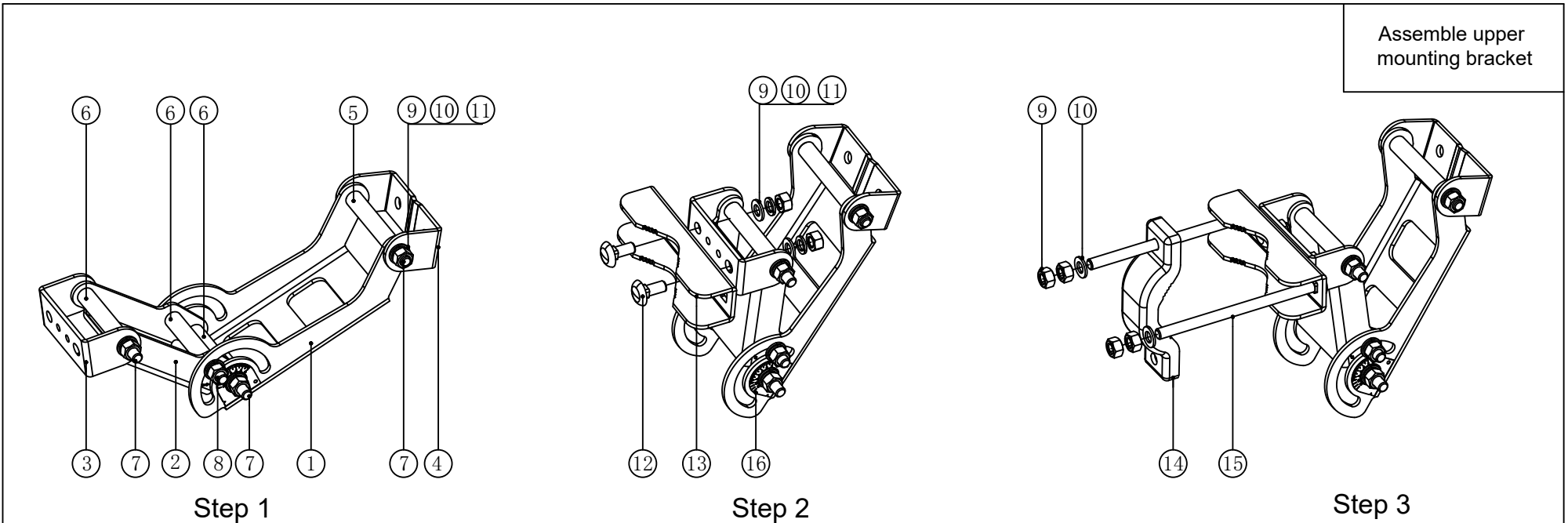


### Layout of Array

Array	Connector	Frequency(MHz)	RET Serial
R1	1-2	698-960	ZTR1...01
R2	3-4	698-960	ZTR1...02
Y1	5-6	1695-2690	ZTY1...03
Y2	7-8	1695-2690	ZTY2...04
Y3	9-10	1695-2690	ZTY3...05
Y4	11-12	1695-2690	ZTY4...06
Y5	13-20	2300-2690	ZTY5...07



All data are based on NGMN recommendations on Base Station Antenna Standards (BASTA V11.1).



Assemble upper mounting bracket

Step 1

Step 2

Step 3

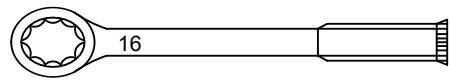
Step 1: Identify downtilt kit, attach mounting base A③ on short arm② side with M10x125 bolt, and attach mounting base B④ on long arm① side with M10x125 bolt;

Step 2: Assemble U-clamp⑬ on mounting base A③ and fasten it with M10x25 bolts(47N · m) ;

Step 3: Attach pipe clamp⑭ to the U-clamp⑬ in step 2 with M10x170 bolts;

Installation tools:

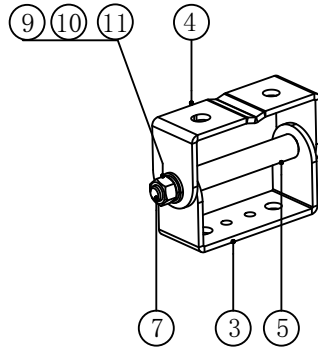
Torque wrench(16#)\*1



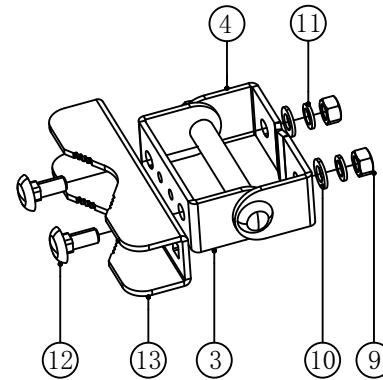
Packing list			
Assembly	QTY	NO.	Part
Downtilt kit	1	1	Long arm*1
		2	Short arm*1
		3	Mounting base A*1
		4	Mounting base B*1
		5	Long supporting tube*1
		6	Short supporting tube*3
		7	CHSN bolt(M10x125)*3
		8	CHSN bolt(M10x120)*1
		9	Nut(M10) *4
		10	Plain washer (D10) *4
		11	Spring washer (D10) *4
Mounting base assembly	1	3	Mounting base A*1
		4	Mounting base B*1
		5	Long supporting tube*1
		7	CHSN bolt(M10x125)*1
		9	Nut(M10) *1
		10	Plain washer (D10) *1
Clamp	2	13	U-clamp*1
		14	Pipe clamp*1



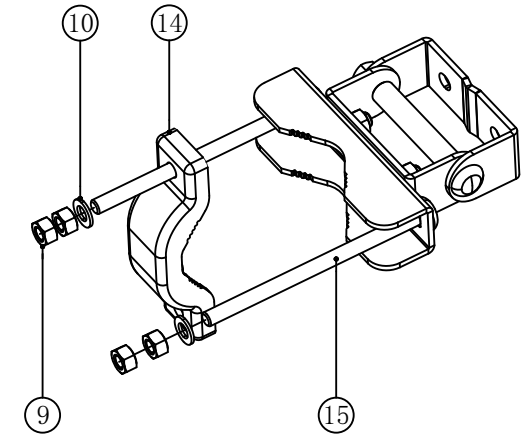
Assemble lower mounting bracket



Step 4



Step 5



Step 6

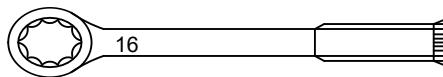
Step 4: Identify mounting base assembly;

Step 5: Assemble U-clamp ⑬ on mounting base A ③ and fasten it with M10x25 bolts(47N · m) ;

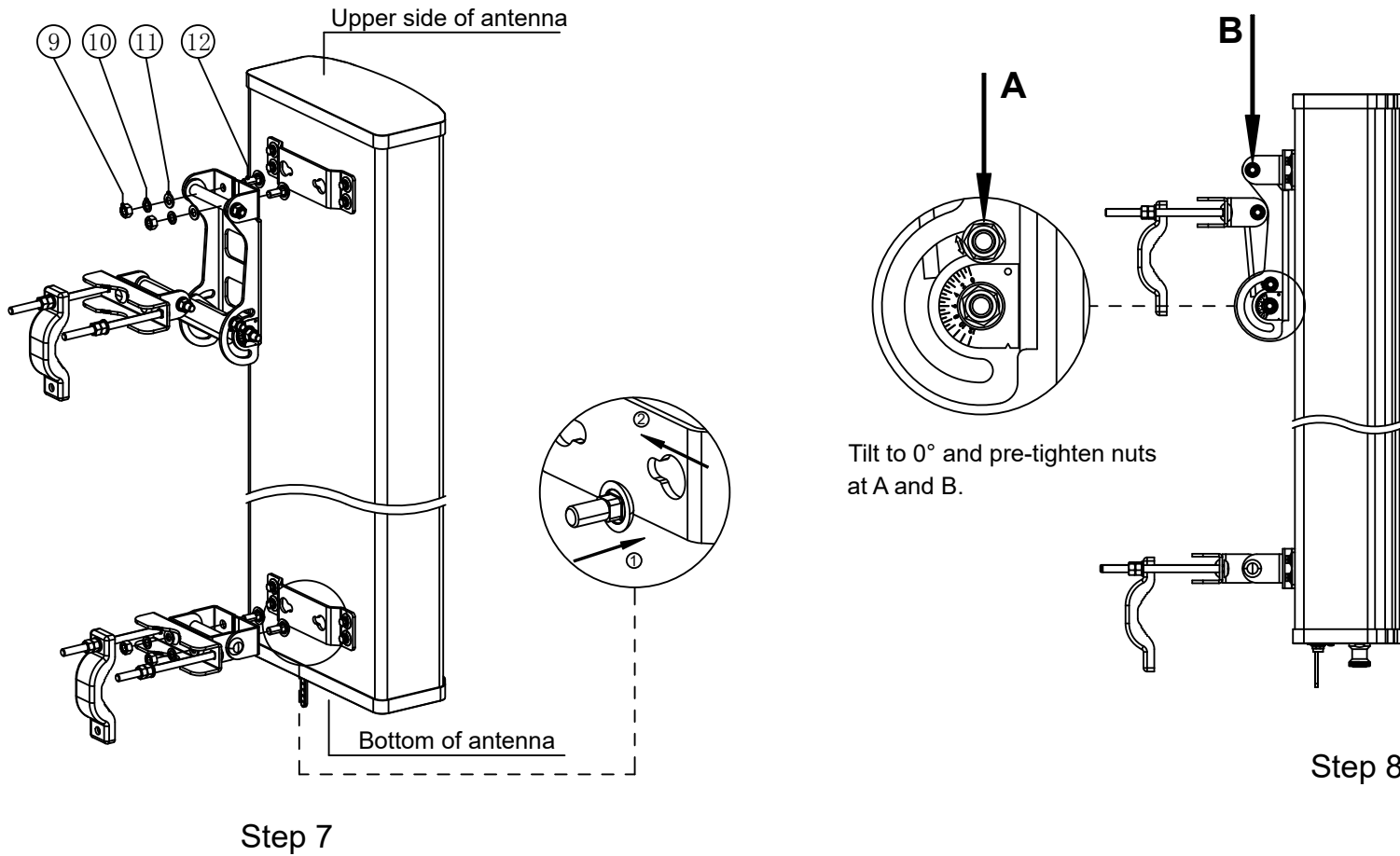
Step 6: Attach pipe clamp ⑭ to the U-clamp ⑬ in step 5 with M10x170 bolts;

Installation tools:

Torque wrench(16#)\*1

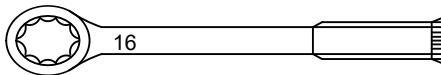


Packing list			
Assembly	QTY	NO.	Part
Cap head square neck bolt(M10x170) assembly	4	15	CHSN bolt(M10x170)*1
		9	Nut(M10) *2
		10	Plain washer (D10) *1
Cap head square neck bolt(M10x25) assembly	8	12	CHSN bolt(M10x25)*1
		9	Nut(M10) *2
		10	Plain washer (D10) *1
		11	Spring washer (D10) *1



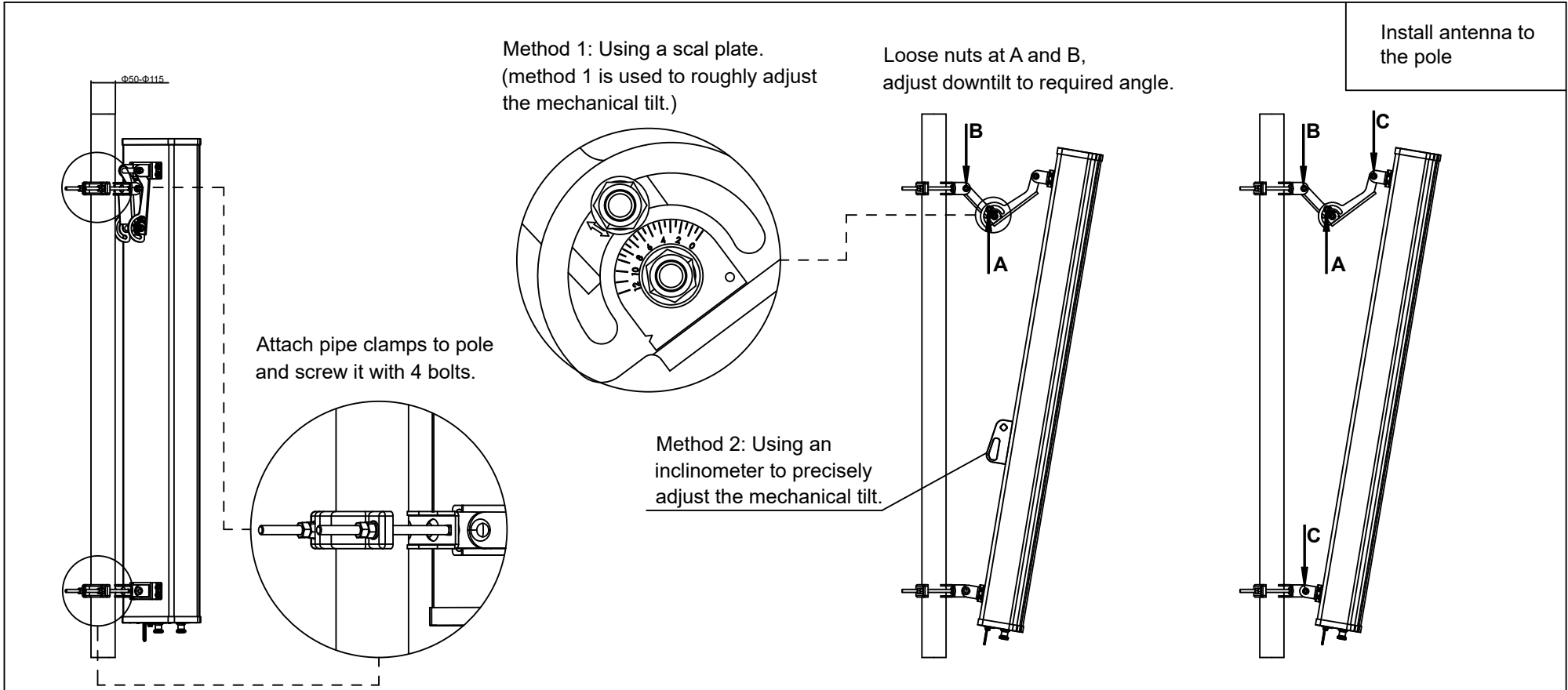
Installation tools:

Torque wrench(16#)\*1



Step 7: Attach upper mounting bracket and lower mounting bracket to antenna, fasten them with M10x25 bolts(47N·m);

Step 8: Tilt to 0° and pre-tighten nuts(M10) at A and B;



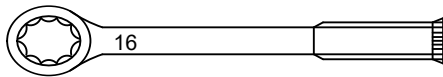
Step 9

Step 10

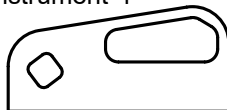
Step 11

Installation tools:

Torque wrench(16#)\*1



Slope measuring instrument\*1



Step 9: Attach mounting brackets to pole vertically and tighten M10 nuts(47N·m);

Step 10: Loosen M10 nuts at A and B,adjust downtilt to required angle;

Step 11: Tighten all M10 nuts at A 、 B、 C(47N·m).

Installation notes:  
Check each package against packing list;  
Observe safe working at heights;  
Ensure lightning protection is applied;  
Annual maintenance is recommended to antenna system.

Mechanical Downtilt Range		
Mounting bracket	L(mm)	Downtilt range
00-ZJ29(08)	1900	0~8°
00-ZJ29(12)	1450	0~12°
00-ZJ29(16)	1088	0~16°
00-ZJ29(20)	900	0~20°