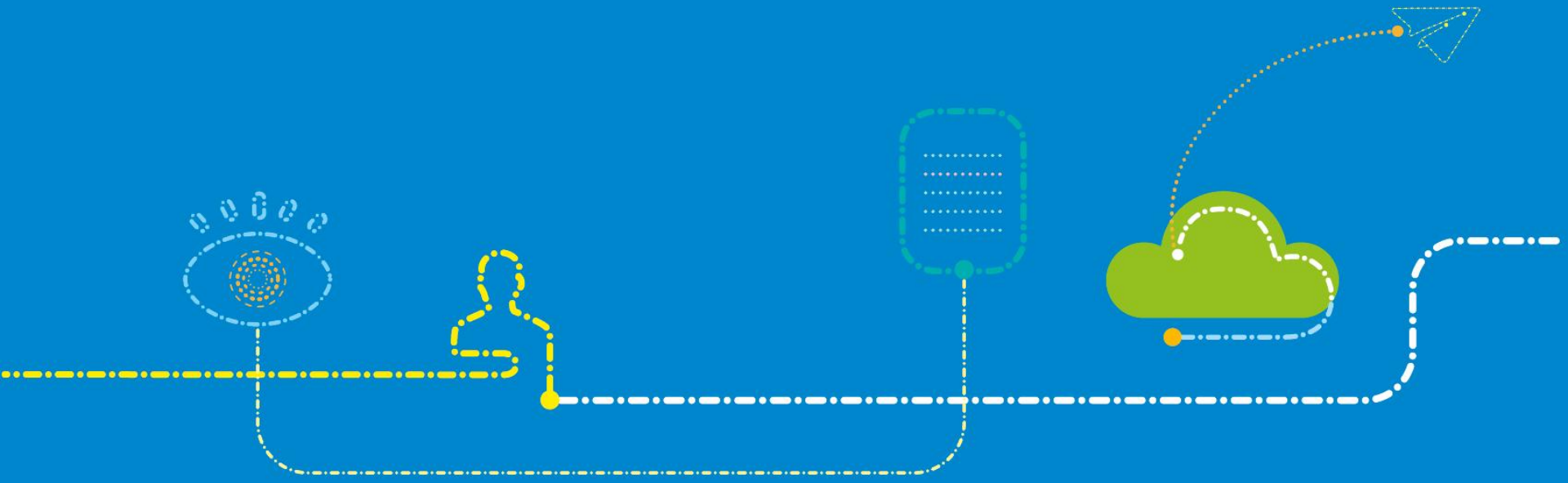
Survey & Design Workshop For Ukraine KS Project

ZTE
Tomorrow never waits



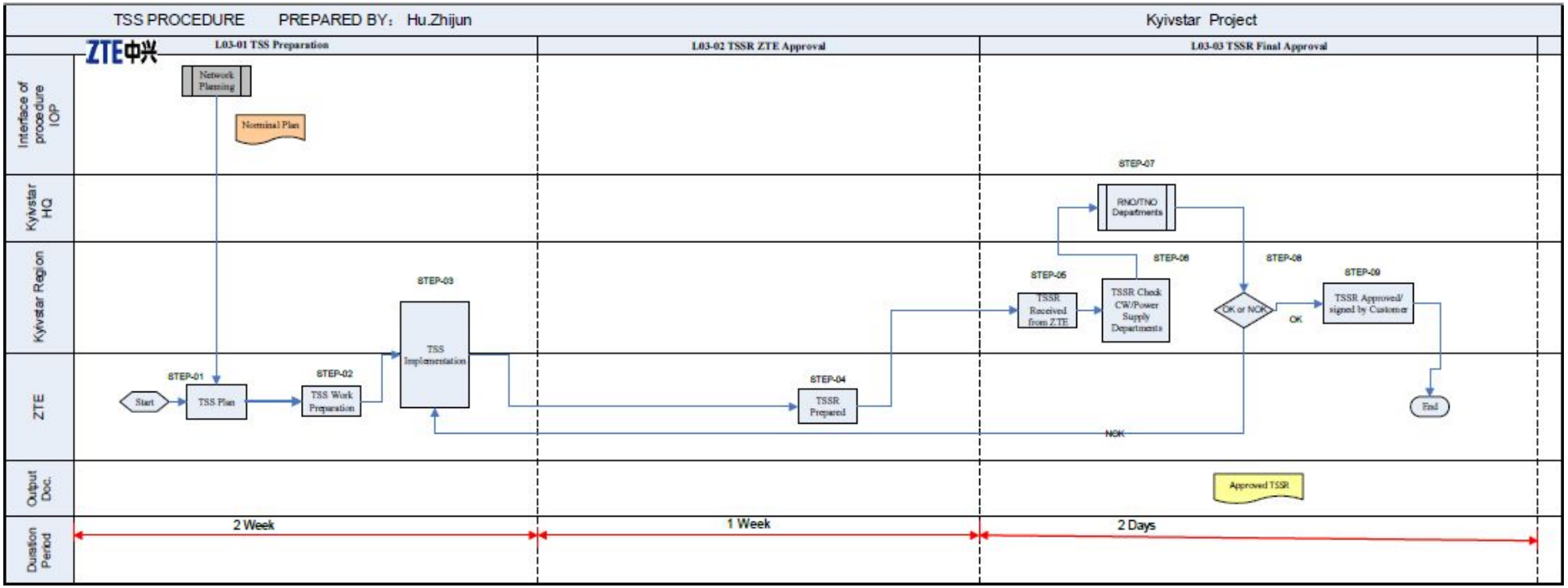
Contents

TSSR output Procedure

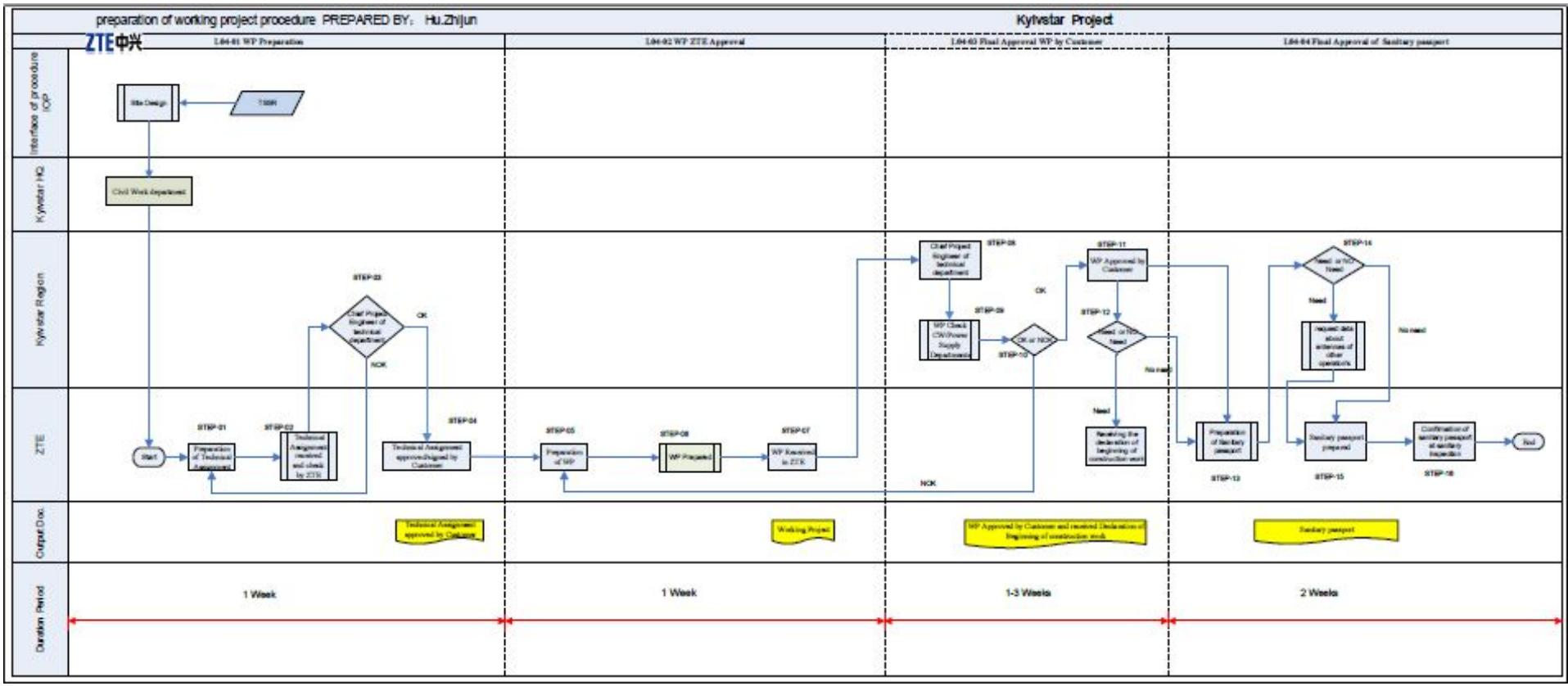
ZTE Equipment Description

Engineering scenarios

TSSR output procedure



TSSR output procedure



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- TSSR output Procedure
- **ZTE Equipment Description**
- Engineering scenarios

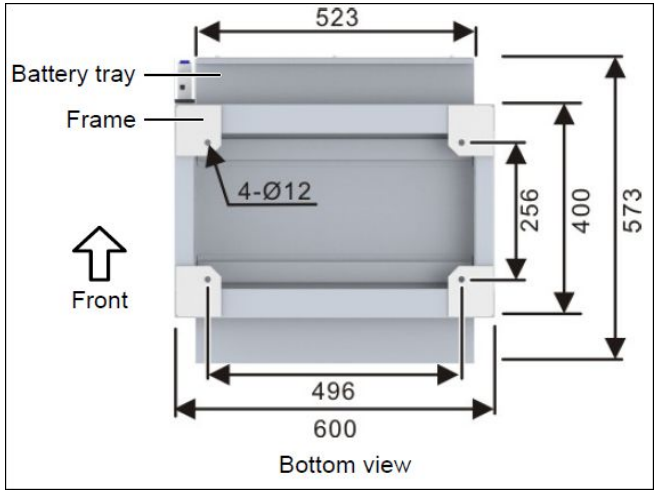
Product Description – ZTE (-48V) DC system 2000mm rack

DC power solution scenario

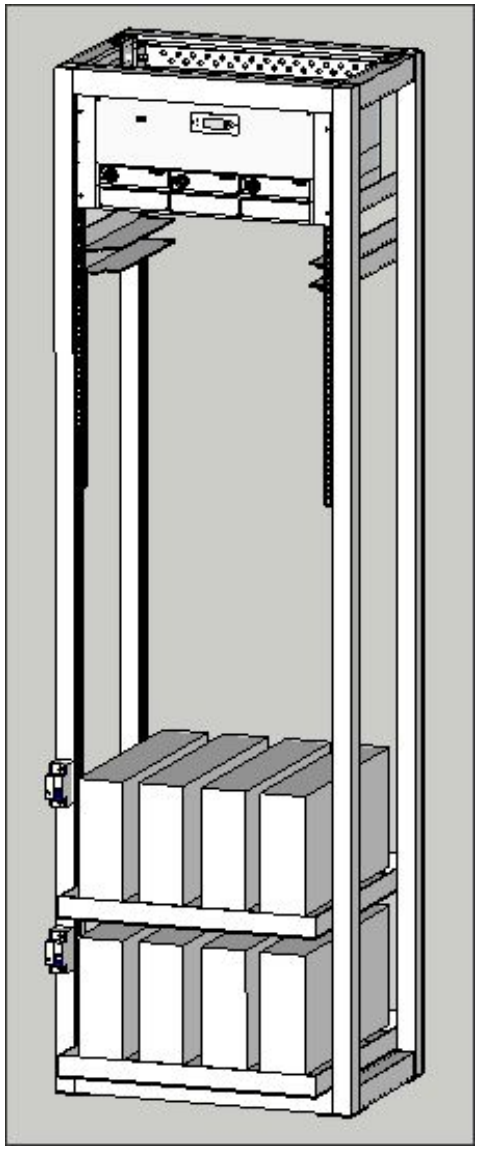
- In case of only existing +24V DC power rack, no -48V DC power on site;
- In case of cable tray height is more than 2000mm

ZTE -48V DC Power

- ZXDUPA-FR01 Frame rack 2000mm
- ZXDU68 B301(V5.0R01M01) DC power system
- Rack Height:2000mm
- Dimension of floor space:600mm*573mm
- AC breaker requirement: 16A-TP



Floor space of ZXDUPA-FR01



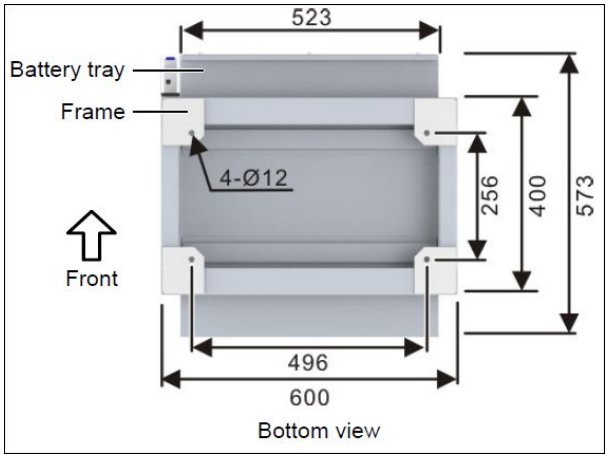
Product Description – ZTE (-48V) DC system 1600mm rack

DC power solution scenario

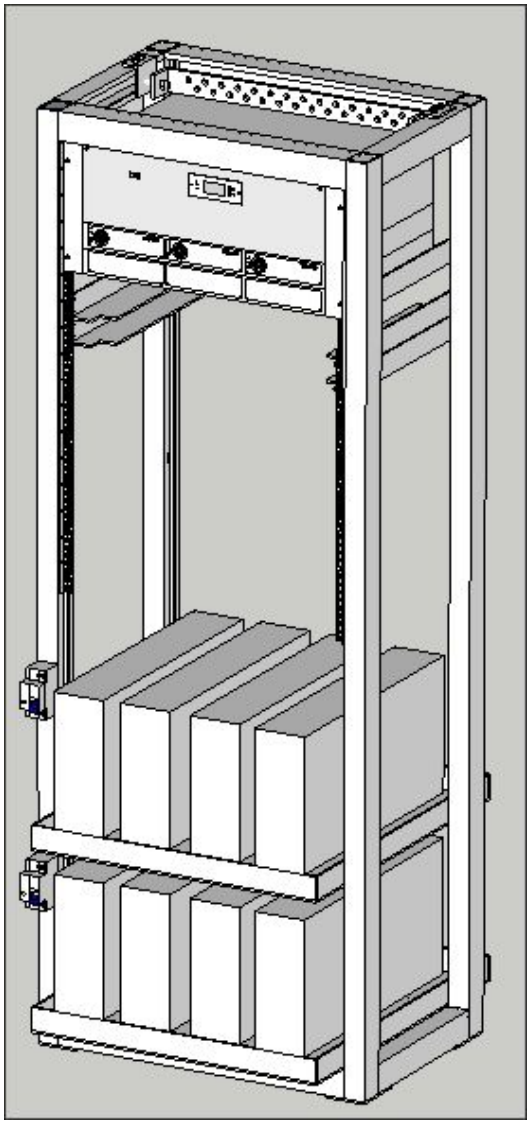
- In case of only existing +24V DC power rack, no -48V DC power on site;
- In case of cable tray height is less than 2000mm
- **For PO1(132 sites) there is no 1.6m rack.**

ZTE -48V DC Power

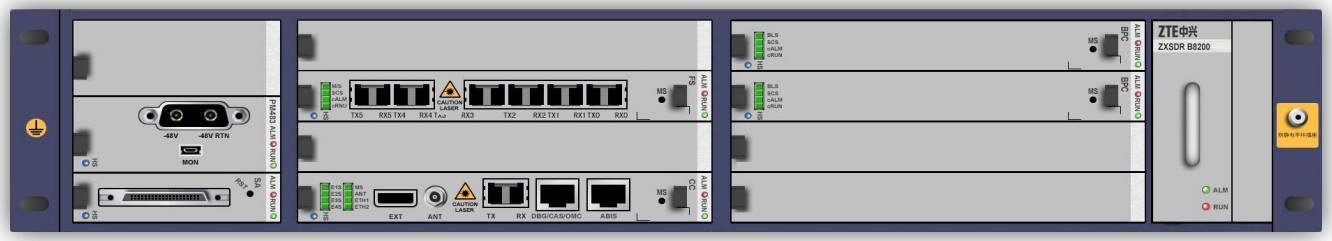
- ZXDUPA-FR01 Frame rack 2000mm
- ZXDU68 B301(V5.0R01M01) DC power system
- Rack Height:1600mm
- Dimension of floor space:600mm*573mm
- AC breaker requirement: 16A-TP



Floor space of ZXDUPA-FR01

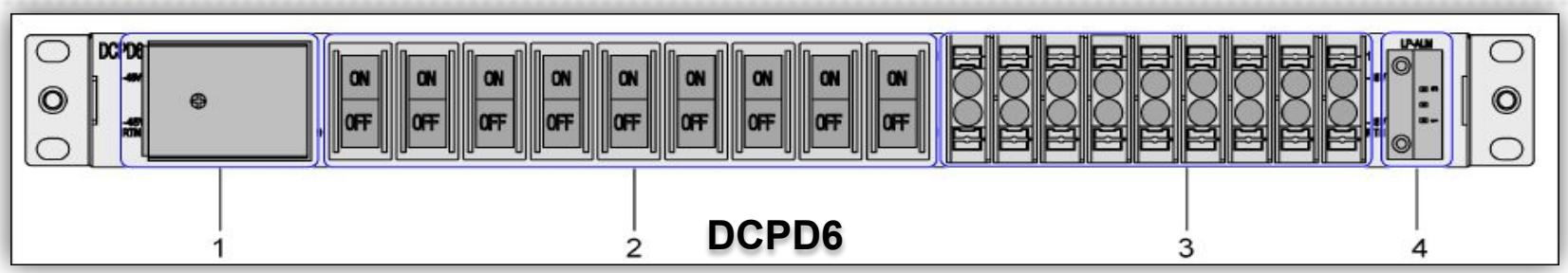


Product Description – BBU B8200



Specifications of B8200	
Dimension	88.4mm(H) x 482.6mm(W) x 197(D)
Weight	8.75kg
Typical Power consumption	240W
DC Requirement	10A

DCPD6



1,DC input interface

2,Switch for DC output for 9 paths(20A*9 paths)

3,Connector for DC output 9 paths

4,LP_ALM provides lighting protection alarm(Dry contact output)

Dimensions: 43.6 (h) x 482.6 (w) x 228 (d)

(That means 1U space standard)

Weight: 5.0kg

Maximum (6 RRUs)+(1 BBU) to be connected to a single DCPD6.

Notes:

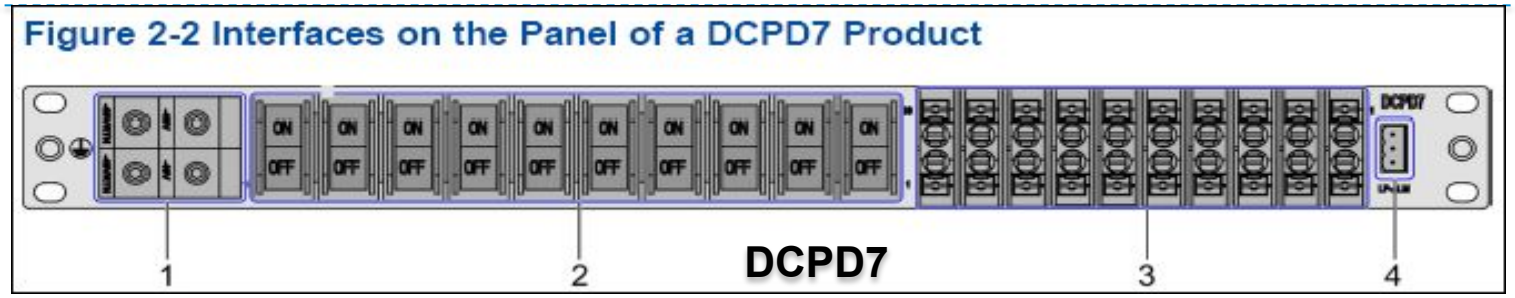
1,The 6 RRUs mentioned not include R8863, R8863 should not be connected to DCPD6 because of single R8863 got big power consumption.

2, 63A breaker in DC power system needed for DCPD6.

We can find site wise DCPD configuration in ZTE input data.

DCPD7

Figure 2-2 Interfaces on the Panel of a DCPD7 Product



1,DC input interface

2,Switch for DC output for 10 paths(25A*10 paths)

3,Connector for DC output 10 paths

4,LP_ALM provides lighting protection alarm(Dry contact output)

Dimensions: 43.6 (h) x 482.6 (w) x 228 (d)

(That means 1U space standard)

Weight: 5.0kg

Maximum (4 R8863)+(1 BBU) to be connected to a single DCPD7

Notes:

1, The R8863 only can be connected to DCPD7, not DCPD6.

2, Other RRUs also can be connected to DCPD7, as a sample, **(3 R8863)+(2 other RRUs)+(1 BBU) or (2 R8863)+(3 other RRUs)+(1 BBU)** . (The mentioned "other RRUs" include all types RRU except R8863.

3, 63A breaker in DC power system for DCPD7 needed.

We can find site wise DCPD configuration in ZTE input data.

Product Description – RRU (RRU types)

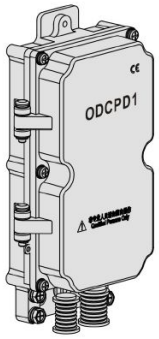
System	GSM900M			DCS1800M		UMTS2100M	
RRU type	ZXSDR R8861 S9000(DC 925-35)	ZXSDR R8881 S9000(DC 925-35)	ZXSDR R8863 S9000(DC 925-35)	ZXSDR R8862 S1800(DC 1805-75)	ZXSDR R8863 S1800	ZXSDR R8861 S2100(DC 2110-60 EB)	ZXSDR R8863 S2100 (DC 2110-60)

R8863 will not be configured for RT Pole(Separate pole for each sector)

Power Cable Size	Max. cable run for R8881	Max. cable run for R8861	Max. cable run for R8862	Max. cable run for R8863
2*4mm2	>0m =<80m	>0m =<80m	>0m =<55m	>0m =<30m
2*6mm2	>80m =<120m	>80m =<120m	>55m =<85m	>30m =<45m
2*10mm2	>120m =<205m	>120m =<205m	>80m =<145m	>45m =<80m

DC Transiting Box (ODCPD1)

External View



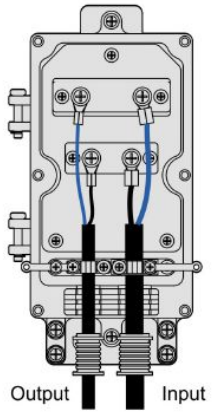
Configuration Principle

To reduce voltage drop, a DC transiting box (ODCPD1) is required in case that the RRU is far away from the power supply. The DC transiting box is used to transit the DC power transmission cable (diameter: 2 * 10 mm2) to the DC power cable suitable for the RRU (diameter: 2 * 4 mm2).

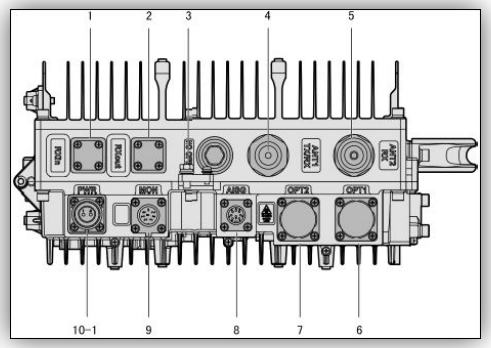
Installation Completed

ODCPD1 needed for R886X if 2*10mm DC cables used.

Power Cable Connection Diagram



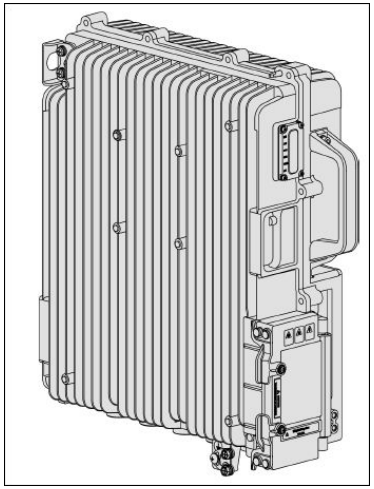
Product Description – RRU

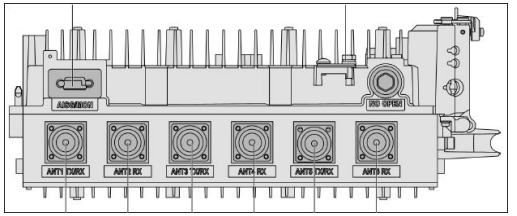


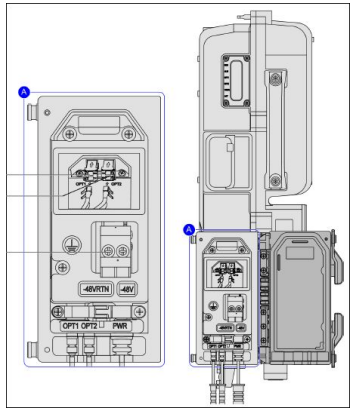
R8881

Type	Weight	Dimensions (H*W*D)mm
R8881	18Kg	370x320x170

Type	Weight	Dimensions (H*W*D)mm
R8863	25Kg	440x360x133

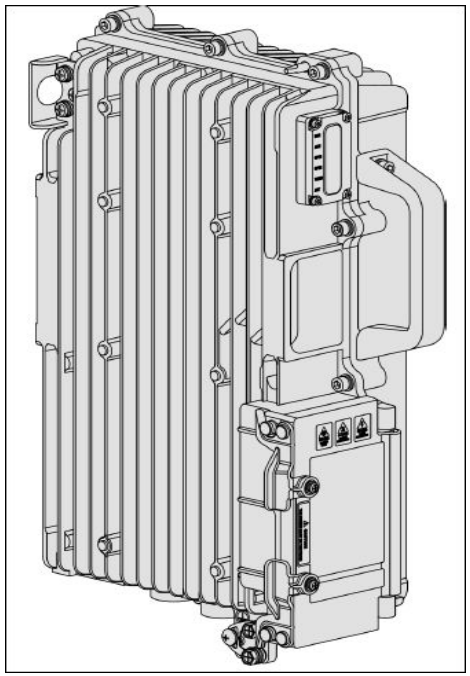


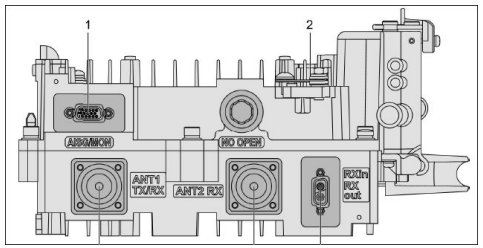


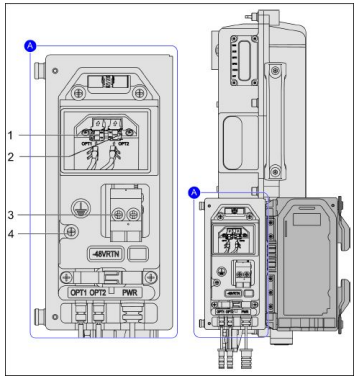


R8863

Product Description – RRU





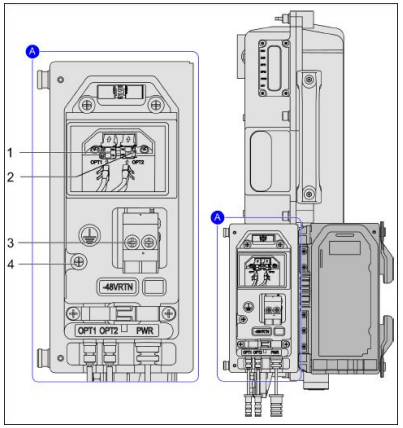


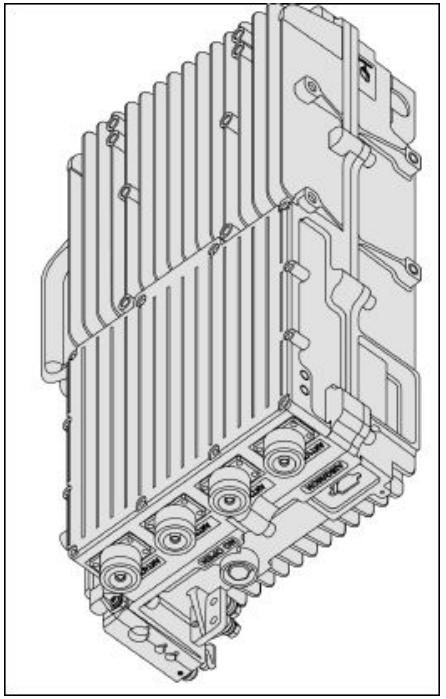
R8861

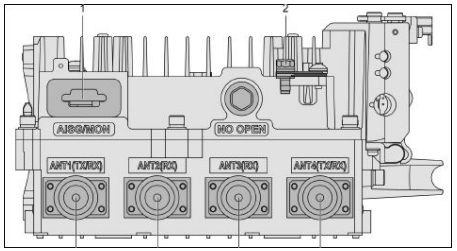
Type	Weight	Dimensions (H*W*D)mm
R8861	18Kg	370x320x170

Type	Weight	Dimensions (H*W*D)mm
R8862A	15Kg	425x220x133

R8862A







Product Description – Micro BTS B8908 (2G)

B8908

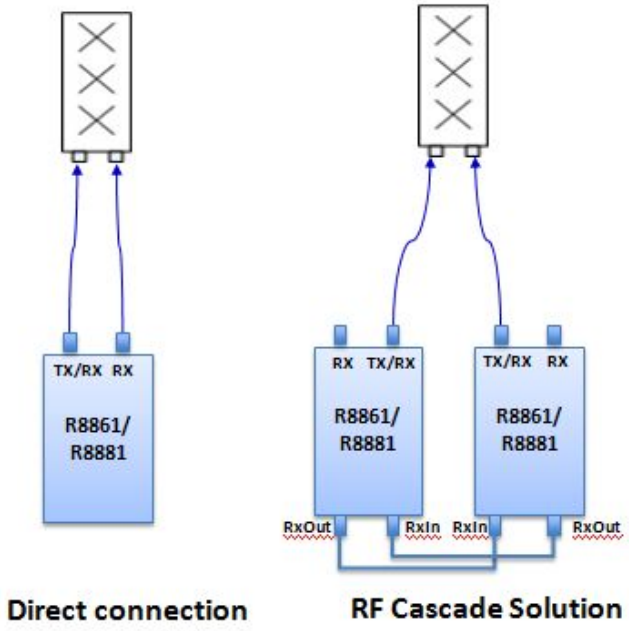
- **BS8908 only used for sites which with following both condition ,**
  - I. IBC site.
  - II. There is no space on site for (-48V DC rack+BBU+RRU) installation.
- **BS8908 only have 2G equipment in this period, that means for sites need to use BS8908,**
  - I. 3G can not be launched on this site.

Type	Weight	Dimensions (H*W*D)mm	Power consumption	Power input type
B8908	15Kg	420 mm*320 mm*100 mm	165W	220 V AC

Product Description – RRU RF cable

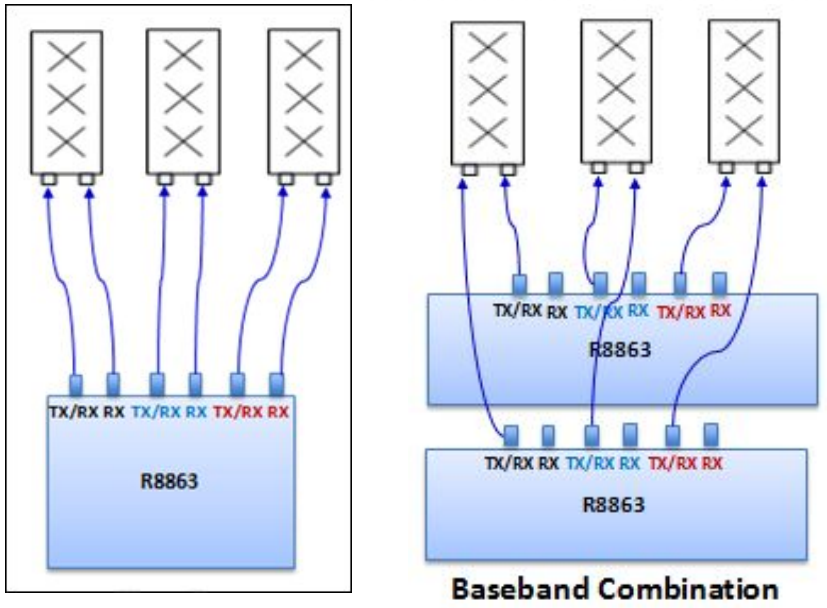
RF G900 RRU (R8861 or R8881)

- In case of G900 sector TRX <=4, 1 RRU direct to RRU;
- In case of G900 sector TRX >4, 2 RRUs need combination;



RF G900 RRU (R8863)

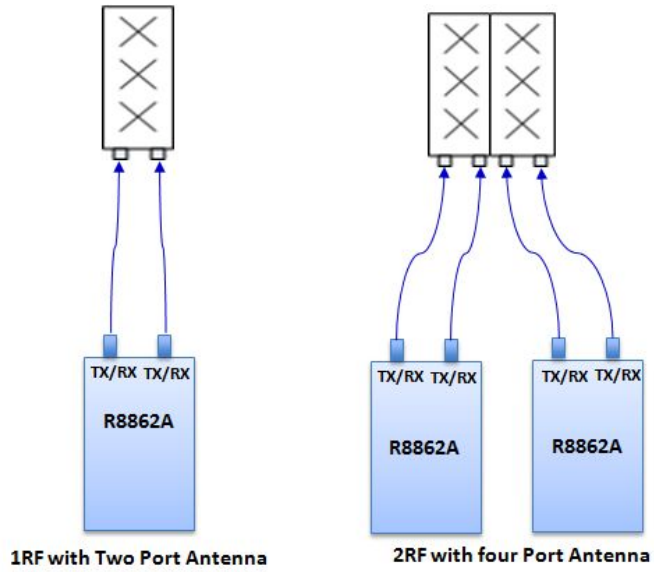
- See blow RRU connection in case of 1 OR 2 R8863 for G900;



Product Description – RRU RF cable

RF D1800 RRU (R8862A)

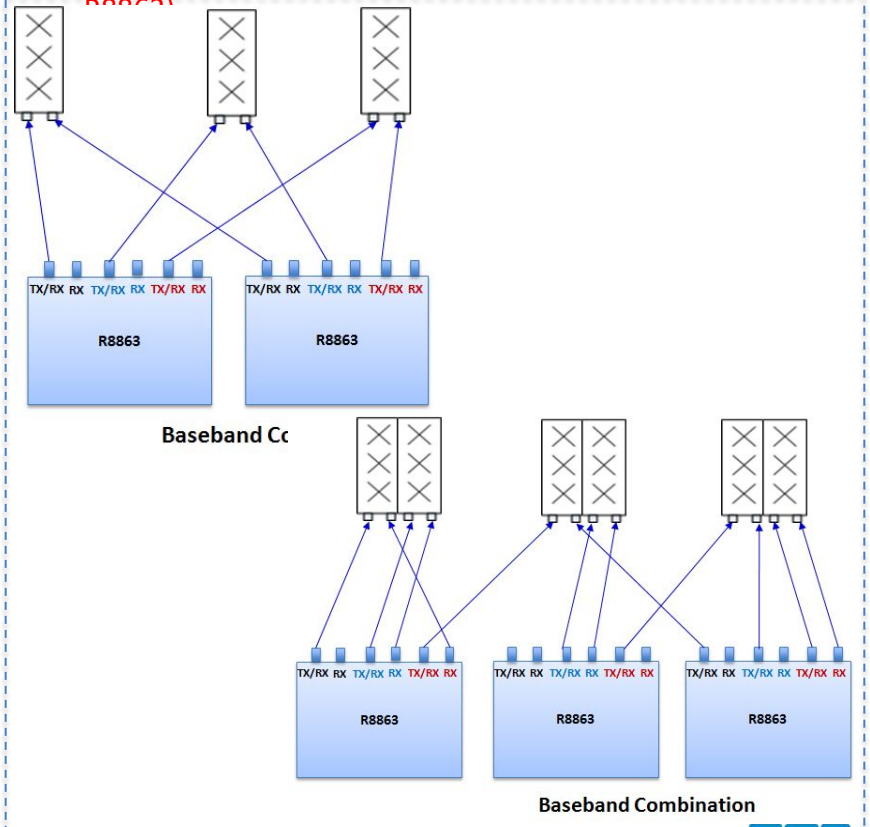
See blow RRU connection in case of 1 OR 2 R8862A for 1 sector of D1800;



RF D1800 RRU (R8863)

See blow RRU connection in case of 2 OR 3 R8863 for D1800 all sectors;

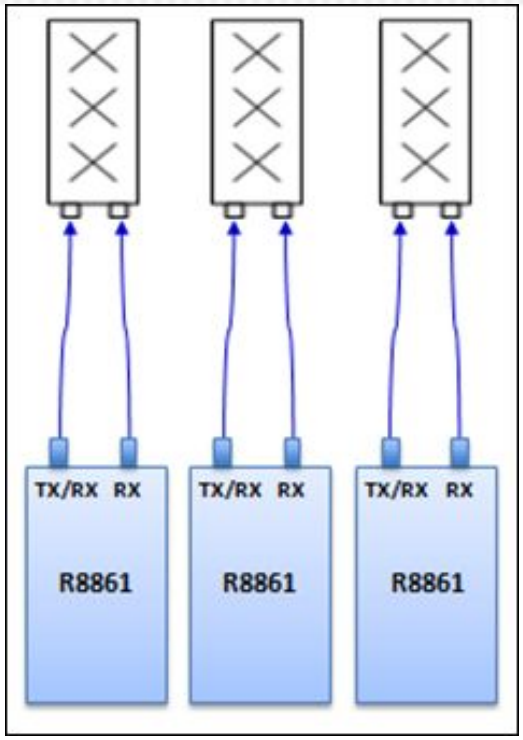
(If any sector TRX of D1800>8,need 3 R8863,otherwise 2



Product Description – RRU RF cable

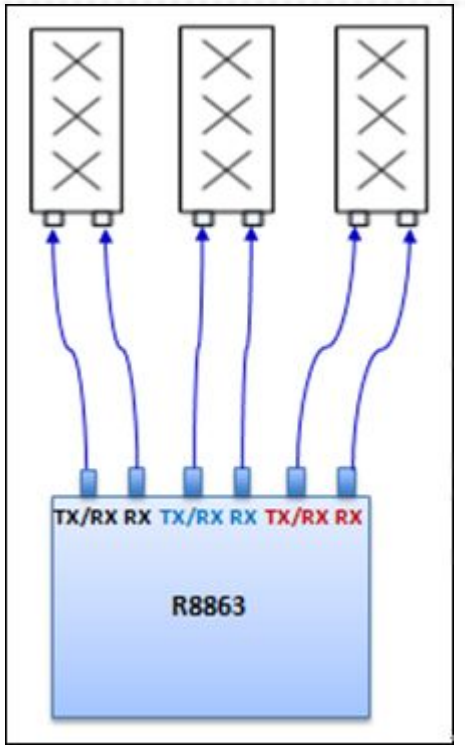
RF U2100 RRU (R8861)

See blow RRU connection in case of R8861 for U2100;



RF U2100 RRU (R8863)

See blow RRU connection in case of R8863 for U2100;



Product Description – RRU fiber cascading

RRU fiber cascading

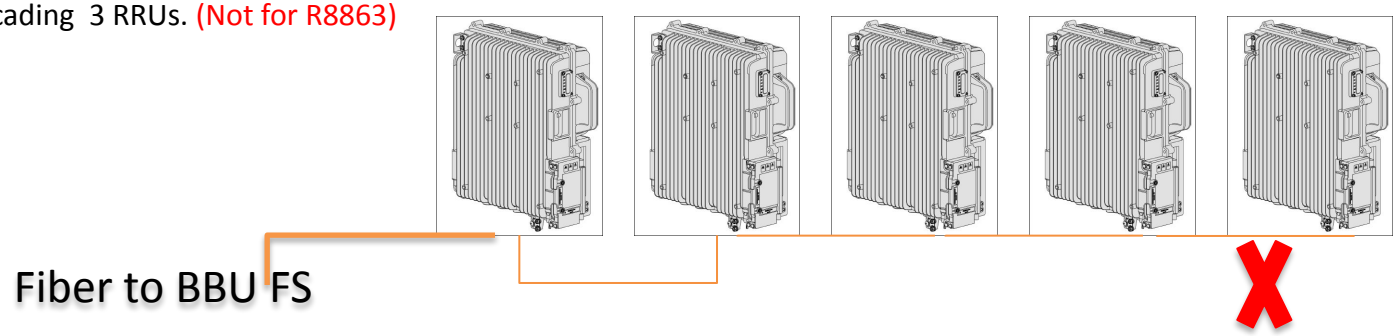
There are 6 optic ports on BBU FS5 board.

I. If RRUs <=6, all RRUs fiber connect to FS5 board optic ports directly.

II. If RRUs >6, 6 RRUs fiber connect to FS5 board optic ports directly, and for the other RRUs which more than 6, need fiber cascading connection.

III. Only can cascade internally in same system. That means we only can cascade G900 RRU to G900 RRU, D1800 RRU to D1800 RRU, U2100 RRU TO U2100 RRU. we can not cascade G900 RRU to D1800 RRU or U2100 RRU.

IV. Maximum cascading 3 RRUs. (Not for R8863)



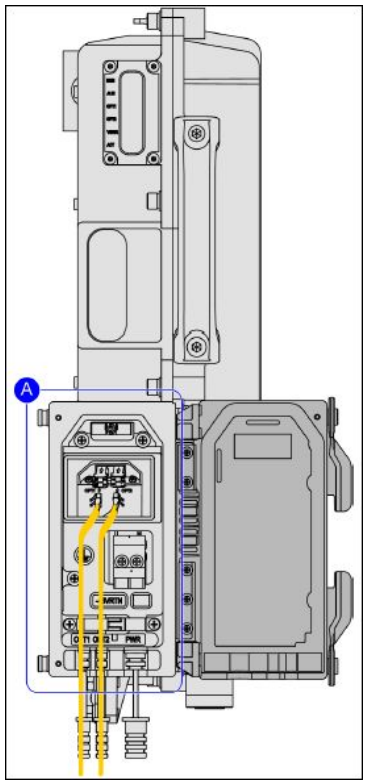
RRU Qty	Qty of BBU-RRU Fiber	Qty of RRU-RRU cascading Fiber	Remark
A<=6	A	0	
A>6	6	A-6	Must cascading in same system and RRU

Different types of Fiber for different RRU

The type of BBU-RRU fiber for R888X and R886X is different.

Fiber for R888X:
There is a protection sleeve for fiber at the RRU side

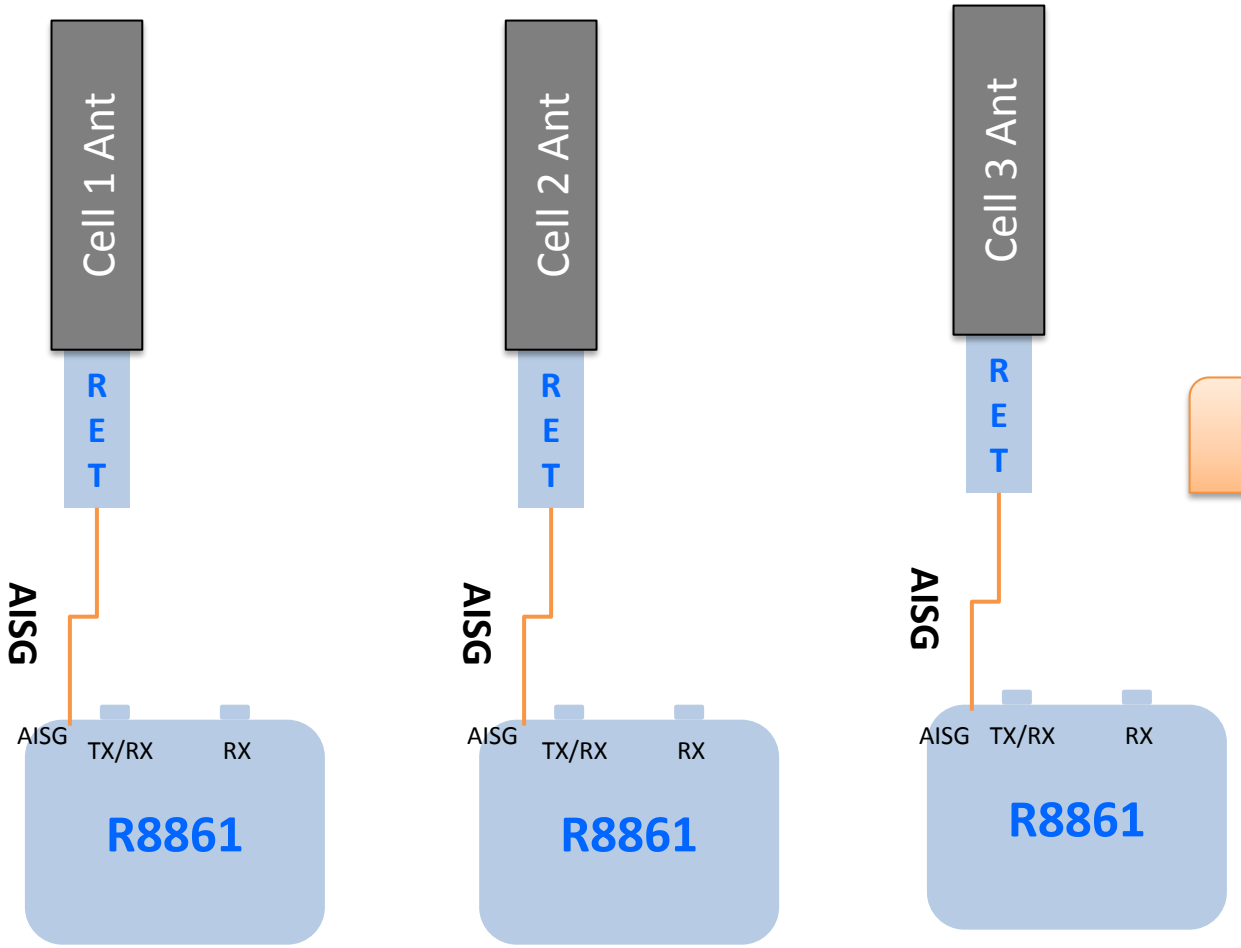
Fiber for R886X:
There is no protection sleeve for fiber at the RRU side



Site transmission

Kiyvstar is responsed for upgrading the transmission to IP GE(E) .

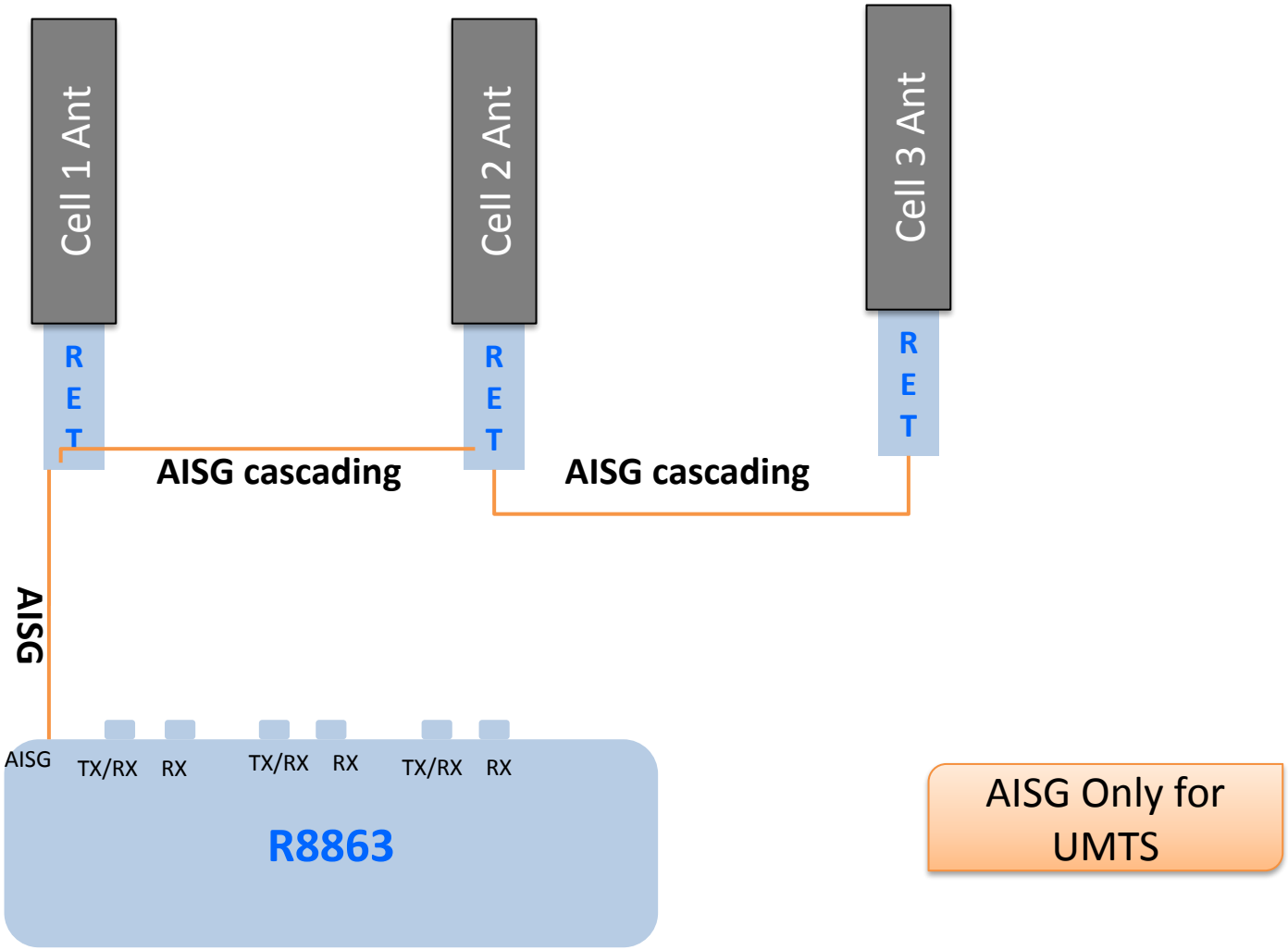
AISG-U2100 R8861



AISG Only for UMTS

R8861 installed close to Antenna-AISG cable maximum 20m long

AISG-U2100 R8863



R8863 installed close to Antenna-AISG cable maximum 20m long

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2. ZTE Equipment Description
3. Engineering scenarios
4. Output Documents

Site overview

Site Overview						
PO	**Site Qty of PO**	**Region**	**Site Qty. of Region**	**2G Swap only**	**2G Swap+3G Swap**	**2G Swap+3G Rollout**
PO1	132	KIR	45	6	0	39
		POL	52	0	44	8
		SUM	35	0	0	35
PO2	236	KIR	69	0	0	69
		POL	19	0	0	19
		SUM	59	1	0	58
		CHG	26	0	0	26
		DNE	24	0	0	24
		ZAP	39	6	0	33
Total	**368**	**-**	**368**	**13**	**44**	**311**

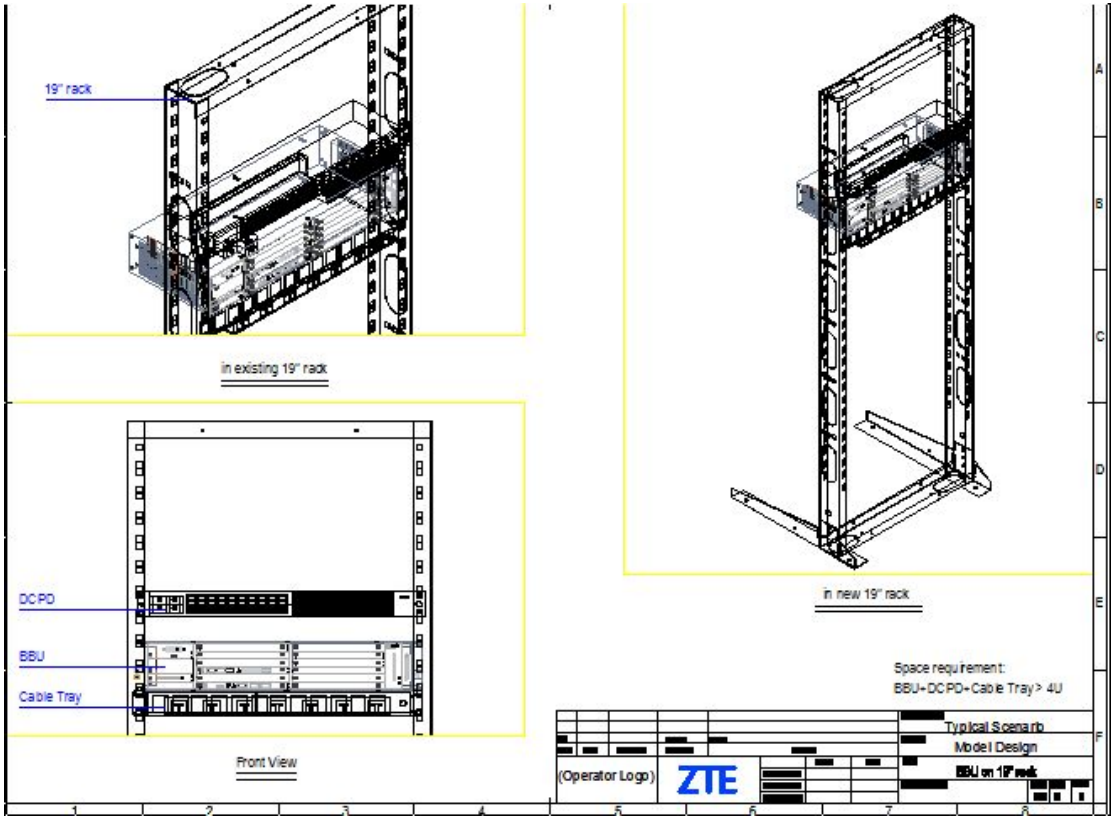
Site Scenarios-Site Equipment Principle

Major Equipment			Before	After		Remark
BTS	Macro/BBU		Macro	New 19" BBU Rack		
			NSN BBU Rack	Reuse NSN BBU Rack		
	RRU		Macro/Distributed	R8863/R8861(R8881)	G900	Priority to use R8863.May change to R8861/62/81 if jumpers length>5m
				R8863/R8862	D1800	
				R8863/R8861	U2100	
DC System	Rectifier Module	+24 V	-	ZXDU68 B301 in ZXDUPA-FR01		2 Type:1600mm 2000mm
	Battery		-	TBC-ZTE 150Ah*2 group		
	Rectifier Module	-48V	-	Reuse		
	Battery		-	Reuse		
Antenna			-	Reuse		2G Swap + 3G Swap
			Spare ports for 2100M available	Reuse		2G Swap + 3G Creation
			Spare ports for 2100M not available	New 2100M 2 Ports Antenna		
			Spare ports for 2100M not available &Not possible to install new antenna	Swap existing Antenna with 4 or 6 Ports Antenna		
			-	Reuse		2G Swap
			-	Reuse		3G Swap

BBU and DCPD installation

Scenario 1-In New/Existing 19” Rack

- BBU&DCPD to be installed **on existing 19’Rack**(Only existing BTS 19’ rack. Transmission 19’ rack is not allowed to install new BBU&DCPD)
- BBU&DCPD to be installed **on new 19’Rack**(No existing BTS 19” rack or No enough space in existing 19’ rack)



- **Space requirement:**
  - 5U space for (BBU+1 DCPD)
  - 7U space for (BBU+2 DCPD)

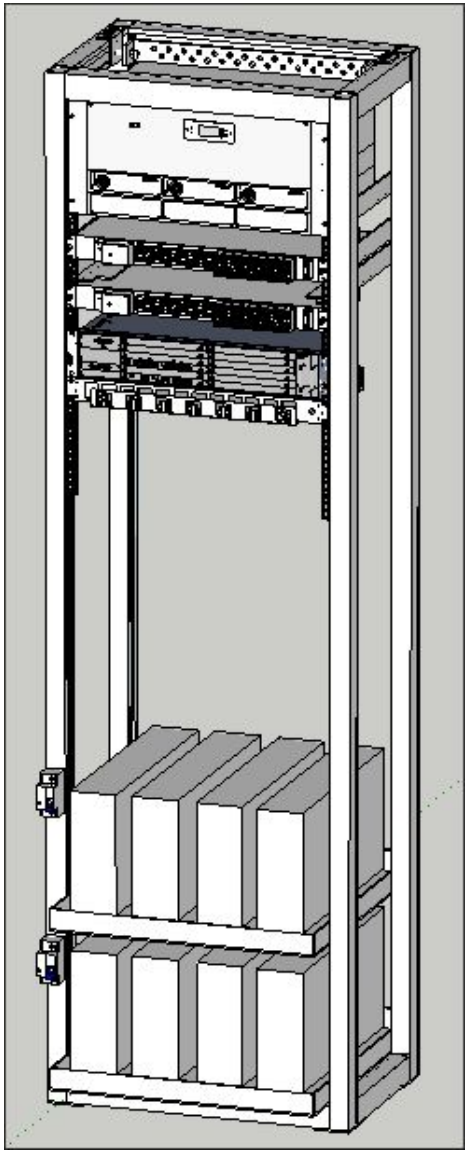
BBU to be installed on existing BTS 19’ rack or on new 19’ rack

BBU and DCPD installation

Scenario 2-In New ZTE DC Rack

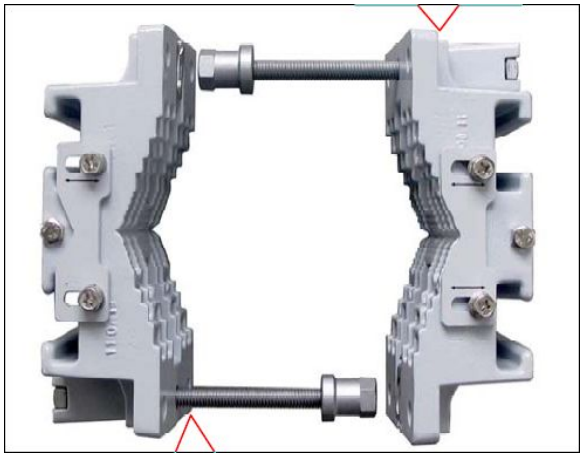
- **To be installed in New ZTE DC rack(Only for IBC sites)**
  - The solution only used in very special and difficulty situation, this is not normal solution.
  - In case of can not install new 19’ rack, just like some IBC sites due to space limited.

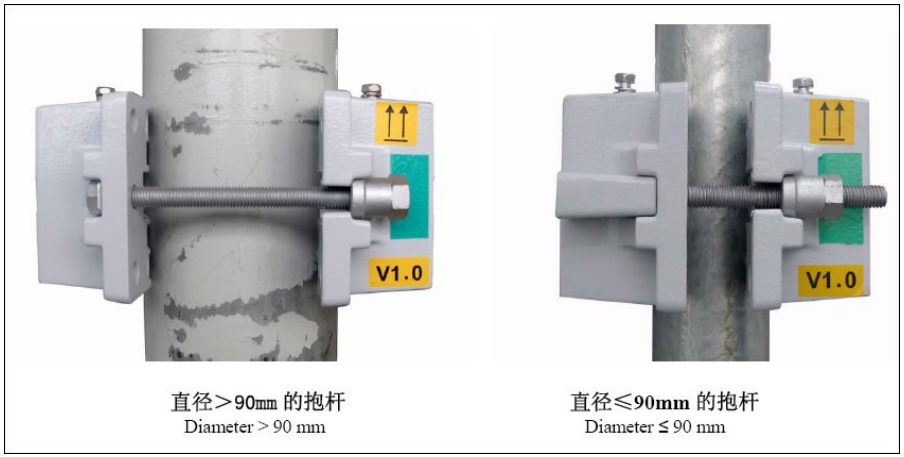
- **Space requirement:**
  - 5U space for (BBU+1 DCPD)
  - 6U space for (BBU+2 DCPD)

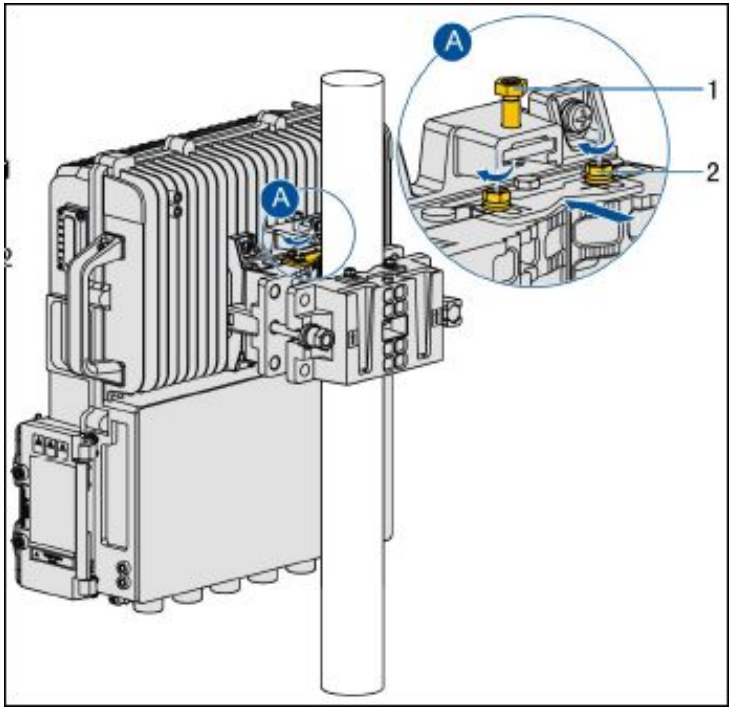


RRU installation

Components-”1-on-1 pole”





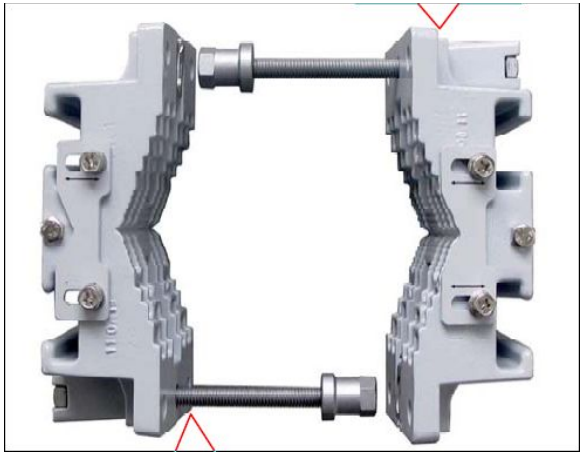


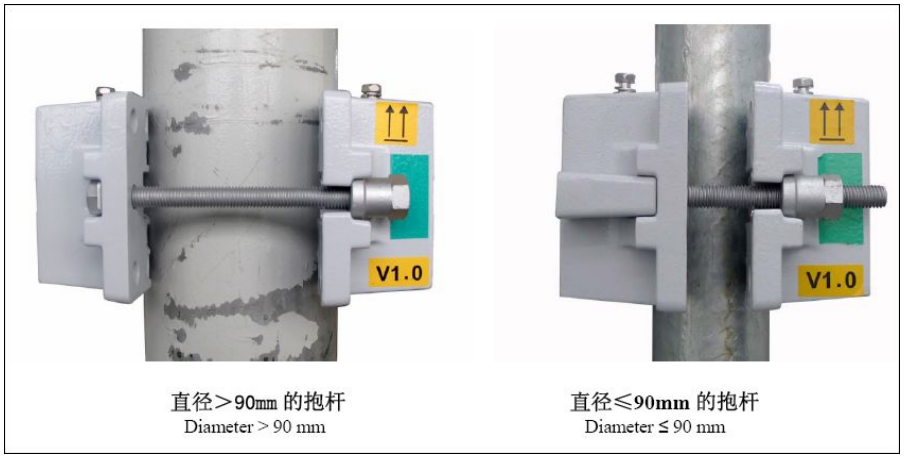
1 RRU fixing on pole kit-1 RRU need 1 set bracket

(Pole diameter requirement: 40mm to 120mm)

RRU installation

Components-”2-on-1 pole”



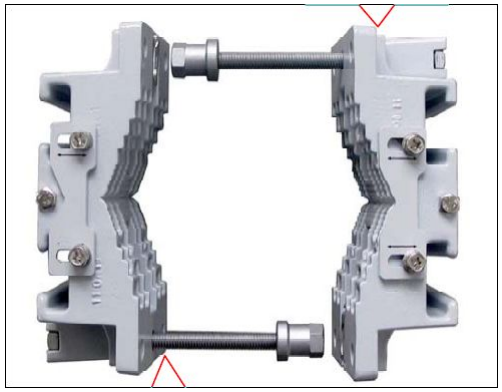


2 RRU combined fixing on 1 pole kit - 2 RRU need 1 set bracket

(Pole diameter requirement: 60mm to 120mm)

RRU installation

Components-”3-on-1 pole”

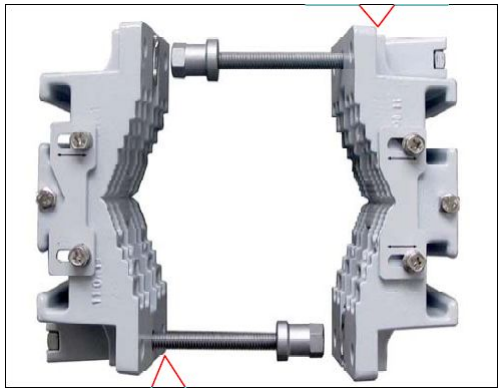


3 RRU combined fixing on 1 pole kit - 3 RRU need 1 set bracket

(Pole diameter requirement: 60mm to 120mm)

RRU installation

Components-”4-on-1 pole”



4 RRU combined fixing on 1 pole kit - 4 RRU need 1 set bracket

(Pole diameter requirement: 60mm to 120mm)

RRU installation

General

- **Different RRU Installation solution for different RRUs:**

RRU	1-on-1 pole	2-on-1 pole	3-on-1 pole	4-on-1 pole
R8863	Ok	Ok	No	No
R8861	Ok	Ok	Ok	Ok
R8862	Ok	Ok	Ok	Ok
R8881	Ok	Ok	Ok	Ok

- **3-on-1 pole and 4-on-1 pole components are not available for P01 and P02.**
- **RRU installation components can suit for below conditions(No need additional mount):**

I. Pole diameter 60 －120 mm. If the diameter ≤ 90mm, use the pad on the bolt; otherwise, remove the pad.

II. The angle steel should range from 60 mm to 100 mm;

III. The channel steel should range from 63 mm to 100 mm.

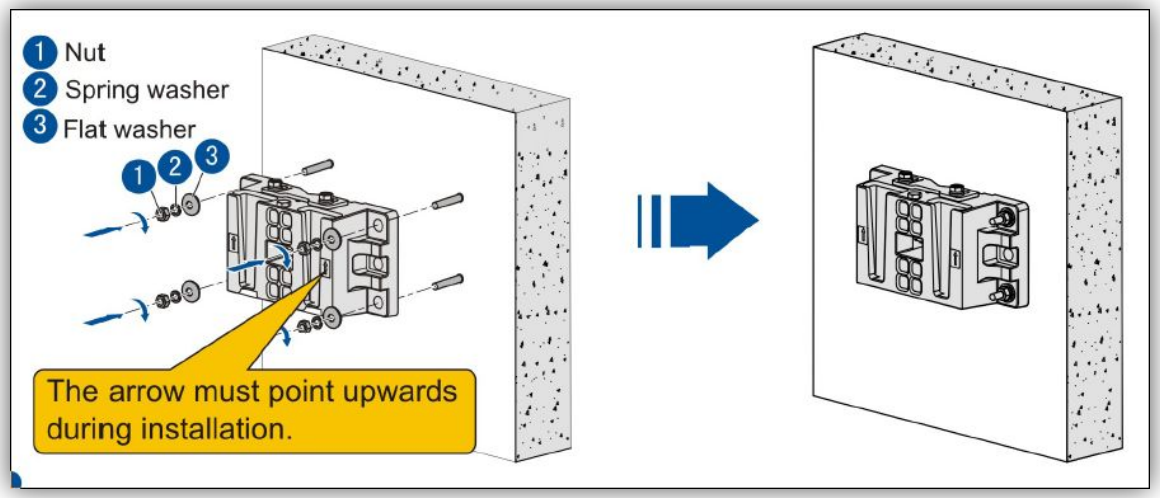
RRU installation

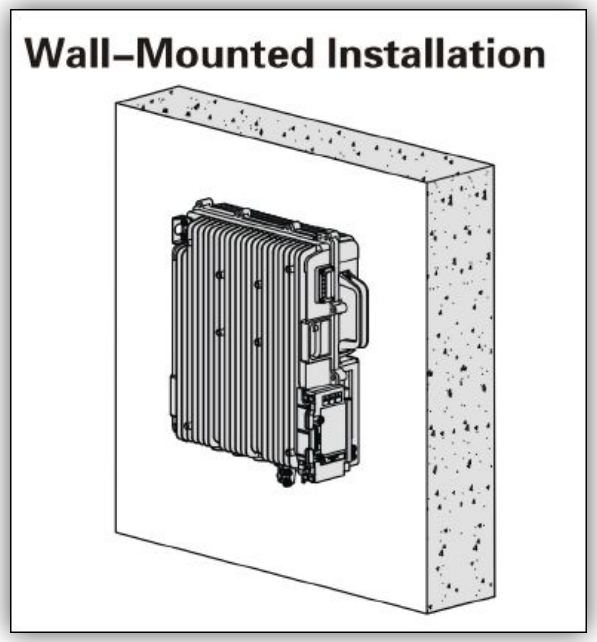
Scenario 1-1 Outdoor-At the backside of antenna

- **To be installed at the backside of antenna on the antenna pole**
- Space behind the antenna is more than 400mm

Scenario 1-2 Outdoor-At the backside of antenna

RRU installation components-Wall mount

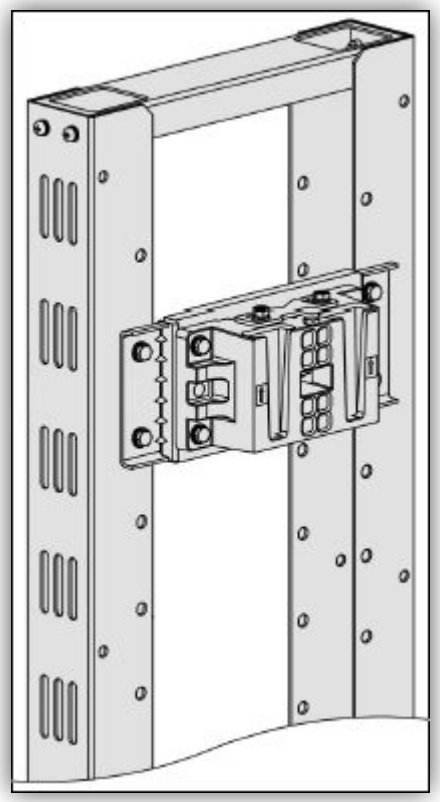




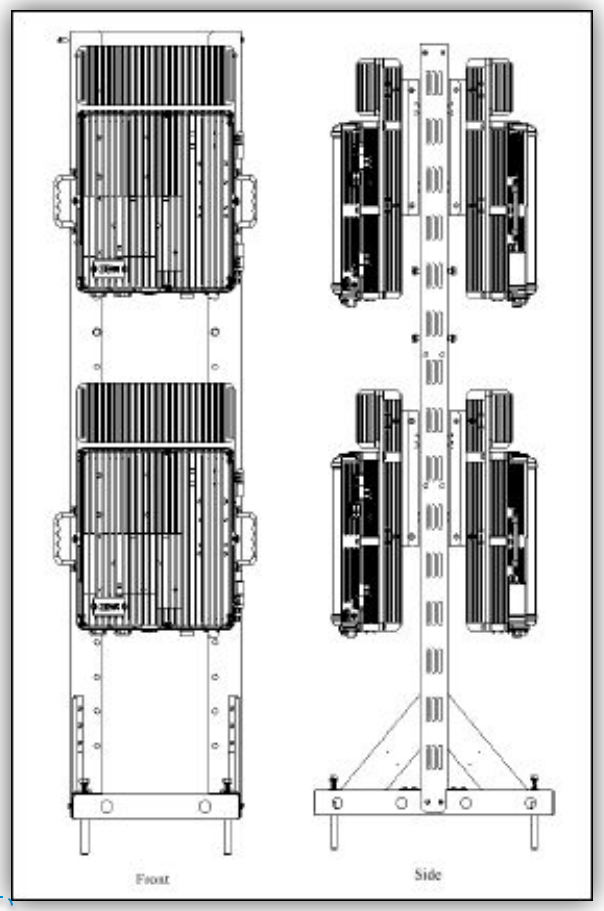
Wall mount fixing bracket kit---One RRU need 1 set bracket

RRU installation components-RRU gantry installation

Indoor RRU gantry



This is the second choice when the RRUs can not be installed on wall



RRU installed on the Indoor RRU gantry

Tower Scenarios-Summary

Scenario No.	Scenario Description	Scenario Ratio	RRU type
1	GF Guyed master	6%	R8863
2	GF SST	10%	R8863
3	IBC（No Tower)	2%	R8861 OR R8881 OR R8862A OR R8863
4	Monopole	39%	R8863
5	Monopole(Traditional)	2%	R8863
6	RT Guyed master	16%	R8863
7	RT Pole(1 Single pole for all sector)	13%	R8863
8	RT Pole(Separate pole for each sector)	8%	R8861 OR R8881 OR R8862A

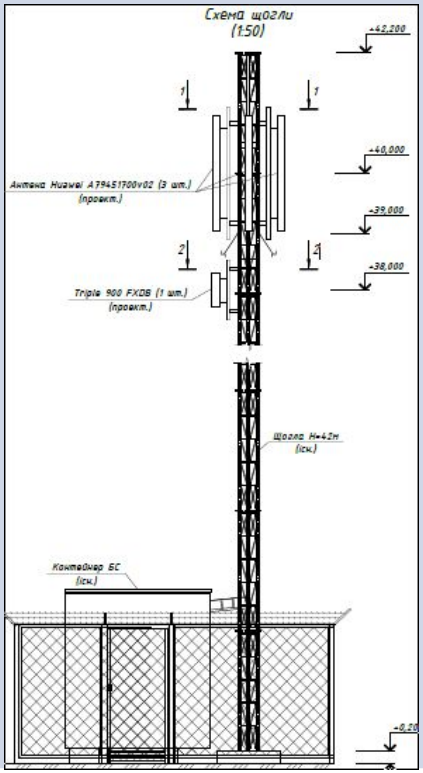
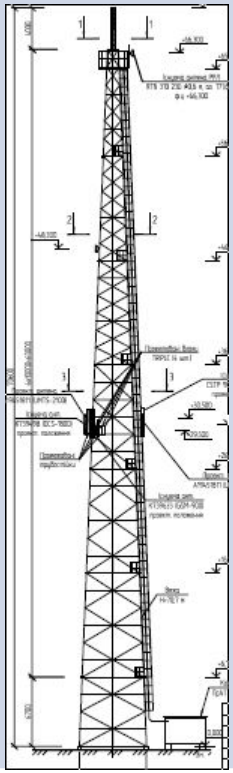
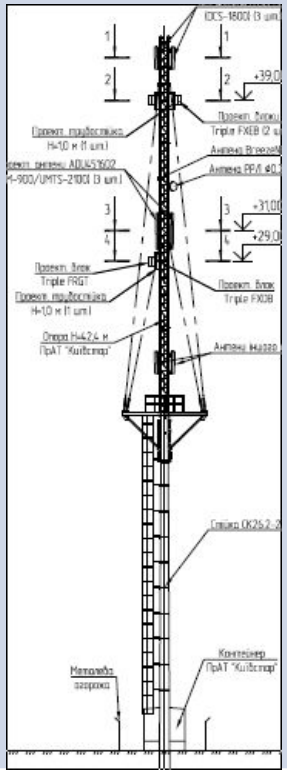
In case of Wrong RRU type configured in ZTE BOQ,

Plz note and inform ZTE by email with site ID and tower type;

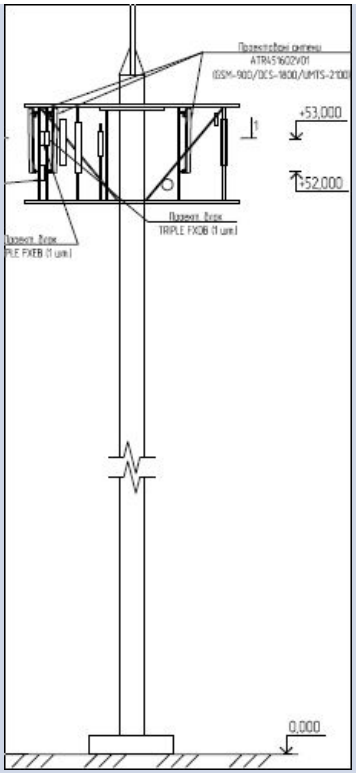
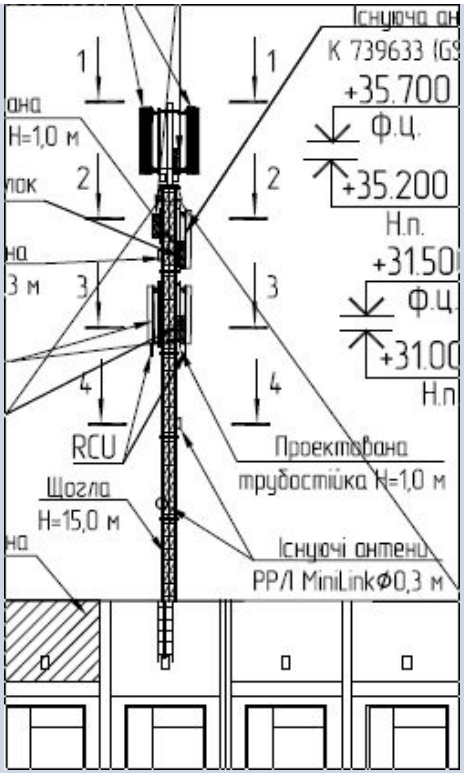
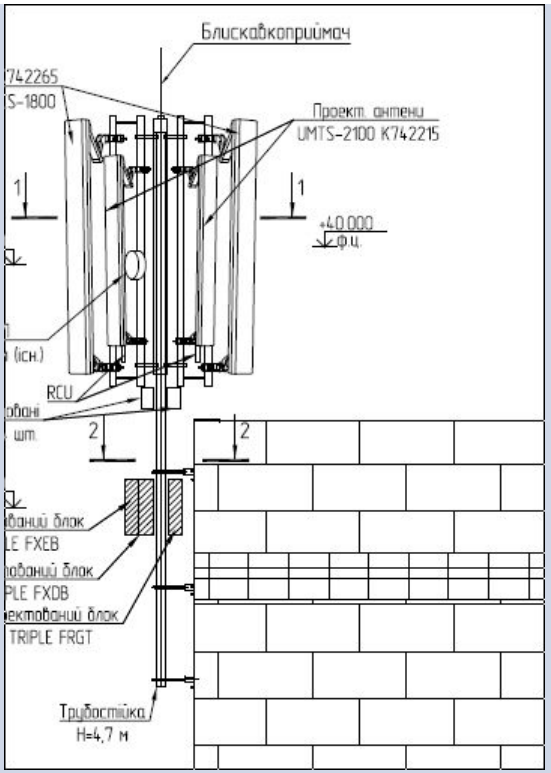
Modify all system RRUs during TSSR output, not only 3G;

I. For example, site survey shows rooftop guyed master on site, but in ZTE BOQ configure is not R8863, just send email to ZTE and get confirmation, change all RRU to R8863.

Tower Scenarios

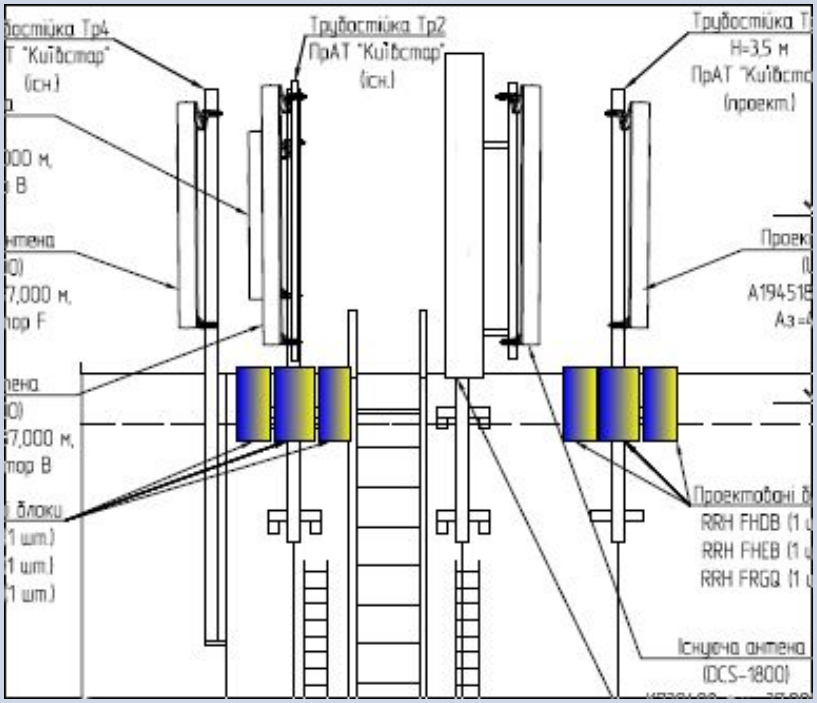
GF Guyed master	GF SST	Monopole
		 

Tower Scenarios

Monopole(Traditional)	RT Guyed master	RT Pole(1 Single pole for all sector)
		

Tower Scenarios

RT Pole(Separate pole for each sector)



Basic guidline for RRU installation

For masters:

I. U2100 R8863 to be installed on tower leg or antenna pole close to 3G antenna.

II. For guyed master and monopole, the R8863 for 900M and 1800M to be installed on the RRU pole or tower leg.

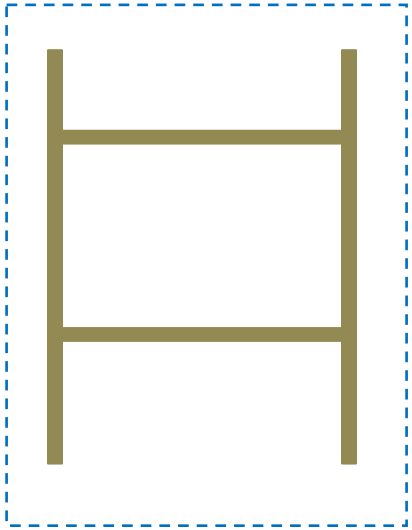
III. For SST, the RRUs to be installed on antenna pole or RRU pole or tower leg.

RT pole

I. RRUs to be installed on antenna pole or new RRU "F" pole according to site situation.

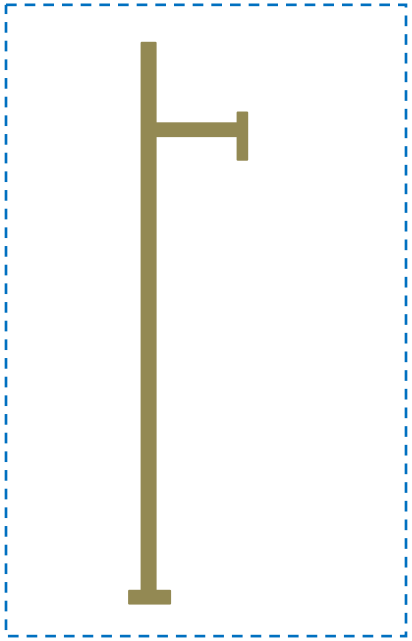
"H" support structure-For RRU installation

- Can be used in following scenario
  - Guyed master
  - Monopole

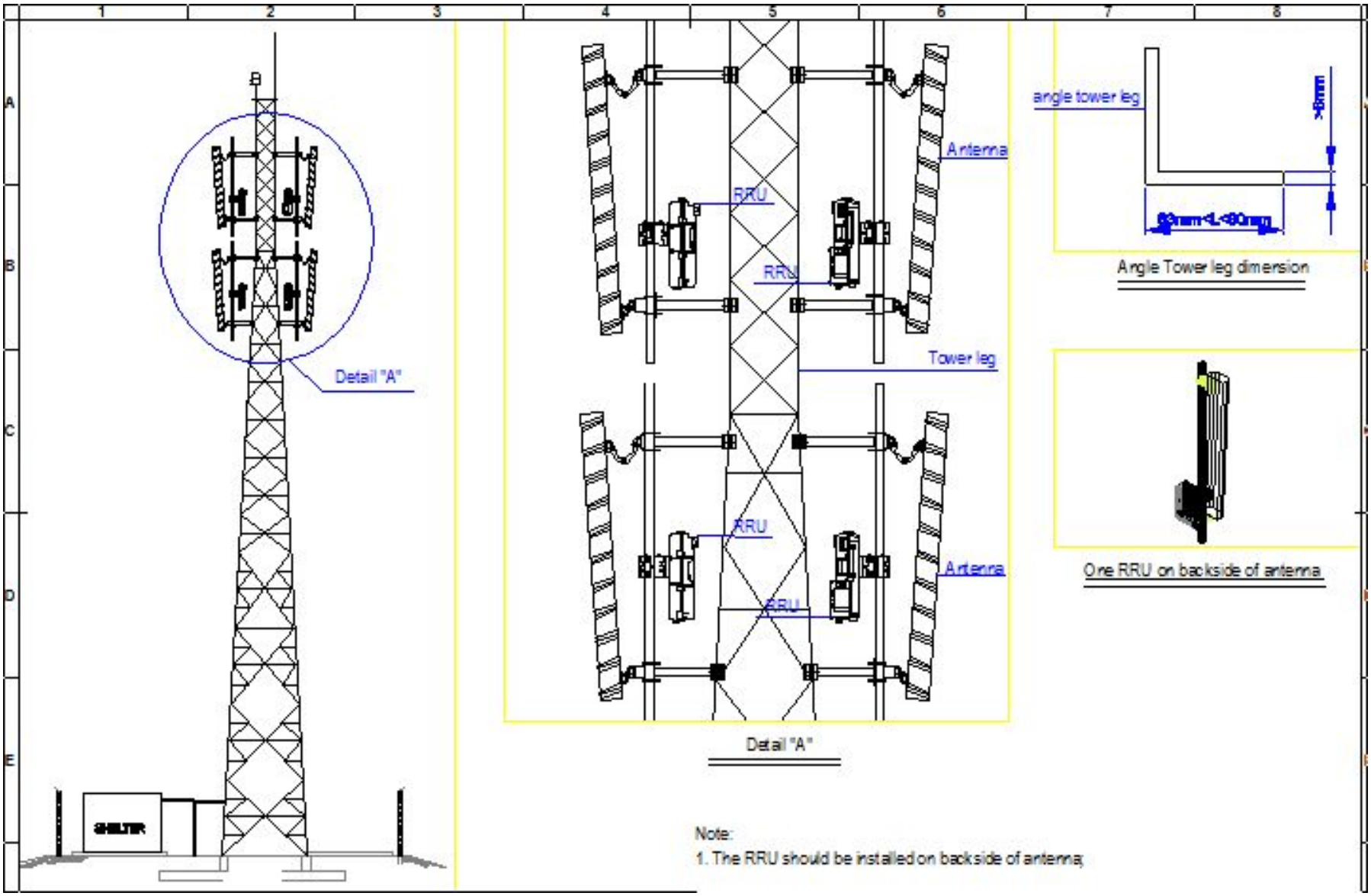


“F" support structure-For RRU installation

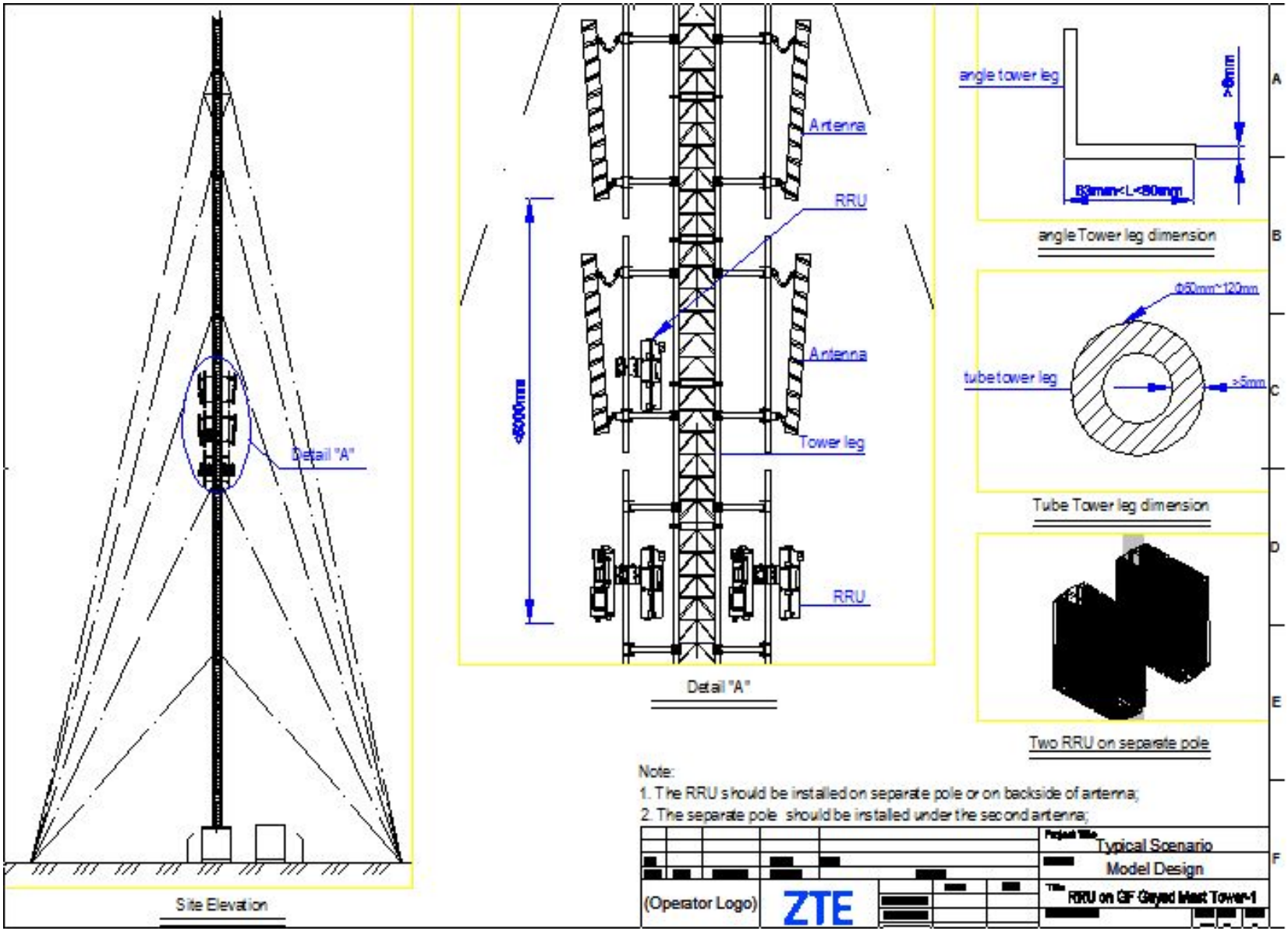
- Can be used in following scenario
  - Rooftop pole



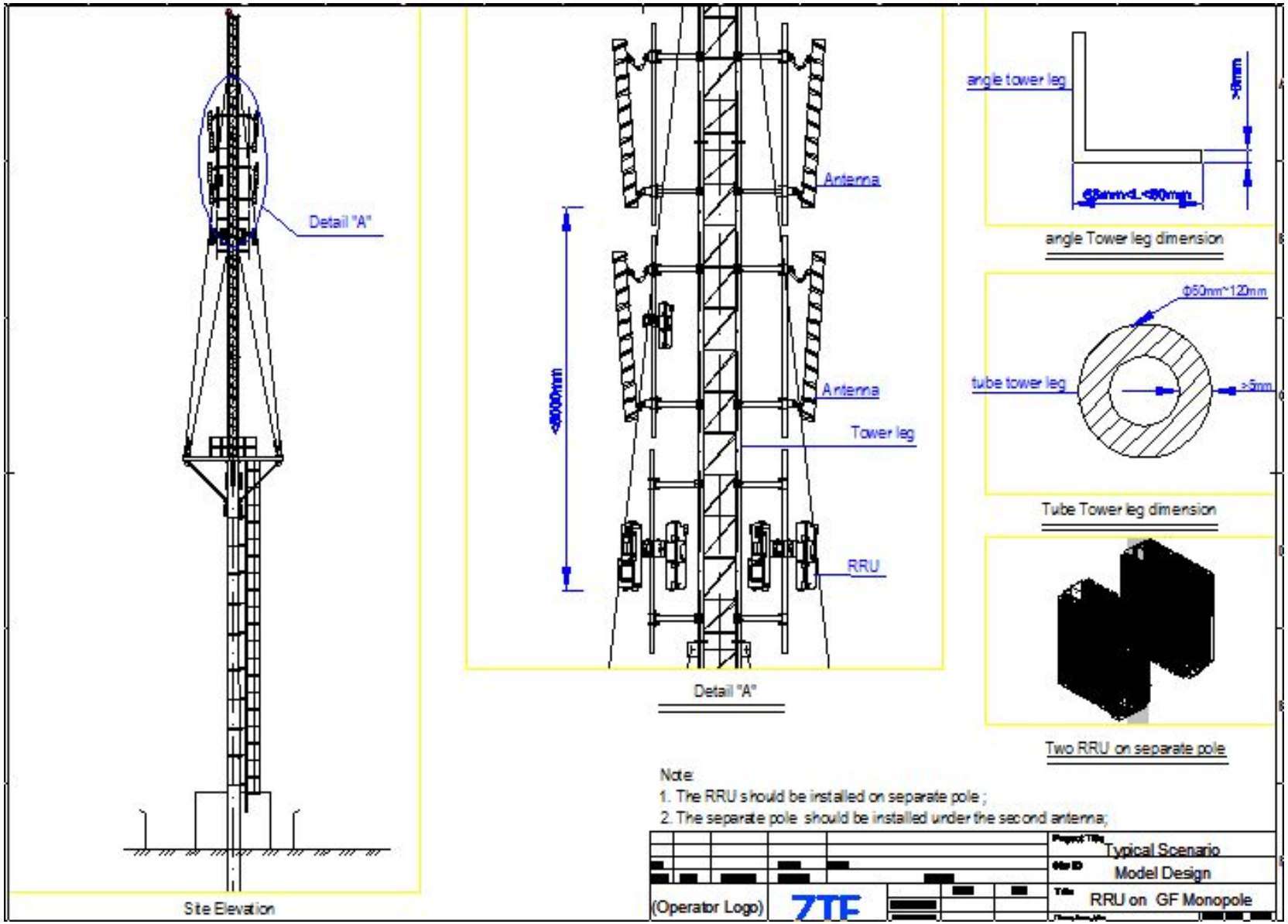
Suggested RRU installation-Self support tower



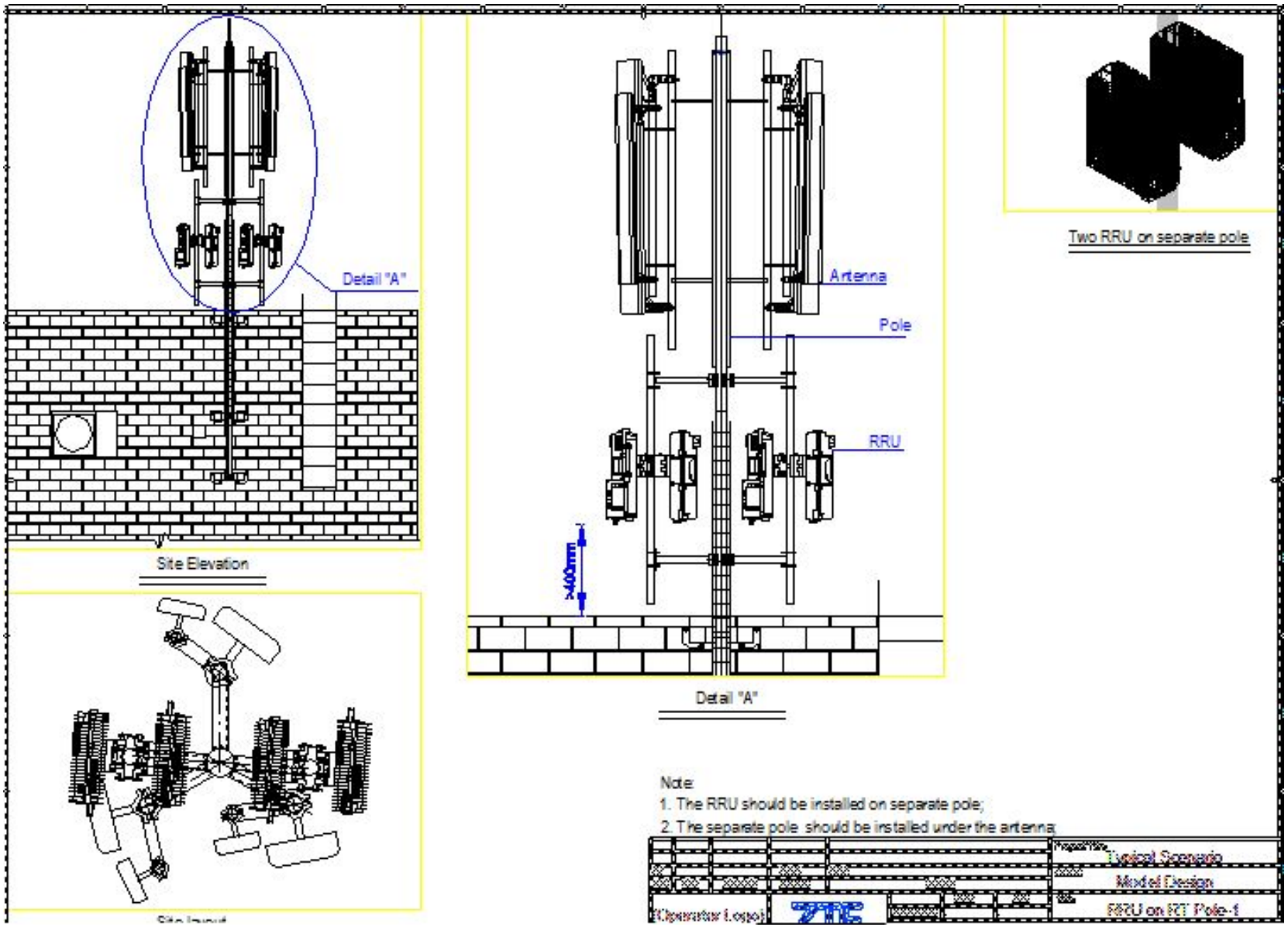
Suggested RRU installation-Guyed master



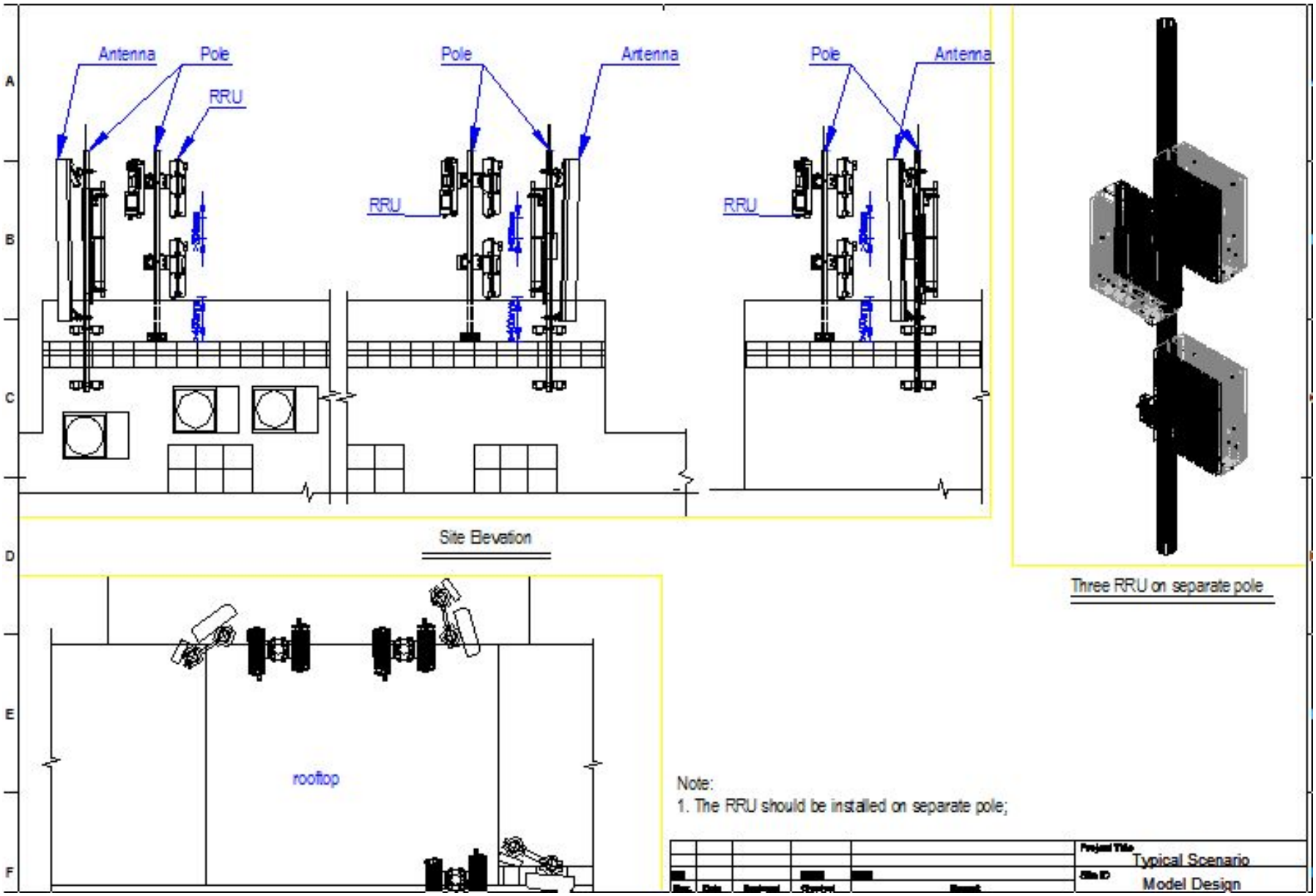
Suggested RRU installation-Monopole



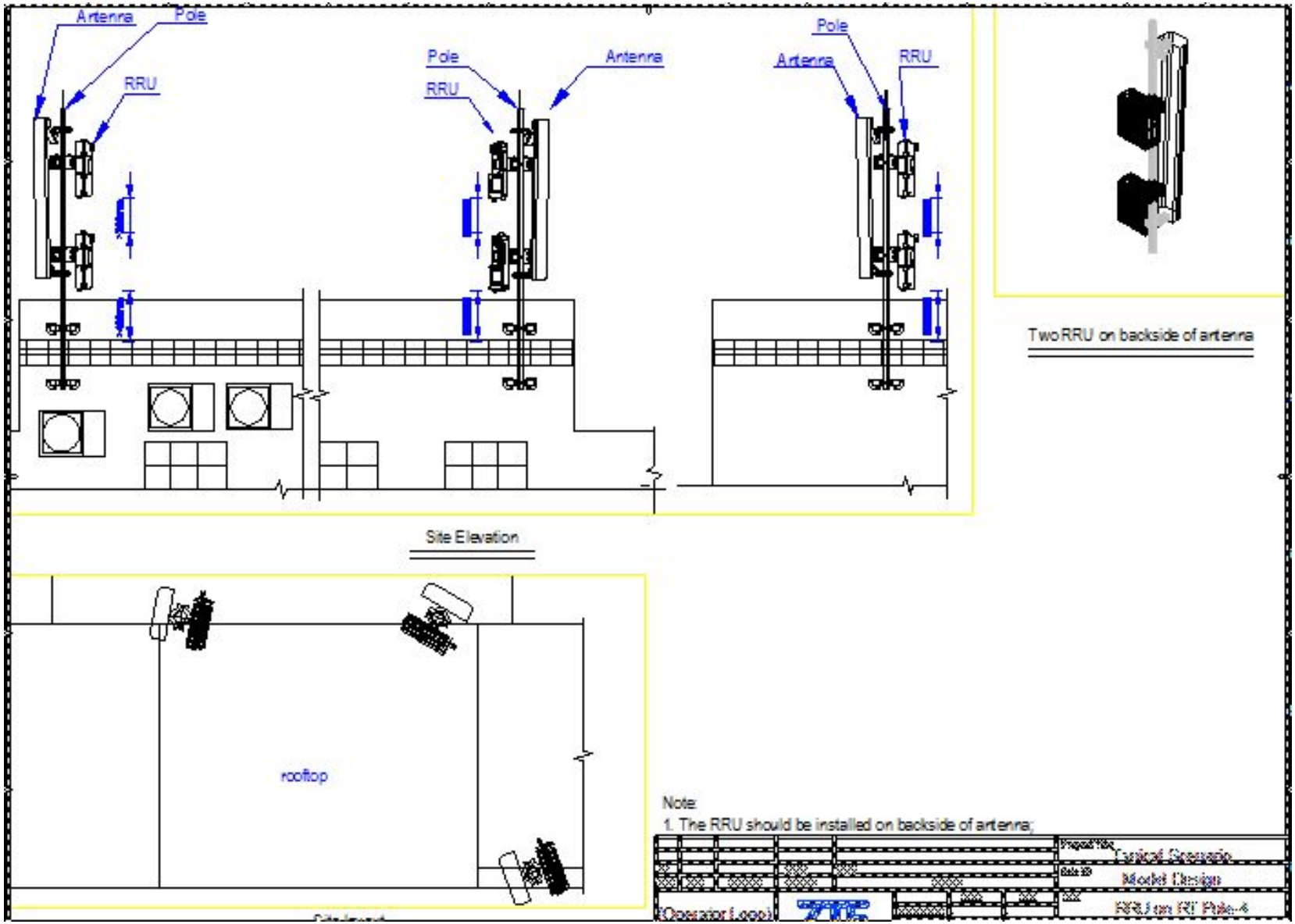
Suggested RRU installation- RT Pole(1 Single pole for all sector)



Suggested RRU installation-RT Pole(Separate pole for each sector)

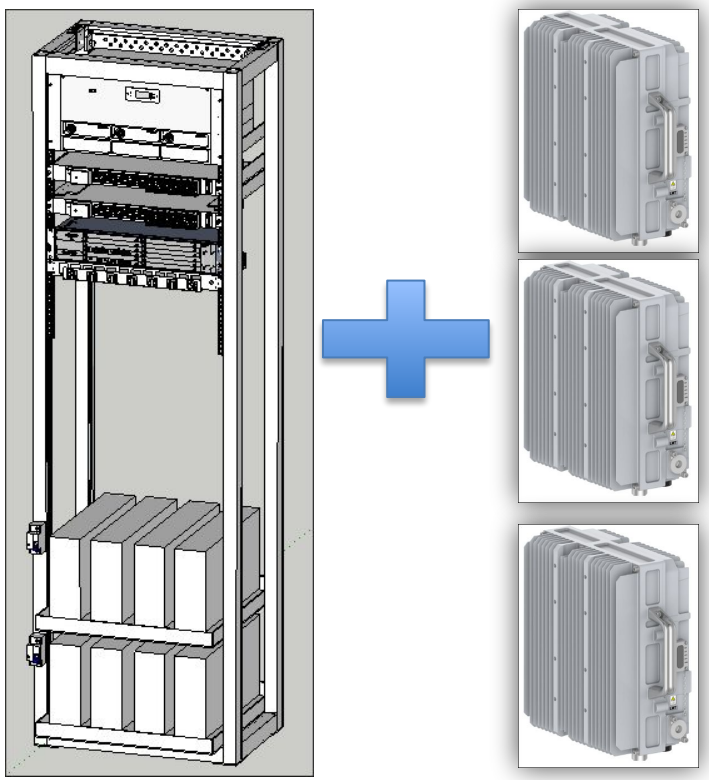


Suggested RRU installation-RT Pole(Separate pole for each sector)



IBC sites solution scenario 1

- Enough space for DC rack and RRU

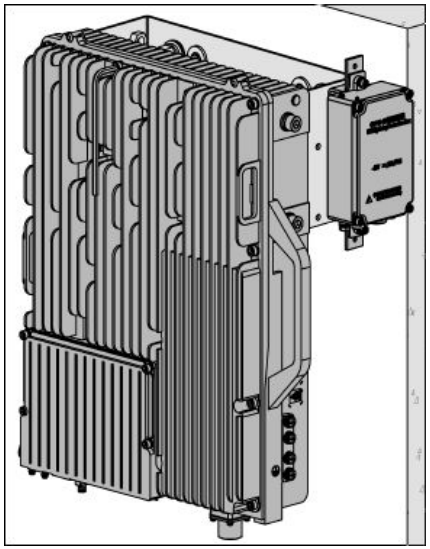


-48V DC rack + BBU&DCPD+RRU
2G+3G can be performed on site

Example

IBC sites solution scenario 2(BS8908 Only can launch 2G)

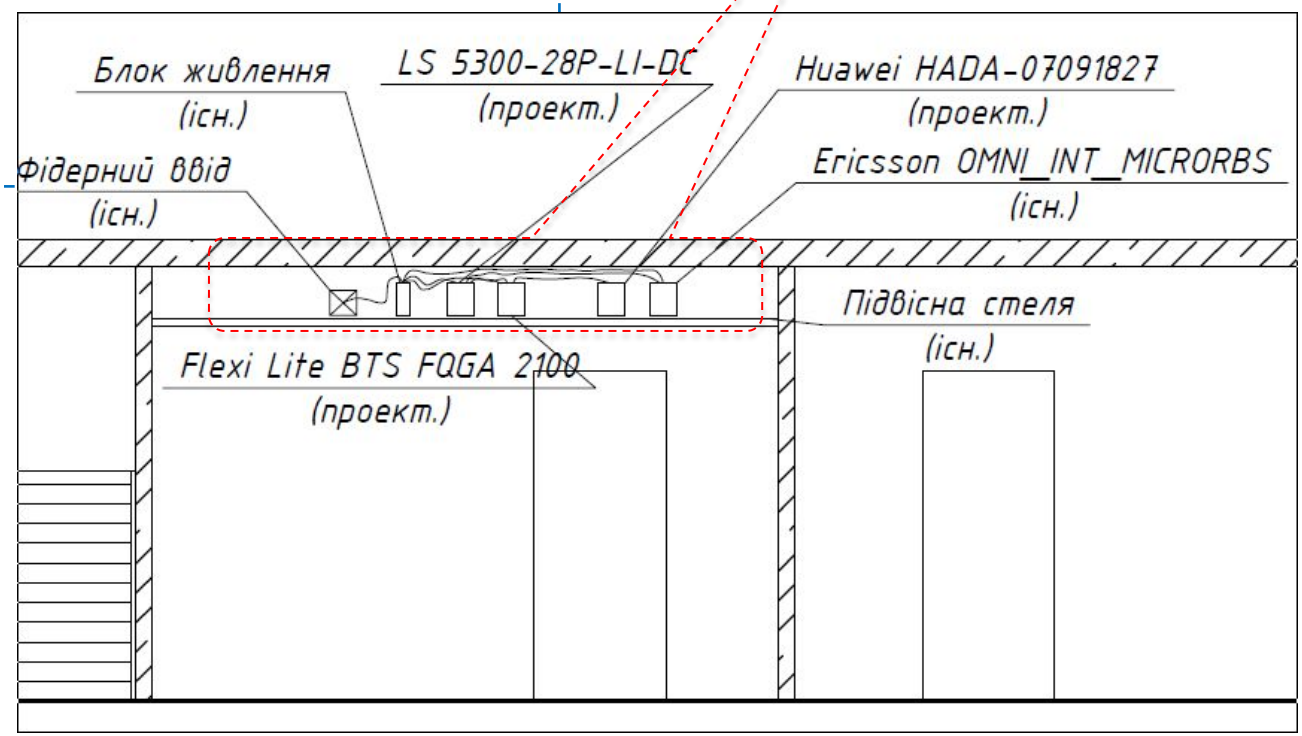
- No space for DC rack and RRU



BS8908---AC 220V
Only 2G on be launched on site

Example: Equipments only can be installed inside ceiling

Example



Antenna Scenarios

Basic guidline for Antennas

We should check all sector ports requirement for all system in input form.

I. Plz pay special attention to D1800 ports requirement.

II. 2G antenna should reuse existing antenna if possible.

3G antenna height

I. 3G antenna height , azimuth and tilt based on 3G planning. If there is no planning for 3G, 3G antenna parameters follow 2G antenna.

II. If 3G planning height the same with 2G, and impossible to set antenna at the same level, the first priority of 3G antenna should be under 2G antenna within 3m distance. The second priority should be higher than 2G antenna within 3m distance.

3G antenna type and swap scenario

I. The first priority is to install new single band 3G 2 ports antenna if all condition is ok(Space on tower/RT pole is ok, Bearing capacity is ok) (Need consider new pole for 3G antenna)

II. If can not add separate antenna for 3G, following the guideline(BOQ and Antenna solution scenario_20160120_V3.0) based on scenarios.

III. If existing 4 ports (1710-2200M) antenna for D1800. After swap, if D1800 only use 2 ports, U2100 can reuse another 2 spare space and Kyivstar provide additional RCU module for this antenna). New RCU module quantity need to mark in report material list.

Antenna Scenarios

Filters

I. G900 Filters will be reused if existed on site.

Documents

I. 305 sites ZTE PP_checked_Send to Partners

II. BOQ and Antenna solution scenario_20160120_V3.1

Thank you

Tomorrow never waits