

Huawei SingleRAN Hardware Roadmap

2016Q4

www.huawei.com

Definition of Version Status

Version Status	Name	IPD phase	Status Description
Planning	NA	Before Charter	Stand for that the version is under planning, all the features and release date are candidate
Planned	NA	Charter to PDCP	Stand for that the version is planned, candidate features have been scoped, but the final features and release date is still to be defined
RFC	Ready For Contract	PDCP to GA	Stand for that the version is ready for contract, only minor changes might be done before the release of the product
Released	NA	GA to EOM	<ul style="list-style-type: none">•Stands for that the version has been released and already generally available for customers•The EOM (End of Marketing) date is the date from which the receipts of POs (including POs of new offices and/or expansion offices) are rejected.

CONTENTS

❑ Radio Product Roadmap

❑ MBTS

- ❑ Radio Units
- ❑ Active Antenna Units
- ❑ Small cell

❑ Radio Controller Product Roadmap

- ❑ BSC6900/6910
- ❑ SRC

3900 Family, Based on Module Design

Distributed Base station

Centralized Base Station

Macro Indoor

Macro Outdoor

MBTS



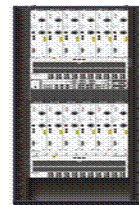
DBS3900



CBS5900



BTS3900



BTS3900L



BTS3900A



BTS3900AL

Main Module



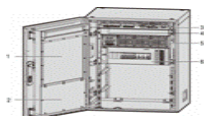
RRU



RFU



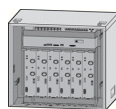
AAU



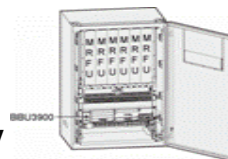
APM30



OMB



Radio Frequency Cabinet



Indoor Macro Cabinet



Indoor Macro Large Cabinet



Outdoor Macro Large Cabinet



Indoor BBU Cabinet



BBU3900/3910



BBU3910A



USU



RMU3900A



IPCLK500

MBTS Capacity Roadmap

SRAN 10.1

BBU3910A

GSM Mode(GBSS17.1)

- 48TRX(IP o E1)
- 72TRX(IP o FE)

UMTS Mode(RAN17.1)

- 12 cells
- DL/UL 1024/1024CE

LTE Mode(eRAN8.1)

- 6 cells x 20M
- DL + UL 1.5Gbps

SRAN 11.1

BBU3900/3910

GSM Mode(GBSS18.1)

- GTMUc@LegacyOM
- ▣ 32Cell, 126TRX(TDM), 48TRX(IP o E1) , 60TRX(IP o FE)

LTE Mode(eRAN11.1)

- 72 cells x 20M with UMPTe*&UBBPe*
- DL + UL 10Gbps with UMPTe*

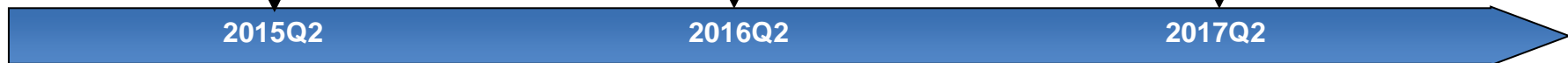
*2016Q3

SRAN 12.1

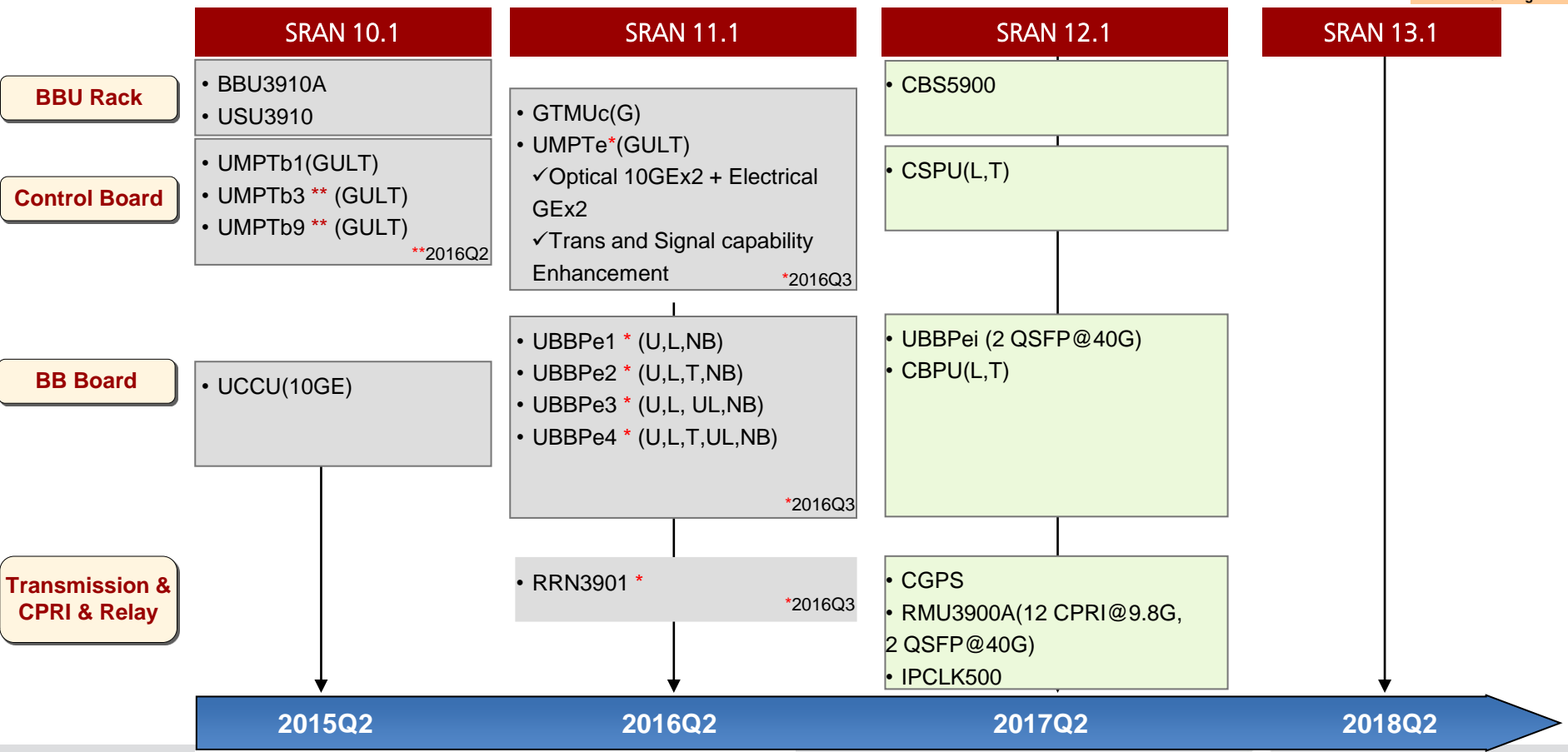
CBS5900

LTE Mode(eRAN12.1)

- 288 cells x 20M x 4T4R with CBPU



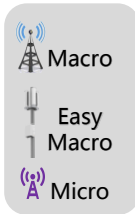
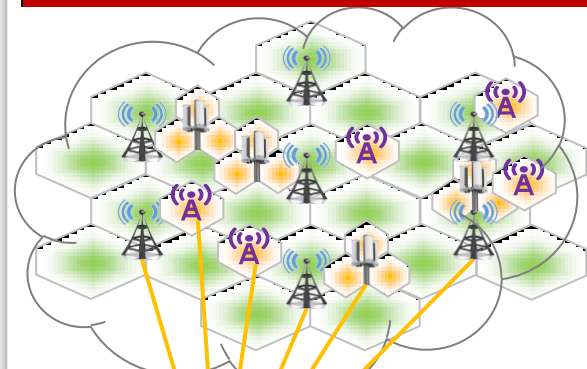
MBTS Hardware Roadmap



Notes: G—GSM, U—UMTS, L—LTE FDD, T—LTE TDD

CBS5900: Optimized for Cluster Deployment

CBS Optimized for Cluster Deployment



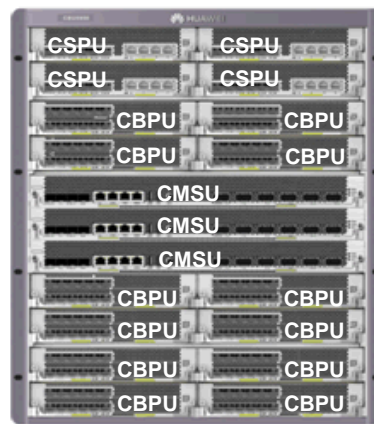
Centralized Base Station @CO , typically 20 sites

- Up to 576 cells
- One OM and transport
- Inter-sites BB pooling
- Inter-sites Coordination
- CU, DU flexible deployment
- New business anchor

CBS5900



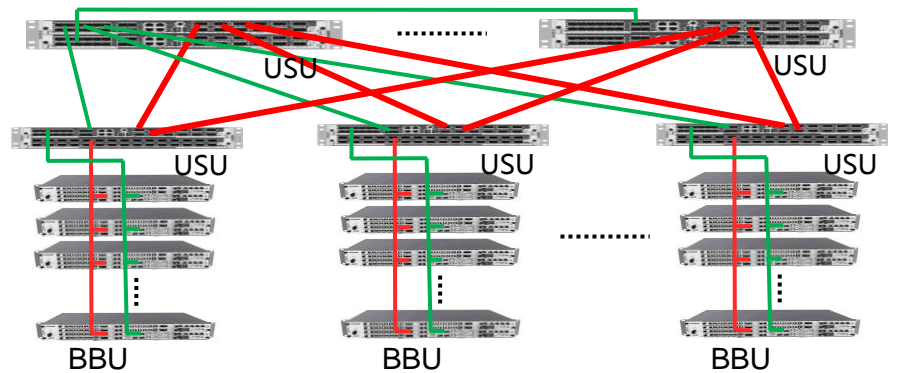
CBS5900 Specification



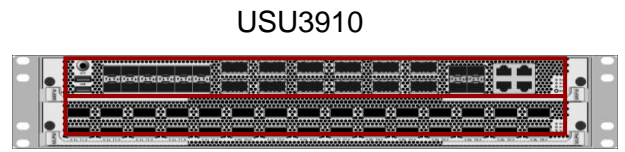
	CBS5900
Processing Unit slot	16
Switch Unit Slot	3
Dimension	H:12U W:19" D:480mm
Power supply	DC -48v

	CBPU	CSPU
Function	Baseband Processing	Service Processing
Max Conf.	12	4
Per Unit Capacity	24*20M 4T4R 12 x 10G CPRI ports	20G Switch capacity+ 43200 connected users 6 x1/ 10G SFP ports

Cloud BB platform Roadmap



● Centralized: USU & BBU in same site — User Plane — Control plane



- UEFU:
 - ✓ Signaling&OM&Clock switching
 - ✓ OM for USU connected to OSS
 - ✓ data switching amongst USU

- ULPU:
 - ✓ User and scheduling data switching amongst BBUs
 - ✓ 2*10GE、2*sRIO configurable, 1*40GE、4*10GE、2*sCPRI+2*sRIO HW ready

SRAN10.1

- UCCU: used in BBU, support 10GE
- IBC10: Cabinet for USU and BBU
 - ✓ 3 USU3910 + 10BBU
- USU3910
 - ✓ 1-level USU
 - ☐ Centralized: 5 BBU (6 BB boards per BBU)
 - ✓ 2-level USU
 - ☐ Centralized: 60 BBU

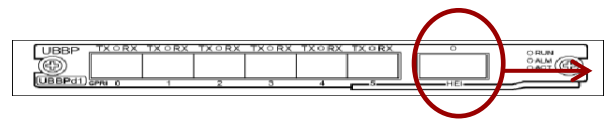
SRAN11.1

- UBBPe*: Support 40GE

*2016Q3

SRAN12.1

USU3910: Centralized 2-level USU backup



- UBBPe interconnection port:
 - ✓ 2*6.25G SRIO、40GE

Blade Site Solution Powers “Clean Site”

Traditional Macro Site



More
Boxes

More Site
Spaces



Blade Site Solution



Blade RRU
12 L



Blade BBU
12 L



Blade Power
12 L



Blade VRLA Battery
28 L



Blade Lithium Battery
12 L



✓ “0” Footprint



✓ Seamless Installation, Easy Expansion



✓ Fast installation, saving **80%** deployment time



✓ All RATs, all bands with high capacity

Blade BBU Specification



BBU3910A

BBU3910A1

- **GO:** 72TRX(FE)/ 48TRX(E1)
GU/GL: 48TRX
- **UO:** 6Cell / 512CE /
768CE(UL/DL)
- **FDD LTE:** 3*20M 4T4R
- **TDD LTE:** 3*20M 4T4R
- **UMTS+LTE:**
6Cells/256CE/384CE+3*20M
2T2R

BBU3910A2

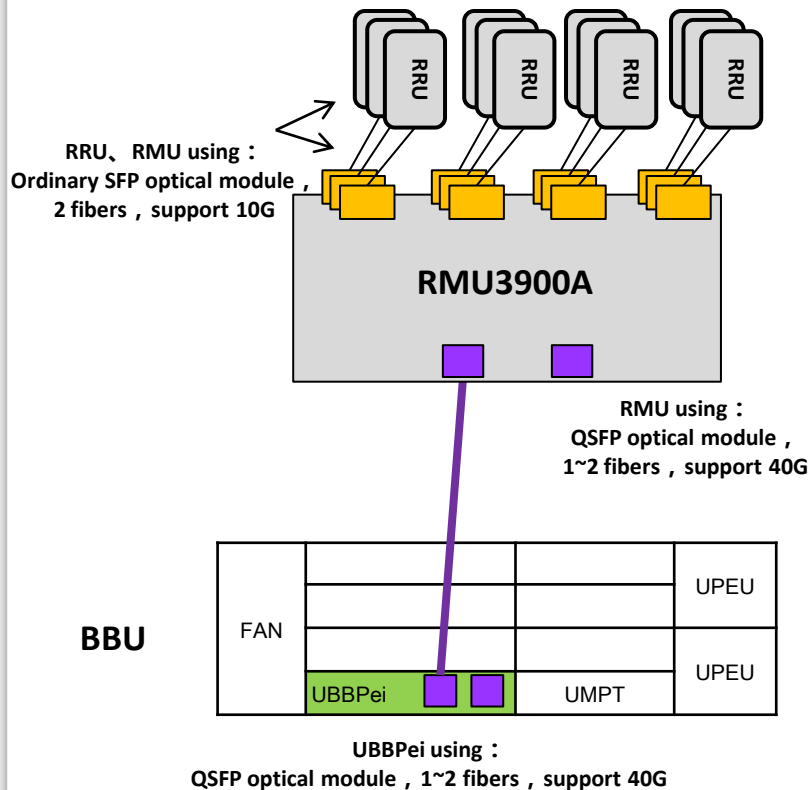
- **GO:** 72TRX(FE)/ 48TRX(E1)
GU/GL: 48TRX
- **UO:** 6Cell / 768CE /
768CE(UL/DL)
- **FDD LTE:** 6*20M 2T2R
- **UMTS+LTE:**
6Cells/384CE/512CE+3*20M
2T2R

BBU3910A3

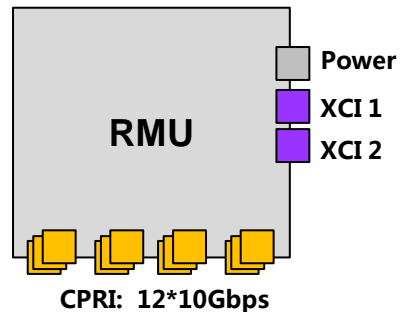
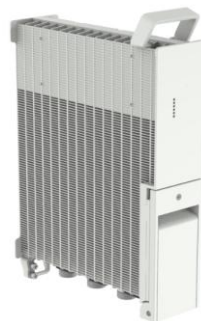
- **GO:** 72TRX(FE)/ 48TRX(E1)
GU/GL: 48TRX
- **UO:** 12Cell / 1024CE(UL/DL)
- **FDD LTE:** 6*20M 4T4R
- **TDD LTE:** 6*20M 4T4R
- **UMTS+LTE:**
6Cells/512CE/768CE+3*20M
4T4R

- **Weight:** 12 kg
- **Dimensions(Hx W x D):** 400mmx100mmx300mm
- **Operating temperature:** -40°C to +55°C (no solar radiation)
- **Input power:** -48v
- **Protection class:** IP65
- **Heat Dissipation Capability:** 150W

RMU Solution



RMU3900A



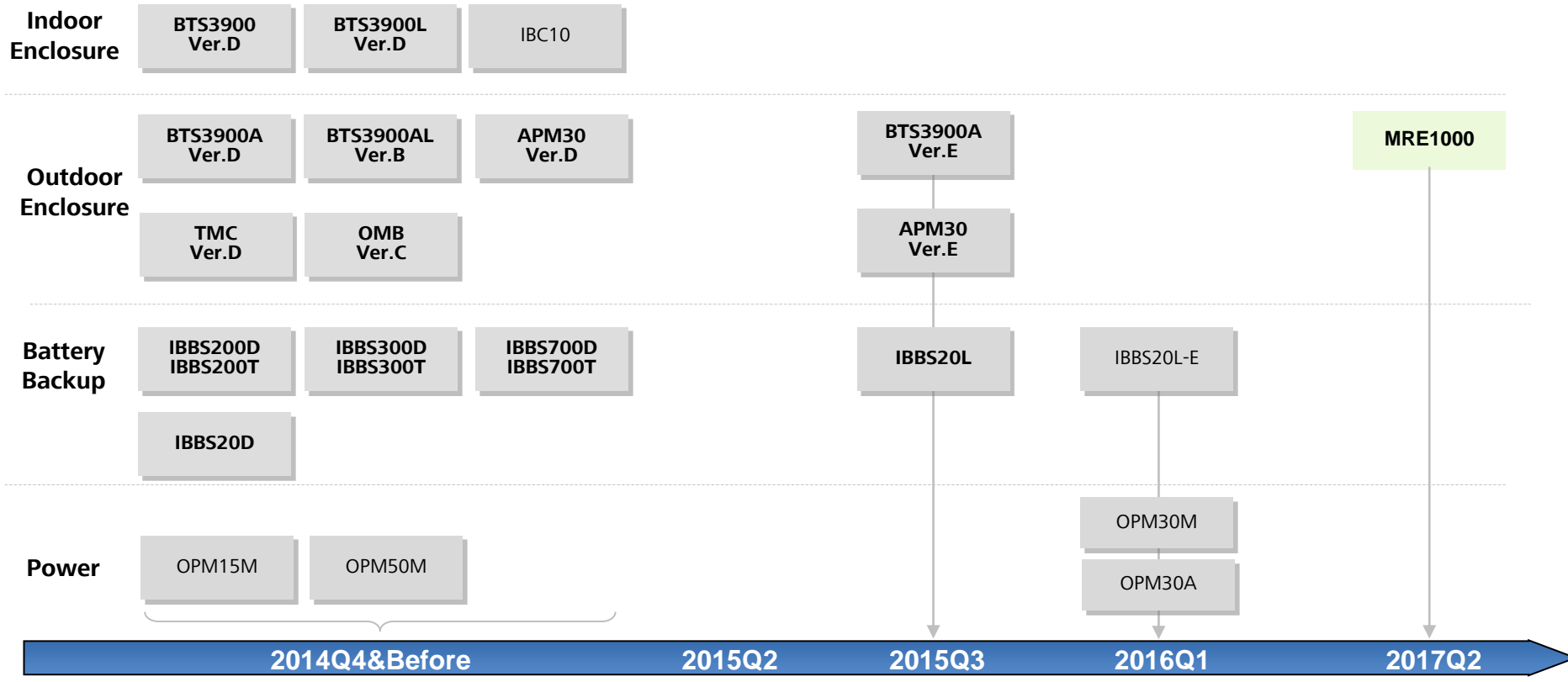
- RMU will be used match with UBBPei
- RMU can Multiplex up to 12 CPRI port to 1~2 fiber,
- 1 fiber can support up to 40G, save fibers, extend UBBP ports.

UBBPei



- UBBPei is developed based on UBBPe board
- the baseband specification is same as UBBPe.
- Interface spec : 2*40Gbps

Enclosure & Power Hardware Roadmap

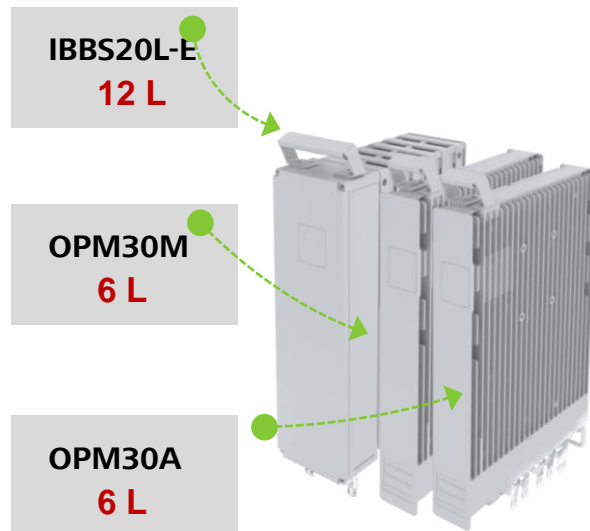


Blade Power, fast deploy to various scenes

AC+DC Solution, adapt to various scenes



Small-scale, Modular assembly, Fast Deployment



Blade Power & Battery Specification



OPM50M

Dimensions (H x W x D): 400mmx100mmx300mm

Output power: 3000W@220V, ≤50°C
2600W@220V, >50°C
1500W@110V

Loading Capability: 5*30A



OPM30M

Dimensions (H x W x D): 400mmx50mmx300mm

Output power: 1500W@220V
750W@110V

Loading Capability: 3*30A

Support DC equipments and batteries backup



OPM30A

Dimensions (H x W x D): 400mmx50mmx300mm

Output power: 1500W@220V
750W@110V

Loading Capability: 3*30A

Output Voltage: 220V AC

Support AC equipments and batteries backup



IBBS20D

Blade VRLA Battery

Dimensions (H x W x D): 400mmx240mmx300mm

Capacity: 20Ah, Support 2 IBBS20D(40Ah)

Support OPM50M



IBBS20L

Blade Lithium Battery

Dimensions (H x W x D): 400mmx100mmx300mm

Capacity: 20Ah, Support 5 IBBS20L(100Ah)

Battery discharge power: 3000W max.

Support OPM50M



IBBS20L-E

Blade Lithium Battery

Dimensions (H x W x D): 400mmx100mmx300mm

Capacity: 20Ah, Support 5 IBBS20L-E(100Ah)

Battery discharge power: 1000W max.(one battery),
1300W max.(two batteries and above)

Support OPM30M & OPM30A

Ver.E Cabinet Specification



BTS3900A+IBBS



DBS3900 APM30H+IBBS

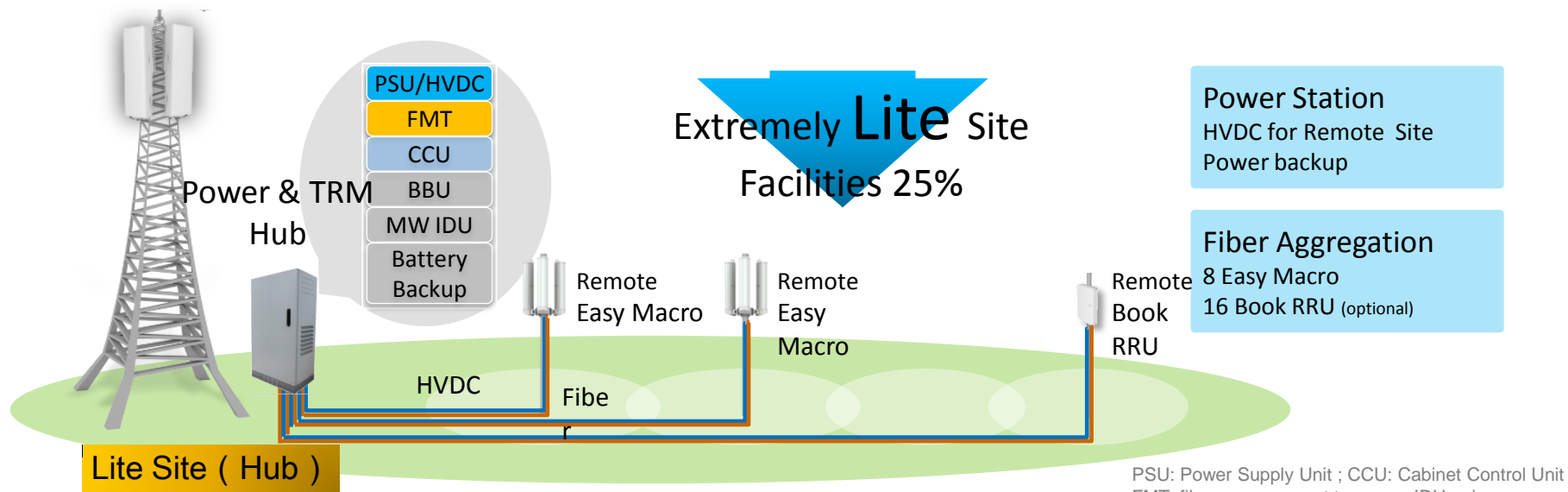
Capacity Specification

- **Configuration:** 7B4M, 2BBU+21RxU
BBU: 1200W
Macro+DBS: 6*2x80W RFU+6*2x80W RRU+9*2x40W RRU
DBS: 6*2x80W RRU+6*2x60W RRU+9*2x40W RRU
- **Output power:** PSU Number: 1~5; PSU Capacity: 3000W
- **Power backup:**
Support 100AH、150AH、200AH、300AH、400AH、600AH with IBBS200D/T or IBBS300D/T
- **Heat dissipation:** 1800W

Physical Specification

- **Dimensions (H x W x D):** 1400mmx600mmx480mm
- **Input power:** 220V AC/110V AC/-48V DC
- **Operating temperature:** -40° C to 50° C with solar radiation of 1120 W/m², A heater unit is required if the temperature is lower than -20° C.

Lite site (Hub) Simplify Site Admittance: One for More



PSU: Power Supply Unit ; CCU: Cabinet Control Unit
FMT: fiber management tray; mw IDU: microwave Indoor unit



Road Coverage



Neighborhood Coverage



Tourist Spots Coverage

Lite site (Hub) -MRE1000 Cabinet



	Specifications
Site	400mm(D)*650mm(W)*1200mm(H)
Space	upper-deck : 8U 19inch spaces(Total) 5U equipment spaces (Including BBU) below-deck : 100Ah batteries
configuration	8* Easy Macro or 16*BOOK RRU
IP protect	upper-deck: IP55 below-deck : IP34
Heat dissipation	1000W

CONTENTS

Radio Product Roadmap

- MBTS

Radio Units

- Active Antenna Units

- Small cell

Radio Controller Product Roadmap

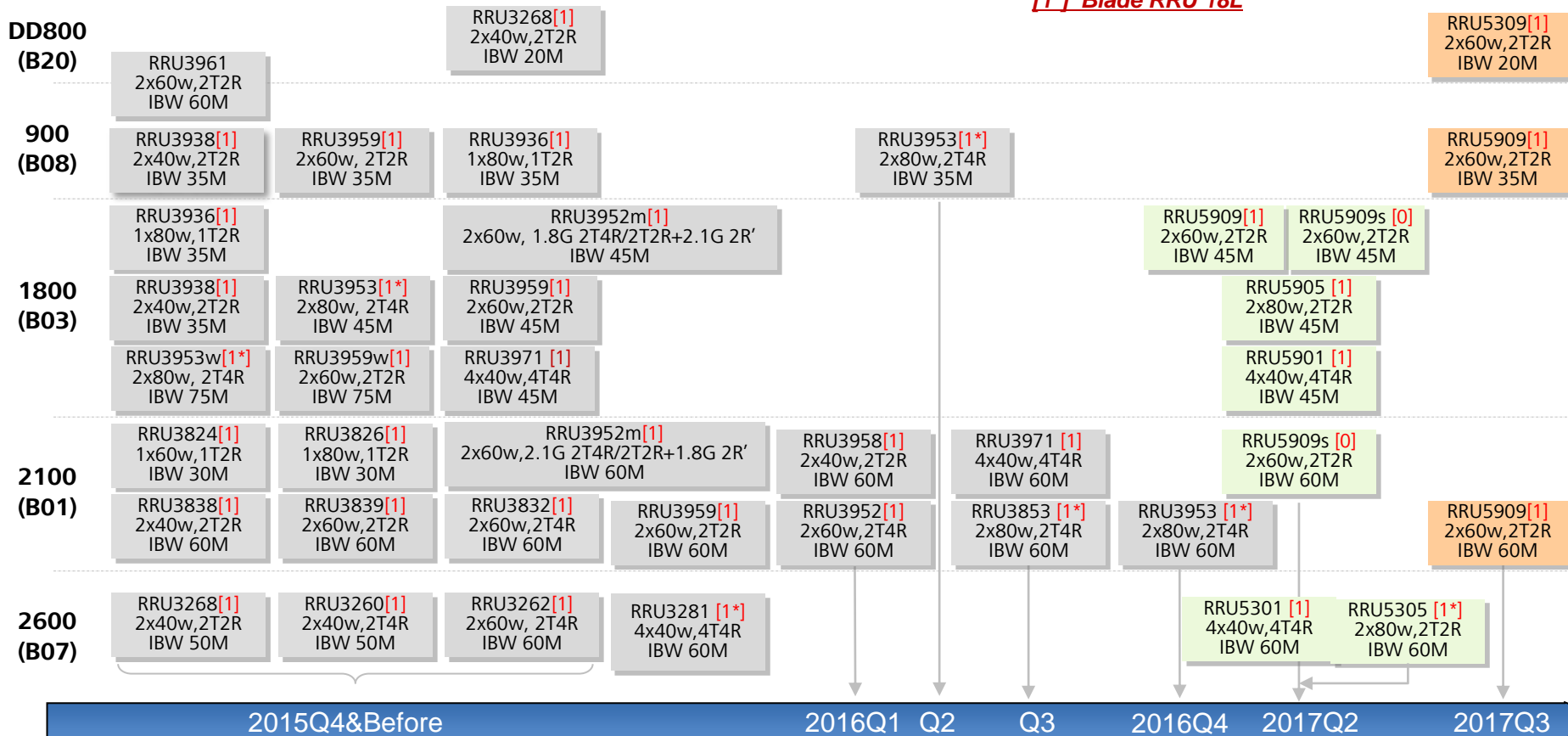
- BSC6900/6910

- SRC

GUL RF Module Hardware Roadmap (RRU-1/2)

[0] Blade RRU 8L
[1] Blade RRU 12L
[1*] Blade RRU 18L

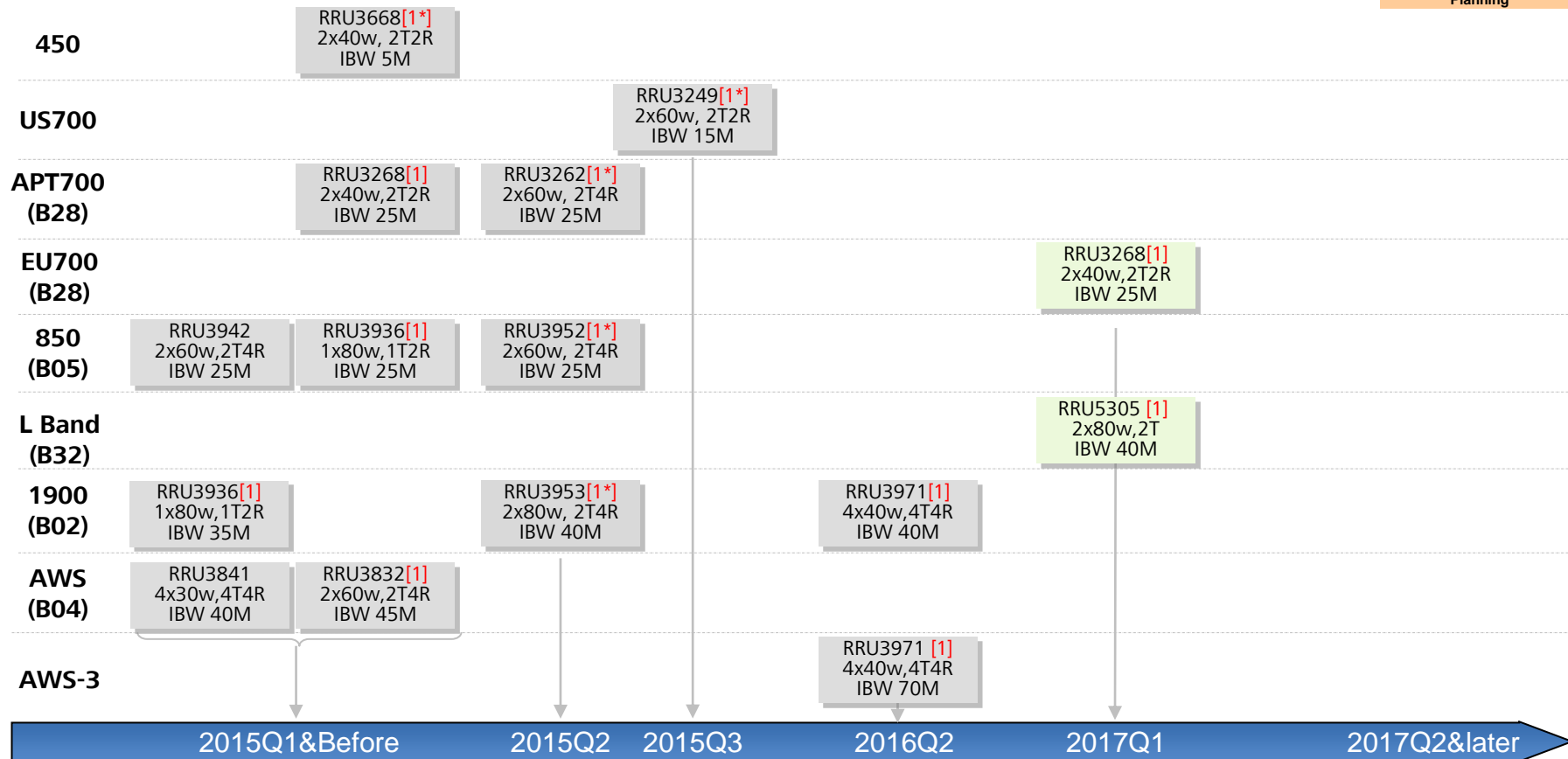
Released
 Ready for Contract
 Planned
 Planning



GUL RF Module Hardware Roadmap (RRU-2/2)

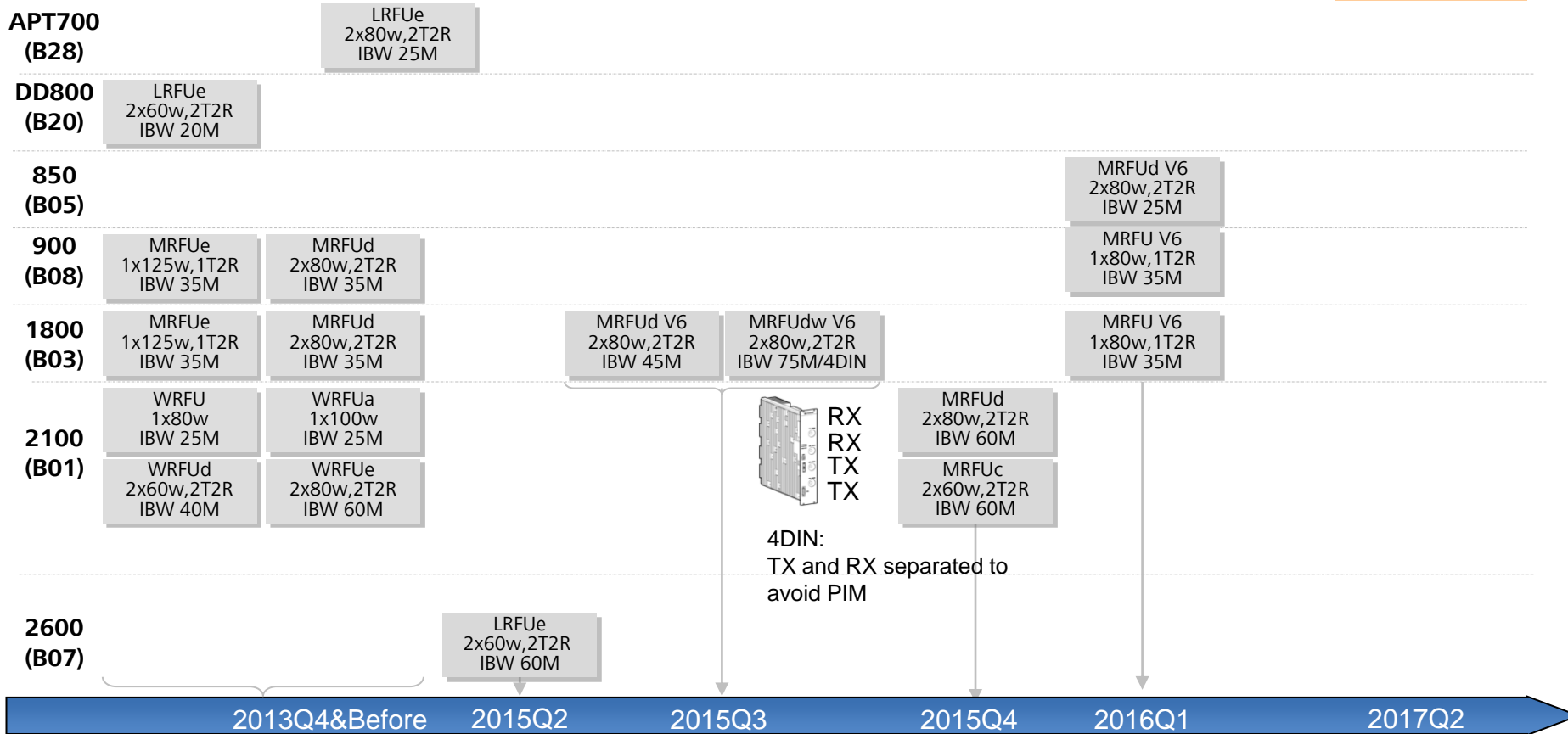
[1] Blade RRU 12L
[1*] Blade RRU 18L

Released
Ready for Contract
Planned
Planning

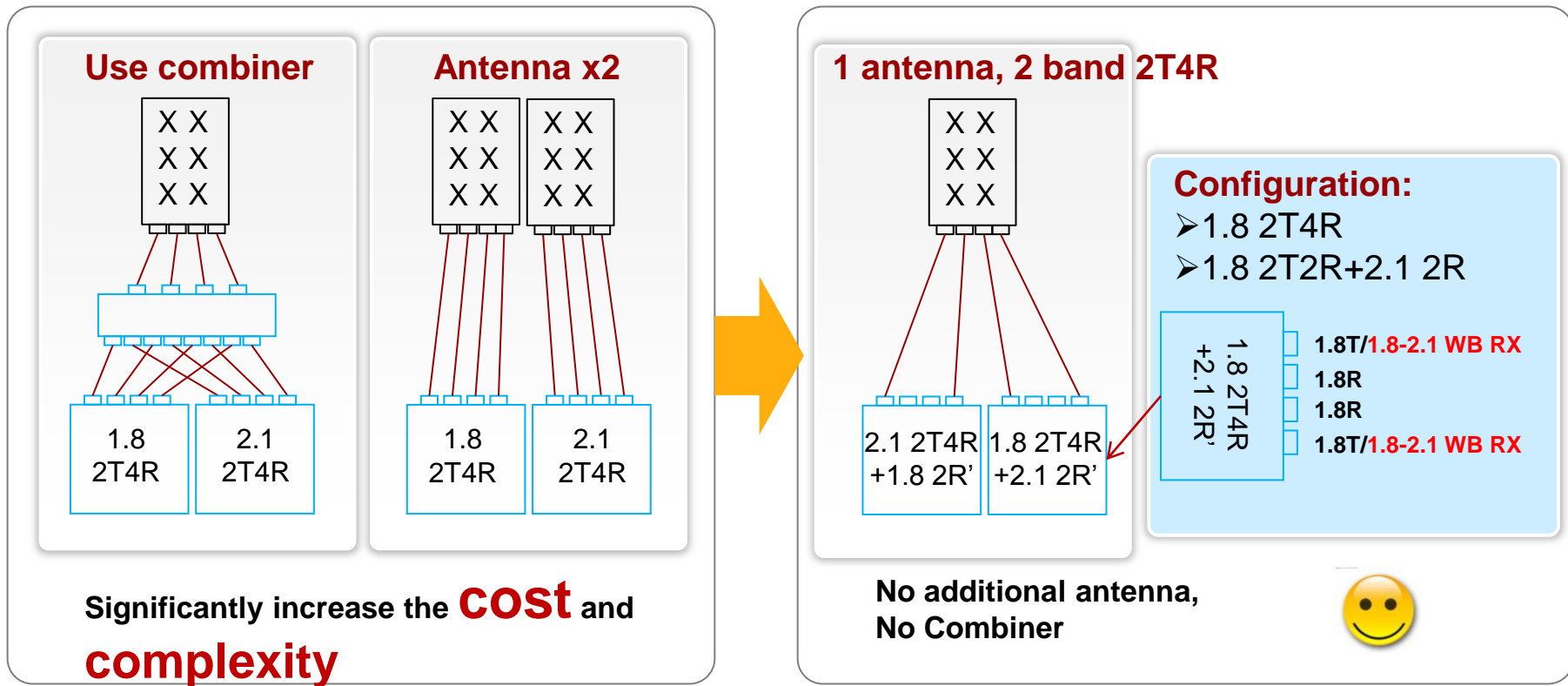


GUL RF Module Hardware Roadmap (RFU)

Released
Ready for Contract
Planned
Planning



Wideband Receiver RRU: supports Single antenna with dual-band 2T4R



LTE TDD eRAN RRU Roadmap

Released
Ready for Contract
Planned
Planning



8T8R

RRU

RRU3279 17L
• 2.6G up to 8*20W, 80MHz

RRU3279
• 2.3G up to 8*20W, 80MHz

RRU3278 24L
• 3.5G up to 8*20W, 80MHz

RRU3278 24L
• 3.7G Up to 8*20W, 80MHz

RRU5258
3.5G, Up to 8*25W

RRU5258
2.3G, Up to 8*25W

RRU5258
2.6G, Up to 8*25W



4T4R

Blade RRU

Blade RRU3276 18L
• 2.6G 4*40W, 150MHz

Blade RRU3276
• 2.3G 4*40W, 100MHz

Blade RRU5256
2.3/2.6G Up to 4*60W

RRU3256
• 3.5G 4*15W, 80MHz



2T2R

BOOK RRU

RRU3236E
• 2.3G
• Up to 2x10W, 60MHz

RRU3236E
• 3.5G
• Up to 2x10W, 60MHz

RRU3236E
• 2.6G
• Up to 2x10W, 60MHz



CONTENTS

Radio Product Roadmap

- MBTS

- Radio Units

Active Antenna Units

- Small cell

Radio Controller Product Roadmap

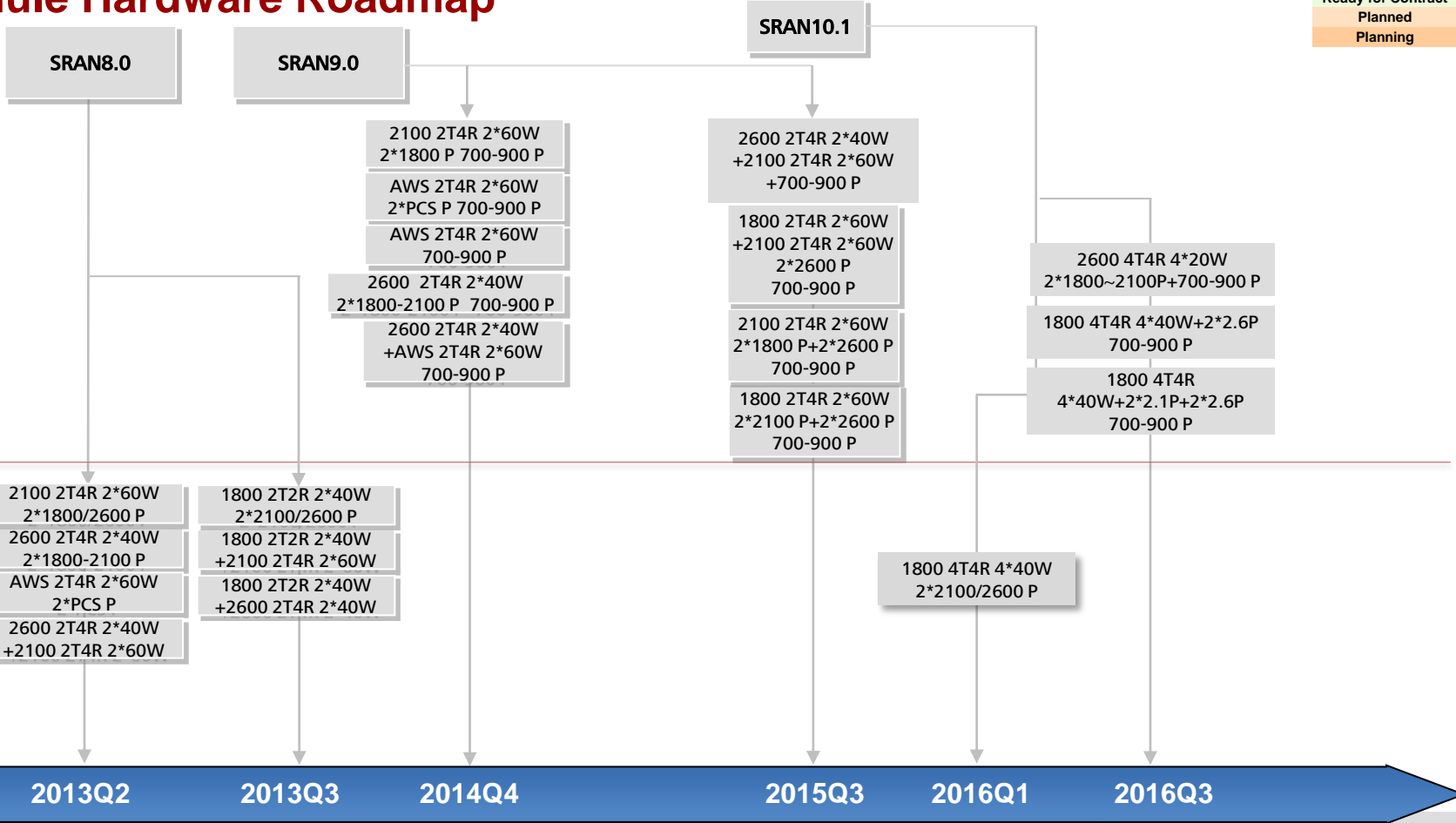
- BSC6900/6910

- SRC

AAS Module Hardware Roadmap



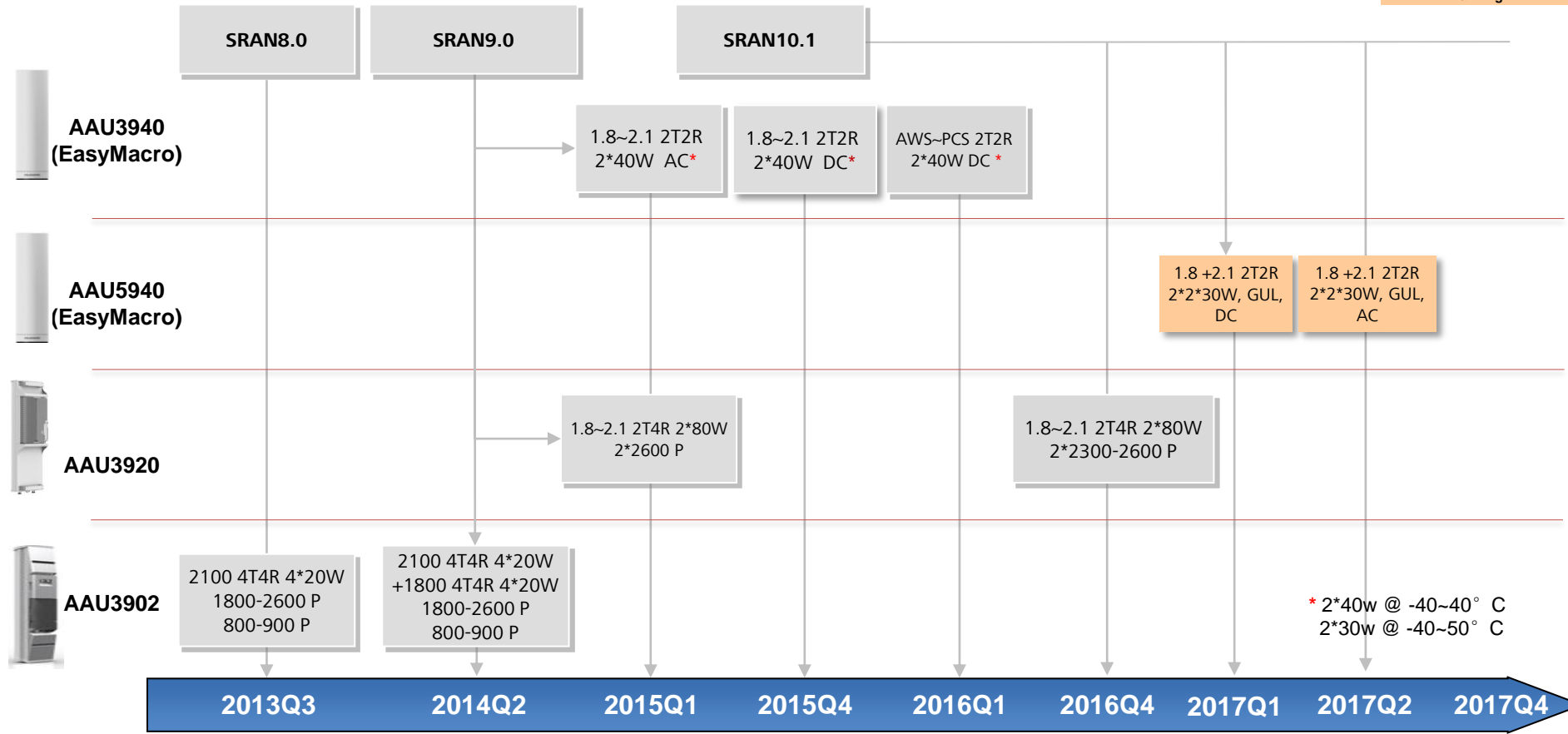
AAU3911



AAU3910

AAS Module Hardware Roadmap(AAU390X & 2X & 4x)

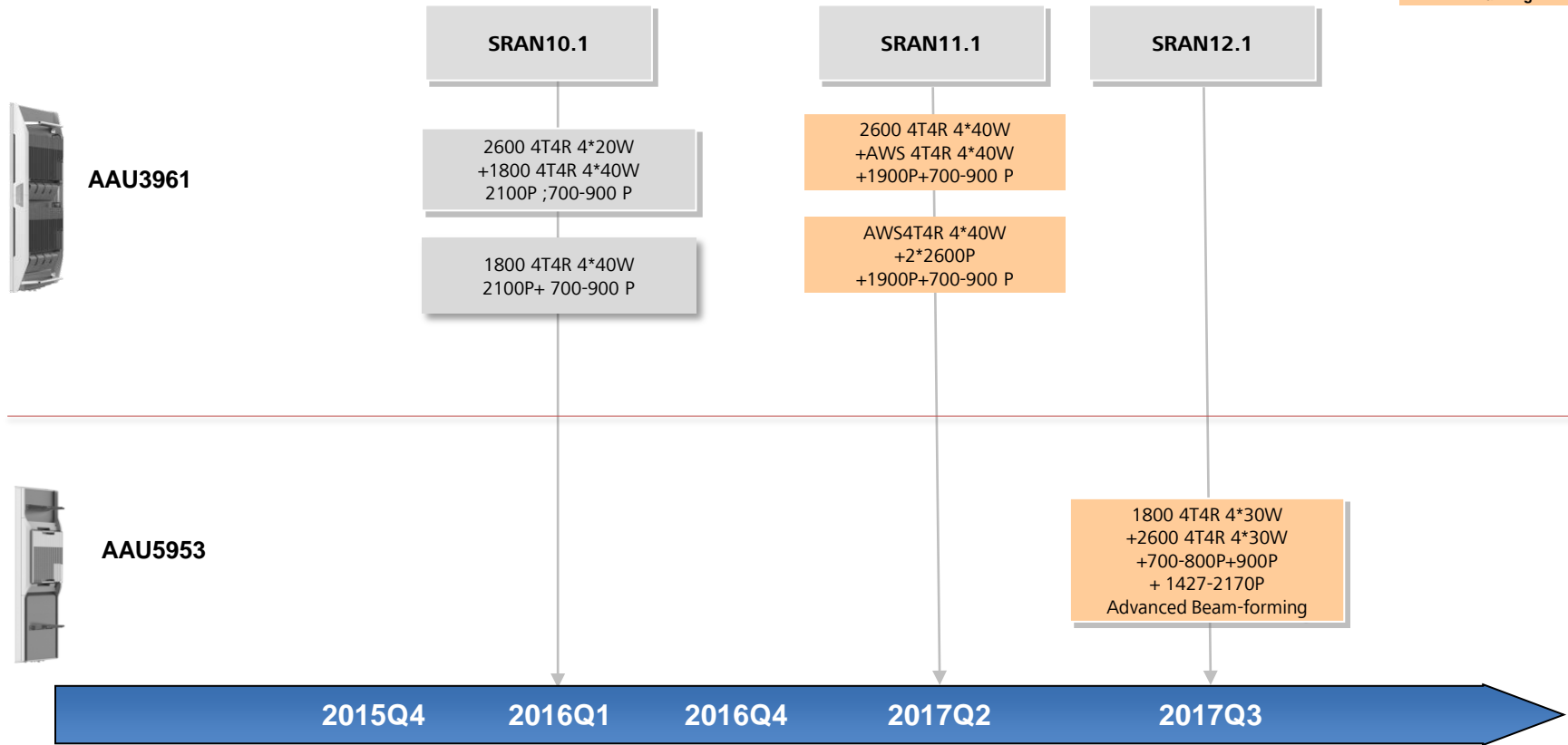
Released
 Ready for Contract
 Planned
 Planning



* 2*40w @ -40~40° C
 2*30w @ -40~50° C

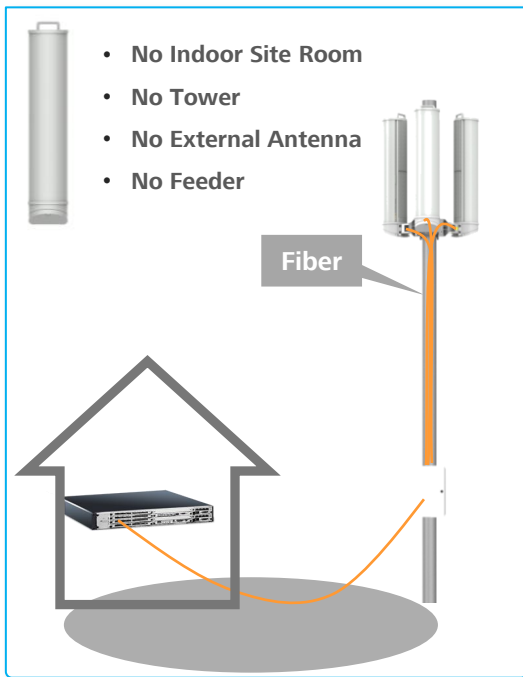
AAS Module Hardware Roadmap

Released
Ready for Contract
Planned
Planning



Easy Macro Specification

Easy Macro (AAU3940)



AAU3940		1.8~2.1 GHz (Wide Band)		AWS~PCS (Wide Band)	
Active Part					
		1.8GHz	2.1GHz	AWS	PCS
RAT		L	UL	L	UL
Output Power		2*40w @ -40° C~40° C (without solar radiation) 2*30w @ -40° C~50° C (without solar radiation)			
Number of carrier		LTE: 2	UMTS: 4	LTE: 2	UMTS: 4
		U&L: 4U2L		U&L: 4U2L	
IBW	Tx	40MHZ	40MHZ	40MHZ	40MHZ
	Rx	40MHZ	40MHZ	40MHZ	40MHZ
DUP bandwidth		TX: 1805~1880, RX: 1710~1785	TX: 2110~2170, RX: 1920~1980	TX: 2110~2155, RX: 1710~1755	TX: 1930~1990, RX: 1850~1910
Antenna Part					
		1710~1880	1920~2170	1710~1910	1930~2155
Polarization		+/-45			
Gain(dBi)		14	14.5	14	14.5
Horizontal half-power beam width		~70			
Electrical tilt		-3~12			
Mechanical Part					
Height (cm)		75			
Diameter (cm)		15			
Weight (Kg)		15			
Heat Dissipation		Natural Cooling			

Easy Macro 2.0 (AAU5940): 5 Evolutions

Evolution1: Improved Power

✓ 2*40W

✓ 2*2*30W @ full °C

- More Capacity
- More Coverage

Evolution2: GUL MSR

✓ UL

✓ GUL

- 1800: 2G or 4G1L
- 2100: 6U or 4U1L

Evolution3: Adjustable VBW

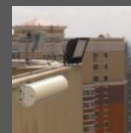
✓ 13deg

✓ 13 / 80 deg

- User experience improved
- Optimized for high buildings(45-90m)

Evolution4: Horizontal installation

- Reduce interference to neighbor cell
- Optimized for narrow buildings



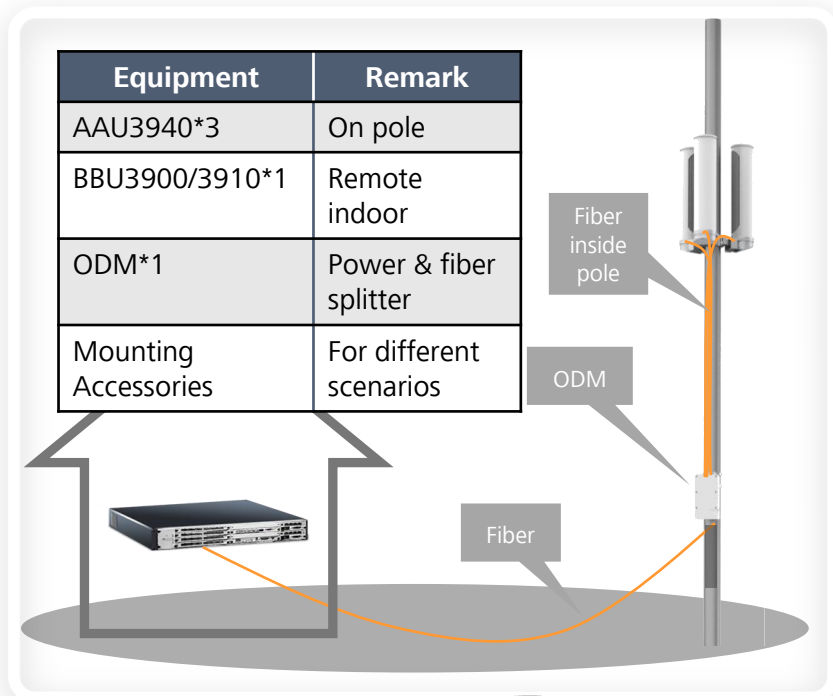
Evolution5: Monitor for battery cell

- Maintenance improved
- Optimized for DC Easy Macro with Battery



Easy MacroTM Deployment

With Remote BBU

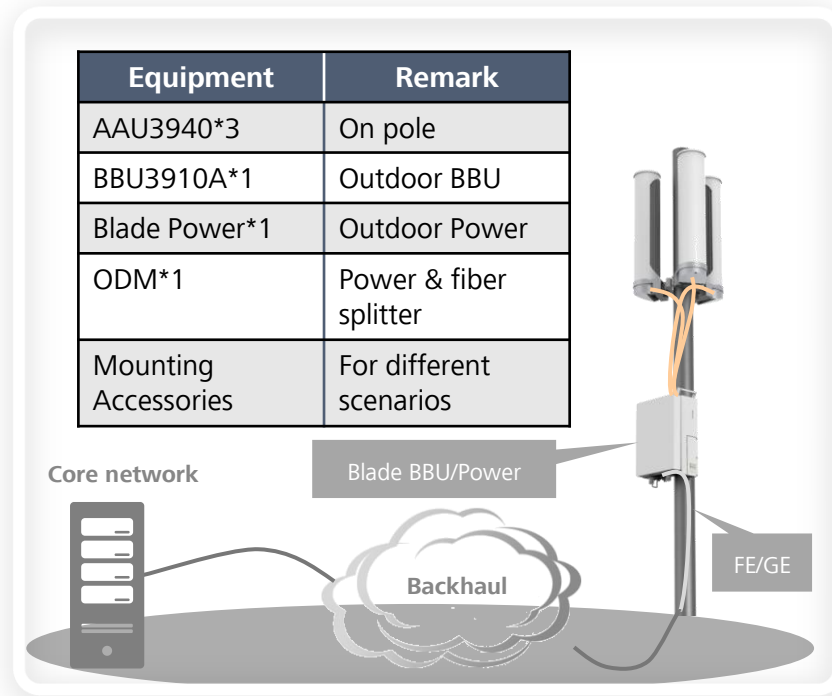


✓ Seamless assembled as Blade Site



✓ "0" Room for full outdoor

With Blade BBU



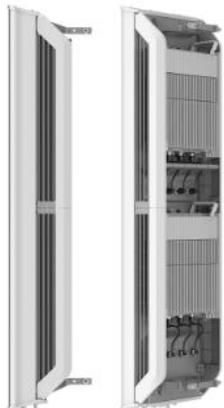
✓ Fast installation, saving **70%** deployment time



✓ All RATs, all bands with high capacity

AAU3961 Specification

AAU3961



AAU3961 1800A 4T4R 4*40W+2600A 4T4R 4*20W+ 690~960P+1710~2690P								
Dimensions (H x W x D)		1550mm(H)*370mm(W)*230mm(D)						
Weight		1A: 45kg; 2A: 63kg						
Temperature		- 40°C~45°C (without solar radiation)						
Heat Dissipation		Natural Cooling						
Wind load		Frontal/lateral/rearside:665N/500N/985N at 150km/h						
Survival wind speed (km/h)		200						
Active Radio Unit		1800M Active			2600M Active			
Frequency (MHz)		UL: 1710-1785			UL:2500-2570			
		DL: 1805-1880			DL: 2620-2690			
IBW	TX	45MHz			60MHz			
DUP bandwidth		75MHz			70MHz			
Passive Antenna Unit								
Frequency range (MHz)		690-803	790~862	824-894	880-960	1710-1880	1920-2170	2500-2690
Gain(dBi)		14	14.5	14.5	15	17	17	17.5
Horizontal 3dB beam width (°)		65				63		
Vertical 3dB beam width (°)		16				6.4		
Electrical downtilt (°)		0 - 14° , continuously adjustable				2 - 12° ,Continuously adjustable		

CONTENTS

Radio Product Roadmap

- MBTS
- Radio Units
- Active Antenna Units

Small cell

Radio Controller Product Roadmap

- BSC6900/6910
- SRC

Small Cell Product Portfolio Overview

Outdoor Site Densification

Micro BTS



BTS3902E
BTS3202E
2*5W U/L



BTS3203E
4*1W L

BTS3205E
2*5W TDD



BTS3911E
2*2*5W UL
Dual Band &
Dual Mode



BTS3912E
2*10W UL

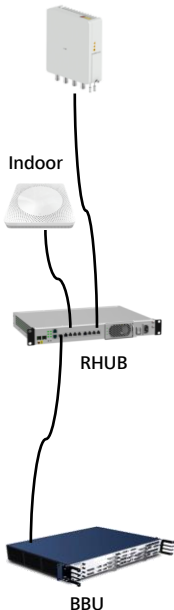
Micro RRU



RRU3230E L
RRU3930E UL
2*5W

Indoor Digitalization

LampSite – Mid/Large building



LampSite 1.0



pRRU3901

LampSite 1.5



pRRU3902



pRRU3907

LampSite 2.0



pRRU3911



pRRU3916

LampSite 3.0



pRRU5913

Pico – Small building



BTS3911B
2*2*125mW
Dual Band

Service Anchor

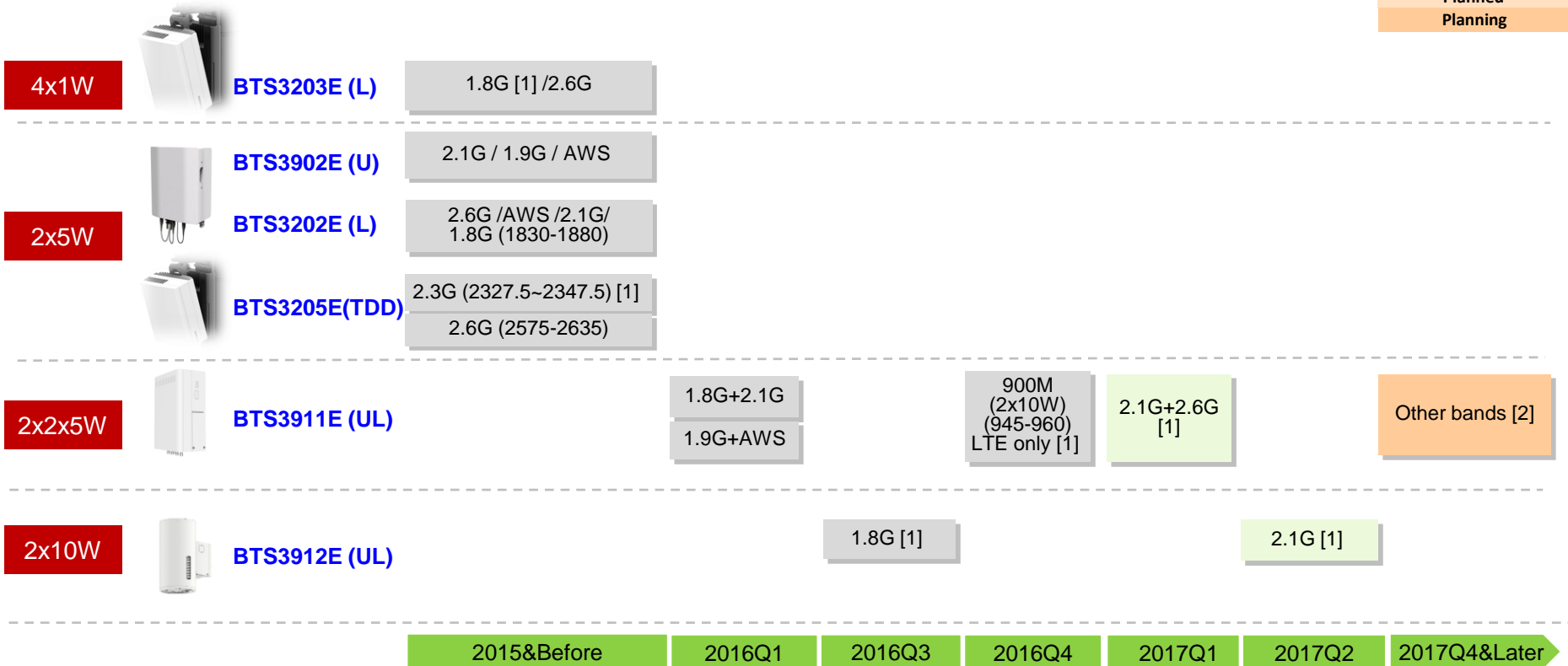


SVA3100/SVA3200

Note. Dates provided are TR5 dates

Micro Hardware Roadmap 1/2

Released
Ready for Contract
Planned
Planning

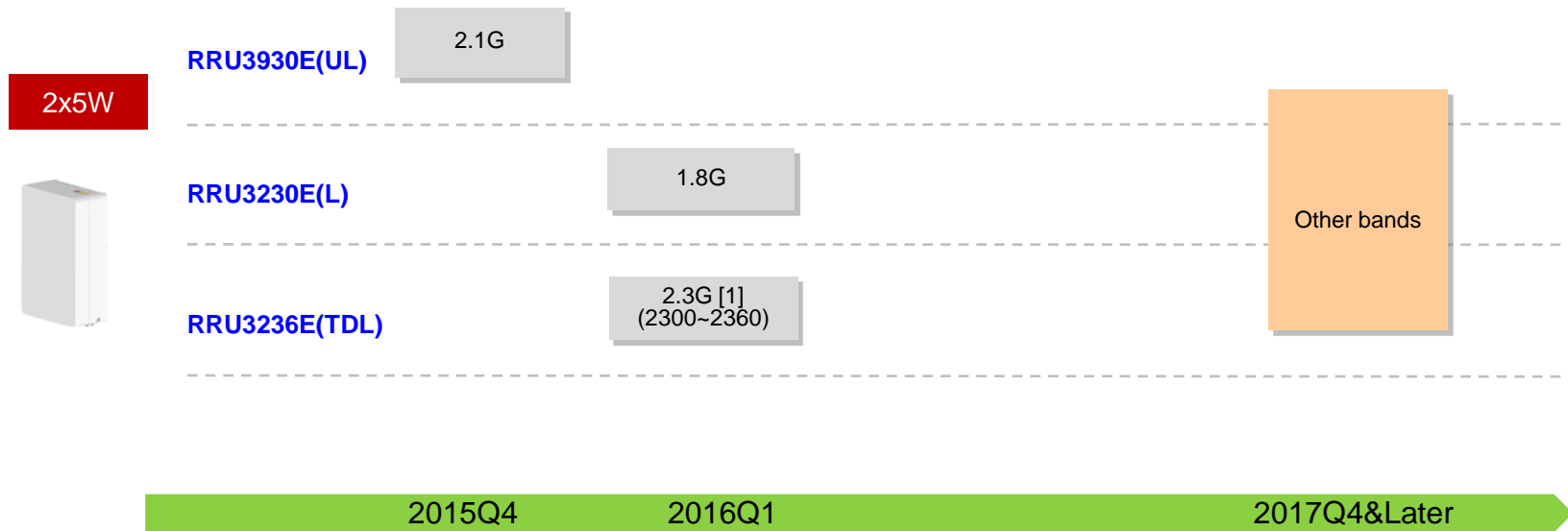


Note[1]: Status is TR5.

Note[2]: Other bands developing bases on customized requirement.

Micro Hardware Roadmap 2/2

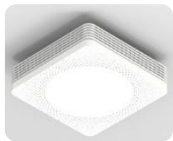
Released
Ready for Contract
Planned
Planning



Note[1]: Status is TR5.

Pico Hardware Roadmap

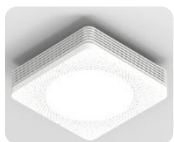
Released
Ready for Contract
Planned
Planning



BTS3911B

2x2x125mW
UMTS<E & WiFi
LTE: 384 RRC

1.9G+AWS+WiFi
2.1G+2.6G+WiFi
2.1G+1.8G+WiFi



BTS59XXB

LAA Supporting

2016Q2

2018Q4&later

LampSite Hardware Roadmap for Single Operator 1/2

Released
Ready for Contract
Planned
Planning



pRRU3901

- 2 bands +WiFi
- 2.6L, 3kg
- 2*1.25Gbps



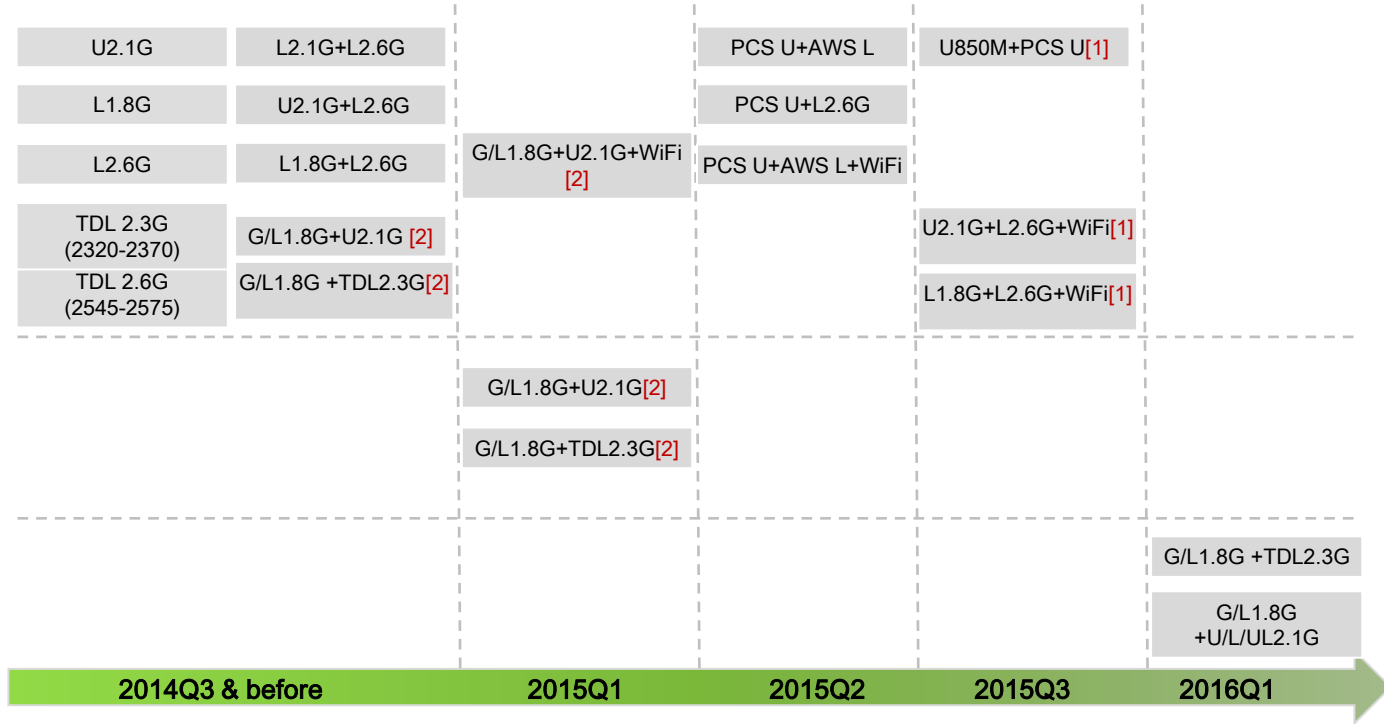
pRRU3902

- 2 bands
- 1.2L, 1kg
- 2*1.25Gbps



pRRU3907

- pRRU3902 Upgrade for outdoor
- 2 band,
 - 3.7L, ≤ 4kg



Note:[1] Status is TR5.

Note:[2] GSM/CDMA is DCU solution. 2. 2.1G/PCS/AWS support U/L or UL mode, 1.8G support G/L mode.

LampSite Hardware Roadmap for Single Operator 2/2

Released
Ready for Contract
Planned
Planning



pRRU3911

- 2 bands +Wi-Fi or 3Bands
- 1.6L, 1.8kg
- 2*1.25Gbps

Any 3 Bands From 900M/1.8G/2.1G/2.6G/WiFi

Any 3 Bands From 850M/1.8G/2.1G/TDD 2.3G/WiFi

Any 3 Bands From 900M/1.8G/2.1G/TDD2.6G (band41) [1]

Any 3 Bands From 1.8G/2.1G/TDD2.3G/LAA/WiFi [1]

Any 3 Bands From 800M/1.8G/2.1G/2.6G/WiFi [1]

Any 3 Bands From 850M/PCS/AWS/2.6G/WiFi [1]

Any 3 Bands From 1.8G/2.1G/2.6G/LAA/WiFi[1]



pRRU3916

- pRRU3911 Upgrade for outdoor
- 3 bands
 - 5.2L, <7kg

Any 3 Bands From 800M/1.8G/2.1G/2.6G[1]

Any 3 Bands From 900M/1.8G/2.1G/2.6G [1]

Any 3 Bands From 850M/1.9G/AWS/2.6G[1]



RHUB

- 8 Ethernet port
- Multi-Level Cascade

RHUB3908
8*1.25Gbps

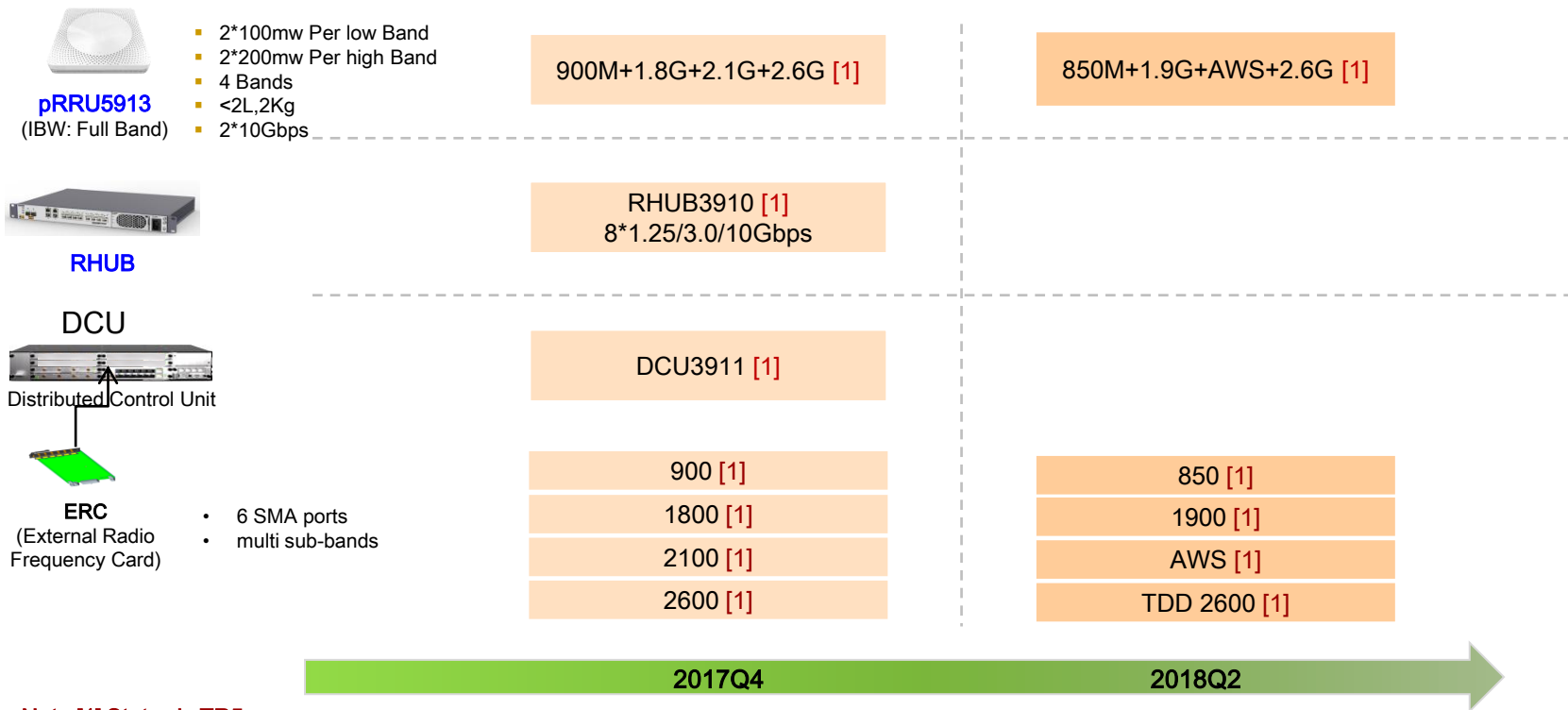
RHUB3918 [1]
8*1.25/3.0/10Gbps



Note:[1] Status is TR5.

LampSite Hardware Roadmap for Multiple Operator

Released
Ready for Contract
Planned
Planning



Note:[1] Status is TR5.

CONTENTS

- Radio Product Roadmap

 - MBTS

 - Radio Units

 - Active Antenna Units

 - Small cell

- Radio Controller Product Roadmap**

 - BSC6900/6910

 - SRC

BSC6900&BSC6910 Roadmap

BSC6900

SRAN 8.0

Dual Mode
 •5120 TRX + 24G (typical, on IP)

BSC Mode
 •8192 TRX (on IP)

RNC Mode
 •40Gbps lub throughput (DL+UL)
 •5300K BHCA

boards
 • EIUb (BSC)/ OIUb (BSC)/ PEUc

SRAN 9.0

boards
 •TNUb (BSC)
 •GCGb/GCUB
 •GOUe
 •XPUc (BSC)/SPUc

SRAN10.1

boards
 •DEUa: voice optimization(RNC)
 • ASUa (Built-in Coordinator)



BSC6910

SRAN 8.0

Dual Mode
 •8000 TRX + 90G (typical, on IP)

BSC Mode
 •24000 TRX(on IP)

RNC Mode
 •120Gbps lub throughput (DL+UL)
 •64000K BHCA

boards
 •EGPUa:CP and UP
 •EOMUa/EXOua
 •EXPUa (BSC)/ ENIUa/ESAUa

SRAN 9.0

BSC Mode
 •Up to 7000TRX(ABIS TDM + A TDM)

boards
 •GCGb/GCUB
 •GOUe

SRAN10.1

boards
 •DEUa: voice optimization(RNC)
 •SCUc: Switching Board

SRAN11.1

boards
 •EGPUB:CP,UP and Service awareness
 •EXPUB(BSC)

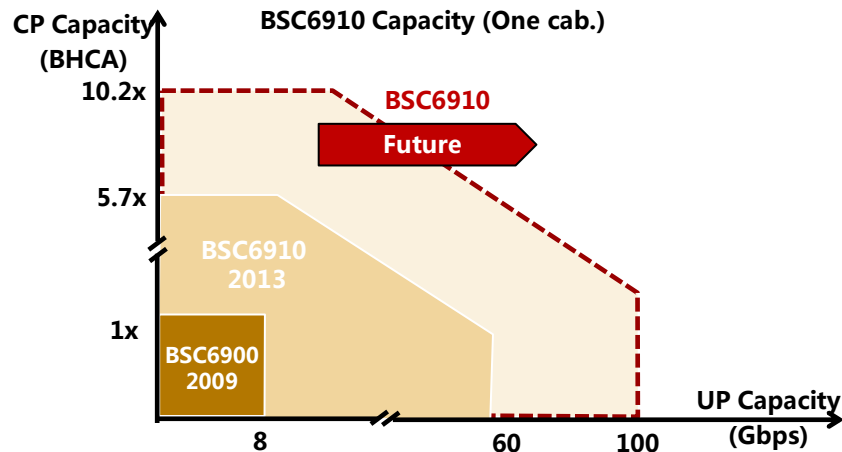
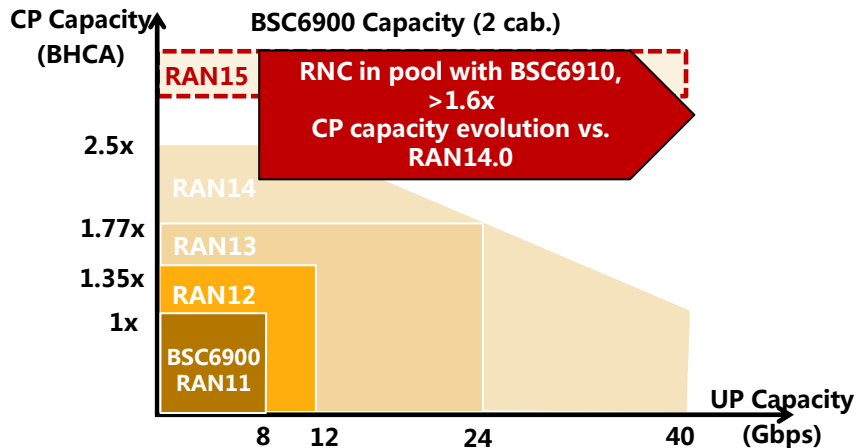
SRAN12.1

boards
 •EXOUB
 •FG2e

Note: All data is based on Huawei's traffic model
BSC Mode is based on 1 Cabinet and RNC/Dual Mode is based on 2 Cabinets



RNC Capacity Evolution



- ❑ BSC6900 capacity keeps improving continuously
- ❑ Flexible configuration principle, adaptive to various traffic model
- ❑ RNC in pool solution enable BSC6900 scale out capability, benefit from BSC6910 introduction

- ❑ BSC6910 is the first tera RNC in industry (Max. 2 Cab.)
- ❑ Dynamic CP/UP reconfiguration, maximize resource utilization according to offered traffic characteristics
- ❑ Capacity enhancement with software optimization and new hardware introduction

SRC Roadmap

Released
Ready for Contract
Planned
Planning



EGPUa



ASUa



2013Q2

SRAN8.0

- BSC6910&ECO6910&MAG9811 Co-cabinet

2014Q2

SRAN9.0

- BSC6910&ECO6910 Co-subrack

2015Q2

SRAN10.1

- BSC6900&ECO6910 Co-subrack

2017~

Future

- BSC6910&WLAN AC Co-subrack

Thank you

www.huawei.com

Copyright©2009 Huawei Technologies Co., Ltd. All Rights Reserved.
The information contained in this document is for reference purpose only, and is subject to change or withdrawal according to specific customer requirements and conditions.