iPECS is an Ericsson-LG Brand

ERICSSON | LG

Main Board Unit

(iPECS eMG100HW-TRA-01-002)

30 Aug, 2019

Ericsson-LG Enterprise

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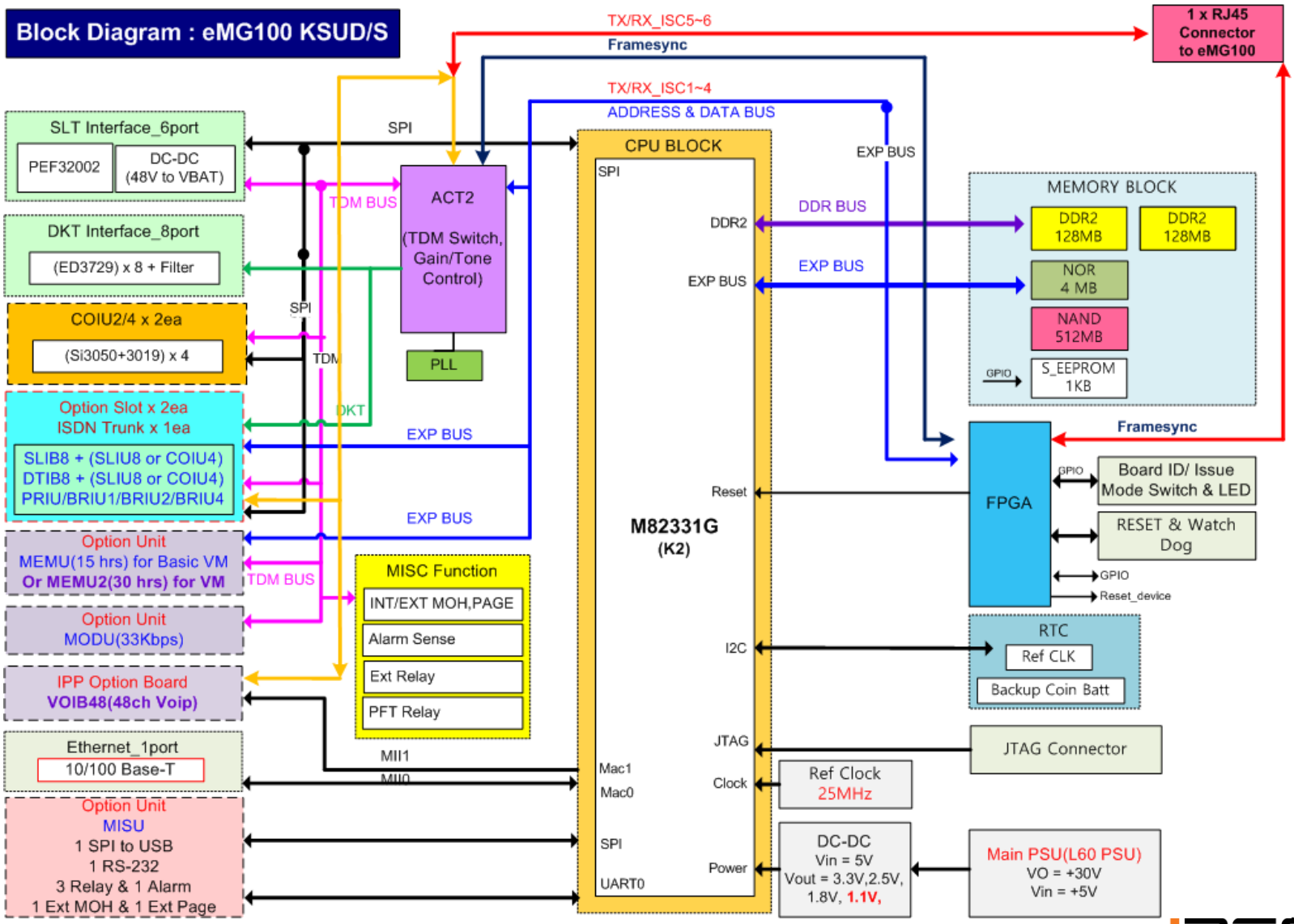
REVISION HISTORY

ISSUE	DATE	DESCRIPTION OF CHANGES
0.1	25-Jul-19	Preliminary release
0.2	23-Aug-19	Add Pin assignment
0.3	30-Aug-19	Error correction

Table of Contents

MBU Block Diagram



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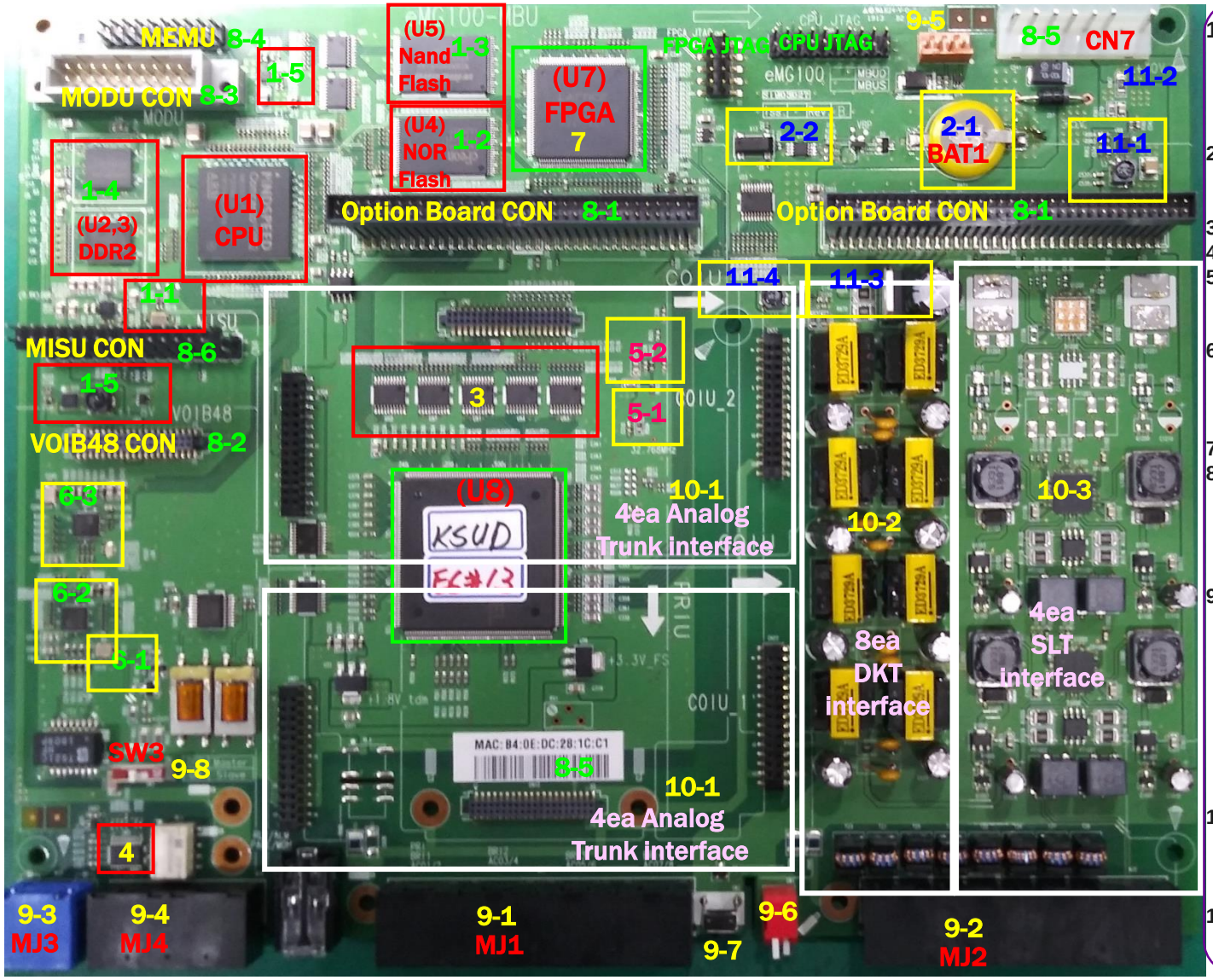
Board Layout-MBUD



1. CPU Block
   1) Clock input (25MHz)
   2) NOR Flash 3) Nand Flash
   4) DDR2 (2 ea)
   5) Power(+2.5V/+1.8V/+1.2V) for CPU
2. RTC block
   1) RTC back up battery
   2) RTC
3. Address & Data, CS buffer to Option
4. Highway & Framesync buffer to KSU
5. TDM Switch(U8)
   1) VCXO (32.768MHz), bottom
   2) PLL circuit, bottom
6. LAN PHY
   1) Clock input (25MHz)
   2) PHY Interface (MBU)
   3) PHY Interface (to VOIB48)
7. FPGA block
8. Board connection
   1) Option board conn.
   2) VOIB48 conn.
   3) MODU conn. 4) MEMU conn.
   5) PSU conn. 6) MISU conn.
9. Function ports & block
   1) Trunk MJ 2) STA MJ
   3) LAN
   4) TDM EXP conn. to KSU Exp
      RLY/ALM/Ext Page/Ext MOH
   5) Serial port
   6) Mode Switch
   7) Reset Switch
   8) Master / Slave mode switch
10. CO / Station Interface
    1) 2 x 4 Analog Trunk interface
    2) 8 DKT Interface
    3) 6 SLT Interface
11. Power
    1) +5V/+3.3V 2) -5V/+30V 3) VF(+30V)
    4) +1.5V for Duslic-xs2

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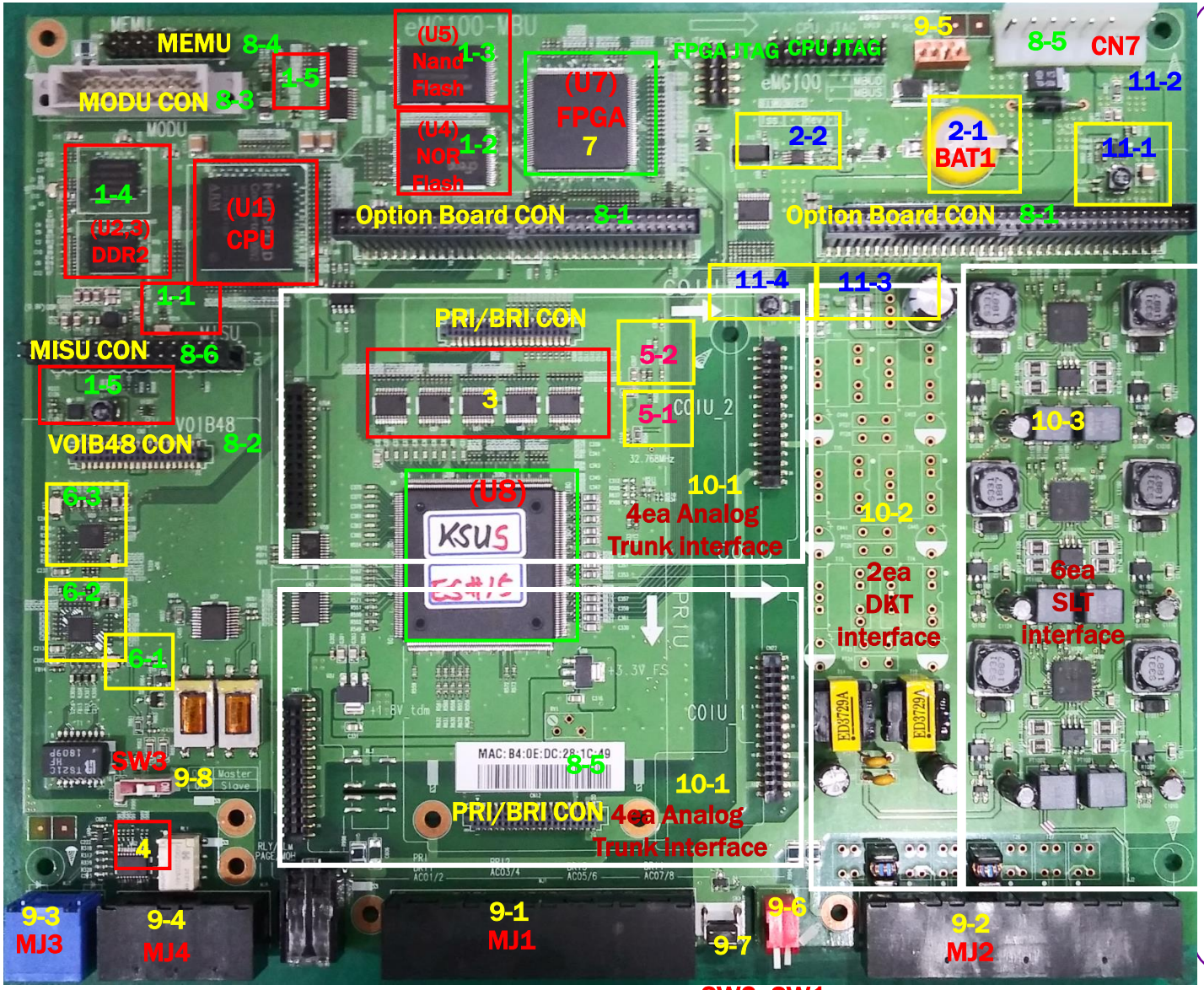
Board Layout-MBUS/MBUSC



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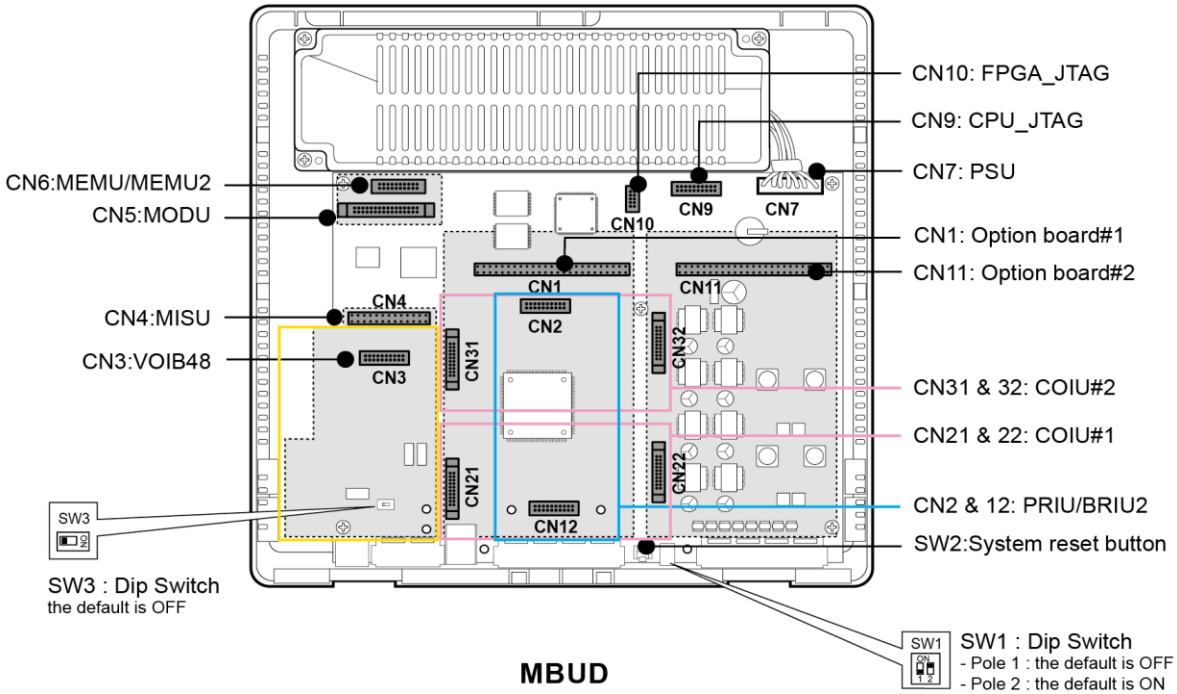
MBU configuration- KSUD,MBUD



MBUD

- 8 DKT and 4 SLT interface circuits
- 1 External Relay contact for LBC or General purpose
- 1 Alarm Detection circuit, 1 External Page port, and 1 External MOH port
- Internal MOH (13 music resources)
- Embedded VoIP channel(Max. 16 chs) or VM channel(Max. 16chs)
- Master Clock Generation & PLL circuit
- 1 RS-232C Interface circuit : 4 pin connector for GDK-TRC1
- 1 LAN Interface circuit
- PCM Voice Processing circuit (ACT2 - ASIC, voice switching, including DSP)
- PCM Tone Generation and PCM Gain Control
  - Tone (DTMF/CPT/FAX) detection and CID Signal (FSK/DTMF/RUS CID) detection
- 2 COIU slots, 1 BRIU/PRIU slot, 2 Extension Option Universal slots
- 1 MODU & 1 MEMU slot, 1 VOIB48 slot, 1 MISU slot

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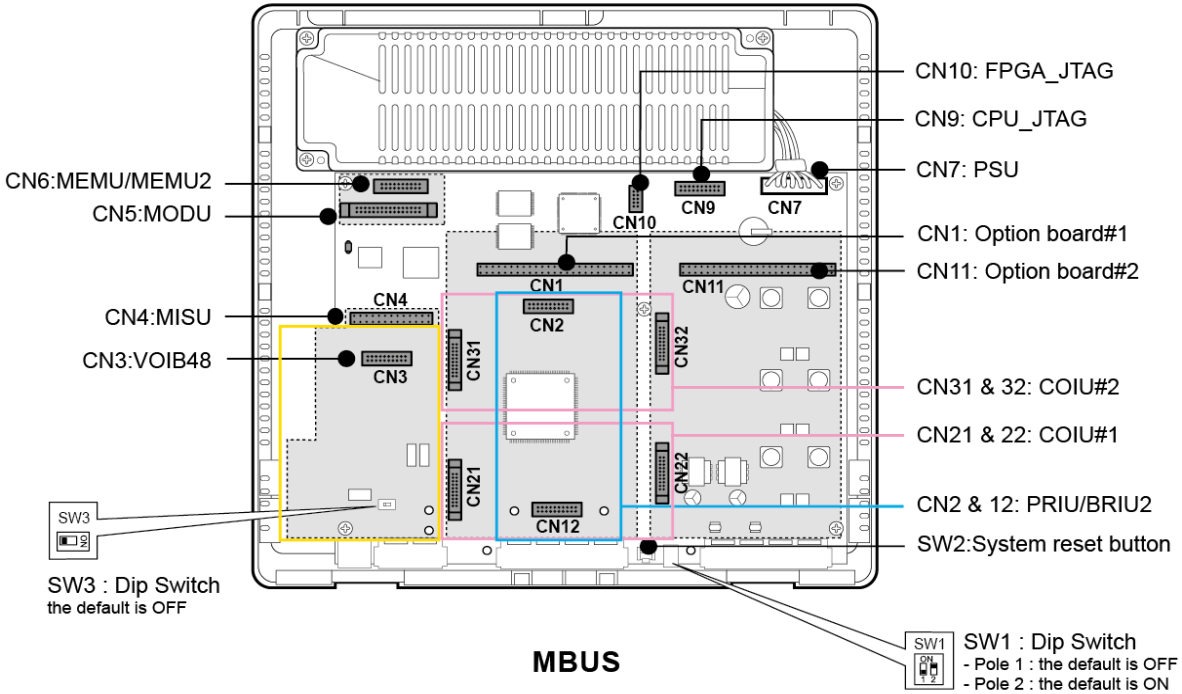
MBU configuration- KSUS,MBUS



MBUS

- 2 DKT and 6 SLT interface circuits
- 1 External Relay contact for LBC or General purpose
- 1 Alarm Detection circuit, 1 External Page port, and 1 External MOH port
- Internal MOH (13 music resources)
- Embedded VoIP channel(Max. 16 chs) or VM channel(Max. 16chs)
- Master Clock Generation & PLL circuit
- 1 RS-232C Interface circuit : 4 pin connector for GDK-TRC1
- 1 LAN Interface circuit
- PCM Voice Processing circuit (ACT2 - ASIC, voice switching, including DSP)
- PCM Tone Generation and PCM Gain Control
  - Tone (DTMF/CPT/FAX) detection and CID Signal (FSK/DTMF/RUS CID) detection
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Switch & LEDs

MBU SW1 – 2-pole Dip switch, LEDs

MBU SW1 – 2-pole Dip switch

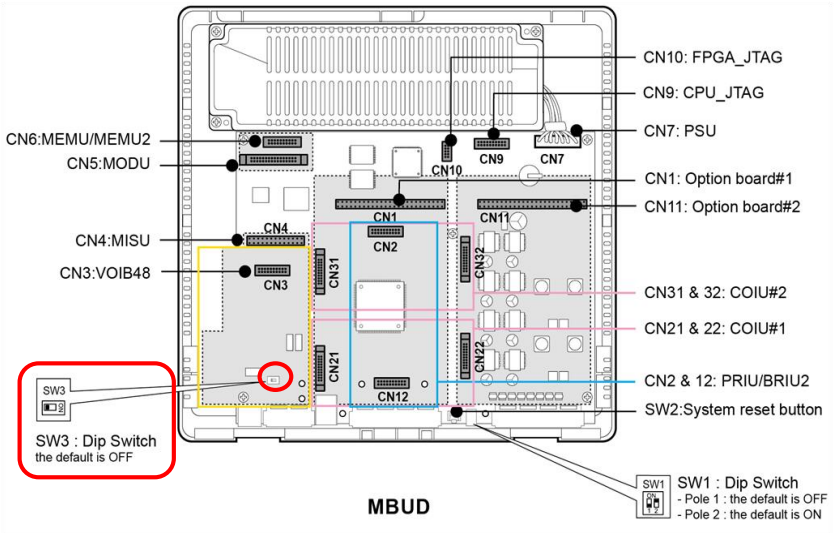
Pole	Function	Switch State		Remarks
		ON	OFF	
1	Database Write protection	No admin allowed	Admin allowed	Default = OFF
2	Initialization for Database	Initialize Database on reset	Use stored Database	Default = ON

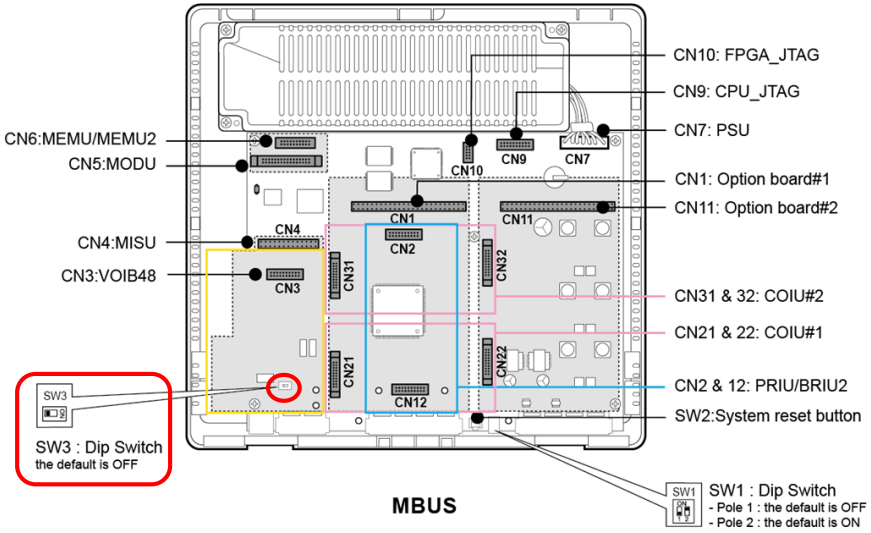
MBU LED (Color) status

LED	Color	Description
LD1 (TMR)	Pure Green	Flash 300ms ON and OFF, normal operation
LD2 (CALL)	Pure Green	Call Task, Call event status
LD3(SYNC)	Blue	External Clock Synchronization · ON : PLL circuit sync to ISDN interface clock · OFF : PLL circuit sync to internal clock
LD4(PWR)	Blue	System Powered ON Indication
LD5	Pure Green	Flash 300ms ON and OFF, normal operation, same as LD1
LD6	Blue	Internal VOIB48 Link status · ON : Internal LAN Linked with VOIB48 · OFF : Internal LAN Link disconnected

Switch & LEDs

MBU SW3 - Select Master / Slave DIP switch





Function	Switch State		Remarks
	ON	OFF	
Clock Master / Slave mode selection	Slave Mode	Master Mode	Default = OFF

SW3 is used for eMG100 KSU expansion
System clock is controlled by master MBU

If expansion is not used then leave it as default position “OFF”

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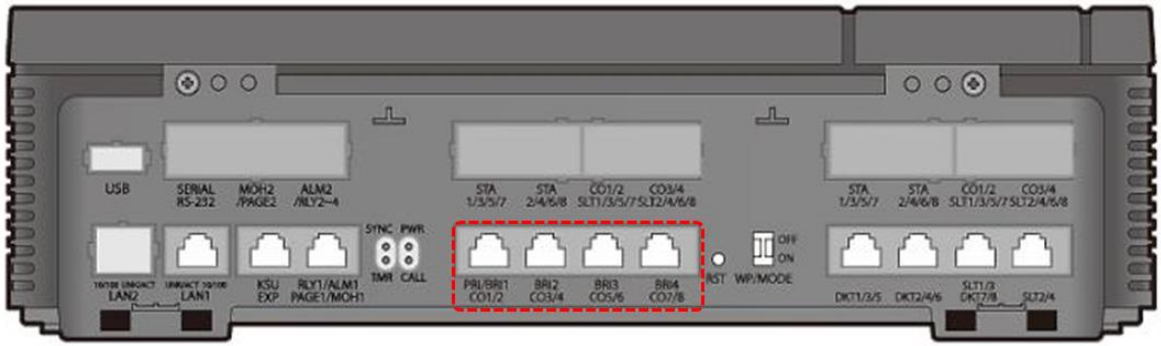
Modular Jack Wiring

MBU Trunk interface slot



Trunk interface Board	Modular jack	Pin assignment	
COIU2/4	MJ1-1 MJ1-2 MJ1-3 MJ1-4 PRI/BRI1 BRI2 BRI3 BRI4 **CO1/2 CO3/4 CO5/6 CO7/8**	MJ1-1: CO1 (7,8), CO2 (4,5) MJ1-2: CO3 (7,8), CO4 (4,5)	1st COIU2/4
		MJ1-3: CO5 (7,8), CO6 (4,5) MJ1-4: CO7 (7,8), CO8 (4,5)	2nd COIU2/4
BRIU1/2/4	MJ1-1 MJ1-2 MJ1-3 MJ1-4 PRI/**BRI1** **BRI2** **BRI3** **BRI4** CO1/2 CO3/4 CO5/6 CO7/8	MJ1-1: BRI1 (3, 4, 5, 6: TX+, RX+, RX-, TX-) MJ1-2: BRI2 (3, 4, 5, 6: TX+, RX+, RX-, TX-) MJ1-3: BRI3 (3, 4, 5, 6: TX+, RX+, RX-, TX-) MJ1-4: BRI4 (3, 4, 5, 6: TX+, RX+, RX-, TX-)	
PRIU	MJ1-1 MJ1-2 MJ1-3 MJ1-4 **PRI**/BRI1 BRI2 BRI3 BRI4 CO1/2 CO3/4 CO5/6 CO7/8	MJ1-1: PRI1 (1, 2, 4, 5: RX+, RX-, TX+, TX-) MJ1-2: Unused MJ1-3: Unused MJ1-4: Unused	

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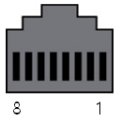
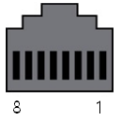
Modular Jack Wiring

MBU Trunk interface slot – Pin Assignment

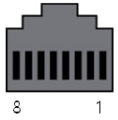
MJ1-1~4 Wiring : Analog CO Line

Connector	Pin-out	Pin Number	Signal Name
RJ45		1,2,3, 6	Reserved
		4,5	CO2-R, CO2-T
		7,8	CO1-R, CO1-T

MJ1-1~4 Wiring : BRI Line

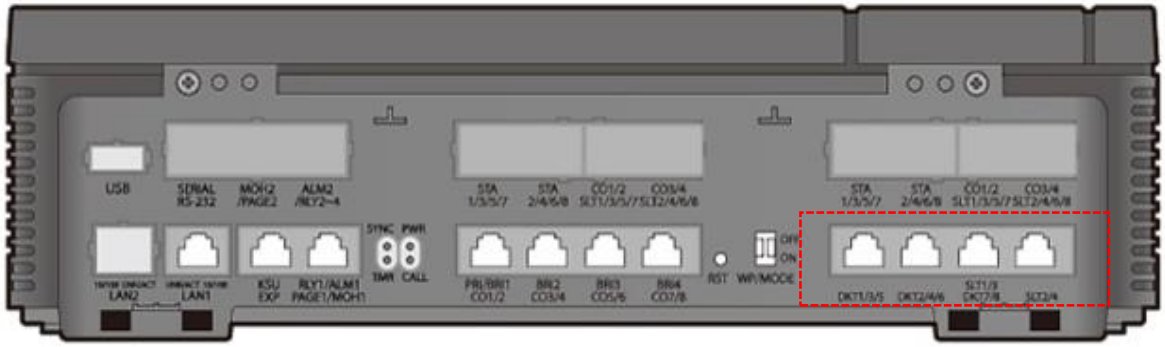
Connector	Pin-out	Pin Number	Signal Name	Function
RJ45		1,2,7,8	Reserved	
		3	TX+	Transmit Data
		4	RX+	Receive Data
		5	RX-	Receive Data
		6	TX-	Transmit Data

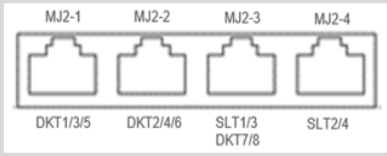
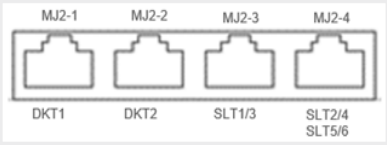
MJ1-1 Wiring : PRI Line

Connector	Pin-out	Pin Number	Signal Name	Function
RJ45		1	RX+ / TX+	TE / NT
		2	RX- / TX-	TE / NT
		4	TX+ / RX+	TE / NT
		5	TX- / RX-	TE / NT
		3, 6, 7, 8	N/A	

Modular Jack Wiring

MBU Extension interface slot



Basic extension	Modular Jack	Pin assignment
KSU-D		MJ2-1: DKT1(4,5), DKT3(7,8), DKT5(1,2), N.C(3,6) MJ2-2: DKT2(4.5), DKT4(7,8), DKT6(1,2), N.C(3,6) MJ2-3: SLT1(4,5), DKT7(7,8), DKT8(1,2), SLT3(3,6) MJ2-4: SLT2(4.5), N.C(7,8), N.C(1,2), SLT4(3,6)
KSU-S		MJ2-1: DKT1(4,5), N.C(7,8), N.C(1,2), N.C(3,6) MJ2-2: DKT2(4.5), N.C(7,8), N.C(1,2), N.C(3,6) MJ2-3: SLT1(4,5), N.C(7,8), N.C(1,2), SLT3(3,6) MJ2-4: SLT2(4.5), SLT5(7,8), SLT6(1,2), SLT4(3,6)

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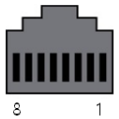
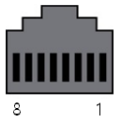
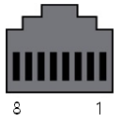
Modular Jack Wiring

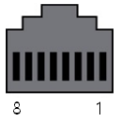
MBU Extension interface slot – Pin Assignment

MJ2 Wiring : for KSUD

Connector	Pin-out	Pin Number	Signal Name
RJ45 (MJ2-1)		4,5	DKT1-T, DKT1-R
		7,8	DKT3-T, DKT3-R
		1,2	DKT5-T, DKT5-R
		3,6	N.C

Connector	Pin-out	Pin Number	Signal Name
RJ45 (MJ2-2)		4,5	DKT2-T, DKT2-R
		7,8	DKT4-T, DKT4-R
		1,2	DKT6-T, DKT6-R
		3,6	N.C

Connector	Pin-out	Pin Number	Signal Name
RJ45 (MJ2-3)		4,5	SLT1-T, SLT1-R
		7,8	DKT7-T, DKT7-R
		1,2	DKT8-T, DKT8-R
		3,6	SLT3-T, SLT3-R

Connector	Pin-out	Pin Number	Signal Name
RJ45 (MJ2-4)		4,5	SLT2-T, SLT2-R
		7,8	N.C
		1,2	N.C
		3,6	SLT4-T, SLT4-R

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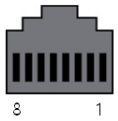
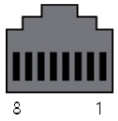
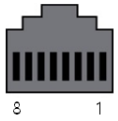
Modular Jack Wiring

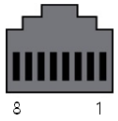
MBU Extension interface slot – Pin Assignment

MJ2 Wiring : for KSUS

Connector	Pin-out	Pin Number	Signal Name
RJ45 (MJ2-1)		4,5	DKT1-T, DKT1-R
		7,8	N.C
		1,2	N.C
		3,6	N.C

Connector	Pin-out	Pin Number	Signal Name
RJ45 (MJ2-2)		4,5	DKT2-T, DKT2-R
		7,8	N.C
		1,2	N.C
		3,6	N.C

Connector	Pin-out	Pin Number	Signal Name
RJ45 (MJ2-3)		4,5	SLT1-T, SLT1-R
		7,8	N.C
		1,2	N.C
		3,6	SLT3-T, SLT3-R

Connector	Pin-out	Pin Number	Signal Name
RJ45 (MJ2-4)		4,5	SLT2-T, SLT2-R
		7,8	SLT5-T, SLT5-R
		1,2	SLT6-T, SLT6-R
		3,6	SLT4-T, SLT4-R

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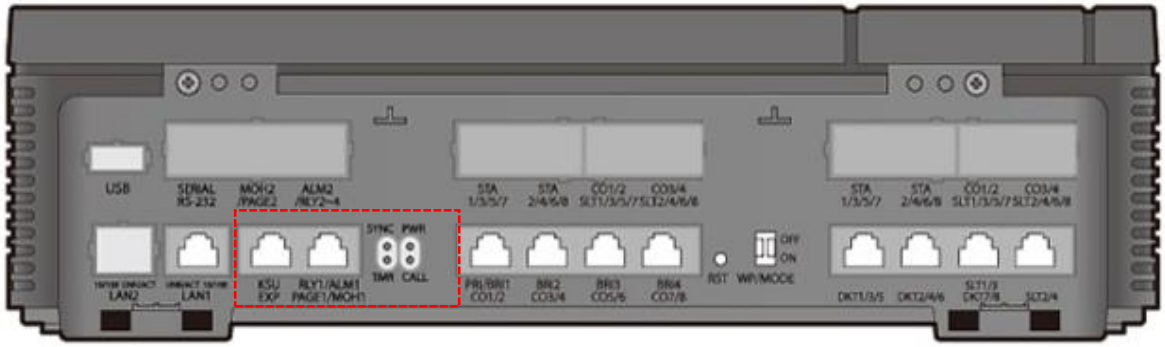
Modular Jack Wiring

MBU MISC slot



MISC	Modular jack	Pin assignment
MBU	MJ3 MJ4-1 MJ4-2 LAN1 KSU EXP RLY1/ALM1 PAGE1/MOH1	M3 : 1,2,3,6 (TX+, TX-, RX+, RX-) M4-1 : Frame(8.7), ISC6(6.2), ISC5(3.1), GND(5.4) M4-2 : RLY(8.7), ALM(6.5), PAGE(4.3), MOH(2.1)

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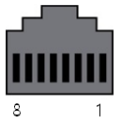
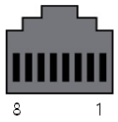
Modular Jack Wiring

MBU MISC slot – Pin Assignment

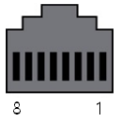
MJ3 Wiring : LAN port

Connector	Pin-out	Pin Numbers	Signal Name	Function
RJ45		4,5,7,8	Reserved	
		1	TX+	Transmit Data
		2	TX-	Transmit Data
		3	RX+	Receive Data
		6	RX-	Receive Data

MJ4-1 Wiring : KSU Expansion

Connector	Pin-out	Pin Number	Signal Name	Function
RJ45		8	FRAMERX	Framesync RX signal
		7	FRAMETX	Framesync TX signal
		6	TDM highway tx6	TDM stream TX 6
		5	GND	Ground
		4	GND	Ground
		3	TDM highway tx5	TDM stream TX 5
		2	TDM highway rx6	TDM stream RX 6
		1	TDM highway rx5	TDM stream RX 5

MJ4-2 Wiring : Relay / Alarm / Ext PAGE / Ext MOH

Connector	Pin-out	Pin Number	Signal Name	Function
RJ45		8	RELAY_T	Relay Contact Tip
		7	RELAY_R	Relay Contact Ring
		6	ALARM_T	Alarm Detection Tip
		5	ALARM_R	Alarm Detection Ring
		4	EXTPAGE_T	External Page Tip
		3	EXTPAGE_R	External Page Ring
		2	EXTMOH_T	External MOH Tip
		1	EXTMOH_R	External MOH Ring

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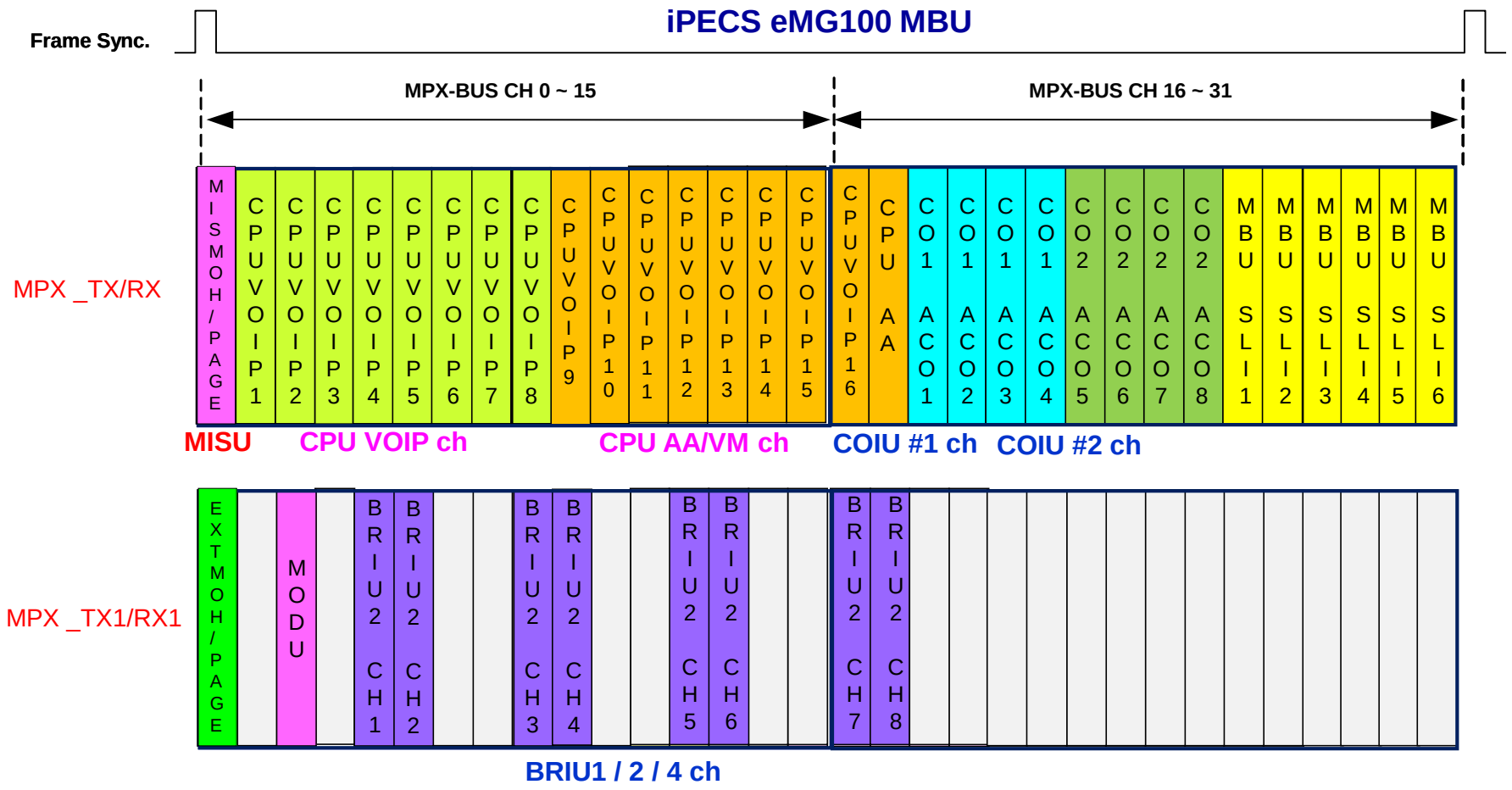
TDM Bus Time Slot Assignment

MBU



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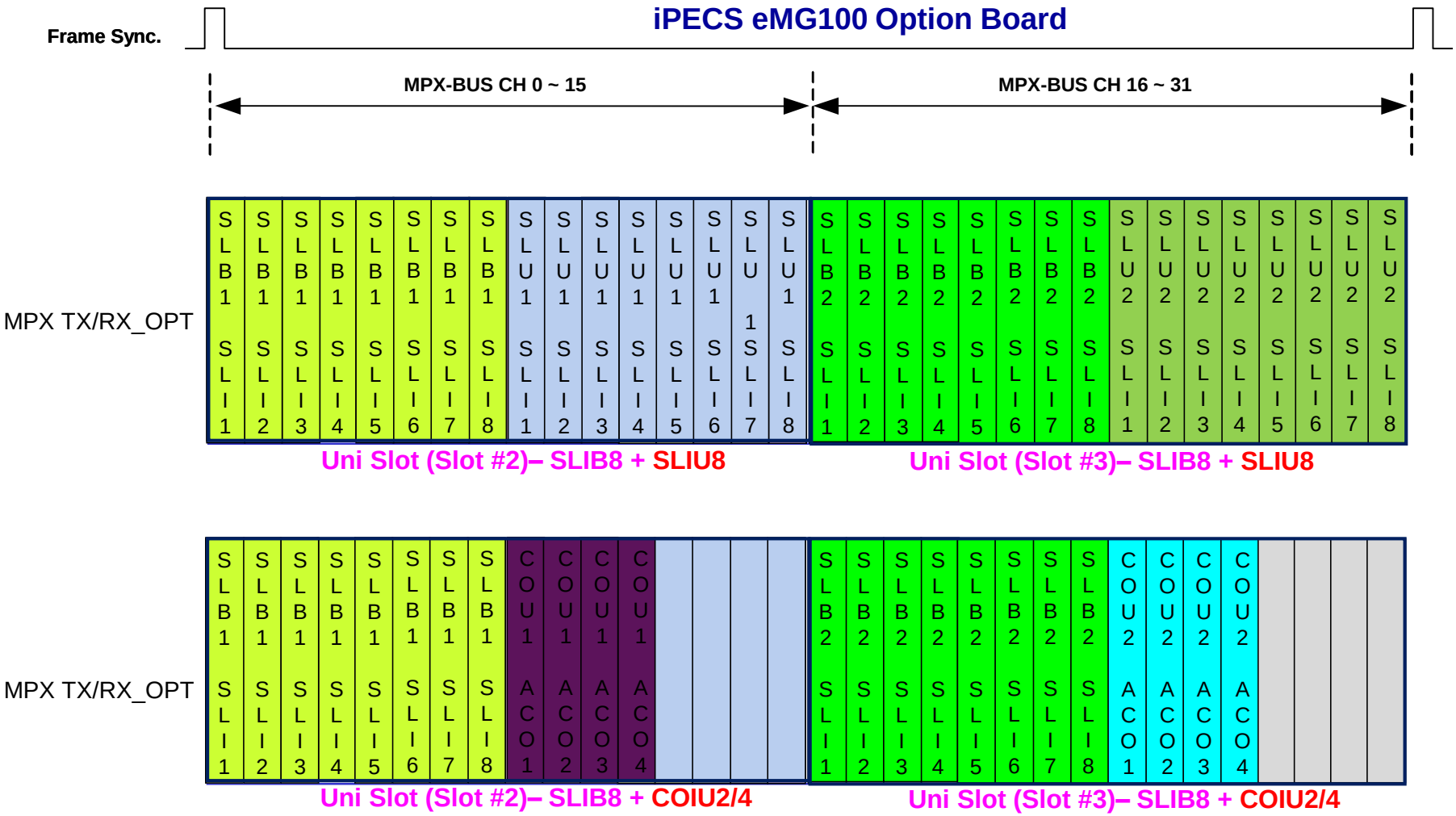
TDM Bus Time Slot Assignment

Option Board



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Highway Time Slot Assignment

System Voice TX/RX Highway architecture

MBU ACT2	Additional	VOIB48	2'nd KSU	PRIU
TX/RX_ISC0		-	-	-
TX/RX_ISC1		-	-	RX/TX_ISC1
TX/RX_ISC2		RX/TX_ISC2	-	-
TX/RX_ISC3		-	-	-
TX/RX_ISC4		-	-	RX/TX_ISC4
TX/RX_ISC5		-	RX/TX_ISC5	-
TX/RX_ISC6			RX/TX_ISC6	-
TX/RX_ISC7	For Option board	-	-	-
TX/RX_ISC8		-	-	-
TX/RX_ISC9		-	-	-
TX/RX_ISC10	Internal Crosed	-	-	-
TX/RX_ISC11		-	-	-
TONE_ISC		-	-	-