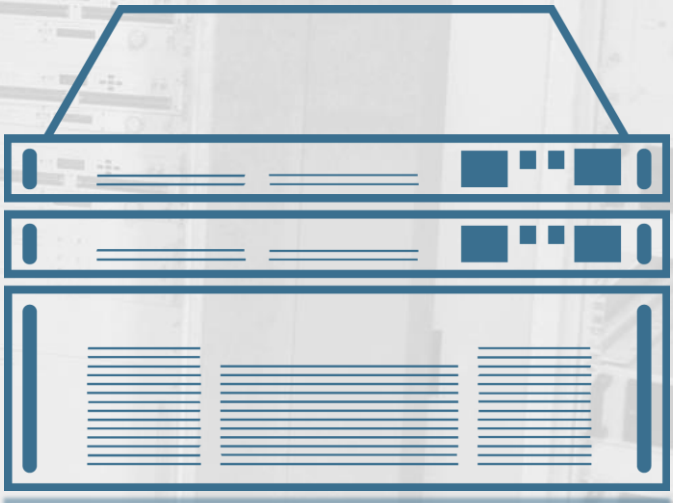
CTE

Digital Broadcast

LEADER IN BROADCASTING RADIO AND TELEVISION TRANSMITTERS



PRODUCT PRESENTATION 2016

CTE Digital Broadcast S.r.l.
Sede Legale - Registered Office: Viale Piave, 15 - I-20129 Milano (MI) - Italy
Sede Operativa - Manufacturing and Components Warehouse: Via E. Mattei, 7 - I-30039 Stra (Venice) - Italy
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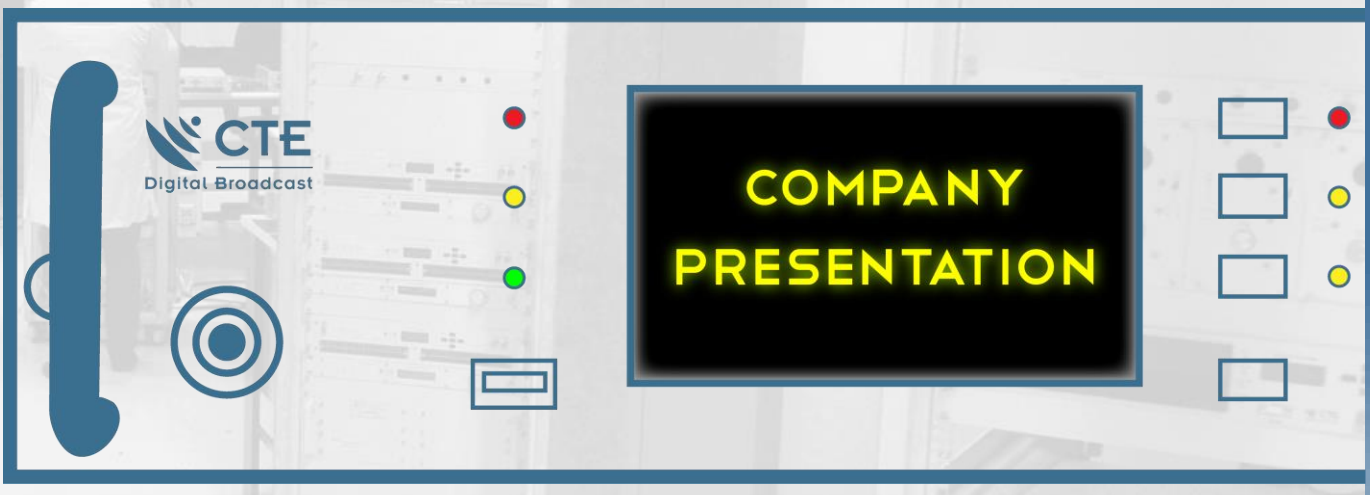
Cap. Soc.: € 100.000,00 I.V.- **C.F.:** Registro Imprese Milano 04912770288 - **REA:** MI 2081436 - **P. IVA:** EU VAT IT 04912770288

COMPANY PRESENTATION

CTE
Digital Broadcast



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COMPANY PRESENTATION

CTE DIGITAL BROADCAST IN SHORT

CTE Digital Broadcast

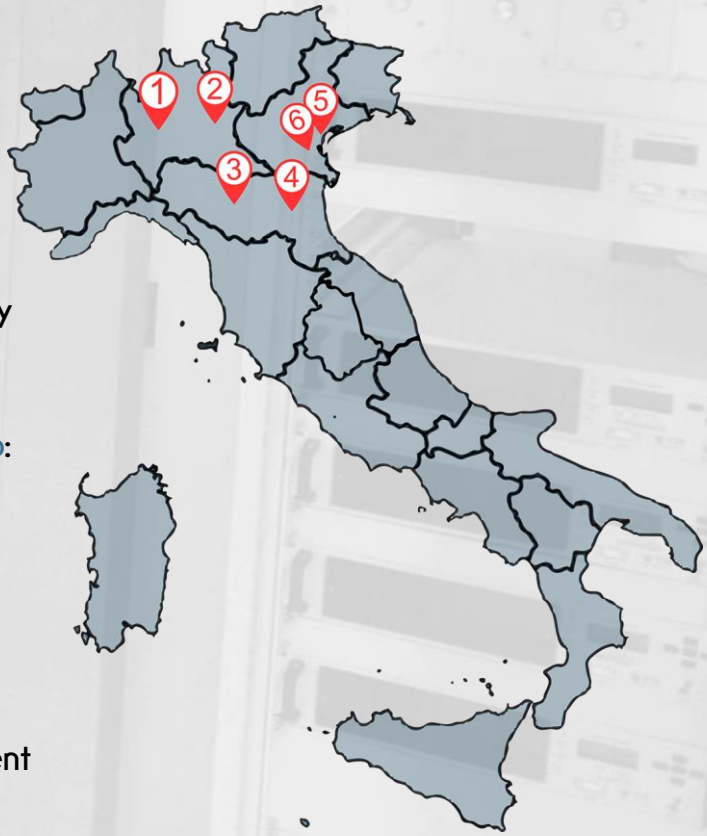
The acquisition of the activity of the well known ELIT Elettronica Italiana S.p.A. company (in its turn founded in 1946 as a major supplier to RAI-RAIWAY) and the acquisition of Teko Telecom S.r.l. Bologna grant to CTE Digital Broadcast more than 60 years of experience and service.

CTE Digital Broadcast has shaped the history of broadcasting through a solid and well reputed capacity in designing and producing transmission equipment and audio and video transreceiving apparatus for major operators on the world market.

Today, CTE Digital Broadcast, with its partners Meta System, CTE International, has invested considerable resources in research and development. In its drive to consolidate its position as leader in its field CTE Digital Broadcast has developed and manufactured various models of transmitters and repeaters with the new digital DAB/DMB and DVB-T/H technologies. The excellent quality of the products and competitive prices allow CTE to distribute in all the EU countries, as well as in Scandinavia, Eastern Europe, the Middle East, North and South America, Africa, New Zealand, Australia, the Far East and China.

OUR DEPARTMENTS:

1. MILAN: Legal Office
2. BRESCIA: DTV-DAB, R&D + Testing
3. REGGIO EMILIA: Commercial Offices by CTE Int'l (Partner)
4. BOLOGNA - San Giovanni in Persiceto: Industrial Production by MetaSystem Group (Partner)
5. VENICE - Stra: Manufacturing and Components Warehouse
6. Padua - Brugine: Mechanics Department by PMW S.r.l. (Partner)



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COMPANY PRESENTATION

CTE DIGITAL BROADCAST IN VERY (VERY) SHORT

CTE Digital Broadcast

- High Efficiency: on WHOLE RANGE (low, medium and high power)
- High Efficiency: BROADBAND UHF (NO manual tuning of frequency)
- High Efficiency: COMPACT DESIGNS: 130W in 1U, 400W in 2U, 1500W in 3+1U, etc.
- High Efficiency: LOW HEAT DISSIPATION for increased Transmitter lifetime and reduced Air Con
- Specific "no cable" design: EASY MAINTENANCE, easy as Lego
- Transmitters designed, re-thought and re-engineered FROM SCRATCH!

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COMPANY PRESENTATION

ENGINEERING, AS A CULTURE

CTE Digital Broadcast

In our niche business, we believe in engineering. Every new design, every new development should be re-invented. We should always think about how to remake things easier, things simpler to use for our customers.

We believe in beauty of our designs. Our customers won't sometimes even see it as most of them do not open our devices to contemplate the inside engineering. But still, this is how we want things to be done.

That is how we came to the "zero cable" philosophy of our designs. From start, our engineers were challenged to reinvent transmitters that would strictly ban any cable internally.

Challenge accepted!

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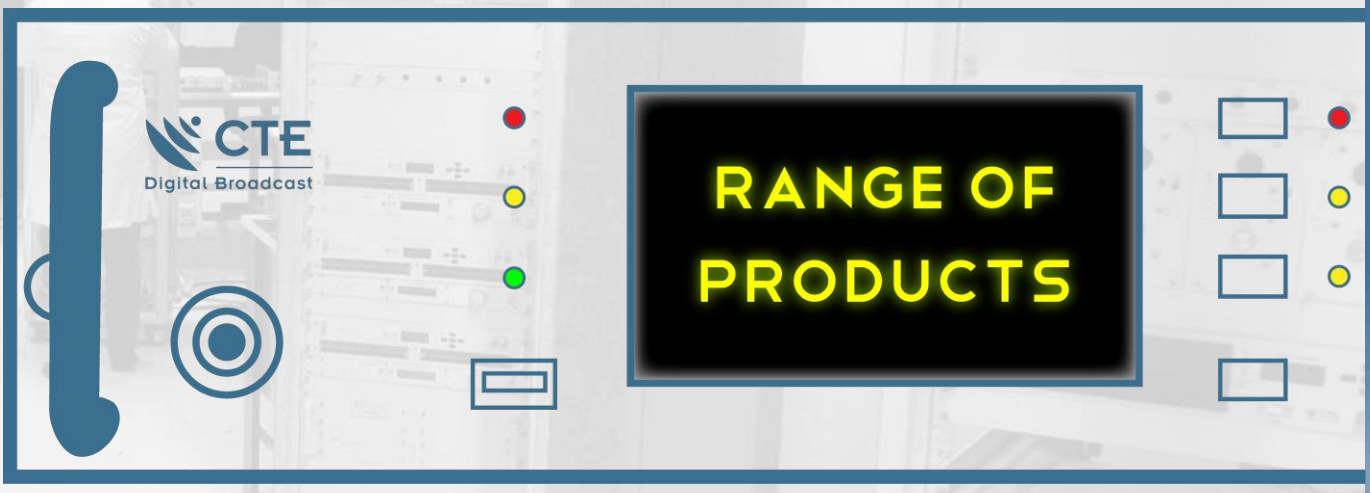
RANGE OF PRODUCTS

CTE
Digital Broadcast



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BLUETECH

CTE
Digital Broadcast

"BLUETECH": SIMPLY INNOVATIVE!

BLUETECH represents the new set of innovative ideas implemented by "CTE Digital Broadcast" both for TV and FM transmitters: energy saving, small footprint, compact design, low operating cost, long-life duration are the most important benefits granted for a more sustainable broadcasting.

BLUETECH

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MODELS

CTE
Digital Broadcast

D-30 / D-50 / ECO-80 / ECO-130

BLUETECH

130 W

80 W

50 W

30 W

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MODELS

CTE
Digital Broadcast

D-30 / D-50 / ECO-80 / ECO-130

KEY FEATURES

- Available output power: 30W – 50W – 80W – 130W rms
- High Efficiency, wide band and broadband UHF
- Adaptive pre-correction circuits with MER up to 42 dB
- ASI + IP + DVB-S/S2 + RF input interfaces available
- Transmitter, Repeater, Transposer, Re-generative Gap Filler
- Hot Swappable Power Supply and RF amplifier
- DVB-T/H/T2, ISDB-Tb, DAB+/DMB, Analog for DualCast applications

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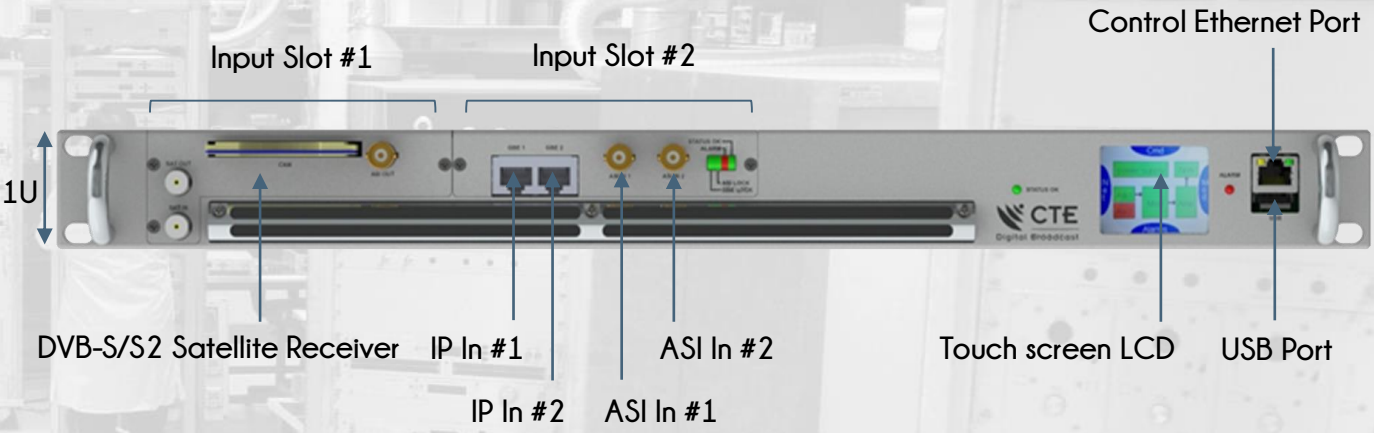
MODELS

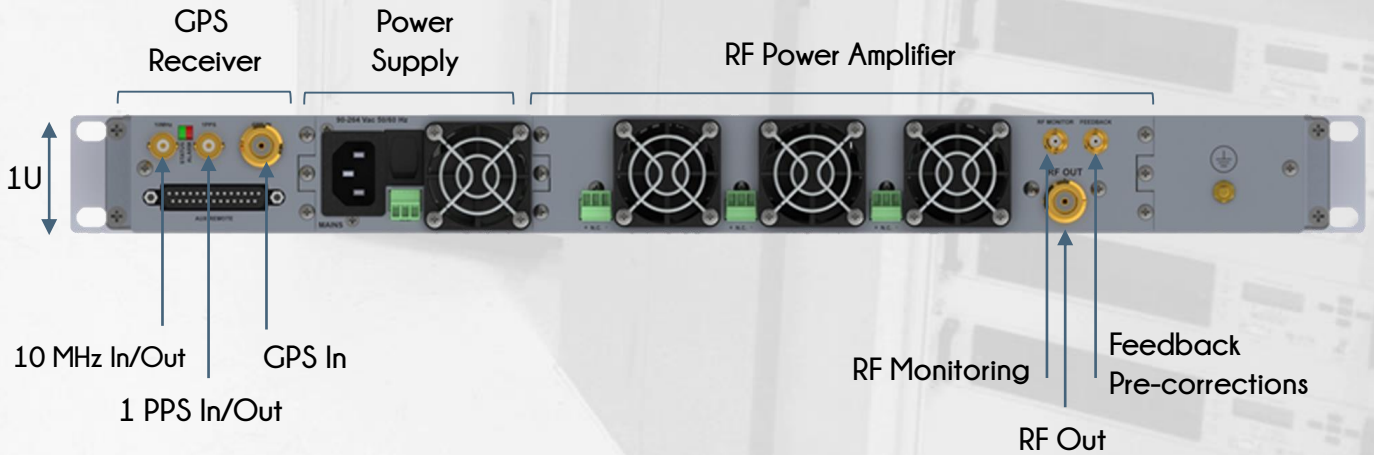
CTE Digital Broadcast

D-30 / D-50 / ECO-80 / ECO-130

FRONT PANEL



REAR PANEL



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MODELS

CTE
Digital Broadcast

D-30 / D-50 / ECO-80 / ECO-130

1 + DVB-S/S2 Rx + 2 x ASI + 2 x GbE

1 x DVB-S/S2 Rx

1 x DVB-S/S2 Rx + 4 x ASI

1 x RF

2 x GbE + 2 x ASI

4 x ASI + Analog

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ISDB-Tb TRANSMITTERS

CTE Digital Broadcast

KEY FEATURES for ISDB-Tb Version

- Dual Mode: Analogue NTSC/PAL – Digital ISDB-Tb, DVB-T/T2, ATSC
- SFN: Static delay and relative synchronization
- REMUX Option with following functions:
  - Layer combiner: A/B/C
  - IP Insertion
  - Program Filtering

BLUETECH

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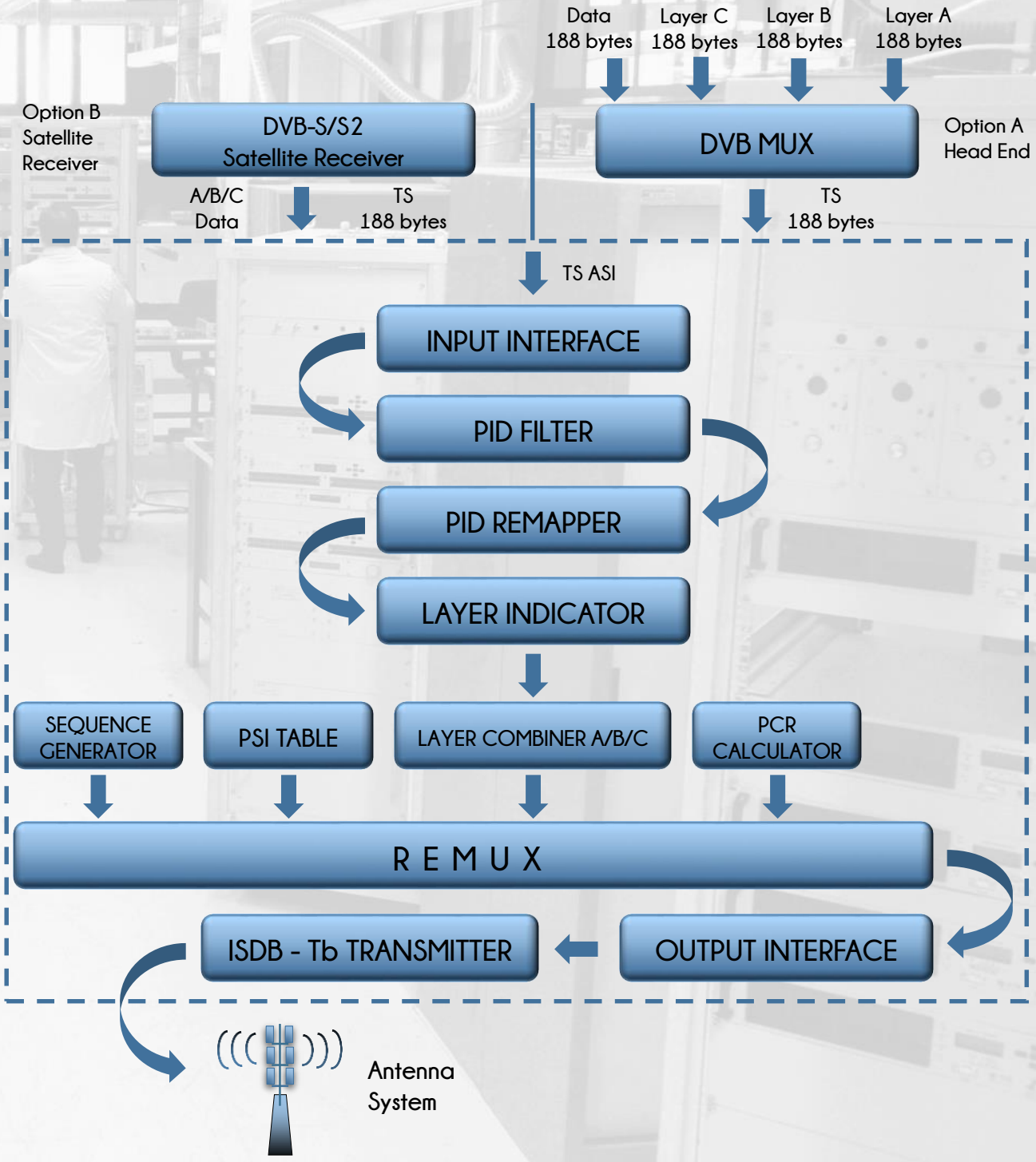
ISDB-Tb TRANSMITTERS

CTE Digital Broadcast

ISDB-Tb EMBEDDED REMUX



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MODELS

CTE
Digital Broadcast

ECO-200 /ECO-350 / ECO-350-2PS / ECO-600

BLUETECH

600 W

400 W

200 W

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MODELS

CTE
Digital Broadcast

ECO-200 /ECO-350 / ECO-350-2PS / ECO-600

KEY FEATURES

- Available output power: 200W (2U) – 400W (2U or 3U) – 600W (3U)
- High Efficiency, wide band and broadband UHF
- Adaptive pre-correction circuits with MER up to 38 dB typical
- ASI + IP + DVB-S/S2 + RF input interfaces available
- Transmitter, Repeater, Transposer, Re-generative Gap Filler
- Hot Swappable Power Supply from front panel
- DVB-T/H/T2, ISDB-Tb, DAB+/DMB, Analog for DualCast applications

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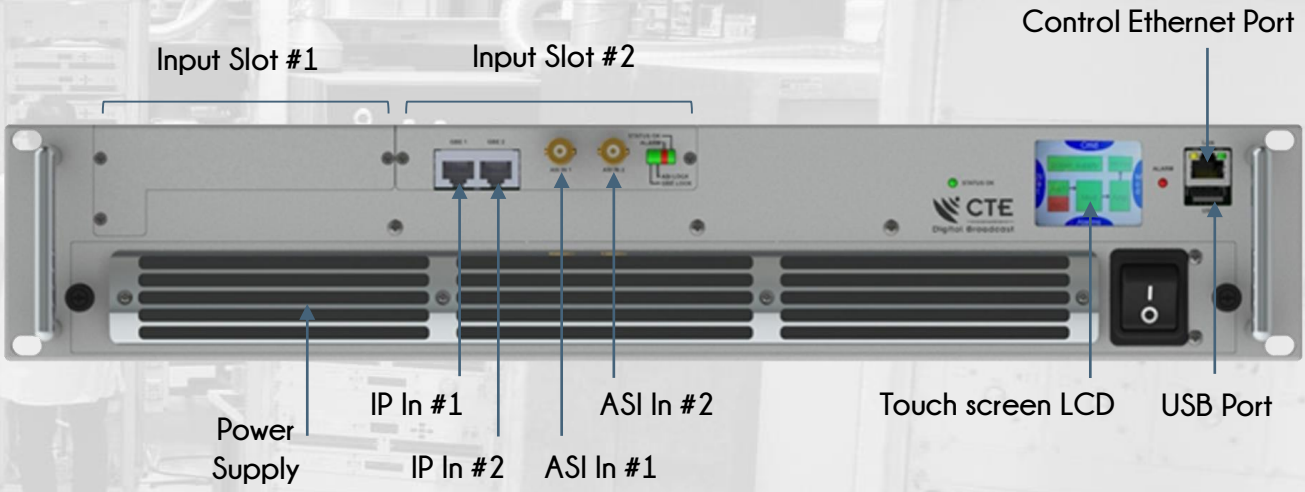
MODELS

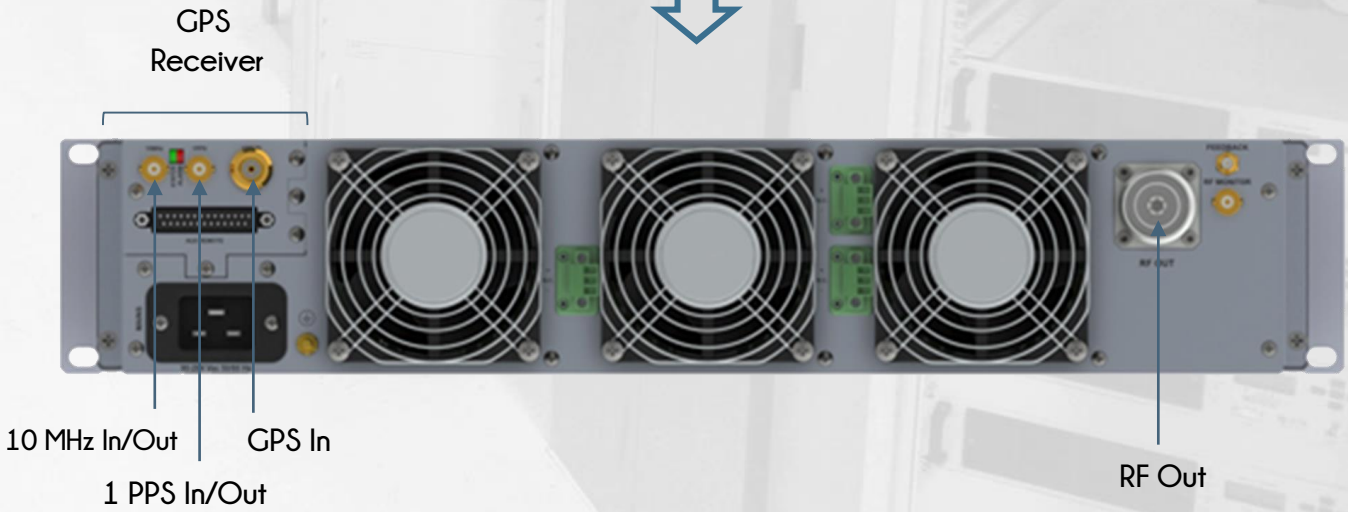
CTE Digital Broadcast

ECO-200 /ECO-350 / ECO-350-2PS / ECO-600

FRONT PANEL



REAR PANEL



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MODELS

CTE
Digital Broadcast

ECO-800 /ECO-1100 / ECO-1300

BLUETECH

1500 W

1200 W

800 W

600 W

400 W

200 W

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MODELS

CTE
Digital Broadcast

ECO-800 /ECO-1100 / ECO-1300

KEY FEATURES

- Available output power: 200, 400, 600, 800W – 1200W – 1500W. Single or Dual redundant Exciters
- High Efficiency, wide band and broadband UHF
- Adaptive pre-correction circuits with MER up to 38 dB typical
- ASI + IP + DVB-S/S2 + RF input interfaces available
- Embedded ASI and RF Switch Over matrix for Dual Redundant Exciters
- Hot Swappable Power Supply from back panel
- DVB-T/H/T2, ISDB-Tb, DAB+/DMB, Analog for DualCast applications

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MODELS

CTE
Digital Broadcast

ECO-800 /ECO-1100 / ECO-1300

FRONT PANEL

ASIs Exciter #1 ASIs Exciter #2

REAR PANEL

RF Exciter #1 RF Exciter #2

Power Supply #1 Power Supply #2

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MODELS

ECO-800 /ECO-1100 / ECO-1300

DUAL DRIVER CONFIG

CTE Digital Broadcast

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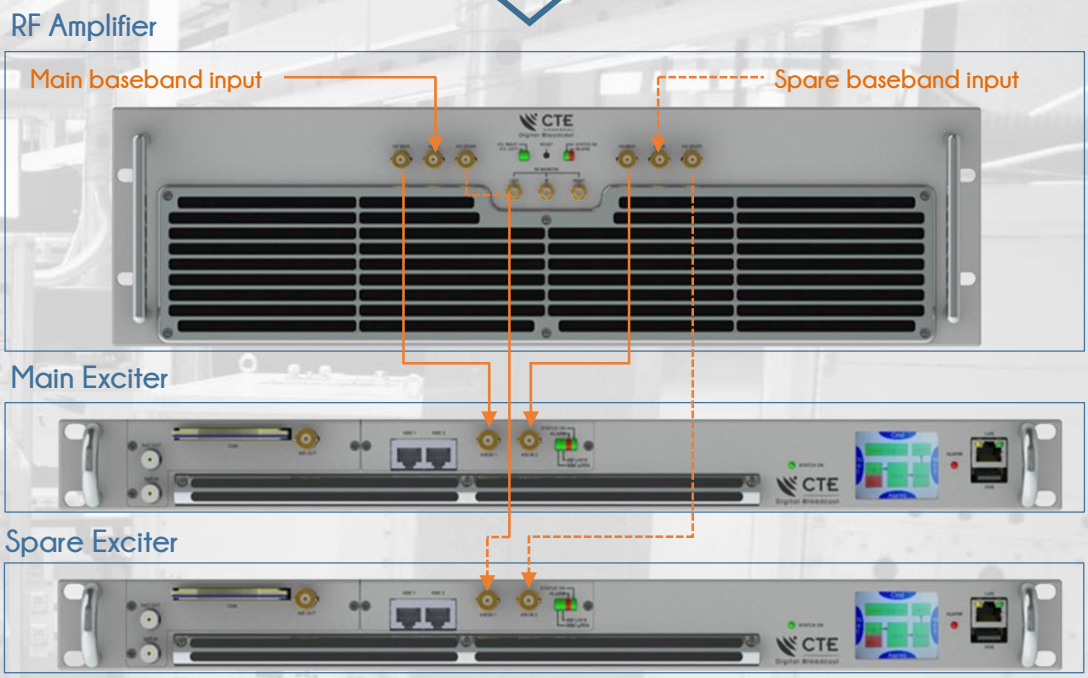

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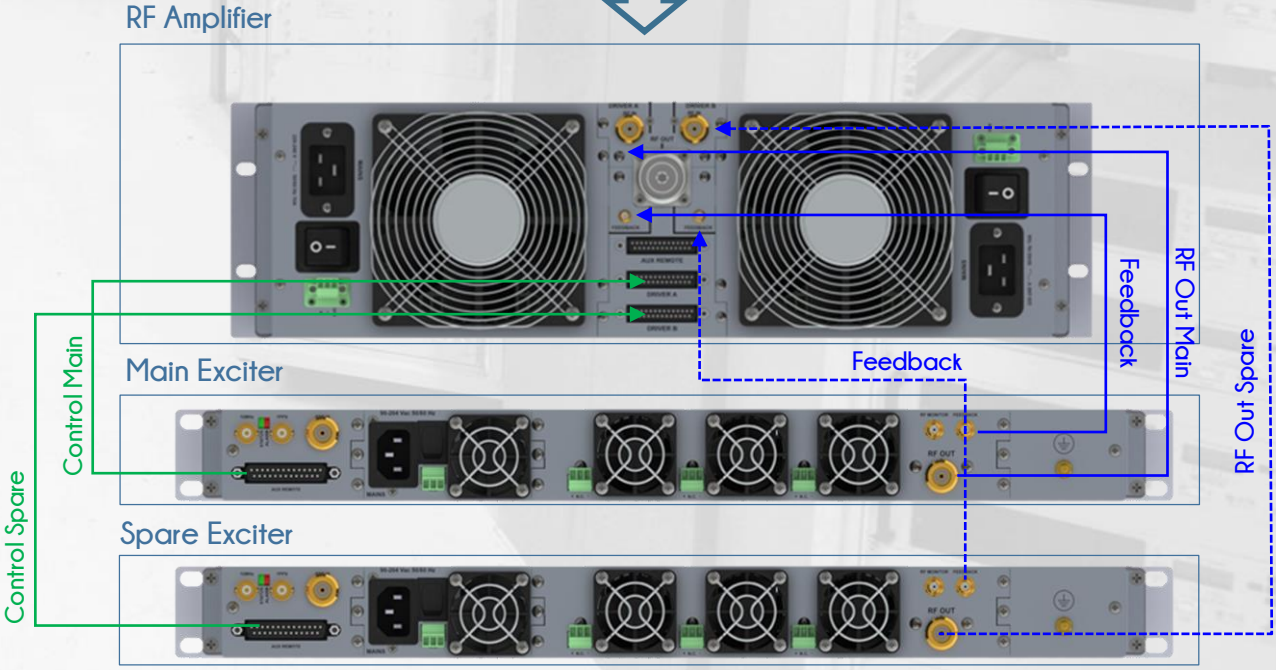

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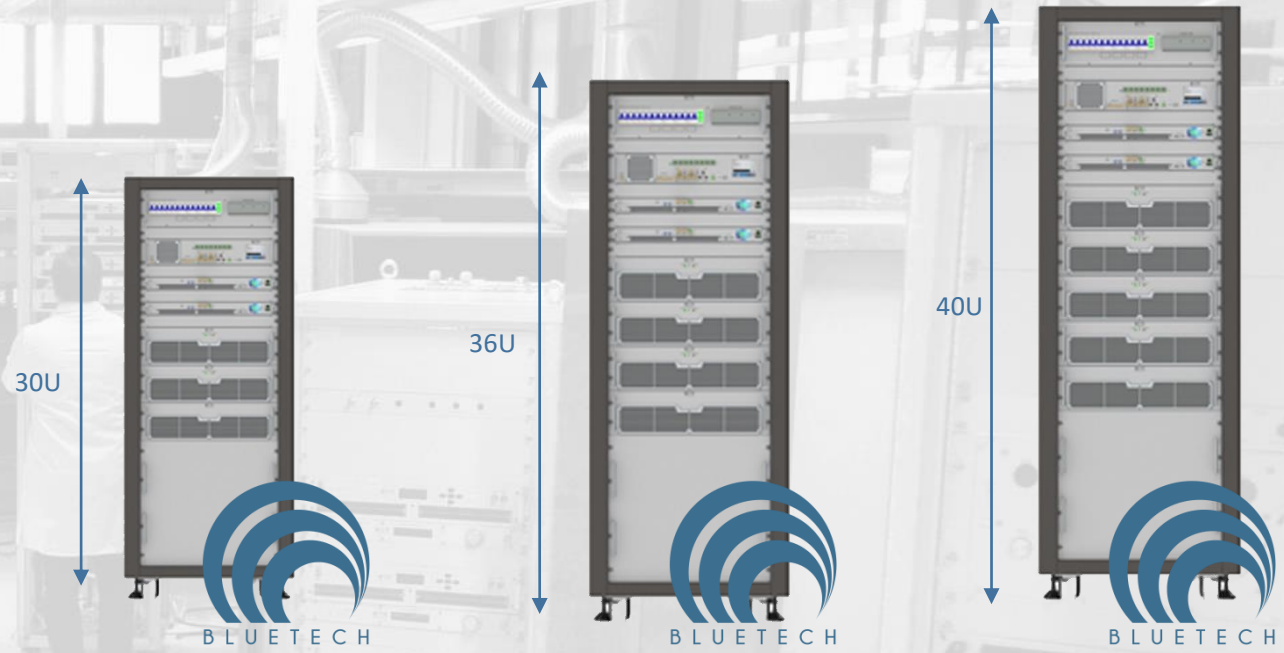
MODELS

CTE
Digital Broadcast

ECO-1500 / ECO-2300 / ECO-2600 / ECO-3200/ ECO-4000/ ECO-5000



6000 W

4500 W

3000 W

2200 W

1500 W

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MODELS

CTE
Digital Broadcast

ECO-1500 / ECO-2300 / ECO-2600 / ECO-3200/ ECO-4000/ ECO-5000

KEY FEATURES

- Available output power: 1500W (30U) - 2200W (36U) - 3000W (30U) - 4500W (36U) - 6000W (40U)
- High Efficiency, wide band and broadband UHF
- Adaptive pre-correction circuits with MER up to 38 dB typical
- ASI + IP + DVB-S/S2 + RF input interfaces available
- Embedded ASI and RF Switch Over matrix for Dual Redundant Exciters
- Hot Swappable Power Supply from back panel
- DVB-T/H/T2, ISDB-Tb, DAB+/DMB, Analog for DualCast applications

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MODELS

CTE
Digital Broadcast

ECO 3000L / ECO 4500L / ECO 6000L / ECO 9000L / ECO 12000L

PS1
PS2
PS3

100%
OUTPUT
POWER

FAILED
PS2
PS3

100%
OUTPUT
POWER

FAILED
FAILED
PS3

50%
OUTPUT
POWER

NEW!
LIQUID
COOLED

12 KW

9 KW

6 KW

4,5 KW

3 KW

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MODELS

CTE
Digital Broadcast

ECO-3000L / ECO-4500L / ECO-6000L / ECO-9000L / ECO-12000L

KEY FEATURES

- Available output power: 3000W, 4500W, 6000W, 9000W, 12000W
- High Efficiency, wide band and broadband UHF
- Adaptive pre-correction circuits with MER up to 38 dB typical
- ASI + IP + DVB-S/S2 + RF input interfaces available
- Embedded ASI and RF Switch Over matrix for Dual Redundant Exciters
- Hot Swappable Power Supply from back panel
- DVB-T/H/T2, ISDB-Tb, DAB+/DMB, Analog for DualCast applications

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MODELS

CTE
Digital Broadcast

MTS-C1 / MTS-15U / MTS-15R

[6+2] or [7+1] x 15 W

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MODELS

CTE
Digital Broadcast

MTS-C1 / MTS-15U / MTS-15R

KEY FEATURES

- Available output power: 8 x 15W rms
- Adaptive pre-correction circuits with MER up to 42 dBs
- ASI + IP + DVB-S/S2 + RF input interfaces
- Embedded switch over matrix for 6+2 or 7+1 configurations
- Dual redundant GPS receiver and power supplies

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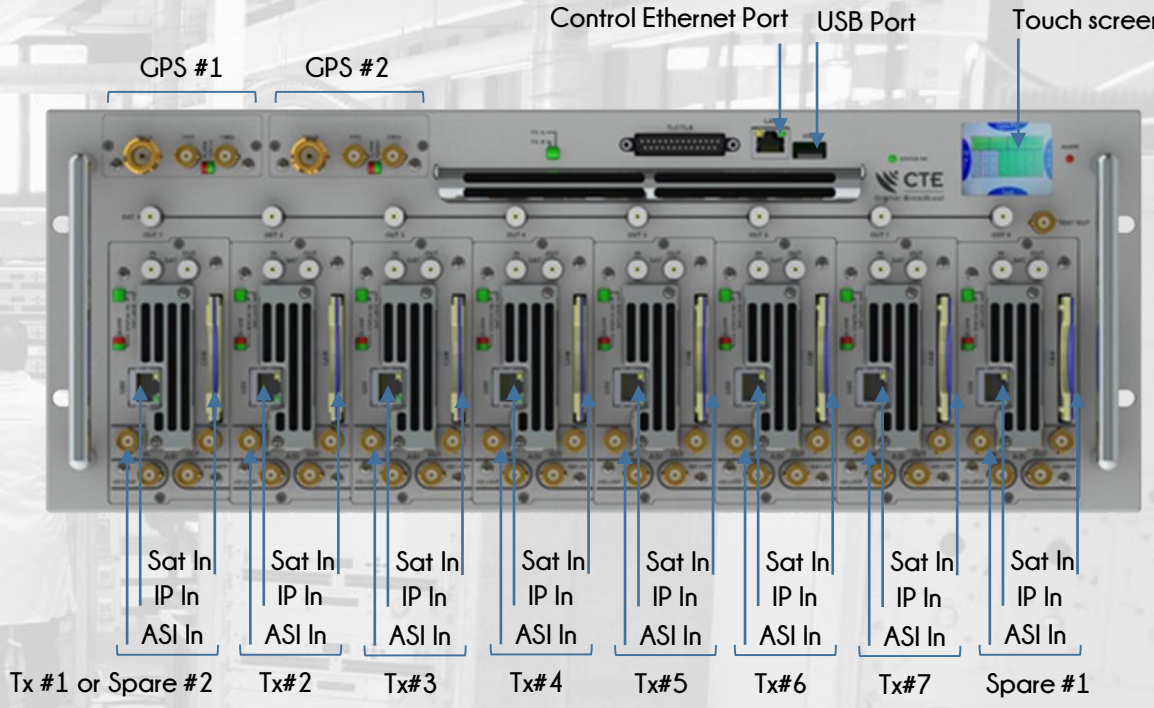
MODELS

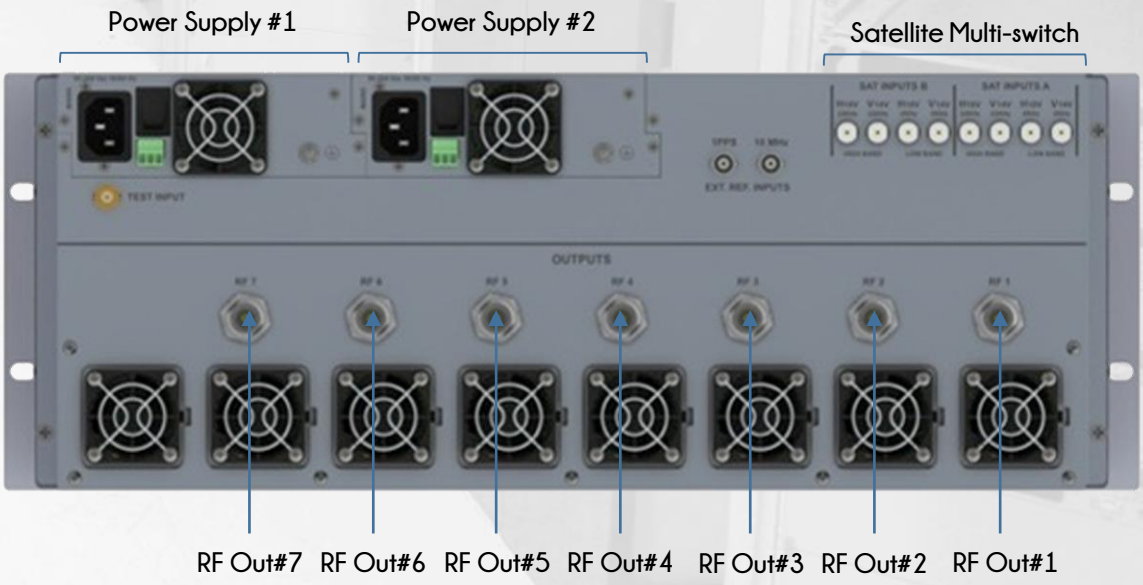
MTS-C1 / MTS-15U / MTS-15R

CTE Digital Broadcast

FRONT PANEL



REAR PANEL



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MODELS

CTE
Digital Broadcast

OTGPS1U

KEY FEATURES

- Up to 18 x 1PPS and 18 x 10MHz outputs
- Dual redundant GPS receivers
- Dual redundant Power supplies

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MODELS

CTE Digital Broadcast

OTGPS1U

FRONT PANEL

GPS Receiver #1 GPS Receiver #2 Power Supply #1 Power Supply #2

Control Ethernet Port

REAR PANEL

18 x 1PPS Out

18 x 10MHz Out

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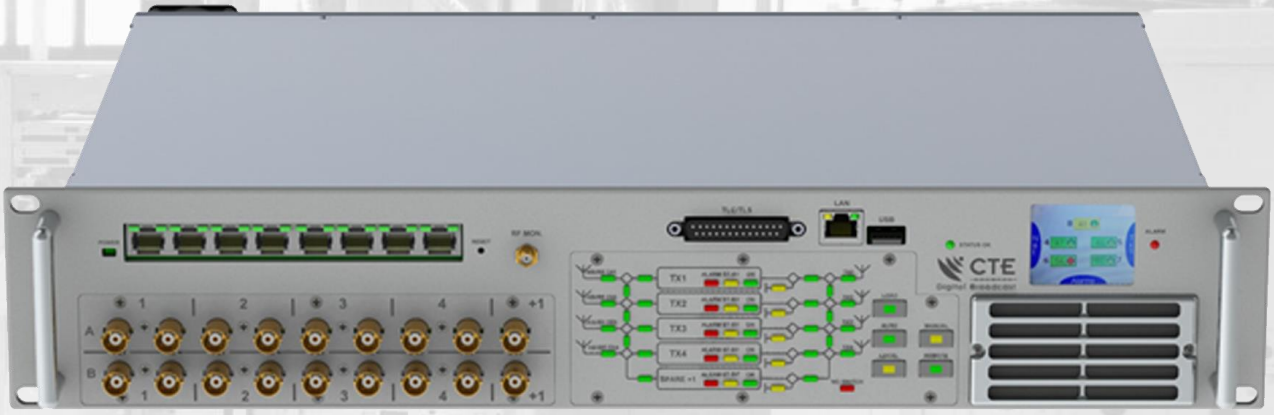
MODELS

CTE
Digital Broadcast

ACS 2E / ACS 2U / ACS 3U



KEY FEATURES

- ASI + RF Switch for up to 6+2 or 7+1 configurations – 2 x ASI inputs matrixes
- Embedded IP router + RS232 back up port
- No Power Supply embedded for lower risk of failure

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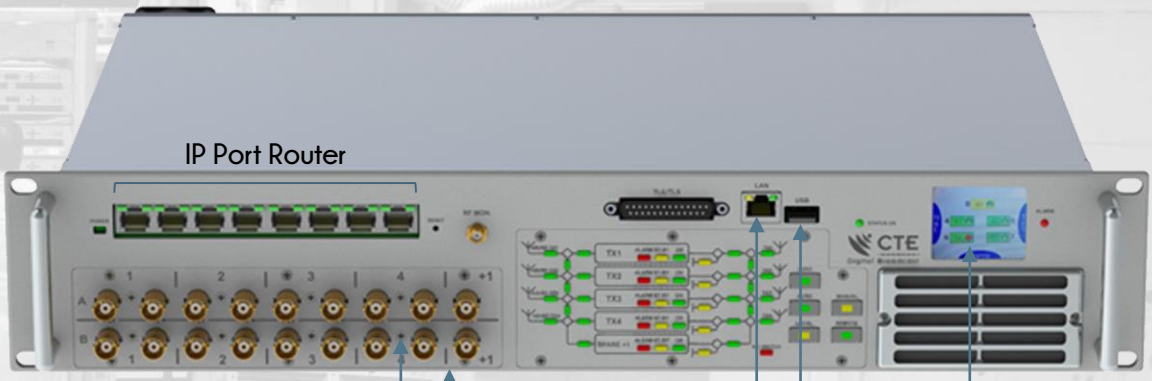
MODELS

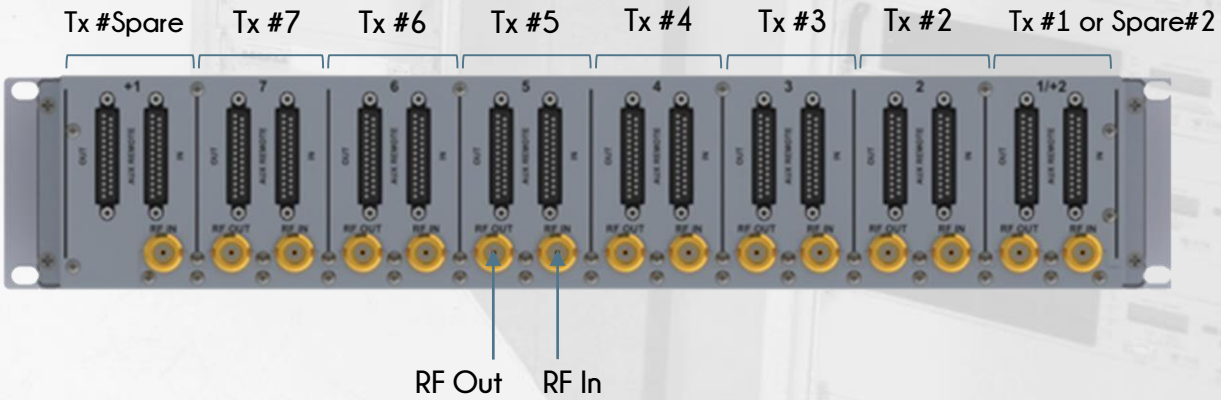
CTE
Digital Broadcast

ACS 2E / ACS 2U / ACS 3U

FRONT PANEL



REAR PANEL



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HIGH EFFICIENCY TECHNOLOGY

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HIGH EFFICIENCY TECHNOLOGY

TECHNOLOGIES ON THE MARKET

CTE Digital Broadcast

NARROW BAND DOHERTY

- Up to 3-4 Channels
- Problem with spare parts
- Problem with N+1 systems

NOT SUPPORTED BY CTE DB

WIDE BAND DOHERTY

- Up to 120 MHz Band
- Convenient for N+1 and Spares
- Problem with N+1 systems

SUPPORTED BY CTE DB

BROAD BAND DOHERTY

- Average efficiency of 35 %
- Convenient for N+1 and Spares
- Complete UHF Band up to Ch60

SUPPORTED BY CTE DB

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HIGH EFFICIENCY TECHNOLOGY

BLUETECH

CTE Digital Broadcast

CTE Digital Broadcast TECHNOLOGIES

- For customers wishing to get maximum of flexibility, CTE DB usually offers broadband Doherty, so transmitter covers the full UHF Band (up to Ch60) with absolutely no need of any manual tuning or different amplifier references. Overall Efficiency usually reaches an average of 35 %.

- For customers wishing to get maximum efficiency, CTE DB usually offers wideband Doherty, so transmitter covers a 120 MHz Band. Using such technology, overall Efficiency usually reaches an average of 40%.

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HIGH EFFICIENCY TECHNOLOGY

BLUETECH

CTE Digital Broadcast

DVB-T, DVB-T2, ISDB-Tb

MODEL	SIZE	OUTPUT POWER (W RMS COFDM)		MER	POWER CONSUMPTION W/H		% OVERALL EFFICIENCY	
		BB	*WB*		*BB*	*WB*	*BB*	*WB*
ECO-80	1U	80	---	≥ 40 dB	364	---	22%	---
ECO-130	1U	130	---	≥ 40 dB	481	---	27%	---
ECO-200	2U	200	210	≥ 38 dB	667	656	30%	32%
ECO-350	2U	350	400	≥ 38 dB	1029	1111	34%	36%
ECO-400	3U	400	400	≥ 38 dB	1159	1096	34,5%	36,5%
ECO-600	3U	600	650	≥ 38 dB	1724	1688	34,8%	38,5%
ECO-800	3+1U	800	900	≥ 38 dB	2286	2308	35%	39%
ECO-1100	3+1U	1100	1200	≥ 38 dB	3143	3000	35%	40%
ECO-1300	3+1U	1300	1500	≥ 38 dB	3714	3750	35%	40%
ECO-2600	3+3+1U	2600	3000	≥ 38 dB	7429	7500	35%	40%
ECO-5000	3+3+3+ 3+1U	5000	6000	≥ 38 dB	14285	15000	35%	40%

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HIGH EFFICIENCY TECHNOLOGY

BLUETECH

CTE Digital Broadcast

ATSC

MODEL	SIZE	OUTPUT POWER (W RMS COFDM)		MER (EVM <1%)	POWER CONSUMPTION W/H		% OVERALL EFFICIENCY	
		BB	*WB*		*BB*	*WB*	*BB*	*WB*
ECO-80	1U	80	---	≥ 39 dB	364	---	22%	---
ECO-130	1U	130	---	≥ 39 dB	481	---	27%	---
ECO-200	2U	300	350	≥ 38 dB	1000	1094	30%	32%
ECO-350	2U	350	400	≥ 38 dB	1029	1111	34%	36%
ECO-400	3U	600	470	≥ 38 dB	1739	1918	34,5%	36,5%
ECO-600	3U	800	1000	≥ 38 dB	2254	2370	35,5%	42,2%
ECO-800	3+1U	1200	1400	≥ 38 dB	3243	3256	37%	43%
ECO-1100	3+1U	1800	200	≥ 38 dB	4800	4598	37,5%	43,5%
ECO-1300	3+1U	2000	2200	≥ 38 dB	5333	5057	37,5%	403,5
ECO-2600	3+3+1U	4000	4400	≥ 38 dB	10667	10115	37,5%	403,5
ECO-5000	3+3+3+ 3+1U	8000	8800	≥ 38 dB	21335	20230	37,5%	43,5%

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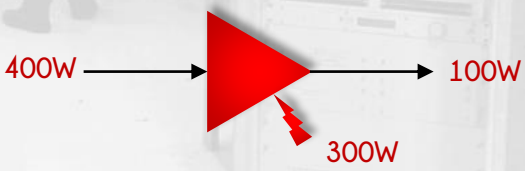
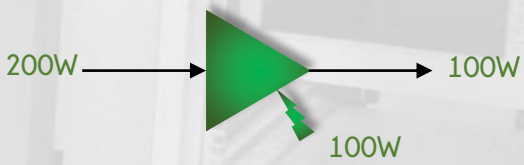
EFFICIENCY AND HEAT DISSIPATION

- High Efficiency Technology is not only about Efficiency, but also about HEAT DISSIPATION.
- Indeed, talking about the transistor, it will get 50% efficiency using Doherty, whereas around 25% using traditional Class AB design. In other words, in order to get 100W after transistor there will be 100W dissipated power using Doherty, whereas 300W dissipated power using traditional Class AB which is three times more.





- So, High Efficiency Doherty design also helps to reduce footprint of transmitter (compactness), increase transmitter lifetime (cooler processing) and remove power consuming devices (such as air conditioning) that will increase even more site efficiency.

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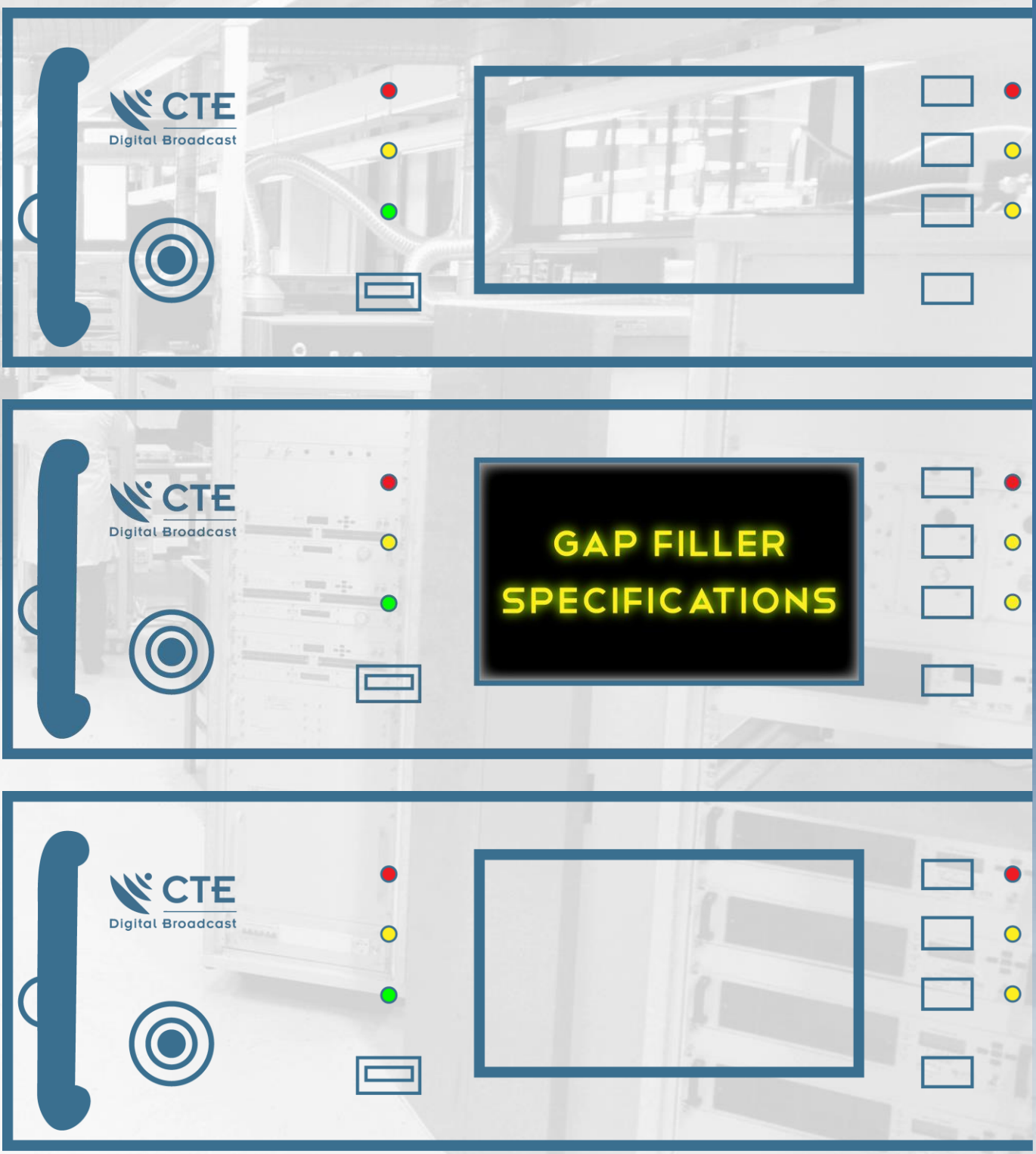
GAP FILLER SPECIFICATIONS



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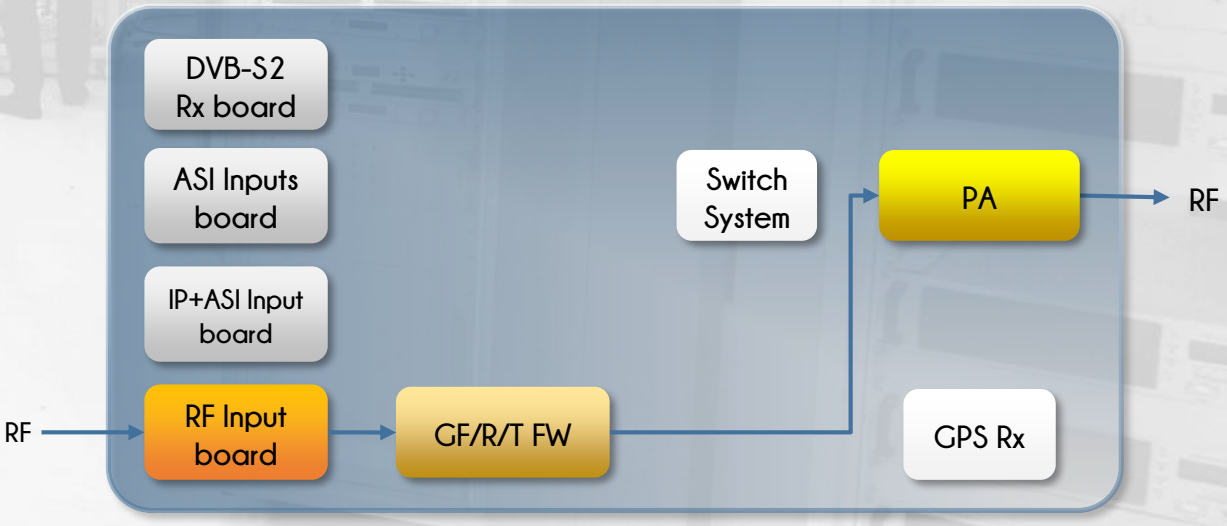
GAP FILLER
TRANSPOSER
REPEATER

CTE
Digital Broadcast

UNIT CONFIGURATION

The Unit is equipped with an RF Input board for Gap Filler, Repeater or Transposer use.

Processing Firmware loaded within the unit is for Gap Filler, Repeater or Transposer use.



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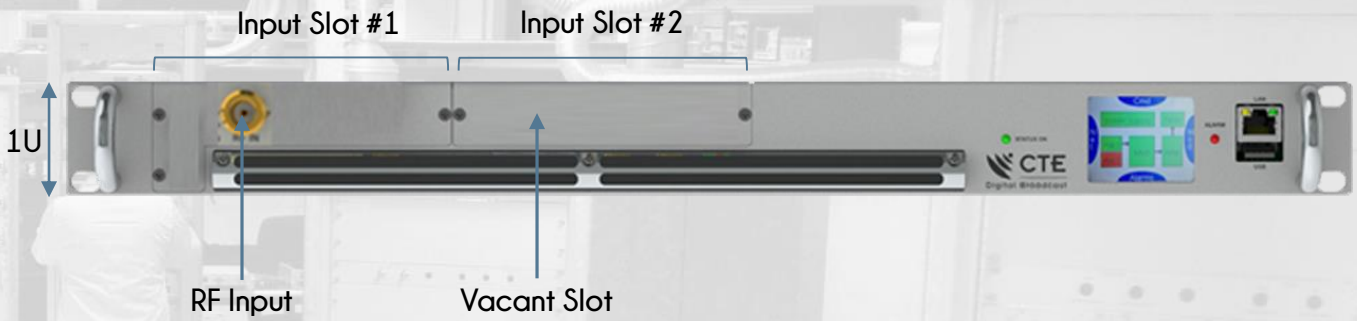
GAP FILLER
TRANSPOSER
REPEATER

CTE
Digital Broadcast

DRIVER WITH RF INPUT



130 W

80 W

50 W

30 W

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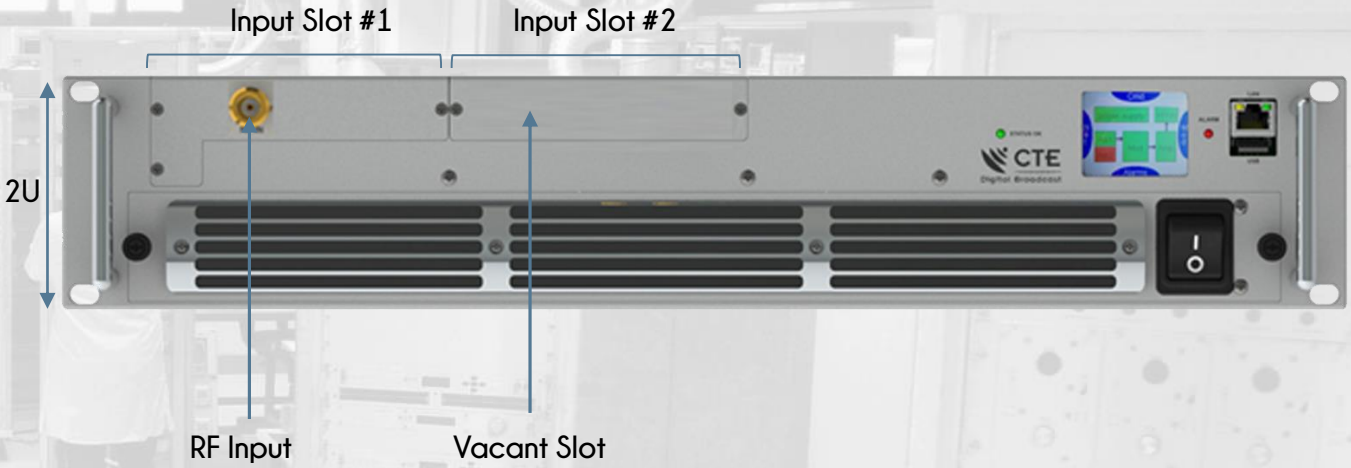
GAP FILLER
TRANSPOSER
REPEATER

CTE
Digital Broadcast

RF INPUT



600 W

400 W

200 W

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GAP FILLER
TRANSPOSER
REPEATER

CTE
Digital Broadcast

ECHO CANCELLER PERFORMANCES

STANDARD VERSION

- Cancellation level: 40dB typical
- Cancellation window: 2 windows (see next slide)
- Maximum echo level: +15dBc (over main signal)
- Total delay: 12 micro sec

PRELIMINARY
ENHANCED VERSION (HW Option)

- Cancellation level: 70dB typical (@ +35dBc of echo)
- Maximum echo level: +35dBc (over main signal)

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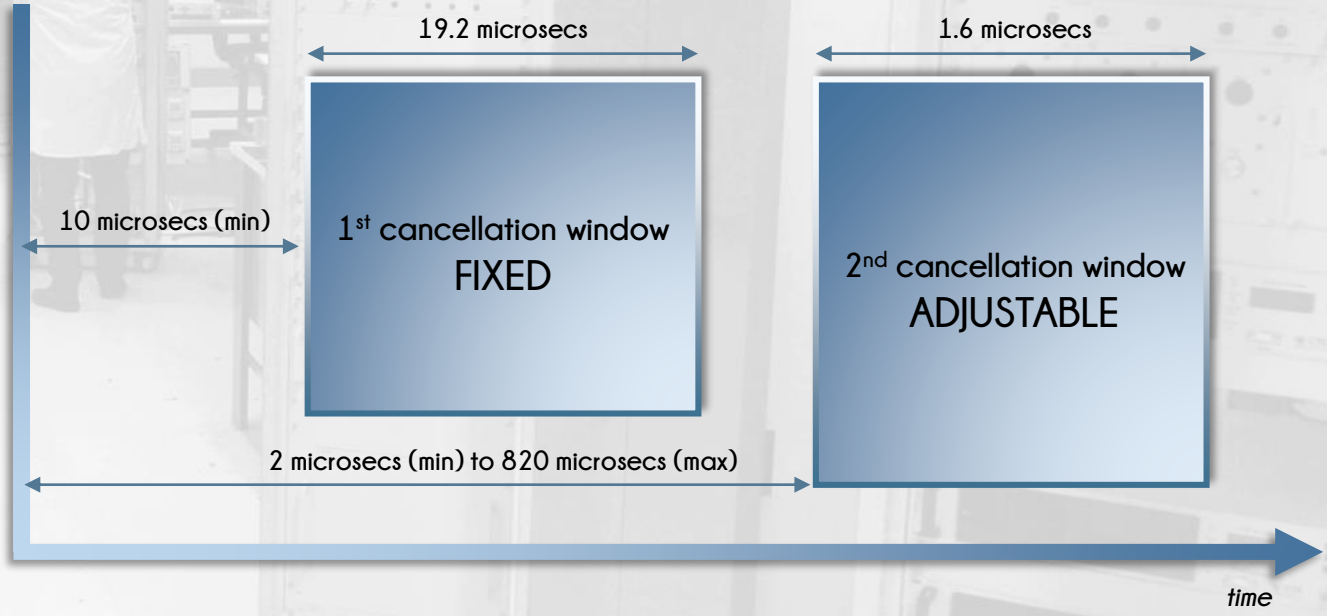
2 CANCELLATION WINDOWS



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EXAMPLE OF INPUT SIGNAL

R&S ETL Digital Overview S/N 100819, FW 2.66

Ch: 30 UHF RF 569.142857 MHz ISDB-T 6 MHz

* Att 0 dB
ExpLvl -47.50 dBm

MER (total,rms) 36.0 dB

	Pass	Limit <	Results	< Limit	Unit
	Level	-60.0	-50.0	10.0	dBm
	Sideband		Normal		
	ISDB-T Mode		Mode 3, 8K-FFT		
	Guard Interval		1/16		
	Carrier Freq Offset	-30000.0	0.0	30000.0	Hz
Ext	Bit Rate Offset	-100.0	0.0	100.0	ppm
	MER (total,rms)	24.0	36.0	-----	dB

			Layer A	Layer B	Layer C		
OLim	MER (Layer, rms)	24.0	35.3	35.7	35.6		dB
	BER before Viterbi		0.0e-7	0.0e-7	0.0e-8	1.0e-2	
	BER before RS		0.0e-7	0.0e-7	0.0e-8	2.0e-4	
	BER after RS		0.0e-6	0.0e-6	0.0e-7	1.0e-10	
PSPA	Packet Error Ratio		0.0e-4	0.0e-4	0.0e-5	1.0e-8	
	Packet Errors		0	0	0	1	/s
	MPEG TS Bitrate		0.4406	1.4869	9.6924		MBit/s

Lvl -50.0dBm | BER 0.0e-8 | MER 36.0dB DEMOD MPEG

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GAP FILLER
TRANSPOSER
REPEATER

CTE
Digital Broadcast

CHARACTERISTICS AT 130 W WITH 0 DB OF ECHO

R&S ETL Digital Overview S/N 100819, FW 2.66

Ch: 30 UHF RF 569.142857 MHz ISDB-T 6 MHz

* Att 25 dB
ExpLvl -7.50 dBm

MER (total,rms) 35.3 dB

	Pass	Limit <	Results	< Limit	Unit
	Level	-60.0	-3.6	10.0	dBm
	Sideband		Normal		
	ISDB-T Mode		Mode 3, 8K-FFT		
	Guard Interval		1/16		
	Carrier Freq Offset	-30000.0	0.0	30000.0	Hz
Ext	Bit Rate Offset	-100.0	0.0	100.0	ppm
	MER (total,rms)	24.0	35.3	-----	dB

			Layer A	Layer B	Layer C		
OLim	MER (Layer, rms)	24.0	34.6	35.0	35.0		dB
	BER before Viterbi		0.0e-6	0.0e-7	0.0e-8	1.0e-2	
	BER before RS		0.0e-6	0.0e-7	0.0e-7	2.0e-4	
	BER after RS		0.0e-5	0.0e-5	0.0e-6	1.0e-10	
PS	Packet Error Ratio		0.0e-3	0.0e-3	0.0e-4	1.0e-8	
	Packet Errors		0	0	0	1	/s
	MPEG TS Bitrate		0.4406	1.4869	9.6924		MBit/s

Lvl -3.6dBm | BER 0.0e-7 | MER 35.3dB DEMOD MPEG

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GAP FILLER
TRANSPOSER
REPEATER

CTE
Digital Broadcast

CHARACTERISTICS AT 130 W WITH +10 DB OF ECHO

R&S ETL Digital Overview S/N 100819, FW 2.66

Ch: 30 UHF RF 569.142857 MHz ISDB-T 6 MHz

* Att 25 dB
ExpLvl -7.50 dBm

MER (total,rms) 29.6 dB

	Pass	Limit <	Results	< Limit	Unit
	Level	-60.0	-3.6	10.0	dBm
	Sideband		Normal		
	ISDB-T Mode		Mode 3, 8K-FFT		
	Guard Interval		1/16		
	Carrier Freq Offset	-30000.0	0.0	30000.0	Hz
Ext	Bit Rate Offset	-100.0	0.0	100.0	ppm
	MER (total,rms)	24.0	29.6	-----	dB

			Layer A	Layer B	Layer C		
OLim	MER (Layer, rms)	24.0	29.1	29.3	29.3		dB
	BER before Viterbi		0.0e-7	3.8e-8	0.0e-9	1.0e-2	
	BER before RS		0.0e-7	0.0e-8	0.0e-8	2.0e-4	
	BER after RS		0.0e-6	0.0e-6	0.0e-7	1.0e-10	
PS	Packet Error Ratio		0.0e-4	0.0e-4	0.0e-5	1.0e-8	
	Packet Errors		0	0	0	1	/s
	MPEG TS Bitrate		0.4406	1.4869	9.6924		MBit/s

Lvl -3.6dBm | BER 0.0e-8 | MER 29.6dB DEMOD MPEG

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GAP FILLER
TRANSPOSER
REPEATER

CTE
Digital Broadcast

CHARACTERISTICS AT 130 W WITH +15 DB OF ECHO

R&S ETL Digital Overview S/N 100819, FW 2.66

Ch: 30 UHF RF 569.142857 MHz ISDB-T 6 MHz

* Att 25 dB
ExpLvl -7.50 dBm

MER (total,rms) 25.3 dB

	Pass	Limit <	Results	< Limit	Unit
	Level	-60.0	-3.7	10.0	dBm
	Sideband		Normal		
	ISDB-T Mode		Mode 3, 8K-FFT		
	Guard Interval		1/16		
	Carrier Freq Offset	-30000.0	0.0	30000.0	Hz
Ext	Bit Rate Offset	-100.0	0.0	100.0	ppm
	MER (total,rms)	24.0	25.3	-----	dB

			Layer A	Layer B	Layer C		
	MER (Layer, rms)	24.0	25.0	24.9	24.9		dB
	BER before Viterbi		0.0e-7	4.4e-5	0.0e-8	1.0e-2	
	BER before RS		0.0e-6	0.0e-7	0.0e-8	2.0e-4	
	BER after RS		0.0e-5	0.0e-6	0.0e-7	1.0e-10	
PS	Packet Error Ratio		0.0e-3	0.0e-4	0.0e-5	1.0e-8	
	Packet Errors		0	0	0	1	/s
	MPEG TS Bitrate		0.4406	1.4869	9.6924		MBit/s

Lvl -3.7dBm | BER 0.0e-8 | MER 25.3dB DEMOD MPEG

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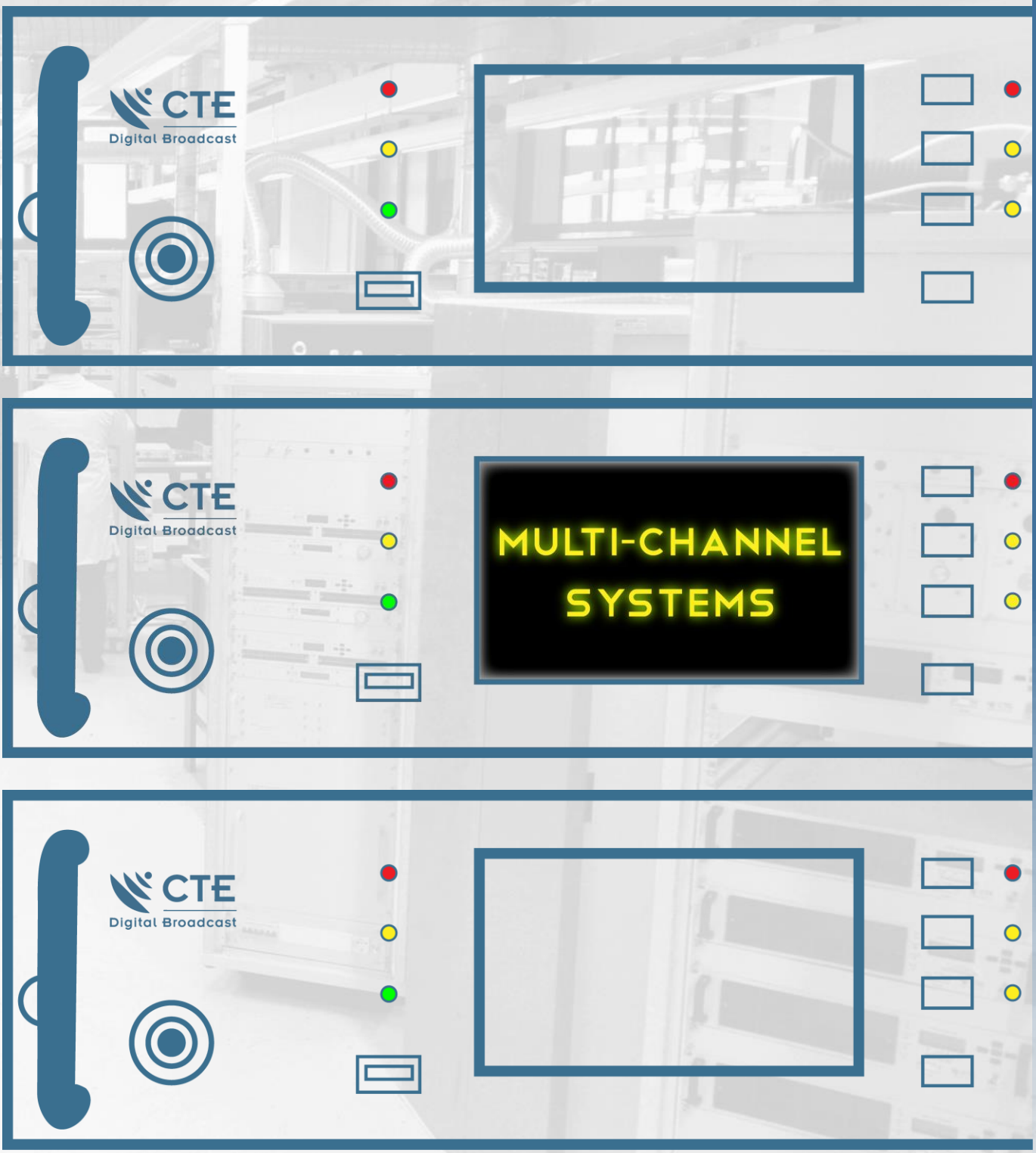
MULTI-CHANNEL SYSTEMS

CTE
Digital Broadcast



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MULTI-CHANNEL SYSTEMS

CTE Digital Broadcast

4+1 - 130W rms HIGH EFFICIENCY

BLUETECH

- GPS Receiver: OTGPS 1U
- Switch Over Unit: ACS 2U
- 130W High Efficiency Transmitter: ECO-130
- 130W High Efficiency Transmitter: ECO-130
- 130W High Efficiency Transmitter: ECO-130
- 130W High Efficiency Transmitter: ECO-130
- 130W High Efficiency Spare Transmitter: ECO-130
- Combiner/Filter System
- Electrical drawer: PWP 300

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MULTI-CHANNEL SYSTEMS

CTE Digital Broadcast

4+1 - 400W rms HIGH EFFICIENCY

BLUETECH

- GPS Receiver: OTGPS 1U
- Combiner/Filter System
- Switch Over Unit: ACS 3U
- 400W High Efficiency Transmitter: ECO-350
- 400W High Efficiency Transmitter: ECO-350
- 400W High Efficiency Transmitter: ECO-350
- 400W High Efficiency Transmitter: ECO-350
- 400W High Efficiency Spare Transmitter: ECO-350
- Electrical drawer: PWP 300

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MULTI-CHANNEL SYSTEMS

CTE Digital Broadcast

4+1 - 600W rms HIGH EFFICIENCY

BLUETECH

- GPS Receiver: OTGPS 1U
- 600W High Efficiency Transmitter: ECO-600
- 600W High Efficiency Transmitter: ECO-600
- 600W High Efficiency Transmitter: ECO-600
- 600W High Efficiency Transmitter: ECO-600
- 600W High Efficiency Spare Transmitter: ECO-600
- Switch Over Unit: ACS 3U
- Combiner/Filter System

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MULTI-CHANNEL SYSTEMS

CTE Digital Broadcast

4+1 - 800W rms HIGH EFFICIENCY

BLUETECH

GPS Receiver: OTGPS 1U

Switch Over Unit: ACS 2E

900W High Efficiency Transmitter (2 exciters): ECO-800

900W High Efficiency Transmitter (2 exciters): ECO-800

900W High Efficiency Transmitter (2 exciters): ECO-800

900W High Efficiency Transmitter (2 exciters): ECO-800

900W High Efficiency Spare (1 exciter): ECO-800

Combiner/Filter System

Electrical drawer: PWP 300

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GAP FILLER
TRANSPOSER
REPEATER

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OUTDOOR SHELTER PROJECTS

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DAB+ DIGITAL RADIO

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DAB+
DIGITAL RADIO

CTE
Digital Broadcast

DAB+ DIGITAL RADIO

5000 W	ECO-5000V
3800 W	ECO-3800V
3600 W	ECO-3600V
2700 W	ECO-2700V
2500 W	ECO-2500V
1800 W	ECO-1800V
1300 W	ECO-1300V
900 W	ECO-900V
450 W	ECO-450V
250 W	ECO-250V
100 W	ECO-100V

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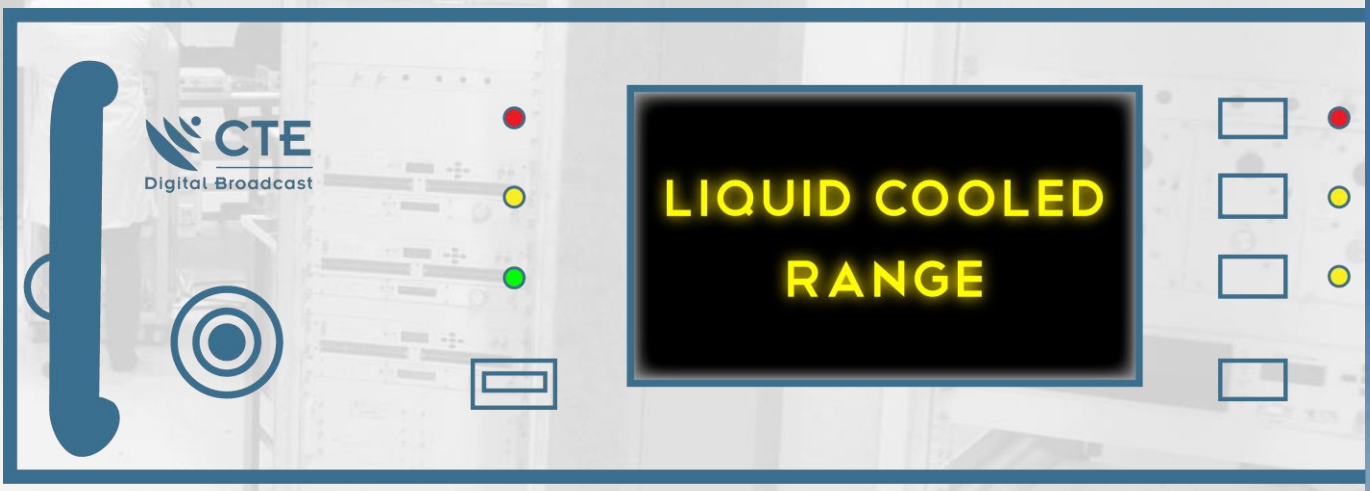
LIQUID COOLED RANGE



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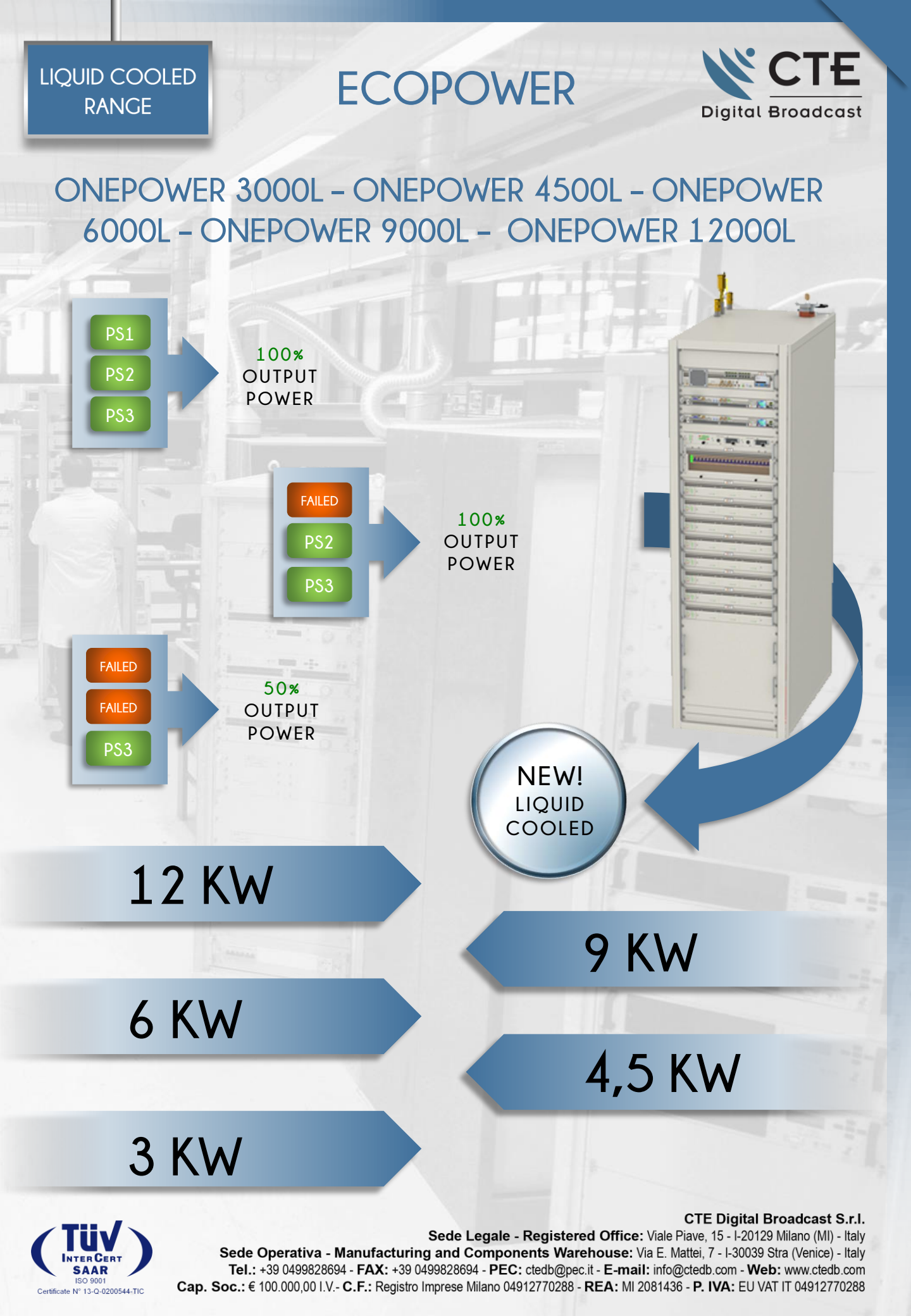
LIQUID COOLED RANGE

ECOPOWER

CTE Digital Broadcast

ONEPOWER 3000L – ONEPOWER 4500L – ONEPOWER 6000L – ONEPOWER 9000L – ONEPOWER 12000L



12 KW

9 KW

6 KW

4,5 KW

3 KW

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LIQUID COOLED RANGE

CTE Digital Broadcast

RANGE OF LIQUID COOLED TRANSMITTERS

[PRELIMINARY]

MODEL	NR OF AMP.	OUTPUT POWER (W RMS) - WB	MER	% OVERALL EFFICIENCY (WIDE-BAND)	% OVERALL EFFICIENCY (BROAD-BAND)
ECO 1200 L	1	1 200	> 38 dB	40%	35%
ECO 1500 L	1	1 500	> 38 dB	40%	35%
ECO 3000 L	2	3 000	> 38 dB	40%	35%
ECO 4500 L	3	4 500	> 38 dB	40%	35%
ECO 6000 L	4	6 000	> 38 dB	40%	35%
ECO 7500 L	5	7 500	> 38 dB	40%	35%
ECO 9000 L	6	9 000	> 38 dB	40%	35%

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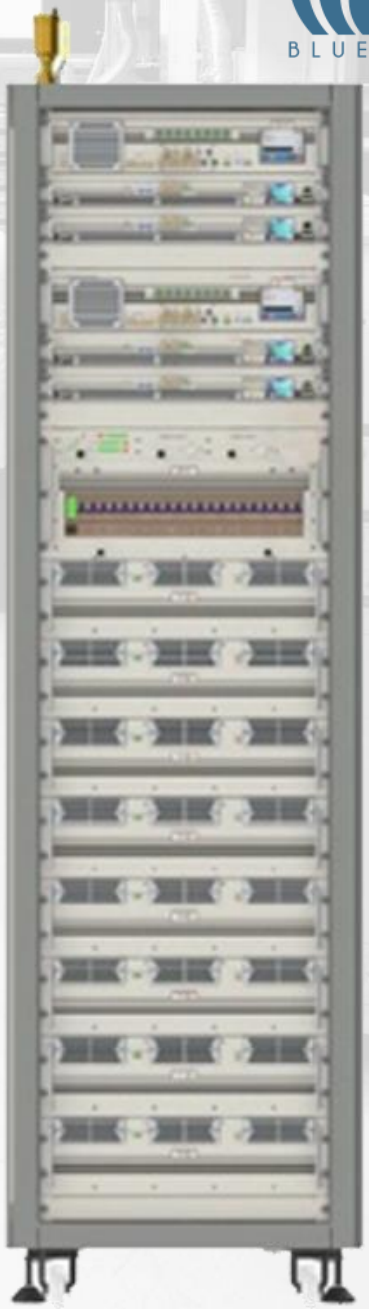
LIQUID COOLED RANGE

CTE Digital Broadcast

EXAMPLE:
2 x 5kW rms IN A SINGLE RACK

BLUETECH



- Control and Monitoring unit Tx#1: LOGIC (2U)
- Main Exciter Tx#1: DRIVER (1U)
- Spare Exciter Tx#1: DRIVER (1U)
- Control and Monitoring unit Tx#2: LOGIC (2U)
- Main Exciter Tx#2: DRIVER (1U)
- Spare Exciter Tx#2: DRIVER (1U)
- Liquid Cooled Control Unit (3U)
- Power Distribution Unit: PWP400 (3U)
- Power Amplifier #1 Tx#1 (2U)
- Power Amplifier #2 Tx#1 (2U)
- Power Amplifier #3 Tx#1 (2U)
- Power Amplifier #4 Tx#1 (2U)
- Power Amplifier #1 Tx#2 (2U)
- Power Amplifier #2 Tx#2 (2U)
- Power Amplifier #3 Tx#2 (2U)
- Power Amplifier #4 Tx#2 (2U)

TÜV INTERCERT SAAR ISO 9001
Certificate N° 13-Q-0200544-TIC

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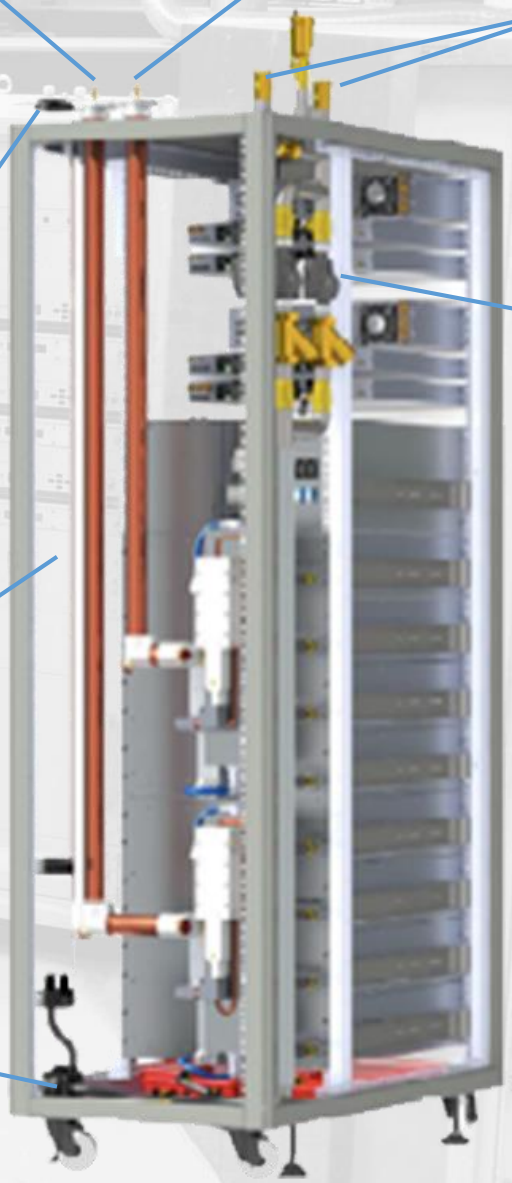
Sede Operativa - Manufacturing and Components Warehouse: Via E. Mattei, 7 - I-30039 Stra (Venice) - Italy
Tel.: +39 0499828694 - **FAX:** +39 0499828694 - **PEC:** ctedb@pec.it - **E-mail:** info@ctedb.com - **Web:** www.ctedb.com
Cap. Soc.: € 100.000,00 I.V.- **C.F.:** Registro Imprese Milano 04912770288 - **REA:** MI 2081436 - **P. IVA:** EU VAT IT 04912770288

LIQUID COOLED RANGE

CTE Digital Broadcast

EXAMPLE:
2 x 5kW rms IN A SINGLE RACK



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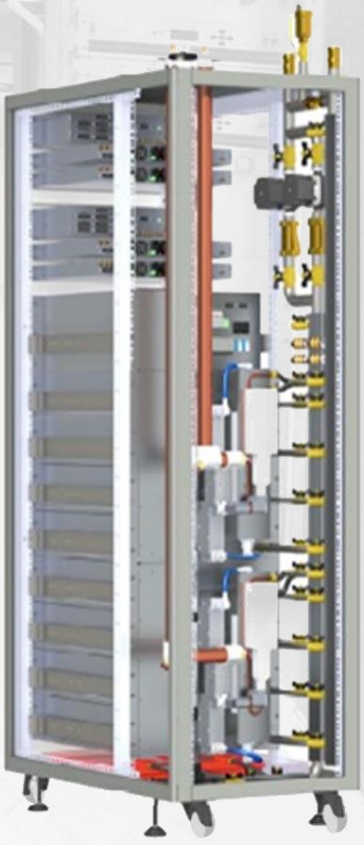

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LIQUID COOLED RANGE

CTE Digital Broadcast

KEY FEATURES

- High Efficiency (BroadBand or WideBand available)
- Low consumption Pump and Heat Exchanger (pump's consumption + heat exchanger + external fans = 535W)
- Dual Redundant Pumps
- 2 x Reserve tanks (6 Litres each) for automatic liquid refilling than less maintenance on site.
- 1200 W rms (6 x pallets) or 1500 W rms (8 x pallets) power amplifiers
- Liquid Cooled Control Unit: level (liquid + refilling), pressure, temperature, pump status, etc.
- Very small external heat exchanger powered at 24V for easier, faster and more safety installation and maintenance
- Mixture of distilled water + coolant depending on temperature specifications

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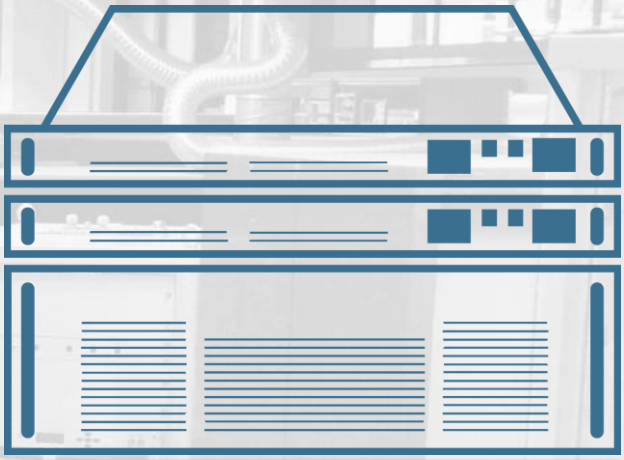
PRODUCT PRESENTATION 2016

CTE
Digital Broadcast



THANKS FOR YOUR ATTENTION

CTE Digital Broadcast S.r.l.

LEGAL OFFICE
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