

RF Repeater Solution

RF Analog Repeater (CDMA,UMTS(WCDMA), LTE)

◆ Feature

- Low cost, Easy & fast to install
- Competitive Price
- LED Alarm, AGC, Auto shut Down
- LED Bars show input & Output Level
- USB Control(Bluetooth option)
- NMS (Using for Mobile Station)

◆ Application

- CDMA
- UMTS (WCDMA)
- LTE



◆ Standard Specification (High & Middle Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	CDMA, UMTS, LTE		-
	Band	CDMA, UMTS, LTE Band		-
Input Power range		-65dBm~-35dBm	-100dBm~-60dBm	According to customer requests, we can make it customized.
Gain		55dB~95dB	55dB~90dB	
Output Power		1W, 5W, 20W	+15dBm, +20dBm, +20dBm	
Gain control		30dB (step 1dB/error 1dB)		-
AGC		30dB(step 1dB)	-	-
ALC		15dB(step 1dB/error 1.5dB)	15dB(step 1dB/error 1.5dB)	-
Shut down		≥ Output power + 2~5dB		-
Pass Bandwidth Ripple		≤ 3 dB		-
VSWR		≤ 1:1.5		-
System Group Delay		≤ 5μs		-
Frequency Stability		≤ 0.01ppm		-
Noise Figure		-	≤ 5dB	-
Tx/Rx Isolation		≥ Gain + 15dB		-
In band Spurious		3GPP Standard		-
Out of band Gain		3GPP Standard		-
Spurious Emission mask		3GPP Standard		-
EVM/ROH		12.5%/0.98		-
PCDE		≤ -35dB		@UMTS
Impedance		50Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

■ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification
Power LED	Green	OFF	Normal operating
Down Link Over power	OFF	Red	Down Link shut down
Up Link Over power	OFF	Red	up Link shut down
Temperature Alarm	OFF	Red	Internal temperature(TEMP) higher than +75°C (Option)

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- LTE



◆ Standard Specification (Small & Micro Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	CDMA, UMTS, LTE		-
	Band	CDMA, UMTS, LTE Band		-
Input Power range		-65dBm~-35dBm	-100dBm~-60dBm	According to customer requests, we can make it customized.
Gain		45dB~75dB	45dB~75dB	
Output Power		+21dBm, +15dBm, +5dBm	+15dBm, +10dBm, +0dBm	
Gain control		30dB (step 1dB/error 1dB)		-
ALC		15dB(step 1dB/error 1.5dB)	15dB(step 1dB/error 1.5dB)	-
Shut down		≥ Output power + 2~5dB		-
Pass Bandwidth Ripple		≤ 3 dB		-
VSWR		≤ 1:1.5		-
System Group Delay		≤ 5μs		-
Frequency Stability		≤ 0.01ppm		-
Noise Figure		-	≤ 5dB	-
Tx/Rx Isolation		≥ Gain + 15dB		-
In band Spurious		3GPP Standard		-
Out of band Gain		3GPP Standard		-
Spurious Emission mask		3GPP Standard		-
EVM/ROH		12.5%/0.98		-
PCDE		≤-35dB		@UMTS
Impedance		50Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

◆ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification
Power LED	Green	OFF	Normal operating
Down Link Over power	OFF	Red	Down Link shut down
Up Link Over power	OFF	Red	up Link shut down

RF Repeater Solution

RF Analog Repeater-Band Fixed (Tetra, GSM900, DCS1800)

◆ Feature

- Low cost, Easy & fast to install
- Competitive Price
- LED Alarm, AGC, Auto shut Down
- LED Bars show input & Output Level
- USB Control(Bluetooth option)
- NMS (Using for Mobile Station)
- Band Fixed

◆ Application

- Tetra
- GSM900
- DCS1800



◆ Standard Specification (High & Middle Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	Tetra, GSM900, DCS1800		-
	Band	Tetra, GSM900, DCS1800Fixed Band		-
Input Power range		-65dBm~-35dBm	-100dBm~-60dBm	According to customer requests, we can make it customized.
Gain		55dB~85dB	55dB~85dB	
Output Power		200mW, 1W, 5W	+15dBm, +20dBm, +20dBm,	
Gain control		30dB (step 1dB/error 1dB)		
ALC		15dB(step 1dB/error 1.5dB)	15dB(step 1dB/error 1.5dB)	-
Maximum Input			0dBm	Damage
Shut down		≥ Output power + 2~5dB		-
Pass Bandwidth Ripple		≤ 3 dB		-
VSWR		≤ 1:1.5		-
System Group Delay		≤ 5μs		-
Frequency Stability		≤ 0.01ppm		-
Noise Figure		-	≤ 5dB	-
Tx/Rx Isolation		≥ Gain + 15dB		-
IM & Spurious		≤-36dBm@GSM900/≤-30dBm@DCS1800		CW 2Tone 200KHz Spacing
Out of Band Gain		45dB@400KHz offset		
		40dB@600KHz offset		
		35dB @1MHz offset		
		25dB @5MHz offset		
Impedance		50Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

■ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification
Power LED	Green	OFF	Normal operating
Down Link Over power	OFF	Red	Down Link shut down
Up Link Over power	OFF	Red	up Link shut down
Temperature Alarm	OFF	Red	Internal temperature(TEMP) higher than +75℃ (Option)

RF Repeater Solution

RF Analog Repeater-Band Fixed (Tetra, GSM900, DCS1800)

◆ Feature

- Low cost, Easy & fast to install
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◆ Application

- Tetra
- GSM900
- DCS1800



◆ Standard Specification (Small & Micro Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	Tetra, GSM900, DCS1800		-
	Band	Tetra, GSM900, DCS1800Fixed Band		-
Input Power range		-65dBm~-35dBm	-100dBm~-60dBm	According to customer requests, we can make it customized.
Gain		45dB~75dB	45dB~75dB	
Output Power		+15dBm, +5dBm	+10dBm, +0dBm	
Gain control		30dB (step 1dB/error 1dB)		-
ALC		15dB(step 1dB/error 1.5dB)	15dB(step 1dB/error 1.5dB)	-
Maximum Input		-	0dBm	Damage
Shut down		≥ Output power + 2~5dB		-
Pass Bandwidth Ripple		≤ 3 dB		-
VSWR		≤ 1:1.5		-
System Group Delay		≤ 5μs		-
Frequency Stability		≤ 0.01ppm		-
Noise Figure		-	≤ 5dB	-
Tx/Rx Isolation		≥ Gain + 15dB		-
IM & Spurious		≤-36dBm@GSM900/≤-30dBm@DCS1800		CW 2Tone 200KHz Spacing
Out of Band Gain		45dB@400KHz offset		
		40dB@600KHz offset		
		35dB @1MHz offset		
		25dB @5MHz offset		
Impedance		50Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

■ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification
Power LED	Green	OFF	Normal operating
Down Link Over power	OFF	Red	Down Link shut down
Up Link Over power	OFF	Red	up Link shut down
Temperature Alarm	OFF	Red	Internal temperature(TEMP) higher than +75℃ (Option)

RF Repeater Solution

RF Analog Repeater-Band Selective (Tetra, GSM900, DCS1800)

◆ Feature

- Low cost, Easy & fast to install
- Competitive Price
- LED Alarm, AGC, Auto shut Down
- LED Bars show input & Output Level
- USB Control(Bluetooth option)
- NMS (Using for Mobile Station)
- Band Selective

◆ Application

- Tetra
- GSM900
- DCS1800



◆ Standard Specification (High & Middle Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	Tetra, GSM900, DCS1800		-
	Band	0.5MHz ~ 15MHz		Band Selective
	Band Resolution	12.5KHz		Software control
Input Power range		-65dBm~-35dBm	-100dBm~-60dBm	According to customer requests, we can make it customized.
Gain		55dB~85dB	55dB~85dB	
Output Power		200mW, 1W, 5W	+15dBm, +20dBm, +20dBm,	
Gain control		30dB (step 1dB/error 1dB)		-
ALC		15dB(step 1dB/error 1.5dB)	15dB(step 1dB/error 1.5dB)	-
Maximum Input		-	0dBm	Damage
Shut down		≥ Output power + 2~5dB		-
Pass Bandwidth Ripple		≤ 3 dB		-
VSWR		≤ 1:1.5		-
System Group Delay		≤ 5μs		-
Frequency Stability		≤ 0.01ppm		-
Noise Figure		-	≤ 5dB	-
Tx/Rx Isolation		≥ Gain + 15dB		-
IM & Spurious		≤-36dBm@GSM900/≤-30dBm@DCS1800		CW 2Tone 200KHz Spacing
Out of Band Gain		45dB@400KHz offset		
		40dB@600KHz offset		
		35dB @1MHz offset		
		25dB @5MHz offset		
Impedance		50Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

■ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification
Power LED	Green	OFF	Normal operating
Down Link Over power	OFF	Red	Down Link shut down
Up Link Over power	OFF	Red	up Link shut down
Temperature Alarm	OFF	Red	Internal temperature(TEMP) higher than +75℃ (Option)

RF Repeater Solution

RF Analog Repeater-Band Selective (Tetra, GSM900, DCS1800)

◆ Feature

- Low cost, Easy & fast to install
- Competitive Price
- LED Alarm, AGC, Auto shut Down
- LED Bars show input & Output Level
- Band Selective

◆ Application

- Tetra
- GSM900
- DCS1800



◆ Standard Specification (Small & Micro Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	Tetra, GSM900, DCS1800		-
	Band	0.5MHz ~ 15MHz		Band Selective
	Band Resolution	12.5KHz		Software control
Input Power range		-65dBm~-35dBm	-100dBm~-60dBm	According to customer requests, we can make it customized.
Gain		45dB~75dB	45dB~75dB	
Output Power		+15dBm, +5dBm	+10dBm, +0dBm	
Gain control		30dB (step 1dB/error 1dB)		-
ALC		15dB(step 1dB/error 1.5dB)	15dB(step 1dB/error 1.5dB)	-
Maximum Input		-	0dBm	Damage
Shut down		≥ Output power + 2~5dB		-
Pass Bandwidth Ripple		≤ 3 dB		-
VSWR		≤ 1:1.5		-
System Group Delay		≤ 5μs		-
Frequency Stability		≤ 0.01ppm		-
Noise Figure		-	≤ 5dB	-
Tx/Rx Isolation		≥ Gain + 15dB		-
IM & Spurious		≤-36dBm@GSM900/≤-30dBm@DCS1800		CW 2Tone 200KHz Spacing
Out of Band Gain		45dB@400KHz offset		
		40dB@600KHz offset		
		35dB @1MHz offset		
		25dB @5MHz offset		
Impedance		50Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

■ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification
Power LED	Green	OFF	Normal operating
Down Link Over power	OFF	Red	Down Link shut down
Up Link Over power	OFF	Red	up Link shut down

RF Repeater Solution

RF Analog Repeater-Channel Selective (Tetra, GSM900, DCS1800)

◆ Feature

- Low cost, Easy & fast to install
- Competitive Price
- LED Alarm, AGC, Auto shut Down
- LED Bars show input & Output Level
- USB Control(Bluetooth option)
- NMS (Using for Mobile Station)
- Channel Selective

◆ Application

- Tetra
- GSM900
- DCS1800



◆ Standard Specification (High & Middle Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	Tetra, GSM900, DCS1800		-
	Channel Bandwidth	200kHz		-
	No. of Channels	1 ~ 4 Channel		Software control
Input Power range		-65dBm~-35dBm	-100dBm~-60dBm	According to customer requests, we can make it customized.
Gain		55dB~85dB	55dB~85dB	
Output Power		200mW, 1W, 5W	+15dBm, +20dBm, +20dBm,	
Gain control		30dB (step 1dB/error 1dB)		-
ALC		15dB (step 1dB/error 1.5dB)	15dB (step 1dB/error 1.5dB)	-
Maximum Input		-	0dBm	Damage
Shut down		≥ Output power + 2~5dB		-
Pass Bandwidth Ripple		≤ 3 dB		-
VSWR		≤ 1:1.5		-
System Group Delay		≤ 5μs		-
Frequency Stability		≤ 0.01ppm		-
Noise Figure		-	≤ 5dB	-
Tx/Rx Isolation		≥ Gain + 15dB		-
IM & Spurious		≤-36dBm@GSM900/≤-30dBm@DCS1800		CW 2Tone 200KHz Spacing
Out of Band Gain		45dB@400KHz offset		
		40dB@600KHz offset		
		35dB @1MHz offset		
		25dB @5MHz offset		
Impedance		50Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

■ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification
Power LED	Green	OFF	Normal operating
Down Link Over power	OFF	Red	Down Link shut down
Up Link Over power	OFF	Red	up Link shut down
Temperature Alarm	OFF	Red	Internal temperature(TEMP) higher than +75℃ (Option)

■ Optic Repeater Solution

Analog Optic Repeater(CDMA,UMTS(WCDMA), LTE)

◆ Feature

- Easy Installation & Maintenance
- Low cost to extend cell coverage
(Optic cable $\leq 20\text{Km}$)
- Master & Slave FSK Control
- A max. of 3ROUs can be cascaded
- Using HPA&LPA

◆ Application

- CDMA
- UMTS
- LTE
- Urban, Subway, Rural



◆ Standard Specification (High & Middle Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	CDMA, UMTS, LTE		-
	Band	CDMA, UMTS, LTE Band		-
Input Power range		-65dBm~-35dBm	-100dBm~-60dBm	According to customer requests, we can make it customized.
Gain		50dB~80dB	40dB~70dB	
Output Power		5W, 15W, 40W	0dBm	
Gain control		30dB (step 1dB/error 1dB)		-
Shut down		\geq Output power + 2~5dB		-
Pass Bandwidth Ripple		$\leq 3\text{dB}$		-
VSWR		$\leq 1:1.5$		-
System Group Delay		$\leq 6\mu\text{s}$		-
Frequency Stability		$\leq 0.01\text{ppm}$		-
Noise Figure		-	$\leq 5\text{dB}$	Optic Loss $\leq 10\text{dB}$
Tx/Rx Isolation		$\geq 95\text{dB}$		-
In band Spurious		3GPP Standard		-
Out of band Gain		3GPP Standard	-	-
Spurious Emission mask		3GPP Standard	-	-
EVM/ROH		7%/0.98		-
PCDE		$\leq -35\text{dB}$	-	@UMTS
Impedance		50 Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

◆ Optic specification

Item	Specification	
	Down Link	Up Link
Laser type	DFB With Isolator	
Wavelength	1310 \pm 5nm	1530, 1550, 1570 \pm 5nm
Optic power	$\leq 0\text{ dBm}$	
Connector type	SC/APC	

◆ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification	
			MHU	ROU
Power LED	Green	OFF	Normal operating	
Over power	OFF	Red	Up Link shut down	Down Link shut down
Optic status	Green	OFF	Normal Optic level	

■ Optic Repeater Solution

Analog Optic Repeater-Band Fixed (Tetra, GSM900, DCS1800)

◆ Feature

- Easy Installation & Maintenance
- Low cost to extend cell coverage (Optic cable $\leq 20\text{Km}$)
- Master & Slave FSK Control
- A max. of 3ROUs can be cascaded
- Using HPA&LPA
- Band Fixed

◆ Application

- Tetra
- GSM900
- DCS1800
- Urban, Subway, Rural



◆ Standard Specification (High & Middle Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	Tetra, GSM900, DCS1800		-
	Band	Tetra, GSM900, DCS1800Fixed Band		-
Input Power range		-37dBm ~ -7dBm	$\leq -65\text{dBm}$	According to customer requests, we can make it customized.
Gain		50dB~80dB	40dB~70dB	
Output Power		200mW, 3W, 10W	+0dBm	
UL Maximum Input		0dBm		Damage
Gain control		30dB (step 1dB/error 1dB)		-
Shut down		\geq Output power + 2~5dB		-
Pass Bandwidth Ripple		$\leq 3\text{dB}$		-
VSWR		$\leq 1:1.5$		-
System Group Delay		$\leq 6\mu\text{s}$		-
Frequency Stability		$\leq 0.01\text{ppm}$		-
Noise Figure		-	$\leq 5\text{dB}$	Optic Loss $\leq 10\text{dBo}$
Tx/Rx Isolation		$\geq 95\text{dB}$		-
IM & Spurious		$\leq -36\text{dBm}@GSM900/\leq -30\text{dBm}@DCS1800$		CW 2Tone 200KHz Spacing
Out of Band Gain		45dB@400KHz offset		-
		40dB@600KHz offset		-
		35dB @1MHz offset		-
		25dB @5MHz offset		-
Impedance		50 Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

◆ Optic specification

Item	Specification	
	Down Link	Up Link
Laser type	DFB With Isolator	
Wavelength	1310 \pm 5nm	1530, 1550, 1570 \pm 5nm
Optic power	$\leq 0\text{ dBm}$	
Connector type	SC/APC	

◆ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification	
			MHU	ROU
Power LED	Green	OFF	Normal operating	
Over power	OFF	Red	Up Link shut down	Down Link shut down
Optic status	Green	OFF	Normal Optic level	

■ Optic Repeater Solution

Analog Optic Repeater-Band Selective (Tetra, GSM900, DCS1800)

◆ Feature

- Easy Installation & Maintenance
- Low cost to extend cell coverage (Optic cable $\leq 20\text{Km}$)
- Master & Slave FSK Control
- A max. of 3ROUs can be cascaded
- Using HPA&LPA / Band Selective

◆ Application

- Tetra
- GSM900
- DCS1800
- Urban, Subway, Rural



◆ Standard Specification (High & Middle Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	Tetra, GSM900, DCS1800		-
	Band	0.5MHz ~ 15MHz		Band Selective
	Band Resolution	12.5KHz		Software control
Input Power range		-37dBm ~ -7dBm	$\leq -65\text{dBm}$	According to customer requests, we can make it customized.
Gain		50dB~80dB	40dB~70dB	
Output Power		200mW, 3W, 10W	+0dBm	
UL Maximum Input		0dBm		Damage
Gain control		30dB (step 1dB/error 1dB)		-
Shut down		\geq Output power + 2~5dB		-
Pass Bandwidth Ripple		$\leq 3\text{dB}$		-
VSWR		$\leq 1:1.5$		-
System Group Delay		$\leq 6\mu\text{s}$		-
Frequency Stability		$\leq 0.01\text{ppm}$		-
Noise Figure		-	$\leq 5\text{dB}$	Optic Loss $\leq 10\text{dBo}$
Tx/Rx Isolation		$\geq 95\text{dB}$		-
IM & Spurious		$\leq -36\text{dBm}@GSM900/\leq -30\text{dBm}@DCS1800$		CW 2Tone 200KHz Spacing
Out of Band Gain	45dB@400KHz offset			-
	40dB@600KHz offset			-
	35dB @1MHz offset			-
	25dB @5MHz offset			-
Impedance		50 Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

◆ Optic specification

Item	Specification	
	Down Link	Up Link
Laser type	DFB With Isolator	
Wavelength	1310 \pm 5nm	1530, 1550, 1570 \pm 5nm
Optic power	$\leq 0\text{ dBm}$	
Connector type	SC/APC	

◆ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification	
			MHU	ROU
Power LED	Green	OFF	Normal operating	
Over power	OFF	Red	Up Link shut down	Down Link shut down
Optic status	Green	OFF	Normal Optic level	

System Monitoring Solution

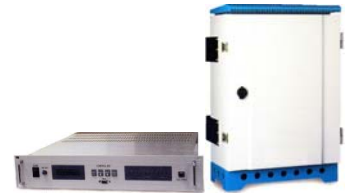
RF Spectrum Supervisor -(Tetra, GSM900, DCD1800)

◆ Feature

- Easy Installation & Maintenance
- Low cost to extend cell coverage
(Optic cable $\leq 20\text{Km}$)
- Master & Slave FSK Control
- A max. of 3ROUs can be cascaded
- Using HPA&LPA / Channel Selective

◆ Application

- Tetra
- GSM900
- DCS1800
- Urban, Subway, Rural



◆ Standard Specification (High & Middle Power)

Parameter		specification		Remark
		Down Link	Up Link	
Frequency	Range	Tetra, GSM900, DCS1800		-
	Channel Bandwidth	200kHz		-
	No. of Channels	1 ~ 4 Channel		Software control
Input Power range		-37dBm ~ -7dBm	$\leq -65\text{dBm}$	According to customer requests, we can make it customized.
Gain		50dB~80dB	40dB~70dB	
Output Power		200mW, 3W, 10W	+0dBm	
UL Maximum Input		0dBm		Damage
Gain control		30dB (step 1dB/error 1dB)		-
Shut down		\geq Output power + 2~5dB		-
Pass Bandwidth Ripple		$\leq 3\text{dB}$		-
VSWR		$\leq 1:1.5$		-
System Group Delay		$\leq 6\mu\text{s}$		-
Frequency Stability		$\leq 0.01\text{ppm}$		-
Noise Figure		-	$\leq 5\text{dB}$	Optic Loss $\leq 10\text{dBo}$
Tx/Rx Isolation		$\geq 95\text{dB}$		-
IM & Spurious		$\leq -36\text{dBm}@GSM900/\leq -30\text{dBm}@DCS1800$		CW 2Tone 200KHz Spacing
Out of Band Gain		45dB@400KHz offset		-
		40dB@600KHz offset		-
		35dB @1MHz offset		-
		25dB @5MHz offset		-
Impedance		50 Ω		-
In/out connector		N type Female		-
Input Voltage		AC 110/220V, 50/60 Hz		-

◆ Optic specification

Item	Specification	
	Down Link	Up Link
Laser type	DFB With Isolator	
Wavelength	1310 \pm 5nm	1530, 1550, 1570 \pm 5nm
Optic power	$\leq 0\text{ dBm}$	
Connector type	SC/APC	

◆ Repeater LED Indicators

Type	Normal Status	Abnormal Status	Specification	
			MHU	ROU
Power LED	Green	OFF	Normal operating	
Over power	OFF	Red	Up Link shut down	Down Link shut down
Optic status	Green	OFF	Normal Optic level	