LS Cable
Leading Solution

RF Total Solution

We are at the Heart of All Human Communication

Leading Solution

**LS aims to develop into a company that provides its clients with a Leading Solution,
contributes to the overall society,
and offers a business environment where the employees can realize their dreams.**

Always with our customers

LS Cable is leading the cable, telecommunication industry.
It also represents the LS Group with its company vision,
"Always with our customers." LS Cable continuously drives towards becoming the global leading company providing the technology as required by customers and the solution that others cannot offer.

Towards the global leading company

All employees of LS Cable stand behind the vision of becoming Your No.1 Creative Partner and are doing their best to realize our customers' satisfaction. Securing and establishing a firm growth engine, LS Cable will be reborn as an enterprise to leap worldwide

RF Total Solution

for Wireless Base Station, In building System

LS cable, a global supplier in the wire & cable sector, is now expanding its product portfolio on the wireless communication field to provide total- package solution.

With years of experience serving in one of the most advanced market in the world, LS Cable has capability to implement the most efficient solutions based on state of the art technologies on hand,

LS Cable is now a RF Total Solution provider to support our customers to meet sophisticated demand of today's fast- evolving technology of wireless communications.

We are determined to support our customers with our leading solution technologies.

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Transmission Line Products

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Application Guide

Self-Supporting Tower

LHF Series
Low Loss Flexible Foam Dielectric Feeder

1/2 ″
LHF 12D / LHF-FR 12D

7/8 ″
LHF 22D / LHF-FR 22D

1-1/4 ″
LHF 33D / LHF-FR 33D

1-5/8 ″
LHF 42D / LHF-FR 42D

Construction

		LHF 12D (1/2″)	LHF 22D (7/8″)	LHF 33D (1-1/4″)	LHF 42D (1-5/8″)
Inner Conductor	Material / Construction	Copper-Clad Aluminum Wire	Smooth Copper Tube	Smooth Copper Tube	Helically Corrugated Copper Tube
	Diameter (mm)	5.0	9.4	13.7	18.1
Dielectric	Material / Construction	Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene
	Diameter (mm)	12.5	23.0	33.6	43.5
Outer Conductor	Material / Construction	Annularly Corrugated Copper Tube	Annularly Corrugated Copper Tube	Annularly Corrugated Copper Tube	Annularly Corrugated Copper Tube
	Diameter (mm)	14.2	25.2	36.4	46.5
Jacket Diameter	Standard Jacket (mm)	16.4	28.2	39.4	50.0
	Halogen-Free / Flame-Retardant Jacket (mm)	16.4	28.2	39.4	50.0

Mechanical Characteristics

		LHF 12D (1/2″)	LHF 22D (7/8″)	LHF 33D (1-1/4″)	LHF 42D (1-5/8″)
Min. Bending Radius (mm)		125	250	380	500
Recommended Operating Temperature	Standard Jacket (℃)	-40 ~ +80	-40 ~ +80	-40 ~ +80	-40 ~ +80
	Halogen-Free / Flame-Retardant Jacket (℃)	-30 ~ +80	-30 ~ +80	-30 ~ +80	-30 ~ +80
Nominal Weight	Standard Jacket (kg/km)	244	501	915	1,068
	Halogen-Free / Flame-Retardant Jacket (kg/km)	262	529	963	1,147
Flat Plate Crush Resistance (kg/mm)		2.0	1.4	2.4	1.6
Max. Pulling Force (kg)		113	147	260	181

Electrical Characteristics

		LHF12D (1/2″)	LHF22D (7/8″)	LHF33D (1-1/4″)	LHF42D (1-5/8″)
DC Resistance Ω/1,000m (Ω/1,000ft)	Inner Conductor	1.6 (0.5)	1.5 (0.5)	1.1 (0.3)	1.4 (0.4)
	Outer Conductor	1.9 (0.6)	1.9 (0.6)	1.0 (0.3)	0.6 (0.2)
Insulation Resistance (MΩ · km)		10,000	10,000	10,000	10,000
Dielectric Strength (for 1 Min.)		DC 4,000V	DC 6,000V	DC 10,000V	DC 11,000V
Velocity of Propagation (%)		89	89	89	89
Peak Power Rating (kW)		40	91	200	302
Max. Operating Frequency (GHz)		8.8	4.9	3.3	2.5
Characteristic Impedance (Ω)		50	50	50	50
Return Loss (Typical Value) (dB)		28	28	28	28

Attenuation(at 20℃) & Average Power Rating(at Ambient 40℃, Inner Conductor 100℃)

Frequency(MHz)		LHF 12D (1/2″)	LHF 22D (7/8″)	LHF 33D (1-1/4″)	LHF 42D (1-5/8″)
Attenuation dB/100m (dB/100ft)	30	1.14 (0.35)	0.59 (0.18)	0.42 (0.13)	0.33 (0.10)
	100	2.12 (0.65)	1.13 (0.34)	0.79 (0.24)	0.64 (0.20)
	150	2.60 (0.79)	1.40 (0.43)	0.98 (0.30)	0.80 (0.24)
	450	4.58 (1.40)	2.52 (0.77)	1.77 (0.54)	1.48 (0.45)
	824	6.31 (1.92)	3.51 (1.07)	2.49 (0.76)	2.11 (0.64)
	894	6.55 (2.00)	3.67 (1.12)	2.61 (0.80)	2.20 (0.67)
	960	6.84 (2.08)	3.82 (1.16)	2.72 (0.83)	2.31 (0.70)
	1,000	7.00 (2.13)	3.92 (1.19)	2.79 (0.85)	2.38 (0.73)
	1,700	9.32 (2.84)	5.29 (1.61)	3.84 (1.17)	3.28 (1.00)
	1,800	9.61 (2.93)	5.47 (1.67)	3.97 (1.21)	3.40 (1.04)
	2,000	10.19 (3.11)	5.81 (1.77)	4.25 (1.30)	3.63 (1.11)
	2,400	11.10 (3.38)	6.46 (1.97)	4.73 (1.44)	4.05 (1.23)
	2,700	12.53 (3.73)	6.88 (2.10)	5.11 (1.56)	4.18 (1.27)
	3,000	12.96 (3.95)	7.37 (2.25)	5.43 (1.66)	-
	3,500	13.92 (4.24)	8.08 (2.46)	-	-
	4,000	15.27 (4.65)	8.75 (2.67)	-	-
	5,000	17.15 (5.23)	9.99 (3.04)	-	-
Average Power Rating (kW)	30	6.10	13.58	21.30	30.60
	100	3.32	7.36	11.50	16.42
	150	2.71	5.98	9.32	13.28
	450	1.55	3.38	5.23	7.37
	824	1.13	2.46	3.78	5.28
	894	1.09	2.36	3.61	5.05
	960	1.05	2.27	3.48	4.85
	1,000	1.03	2.22	3.40	4.74
	1,700	0.78	1.67	2.53	3.50
	1,800	0.76	1.62	2.45	3.39
	2,000	0.71	1.53	2.31	3.18
	2,400	0.65	1.38	2.09	2.86
	2,700	0.61	1.31	1.95	2.77
	3,000	0.58	1.22	1.84	-
	3,500	0.53	1.12	-	-
	4,000	0.50	1.04	-	-
	5,000	0.44	0.92	-	-

* Standard Conditions : V.S.W.R 1.0 ; Ambient Temperature 20℃
* Specifications Subject to change without notice

HFC Series
Flexible Foam Dielectric Feeder

1/2 ″
HFC 12D / HFC-FR 12D

7/8 ″
HFC 22D / HFC-FR 22D

1-1/4 ″
HFC 33D / HFC-FR 33D

1-5/8 ″
HFC 42D / HFC-FR 42D

Construction

		HFC 12D (1/2″)	HFC 22D (7/8″)	HFC 33D (1-1/4″)	HFC 42D (1-5/8″)
Inner Conductor	Material / Construction	Copper-Clad Aluminum Wire	Smooth Copper Tube	Smooth Copper Tube	Helically Corrugated Copper Tube
	Diameter (mm)	4.8	9.0	13.1	17.2
Dielectric	Material / Construction	Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene
	Diameter (mm)	12.0	22.1	32.5	42.5
Outer Conductor	Material / Construction	Annularly Corrugated Copper Tube	Annularly Corrugated Copper Tube	Annularly Corrugated Copper Tube	Annularly Corrugated Copper Tube
	Diameter (mm)	13.8	24.9	36.0	46.5
Jacket Diameter	Standard Jacket (mm)	16.0	27.9	39.0	50.0
	Halogen-Free / Flame-Retardant Jacket (mm)	16.0	27.9	39.0	50.0

Mechanical Characteristics

		HFC 12D (1/2″)	HFC 22D (7/8″)	HFC 33D (1-1/4″)	HFC 42D (1-5/8″)
Min. Bending Radius (mm)		125	250	380	500
Recommended Operating Temperature	Standard Jacket (℃)	-40 ~ +80	-40 ~ +80	-40 ~ +80	-40 ~ +80
	Halogen-Free / Flame-Retardant Jacket (℃)	-30 ~ +80	-30 ~ +80	-30 ~ +80	-30 ~ +80
Nominal Weight	Standard Jacket (kg/km)	242	516	963	1,265
	Halogen-Free / Flame-Retardant Jacket (kg/km)	260	560	1,014	1,358
Flat Plate Crush Resistance (kg/mm)		2.0	1.4	2.4	2.7
Max. Pulling Force (kg)		113	147	260	250

Electrical Characteristics

		HFC 12D (1/2″)	HFC 22D (7/8″)	HFC 33D (1-1/4″)	HFC 42D (1-5/8″)
DC Resistance Ω/1,000m (Ω/1,000ft)	Inner Conductor	1.55 (0.47)	1.15 (0.35)	0.72 (0.22)	0.85 (0.26)
	Outer Conductor	1.9 (0.58)	1.15 (0.35)	0.45 (0.14)	0.36 (0.11)
Insulation Resistance (MΩ·km)		10,000	10,000	10,000	10,000
Dielectric Strength (for 1 Min.)		DC 4,000V	DC 6,000V	DC 9,000V	DC 11,000V
Velocity of Propagation (%)		88	88	88	88
Peak Power Rating (kW)		40	91	205	315
Max. Operating Frequency (GHz)		8.8	5	3.3	2.5
Characteristic Impedance (Ω)		50	50	50	50
Return Loss (Typical Value) (dB)		28	28	28	28

Attenuation(at 20℃) & Average Power Rating(at Ambient 40℃, Inner Conductor 100℃)

Frequency(MHz)		HFC 12D (1/2″)	HFC 22D (7/8″)	HFC 33D (1-1/4″)	HFC 42D (1-5/8″)
Attenuation dB/100m (dB/100ft)	30	1.17 (0.36)	0.64 (0.20)	0.44 (0.13)	0.36 (0.11)
	100	2.17 (0.66)	1.19 (0.36)	0.83 (0.25)	0.67 (0.20)
	150	2.67 (0.81)	1.47 (0.45)	1.03 (0.31)	0.84 (0.26)
	450	4.75 (1.45)	2.65 (0.81)	1.86 (0.57)	1.53 (0.47)
	824	6.49 (1.98)	3.68 (1.12)	2.62 (0.80)	2.17 (0.66)
	890	6.76 (2.06)	3.85 (1.17)	2.75 (0.84)	2.27 (0.69)
	960	7.04 (2.15)	4.01 (1.22)	2.86 (0.87)	2.38 (0.73)
	1,000	7.20 (2.19)	4.10 (1.25)	2.94 (0.90)	2.43 (0.74)
	1,700	9.61 (2.93)	5.54 (1.69)	4.01 (1.22)	3.35 (1.02)
	1,800	9.91 (3.02)	5.73 (1.75)	4.15 (1.26)	3.47 (1.06)
	2,000	10.70 (3.26)	6.09 (1.86)	4.43 (1.35)	3.71 (1.13)
	2,300	11.54 (3.52)	6.63 (2.02)	4.60 (1.40)	4.07 (1.24)
	2,700	12.61 (3.84)	7.30 (2.13)	5.11 (1.56)	4.53 (1.38)
	3,000	13.44 (4.10)	7.81 (2.38)	5.43 (1.66)	-
	3,400	14.44 (4.40)	8.52 (2.60)	-	-
	4,000	15.81 (4.82)	9.42 (2.87)	-	-
	5,000	17.77 (5.42)	10.84 (3.30)	-	-
Average Power Rating (kW)	30	6.19	13.90	21.33	29.55
	100	3.36	7.51	11.36	15.60
	150	2.74	6.09	9.15	12.52
	450	1.56	3.43	5.02	6.76
	824	1.14	2.48	3.56	4.74
	890	1.10	2.38	3.40	4.52
	960	1.05	2.28	3.26	4.32
	1,000	1.03	2.23	3.18	4.22
	1,700	0.78	1.67	2.32	3.04
	1,800	0.76	1.62	2.24	2.93
	2,000	0.72	1.52	2.10	2.74
	2,300	0.66	1.41	1.93	2.51
	2,700	0.62	1.33	1.74	2.25
	3,000	0.58	1.21	1.64	-
	3,400	0.54	1.13	-	-
	4,000	0.49	1.03	-	-
	5,000	0.44	0.90	-	-

* Standard Conditions : V.S.W.R 1.0 ; Ambient Temperature 20℃
* Specifications Subject to change without notice

HFSC Series
Super Flexible Foam Dielectric Feeder

1/4″
HFSC 6D / HFSC-FR 6D

3/8″
HFSC 10D / HFSC-FR 10D

1/2″
HFSC 12D / HFSC-FR 12D

7/8″
HFSC 22D / HFSC-FR 22D

Construction

		HFSC 6D (1/4″)	HFSC 10D (3/8″)	HFSC 12D (1/2″)	HFSC 22D (7/8″)
Inner Conductor	Material / Construction	Copper-Clad Aluminum Wire	Copper-Clad Aluminum Wire	Copper-Clad Aluminum Wire	Helically Corrugated Copper Tube
	Diameter (mm)	1.9	2.8	3.6	9.4
Dielectric	Material / Construction	Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene
	Diameter (mm)	4.7	7.2	8.9	23.0
Outer Conductor	Material / Construction	Annularly Corrugated Copper Tube	Annularly Corrugated Copper Tube	Annularly Corrugated Copper Tube	Annularly Corrugated Copper Tube
	Diameter (mm)	6.4	9.5	12.2	25.2
Jacket Diameter	Standard Jacket (mm)	7.5	10.5	13.6	27.9
	Halogen-Free / Flame-Retardant Jacket (mm)	7.5	10.5	13.6	27.9

Mechanical Characteristics

		HFSC 6D (1/4″)	HFSC 10D (3/8″)	HFSC 12D (1/2″)	HFSC 22D (7/8″)
Min. Bending Radius (mm)		25	25	32	125
Recommended Operating Temperature	Standard Jacket (℃)	-40 ~ +80	-40 ~ +80	-40 ~ +80	-40 ~ +80
	Halogen-Free / Flame-Retardant Jacket (℃)	-30 ~ +80	-30 ~ +80	-30 ~ +80	-30 ~ +80
Nominal Weight	Standard Jacket (kg/km)	76	117	201	471
	Halogen-Free / Flame-Retardant Jacket (kg/km)	80	123	211	494
Flat Plate Crush Resistance (kg/mm)		1.86	1.7	1.7	1.4
Max. Pulling Force (kg)		68	60	65	102

Electrical Characteristics

		HFSC 6D (1/4″)	HFSC 10D (3/8″)	HFSC 12D (1/2″)	HFSC 22D (7/8″)
DC Resistance Ω/1,000m (Ω/1,000ft)	Inner Conductor	9.80 (2.99)	4.20 (1.28)	2.85 (0.87)	2.80 (0.85)
	Outer Conductor	6.50 (1.98)	5.00 (1.52)	3.25 (0.99)	1.20 (0.37)
Insulation Resistance (MΩ·km)		10,000	10,000	10,000	10,000
Dielectric Strength (for 1 Min.)		DC 1,600V	DC 2,300V	DC 2,500V	DC 6,000V
Velocity of Propagation (%)		81	81	81	88
Peak Power Rating (kW)		6.4	13.2	15.6	90
Max. Operating Frequency (GHz)		20.4	13.0	10.0	5.0
Characteristic Impedance (Ω)		50	50	50	50
Return Loss (Typical Value) (dB)		28	28	28	28

Attenuation (at 20℃) & Average Power Rating (at Ambient 40℃, Inner Conductor 100℃)

Frequency (MHz)		HFSC 6D (1/4″)	HFSC 10D (3/8″)	HFSC 12D (1/2″)	HFSC 22D (7/8″)
Attenuation dB/100m (dB/100ft)	30	3.15 (0.96)	2.28 (0.69)	1.80 (0.55)	0.70 (0.21)
	100	5.82 (1.77)	4.22 (1.29)	3.33 (1.01)	1.29 (0.39)
	150	7.17 (2.19)	5.20 (1.58)	4.10 (1.25)	1.61 (0.49)
	450	12.70 (3.87)	9.22 (2.81)	7.29 (2.22)	2.85 (0.87)
	824	17.60 (5.36)	12.70 (3.87)	10.10 (3.08)	3.97 (1.21)
	894	18.40 (5.61)	13.30 (4.05)	10.50 (3.20)	4.12 (1.26)
	960	19.10 (5.82)	13.80 (4.21)	11.00 (3.35)	4.32 (1.32)
	1,000	19.50 (5.94)	14.10 (4.30)	11.20 (3.41)	4.42 (1.35)
	1,700	26.10 (7.96)	18.80 (5.73)	15.00 (4.57)	5.95 (1.81)
	1,800	26.90 (8.20)	19.40 (5.91)	15.50 (4.72)	6.13 (1.87)
	2,000	28.50 (8.69)	20.60 (6.28)	16.40 (5.00)	6.52 (1.99)
	2,400	31.60 (9.63)	22.80 (6.95)	18.20 (5.55)	7.13 (2.17)
	3,000	35.80 (10.91)	25.80 (7.86)	20.70 (6.31)	8.27 (2.52)
	4,000	42.20 (12.86)	30.40 (9.27)	24.40 (7.44)	9.80 (2.99)
	6.000	53.40 (16.28)	38.40 (11.70)	31.00 (9.45)	-
	10,000	72.60 (22.13)	52.10 (15.90)	42.30 (12.89)	-
	14,000	89.40 (27.25)	-	-	-
	16,000	97.20 (29.63)	-	-	-
Average Power Rating (kW)	30	2.08	3.44	4.87	14.32
	100	1.13	1.86	2.62	7.72
	150	0.92	1.51	2.12	6.26
	450	0.52	0.85	1.19	3.51
	824	0.38	0.61	0.85	2.53
	894	0.36	0.59	0.82	2.42
	960	0.35	0.57	0.79	2.33
	1,000	0.34	0.55	0.77	2.28
	1,700	0.26	0.41	0.57	1.70
	1,800	0.25	0.40	0.55	1.65
	2,000	0.24	0.38	0.52	1.55
	2,400	0.22	0.34	0.47	1.40
	3,000	0.19	0.30	0.41	1.23
	4,000	0.16	0.26	0.35	1.04
	6,000	0.13	0.20	0.27	-
	10,000	0.10	0.15	0.20	
	14,000	0.08	-	-	-
	16,000	0.08	-	-	-

* Standard Conditions : V.S.W.R 1.0 ; Ambient Temperature 20℃
* Specifications Subject to change without notice

Radiating Cable

RFCX Series(Coupled Mode)

1/2″
RFCX 12D / RFCX-FR 12D

7/8″
RFCX 22D / RFCX-FR 22D

1-1/4″
RFCX 33D / RFCX-FR 33D

1-5/8 ″
RFCX 42D / RFCX-FR 42D

Construction

		RFCX 12D (1/2″)	RFCX 22D (7/8″)	RFCX 33D (1-1/4″)	RFCX 42D (1-5/8″)
Inner Conductor	Material / Construction	Copper-Clad Aluminum Wire	Smooth Copper Tube	Smooth Copper Tube	Helically Corrugated Copper Tube
	Diameter (㎜)	4.8	9.4	13.1	17.2
Dielectric	Material / Construction	Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene
	Diameter (㎜)	12.0	23.0	32.5	42.5
Outer Conductor	Material / Construction	Annularly Corrugated Copper Tube with Milled Slots	Annularly Corrugated Copper Tube with Milled Slots	Annularly Corrugated Copper Tube with Milled Slots	Annularly Corrugated Copper Tube with Milled Slots
	Diameter (㎜)	13.8	25.2	36.0	46.5
Jacket Diameter	Standard Jacket (㎜)	16.0	28.2	39.0	50.0
	Halogen-Free / Flame-Retardant Jacket (㎜)	16.0	28.2	39.0	50.0

Mechanical Characteristics

		RFCX 12D (1/2″)	RFCX 22D (7/8″)	RFCX 33D (1-1/4″)	RFCX 42D (1-5/8″)
Min. Bending Radius (㎜)		125	250	380	500
Recommended Operating Temperature	Standard Jacket (℃)	-40 ~ +80	-40 ~ +80	-40 ~ +80	-40 ~ +80
	Halogen-Free / Flame-Retardant Jacket (℃)	-30 ~ +80	-30 ~ +80	-30 ~ +80	-30 ~ +80
Nominal Weight	Standard Jacket (㎏/㎞)	238	495	951	1,256
	Halogen-Free / Flame-Retardant Jacket (㎏/㎞)	257	564	1,010	1,354

Electrical Characteristics

		RFCX 12D (1/2″)	RFCX 22D (7/8″)	RFCX 33D (1-1/4″)	RFCX 42D (1-5/8″)
DC Resistance Ω/1,000m (Ω/1,000ft)	Inner Conductor	1.55 (0.47)	1.50 (0.5)	0.72 (0.22)	0.85 (0.26)
	Outer Conductor	2.50 (0.76)	1.9 (0.6)	0.60 (0.18)	0.50 (0.15)
Insulation Resistance (MΩ·km)		10,000	10,000	10,000	10,000
Dielectric Strength (for 1 Min.)		DC 4,000V	DC 6,000V	DC 9,000V	DC 11,000V
Velocity of Propagation (%)		88	88	88	87
Characteristic Impedance (Ω)		50	50	50	50

Attenuation (at 20℃) & Average Power Rating (at Ambient 40℃, Inner Conductor 100℃)

Frequency (MHz)		RFCX 12D (1/2″)	RFCX 22D (7/8″)	RFCX 33D (1-1/4″)	RFCX 42D (1-5/8″)
Attenuation (dB/1km)	75	22.0	12.0	10.0	7.5
	150	31.0	16.0	13.0	9.5
	450	55.0	29.0	24.0	19.0
	800	75.0	49.0	34.0	26.0
	900	79.0	52.0	36.0	28.0
	1,800	118.0	76.0	59.0	43.0
	2,200	131.0	88.0	71.0	55.0
	2,400	140.0	92.0	81.0	58.0
Coupling Loss (dB, 50% / 95%)	75	63 / 74	59 / 69	58 / 68	60 / 72
	150	67 / 77	66 / 77	65 / 74	74 / 80
	450	71 / 83	70 / 80	68 / 78	69 / 80
	800	75 / 86	70 / 82	69 / 82	70 / 81
	900	74 / 85	69 / 79	70 / 81	71 / 82
	1,800	71 / 82	67 / 81	66 / 79	65 / 78
	2,200	73 / 84	69 / 80	67 / 80	66 / 78
	2,400	71 / 83	69 / 82	66 / 79	65 / 77

* Specifications Subject to change without notice

Aluminum RFACX Series(Coupled Mode)

1/2″
RFACX 12D / RFACX-FR 12D

7/8″
RFACX 22D / RFACX-FR 22D

Construction

		RFACX 12D (1/2″)	RFACX 22D (7/8″)
Inner Conductor	Material / Construction	Copper-Clad Aluminum Wire	Smooth Copper Tube
	Diameter (㎜)	5.0	9.4
Dielectric	Material / Construction	Foamed Polyethylene	Foamed Polyethylene
	Diameter (㎜)	12.5	23.0
Outer Conductor	Material / Construction	Annularly Corrugated Aluminum Tube with Milled Slots	Annularly Corrugated Aluminum Tube with Milled Slots
	Diameter (㎜)	14.2	25.2
Jacket Diameter	Standard Jacket (㎜)	16.4	28.2
	Halogen-Free / Flame-Retardant Jacket (㎜)	16.4	28.2

Mechanical Characteristics

		RFACX 12D (1/2″)	RFACX 22D (7/8″)
Min. Bending Radius (㎜)		125	250
Recommended Operating Temperature	Standard Jacket (℃)	-40 ~ +80	-40 ~ +80
	Halogen-Free / Flame-Retardant Jacket (℃)	-30 ~ +80	-30 ~ +80
Nominal Weight	Standard Jacket (㎏/㎞)	178	385
	Halogen-Free / Flame-Retardant Jacket (㎏/㎞)	197	427

Electrical Characteristics

		RFACX 12D (1/2″)	RFACX 22D (7/8″)
DC Resistance Ω/1,000m (Ω/1,000ft)	Inner Conductor	1.55 (0.47)	1.5 (0.46)
	Outer Conductor	3.00 (0.91)	1.7 (0.52)
Insulation Resistance (MΩ·km)		10,000	10,000
Dielectric Strength (for 1 Min.)		DC 4,000V	DC 6,000V
Velocity of Propagation (%)		88	88
Characteristic Impedance (Ω)		50	50

Attenuation (at 20℃) & Average Power Rating (at Ambient 40℃, Inner Conductor 100℃)

Frequency (MHz)		RFACX 12D (1/2″)	RFACX 22D (7/8″)
Attenuation (dB/1km)	75	22.0	12.0
	150	31.0	16.0
	450	55.0	29.0
	800	75.0	49.0
	900	79.0	52.0
	1,800	118.0	76.0
	2,200	131.0	88.0
	2,400	140.0	92.0
Coupling Loss (dB, 50% / 95%)	75	63 / 74	59 / 69
	150	67 / 77	66 / 77
	450	71 / 83	70 / 80
	800	75 / 86	70 / 82
	900	74 / 85	69 / 79
	1,800	71 / 82	67 / 81
	2,200	73 / 84	69 / 80
	2,400	71 / 83	69 /82

* Specifications Subject to change without notice

RFCL Series(Radiating Mode)

7/8″
RFCL 22D /
RFCL-FR 22D

1-1/4″
RFCL 33D /
RFCL-FR 33D

1-5/8″
RFCL 42D /
RFCL-FR 42D

1-1/4″
RFACL 33D /
RFACL-FR 33D

1-5/8″
RFACL 42D /
RFACL-FR 42D

Construction

		RFCL 22D (7/8″)	RFCL 33D (1-1/4″)	RFCL 42D (1-5/8″)
Inner Conductor	Material / Construction	Smooth Copper Tube	Smooth Copper Tube	Helically Corrugated Copper Tube
	Diameter (㎜)	9.0	13.0	17.1
Dielectric	Material / Construction	Foamed Polyethylene	Foamed Polyethylene	Foamed Polyethylene
	Diameter (㎜)	23.3	33.0	43.5
Outer Conductor	Material / Construction	Overlapped Copper Foil with Punched Leaky Slots	Overlapped Copper Foil with Punched Leaky Slots	Overlapped Copper Foil with Punched Leaky Slots
	Diameter (㎜)	23.7	33.5	44.0
Jacket Diameter	Standard Jacket (㎜)	27.3	38.0	48.0
	Halogen-Free / Flame-Retardant Jacket (㎜)	28.7	39.0	49.0

Mechanical Characteristics

		RFCL 22D (7/8″)	RFCL 33D (1-1/4″)	RFCL 42D (1-5/8″)
Min. Bending Radius (㎜)		350	500	700
Recommended Operating Temperature	Standard Jacket (℃)	-40 ~ +80	-40 ~ +80	-40 ~ +80
	Halogen-Free / Flame-Retardant Jacket (℃)	-30 ~ +80	-30 ~ +80	-30 ~ +80
Nominal Weight	Standard Jacket (㎏/㎞)	591	790	995
	Halogen-Free / Flame-Retardant Jacket (㎏/㎞)	711	950	1,197

Electrical Characteristics

		RFCL 22D (7/8″)	RFCL 33D (1-1/4″)	RFCL 42D (1-5/8″)
DC Resistance Ω/1,000m (Ω/1,000ft)	Inner Conductor	1.50 (0.46)	1.50 (0.46)	1.50 (0.46)
	Outer Conductor	2.00 (0.61)	2.30 (0.70)	2.00 (0.61)
Insulation Resistance (MΩ· km)		10,000	10,000	10,000
Dielectric Strength (for 1 Min.)		DC 6,000V	DC 9,000V	DC 11,000V
Velocity of Propagation (%)		88	87	87
Characteristic Impedance (Ω)		50	50	50

Attenuation (at 20℃) & Average Power Rating (at Ambient 40℃, Inner Conductor 100℃)

	Frequency (MHz)	RFCL 22D (7/8″)		RFCL 33D (1-1/4″)		RFCL 42D (1-5/8″)	
		Attenuation	Coupling Loss	Attenuation	Coupling Loss	Attenuation	Coupling Loss
		(dB/1km)	50% / 95%	(dB/1km)	50% / 95%	(dB/1km)	50% / 95%
RFCL M-Type	75	11	79/86	8	70/80	7	70/80
	150	15	77/83	11	76/85	9	70/80
	450	30	60/65	21	85/93	16	76/85
	800	40	63/73	33	67/72	26	65/70
	900	43	65/75	36	67/72	28	65/70
RFCL W-Type	1,700	59	63/68	55	56/61	51	58/63
	1,900	62	64/69	59	62/67	52	56/61
	2,100	65	64/69	63	64/69	57	58/63
	2,300	70	65/70	67	60/65	64	60/65
	2,400	73	65/70	73	60/65	70	60/65
RFCL	75	-	-	8	72/83	7	91/100
	90	-	-	9	74/84	8	91/100
	150	-	-	12	77/90	10	96/104
	320	-	-	17	87/99	15	96/100
	450	-	-	20	89/98	19	85/90
	800	-	-	28	71/77	31	62/83
	900	-	-	29	69/73	28	71/78
	1,700	-	-	47	67/72	46	75/81
	1,900	-	-	50	68/73	60	70/80
	2,100	-	-	57	66/72	53	71/80
RFACL M-Type (Aluminum)	75	-	-	9	73/88	7	78/86
	150	-	-	13	81/92	10	85/88
	450	-	-	23	68/73	19	68/72
	800	-	-	34	64/76	27	63/71
	900	-	-	37	64/71	29	64/71

* Specifications Subject to change without notice

HFAC Series
Flexible Foam Dielectric Aluminum Feeder

1/2″
HFAC 12D / HFAC-FR 12D

7/8″
HFAC 22D / HFAC-FR 22D

Construction

		HFAC 12D (1/2″)	HFAC 22D (7/8″)
Inner Conductor	Material / Construction	Copper-Clad Aluminum Wire	Smooth Copper Tube
	Diameter (㎜)	5.0	9.4
Dielectric	Material / Construction	Foamed Polyethylene	Foamed Polyethylene
	Diameter (㎜)	12.5	23.0
Outer Conductor	Material / Construction	Annularly Corrugated Aluminum Tube	Annularly Corrugated Aluminum Tube
	Diameter (㎜)	14.2	25.2
Jacket Diameter	Standard Jacket (㎜)	16.4	28.2
	Halogen-Free / Flame-Retardant Jacket (㎜)	16.4	28.2

Mechanical Characteristics

		HFAC 12D (1/2″)	HFAC 22D (7/8″)
Min. Bending Radius (㎜)		125	250
Recommended Operating Temperature	Standard Jacket (℃)	-40 ~ +80	-40 ~ +80
	Halogen-Free / Flame-Retardant Jacket (℃)	-30 ~ +80	-30 ~ +80
Nominal Weight	Standard Jacket (㎏/㎞)	166	390
	Halogen-Free / Flame-Retardant Jacket (㎏/㎞)	186	410
Flat Plate Crush Resistance (㎏/㎟)		1.5	1.1
Max. Pulling Force (㎏)		113	147

Electrical Characteristics

		HFAC 12D (1/2″)	HFAC 22D (7/8″)
DC Resistance Ω/1,000m (Ω/1,000ft)	Inner Conductor	1.6 (0.5)	1.5 (0.5)
	Outer Conductor	1.9 (0.6)	1.5 (0.5)
Insulation Resistance (MΩ·km)		10,000	10,000
Dielectric Strength (for 1 Min.)		DC 4,600V	DC 6,000V
Velocity of Propagation (%)		88	89
Peak Power Rating (kW)		40	91
Max. Operating Frequency (GHz)		8.8	4.9
Characteristic Impedance (Ω)		50	50
Return Loss (Typical Value) (dB)		28	28

Attenuation (at 20℃) & Average Power Rating (at Ambient 40℃, Inner Conductor 100℃)

Frequency (MHz)		HFAC 12D (1/2″)	HFAC 22D (7/8″)
Attenuation dB/100m (dB/100ft)	100	2.24 (0.68)	1.40 (0.43)
	150	2.75 (0.84)	1.72 (0.52)
	450	4.89 (1.49)	3.00 (0.91)
	824	6.68 (2.04)	4.13 (1.26)
	894	6.96 (2.12)	4.30 (1.31)
	960	7.25 (2.21)	4.46 (1.36)
	1,000	7.42 (2.26)	4.65 (1.42)
	1,700	9.90 (3.02)	6.35 (1.94)
	2,000	11.02 (3.36)	6.80 (2.07)
	2,300	11.89 (3.62)	7.40 (2.26)
	3,000	13.84 (4.22)	8.70 (2.65)
Average Power Rating (kW)	100	3.18	7.18
	150	2.59	5.83
	450	1.46	3.30
	824	1.07	2.40
	894	1.02	2.30
	960	0.98	2.21
	1,000	0.96	2.17
	1,700	0.72	1.63
	2,000	0.65	1.49
	2,300	0.60	1.38
	3,000	0.51	1.19

* Standard Conditions : V.S.W.R 1.0 ; Ambient Temperature 20℃
* Specifications Subject to change without notice

HFASC Series
Super Flexible Foam Dielectric Aluminum Feeder

3/8″
HFASC 10D / HFASC-FR 10D

1/2″
HFASC 12D / HFASC-FR 12D

Construction

		HFASC 10D (3/8″)	HFASC 12D (1/2″)
Inner Conductor	Material / Construction	Copper-Clad Aluminum Wire	Copper-Clad Aluminum Wire
	Diameter (㎜)	3.6	5.0
Dielectric	Material / Construction	Foamed Polyethylene	Foamed Polyethylene
	Diameter (㎜)	9.7	13.4
Outer Conductor	Material / Construction	Aluminum Smooth Tube	Aluminum Smooth Tube
	Diameter (㎜)	10.1	13.8
Jacket Diameter	Standard Jacket (㎜)	11.4	15.6
	Halogen-Free / Flame-Retardant Jacket (㎜)	11.4	15.6

* Cable dimension is nominal value

Mechanical Characteristics

		HFASC 10D (3/8″)	HFASC 12D (1/2″)
Min. Bending Radius (㎜)		32	51
Recommended Operating Temperature	Standard Jacket (℃)	-40 ~ +80	-40 ~ +80
	Halogen-Free / Flame-Retardant Jacket (℃)	-30 ~ +80	-30 ~ +80
Nominal Weight	Standard Jacket (㎏/㎞)	109	176
	Halogen-Free / Flame-Retardant Jacket (㎏/㎞)	117	190
Flat Plate Crush Resistance (㎏/㎜)		1.7	1.7
Max. Pulling Force (㎏)		113	182

Electrical Characteristics

		HFASC 10D (3/8″)	HFASC 12D (1/2″)
DC Resistance Ω/1,000m (Ω/1,000ft)	Inner Conductor	2.8 (0.9)	1.5 (0.5)
	Outer Conductor	3.2 (1.0)	2.2 (0.7)
Insulation Resistance (MΩ·km)		10,000	10,000
Dielectric Strength (for 1 Min.)		DC 2,500V	DC 2,500V
Velocity of Propagation (%)		85	88
Peak Power Rating (kW)		15.6	41.8
Max. Operating Frequency (GHz)		12	8.8
Characteristic Impedance (Ω)		50	50
Return Loss (Typical Value) (dB)		28	28

Attenuation (at 20℃) & Average Power Rating (at Ambient 40℃, Inner Conductor 100℃)

Frequency (MHz)		HFASC 10D (3/8″)	HFASC 12D (1/2″)
Attenuation dB/100m (dB/100ft)	100	3.13 (0.95)	2.23 (0.68)
	450	6.94 (2.12)	4.72 (1.44)
	824	9.43 (2.87)	6.46 (1.97)
	894	9.92 (3.02)	6.76 (2.06)
	1,500	13.10 (3.99)	9.45 (2.88)
	1,800	14.38 (4.38)	9.92 (3.02)
	2,000	15.35 (4.68)	10.53 (3.21)
	2,400	16.85 (5.14)	11.65 (3.55)
Average Power Rating (kW)	100	2.89	3.57
	450	1.30	1.56
	824	0.93	1.13
	894	0.89	1.10
	1,500	0.66	0.78
	1,800	0.60	0.73
	2,000	0.55	0.70
	2,400	0.50	0.63

* Standard Conditions : V.S.W.R 1.0 ; Ambient Temperature 20℃
* Specifications Subject to change without notice

Jacket Option

Standard Jacket

LHF & HFC & HFSC & RFCX & RFCL Series Cables Complying with;

- IEC 754-1 : Halogen Acid Gas Content (Chlorium < 0.5%)
- IEC 754-2 : Degree of Acidity of Gas (pH-Value < 4.0, Conductivity < 100 ㎲/㎝)

Flame Retardant Jacket

LHF & HFC & HFSC & RFCX Series Cables Complying with;

- IEC 754-1 : Halogen Acid Gas Content (Chlorium < 0.5%)
- IEC 754-2 : Degree of Acidity of Gas (pH-Value < 4.0, Conductivity < 100 ㎲/㎝)
- IEC 332-1 : Flammability Test on Single Cables
- IEC 332-3C : Flammability Test on Cable Bundles
- IEEE 383 : Flammability Test on Cable Bundles
- ASTME 662 : Optical Density of Smoke (Smoke - Density < 150)

RFCL Series Cables Complying with;

- IEC 754-1 : Halogen Acid Gas Content (Chlorium < 0.5%)
- IEC 754-2 : Degree of Acidity of Gas (pH-Value < 4.0, Conductivity < 100 ㎲/㎝)
- IEC 332-1 : FlammabilityTest on Single Cables
- ASTME 662 : Optical Density of Smoke (Smoke - Density < 150)

Model	Jacket	IEC 754-1	IEC 754-2	IEC 332-1	IEC 332-3C	IEEE 383	ASTM E 662
LHF 12D LHF 22D LHF 32D LHF 42D HFC 12D HFC 22D HFC 33D HFC 42D HFSC 12D HFSC 22D RFCX 12D RFCX 22D RFCX 33D RFCX 42D	Standard Black PE	○	○	–	–	–	–
RFCL 22D RFCL 33D RFCL 42D	Standard Black PE	○	○	–	–	–	–
LHF-FR 12D LHF-FR 22D LFF-FR 33D LHF-FR 42D HFC-FR 12D HFC-FR 22D HFC-FR 33D HFC-FR 42D HFSC-FR 12D HFSC-FR 22D RFCX-FR 12D RFCX-FR 22D RFCX-FR 33D	Halogen-Free Flame-Retardant Black Compound	○	○	○	○	○	○
RFCX-FR 42D RFCL-FR 22D RFCL-FR 33D RFCL-FR 42D	Halogen-Free Flame-Retardant Black Compound	○	○	○	–	–	○

Packing Information

Size	Model	Standard (m)	Drum Type					Drum Weight (kg)	Quantity of Drums Per Container		
			A	B	C	D	E		20 ft	40 ft	40 ft HQ
1-5/8″	LHF-FR 42D HFC-FR 42D	500	110	2,100	2,160	1,020	1,200	485	5	10	10
1-1/4″	HFC-FR 33D RFCX-FR 33D	500	110	1,700	1,760	750	900	250	6	13	13
7/8″	HFC-FR 22D RFCX-FR 22D HFSC-FR 22D	500	110	1,200	1,260	650	750	160	12	25	45
1/2″	HFC-FR 12D RFCX-FR 12D HFSC-FR 12D	500	75	850	900	428	500	70	44	100	100
1/2″ SF	HFSC-FR 12D	500	75	850	870	428	500	65	44	100	100
1/2″	HFSC-FR 12D	500	75	860	910	430	470	45	44	100	100
3/8″	HFSC-FR 10D	500	85	860	910	430	470	45	44	100	100

Conversion Table

The reflection coefficient sums up the effects of all the impedence variations within the cable and its end at a certain frequency.
"Return Loss" or "V.S.W.R" is usually used instead of reflection coefficient.
The following fomulas can be used for converting among the "Returns Loss", "Reflection Coefficient" and "V.S.W.R."

$$\text{V.S.W.R} = \frac{1+|r|}{1-|r|} \qquad \text{Reflection Coefficient } (\Gamma) = \frac{Z_L - Z_0}{Z_L + Z_0} = \frac{Z_n - 1}{Z_n + 1} \left(Z_n = \frac{Z_L}{Z_0} \right)$$

$$\text{R.L. (Return Loss)} = -20 \log (|\Gamma|)$$

V.S.W.R	Return Loss (dB)	Reflection Coefficient (%)	V.S.W.R	Return Loss (dB)	Reflection Coefficient (%)	V.S.W.R	Return Loss (dB)	Reflection Coefficient (%)
1.010	46.06	0.512	1.053	31.80	2.570	1.138	23.80	6.457
1.011	45.60	0.525	1.055	31.40	2.692	1.141	23.60	6.607
1.012	44.80	0.575	1.058	31.00	2.818	1.145	23.40	6.761
1.012	44.20	0.616	1.059	30.80	2.884	1.149	23.20	6.918
1.013	44.00	0.631	1.060	30.71	2.910	1.150	23.13	6.980
1.013	43.60	0.660	1.064	30.20	3.090	1.156	22.80	7.244
1.014	43.00	0.707	1.065	30.00	3.162	1.160	22.60	7.413
1.015	42.80	0.724	1.068	29.60	3.311	1.164	22.40	7.586
1.016	42.40	0.776	1.070	29.40	3.338	1.168	22.20	7.762
1.017	41.60	0.832	1.072	29.20	3.467	1.170	22.12	7.830
1.018	41.20	0.871	1.074	29.00	3.548	1.173	22.00	7.943
1.019	40.60	0.933	1.075	28.80	3.631	1.177	21.80	8.128
1.020	40.08	0.990	1.077	28.40	3.715	1.180	21.66	8.260
1.021	39.80	1.023	1.080	28.30	3.85	1.181	21.60	8.318
1.022	39.40	1.072	1.083	28.00	3.981	1.186	21.40	8.511
1.023	39.00	1.122	1.085	27.80	4.074	1.190	21.23	8.680
1.024	38.60	1.175	1.087	26.70	4.196	1.200	20.83	9.090
1.025	38.20	1.230	1.089	27.40	4.266	1.210	20.08	9.910
1.026	37.60	1.288	1.090	27.32	4.310	1.230	19.73	10.310
1.029	37.00	1.413	1.091	27.20	4.365	1.240	19.40	10.710
1.030	36.59	1.480	1.094	27.00	4.467	1.250	19.08	11.110
1.031	36.40	1.514	1.096	26.80	4.571	1.260	18.48	11.500
1.032	36.00	1.585	1.098	26.60	4.677	1.270	18.49	11.890
1.035	35.40	1.698	1.101	26.40	4.786	1.280	18.22	12.280
1.036	35.00	1.778	1.106	26.00	5.012	1.290	17.95	12.660
1.037	34.80	1.820	1.108	25.80	5.129	1.300	17.69	13.040
1.040	34.19	1.950	1.111	25.60	5.248	1.310	17.45	13.420
1.042	33.80	2.042	1.114	25.40	5.370	1.330	16.98	14.160
1.043	33.60	2.089	1.116	25.20	5.495	1.350	16.54	14.890
1.044	33.40	2.138	1.119	25.00	5.563	1.360	16.33	15.250
1.045	33.20	2.188	1.122	24.80	5.754	1.370	16.13	15.610
1.046	33.00	2.239	1.125	24.60	5.888	1.380	15.94	15.970
1.049	32.40	2.339	1.130	24.29	6.100	1.390	15.75	16.320
1.050	32.20	2.255	1.135	24.00	6.310	1.400	15.60	16.600

RF Total Solution

for Wireless Base Station, In building System

LS cable, a global supplier in the wire & cable sector, is now expanding its product portfolio on the wireless communication field to provide total- package solution.

With years of experience serving in one of the most advanced market in the world, LS Cable has capability to implement the most efficient solutions based on state of the art technologies on hand,

LS Cable is now a RF Total Solution provider to support our customers to meet sophisticated demand of today's fast- evolving technology of wireless communications.

We are determined to support our customers with our leading solution technologies.

7/16 DIN Series / N Series

Description

RF connector with 7/16 DIN & N interface is typical type for communication systems.
LS connectors are designed and produced to have features as below.

- Excellent V.S.W.R Performance
- Low Intermodulation
- Fast and Easy Installation
- Waterproof
- Environment Resistance Ensures Long Life and Consistent Performance

Products Overview

φ	Cable	Cable Description	N Connector		7/16 DIN Connector	
			Male	Female	Male	Female
1/4″	HFSC-FR 6D	Super Flex. 1/4″	CHFS 6NM	CHFS 6NF	CHFS 6DM	CHFS 6DF
			CHFS 6NMR	CHFS 6NFR	CHFS 6DMR	CHFS 6DFR
3/8″	HFSC-FR 10D	Super Flex. 3/8″	CHFS 10NM	CHFS 10NF	CHFS 10DM	CHFS 10DF
			CHFS 10NMR	CHFS 10NFR	CHFS 10DMR	CHFS 10DFR
1/2″	HFSC-FR 12D	Super Flex. 1/2″	CHFS 12NM	CHFS 12NF	CHFS 12DM	CHFS 12DF
			CHFS 12NMR	CHFS 12NFR	CHFS 12DMR	CHFS 12DFR
	HFC-FR 12D	Flex. 1/2″	CHF 12NM	CHF 12NF	CHF 12DM	CHF 12DF
	LHF-FR 12D		CLH 12NM	CLH 12NF	CLH 12DM	CLH 12DF
7/8″	HFSC-FR 22D	Super Flex. 7/8″	CHFS 22NM	CHFS 22NF	CHFS 22DM	CHF 22DF
	HFC-FR 22D	Flex. 7/8″	CHF 22NM	CHF 22NF	CHF 22DM	CHF 22DF
	LHF-FR 22D	Low Loss 7/8″	CLH 22NM	CLH 22NF	CLH 22DM	CLH 22DF
1-1/4″	HFC-FR 33D	Flex. 1-1/4″	CHF 33NM	CHF 33NF	CHF 33DM	CHF 33DF
	LHF-FR 33D		CLH 33NM	CLH 33NF	CLH 33DM	CLH 33DF
1-5/8″	HFC-FR 42D	Flex. 1-5/8″	CHF 42NM	CHF 42NF	CHF 42DM	CHF 42DF
	LHF-FR 42D	Low Loss 1-5/8″	CLH 42NM	CLH 42NF	CLH 42DM	CLH 42DF

* Other Designs are Available on Request

7/16 DIN Series

Din-Female for 1-5/8″

Din-Male for 1-5/8″

Connector Din Type for 1-5/8" LHF & HFAC & HFC

Description	Length (mm)	Max.Dia (mm)	Weight (g)	Code		
				LHF	HFAC	HFC
Din-Female for 1-5/8″	99.5	59.6	1,000	CLH 42DF	CHFA 42DF	CHF 42DF
Din-Male for 1-5/8″	107	59.6	1,070	CLH 42DM	CHFA 42DM	CHF 42DM

Din-Female for 1-1/4″

Din-Male for 1-1/4″

Connector Din Type for 1-1/4" LHF & HFC

Description	Length (mm)	Max.Dia (mm)	Weight (g)	Code	
				LHF	HFC
Din-Female for 1-1/4″	88.9	47.6	560	CLH 33DF	CHF 33DF
Din-Male for 1-1/4″	95.4	47.6	560	CLH 33DM	CHF 33DM

Electrical Characteristics

Impendence		50 Ω
Frequency Range		(Max.) 7.5 GHz
V.S.W.R (Mating)	1 GHz (Straight / Right Angle)	1.08 / 1.12
	2 GHz (Straight / Right Angle)	1.10 / 1.15
Insertion Loss		(Max.) 0.2 dB @ 3 GHz
IMD		-155dBc
Dielectric Withstanding Voltage		4.0 kV rms, 50 Hz
Working Voltage		2.7 kV rms, 50 Hz
Insulation Resistance		10 GΩ
Contact Resistance	Inner Contact	0.4 mΩ
	Outer Contact	1.5 mΩ

Mechanical Characteristics

Coupling Nut Torque (Recommanded)	25 Nm ~ 30 Nm
Coupling Nut Retension Force	1,000 Nm
Contact Captivation	200 N
Durability (Mating)	500 Times

N Series

N-Female for 1-5/8″

N-Male for 1-5/8″

Connector N Type for 1-5/8" LHF & HFAC & HFC

Description	Length (mm)	Max.Dia (mm)	Weight (g)	Code		
				LHF	HFAC	HFC
N-Female for 1-5/8″	105	59.6	1,000	CLH 42NF	CHF 42NF	CHF 42NF
N-Male for 1-5/8″	108	59.6	1,070	CLH 42NM	CHF 42NM	CHF 42NM

N-Female for 1-1/4″

N-Male for 1-1/4″

Connector N Type for 1-1/4" LHF & HFC

Description	Length (mm)	Max.Dia (mm)	Weight (g)	Code	
				LHF	HFC
N-Female for 1-1/4″	95.5	47.6	560	CLH 33NF	CHF 33NF
N-Male for 1-1/4″	98	47.6	560	CLH 33NM	CHF 33NM

Electrical Characteristics

Impendence		50 Ω
Frequency Range		(Max.) 11 GHz
V.S.W.R (Mating)	1 GHz (Straight / Right Angle)	1.08 / 1.12
	2 GHz (Straight / Right Angle)	1.10 / 1.15
Insertion Loss		(Max.) 0.2 dB @ 3 GHz
IMD		-155dBc
Dielectric Withstanding Voltage		2.5 kV rms, 50 Hz
Working Voltage		1.0 kV rms, 50 Hz
Insulation Resistance		5,000 mΩ
Contact Resistance	Inner Contact	1.0 mΩ
	Outer Contact	1.0 mΩ

Mechanical Characteristics

Coupling Nut Torque (Recommanded)	0.68 Nm ~ 1.13 Nm
Coupling Nut Retension Force	450 Nm
Contact Captivation	28 N
Durability (Mating)	500 Times

Jumper Cable

Description

LS Cable provides jumper cables which have outstanding electrical performance along with high durability for tight routing and superior environmental sealing for long life reliability.

LS jumper cables are offered in sizes of 3/8″ and 1/2″. Jumper cables are used in areas that require extremely small bending radius such as on the connection between main feeders and antennas or between main feeders and RF-equipments. LS jumper cables are designed and produced to have features as belows.

Features / Benefits

- High Pull-Off Strength
- Excellent V.S.W.R Performance
  - Typical V.S.W.R Over Cellular, PCS and 3 G-Band are 1.08
- Low and Stable Intermodulation
  - Typical IM3 Product Value with 40 dBm is -155 dBc Over the Cellular and PCS Band
- Complete Weatherproof

Cable Type (Min. Bending Radius)

- HFSC 10D : 25 mm
- HFSC 12D : 35 mm

Product Code

Description of Attached Connector	HFSC 10D		
	1M	2M	3M
7/16 Male to 7/16 Male	JHFS10-1-DMDM	JHFS10-2-DMDM	JHFS10-3-DMDM
7/16 Male to 7/16 Female	JHFS10-1-DMDF	JHFS10-2-DMDF	JHFS10-3-DMDF
7/16 Female to 7/16 Female	JHFS10-1-DFDF	JHFS10-2-DFDF	JHFS10-3-DFDF
N Male to 7/16 Male	JHFS10-1-NMDM	JHFS10-2-NMDM	JHFS10-3-NMDM
N Female to 7/16 Female	JHFS10-1-NFDF	JHFS10-2-NFDF	JHFS10-3-NFDF
N Male to 7/16 Female	JHFS10-1-NMDF	JHFS10-2-NMDF	JHFS10-3-NMDF
N Female to 7/16 Male	JHFS10-1-NFDM	JHFS10-2-NFDM	JHFS10-3-NFDM
N Male to N Male	JHFS10-1-NMNM	JHFS10-2-NMNM	JHFS10-3-NMNM
N Male to N Female	JHFS10-1-NMNF	JHFS10-2-NMNF	JHFS10-3-NMNF
N Female to N Female	JHFS10-1-NFNF	JHFS10-2-NFNF	JHFS10-3-NFNF

Description of Attached Connector	HFSC 12D		
	1M	2M	3M
7/16 Male to 7/16 Male	JHFS12-1-DMDM	JHFS12-2-DMDM	JHFS12-3-DMDM
7/16 Male to 7/16 Female	JHFS12-1-DMDF	JHFS12-2-DMDF	JHFS12-3-DMDF
7/16 Female to 7/16 Female	JHFS12-1-DFDF	JHFS12-2-DFDF	JHFS12-3-DFDF
N Male to 7/16 Male	JHFS12-1-NMDM	JHFS12-2-NMDM	JHFS12-3-NMDM
N Female to 7/16 Female	JHFS12-1-NFDF	JHFS12-2-NFDF	JHFS12-3-NFDF
N Male to 7/16 Female	JHFS12-1-NMDF	JHFS12-2-NMDF	JHFS12-3-NMDF
N Female to 7/16 Male	JHFS12-1-NFDM	JHFS12-2-NFDM	JHFS12-3-NFDM
N Male to N Male	JHFS12-1-NMNM	JHFS12-2-NMNM	JHFS12-3-NMNM
N Male to N Female	JHFS12-1-NMNF	JHFS12-2-NMNF	JHFS12-3-NMNF
N Female to N Female	JHFS12-1-NFNF	JHFS12-2-NFNF	JHFS12-3-NFNF

Adaptors

Description

RF Adaptor with Between Series & IN - Series is very typical type for communication systems. LS Adaptors are designed and produced to have features as below.

- Excellent V.S.W.R Performance
- Very Low Intermodulation
- Fast and Easy Installation
- Waterproof
- Environment Resistance Ensures Long Life and Consistent Performance

Adaptor type & product code

<Between series>

Product code	Adaptor Type	Gender A	Gender B
AHF NM(F)DM(F)	N / 7/16DIN	Male (Female)	Male (Female)
AHF SM(F)NM(F)	SMA / N	Male (Female)	Male (Female)

<In-series>

Product code	Adaptor Type	Gender A	Gender B
AHF NM(F)NF(M)	N	Male (Female)	Male (Female)
AHF DM(F)DF(M)	7/16DIN	Male (Female)	Male (Female)
AHF SM(F)SF(M)	SMA	Male (Female)	Male (Female)

Electrical Characteristics

Impendence		50 Ω
Frequency Range		DC to 3 GHz
V.S.W.R (Max)		1.07:1(DC to 3 GHz)
Insertion (Max)		-0.1 dB
Intermodulation Distortion		≤-150dBc (2×43dBm carrier)
Insulation Resistance		≥5 ×10^3mΩ
Dielectric Withstanding	Voltage (at sea level)	2500V rms, 50 Hz
	Working Voltage (at sea level)	≤1000V rms, 50 Hz
Contact Resistance	Center Contact	≤1.0 mΩ
	Outer Contact	≤1.0 mΩ

Environmental Characteristics

Temperature Range	-65℃~ +165℃
Temperature Shock	MIL-STD202, Method107, Condition B
Moisture Resistance	MIL-STD202, Method106
Corrosion	Saltspray test acc. To MIL-STD-202 Method101D Condition B
Shock	MIL-STD-202, Method213. Condition I

Surge Arrestor(λ /4 wave)

Description

LS Cable's surge arrestors provide excellent lightning protection and outstanding RF performance.
All designs have low return loss, low insertion loss and low intermodulation.
LS Cable offers λ / 4 wave shorting stubs with a full line of mounting adaptors and accessories.

Features / Benefits

- Outstanding RF Performance
- Complete Weatherproof
- Available with Type N or DIN Interface
- Maintenance Free Operation (λ / 4 Wave Shorting Stubs)

Product Code

Model	Code	Frequency Band(MHz)	Interface Type
λ/4 Wave	AT-NMNF-W	800 ~ 2,700	N-Male / N-Female
	AT-NMNF-01	800 ~ 900	N-Male / N-Female
	AT-NMNF-02	890 ~ 960	N-Male / N-Female
	AT-NMNF-03	1,700 ~ 1,900	N-Male / N-Female

Model	Code	Frequency Band(MHz)	Interface Type
λ/4 Wave	AT-DMDF-W	800 ~ 2,700	DIN-Male / DIN-Female
	AT-DMDF-01	800 ~ 900	DIN-Male / DIN-Female
	AT-DMDF-02	890 ~ 960	DIN-Male / DIN-Female
	AT-DMDF-03	1,700 ~ 1,900	DIN-Male / DIN-Female

Electrical Characteristics

Model	λ/4 Wave Shorting Stub
Impedance (Nominal)	50Ω
V.S.W.R	< 1.1
Insertion Loss	< 0.1 dB
IMD	-155dBc
Max.Impulse Spark-Over Voltage	> 600V

Mechanical Characteristics

Model	λ/4 Wave Shorting Stub
Outer Conductor	Brass / Silver or SuCo Plated
Inner Conductor	BeCu (Female) / Silver or SuCo Plated
Other Metal Parts	Brass / Nickel Plated
Temperature Range	-40℃ ~ +100℃
Moisture Resistance	Waterproof

Surge Arrestor(Gas Tube)

Description

LS Cable's gas discharge tube type lightning arrestor is one of lightning strike protector that is used most widely with λ/4 shorting stub type lightning arrestor. The biggest difference from others is that it adapts replaceable gas discharge tube between internal and outer conductor and it discharges electron pulse that occurred instantaneously at lightning strike to earth.

Features / Benefits

- Outstanding Broadband RF Performance (DC~2,700MHz)
- DC Pass Capability
- High Tensional Internal Conductor Structure
- Complate Waterproof
- Available with Type N or 7/16 DIN Type

Product Code

Model	Code	Frequency Band(MHz)	Interface Type
Gas Tube	AG-NMNF-01	DC ~ 2,700	N-Male / N-Female
	AG-DMDF-02	DC ~ 2,700	DIN-Male / DIN-Female

Electrical Characteristics

Model	Gas Tube
Impedance (Nominal)	50Ω
V.S.W.R	< 1.1
Insertion Loss	< 0.1 dB
Max.Impulse Spark-Over Voltage	> 600V

Mechanical Characteristics

Model	Gas Tube
Outer Conductor	Brass / Silver or SuCo Plated
Inner Conductor	BeCu (Female) / Silver or SuCo Plated
Other Metal Parts	Brass / Nickel Plated
Temperature Range	-40℃ ~ +100℃
Moisture Resistance	Waterproof

Dummy Load

Description

Dummy load is a means of termination microwave transmission line without much reflection.
It is performed by microwave power absorption.
Dummy load is used in "RFCL" or "RFCX" application to provide launch for the signal from the end of the cable.
All connector interfaces conform to MIL-C-39012.
V.S.W.R : 0~3GHz. Max 1.15.

Features / Benefits

- Outstanding RF Performance. Low V.S.W.R
- Available with Type N Interfaces

Product Code

Code	V. S. W. R	Connector Interface	Dummy Load Power Rating
L-DL-10-NM	〈 1.15	N-Male	10 Watt
L-DL-10-NF	〈 1.15	N-Female	
L-DL-20-NM	〈 1.15	N-Male	20 Watt
L-DL-20-NF	〈 1.15	N-Female	
L-DL-30-NM	〈 1.15	N-Male	30 Watt
L-DL-30-NF	〈 1.15	N-Female	
L-DL-50-NM	〈 1.15	N-Male	50 Watt
L-DL-50-NF	〈 1.15	N-Female	
L-DL-10-DM	〈 1.15	DIN-Male	10 Watt
L-DL-10-DF	〈 1.15	DIN-Female	
L-DL-20-DM	〈 1.15	DIN-Male	20 Watt
L-DL-20-DF	〈 1.15	DIN-Female	
L-DL-30-DM	〈 1.15	DIN-Male	30 Watt
L-DL-30-DF	〈 1.15	DIN-Female	
L-DL-50-DM	〈 1.15	DIN-Male	50 Watt
L-DL-50-DF	〈 1.15	DIN-Female	

* Note : Other Designs are Available on Request

Cable Cutting Tool

Description

Connector termination is one of the most important factors affecting RF transmission line operation. LS Cable offers cable cutting tools in sizes ranging from 1/2″ to 1 - 5/8″ which are desinged to cut the jacket and outer conductor in seconds.
These cutting tools make the accurate cuts of cables at top of currugation at exact distance required for easy connector attachment. It allows to give one more way to ensure consistent electrical performance for your application.

Features / Benefits

- Accurate Termination
- Easy Handling

Product Code

Code	Description	Cable Type
L-CT-12D	Cut Jacket & Outer Conductor	1/2″ Flex.
L-CT-12DS	Cut Jacket & Outer Conductor	1/2″ Super Flex.
L-CT-22D	Cut Jacket, Outer Conductor, Dielectric & Inner Conductor	7/8″ Flex.
L-CT-33D	Cut Jacket, Outer Conductor, Dielectric & Inner Conductor	1-1/4″ Flex.
L-CT-42D	Cut Jacket, Outer Conductor, Dielectric & Inner Conductor	1-5/8″ Flex.

DC STOP 800~2170MHz
BLK-0822-DMDF

Features

- Low RF Signal Insertion loss
- Suitable for Indoor or Outdoor Applications
- High DC Signal Isolation from Port1 to Port2 and vice versa

Specification

Items	BLK-0822-DMDF
Frequency Range	800 ~ 2,170MHz
Insertion Loss Port1 ↔Port2	0.1dB (800 ~ 2,170MHz)
Isolation Port1 ↔Port2	> 70dB(DC)
V.S.W.R	1.2
Impedance	50Ω
Inter Modulation	-160dBc@Tone (2Tone=43dBm)
Input Power	< 750W (800 ~ 2,170MHz)

Mechanical

Temperature Range	-20℃ ~ +75℃
Connectors	Port1 : 7~16 Male Port2 : 7~16 Female
Weight	0.38
Size	50 x 38 x 37.5mm 104 x 38 x 37.5mm (Inc. Connector)

Attenuator
ATT-XdB-002-NMNF / ATT-XdB-002-DMDF

Att-XdB-002-NMNF

Att-XdB-002-DMDF

Features

- Wideband Performance DC ~ 3000MHz
- Compact Size
- Low VSWR
- Indoor Applications
- N Connectors
- DIN Connectors

Specification

Items	ATT-XdB-002-NMNF	ATT-XdB-002-DMDF
Frequency Range	DC ~ 3,000MHz	
Impedance	50Ω	
V.S.W.R	1.2 : 1	
Attenuation Value	-3, -6, -10, -20dB ±0.5dB	-3, -6, -10, -20dB ±0.5dB -30dB ±0.7dB
Input Power	2W / 10W / 20W	
Connectors	N-Male to N-Female	DIN-Male to DIN-Female
Operating Temperature	-35°C ~ +75°C	
Weight	70g	280g
Size(without Connectors)	56.8 x ø19.0mm	69.5 x ø33mm

Grounding Kit
Clip-on Type

Description

The standard ground kits facilitate easy installation with a pre-formed copper strap that eliminates the need for a coiling tool and prevents overtightening. These kits are designed to comply with MIL-STD-188-124A and have been verified by independent labs to protect coax from the damaging effects of lightning current in excess of 200 kA. Each kit includes a 5 ℃(1.5m), 6-gauge 7-strand copper ground lead which can be trimmed to the exact length required for a neat and effective installation.

Included in each kit is a two-hole 3/8″ (10mm) universal lug, and all hardware necessary for attachment to the buss bar. The innovative two-hole universal lug features a unique slotted design which allows it to accommodate 3/4″ to 1 ℃(19mm to 25mm) buss bar hole spacings, ensuring a perfect fir in any ground system. The standard ground kits also include required mastic and electric tape for weatherproofing each kit.

Characteristics

App.	Coax Protection	Mounts to	Coax Outer Conductor
Size	1/2″ to 1-5/8″ Coax	Material	Copper or Aluminum Strap
Feature	Economical Protection	Incl.	Grounding Kit, Lug, Weatherproofing Kit
Design	Bolt - on Style with 5′(1.5 m) Lead / Crimp Lug		

Product Code

Code	Description	Kit Qty.	Wt. lbs (Wt. kg)
L-GK-C12	Standard Ground Kit for 1/2″ Corrugated Coax	Each	1.4 (0.6)
L-GK-C22	Standard Ground Kit for 7/8″ Corrugated Coax	Each	1.4 (0.6)
L-GK-C33	Standard Ground Kit for 1-1/4″ Corrugated Coax	Each	1.4 (0.6)
L-GK-C42	Standard Ground Kit for 1-5/8″ Corrugated Coax	Each	1.5 (0.7)

* Note : 3/8″(100mm) two-hole lugs are universal to accommodate 3/4″ to 1″(19mm to 25mm) spacing requirements. Versions of these kits are available with 1/4″(6mm) two-hole lugs or with your choice of lug pre-attached.

Grounding Kit

Easy install grounding kit

Fields of Aplplication

Provides lightning protection on feeder cable and radio equipments with easly installation.

Features

- 304 stainless steel body moulded in EPDM rubber.
- Contact point, tinted braided copper.
- Ground wire, 16mm sq. Copper.
- RoHs comply

Characteristics

Operating Temp. Range	-45 to +85 deg C	Cable Lugs	Tinned, 8mm dimenter hole
Contacting Resistance	< 1m ohm	Surge Current	70KA
Cable	16mm sq. (black or green)	Waterproofing	IP68
Cable Length	800mm		

Product Code

Code	Description
L-GK-12-WEI	Easy install grounding kit for 1/2" corrugated coax cable
L-GK-22-WEI	Easy install grounding kit for 7/8" corrugated coax cable
L-GK-33-WEI	Easy install grounding kit for 1-1/4" corrugated coax cable
L-GK-42-WEI	Easy install grounding kit for 1-5/8" corrugated coax cable

Single Hanger Clamp Set

Description

This single hanger clamp set is a second generation hanger solution designed specially for BTS tower application.

Consist of Set

- Hanger clamp : UV and chemical resistances
- Hardware kits : 10mm 304 stainless steel hardware kit
- Angle adaptor : adaptor bracket, stainless 304

Product Code

Code	Description
L-MT-12SC1	Single Hanger Clamp Set for 1/2″ Corrugated Cable 1 Run
L-MT-12SC2	Single Hanger Clamp Set for 1/2″ Corrugated Cable 2 Runs
L-MT-12SC3	Single Hanger Clamp Set for 1/2″ Corrugated Cable 3 Runs
L-MT-22SC1	Single Hanger Clamp Set for 7/8″ Corrugated Cable 1 Run
L-MT-22SC2	Single Hanger Clamp Set for 7/8″ Corrugated Cable 2 Runs
L-MT-22SC3	Single Hanger Clamp Set for 7/8″ Corrugated Cable 3 Runs
L-MT-33SC1	Single Hanger Clamp Set for 1- 1/4″ Corrugated Cable 1 Run
L-MT-33SC2	Single Hanger Clamp Set for 1- 1/4″ Corrugated Cable 2 Runs
L-MT-33SC3	Single Hanger Clamp Set for 1-1/4″ Corrugated Cable 3 Runs
L-MT-42SC1	Single Hanger Clamp Set for 1- 5/8″ Corrugated Cable 1 Run
L-MT-42SC2	Single Hanger Clamp Set for 1- 5/8″ Corrugated Cable 2 Runs
L-MT-42SC3	Single Hanger Clamp Set for 1- 5/8″ Corrugated Cable 3 Runs

for Small Tower (Max.50m)

Description

This single hanger clamp set for a second generation hanger solution designed specially for BTS tower application.

Consist of Set

- Hanger clamp : UV and chemical resistances
- Hardware kits : 10mm 304 stainless steel hardware kit
- Angle adaptor : adaptor bracket, stainless 304

Product Code

Code	Description
L-MT-12SC1L	Single Hanger Clamp Set for 1/2″ Corrugated Cable 1 Run
L-MT-12SC2L	Single Hanger Clamp Set for 1/2″ Corrugated Cable 2 Runs
L-MT-12SC3L	Single Hanger Clamp Set for 1/2″ Corrugated Cable 3 Runs
L-MT-22SC1L	Single Hanger Clamp Set for 7/8″ Corrugated Cable 1 Run
L-MT-22SC2L	Single Hanger Clamp Set for 7/8″ Corrugated Cable 2 Runs
L-MT-22SC3L	Single Hanger Clamp Set for 7/8″ Corrugated Cable 3 Runs
L-MT-33SC1L	Single Hanger Clamp Set for 1- 1/4″ Corrugated Cable 1 Run
L-MT-33SC2L	Single Hanger Clamp Set for 1- 1/4″ Corrugated Cable 2 Runs
L-MT-33SC3L	Single Hanger Clamp Set for 1-1/4″ Corrugated Cable 3 Runs

* Note : Not available for 1-5/8″ corrugated cable

Double Hanger Clamp Set

Description

This double hanger clamp set is a second generation hanger solution designed specially for BTS tower application.

Consist of Set

- Hanger clamp : UV and chemical resistances
- Hardware kits : 10mm 304 stainless steel hardware kit
- Angle adaptor : adaptor bracket, stainless 304

Product Code

Code	Description
L-MT-12DC1	Double Hanger Clamp Set for 1/2″ Corrugated Cable 2 Runs
L-MT-12DC2	Double Hanger Clamp Set for 1/2″ Corrugated Cable 4 Runs
L-MT-12DC3	Double Hanger Clamp Set for 1/2″ Corrugated Cable 6 Runs
L-MT-22DC1	Double Hanger Clamp Set for 7/8″ Corrugated Cable 2 Runs
L-MT-22DC2	Double Hanger Clamp Set for 7/8″ Corrugated Cable 4 Runs
L-MT-22DC3	Double Hanger Clamp Set for 7/8″ Corrugated Cable 6 Runs
L-MT-33DC1	Double Hanger Clamp Set for 1-1/4″ Corrugated Cable 2 Runs
L-MT-33DC2	Double Hanger Clamp Set for 1-1/4″ Corrugated Cable 4 Runs
L-MT-33DC3	Double Hanger Clamp Set for 1-1/4″ Corrugated Cable 6 Runs
L-MT-42DC1	Double Hanger Clamp Set for 1-5/8″ Corrugated Cable 2 Runs
L-MT-42DC2	Double Hanger Clamp Set for 1-5/8″ Corrugated Cable 4 Runs
L-MT-42DC3	Double Hanger Clamp Set for 1-5/8″ Corrugated Cable 6 Runs

for Small Tower (Max.50m)

Description

This double hanger clamp set for small tower which is shorter than 50m height is a second generation hanger solution designed specially for BTS tower application.

Consist of Set

- Hanger clamp : UV and chemical resistances
- Hardware kits : 10mm 304 stainless steel hardware kit
- Angle adaptor : adaptor bracket, stainless 304

Product Code

Code	Description
L-MT-12DC1L	Double Hanger Clamp Set for 1/2″ Corrugated Cable 2 Runs Less 50m
L-MT-12DC2L	Double Hanger Clamp Set for 1/2″ Corrugated Cable 4 Runs Less 50m
L-MT-12DC3L	Double Hanger Clamp Set for 1/2″ Corrugated Cable 6 Runs Less 50m
L-MT-22DC1L	Double Hanger Clamp Set for 7/8″ Corrugated Cable 2 Runs Less 50m
L-MT-33DC1L	Double Hanger Clamp Set for 1-1/4″ Corrugated Cable 2 Runs Less 50m

* Note : Not available for 7/8″ corrguated cable for more then 2 stacks
* Note : Not available for 1-1/4″ corrguated cable for more then 2 stacks
* Note : Not available for 1-5/8″ corrugated cable

Hoisting Grip

Lace-Up Hoisting Grip / Pre-Laced Hoisting Grip

Lace-Up Hoisting Grip

Pre-Laced Hoisting Grip

Description

Lace-up hoisting grips provide an effective means for hoisting coax and elliptical waveguide into position and can be utilized to provide additional support once in place. The lace-up design allows the hoisting grip to be attached even when the run has been connectorized and facilitates easy positioning at 200′ (61m) increments on long coax runs. Lace-up hoisting grips for coaxial cables include a self-locking clip and sealing tape to provide additional support both during and after installation.

Description

Pre-laced hoisting grips feature a closed-mesh design which simplifies installation over traditional split, lace-up style grips. The unique design allows the pre-laced hoisting grip to slip over an unterminated end of coax. The grip securely tightens when pulled, providing an effective means to hoist coax into position and to provide additional support for the coax once in place. Pre-laced hoisting grips for coaxial cables include a self-locking clip and sealing tape to provide additional support both during and after installation.

Characteristics

	Lace-Up Hoisting Grip	Pre-Laced Hoisting Grip
App.	Coax	Coax Support
Size	1/2″ to 1-5/8″	1/2″ to 1-5/8″
Feature	Lace-Up Installation at Ant Point On Coax	Pre-Laced to Simplify Installation
Design	Mesh Grip with Single Eye Support	Mesh Grip with Single Eye Support
Material	Tinned Broze	Tinned Bronze
Incl.	Grip, Self-Locking Clip, Tape	Grip, Self-Locking Clip, Tape

Product Code

	Code	Description	Kit Qty.	Wt. lbs(Wt. kg)
Lace-Up Hoisting Grip	L-HG-12	Open Weave Hoisting Grip for 1/2″ Corrugated Coax	Each	0.3 (0.1)
	L-HG-22	Open Weave Hoisting Grip for 7/8″ Corrugated Coax	Each	0.6 (0.3)
	L-HG-33	Open Weave Hoisting Grip for 1-1/4″ Corrugated Coax	Each	0.6 (0.3)
	L-HG-42	Open Weave Hoisting Grip for 1-5/8″ Corrugated Coax	Each	1.3 (0.6)
Pre-Laced Hoisting Grip	L-HG-12L	Open Weave Hoisting Grip for 1/2″ Corrugated Coax	Each	0.4 (0.2)
	L-HG-22L	Open Weave Hoisting Grip for 7/8″ Corrugated Coax	Each	0.5 (0.2)
	L-HG-33L	Open Weave Hoisting Grip for 1-1/4″ Corrugated Coax	Each	0.5 (0.2)
	L-HG-42L	Open Weave Hoisting Grip for 1-5/8″ Corrugated Coax	Each	1.3 (0.6)

Generic Locking Coax Blocks

Single and Multi-Stack Version For Round or Flat Members

Description

Utilizing a stainless teel frame to fasten the support blocks inposition, the Generic Locking Coax Blocks provide an optimal, low-costsolution for mounting transmission lines to the most commonly used telecom structures.

Its design secures for adaptors or hole drilling This, combined with the hex head set screw, simplifies intallation while minimizing construction costs.

The Generic Locking Coax Blocks are designed to attatch directly to round and flat members up to 15 millimeters(0.6inch)thick.

Manufactured from 304 stainless steel and polypropylene, the Generic Locking Coax Blocks provide a cost efficient solution in almost any application.

Characteristics

Code	Description	A(mm/inch)	B(mm/inch)	C(mm/inch)	D(mm/inch)
L-CB-GL06-U1	Generic Locking Coax Blocks for 1/4″ Coax, Single Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	29.21(1.13)	25.40(1.00)	73.03(2.88)	23.81(0.94)
L-CB-GL06-U2	Generic Locking Coax Blocks for 1/4″ Coax, Double Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	57.15(2.25)	25.40(1.00)	101.60(4.00)	23.81(0.94)
L-CB-GL06-U3	Generic Locking Coax Blocks for 1/4″ Coax, Triple Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	85.73(3.38)	25.40(1.00)	130.18(5.13)	23.81(0.94)
L-CB-GL12-U1	Generic Locking Coax Blocks for 1/2″ Coax, Single Stack, 3 to12mm, 1/8° ±to 1/2″ Round or Flat	29.21(1.13)	25.40(1.00)	73.03(2.88)	23.81(0.94)
L-CB-GL12-U2	Generic Locking Coax Blocks for 1/2″ Coax, Double Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	57.15(2.25)	25.40(1.00)	101.60(4.00)	23.81(0.94)
L-CB-GL12-U3	Generic Locking Coax Blocks for 1/2″ Coax, Triple Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	85.73(3.38)	25.40(1.00)	130.18(5.13)	23.81(0.94)
L-CB-GL22-U1	Generic Locking Coax Blocks for 7/8″ Coax, Single Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	38.10(1.50)	25.40(1.00)	82.55(3.25)	36.58(1.44)
L-CB-GL22-U2	Generic Locking Coax Blocks for 7/8″ Coax, Double Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	76.20(3.00)	25.40(1.00)	120.65(4.75)	36.58(1.44)
L-CB-GL22-U3	Generic Locking Coax Blocks for 7/8″ Coax, Triple Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	114.30(4.50)	25.40(1.00)	158.75(6.25)	36.58(1.44)
L-CB-GL33-U1	Generic Locking Coax Blocks for 1-1/4″ Coax, Single Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	52.39(2.06)	25.40(1.00)	95.25(3.75)	47.63(1.88)
L-CB-GL33-U2	Generic Locking Coax Blocks for 1-1/4″ Coax, Double Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	104.78(4.13)	25.40(1.00)	120.65(4.75)	47.63(1.88)
L-CB-GL33-U3	Generic Locking Coax Blocks for 1-1/4″ Coax, Triple Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	157.23(6.19)	25.40(1.00)	146.05(5.75)	47.63(1.88)
L-CB-GL42-U1	Generic Locking Coax Blocks for 1-5/8° ±Coax, Single Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	63.50(2.50)	25.40(1.00)	107.95(4.25)	60.45(2.38)
L-CB-GL42-U2	Generic Locking Coax Blocks for 1-5/8″ Coax, Double Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	127.00(5.00)	25.40(1.00)	171.45(6.75)	60.45(2.38)
L-CB-GL42-U3	Generic Locking Coax Blocks for 1-5/8″ Coax, Triple Stack, 3 to12mm, 1/8″ to 1/2″ Round or Flat	190.50(7.50)	25.40(1.00)	234.95(9.25)	60.45(2.38)

Weatherproofing Kit

Universal Weatherproofing Kit/Cold Shrink Weatherproofing Kit

Universal Weatherproofing kit

Description

The universal weatherproofing kits include mastic and electrical tapes that are applied to provide a multi-layer, long-term environmental seal over multiple connections. The standard version (L-WK-U) includes five 3-3/4″ x 2′ (95mm x 0.6m) rolls of butyl mastic tape, two 3/4″ x 44′ (19mm x 13m) rolls of electrical tape, and one 2″ x 20′ (51mm x 6m) roll of electrical tape. The large version (L-WK-UL) includes five 3-3/4″ x 2′(95mm x 0.6m) rolls of butyl mastic tape, three 3/4″ x 44′ (19mm x 13m) rolls of electrical tape, and three 2″ x 20′ (51mm x 6m) rolls of electrical tape.

Characteristics

App.	Coax Protection	Design	Tape Kit for Multi-Layer Wrap
Size	Two Versions	Material	Butyl and Winyl
Feature	Multi-Connection Protection	Incl.	See Text

Product Code

Code	Description	Kit Qty.	Wt. lbs (Wt. kg)
L-WK-U	Universal Weatherproofing Kit	Each	3.4 (1.5)

30M™ Cold Shrink™ Weatherproofing Kit

Description

Avoid messy tapes and mastics with cold shrinkTM. This unique weatherproofing solution installs in less than three minutes, and eliminates difficult and time consuming taping processes. Because no speacial techniques are required, cold shrinkTM can be installed perfectly by both new and experienced installers. To apply, position the kit over a connection, and unwind the spiral support. As the tube loses its support, it collapses over the connection to form a long term environmental seal. An universally designed spacer accommodates similar coax sizes with tolerance variances allowing these kits to be used on a variety of manufacturers coaxial cables regardless of your coax preference. Cold shrinkTM kits are available to seal main feeder, jumper and antenna connections.

Product Code

Splices			Main Feeder to Jumper			Antenna Interfaces		
Coax Size Mated to Coax Size	Code	Wt. lbs (Wt. kg)	Coax Size Mated to Coax Size	Code	Wt. lbs (Wt. kg)	Coax Size Mated to Coax Size	Code	Wt. lbs (Wt. kg)
1/2″ to 1/2″	L-CS-U1212	0.2 (0.1)	7/8″ to 1/2″	L-CS-U1222	0.8 (0.4)	1/2″	L-CS-U1212	0.2 (0.1)
7/8″ to 7/8″	L-CS-U1222	0.8 (0.4)	1-1/4″ to 1/2″	L-CS-U1242	1.0 (0.5)	5/8″	L-CS-U1222	0.8 (0.4)
1-1/4″ to 1-1/4″	L-CS-U1242	1.0 (0.5)	1-1/4″ to 5/8″	L-CS-U1242	1.0 (0.5)	7/8″	L-CS-U1222	0.8 (0.4)
1-5/8″ to 1-5/8″	L-CS-U1242	1.0 (0.5)	1-5/8″ to 1/2″	L-CS-U1242	1.0 (0.5)			

Entry Port System

4°» (102mm) Feed-thru Entry Panel

Description

Aluminum feed-thru entry panels enable multiple coax runs to enter buildings and shelters. These rugged panels support the coax at the entry point and prevent moisture from entering the building. Each panel features 4″ (102mm) openings to accept boot assemblies. Each boot assembly must be fitted with a cushion to hold the coax in place. Feed-thru entry panels are offered with a broad selection of hole patterns and plate sizes to match your exact application. These entries can be used in both interior and exterior wall applications to create a neat and clean installation. Each feed-thru entry panel includes a set of wall attachment hardware, including #14 x 1-1/2″ (6mm x 38mm) stainless steel screws, finishing washers, and plastic anchors and is powder coated to ensure long term integrity and provide appealing aestheics. Sealing caps for all openings are also included. Boots and cushins, or boot assembly kits must be purchased separately to accommodate specific coax requirements.

Characteristics

App.	Entry Solutions	Mounts to	Walls
Size	19 Sizes	Material	Aluminum
Feature	Easy to Install Solution	Incl.	Port, Caps, Wall Hardware
Design	Entry Plates with Round Ports	Order Sep.	4″ (102mm) Boot Assemblies

Product Code

Code	Description	Kit Qty.	Wt. lbs (Wt. kg)
L-EP-220	Entry Panel, 1 Port, 1 x 1, Standard	Each	1.0 (0.5)
L-EP-574	Entry Panel, 1 Port, 1 x 1, Compact	Each	0.6 (0.3)
L-EP-1448	Entry Panel, 2 Port, 1 x 2	Each	2.3 (1.0)
L-EP-1635	Entry Panel, 3 Port, 1 x 3	Each	2.9 (1.3)
L-EP-575	Entry Panel, 4 Port, 1 x 4	Each	3.5 (1.6)
L-EP-1199	Entry Panel, 4 Port, 2 x 2, Standard	Each	4.2 (1.9)
L-EP-1650	Entry Panel, 4 Port, 2 x 2, Compact	Each	4.0 (1.8)
L-EP-1449	Entry Panel, 6 Port, 2 x 3	Each	6.1 (2.8)
L-EP-1477	Entry Panel, 6 Port, 1 x 6	Each	6.0 (2.7)
L-EP-576	Entry Panel, 8 Port, 2 x 4, Standard	Each	6.1 (2.8)

Code	Description	Kit Qty.	Wt. lbs (Wt. kg)
L-EP-1338	Entry Panel, 8 Port, 2 x 4, Large	Each	6.0 (2.7)
L-EP-1033	Entry Panel, 9 Port, 3 x 3	Each	7.1 (3.2)
L-EP-1297	Entry Panel, 10 Port, 2 x 5	Each	7.4 (3.4)
L-EP-1118	Entry Panel, 12 Port, 3 x 4, Standard	Each	8.5 (3.9)
L-EP-1334	Entry Panel, 12 Port, 3 x 4, Compact	Each	7.0 (3.2)
L-EP-1336	Entry Panel, 12 Port, 2 x 6	Each	9.2 (4.2)
L-EP-1447	Entry Panel, 16 Port, 4 x 4	Each	9.0 (4.1)
L-EP-1333	Entry Panel, 18 Port, 3 x 6	Each	13.0 (5.9)
L-EP-1861	Entry Panel, 20 Port, 4 x 5	Each	11.0 (5.0)
L-EP-1340	Entry Panel, 24 Port, 4 x 6	Each	15.8 (7.2)

* Note : 5″ (127mm) Feed-thru Entry Panels available with 1, 2, 3, 4, 6, 8, and 9 hole configurations.

Cushion and Boot

4°» (102mm) Boot Assembly Kit

Description

These innovative boot assembly kits feature a boot assembly and standard cushion insert in one convenient package. The unique boot assembly features a split, one-piece design which dramatically reduces installation time and difficulty. Boot assembly kits are designed to be fitted onto EP-series entry panels in wall/roof feed-thru applications.

Characteristics

App.	Entry Solutions	Mounts to	4″ (102mm) Entry Panels
Size	Versions for Coax and Elliptical Waveguide	Material	EPDM Rubber
Feature	One-Piece Design Simplifies Installation	Incl.	Boot, Cushion, Two Hose Clames
Design	Compression Boot Kit for Aluminum Entry Panels	Order Sep.	4″ (102mm) Entry Panel

Product Code

Code	Description	Kit Qty.	Wt. lbs (Wt. kg)
L-BA-12-1A	Boot Assembly Kit, 4″ (102mm) w/1 Hole for 1/2″ Corrugated Coax	Each	1.6 (0.7)
L-BA-12-2A	Boot Assembly Kit, 4″ (102mm) w/2 Hole for 1/2″ Corrugated Coax	Each	1.6 (0.7)
L-BA-12-3A	Boot Assembly Kit, 4″ (102mm) w/3 Hole for 1/2″ Corrugated Coax	Each	1.6 (0.7)
L-BA-12-4A	Boot Assembly Kit, 4″ (102mm) w/4 Hole for 1/2″ Corrugated Coax	Each	1.6 (0.7)
L-BA-12-5A	Boot Assembly Kit, 4″ (102mm) w/5 Hole for 1/2″ Corrugated Coax	Each	1.6 (0.7)
L-BA-12F-1A	Boot Assembly Kit, 4″ (102mm) w/1 Hole for 1/2″ Flex Coax	Each	1.6 (0.7)
L-BA-12F-2A	Boot Assembly Kit, 4″ (102mm) w/2Hole for 1/2″ Flex Coax	Each	1.6 (0.7)
L-BA-12F-3A	Boot Assembly Kit, 4″ (102mm) w/3 Hole for 1/2″ Flex Coax	Each	1.6 (0.7)
L-BA-12F-4A	Boot Assembly Kit, 4″ (102mm) w/4 Hole for 1/2″ Flex Coax	Each	1.6 (0.7)
L-BA-16-1A	Boot Assembly Kit, 4″ (102mm) w/1 Hole for 5/8″ Corrugated Coax	Each	1.6 (0.7)
L-BA-16-2A	Boot Assembly Kit, 4″ (102mm) w/2 Hole for 5/8″ Corrugated Coax	Each	1.6 (0.7)
L-BA-16-3A	Boot Assembly Kit, 4″ (102mm) w/3 Hole for 5/8″ C orrugated Coax	Each	1.6 (0.7)
L-BA-16-4A	Boot Assembly Kit, 4″ (102mm) w/4 Hole for 5/8″ Corrugated Coax	Each	1.6 (0.7)
L-BA-22-1A	Boot Assembly Kit, 4″ (102mm) w/1 Hole for 7/8″ Corrugated Coax	Each	1.6 (0.7)
L-BA-22-2A	Boot Assembly Kit, 4″ (102mm) w/2 Hole for 7/8″ Corrugated Coax	Each	1.6 (0.7)
L-BA-22-3A	Boot Assembly Kit, 4″ (102mm) w/3 Hole for 7/8" Corrugated Coax	Each	1.6 (0.7)
L-BA-22-4A	Boot Assembly Kit, 4″ (102mm) w/4 Hole for 7/8″ Corrugated Coax	Each	1.6 (0.7)
L-BA-33-1A	Boot Assembly Kit, 4″ (102mm) w/1 Hole for 1-1/4″ Corrugated Coax	Each	1.6 (0.7)
L-BA-42-1A	Boot Assembly Kit, 4″ (102mm) w/1 Hole for 1-5/8″ Corrugated Coax	Each	1.6 (0.7)
L-BA-57-1A	Boot Assembly Kit, 4″ (102mm) w/1 Hole for 2-1/4″ Corrugated Coax	Each	1.6 (0.7)

Combiner, Filter and Coupler

- Splitter / Tapper
- Coupler / Hybrid Coupler
- Combiner
- Duplexer / Filter

Application Guide

In Building

LS RF Total Solution provides cost effective In-Building solution.

BTS Antenna

LS RF Total Solution provides cost effective BTS solution.

Wide Band Power Splitter

SPT-2way-100-NF / SPT-3way-100-NF / SPT-4way-100-NF

2 way

3 way

4 way

Description

High-power splitter for mobile network is designed to divide an incoming RF signal into certain output port equally.
Splitters covers wide band 800 to 2,700MHz.
(Indoor/outdoor versions available)

Electrical Characteristics

Items	SPT-Xway-100-NF		
Frequency Range	800 ~ 2,700MHz		
For Conncecting Antennas	2 way	3way	4way
Insertion Loss	< 0.1dB		
Split Loss	3.0 ±0.1dB	4.8 ±0.15dB	6.0 ±0.15dB
V.S.W.R	< 1.2	< 1.2	< 1.25
Impedance	50 Ω		
Power	200W		
PIMD	-150dBc (43dBm / 2Tone)		
Connector	N - Female		
Operating Temperature	-35 ~ +75˚C / 0 ~95%		

Mechanical Characteristics

Weight	Approx. 0.4kg	Approx. 0.45kg	Approx. 0.5kg
Size (Except for connector)	193 x 25 x 25mm	190.6 x 25 x 25mm	192.5 x 25 x 25mm

Wide Band Power Splitter

SPT-2way-700-DF / SPT-3way-700-DF / SPT-4way-700-DF

2 way

3 way

4 way

Description

High-power splitter for mobile network is designed to divide an incoming RF signal into certain output port equally.
Splitters covers wide band 800 to 2,700MHz.
(Indoor/outdoor versions available)

Electrical Characteristics

Items	SPT-Xway-700-DF		
Frequency Range	800 ~ 2,500MHz		
For Conncecting Antennas	2 way	3way	4way
Insertion Loss	< 0.1dB		
Split Loss	3.0 ±0.1dB	4.8 ±0.15dB	6.0 ±0.15dB
V.S.W.R	< 1.2	< 1.2	< 1.3
Impedance	50 Ω		
PIMD	-150dBc (43dBm / 2Tone)		
Power	700W		
Connectors	7/16(DIN) - Female		
Operating Temperature	-35 ~ +75℃ / 0 ~95%		

Mechanical Characteristics

Weight	Approx. 1.05kg	Approx. 1.11kg	Approx. 1.15kg
Size (Except for connector)	210.4 x 40 x 40mm	210.4 x 40 x 40mm	210.4 x 40 x 40mm

Wide Band Power Tapper

TAP-7dB-100-NF / TAP-10dB-100-NF / TAP-15dB-100-NF

Description

High-power tapper for mobile network is designed to divide an incoming RF signal into certain output port unequally.
Tappers cover wide band 800 to 2,700MHz.
(Indoor/outdoor versions available)

Electrical Characteristics

Items	TAP-XdB-100-NF		
Frequency Range	800 ~ 2,700MHz		
Tap Loss Input ↔P1 Input ↔P2	-7 ±1.0dB < 1.3dB	-10 ±1.0dB < 0.7dB	-15 ±1.0dB < 0.4dB
Insertion Loss	< 0.1dB		
V.S.W.R	< 1.4		
Impedance	50 Ω		
PIMD	-150dBc		
Power	200W		
PIMD	-150dBc (43dBm / 2Tone)		
Connectors	N-Female		
Operating Temperature	-35 ~ +75℃ / 0 ~95%		

Mechanical Characteristics

Weight	Approx. 0.4kg
Size (Except for connector)	184 x 25 x 25mm

Directional Coupler

CPL-100-6dB-NF / CPL-100-8dB-NF / CPL-100-10dB-NF / CPL-100-13dB-NF / CPL-100-15dB-NF / CPL-100-20dB-NF / CPL-100-30dB-NF

Description

Directional coupler is designed to decouple defined portion of RF signal from the main through line.
It covers 800 to 2,700MHz

- Broadband Range
- ROHS
- Low VSWR
- Low Loss

Electrical Characteristics

Items	CPL-100-XX-MF
Frequency Range	800 ~ 2,700MHz
Coupling Value	-6dB, -8dB, -10dB, -13dB, -15dB, -20dB, -30dB
Insertion Loss(Max.)	1.5dB, 1.1dB, 0.7dB, 0.5dB, 0.4dB 0.2dB,
Coupling Tolerance	±0.8 ±1.0
V.S.W.R	< 1.2
Directivity	20dB
Impedance	50 Ω
Max. Power	100W(Forward Input, All Port Terminated)
PIMD	-140dBc (43dBm/2tone)
Connectors	N - Female
Operating Temperature	-35 ~ +75°C / 0 ~95%

Mechanical Characteristics

Weight	Approx. 0.3kg
Size (Except for connector)	108.4 x 29.2 x 23mm

3dB Directional Coupler

CPL-0822-4A-3 / CPL-1722-4A-3 / CPL-0809-4A-3
CPL-0900-4A-AD3 / CPL-0900-4A-AN

Features

- High Power Rating
- 3dB Coupling Value
- Low Insertion Loss
- Low VSWR
- Low Loss
- Low Passive Inter Modulation Products
- Compact Size
- Indoor/outdoor Applications
- 7/16(DIN) Female Connectors

Specification

Items	CPL-0822-4A-3	CPL-1722-4A-3	CPL-0809-4A-3	CPL-0900-4A-AD3	CPL-0900-4A-AN
Frequency Range	800~ 2200MHz	1700~ 2200MHz	806~ 960MHz	806~ 960MHz	806~ 960MHz
Attenuation (1 ↔2/1 ↔3)	3±1.2 dB	3 ±0.4 dB	3 ±0.4 dB	3 ±0.4 dB	3 ±0.4 dB
Directivity	>20dB	>25dB	>30 dB	>30 dB	>30 dB
VSWR	< 1.2	<1.15	< 1.1	< 1.11	< 1.11
Impedance	50 Ω				
Input Power	< 300 W Total Power	< 300 W Total Power	< 500 W Total Power	< 500 W Total Power	< 500 W Total Power
PIMD	-160 dBc				
Temperature Range	-30°C ~ +70°C				
Connectors	7-16 Female	7-16 Female	7-16 Female	N-Female	N-Female
Application	Indoor or Outdoor	Indoor or Outdoor	Indoor or Outdoor	Indoor	Indoor
Mounting	With 2 Screws (Max.5.5mm Diameter)	With 2 Screws (Max.5.5mm Diameter)	With 2 Screws (Max.5.5mm Diameter)	With 2 Screws (Max.5mm Diameter)	With 2 Screws (Max.5mm Diameter)
Weight	1.3kg	1.3kg	1.8kg	0.6kg	0.6kg
Dimension (Including Connectors)	94 x 60 x 88mm	94 x 60 x 88mm	135 x 46.5 x 94mm	157 x 55 x 84mm	157 x 55 x 84mm

3dB Hybrid Coupler

CPL-100-3-DF-B / CPL-100-3-NF-B

Features

- Wideband Performance 800 ~ 2700 MHz
- High Isolation
- 120 Watt Average Power Rating
- Low Insertion Loss
- Low VSWR
- Low Passive Inter Modulation Products
- Compact Size
- Indoor/Outdoor Applications
- 7/16(Din) Female Connectors (CPL-100-3-DF-B)
- N-Female Connectors (CPL-100-3-NF-B)

CPL-100-3-DF-B

CPL-100-3-NF-B

Specification

Items	CPL-100-3-DF-B	CPL-100-3-NF-B
Frequency Range	800 ~ 2,700MHz	
Impedance	50 Ω	
V.S.W.R	1.2:1	
Coupling Value	3.0 +/-0.6dB	
Isolation	< -23dB	
PIMD	< -150dBc	
Input Power(avg.)	120Watt	
Connectors	7/16(Din)-Female	N-Female
Environmental Class	IP68	
Operating Temperature	-35℃ ~ +75℃	
Weight	940g	650g
Size	129 x 42 x 40mm	129 x 44 x 31.5mm

4 x 4 Hybrid Coupler

MUL-0827-44A / MUL-0827-44B

Features

- Wideband Performance 800 ~ 2700 MHz
- High Isolation
- 100 Watt Average Power Rating
- Low Insertion Loss
- Low VSWR
- Compact Size
- Indoor/Outdoor Applications
- N-Female Connectors(MUL-0827-44A)
- 7/16(DIN)-Female Connectors(MUL-0827-44B)

MUL-0827-44B

MUL-0827-44A

Specification

Items	MUL-0827-44A	MUL-0827-44B
Frequency Range	800 ~ 2,700MHz	
Impedance	50 Ω	
V.S.W.R	1.2:1	
Coupling Value	6.2 +/-0.8dB	
Isolation	< -25dB	
PIMD	< -150dBc	
Input Power(avg.)	100Watt	
Connectors	N-Female	7/16(DIN) Female
Environmental Class	IP68	
Operating Temperature	-20°C ~ +75°C	
Size	150.4 x 150.4 x 28.4mm	153 x 153 x 35mm

4.7-dB, 6-dB Coupler (806~960MHz)

CPL-0809-4A-N-4.7 / CPL-0809-4A-D-4.7
CPL-0809-4A-N-6 / CPL-0809-4A-D-6

Features

- High Input Isolation
- Compact Size & Low Cost Design
- 350W Port Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7/16 Din or N Type Connector
- Co-Site System
- Integrates AMPS & CDMA800 & GSM900
- Minimal Insertion Loss

Specification

Items	CPL-0809-4A-N-4.7(N-Female) / CPL-0809-4A-D-4.7(7-16 Female)	CPL-0809-4A-N-6(N-Female) / CPL-0809-4A-D-6(7-16 Female)
Frequency Range	806 ~ 960MHz	
Insertion Loss	1.8 ±0.3dB	1.25 ±0.2dB
Coupling Value	4.7 ±0.5dB	6.0 ±0.5dB
Directivity	> 27dB	
VSWR	< 1.1	
Impedance	50 Ω	
Input Power	< 350 W Total Power	
Application	Indoor	
Mounting	With 2 Screws (Max.5.5mm)	
Weight	0.6kg	
Packing Size	Approx. 300 x 65 x 115mm	
Dimension(W x H x D) N-Female 7/16 Female	 157 x 55 x 95mm (Including Connectors) 157 x 55 x 84mm (Including Connectors)	

7-dB, 10-dB Coupler(806~960MHz)

CPL-0809-4A-N-7 / CPL-0809-4A-D-7
CPL-0809-4A-N-10 / CPL-0809-4A-D-10

Features

- High Input Isolation
- Compact Size & Low Cost Design
- 350W Port Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7/16 Din or N Type Connector
- Co-Site System
- Integrates AMPS & CDMA800 & GSM900
- Minimal Insertion Loss

Specification

Items	CPL-0809-4A-N-7(N-Female) / CPL-0809-4A-D-7(7-16 Female)	CPL-0809-4A-N-10(N-Female) / CPL-0809-4A-D-10(7-16 Female)
Frequency Range	806 ~ 960MHz	
Insertion Loss	1.0 ±0.2dB	0.5 ±0.2dB
Coupling Value	7.0 ±0.5dB	10 ±0.5dB
Directivity	> 27dB	
VSWR	< 1.1	
Impedance	50 Ω	
Input Power	< 350 W Total Power	
Application	Indoor	
Mounting	With 2 Screws(Max.5.5mm)	
Weight	0.6kg	
Packing Size	Approx. 300 x 65 x 115mm	
Dimension(W x H x D) N-Female 7/16 Female	 157 x 55 x 95mm(Including Connectors) 157 x 55 x 84mm(Including Connectors)	

4.7-dB, 6-dB Coupler(1710~1900MHz)

CPL-1719-4A-N-4.7 / CPL-1719-4A-D-4.7
CPL-1719-4A-N-6 / CPL-1719-4A-D-6

Features

- High Input Isolation
- Minimal Insertion Loss
- Compact Size & Low Cost Design
- 350W Port Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7/16 Din or N Type Connector
- Co-Site System
- Integrates GSM1800
- Reduction Feeders

Specification

Items	CPL-1719-4A-N-4.7(N-Female) / CPL-1719-4A-D-4.7(7-16 Female)	CPL-1719-4A-N-6(N-Female) / CPL-1719-4A-D-6(7-16 Female)
Frequency Range	1710 ~ 1900MHz	
Attenuation 1 ↔3 (4 ↔2)	1.8 ±0.3dB	1.25 ±0.2dB
Attenuation 1 ↔2 (4 ↔3)	4.7 ±0.5dB	6.0 ±0.5dB
Directivity	> 27dB	
VSWR	< 1.1	
Impedance	50Ω	
Input Power	< 350W Total Power at Two Inputs, with Max. 250W at One Input	
Application	Indoor	
Mounting	With 2 Screws (Max.5.5mm Diameter)	
Weight	0.5kg	
Packing Size	Approx. 260 x 65 x 115mm	
Dimension(W x H x D) N-Female 7/16 Female	 111 x 55 x 95mm (Including Connectors) 111 x 55 x 84mm (Including Connectors)	

7-dB, 10-dB Coupler(1710~1900MHz)

CPL-1719-4A-N-7 / CPL-1719-4A-D-7 / CPL-1719-4A-N-10 / CPL-1719-4A-D-10

Features

- High Input Isolation
- Minimal Insertion Loss
- Compact Size & Low Cost Design
- 350W Port Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7/16 Din or N Type Connector
- Co-Site System
- Integrates GSM1800
- Reduction Feeders

Specification

Items	CPL-1719-4A-N-7(N-Female) / CPL-1719-4A-D-7(7-16 Female)	CPL-1719-4A-N-10(N-Female) / CPL-1719-4A-D-10(7-16 Female)
Frequency Range	1710 ~ 1900MHz	
Attenuation 1 ↔3 (4 ↔2)	1.0 ±0.2dB	0.5 ±0.2dB
Attenuation 1 ↔2 (4 ↔3)	7.0 ±0.5dB	1.0 ±0.5dB
Directivity	> 27dB	
VSWR	< 1.1	
Impedance	50Ω	
Input Power	< 350W Total Power at Two Inputs, with Max. 250W at One Input	
Application	Indoor	
Mounting	With 2 Screws (Max.5.5mm Diameter)	
Weight	0.5kg	
Packing Size	Approx. 260 x 65 x 115mm	
Dimension(W x H x D) N-Female 7/16 Female	 111 x 55 x 95 (Including Connectors) 111 x 55 x 84 (Including Connectors)	

6-dB, 10-dB Coupler(800~1900MHz)

CPL-0819-4A-N-6 / CPL-0819-4A-D-6
CPL-0819-4A-N-10 / CPL-0819-4A-D-10

Features

- High Input Isolation
- Minimal Insertion Loss
- Compact Size & Low Cost Design
- 350W Port Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7/16 Din or N Type Connector
- Co-Site System
- Integrates AMPS & CDMA800 & GSM900
- Reduction Feeders

Specification

Items	CPL-0819-4A-N-6(N-Female) / CPL-0819-4A-D-6(7-16 Female)	CPL-0819-4A-N-10(N-Female) / CPL-0819-4A-D-10(7-16 Female)
Frequency Range	800 ~ 1900MHz	
Attenuation 1 ↔3 (4 ↔2)	1.5 ±0.5dB (800 ~ 1900MHz)	0.5 ±0.5dB (800 ~ 1900MHz)
Attenuation 1 ↔2 (4 ↔3)	6.0 ±1dB (800 ~ 960/1700 ~ 1900MHz) 6.0-1.5dB (960 ~ 1700MHz)	10 ±1dB (800 ~ 960/1700 ~ 1900MHz) 10-2dB (960 ~ 1700MHz)
Directivity	> 22dB	> 20dB
VSWR	< 1.15	
Impedance	50Ω	
Input Power	< 350W Total Power at Two Inputs, with Max. 250W at One Input	
Application	Indoor	
Mounting	With 2 Screws(Max.5.5mm Diameter)	
Weight	0.5kg	
Packing Size	Approx. 275 x 47 x 115mm	
Dimension(W x H x D) N-Female 7/16 Female	 135 x 40 x 95mm (Including Connectors) 135 x 40 x 84mm (Including Connectors)	

Dual Band Combiner

DBC-0822-3D

Features

- Integrates Wireless Bands (806MHz~960MHz & 1710MHz~2170MHz)
- Designed for Co-Siting Systems
- Available as a Single Unit or Double Unit
- Wall or Pole Mounting
- Reciprocal Characteristic
- 250 Watt Average Power Rating
- Built in DC By-Pass
- Low Insertion Loss
- Low Passive Inter Modulation Products
- Indoor / Outdoor Applications
- 7/16(Din) Female Connectors

Specification

Items	DBC-0822-3D
Frequency Range	Band1 : 806 ~ 960MHz / Band2 : 1710 ~ 2170MHz
Impedance	50Ω
VSWR	< 1.2 : 1
Insertion Loss Port1 ↔Port3 Port1 ↔Port3	< 0.15dB Typ. (806~960MHz) < 0.25dB Typ. (1710 ~ 2000MHz) < 0.35dB Typ. (2000~2170MHz)
Isolation Loss Port1 ↔Port2	< -45dB Typ. (806~824MHz) < -50dB Typ. (824~2170MHz)
PIMD	< -160dBc
DC By-Pass	< 2500mA
Input Power	250Watt
Mounting	Wall or Pole
Connectors	7/16(DIN) – Female
Environmental Class	IP 66
Operating Temperature	-40˚C ~ +60˚C
Weight	Single Type : 1,600g / Double Type : 3,000g
Size(with Bracket)	Single Type : 137 x 282 x 58.5mm / Double Type : 137 x 282 x 111mm

Dual Band Combiner

DBC-0822-3A

Features

- Integrates Wireless Bands (806MHz~960MHz & 1710MHz~2170MHz)
- Designed for Co-Siting Systems
- Available as a Single Unit or Double Unit
- Wall or Pole Mounting
- Reciprocal Characteristic
- 250 Watt Average Power Rating
- Built in DC STOP
- Low Insertion Loss
- Low Passive Inter Modulation Products
- Indoor / Outdoor Applications
- 7/16(Din) Female Connectors

Specification

Items	DBC-0822-3A
Frequency Range	Band1 : 806 ~ 960MHz / Band2 : 1710 ~ 2170MHz
Impedance	50Ω
VSWR	< 1.2 : 1
Insertion Loss Port1 ↔Port3 Port1 ↔Port3	< 0.15dB Typ. (806~960MHz) < 0.25dB Typ. (1710 ~ 2000MHz) < 0.35dB Typ. (2000~2170MHz)
Isolation Loss Port1 ↔Port2	< -45dB Typ. (806~824MHz) < -50dB Typ. (824~2170MHz)
PIMD	< -160dBc
Input Power	250Watt
Mounting	Wall or Pole
Connectors	7/16(DIN) – Female
Environmental Class	IP 66
Operating Temperature	-40˚C ~ +60˚C
Weight	Single Type : 1,600g / Double Type : 3,000g
Size(with Bracket)	Single Type : 137 x 282 x 58.5mm / Double Type : 137 x 282 x 111mm

Dual Band Combiner

DBC-0822-3E

Features

- Integrates Wireless Bands (806MHz~960MHz & 1920MHz~2170MHz)
- Designed for Co-Siting Systems
- Available as a Single Unit or Double Unit
- Wall or Pole Mounting
- Reciprocal Characteristic
- 250 Watt Average Power Rating
- Built in DC By-Pass
- Low Insertion Loss
- Low Passive Inter Modulation Products
- Indoor / Outdoor Applications
- 7/16(Din) Female Connectors

Specification

Items	DBC-0822-3E
Frequency Range	Band1 : 806 ~ 960MHz / Band2 : 1920 ~ 2170MHz
Impedance	50Ω
VSWR	< 1.2 : 1
Insertion Loss Port1 ↔Port3 Port1 ↔Port3	< 0.15dB Typ. (806~960MHz) < 0.25dB Typ. (1920 ~ 2000MHz) < 0.35dB Typ. (2000~2170MHz)
Isolation Loss Port1 ↔Port2	< -45dB Typ. (806~824MHz) < -50dB Typ. (824~2170MHz)
PIMD	< -160dBc
DC By-Pass	< 2500mA
Input Power	250Watt
Mounting	Wall or Pole
Connectors	7/16(DIN) – Female
Environmental Class	IP 66
Operating Temperature	-40°C ~ +60°C
Weight	Single Type : 1,600g / Double Type : 3,000g
Size(with Bracket)	Single Type : 137 x 282 x 58.5mm / Double Type : 137 x 282 x 111mm

Dual Band Combiner

DBC-1722-3E

Features

- Integrates Wireless Bands (1710MHz~1880MHz & 1920MHz~2170MHz)
- Designed for Co-Siting Systems
- Available as a Single Unit or Double Unit
- Reciprocal Characteristic
- 200 Watt Average Power Rating
- Built in DC By-Pass
- Low Insertion Loss
- Low Passive Inter Modulation Products
- Wall or Pole Mounting
- Indoor / Outdoor Applications
- 7/16(Din) Female Connectors

Specification

Items	DBC-1722-3E
Frequency Range	Band1 : 1710 ~ 1880MHz / Band2 : 1920 ~ 2170MHz
Impedance	50Ω
VSWR	< 1.2 : 1
Insertion Loss	< 0.4dB Typ.
Isolation Loss	< -50dB
PIMD	< -160dBc
DC By-Pass	< 2500mA
Input Power	200Watt
Mounting	Wall or Pole Mounting
Connectors	7/16(DIN) – Female
Environmental Class	IP 66
Operating Temperature	-30˚C ~ +70˚C
Weight	3500g
Size	210 x 243 x 58mm

Dual Band Combiner

DBC-0800-3A

Features

- Integrates Wireless Bands
  (820MHz~845MHz & 865MHz~890MHz)
- 100 Watt Average Power Rating
- High Isolation
- Low Insertion Loss
- N-Female Connectors

Specification

Items	DBC-0800-3A
Frequency Range	Up Link : 820 ~ 845 MHz / Down Link : 865 ~ 890 MHz
Impedance	50 Ω
VSWR	< 1.3 : 1
Insertion Loss	< 6.0dB
Isolation	< -100dB (Cross Band) / -40dB (Same Band)
Input Power	100Watt
Connectors	N - Female
Operating Temperature	-10°C ~ +60°C
Weight	8000g
Size	260 x 210 x 75mm

Triple Band Combiner

TBC-0822-4A

Features

- High Isolation Cross Band
- High "Q" Value Design
- 240W High Power Rating
- Low Passive Intermodulation
- High Reliability
- 7/16(Din) Connector & N Connector
- Co-Site System
- Integrates CDMA800 / GSM900 & GSM & UMTS
- DC STOP
- Minimal Insertion Loss
- Compact Size & Low Weight
- Indoor or Outdoor Application

Specification

Items	TBC-0822-4A		
Frequency Range	806~960MHz (CDMA800, GSM900)	1710~1880MHz (GSM1800)	1920~2170MHz (UMTS)
Insertion Loss(Max.)	0.2dB	0.4dB	0.4dB
VSWR		1.2:1	
Isolation(Min.)	> 50dB (1710 ~ 1880) > 50dB (1920 ~ 2170)	> 50dB (806 ~ 960) > 50dB (1920 ~ 2170)	> 50dB (806 ~ 960) > 50dB (1710 ~ 1880)
Intermodulation Products @2-tone * 20w		< -160dBc	
Connectors		7/16(DIN)-Female	
Operating Power		240W Avg.	
Application		(Indoor or Outdoor) IP66	
Mounting		Wall Mounting, Mast Mounting	
Size		242 x 216 x 65mm	
Operating Temperature		-40°C ~ +60°C	

Triple Band Combiner

TBC-0822-4D

Features

- High Isolation Cross Band
- High "Q" Value Design
- 240W High Power Rating
- Low Passive Intermodulation
- High Reliability
- 7/16(Din) Connector & N Connector
- Co-Site System
- Integrates CDMA800 / GSM900 & GSM & UMTS
- Built in DC By-Pass
- Minimal Insertion Loss
- Compact Size & Low Weight
- Indoor or Outdoor Application

Specification

Items	TBC-0822-4D		
Frequency Range	806~960MHz (CDMA800, GSM900)	1710~1880MHz (GSM1800)	1920~2170MHz (UMTS)
Insertion Loss(Max.)	0.2dB	0.4dB	0.4dB
VSWR		1.2:1	
Isolation(Min.)	> 50dB (1710 ~ 1880) > 50dB (1920 ~ 2170)	> 50dB (806 ~ 960) > 50dB (1920 ~ 2170)	> 50dB (806 ~ 960) > 50dB (1710 ~ 1880)
Intermodulation Products @2-tone * 20w	< -160dBc		
DC By-Pass	Max. 2500mA (Lightning Protection : 3kA, 8/20 μs pulse)		
Connectors	7/16 (DIN)-Female		
Operating Power	240W Avg.		
Application	(Indoor or Outdoor) IP66		
Mounting	Wall Mounting, Mast Mounting		
Size	242 x 216 x 65mm		
Operating Temperature	-40°C ~ +60°C		

Multi 5Port Combiner

TBC-0822-9A

Features

- High Isolation Cross Band
- Minimal Insertion Loss
- High "Q" Value Design
- Compact Size in Wall Mount
- Low Passive Intermodulation
- Use for Co-Site System
- Permit Combining of GSM900, GSM1800 x 2 and UMTS x 2

Specification

Items			TBC-0822-9A
Frequency Range	GSM900		806~960MHz
	GSM1800	Tx / Rx1	1710~1880MHz
		Tx / Rx2	1710~1880MHz
	UMTS	Tx / Rx1	1920~2110MHz
		Tx / Rx1	1920~2110MHz
Insertion Loss Output Port to All Input Port			< 0.8dB
Isolation	Between Same System		> 20dB
	Between System		> 70dB
Return Loss_ All Port			> 18dB
Impedance			50 Ω
Inter Modulation			< -140dBc (20W x 2Tone)
Total Power Per Tx/Rx Port			100(cw) max, 2.2KW peak
Monitor Port Coupling Value			30 ±2.0dB
Temperature Range			-10°C ~ +80°C
MTBF			200,000
Mounting			Wall Mount
Material			Casing-Al with, AG Coating(Grey Color)
Weight			8.5kg
Connectors			7/16 Female [N(F) For -30dB Test Port]
Size			376 x 258 x 62mm

Multi Operator Combiner

SBC-0822-8A

Features

- High Isolation Cross Band
- Minimal Insertion Loss
- High "Q" Value Design
- Use for Co-site System
- Low Passive Intermodulation
- Permit Combining of GSM900, GSM1800 x 2 and UMTS x 3
- Compact Size in Wall Mount or "19" Format Makes Installation Easy

Specification

Items			SBC-0822-8A		
Frequency Range	GSM900	Up		890.0~915.0MHz	
		Down		935.0~960.0MHz	
	GSM1800	Up	1725.0~1750.0MHz	1760.0~1770.0MHz	
		Down	1820.0~1845.0MHz	1855.0~1865.0MHz	
	UMTS	Up	1920.3~1935.1MHz	1964..9~1979.7MHz	1935.1~1950.1MHz
		Down	2110.3~2125.1MHz	2154.9~2169.7MHz	2125.1~2140.1MHz
Insertion Loss	GSM900			<0.7dB	
	GSM1800			<2.0dB	
	UMTS			<7.0dB	
Isolation	Between Same System			>30dB	
	Between System			>65dB	
Return Loss				>18dB	
Impedance				50Ω	
Input Power Rating Per Port				60W	
Monitor Port Coupling Value				30 ±2.0dB	
Temperature Range				0°C ~ +60°C	
Mounting				19" Rack	
Weight				22kg	
Connectors				N-Type (Female)	
Size				482 x 460 x 266mm	

Multi Operator Combiner

SBC-0822-9A

Features

- High Isolation Cross Band
- Minimal Insertion Loss
- High "Q" Value Design
- Use for Co-site System
- Low Passive Intermodulation
- Permit Combining of GSM900, GSM1800 x 3 and UMTS x 3
- Compact Size in Wall Mount or "19" Format Makes Installation Easy
- Use for Co-site System

Specification

Items			SBC-0822-9A		
Frequency Range	GSM900	Up		890.0~915.0MHz	
		Down		935.0~960.0MHz	
	GSM1800	Up	1725.0~1750.0MHz	1760.0~1770.0MHz	1750.2~1760.0MHz
		Down	1820.0~1845.0MHz	1855.0~1865.0MHz	1845.2~1855.0MHz
	UMTS	Up	1920.3~1935.1MHz	1964..9~1979.7MHz	1935.1~1950.1MHz
		Down	2110.3~2125.1MHz	2154.9~2169.7MHz	2125.1~2140.1MHz
Insertion Loss	GSM900			< 0.7dB	
	GSM1800			< 7.0dB	
	UMTS			< 7.0dB	
Isolation	Between Same System			> 30dB	
	Between System			> 65dB	
Return Loss				> 18dB	
Impedance				50 Ω	
Input Power Rating Per Port				60W	
Monitor Port Coupling Value				30 ±2.0dB	
Temperature Range				0˚C ~ +60˚C	
Mounting				19" Rack	
Weight				22kg	
Connectors				N-Type (Female)	
Size				482 x 460 x 266mm	

Duplexer(AMPS A, B Band)

DUP-0800-3A-AMPS A / DUP-0800-3B-AMPS A
DUP-0800-3C-AMPS A-19 / DUP-0800-3A-AMPS B
DUP-0800-3B-AMPS B

Dup-0800-3A-AMPS A,B

Dup-0800-3B-AMPS A,B

Dup-0800-3C-AMPS A-19

Specification

Items	DUP-0800-3A-AMPS A	DUP-0800-3B-AMPS A	DUP-0800-3C-AMPS A-19	DUP-0800-3A-AMPS B	DUP-0800-3B-AMPS B
Frequency Range	824.0 ~ 835.0MHz 869.0 ~ 880.0MHz			835.0 ~ 851.0MHz 880.0 ~ 896.0MHz	
Insertion Loss	< 0.5dB Max.				
Isolation	> 85dB (High Band ↔Low Band)				
VSWR	< 1.25 : 1				
Impedance	50 Ω				
Input Power Rating Per Port	400W				
PIMD	< -160dBc				
Temperature Range	-20˚C ~ +55˚C	-40˚C ~ +60˚C	-20˚C ~ +55˚C	-20˚C ~ +55˚C	-40˚C ~ +60˚C
Mounting	4 Screws (Ø4.0 mm)	Wall or Pole	4 Screws (Ø4.0 mm)	4 Screws (Ø4.0 mm)	Wall or Pole
Application	Indoor	Outdoor (IP66)	Indoor, 19"	Indoor	Outdoor (IP66)
Weight	3.0kg	5.5kg	4.0kg	3.0kg	5.5kg
Connectors	7 -16 (Female)				
Size	229 x 80 x 170mm	229 x 80 x 170mm	19"	229 x 80 x 170mm	229 x 80 x 170mm

Duplexer(AMPS AB Band)

DUP-0800-3A-AMPS AB-D / DUP-0800-3A-AMPS AB-N
DUP-0800-3C-AMPS AB / DUP-0800-3D-AMPS AB

Features

- High Attenuation
- Minimal Insertion Loss
- High "Q" Value Design
- 400W High Power Rating
- Indoor or Application
- Low Passive Intermodulation
- High Reliability
- 7-16 / N Din Connector
- Integrates AMPS AB-Band Tx & Rx

Specification

Items	DUP-0800-3A-AMPS AB-D	DUP-0800-3A-AMPS AB-N	DUP-0800-3C-AMPS AB	DUP-0800-3D-AMPS AB
Frequency Range	824.0 ~ 851.0 869.0 ~ 896.0		824.0 ~ 846.5 869.0 ~ 891.5	
Insertion Loss	< 0.5dB Max.			
Isolation	> 65dB(824~851/869~896MHz)		> 70dB(824~846.5 / 869~891.5MHz)	
VSWR	< 1.25 : 1			
Impedance	50 Ω			
Input Power Rating Per Port	400W		400W	800W
PIMD	< -160dBc			
Temperature Range	-20˚C ~ +55˚C			
Mounting	4 Screws (Ø 4.0 mm)			
Application	Indoor			
Weight	2.6kg		2.6kg	3.0kg
Connectors	7 -16(Female)	N (Female)	7 -16 (Female)	
Size	229 x 80 x 170mm			229 x 112 x 170mm

Duplexer(GSM 900)

DUP-0900-3A / DUP-0900-3B
DUP-0900-3C / DUP-0900-3A-19

Dup-0900-3C/3B

Dup-0900-3A

Dup-0900-3A-19

Specification

Items	DUP-0900-3A	DUP-0900-3B	DUP-0900-3C	DUP-0900-3A-19
Frequency Range	890.0 ~ 915.0 935.0 ~ 960.0			
Insertion Loss	< 0.5dB Max.			
Isolation	> 70dB(890~915/935~960MHz)			
VSWR	< 1.25 : 1			
Impedance	50Ω			
Input Power Rating Per Port	500W			
PIMD	< -160dBc			
Temperature Range	-40˚C ~ +60˚C	-20˚C ~ +55˚C		
Mounting	Wall or Pole	4 Screws(Ø4.0 mm)	4 Screws(Ø4.0 mm)	19"
Application	Outdoor (IP66)	Indoor	Indoor	Indoor, 19"
Weight	4.0kg	2.6kg	2.6kg	3.5kg
Connectors(Female)	Low : 7/16 High : 7/16 ANT : 7/16	Low : 7/16 High : 7/16 ANT : 7/16	Low : N High : 7/16 ANT : 7/16	Low : 7/16 High : 7/16 ANT : 7/16
Size	229 x 80 x 170mm	229 x 80 x 170mm	229 x 80 x 170mm	19"

Duplexer(GSM-R 900)

DUP-0900-3A-D-GSMR
DUP-0900-3A-N-GSMR

Features

- High Attenuation
- Minimal Insertion Loss
- High "Q" Value Design
- 250W High Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7-16 / N Din Connector
- Integrates GSMR R-900 Band Tx & Rx

Specification

Items	DUP-0900-3A-D-GSMR	DUP-0900-3A-N-GSMR
Frequency Range	876.0 ~ 880.0MHz 921.0 ~ 925.0MHz	
Insertion Loss	< 0.4dB Max.	
Isolation	> 85dB (876 ~880MHz) > 80dB (880 ~ 921 MHz) > 85dB (921~925MHz)	
VSWR	< 1.25 : 1	
Impedance	50 Ω	
Input Power Rating Per Port	250W	
PIMD	< -160dBc	
Temperature Range	-20°C ~ +55°C	
Mounting	4 Screws (Ø 4.0 mm)	
Application	Indoor	
Weight	2.6kg	
Connectors	7 -16 (Female)	N (Female)
Size	229 x 80 x 170mm	

Duplexer(EGSM 900)

DUP-0900-3A-EGSM

Features

- High Attenuation
- Minimal Insertion Loss
- High "Q" Value Design
- 250W High Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7-16 / N Din Connector
- Integrates GSM R-900 Band Tx & Rx

Specification

Items			DUP-0900-3A-EGSM
Frequency Range	EGSM900	Up Down	880.0 ~ 915.0MHz 925.0 ~ 960.0MHz
Insertion Loss	EGSM900(Up & Down Link)		< 0.9dB Max.
Isolation	Up Link↔Down Link		> 75dB (880 ~ 915/925~960MHz)
VSWR			< 1.25
Impedance			50Ω
Input Power Rating Per Port			250W
PIMD			< -160dBc
Temperature Range			-20˚C ~ +55˚C
Application			Indoor
Weight			4.5kg
Connectors			7 -16 (Female)
Size			206 x 238 x 81mm

Duplexer(GSM 1800)

DUP-1800-3A-19
DUP-1800-3A

Features

- High Attenuation
- Minimal Insertion Loss
- High "Q" Value Design
- 200W High Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7-16 / N Din Connector
- Integrates GSM R-900 Band Tx & Rx

Specification

Items	DUP-1800-3A	DUP-1800-3A-19
Frequency Range	1710.0 ~ 1785.0MHz 1805.0 ~ 1880.0MHz	
Insertion Loss	< 0.7dB Max.	
Isolation	> 65dB (1710~1785/1805~1880MHz)	
VSWR	< 1.25 : 1	
Impedance	50 Ω	
Input Power Rating Per Port	200W	
PIMD	< -160dBc	
Temperature Range	-20°C ~ +55°C	
Mounting	4 Screws (Ø 4.0 mm)	19"
Application	Indoor	
Weight	1.8kg	
Connectors	7 -16 (Female)	
Size	190 x 43 x 200mm (Including connector & Bracket)	19" (483 x 88 x 200mm)

Duplexer(EGSM 1900)

DUP-1900-3A

Features

- High Attenuation
- Minimal Insertion Loss
- High "Q" Value Design
- 300W High Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7-16 Din / N Connector
- Integrates GSM R-900 Band Tx & Rx

Specification

Items	DUP-1900-3A
Frequency Range	1850.0 ~ 1910.0MHz 1930.0 ~ 1990.0MHz
Insertion Loss	< 0.7dB Max.
Isolation	> 65dB (1850 ~ 1910/1930 ~ 1990MHz)
VSWR	< 1.25 :1
Impedance	50Ω
Input Power Rating Per Port	300W
PIMD	< -160dBc
Temperature Range	-20˚C ~ +55˚C
Mounting	4 Screws (Ø 4.0 mm)
Application	Indoor
Weight	1.8kg
Connectors	7 -16 (Female)
Size	190 x 43 x 200mm (Including connector & Bracket)

Duplexer(WCDMA)

DUP-2100-3AD / DUP-2100-3AN

Features

- High Attenuation
- Minimal Insertion Loss
- High "Q" Value Design
- 250W High Power Rating
- Indoor Application
- Low Passive Intermodulation
- High Reliability
- 7-16 / N Din Connector
- Integrates GSM R-900 Band Tx & Rx

Specification

Items	DUP-2100-3AD	DUP-2100-3AN
Frequency Range	1920.0 ~ 1980.0MHz 2110.0 ~ 2170.0MHz	
Insertion Loss	< 0.3dB Max.	
Isolation	> 90dB (1920 ~ 1980 / 2110 ~ 2170MHz)	
VSWR	< 1.25 : 1	
Impedance	50 Ω	
Input Power Rating Per Port	250W	
PIMD	< -160dBc	
Temperature Range	-20°C ~ +55°C	
Mounting	4 Screws (Ø 4.0 mm)	
Application	Indoor	
Weight	1.7kg	
Connectors	7 -16 (Female)	N (Female)
Size	229 x 80 x 170mm	

Tower Mounted Amplifier

- TMA 900
- TMA 1800
- TMA 1900
- TMA 2000
- PDU
- Bias Tee

Tower Mounted Amplifier 900MHz

TMA-0900-A

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- Minimal Tx Path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items	TMA-0900-A
Frequency Band	Rx 890 ~ 915MHz / Tx 935 ~ 960MHz
Bandwidth	25MHz
TX Insertion Loss	0.4dB, typical.
Tx Return Loss	18dB, Min.
RX Gain	12 ± 1.0dB
RX Gain Ripple	± 0.5dB
By-Pass mode	-2.3dB
Rx Return Loss	18dB, Min. (Normal) / 15dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)	1.7dB typ. (2.0dB@Temp.)
OIP3	+25dBm Min. (1tone=0dBm)
PIMD @2-tone * 20W	160dBc
Input Power(Avg. / peak)	200W/2kW
DC Supply	+12Vdc/120mA typ.
Alarm	Alarm1 220 mA, +/-25mA / Alarm2 320 mA, +/-25mA
IP Rating	IP 67
Lightning Protection	5kA, 8/20μs pulse
Connectors	7/16 Din (Female)
Size	407.5 x 225 x 117.5mm(Including connector & Bracket)
Weight	Approximate 7.5kg
Operating Temperature	-40°C ~ +65°C

Tower Mounted Amplifier 900MHz 12dB AISG

TMA-0900-12-A-AISG

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-0900-12-A-AISG
Frequency Band		Rx 890 ~ 915MHz / Tx 935 ~ 960MHz
Bandwidth		25MHz
TX Insertion Loss		0.5dB, typical.
Tx Return Loss		18dB, Min.
RX Gain		12dB
RX Gain Ripple		± 0.5dB
Loss in By-Pass Mode		2.7dB, typical.
Rx Return Loss		18dB, Min. (Normal)/15dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)		1.7dB typ. (2.0dB@Temp.)
Output P1dB		+15dBm Min.
3rd Order Intercept Point(OIP3)		+25dBm Min.
PIMD @2-tone * 20W		160dBc
Input Power(Avg. / peak)		200W / 2kW
DC Supply		+12Vdc / 60mA typ.
Alarm Management		According to AISG standard 1.1(OPT 2.0)
IP Rating		IP 67
Lightning Protection		5kA, 8/20 μs pulse
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)
Size		314 x 225 x 94mm
Weight		Approximate 7.5kg
Operating Temperature		-40°C ~ +65°C

Tower Mounted Amplifier 900 MHz 24dB AISG

TMA-0900-24-A-AISG

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-0900-24-A-AISG
Frequency Band		Rx 890 ~ 915MHz / Tx 935 ~ 960MHz
Bandwidth		25MHz
TX Insertion Loss		0.5dB
Tx Return Loss		18dB, Min.
RX Gain		24dB
RX Gain Ripple		±0.5dB
Loss in By-Pass Mode		2.7dB, typical.
Rx Return Loss		18dB, Min. (Normal) / 15dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)		1.7dB typ. (2.0dB@Temp.)
Output P1dB		+19dBm Min.
3rd Order Intercept Point(OIP3)		+28dBm Min.
PIMD @2-tone * 20W		160dBc
Input Power(Avg. / peak)		200W / 2kW
DC Supply		+12Vdc / 250mA typ.
Alarm Management		According to AISG standard 1.1(OPT 2.0)
IP Rating		IP 67
Lightning Protection		5kA, 8/20 μs pulse
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)
Size		314 x 225 x 94mm
Weight		Approximate 7.5kg
Operating Temperature		-40°C ~ +65°C

Tower Mounted Amplifier 1800MHz 12dB

TMA-1800-12-A-C

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items	TMA-1800-12-A-C
Frequency Band	Rx 1710 ~ 1785MHz / Tx 1805 ~ 1880MHz
Bandwidth	75MHz
TX Insertion Loss	0.7dB, Max.
Tx Return Loss	18dB, Min.
RX Gain	12dB
RX Gain Ripple	± 0.5dB
Loss in By-Pass Mode	2.7dB, typical.
Rx Return Loss	18dB, Min. (Normal)/15dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)	1.7dB typ. (2.0dB@Temp.)
Output P1dB	+15dBm Min.
3rd Order Intercept Point(OIP3)	+25dBm Min.
PIMD @2-tone * 20W	160dBc
Input Power(Avg. / peak)	200W / 2kW
DC Supply	+12Vdc / 120mA typ.
Alarm	Alarm1 230 mA / Alarm2 320 mA
IP Rating	IP 67
Lightning Protection	5kA, 8/20 μs pulse
Connectors	7/16 Din (Female)
Dimension	261 x 191 x 73mm
Weight	Approximate 6.0kg
Operating Temperature	-40°C ~ +65°C

Tower Mounted Amplifier 1800MHz 24dB

TMA-1800-24-A-C

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items	TMA-1800-24-A-C
Frequency Band	Rx 1710 ~ 1785MHz / Tx 1805 ~ 1880MHz
Bandwidth	75MHz
TX Insertion Loss	0.7dB, Max.
Tx Return Loss	18dB, Min.
RX Gain	24dB
RX Gain Ripple	±0.5dB
Loss in By-Pass Mode	2.7dB, typical.
Rx Return Loss	18dB, Min. (Normal)/15dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)	1.7dB typ. (2.0dB@Temp.)
Output P1dB	+19dBm Min.
3rd OrderIntercept Point(OIP3)	+28dBm Min.
PIMD @2-tone * 20W	160dBc
Input Power(Avg. / peak)	200W / 2kW
DC Supply	+12Vdc / 230mA typ.
Alarm	Alarm1 310 mA / Alarm2 500 mA
IP Rating	IP 67
Lightning Protection	5kA, 8/20 μs pulse
Connectors	7/16 Din (Female)
Dimension	261 x 191 x 73mm
Weight	Approximate 6.0kg
Operating Temperature	-40˚C ~ +65˚C

Tower Mounted Amplifier 1800MHz 12dB AISG

TMA-1800-12-A-AISG

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-1800-12-A-AISG
Frequency Band		Rx 1710 ~ 1785MHz / Tx 1805 ~ 1880MHz
Bandwidth		75MHz
TX Insertion Loss		0.7dB, Max.
Tx Return Loss		18dB, Min.
RX Gain		12dB
RX Gain Ripple		± 0.5dB
Loss in By-Pass Mode		2.7dB, Typical
Rx Return Loss		18dB, Min. (Normal) / 15dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)		1.7dB typ. (2.0dB@Temp.)
Output P1dB		+19dBm Min.
3rd Order Intercept Point(OIP3)		+25dBm Min.
PIMD @2-tone * 20W		160dBc
Input Power(Avg. / peak)		200W / 2kW
DC Supply		+12Vdc/160mA typ.
Alarm Management		According to AISG standard 1.1(OPT 2.0)
IP Rating		IP 67
Lightning Protection		5kA, 8/20 μs pulse
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)
Dimension		261 x 191 x 73mm
Weight		Approximate 6.0kg
Operating Temperature		-40°C ~ +65°C

Tower Mounted Amplifier 1800MHz 24dB AISG

TMA-1800-24-A-AISG

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-1800-24-A-AISG
Frequency Band		Rx 1710 ~ 1785MHz / Tx 1805 ~ 1880MHz
Bandwidth		75MHz
TX Insertion Loss		0.7dB, Max.
Tx Return Loss		18dB, Min.
RX Gain		24dB
RX Gain Ripple		± 0.5dB, Max
Loss in By-Pass Mode		2.7dB, Max
Rx Return Loss		18dB, Min. (Normal)/15dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)		1.7dB typ. (2.0dB@Temp.)
Output P1dB		+19dBm Min.
3rd Order InterceptPoint(OIP3)		+28dBm Min.
PIMD @2-tone * 20W		160dBc
Input Power(Avg. / peak)		200W / 2kW
DC Supply		+12Vdc / 250mA typ.
Alarm Management		According to AISG standard 1.1(OPT 2.0)
IP Rating		IP 67
Lightning Protection		5kA, 8/20 μs pulse
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)
Dimension		261 x 191 x 73mm
Weight		Approximate 6.0kg
Operating Temperature		-40°C ~ +65°C

Tower Mounted Amplifier 1800MHz 12dB AISG-CWA

TMA-1800-12-A-AISG-C

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items	TMA-1800-12-A-AISG-C	
Frequency Band	Rx 1710 ~ 1785MHz / Tx 1805 ~ 1880MHz	
Bandwidth	75MHz	
TX Insertion Loss	0.7dB, Max.	
Tx Return Loss	18dB, Min.	
RX Gain	12dB	
RX Gain Ripple	± 0.5dB, Max.	
Loss in By-Pass Mode	2.7dB, Max.	
Rx Return Loss	18dB, Min. (Normal)/15dB, Min. (By-Pass)	
Noise Figure(90% of BW in the center)	1.7dB typ. (2.0dB@Temp.)	
Output P1dB	+15dBm Min.	
3rd Order Intercept Point(OIP3)	+25dBm Min.	
PIMD @2-tone * 20W	160dBc	
Input Power(Avg. / peak)	200W / 2kW	
DC & Alarm Characteristics	CWA mode	AISG mode
DC Supply	+12Vdc / 120mA typ.	+12Vdc / 160mA typ.
Alarm	120 ~ 300 mA	AISG 1.1 (OPT 2.0)
IP Rating	IP 67	
Lightning Protection	5kA, 8/20 μs pulse	
Connectors	7/16 Din (Female)	
Dimension	261 x 191 x 73mm	
Weight	Approximate 6.0kg	
Operating Temperature	-40˚C ~ +65˚C	

Tower Mounted Amplifier 1800MHz 24dB AISG-CWA

TMA-1800-24-A-AISG-C

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items	TMA-1800-24-A-AISG-C	
Frequency Band	Rx 1710 ~ 1785MHz / Tx 1805 ~ 1880MHz	
Bandwidth	75MHz	
TX Insertion Loss	0.7dB, Max.	
Tx Return Loss	18dB, Min.	
RX Gain	24dB	
RX Gain Ripple	±0.5dB, Max.	
Loss in By-Pass Mode	2.7dB, Max.	
Rx Return Loss	18dB, Min. (Normal) / 15dB, Min. (By-Pass)	
Noise Figure(90% of BW in the center)	1.7dB typ.(2.0dB@Temp.)	
Output P1dB	+19dBm Min.	
3rd Order Intercept Point(OIP3)	+28dBm Min.	
PIMD @2-tone * 20W	160dBc	
Input Power(Avg. / peak)	200W / 2kW	
DC & Alarm Characteristics	CWA mode	AISG mode
DC Supply	+12Vdc / 230mA typ.	+12Vdc / 250mA typ.
Alarm	300 ~ 500 mA	AISG 1.1 (OPT 2.0)
IP Rating	IP 67	
Lightning Protection	5kA, 8/20 μs pulse	
Connectors	7/16 Din (Female)	
Dimension	261 x 191 x 73mm	
Weight	Approximate 6.0kg	
Operating Temperature	-40°C ~ +65°C	

Tower Mounted Amplifier 1900MHz 12dB AISG

TMA-1900-12-A-AISG

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-1900-12-A-AISG
Frequency Band		Rx 1850 ~ 1910MHz / Tx 1930 ~ 1990MHz
Bandwidth		60MHz
TX Insertion Loss		0.5dB, Max.
Tx Return Loss		18dB, Min.
RX Gain		12dB
RX Gain Ripple		±0.5dB, Max
Loss in By-Pass Mode		2.6dB, Max
Rx Return Loss		18dB, Min. (Normal) / 15dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)		1.7dB typ. (2.0dB@Temp.)
Output P1dB		+15dBm Min.
3rd Order Intercept Point(OIP3)		+25dBm Min.
PIMD @2-tone * 20W		160dBc
Input Power(Avg. / peak)		200W / 2kW
DC Supply		+12Vdc / 160mA typ.
Alarm Management		According to AISG standard 1.1(OPT 2.0)
IP Rating		IP 67
Lightning Protection		5kA, 8/20 μs pulse
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)
Dimension		261 x 191 x 73mm
Weight		Approximate 6.0kg
Operating Temperature		-40°C ~ +65°C

Tower Mounted Amplifier 1900MHz 24dB AISG

TMA-1900-24-A-AISG

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-1900-24-A-AISG
Frequency Band		Rx 1850 ~ 1910MHz / Tx 1930 ~ 1990MHz
Bandwidth		60MHz
TX Insertion Loss		0.5dB, Max.
Tx Return Loss		18dB, Min.
RX Gain		24dB
RX Gain Ripple		± 0.5dB, Max
Loss in By-Pass Mode		2.6dB, Max
Rx Return Loss		18dB, Min. (Normal) / 15dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)		1.7dB typ. (2.0dB@Temp.)
Output P1dB		+19dBm Min.
3rd Order Intercept Point(OIP3)		+28dBm Min.
PIMD @2-tone * 20W		160dBc
Input Power(Avg. / peak)		200W / 2kW
DC Supply		+12Vdc / 250mA typ.
Alarm Management		According to AISG standard 1.1(OPT 2.0)
IP Rating		IP 67
Lightning Protection		5kA, 8/20 μs pulse
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)
Dimension		261 x 191 x 73mm
Weight		Approximate 6.0kg
Operating Temperature		-40°C ~ +65°C

Tower Mounted Amplifier 2100MHz 12dB

TMA-2100-12-A-C

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items	TMA-2100-12-A-C
Frequency Band	Rx 1920 ~ 1980MHz / Tx 2110 ~ 2170MHz
Bandwidth	60MHz
TX Insertion Loss	0.3dB, typically
Tx Return Loss	18dB, Min.
RX Gain	12dB
RX Gain Ripple	±0.3dB, Max
Loss in By-Pass Mode	2.5dB, Max
Rx Return Loss	18dB, Min.(Normal) / 12dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)	1.4dB typ. (2.0dB@Temp.)
Output P1dB	+15dBm Min.
3rd Order Intercept Point(OIP3)	+25dBm Min.
PIMD @2-tone * 20W	160dBc
Input Power(Avg. / peak)	200W / 2kW
DC Supply	+12Vdc / 120mA typ.
Alarm Management	Alarm1 : 230 mA / Alarm2 : 320 mA
IP Rating	IP 67
Lightning Protection	5kA, 8/20 μs pulse
Connectors	7/16 Din (Female)
Dimension	190 x 165 x 65mm
Weight	4.5kg
Operating Temperature	-40°C ~ +65°C

Tower Mounted Amplifier 2100MHz 24dB

TMA-2100-24-A-C

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items	TMA-2100-24-A-C
Frequency Band	Rx 1920 ~ 1980MHz / Tx 2110 ~ 2170MHz
Bandwidth	60MHz
TX Insertion Loss	0.3dB, typically
Tx Return Loss	18dB, Min.
RX Gain	12dB
RX Gain Ripple	± 0.3dB, Max
Loss in By-Pass Mode	2.5dB, Max
Rx Return Loss	18dB, Min. (Normal) / 12dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)	1.4dB typ. (2.0dB@Temp.)
Output P1dB	+20dBm Min.
3rd Order Intercept Point(OIP3)	+29dBm Min.
PIMD @2-tone * 20W	160dBc
Input Power(Avg. / peak)	200W / 2kW
DC Supply	+12Vdc / 230mA typ.
Alarm Management	Alarm1 : 310 mA / Alarm2 : 500 mA
IP Rating	IP 67
Lightning Protection	5kA, 8/20 μs pulse
Connectors	7/16 Din (Female)
Dimension	190 x 165 x 65mm
Weight	4.5kg
Operating Temperature	-40˚C ~ +65˚C

Tower Mounted Amplifier 2100MHz 12dB AISG

TMA-2100-12-A-AISG

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-2100-12-A-AISG
Frequency Band		Rx 1920 ~ 1980MHz / Tx 2110 ~ 2170MHz
Bandwidth		60MHz
TX Insertion Loss		0.3dB, typically
Tx Return Loss		18dB, Min.
RX Gain		12dB
RX Gain Ripple		±0.3dB, Max
Loss in By-Pass Mode		2.5dB, Max
Rx Return Loss		18dB, Min. (Normal) / 12dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)		1.4dB typ. (2.0dB@Temp.)
Output P1dB		+15dBm Min.
3rd Order Intercept Point(OIP3)		+25dBm Min.
PIMD @2-tone * 20W		160dBc
Input Power(Avg. / peak)		200W / 2kW
DC Supply		+12Vdc / 160mA typ.
Alarm Management		According to AISG standard 1.1(OPT 2.0)
IP Rating		IP 67
Lightning Protection		5kA, 8/20 μs pulse
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)
Dimension		190 x 165 x 65mm
Weight		4.5kg
Operating Temperature		-40°C ~ +65°C

Tower Mounted Amplifier 2100MHz 24dB AISG

TMA-2100-24-A-AISG

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-2100-24-A-AISG
Frequency Band		Rx 1920 ~ 1980MHz / Tx 2110 ~ 2170MHz
Bandwidth		60MHz
TX Insertion Loss		0.3dB, typically
Tx Return Loss		18dB, Min.
RX Gain		24dB
RX Gain Ripple		± 0.3dB, Max
Loss in By-Pass Mode		2.5dB, Max
Rx Return Loss		18dB, Min.(Normal) / 12dB, Min. (By-Pass)
Noise Figure(90% of BW in the center)		1.4dB typ. (2.0dB@Temp.)
Output P1dB		+20dBm Min.
3rd Order Intercept Point(OIP3)		+29dBm Min.
PIMD @2-tone * 20W		160dBc
Input Power(Avg. / peak)		200W / 2kW
DC Supply		+12Vdc / 260mA typ.
Alarm Management		According to AISG standard 1.1(OPT 2.0)
IP Rating		IP 67
Lightning Protection		5kA, 8/20 μs pulse
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)
Dimension		190 x 165 x 65mm
Weight		4.5kg
Operating Temperature		-40°C ~ +65°C

Tower Mounted Amplifier 2100MHz 12dB AISG-CWA

TMA-2100-12-A-AISG-C

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-2100-12-A-AISG-C	
Frequency Band		Rx 1920 ~ 1980MHz / Tx 2110 ~ 2170MHz	
Bandwidth		60MHz	
TX Insertion Loss		0.3dB, typically	
Tx Return Loss		18dB, Min.	
RX Gain		12dB	
RX Gain Ripple		±0.3dB, Max	
Loss in By-Pass Mode		2.5dB, Max	
Rx Return Loss		18dB, Min. (Normal) / 12dB, Min. (By-Pass)	
Noise Figure(90% of BW in the center)		1.4dB typ. (2.0dB@Temp.)	
Output P1dB		+15dBm Min.	
3rd Order Intercept Point(OIP3)		+25dBm Min.	
PIMD @2-tone * 20W		160dBc	
Input Power(Avg. / peak)		200W / 2kW	
DC & Alarm Characteristics		CWA mode	AISG mode
DC Supply		+12Vdc/120mA typ.	+12Vdc/160mA typ.
Alarm Management		120 ~ 300 mA	AISG 1.1 (OPT 2.0)
IP Rating		IP 67	
Lightning Protection		5kA, 8/20㎲ pulse	
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)	
Dimension		190 x 165 x 65mm	
Weight		4.5kg	
Operating Temperature		-40˚C ~ +65˚C	

Tower Mounted Amplifier 2100MHz 24dB AISG-CWA

TMA-2100-24-A-AISG-C

Features

- Dual Duplexer, Double Unit
- Low Noise & High IP3
- Compact Size & Low Cost Design
- Avg. 200W(peak 2kW) Port Power Rating
- Low Passive Intermodulation
- 7-16 Din Connector
- AISG Alarm Management
- Minimal Tx path Insertion Loss
- Include Lightning Protection(All Port)
- Fail Safe By-Pass Mode
- Outdoor Application
- High Reliability, High Linearity
- Reduction Feeders

Specification

Items		TMA-2100-24-A-AISG-C	
Frequency Band		Rx 1920 ~ 1980MHz / Tx 2110 ~ 2170MHz	
Bandwidth		60MHz	
TX Insertion Loss		0.3dB, typically	
Tx Return Loss		18dB, Min.	
RX Gain		24dB	
RX Gain Ripple		±0.3dB, Max	
Loss in By-Pass Mode		2.5dB, Max	
Rx Return Loss		18dB, Min. (Normal) / 12dB, Min. (By-Pass)	
Noise Figure(90% of BW in the center)		1.4dB typ. (2.0dB@Temp.)	
Output P1dB		+20dBm Min.	
3rd Order Intercept Point(OIP3)		+29dBm Min.	
PIMD @2-tone * 20W		160dBc	
Input Power(Avg. / peak)		200W / 2kW	
DC & Alarm Characteristics		CWA mode	AISG mode
DC Supply		+12Vdc/120mA typ.	+12Vdc/260mA typ.
Alarm Management		300 ~ 500 mA	AISG 1.1 (OPT 2.0)
IP Rating		IP 67	
Lightning Protection		5kA, 8/20 μs pulse	
Connectors	RF AISG	7/16 Din (Female) 8pin (Female)	
Dimension		190 x 165 x 65mm	
Weight		4.5kg	
Operating Temperature		-40˚C ~ +65˚C	

PDU(Power Distribution Unit)

PDU-2070-3A

Features

- 12V Output Voltage
- 6 Output Port
- Low Cost
- High Reliability
- Easy to Install
- Wide Input Voltage Range
- Compact Design for Cramped BTS Cabinets

Specification

Items	PDU-2070-3A
Input Voltage	±38Vdc ~ ±72Vdc
Output Voltage	+12Vdc ±0.3V / 110mA
Max Current	350mA
Current Alarm Threshold	>230mA ±10%
Number of Output Ports	6 Ports
DC Output Protection	Automatically short Protection & Auto recovery
Power On LED Display	Green LED
Power out LED Display	LED Off
Alarm Display	Orange LED: DC Input Alarm Red LED: DC Output Alarm
Input Power Connector	DIN 3-Pin (Male)
Output MHA1~6	BNC (Female), Right Angle
Alarm Signal Connector	SubD9-Pin
Operating Temp.	-40°C ~ +65°C
Safety	UL609501
Dimensions	19˜ drawer, 2 height units, plug-in depth 171mm

PDU(Power Distribution Unit)

PDU-2070-3L

Features

- 12V Output Voltage
- 2-6 Output Port
- Low Cost
- High Reliability
- Easy to Install
- Wide Input Voltage Range
- Compact Design for Cramped BTS Cabinets
- Small Size

Specification

Items	PDU-2070-3L
Input Voltage	20 ~ 60Vdc / -20 ~ -60Vdc
Output Voltage	12Vdc, 110mA typical
Max Current	375mA
Current Alarm Threshold	<20mA or >160mA
Number of Output Ports	2 Ports / 2 ~ 6Ports
DC Output Protection	Automatically short Protection & Auto recovery
Power On LED Display	Green LED
Power out LED Display	Green LED
Alarm Output Signals	3 molex pin (daisy chain)
Input Power	3 molex pin
Output 0Power	3 molex pin
Output 1Power	3 molex pin
Operating Temp.	-40℃ ~ +60℃
Safety	UL609501
Dimensions	100 x 60 x23mm 483 x 62.1 x 44mm (Lite)

BIAS-TEE 800~2500MHz

BIAST-0822-A
BIAST-0822-B

Features

- Low Insertion Loss
- Lighting Protection
- Low Cost
- Indoor or Outdoor Application
- Easy to Install
- 7/16 Din or SMB Type Connector

Specification

Items	BIAST-0822-A	BIAST-0822-B
Frequency Range	800 ~ 2500MHz	
Insertion Loss	0.1dB(800 ~ 2200MHz), Max. 0.15dB(2200 ~ 2500MHz) Max. (BTS ↔ Antenna)	
Isolation	BTS ↔ Antenna : > 70dB(DC) BTS ↔ DC : > 70dB(DC)	
VSWR	< 1.1(800 ~ 2200MHz), 1.2(2200 ~ 2500MHz)	
Impedance	50 Ω	
Inter Modulation	< -158dBc@Tone(1tone=43dBm)	
Input Power	BTS : < 250W (800~2500MHz) DC/AIGS : < 1.8A / 13VDC, < 0.8A / 29VDC	BTS : < 250W (800 ~ 2500MHz) DC : < 1000mA/0 ~ +30VDC
Lighting Protection	3kA, 10/350 μs pulse	5kA, 8/20 μs pulse
Temperature Range	-40˚C ~ +70˚C	
Connectors	BTS : 7~16 Male Antenna : 7~16 F-male Port DC : SMB Male	
Dimension	53 x 50 x 36mm (without connector)	

BIAS-TEE 800~2170MHz

BIAST-0822-A-AISG-12
BIAST-0822-C-AISG-12

Features

- Low Insertion Loss
- Lighting Protection
- Low Cost
- Indoor or Outdoor Application
- Easy to Install
- 7/16 Din or N Type Connector

Specification

Items	BIAST-0822-A-AISG-12	BIAST-0822-C-AISG-12
BTS	Port 1 : 7/16 (Male)	Port 1 : 7/16 (Female)
Feeder	Port 2 : 7/16 (Female)	Port 2 : 7/16 (Male)
Frequency Range	800 ~ 2170MHz	
Insertion Loss Port 1 ↔ Port 2	< 0.1dB(800 ~ 2170MHz)	
Isolation for DC and RCU Signals Port 1 ↔ Port 2 Port 1 ↔ Port DC / RCU Port 1 ↔ Port 2 DC / RCU	 > 70dB > 70dB > 0dB	
VSWR	< 1.1(800 ~ 2170MHz)	
Impedance	50Ω	
Inter Modulation	< -160dBc (3rd order ; with 2 x 20W)	
Input Power Port 1 or Port 2 Port DC / RCU	 < 750W (800~2170MHz) < 2.5A / +8 ~ +14VDC	
Power Consumption	Typically 0.6W	
Lighting Protection	3kA, 10/350 μs pulse	
Temperature Range	-40°C ~ +60°C	
Modem Carrier Frequency	2.176MHz	
Application	Indoor or Outdoor (IP 66)	
Packing Size	167 x 102 x 86mm	
Dimension	108.7 x 76 x 42.8mm (Including connector)	

BIAS-TEE 800~2170MHz

BIAST-0822-B-AISG-12
BIAST-0822-D-AISG-12

Features

- Low Insertion Loss
- Lighting Protection
- Low Cost
- Indoor or Outdoor Application
- Easy to Install
- 7/16 Din or N Type Connector

Specification

Items	BIAST-0822-B-AISG-12	BIAST-0822-D-AISG-12
Antenna	Port 1 : 7/16 (Male)	Port 1 : 7/16 (Female)
Feeder	Port 2 : 7/16 (Female)	Port 2 : 7/16 (Male)
Frequency Range	800 ~ 2170MHz	
Insertion Loss Port 1 ↔ Port 2	<0.1dB(800 ~ 2170MHz)	
Isolation for DC and RCU Signals Port 1 ↔ Port 2 Port 1 ↔ Port DC / RCU Port 1 ↔ Port 2 DC / RCU	 >70dB >70dB >0dB	
VSWR	<1.1(800 ~ 2170MHz)	
Impedance	50 Ω	
Inter Modulation	<-160dBc (3rd order ; with 2 x 20W)	
Input Power Port 1 or Port 2 Port DC / RCU	 <750W (800~2170MHz) <2.5A / +8 ~ +14VDC	
Power Consumption	Typically 0.6W	
Lighting Protection	3kA, 10/350 μs pulse	
Temperature Range	-40°C ~ +60°C	
Modem Carrier Frequency	2.176MHz	
Application	Indoor or Outdoor (IP 66)	
Packing Size	167 x 102 x 86mm	
Dimension	108.7 x 76 x 42.8mm (Including connector)	

BIAS-TEE 800~2170MHz

BIAST-0822-A-AISG-24
BIAST-0822-C-AISG-24

Features

- Low Insertion Loss
- Lighting Protection
- Low Cost
- Indoor or Outdoor Application
- Easy to Install
- 7/16 Din or N Type Connector

Specification

Items	BIAST-0822-A-AISG-24	BIAST-0822-C-AISG-24
BTS	Port 1 : 7/16 (Male)	Port 1 : 7/16 (Female)
Feeder	Port 2 : 7/16 (Female)	Port 2 : 7/16 (Male)
Frequency Range	800 ~ 2170MHz	
Insertion Loss Port 1 ↔ Port 2	< 0.1dB(800 ~ 2170MHz)	
Isolation for DC and RCU Signals Port 1 ↔ Port 2 Port 1 ↔ Port DC / RCU Port 1 ↔ Port 2 DC / RCU	 > 70dB > 70dB > 0dB	
VSWR	< 1.1(800 ~ 2170MHz)	
Impedance	50Ω	
Inter Modulation	< -160dBc (3rd order ; with 2 x 20W)	
Input Power Port 1 or Port 2 Port DC / RCU	 < 750W (800~2170MHz) < 2.5A / +8 ~ +30VDC	
Power Consumption	Typically 0.6W	
Lighting Protection	3kA, 10/350 μs pulse	
Temperature Range	-40°C ~ +60°C	
Modem Carrier Frequency	2.176MHz	
Application	Indoor or Outdoor (IP 66)	
Packing Size	167 x 102 x 86mm	
Dimension	108.7 x 76 x 42.8mm (Including connector)	

BIAS-TEE 800~2170MHz

BIAST-0822-B-AISG-24
BIAST-0822-D-AISG-24

Features

- Low Insertion Loss
- Lighting Protection
- Low Cost
- Indoor or Outdoor Application
- Easy to Install
- 7/16 Din or N Type Connector

Specification

Items	BIAST-0822-B-AISG-24	BIAST-0822-D-AISG-24
Antenna	Port 1 : 7/16 (Male)	Port 1 : 7/16 (Female)
Feeder	Port 2 : 7/16 (Female)	Port 2 : 7/16 (Male)
Frequency Range	800 ~ 2170MHz	
Insertion Loss Port 1 ↔ Port 2	< 0.1dB(800 ~ 2170MHz)	
Isolation for DC and RCU Signals Port 1 ↔ Port 2 Port 1 ↔ Port DC / RCU Port 1 ↔ Port 2 DC / RCU	 > 70dB > 70dB > 0dB	
VSWR	< 1.1(800 ~ 2170MHz)	
Impedance	50 Ω	
Inter Modulation	< -160dBc (3rd order ; with 2 x 20W)	
Input Power Port 1 or Port 2 Port DC / RCU	 < 750 W (800~2170MHz) < 2.5A / +8 ~ +30VDC	
Power Consumption	Typically 0.6W	
Lighting Protection	3kA, 10/350 μs pulse	
Temperature Range	-40°C ~ +60°C	
Modem Carrier Frequency	2.176MHz	
Application	Indoor or Outdoor (IP 66)	
Packing Size	167 x 102 x 86mm	
Dimension	108.7 x 76 x 42.8mm (Including connector)	

BIAS-TEE 1710~2170MHz

BIAST-1722-A-BH

Features

- Low Insertion Loss
- Lighting Protection
- Low Cost
- Indoor or Outdoor Application
- Easy to Install
- 7/16 Din or N Type Connector

Specification

Items	BIAST-1722-A-BH
Frequency Range	1710 ~ 2170MHz
Insertion Loss	0.1dB(1710 ~ 2170MHz), Max. (BTS ↔ Antenna)
Isolation	BTS ↔ Antenna : >70dB(DC) BTS ↔ DC/AISG : >70dB(DC)
VSWR	< 1.1(1710 ~ 2170MHz)
Impedance	50Ω
Inter Modulation	< -160dBc@Tone (1tone=43dBm)
Input Power	BTS : <250W (1710 ~ 2170MHz) DC/AIGS : < 1.8A / 13VDC < 0.8A / 29VDC
Lighting Protection	3kA, 10/350 μs pulse ; 20kA, 8/20 μs pulse
Temperature Range	-40°C ~ +70°C
Connectors	BTS : 7~16 Male Antenna : 7~16 F-male Port DC : SMB Male
Application	Indoor, Port 2 Connector Outdoor with Sealing (O-ding)
Weight	0.6Kg
Packing Size	145 x 145 x 50mm
Dimension	35.4 x 91 x 47mm (without connector)

LS RF Total Solution

LS cable provides optimum wireless communication network by verified antenna technologies.

Antenna

- In-Building Antenna
- BTS Antenna

Dual Band Omni Antenna

A-OMN-DUO-2

Features

- 1710 ~ 2500MHz
- Compact Size

Installation

Radiation Pattern

1,710 ~ 2,500MHz

Horizontal Pattern

1,710 ~ 2,500MHz

Vertical Pattern

Specification

Items	A-OMN-DUO-2
Frequency Band	1710 ~ 2,500MHz
Gain	> 2dBi
VSWR	< 1.5
Impedance	50Ω
Max. Power Rating	100W
Dimension(øx H)	ø114 x 53mm
Weight(excl. Brackets)	210g
Connector	1 x N-Female
Mounting	Ceiling
Radome(Color)	ASA (White)

Multi Band Omni Antenna

A-OMN-W23-B

Features

- EGSM / DCS / UMTS Systems
- Compact Size

Radiation Pattern

Specification

Items	A-OMN-W23-B	
Frequency Band	824 ~ 960MHz	1,710 ~ 2,200MHz
Polarization	Vertical	
Gain	> 2dBi	> 3dBi
VSWR	< 1.6	
Impedance	50 Ω	
Max. Power Rating	50W	
Dimension(ø x H)	ø 184 x 105mm	
Weight(excl. Brackets)	270g	
Connector	1 x N-Female	
Mounting	Ceiling	
Radome(Color)	ASA (White)	

Multi Band Omni Antenna

A-OMN-WT2-B

Features

The omni antennas provide dependable coverage along with solutions to many cost and reliability issues faced in wireless network deployments.

- Wide Band Omni Antenna
- Ceiling Mount Type

Installation

Radiation Pattern

Vertical Pattern

Specification

Items	A-OMN-WT2-B	
Frequency Band	890 ~ 960MHz	1,710 ~ 2,700MHz
Gain	> 2dBi	
VSWR	<1.8	
Impedance	50Ω	
Max. Power Rating	10W	
Inter-Modulation 2-Tonex30dBm	<-140dBc	
Dimension(ø x H)	ø204 x 83mm	
Weight	500g	
Connector	N-Female	
Mounting	Ceiling	
Radome(Color)	ABS (White)	
Opewating Temperature	-10℃ ~ +60℃	
Relative Humidity	0 ~ 95%	

Dual Band Patch Antenna

A-PAT-DUO-7

Features

The patch antennas are also ideally suited for parking garages, airports, shopping malls, department store and other difficult coverage areas. The dual band antennas support both existing and future wireless applications.

- IDEAL for EGSM/ DCS / UMTS Systems
- Compact Size

Installation

Radiation Pattern

1,710 ~ 2,500MHz

Horizontal Pattern

1,710 ~ 2,500MHz

Vertical Pattern

Specification

Items	A-PAT-DUO-7	
Frequency Band	1,710 ~ 2,400MHz	2,400 ~ 2,500MHz
Polarization	Vertical	
Gain	> 7dBi	
VSWR	< 1.5	< 1.8
Vertical Beam Width	> 55°	
Horizontal Beam Width	> 60°	
Impedance	50 Ω	
Max. Power Rating	100W	
F/B Ratio	15	
Size	108 x 118 x 50mm	
Weight(excl. Brackets)	200g	
Connector	1 x N-Female	
Mounting	Wall	
Radome(Color)	ASA (White)	

Dual Band Patch Antenna

A-PAT-W69

Features

- Wide Band Patch Antenna
- Wall Mount Type

Installation

Radiation Pattern

Low Band Radiation Pattern

High Band Radiation Pattern

Specification

Items	A-PAT-W69	
Frequency Band	824 ~ 960MHz	1,710 ~ 2,500MHz
Gain	> 8dBi	> 6dBi
3dB Beam Width	70° ±10 (E-Plan,H-Plan)	60° ±30 (E-Plan,H-Plan)
Front to Back Ratio	> 10dB	> 10dB
VSWR	< 2.0	
Impedance	50Ω	
Max. Power Rating	50W	
Inter-Modulation2-Tone x 30dBm	< -140dBc	
Dimension(W x L x D)	210 x 210 x 60mm	
Weight	722g	
Connector	N-Female	
Mounting	Wall Mount	
Radome(Color)	ABS (White)	
Opewating Temperature	-10°C ~ +60°C	
Relative Humidity	0 ~ 95%	

Dual Band Patch Antenna

A-PAT-W69-C

Features

The patch antennas are uniquely effective and positive solution to enhance your in-building wireless system. Airports, shopping malls.

Radiation Pattern

Specification

Items	A-PAT-W69-C	
Frequency Band	890 ~ 960MHz	1,710 ~ 2,170MHz
Polarization	Vertical	
Gain	> 6dBi	>9dBi
VSWR	< 1.5	
Horizontal Beam Width	>80˚C	> 65˚C
Vertical Beam Width	>65˚C	> 50˚C
Impedance	50 Ω	
Max. Power Rating	50W	
F/B Ratio	15	
Size	180 x 210 x 42mm	
Weight(excl. Brackets)	600g	
Connector	1 x N-Female	
Mounting	Wall	
Radome(Color)	ASA (White)	

Dual Band Patch Antenna

A-PAT-0825

Features

- Wide Band Patch Antenna
- Wall Mount Type

Installation

Radiation Pattern

Low Band Radiation Pattern

High Band Radiation Pattern

Specification

Items	A-PAT-0825	
Frequency Band	806 ~ 960MHz	1,710 ~ 2,500MHz
Gain	> 8dBi	> 6dBi
3dB Beam Width	70° ±10 (E-Plan,H-Plan)	65° ±30 (E-Plan,H-Plan)
Front to Back Ratio	> 12dB	> 12dB
VSWR	< 1.5	
Impedance	50Ω	
Max. Power Rating	10W	
Inter-Modulation2-Tone x 30dBm	< -150dBc	
Dimension(W x L x D)	210 x 210 x 60mm	
Weight	722g	
Connector	N-Female	
Mounting	Wall	
Radome(Color)	ABS (White)	
Opewating Temperature	-10°C ~ +60°C	
Relative Humidity	0 ~ 95%	

GSM 900 Yagi Antenna

A-YG-900

Features

The yagi antennas provide dependable coverage along with solutions to many cost and reliability issues faced in wireless network deployments.

Installation

Radiation Pattern

890 ~ 960MHz

Horizontal Pattern

890 ~ 960MHz

Vertical Pattern

Specification

Items	A-YG-900
Frequency Band	890 ~ 960MHz
Gain	8dBi
Polarization	Vertical
VSWR	< 1.5 : 1
Vertical Beam Width	Horizontal : 85 ±5
Horizontal Beam Width	Vertical : 60 ±2
Front-to Back Ratio	> 13dB
Max. Power Rating	20W
Connector	716 (DIN)-Female
Weight	800g
Dimension	447 x 101 x 43mm
Radome(Color)	ASA (White)

Wide Band Yagi Antenna

A-YG-W12

Features

The yagi antennas are uniquely effective and positive solution to enhance in-building wireless system.

Installation

Radiation Pattern

1,710 ~ 2,390MHz

Horizontal Pattern

1,710 ~ 2,390MHz

Vertical Pattern

Specification

Items	A-YG-W12
Frequency Band	1,710 ~ 2,390MHz
Polarization	Vertical
Gain	> 12dBi
VSWR	< 1.5 : 1
Vertical Beam Width	>28°
Horizontal Beam Width	>28°
Max. Power Rating	100W
Front-to Back Ratio	> 15dB
Size	405 x 105 x 48mm
Weight	1,250g
Connector	1 x N-Female
Mounting	Pole
Radome(Color)	ASA (White)

Speaker Type Omni Antenna

A-OMN-WT2-S

Installation

Radiation Pattern

890 ~ 960MHz

1,710 ~ 2,500MHz

Vertical Pattern

Specification

Items	A-OMN-WT2-S	
Frequency Band	890 ~ 960MHz	1,710 ~ 2,500MHz
Gain	>2dBi	
VSWR	< 1.8	
Impedance	50 Ω	
Max. Power Rating	10W	
Inter-Modulation 2-Tone x 30dBm	140dBc	
Dimension (ø x H)	ø254 x 105mm	
Weight	800g	
Connector	N-Female	
Mounting	Ceiling Mount	
Radome(Color)	ABS (White)	
F/B Ratio	15	
Operating Temperature	-10℃ ~ +60℃	
Relative Humidity	0 ~ 95%	

Dual Band Patch Antenna

A-PAT-0925-P

Installation

Radiation Pattern

Horizontal Pattern

Vertical Pattern

Specification

Items	A-PAT-0925-P	
Frequency Band	890 ~ 960MHz	1,710 ~ 2,500MHz
Gain	> 6dBi	
3dB Beam Width	50° ~ 90° (E-Plan, H-Plan)	40° ~ 90° (E-Plan, H-Plan)
Front-to Back Ratio	> 10dB	
VSWR	< 1.8	
Impedance	50 Ω	
Max. Power Rating	10W	
Inter-Modulation 2-Tone x 30dBm	< -140dBc	
Dimension (W x L x D)	235 x 205 x 62mm	
Weight	750g	
Connector	SMA-Female	
Mounting	Wall Mount	
Radome(Color)	ABS (White)	
F/B Ratio	15	
Operating Temperature	-10°C ~ +60°C	
Relative Humidity	0 ~ 95%	

Single Band Dual Pol Sector Antenna

GDP-0900-1865

Installation

Radiation Pattern

Horizontal Pattern

Vertical Pattern

Specification

Items	GDP-0900-1865
Antenna Polarization	XPOL
Operational Freq	870 ~ 960MHz
Gain	≥ 18dBi
Horizontal Beam Width	65
Vertical Beam Width	7 ±0.5
Fix Electric Tilt	0
Front-to Back Ratio	>30dB
Isolation	>30dB
Impedance	50 Ω
VSWR	< 1.5
PIMD	>150dBc
Max. Input Power	≥ 500W
Connector	2 x 7/16 (DIN)-Female
Connection	Bottom of Antenna
Dimension(W x L x H)	300 x 110 x 2600mm

Single Band Dual Pol Sector Antenna

GDP-0900-1565

Installation

Radiation Pattern

Horizontal Pattern

Vertical Pattern

Specification

Items	GDP-0900-1565
Antenna Polarization	XPOL
Operational Freq	870 ~ 960MHz
Gain	＞15dBi
Horizontal Beam Width	65
Vertical Beam Width	15±0.5
Fix Electric Tilt	0
Front-to Back Ratio	＞30dB
Isolation	＞30dB
Impedance	50Ω
VSWR	＜1.5
PIMD	＞150dBc
Max. Input Power	≥ 500W
Connector	2 x 7/16 (DIN)-Female
Connection	Bottom of Antenna
Dimension(W x L x H)	300 x 110 x 1300mm

Single Band Dual Pol Sector Antenna

GDP-0900-1465

Installation

Radiation Pattern

Horizontal Pattern

Vertical Pattern

Specification

Items	GDP-0900-1465
Antenna Polarization	XPOL
Operational Freq	870 ~ 960MHz
Gain	＞14dBi
Horizontal Beam Width	65
Vertical Beam Width	15 ±0.5
Fix Electric Tilt	12°
Front-to Back Ratio	＞26dB
Isolation	＞30dB
Impedance	50 Ω
VSWR	＜1.5
PIMD	＞150dBc
Max. Input Power	500W
Connector	2 x 7/16 (DIN)-Female
Connection	Bottom of Antenna
Dimension(W x L x H)	300 x 110 x 1300mm

Single Band Dual Pol Sector Antenna

GDP-0900-1765

Installation

Radiation Pattern

Horizontal Pattern

Vertical Pattern

Specification

Items	GDP-0900-1765
Antenna Polarization	XPOL
Operational Freq	870 ~ 960MHz
Gain	＞17.5dBi
Horizontal Beam Width	65
Vertical Beam Width	7 ±0.5
Fix Electric Tilt	6°
Front-to Back Ratio	＞30dB
Isolation	＞30dB
Impedance	50Ω
VSWR	＜1.5
PIMD	＞150dBc
Max. Input Power	500W
Connector	2 x 7/16 (DIN)-Female
Connection	Bottom of Antenna
Dimension(W x L x H)	300 x 110 x 2600mm

Single Band Dual Pol Sector Antenna

GDP-0900-1690

Installation

Radiation Pattern

Horizontal Pattern

Vertical Pattern

Specification

Items	GDP-0900-1690
Antenna Polarization	XPOL
Operational Freq	870 ~ 960MHz
Gain	＞16.5dBi
Horizontal Beam Width	90
Vertical Beam Width	7 ±0.5
Fix Electric Tilt	0
Front-to Back Ratio	＞24dB
Isolation	＞30dB
Impedance	50 Ω
VSWR	＜1.5
PIMD	＞150dBc
Max. Input Power	500W
Connector	2 x 7/16 (DIN)-Female
Connection	Bottom of Antenna
Dimension(W x L x H)	300 x 110 x 2600mm

Single Band Dual Pol Sector Antenna

SBDP-0809-1565T2

Installation

Radiation Pattern

Horizontal Pattern

Vertical Pattern

Specification

Items	SBDP-0809-1565T2
Frequency Band	890 ~ 960MHz
Gain	> 15dBi
Polarization	±45
Horizontal Beam Width	65 ±5
Vertical Beam Width	15 ±2
VSWR	< 1.5 : 1
Side lobe	> 13dB
Front-to Back Ratio	> 25dB
Port Isolation	30dB
PIMD(3rd)	< -140dBc (20w / 2Tone)
Max. Input Power	350W
Connector	2 x 7/16 (DIN)-Female
Dimension(W x L x H)	300 x 110 x 1300mm
Weight	10.8kg
Radome	FRP (Grey)

Broad Band Dual Pol Sector Antenna

SBDP-1722-1865T2

Installation

Specification

Items	SBDP-1722-1865T2
Frequency Band	1,710 ~ 2,170MHz
Gain	17.7 ~ 18.1dBi
Polarization	±45
Horizontal Beam Width	65±5
Vertical Beam Width	6.5±2
VSWR	1.4 : 1
Electrical Down Tilt	2°
Side lobe	>14dB
Front-to Back Ratio	>25dB
Port Isolation	30dB
PIMD(3rd)	>150dBc (20w / 2Tone)
Max. Input Power	350W
Connector	7/16 (DIN)-Female
Dimension(W x L x H)	172 x 78 x 1305mm
Weight	6.85kg
Radome	FRP (Grey)

Broad Band Dual Pol Sector Antenna

SBDP-1722-1865T6

Installation

Specification

Items	SBDP-1722-1865T6
Frequency Band	1,710 ~ 2,170MHz
Gain	17.5 ~ 17.9dBi
Polarization	±45
Horizontal Beam Width	65 ±6
Vertical Beam Width	6.3 ±2
VSWR	1.4 : 1
Electrical Down Tilt	6°
Side lobe	> 14dB
Front-to Back Ratio	> 25dB
Port Isolation	30dB
PIMD(3rd)	< -150dBc (20w / 2Tone)
Max. Input Power	350W
Dimension	172 x 78 x 1305mm
Connector	7/16 (DIN)-Female
Weight	6.85kg
Radome	FRP (Grey)

Broad Band Dual Pol Sector Antenna

SBDP-1722-1565T8

Installation

Radiation Pattern

Horizontal Pattern

Vertical Pattern

Specification

Items	SBDP-1722-1565T8
Frequency Band	1,710 ~ 2,170MHz
Gain	15dBi
Polarization	±45
Horizontal Beam Width	63±6
Vertical Beam Width	13±2
Fixed Electrical Tilt	0°, 2°, 6°, 8°
VSWR	1.5 : 1
Side lobe	>13dB
Front-to Back Ratio	>25dB
Port Isolation	30dB
PIMD(3rd)	< -140dBc (20w / 2Tone)
Max. Input Power	350W
Dimension	172 x 78 x 700mm
Connector	7/16 (DIN)-Female
Weight	3.95kg
Radome	FRP (Grey)

Broad Band Dual Pol Sector Antenna

SBDP-1722-1763T8

Installation

Radiation Pattern

Horizontal Pattern

Vertical Pattern

Specification

Items	SBDP-1722-1763T8
Frequency Band	1,710 ~ 2,170MHz
Gain	17dBi
Polarization	±45
Horizontal Beam Width	63 ±6
Vertical Beam Width	7 ±2
Fixed Electrical Tilt	0°, 2°, 6°, 8°
VSWR	1.5 : 1
Side lobe	>13dB
Front-to Back Ratio	>25dB
Port Isolation	30dB
PIMD(3rd)	< -140dBc (20w / 2Tone)
Max. Input Power	350W
Dimension	172 x 78 x 700mm
Connector	7/16 (DIN)-Female
Weight	6.85kg
Radome	FRP (Grey)

Electrical Downtilt Antenna

EDTA-0822-208XA

806 ~ 960MHz, X-pol., H85° / V7.3°
1,710 ~ 2,180MHz, X-pol., H85° / V4.5°

Radiation Pattern

806 ~ 960MHz

Horizontal Pattern

806 ~ 960MHz

Vertical Pattern (Downtilt 0°)

806 ~ 960MHz

Vertical Pattern (Downtilt 7°)

1,710 ~ 2,180MHz

Horizontal Pattern

1,710 ~ 2,180MHz

Vertical Pattern (Downtilt 0°)

1,710 ~ 2,180MHz

Vertical Pattern (Downtilt 6°)

Mechanical Specification

Dimension(W x D x H)	320 x 150 x 2,620mm
Weight(Without clamp)	32.0kg
Connector	4 x 7/16DIN(F)/Bottom
Max Wind Speed	60m/s

Installation

Electrical Specification

Items	EDTA-0822-208XA					
Frequency Band	806 ~ 866MHz	824 ~ 896MHz	880 ~ 960MHz	1,710 ~ 1,880MHz	1,850 ~ 1,990MHz	1,920 ~ 2,180MHz
Gain, dBi	16.0/16.1/16.1 0°/4°/7°	16.2/16.3/16.1 0°/4°/7°	16.3/16.5/16.2 0°/4°/7°	17.5/17.6/17.3 0°/3°/6°	17.6/17.8/17.3 0°/3°/6°	17.7/17.8/17.4 0°/3°/6°
Horizontal Beam Width	88°	87°	85°	85°	85°	88°
Vertical Beam Width	7.3°	7.0°	6.8°	4.6°	4.5°	4.2°
Impedance	50Ω			50Ω		
VSWR	≤1.5 : 1			≤1.5 : 1		
Polarization	Dual, Slant ±45°			Dual, Slant ±45°		
Upper Sidelobe Suppression, dB	0°/4°/7° 15/14/14	0°/4°/7° 15/14/14	0°/4°/7° 15/14/14	0°/3°/6° 18/17/15	0°/3°/6° 18/17/15	0°/3°/6° 18/17/15
Front-to Back Ratio	≥25dB			≥23dB		
Adjustable Downtilt Range	0.5° ~ 7°(Continuously Adjustable)			0° ~ 6°(Continuously Adjustable)		
Cross Polarization Ratio 0°	Typically : 18dB	Typically : 18dB	Typically : 17dB	Typically : 16dB	Typically : 15dB	Typically : 15dB
±60°	Typically : 10dB	Typically : 10dB	Typically : 10dB	Typically : 10dB	Typically : 10dB	Typically : 10dB
Isolation Intrasystem	≥30dB			≥30dB		
Intersystem	≥40dB (806 ~ 960MHz / 1,710 ~ 2,170MHz)					
Passive Intermodulation, IM3	≤-150dBc (2 x 43dBm)			≤-150dBc (2 x 43dBm)		
Input Maximum CW Power	500W (at 50°C ambient temperature)			250W (at 50°C ambient temperature)		

Specifications are subject to change.

Electrical Downtilt Antenna

EDTA-0809-1565

Broadband Antenna(CDMA800 / GSM900)
806 ~ 960MHz, X-pol., H65° / V14°

Radiation Pattern

Horizontal Pattern

Vertical Pattern (Downtilt 0°)

Vertical Pattern (Downtilt 14°)

Mechanical Specification

Dimension(W x D x H)	260 x 90 x 1,438mm
Weight	11kg
Connector	2 x 7/16DIN(F)/Bottom
Max Wind Speed	60m/s

Front Side

Electrical Specification

Items	EDTA-0809-1565
Frequency Range	806 ~ 960MHz
Gain	14.5 dBi
Horizontal Beam Width	65°
Vertical Beam Width	14°
Impedance	50Ω
VSWR	≤ 1.4 : 1
Polarization	Dual, Slant ±45°
Upper 1st Sidelobe Suppression	≥ 18dB (@downtilt 0°)
Front-to Back Ratio	≥ 25dB
Adjustable Downtilt Range	0° ~ 15°
Port-to-Port Isolation	≥ 30dB
Passive Intermodulation, IM3	≤ -150dBc
Input Maximum CW Power	350W
Control Interface	Knob type

Electrical Downtilt Antenna

EDTA-1722-1690

Broadband Antenna(CDMA1800 / UMTS)
1,710 ~ 2,170MHz, X-pol., H90° / V7°

Radiation Pattern

Horizontal Pattern

Vertical Pattern (Downtilt 0°)

Vertical Pattern (Downtilt 10°)

Mechanical Specification

Dimension(W x D x H)	166 x 66 x 1,330mm
Weight	7.5kg
Connector	2 x 7/16DIN(F)/Bottom
Max Wind Speed	60m/s

Front Side

Electrical Specification

Items	EDTA-1722-1690
Frequency Range	1,710 ~ 2,170MHz
Gain	16.0 dBi
Horizontal Beam Width	90°
Vertical Beam Width	7.0°
Impedance	50 Ω
VSWR	≤ 1.5 : 1
Polarization	Dual, Slant ±45°
Upper 1st Sidelobe Suppression	≥ 18dB (@downtilt 0°)
Front-to Back Ratio	≥ 25dB
Adjustable Downtilt Range	0° ~ 10°
Port-to-Port Isolation	≥ 30dB
Passive Intermodulation, IM3	≤ -150dBc
Input Maximum CW Power	250W
Control Interface	Knob type

Electrical Downtilt Antenna

EDTA-1722-1765

Broadband Antenna(CDMA1800 / UMTS)
1,710 ~ 2,170MHz, X-pol., H65° / V7°

Radiation Pattern

Horizontal Pattern

Vertical Pattern (Downtilt 0°)

Vertical Pattern (Downtilt 10°)

Mechanical Specification

Dimension(W x D x H)	166 x 66 x 1,330mm
Weight	7.5kg
Connector	2 x 7/16DIN(F)/Bottom
Max Wind Speed	60m/s

Front Side

Electrical Specification

Items	EDTA-1722-1765
Frequency Range	1,710 ~ 2,170MHz
Gain	17.2 dBi
Horizontal Beam Width	65°
Vertical Beam Width	7°
Impedance	50Ω
VSWR	≤ 1.4 : 1
Polarization	Dual, Slant ±45°
Upper 1st Sidelobe Suppression	≥ 18dB (@downtilt 0°)
Front-to Back Ratio	≥ 30dB
Adjustable Downtilt Range	0° ~ 10°
Port-to-Port Isolation	≥ 30dB
Passive Intermodulation, IM3	≤ -150dBc
Input Maximum CW Power	250W
Control Interface	Knob type

Electrical Downtilt Antenna

EDTA-1722-1845

Broadband Antenna(CDMA1800 / UMTS)
1,710 ~ 2,170MHz, X-pol., H45° / V7°

Radiation Pattern

Horizontal Pattern

Vertical Pattern (Downtilt 0°)

Vertical Pattern (Downtilt 10°)

Mechanical Specification

Dimension(W x D x H)	260 x 90 x 1,438mm
Weight	11kg
Connector	2 x 7/16DIN(F)/Bottom
Max Wind Speed	60m/s

Front Side

Electrical Specification

Items	EDTA-1722-1845
Frequency Range	1,710 ~ 2,170MHz
Gain	18.5 dBi
Horizontal Beam Width	45°
Vertical Beam Width	7°
Impedance	50 Ω
VSWR	≤ 1.5 : 1
Polarization	Dual, Slant ±45°
Upper 1st Sidelobe Suppression	≥ 18dB (@downtilt 0°)
Front-to Back Ratio	≥ 30dB
Adjustable Downtilt Range	0° ~ 10°
Port-to-Port Isolation	≥ 30dB
Passive Intermodulation, IM3	≤ -150dBc
Input Maximum CW Power	250W
Control Interface	Knob type

Electrical Downtilt Antenna

EDTA-3338-1865A

3,300 ~ 3,800MHz, X-pol., H65° / V6.5°

Radiation Pattern

Horizontal Pattern

Vertical Pattern (Downtilt 0°)

Vertical Pattern (Downtilt 10°)

Mechanical Specification

Dimension(W x D x H)	130 x 66 x 760mm
Weight(without clamp)	4.5kg
Connector	N-Type(F)
Max Wind Speed	60m/s

Front Side

Electrical Specification

Items	EDTA-3338-1865A
Frequency Range	3,300 ~ 3,800MHz
Gain	17.5 dBi
Horizontal Beam Width	65°
Vertical Beam Width	6.5°
Impedance	50Ω
VSWR	≤ 1.4
Polarization	Dual, Slant ±45°
Upper 1st Sidelobe Suppression	≥ 18dB (@downtilt 0°)
Front-to Back Ratio	≥ 30dB
Port-to-Port Isolation	≥ 30dB
Input Maximum CW Power	150W
Control Interface	Knob type (AISG Compatible)

Electrical Downtilt Antenna

EDTA-2327-1865B

2,300 ~ 2,700MHz, X-pol., H65° / V6.5°

Radiation Pattern

Horizontal Pattern

Vertical Pattern (Downtilt 0°)

Vertical Pattern (Downtilt 10°)

Mechanical Specification

Dimension(W x D x H)	166 x 66 x 1,219mm
Weight(without clamp)	7.0kg
Connector	2 x 7/16DIN(F)
Max Wind Speed	60m/s

Front Side

Electrical Specification

Items	EDTA-2327-1865B
Frequency Range	2,300 ~ 2,700MHz
Gain	17.5 dBi
Horizontal Beam Width	65°
Vertical Beam Width	6.5°
Impedance	50 Ω
VSWR	≤ 1.4
Polarization	Dual, Slant ±45°
Electrical Tilt	0° ~ 10°
Upper 1st Sidelobe Suppression	≥ 18dB (@downtilt 0°)
Front-to Back Ratio	≥ 30dB
Port-to-Port Isolation	≥ 30dB
Passive Intermodulation, IM3	≤ -150dBc (2 x 40dBm)
Input Maximum CW Power	250W
Control Interface	Knob type (AISG Compatible)

Electrical Downtilt Antenna

EDTA-2327-1865

2,300 ~ 2,700MHz, X-pol., H65° / V6.5°

Radiation Pattern

Horizontal Pattern

Vertical Pattern(Downtilt 0°)

Vertical Pattern(Downtilt 10°)

Mechanical Specification

Dimension(W x D x H)	260 x 90 x 1,219mm
Weight(without clamp)	13.0kg
Connector	4 x 7/16DIN(F)
Max Wind Speed	60m/s

Front Side

Electrical Specification

Items	EDTA-2327-1865
Frequency Range	2,300 ~ 2,700MHz
Gain	17.5 dBi
Horizontal Beam Width	65°
Vertical Beam Width	6.5°
Impedance	50Ω
VSWR	≤ 1.4
Polarization	Dual, Slant ±45°
Electrical Tilt	0° ~ 10°
Upper 1st Sidelobe Suppression	≥ 18dB (@downtilt 0°)
Front-to Back Ratio	≥ 30dB
Port-to-Port Isolation	≥ 30dB
Passive Intermodulation, IM3	≤ -150dBc (2 x 40dBm)
Input Maximum CW Power	250W
Control Interface	Knob type (AISG Compatible)

Hybrid 2way Antenna Electrical Downtilt & Steering

H2A-1722-2A

1,710 ~ 2,170MHz, X-pol., H65° / V7°

Mechanical Specification

Dimension(Diameter x H)	ø 156 x 1,434mm
Weight	9.5kg
Connector	2 x 7/16DIN(F)
Max Wind Speed	17.5dBi

Radiation Pattern

Horizontal Pattern

Vertical Pattern(@Downtilt 0°)

Horizontal Beam Steering

Vertical Pattern(@Downtilt 10°)

Electrical Specification

Items	H2A-1722-2A
Frequency Range	1,710 ~ 2,170MHz
Gain	17.5 dBi
Horizontal Beam Width	65°
Vertical Beam Width	7°
Impedance	50 Ω
VSWR	≤ 1.4
Polarization	Dual, Slant ±45°
Electrical Tilt	0° ~ 10°
Upper 1st Sidelobe Suppression, dB	≥ 18dB (@downtilt 0°)
Front-to Back Ratio	≥ 25dB
Port-to-Port Isolation	≥ 30dB
Input Maximum CW Power	200W
Control Interface	AISG

RET-1030-A

Remote Electrical Tilt Unit

Drawing(Unit : mm)

Electrical Specification

Items		RET-1030-A
Input Voltage Range		DC : +10 to +30V
Current Consumption	RET ANT. Operating	0.75W(Normal) 15W (Max)
Protocol		AISG 2.0 Protocol
Function	Tilt Control Steering Control	0° ~ 10° -30° ~ +30°

Mechanical Specification

Connectors	8-pin circular connector comforming to IEC 60130-9-Ed. 3.0 with screw-ring locking		
Interfaces	AISG2.0 Protocol		
Pin Assignment	No.	Signal	Remark
	1	+12V DC nominal	Not used
	2	-48V DC nominal	Not used
	3	RS485B	
	4	RS485 GND	Not used
	5	RS485 A	
	6	10V ~ 30V DC	
	7	DC Return	
	8	N/C	Not used

PAC-CON-A

Portable Antenna Controller-AISG

Drawing(Unit : mm)

Mechanical Specification

RS-232 Port	This port is used for upgrading the PAC-A firmware. The bit rate is 9600bps for the RS-232c protocol.		
	D-Sub(9S)	Circular	Remark
RS-485 Port (AISG Communication Port)	1	3	RS485B
	6	5	RS485A
	5, 9	1, 6	Vdc
	4, 8	7	GND(DC Return)
Shoulder Strap Clamp	This is used to fix the shoulder strap.		
Display Window	Display the ALD's status, and control using this.		
Membrane S/W	This is used for controlling the ALD.		
Power Switch	This is power on / off switch.		
AC / DC Adaptor Input Port	This is used for external DC input.		

Electrical Specification

Items		PAC-CON-A
Input Voltage	Rechargeable Battery	11.1V (3.7v 3Cell), 1.5Ah, Li-ion Polymer
	AC / DC Adaptor	OUT : 19V, 3.75A (Max.)
Communication Protocol		RS-232, RS-485 / 422
Communication Bit Rate		9600, N, 8, 1
Output Voltage	Discharge Battery	DC +12 ~+15V / 10.5W (Max.) @77˚F
	AC / DC Adaptor	DC +12 ~+15V / 50.0W (Max.) @77˚F

Mechanical Specification

Physical Dimension		129 x 214 x 47mm		
Weight		750g(Include Rechargeable Battery)		
Connector Type	DC +19V INPUT	DC Jack Male		
	RS-232	D-SUB 9PIN Female		
	RS-485 / 422	D-SUB 9PIN Male		
Pin Assignment (D-Sub 9P : RS-485 / RS-422)		No.	Signal	Remark
		1	RS-485 B	
		2	N / C	Not used
		3	RS-485 GND	
		4	DC GND	
		5	Vdc (DC + 15V)	
		6	RS-485 A	
		7	N / C	Not used
		8	DC GND	
		9	Vdc (DC + 15V)	

Component List

PAC-A	1	
Adapter (7/6)	1	Jack to Jack (KAD8282210001)
AC/DC Adapter & Power Cable	1	Input : 100-240V~, 50/60Hz 1.5A Output : 19VDC, 3.75A
485 Extend Cable	1	Circular (SU-20SP-8P) to D-Sub (Socket), 4.5m
Neck Strap Pro	1	DC +12 ~+15V / 10.5W (Max.) @77°F
Carrying Case	1	410 x 310 x 125
User's Guide(CD)	1	Manual, PC Application

Top Conversion Bias-T

BIT-1722-TC-A

Drawing(Unit : mm)

Mechanical Specification

Electrical Specification

Items	Specification	Remarks
Frequency Range	1,710 ~ 2,170MHz	
DC Voltage Range	10V ~ 30V	At BTS Port or RET Port
DC Voltage Range at Non Feeder Cable Port	0V	When follow the voltage at the other port, Measured at ANT port
Current Range	≤2.3A	BTS Port → RET Port
DC Path voltage loss	≤1.2V	BTS Port → RET Port When the current is 2.3A, the voltage loss is ≤1.2V
RF Signal Path loss	2.0dB, Max. @2.17MHz +/-400KHz	BTS Port → RET Port
RF Signal Path Return loss	23dB, Min. @1,710 ~ 2,170MHz	BTS Port → ANT Port
RF Signal Path loss	0.2dB, Max @1,710 ~ 2,170MHz	BTS Port → ANT Port
RF Signal Isolation	≥2.0dB @30 ~ 150MHz ≥10.0dB @150 ~ 800MHz ≥10.0dB @3,000 ~ 12,750MHz	ANT Port → RET Port and BTS → RET Port The open port is terminated with 50oHm during the all measurement.
RF Path Power	≤80W	BTS Port → ANT Port. PAR=12.0dB, Power 80W and OFDM signal.
Surge Spec.	5kA (8/20 μs)	Test Port : RET Port. PAR=12.0dB, Power 80W and OFDM signal.
	20kA (8/20 μs)	Test Port : BTS Port

Environment Specification

Items	Specification	Remarks
Operating Temperature	-49 ~ +149	°F
Operating Humidity (Condensing)	5 ~ 100	%
Storage Temperature	-49 ~ +185	°F
Storage Humidity (Condensing)	5 ~ 100	%
Weather Protection	IP 65	

Mechanical Specification

Items		Spec	Comment
RF Connector	BTS Port	DIN Female	
	ANT Port	DIN Female	
	RET Port	RF Connector (SU-20SBR-8S)	
Size		3.35 x 2.70 x 1.49	Inch
Weight		1.3	Pound

Down Top Conversion Bias-T

BIT-1722-DC-A

Drawing(Unit : mm)

Mechanical Specification

Electrical Specification

Items	Specification	Remarks
Frequency Range	1,710 ~ 2,170MHz	
DC Voltage Range	10V ~ 30V	At BTS Port or RET Port
DC Voltage Range at Non Feeder Cable Port	0V	When follow the voltage at the other port, Measured at ANT port
Current Range	≤2.3A	BTS Port → RET Port
DC Path voltage loss	≤1.2V	BTS Port → RET Port When the current is 2.3A, the voltage loss is ≤1.2V
RF Signal Path loss	2.0dB, Max. @2.17MHz +/-400KHz	BTS Port → RET Port
RF Signal Path Return loss	23dB, Min. @1,710 ~ 2,170MHz	BTS Port → ANT Port
RF Signal Path loss	0.2dB, Max @1,710 ~ 2,170MHz	BTS Port → ANT Port
RF Signal Isolation	≥2.0dB @30 ~ 150MHz ≥10.0dB @150 ~ 800MHz ≥10.0dB @3,000 ~ 12,750MHz	ANT Port → RET Port and BTS → RET Port The open port is terminated with 50oHm during the all measurement.
RF Path Power	≤80W	BTS Port → ANT Port. PAR=12.0dB, Power 80W and OFDM signal.
Surge Spec.	5kA (8/20 ㎲)	Test Port : RET Port. PAR=12.0dB, Power 80W and OFDM signal.
	20kA (8/20 ㎲)	Test Port : BTS Port

Environment Specification

Items	Specification	Remarks
Operating Temperature	-49 ~ +149	°F
Operating Humidity (Condensing)	5 ~ 100	%
Storage Temperature	-49 ~ +185	°F
Storage Humidity (Condensing)	5 ~ 100	%
Weather Protection	IP 65	

Mechanical Specification

Items		Spec	Comment
RF Connector	BTS Port	DIN Female	
	ANT Port	DIN Female	
	RET Port	RF Connector (SU-20SBR-8S)	
Size		3.35 x 2.70 x 1.49	Inch
Weight		1.3	Pound

Repeater

- Pico Repeater
- Small Size Repeater
- Middle Size Repeater
- Channel Selective Repeater
- Interference Cancellation Repeater

Pico Repeater(10mW)

RPT- 0900-100-A(GSM900) / RPT- 1800-100-A(GSM1800)
RPT- 2100-100-A(UMTS)

Features

- Cost-effective Solution
- Easy and Fast Installation
- Extending Coverage (ex. Small parking lots, Retail store, Hotel room)
- High Perfomance & Compact Size
- One Body Structure (Antenna Built-in)
- Internal or External Service Antenna
- AGC (Auto Gain Control)
- Auto Installation and Protect Oscillation
- EDGE Support

Specification

Parameter		Down-Link	Up-Link
Frequency Range	GSM900	935 ~ 960MHz	890 ~ 915MHz
	GSM1800	1,805 ~ 1,880MHz	1,710 ~ 1,785MHz
	WCDMA	2,110 ~ 2,170MHz	1,920 ~ 1,960MHz
Gain		60dB	57dB
Output Power		10mW	10mW
Input Range		-57 ~ -42dBm	-100 ~ -47dBm
OIP3		≥ +27dBm	≥+34dBm
Band Width of -3dB		TBD	
Noise Figure		≤ 6dB	
VSVW		≤ 1 : 1.5	
Flatness		± 2dB	
AGC Range		15dB	
Impedance		50ohm	
Power Consumption		8W Max.	

Environmental & Mechanical Specification

Dimension	130 x 155 x 53.5mm
Weight	2kg
Power Supply	AC 110V ~ 220V(AC to DC Adaptor)
Connector Type	Donor Port : SMA Female
Operating Environments	0˚C ~ 50˚C / ≤ 95%

CDMA 10mW Repeater

RPT- 0800-100-A

Features

- CDMA 10mW Repeater
- Small Power Solution
- Compact Size
- Wall Mounting
- ALC Function
- Oscillation ALM Function
- Donor Input Level Monitoring
- Service Antenna Internal/External Function

Specification

Items	RPT- 0800-100-A
Frequency Band	Up-Link : 825 ~ 835MHz Down-Link : 870 ~ 880MHz
Output Power	D/L : +10dBm, U/L : +10dBm
Gain	Up-Link : 57dB Down-Link : 60dB
ALC	20dB Range / 1dB Step
Band Width	5 ~20MHz
ACPR	≤-45dBc @750KHz ≤-55dBc @1.98MHz
Flatness	≤ 2dB
Noise Figure	≤ 6dB
VSWR	≤ 1 : 1.5
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 6W Max.
Operating Temperature	-10°C ~ +55°C
Operating Environment	IP 52
Connectors	SMA-Female x 2
Size / Weight	130 x 155 x 53.5mm / 2kg

GSM1800 Pico Repeater

RPT-1800-100-C

Features

- GSM1800 Pico Repeater
- Compact Size
- Wall or Pole Mounting
- Internal / External Antenna Switch
- Oscillation Protection
- Designed Eco-friendly
- AGC Function

Specification

Items	RPT-1800-100-C
Frequency Band	Up-Link : 1,760 ~ 1,770MHz Down-Link : 1,855 ~ 1,865MHz
-3dB Bandwidth	10MHz ±0.5dB
Gain	Up-Link : 57dB Down-Link : 60dB
AGC	20dB Range
Output Power	+10dBm(Up & Down Link) / 2CH
Out of Band Gain	± 400KHz : 50dB, ±600KHz : 40dB ± 1MHz : 35dB, ±5MHz : 25dB
Spurious Emission	≤-36dBm
Flatness	≤ 3dB
Noise Figure	≤ 6dB
VSWR	≤ 1 : 1.5
Oscillation Protection	Software Algorithm
IP3	≥ 32dB
P1dB	≥ 18dB
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 8W Max.
Operating Temperature	0℃ ~ +50℃
Operating Environment	IP 52
Connectors	SMA-Female x 2
Size / Weight	130 x 155 x 53.5mm / 2kg

WCDMA Pico Repeater

RPT-2100-100-C

Features

- WCDMA Pico Repeater
- Compact Size
- Wall or Pole Mounting
- Internal / External antenna Switch
- Oscillation Protection
- Designed Eco-friendly
- AGC Function

Specification

Items	RPT-2100-100-C
Frequency Band	Up-Link : 1,935 ~ 1,945MHz Down-Link : 2,135 ~ 2,145MHz
-3dB Bandwidth	≥9MHz
Gain	Up-Link : 57dB Down-Link : 60dB
AGC	20dB Range
Output Power	+10dBm(Up & Down Link) / 2FA
ACLR	± 5MHz : 45dBc ± 10MHz : 50dBc
Flatness	≤ 2dB
Noise Figure	≤ 6dB
VSWR	≤ 1 : 1.5
Oscillation Protection	Software Algorithm
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 8W Max.
Operating Temperature	0°C ~ +50°C
Operating Environment	IP 52
Connectors	SMA-Female x 2
Size / Weight	130 x 155 x 53.5mm / 2kg

Dual Band Pico Repeater

RPT-2100-100-A
RPT-1800-100-A

Features

- GSM 1800 & WCDMA Dual Band Pico Repeater
- Compact Size
- Wall Mounting
- AGC Function

Specification

Items	RPT-2100-100-A / RPT-1800-100-A	
	2G : GSM 1800	3G : WCDMA
Frequency Band	Up-Link : 1,760 ~ 1,770MHz Down-Link : 1,855 ~ 1,865MHz	Up-Link : 1,935 ~ 1,945MHz Down-Link : 2,135 ~ 2,145MHz
-3dB Bandwidth	10MHz ± 0.5dB	≥ 9MHz
Gain	Up-Link : 57dB Down-Link : 60dB	
AGC	20dB Range	
Output Power	+10dBm(Up & Down Link) / 2CH	+10dBm(Up & Down Link) / 2FA
Out of Band Gain	± 400KHz : 50dB, ± 600KHz : 40dB ± 1MHz : 35dB, ± 5MHz : 25dB	
Spurious Emission	≤ -36dBm	
ACLR		± 5MHz : 45dBc, ± 10MHz : 50dBc
IP3	≥ 32dB	
Flatness	≤ 3dB	≤ 2dB
Noise Figure	≤ 7dB	
VSWR	≤ 1 : 1.5	
Oscillation Protection	Software Algorithm	
Impedance	50 Ω	
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 8W Max.	
Operating Temperature	0℃ ~ +50℃	
Operating Environment	IP 52	
Connectors	N-Female x 2	
Size / Weight	230 x 320.7 x 88.7mm / 8kg	

Small Size RF Repeater(100mW)

RPT-0900-101-A(GSM900)
RPT-1800-101-A(GSM1800)
RPT-2100-101-A(UMTS)

Features

- Cost-effective Solution
- Easy and Fast Installation
- Application for in Building Distribution System (ex. Shopping Mall, Hotel Lobby)
- High Perfomance & Compact Size
- ALC(Auto Level Control) & MGC(MAnual Gain Control)
- Internal or External Service Antenna
- Local & Remote Control(Using GUI, Modern)
- Wireless Modern Connection(OMC Option)
- EDGE Support

Specification

Parameter		Down-Link	Up-Link
Frequency Range	GSM900	935 ~ 960MHz	890 ~ 915MHz
	GSM1800	1,805 ~ 1,880MHz	1,710 ~ 1,785MHz
	WCDMA	2,110 ~ 2,170MHz	1,920 ~ 1,960MHz
Gain		70dB	
Output Power		100mW	
Input Range		-50 ~ -20dBm	-100 ~ -50dBm
OIP3		≥ 43.5dBm	
Band Width of -3dB		TBD	
Noise Figure		≤ 6dB	
VSVW		≤ 1 : 1.5	
Flatness		±2dB	
AGC Range		30dB	
Impedance		50ohm	
Power Consumption		3W Max.	

Environmental & Mechanical Specification

Dimension	230 x 320 x 88.1mm
Weight	8kg
Power Supply	AC 220V(AC to DC Adaptor)
Connector Type	Donor Port : SMA Female
Operating	-10°C ~ 50°C / ≤ 95%

GSM900 / GSM1800 Dual Band 25dBm Repeater

RPT-0900 / 1800-631-A

Features

- GSM900 & GSM1800 Dual Band 25dBm Repeater
- Small Power Solution
- Compact Size
- Wall Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-0900/1800-631-A
Frequency Band	Up-Link : 880 ~ 891.5MHz, 1,725.1 ~ 1,732.7MHz Down-Link : 925 ~ 936.5MHz. 1,820.1 ~ 1,827.7MHz
-3dB Bandwidth	GSM900 : 11.5MHz ± 0.5MHz GSM1800 : 7.6MHz ± 0.5MHz
Gain	Up-Link & Down-Link : 80dB
ALC	20dB Range
Output Power	Total 28dBm(GSM900 : +25dBm, GSM1800 : +25dBm) (Up & Down Link)
Out of Band Gain	± 400KHz : 50dB, ± 600KHz : 40dB ± 1MHz : 35dB, ± 5MHz : 25dB
Spurious Emission	≤ -36dBm(9KHz ~ 1GHz), ≤ -30dBm(1GHz ~ 12.75GHz)
Flatness	≤ 3dB
Noise Figure	≤ 7dB
VSWR	≤ 1 : 1.5
IP3	GSM900 : ≥ 51dBm, GSM1800 : ≥ 48dBm
Local Monitoring & Control	GUI
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 100W Max.
Operating Temperature	-10℃ ~ +50℃
Operating Environment	IP 52
Connectors	N-Female x 2
Size / Weight	390 x 290 x 150mm / 12kg

WCDMA 30mW Repeater

RPT-2100-300-A

Features

- WCDMA 30mW Repeater
- Small Power Solution
- Compact Size
- Wall Mounting
- ALC Function
- Band Selective AGC Function

Specification

Items	RPT-2100-300-A
Frequency Band	Up-Link : 1,935 ~ 1,945MHz Down-Link : 2,125 ~ 2,135MHz
Output Power	D/L : +15dBm, U/L : +15dBm (WCDMA 2FA)
Gain	Up-Link & Down-Link : 75dB
ALC	30dB Range / 1dB Step
Band Selective	10M BW, 5M BW (First FA) 5M BW (2nd FA) Selective
ACLR	± 5MHz : 45dBc ± 10MHz : 50dBc
Flatness	≤ 2dB
Noise Figure	≤ 5dB
VSWR	≤ 1 : 1.5
Remote/Local Monitoring & Control	WCDMA Modem / GUI
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 38W Max.
Operating Temperature	-10˚C ~ +55˚C
Operating Environment	IP 52
Connectors	N-Female x 2
Size / Weight	302 x 330 x 88mm / 6kg

CDMA 50mW Repeater

RPT-0800-500-A

Features

- CDMA 50mW Repeater
- Small Power Solution
- Compact Size
- Wall Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-0800-500-A
Frequency Band	Up-Link : 825 ~ 835MHz Down-Link : 870 ~ 880MHz
Output Power	D/L : +17dBm, U/L : +17dBm (CDMA 7FA)
Gain	Up-Link & Down-Link : 75dB
ALC	30dB Range / 1dB Step
Band Selective	10M BW 5M BW (First FA), 5M BW (2nd FA) Selective
ACPR	≤ -45dBc@750KHz ≤ -55dBc@1.98MHz
Flatness	≤ 2dB
Noise Figure	≤ 5dB
VSWR	≤ 1 : 1.5
Remote/Local Monitoring & Control	CDMA Modem / GUI
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 38W Max.
Operating Temperature	-10°C ~ +55°C
Operating Environment	IP 52
Connectors	N-Female x 2
Size / Weight	302 x 330 x 88mm / 6kg

GSM1800 50mW Repeater

RPT-1800-500-A

Features

- GSM1800 50mW Repeater
- Small Power Solution
- Compact Size
- Wall Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-1800-500-A
Frequency Band	Up-Link : 1,760 ~ 1,775MHz, 1,782.5 ~ 1,785MHz Down-Link : 1,855 ~ 1,870MHz. 1,877.5 ~ 1,880MHz
-3dB Bandwidth	10MHz ±0.5MHz
Gain	Up-Link & Down-Link : 70dB
ALC	30dB Range
Output Power	+17dBm (Up & Down Link)
Out of Band Gain	±400KHz : 50dB, ±600KHz : 40dB ±1MHz : 35dB, ±5MHz : 25dB
Spurious Emission	≤-36dBm
Flatness	≤3dB
Noise Figure	≤6dB
VSWR	≤1 : 1.5
IP3	≥44dBm
P1dB	≥29dBm
Remote/Local Monitoring & Control	GSM1800 Modem / GUI
Impedance	50Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 30W Max.
Operating Temperature	-10°C ~ +55°C
Operating Environment	IP 52
Connectors	N-Female x 2
Size / Weight	230 x 320 x 74.5mm / 6kg

WCDMA 50mW Repeater

RPT-2100-500-A

Features

- WCDMA 50mW Repeater
- Small Power Solution
- Compact Size
- Wall Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-2100-500-A
Frequency Band	Up-Link : 1,935 ~ 1,945MHz Down-Link : 2,125 ~ 2,135MHz
Output Power	D/L : +17dBm, U/L : +17dBm (WCDMA 2FA)
Gain	Up-Link & Down-Link : 75dB
ALC	30dB Range / 1dB Step
Band Selective	10M BW, 5M BW (First FA) 5M BW (2nd FA) Selective
ACLR	± 5MHz : 45dBc ± 10MHz : 50dBc
Flatness	≤ 2dB
Noise Figure	≤ 5dB
VSWR	≤ 1 : 1.5
Remote/Local Monitoring & Control	WCDMA Modem / GUI
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 38W Max.
Operating Temperature	-10°C ~ +55°C
Operating Environment	IP 52
Connectors	N-Female x 2
Size / Weight	302 x 330 x 88mm / 6kg

Middle Size RF Repeater(1W)

RPT-0900-102-A(GSM900)
RPT-1800-102-A(GSM1800)
RPT-2100-102-A(UMTS)

Features

- Cost-effective Solution
- Easy and Fast Installation
- Application for in Building Distribution System
  (ex. Large Office, Shopping Mall, Hotel Lobby)
- High Perfomance & Compact Size
- ALC(Auto Level Control) & MGC(MAnual Gain Control)
- Local & Remote Control(Using GUI, Modern)
- Wireless Modern Connection(OMC Option)
- EDGE Support

Specification

Parameter		Down-Link	Up-Link
Frequency Range	GSM900	935 ~ 960MHz	890 ~ 915MHz
	GSM1800	1,805 ~ 1,880MHz	1,710 ~ 1,785MHz
	WCDMA	2,110 ~ 2,170MHz	1,920 ~ 1,960MHz
Gain		80dB	
Output Power		1W	
Input Range		-50 ~ -20dBm	-100 ~ -50dBm
OIP3		≥ +61.5dBm	
Band Width of -3dB		TBD	
Noise Figure		≤ 6dB	
VSVW		≤ 1 : 1.5	
Flatness		±2dB	
AGC Range		30dB	
Impedance		50ohm	
Power Consumption		90W Max.	

Environmental & Mechanical Specification

Dimension	565 x 390 x 160mm
Weight	20kg
Power Supply	AC 220V
Connector Type	N Female
Operating	-10°C ~ 50°C / ≤ 95%

CDMA 2W Repeater

RPT-0800-202-A

Features

- CDMA 2W Repeater
- Medium Power Solution
- Compact Size
- Wall or Pole Mounting
- ALC Function
- Band Selective

Specification

Items	RPT- 0800-202-A
Frequency Band	Up-Link : 825 ~ 835MHz Down-Link : 870 ~ 880MHz
Output Power	D/L : +33dBm, U/L : +30dBm (CDMA 7FA)
Gain	Up-Link & Down-Link : 90dB
ALC	30dB Range / 1dB Step
Band Selective	10M BW 5M BW (First FA), 5M BW (2nd FA) Selective
ACPR	≤ -45dBc@750KHz ≤ -55dBc@1.98MHz
Flatness	≤ 2dB
Noise Figure	≤ 5dB
VSWR	≤ 1 : 1.5
Remote/Local Monitoring & Control	CDMA Modem / GUI
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 100W Max.
Operating Temperature	-10°C ~ +55°C
Operating Environment	IP 52
Connectors	N-Female x 2
Size / Weight	320 x 450 x 160mm / 15kg

GSM900 2W Repeater

RPT-0900-202-A

Features

- GSM900 2W Repeater
- Medium Output Power & High Gain Solution
- Compact Size
- Wall or Pole Mounting
- ALC Function
- Outdoor Enclosure

Specification

Items	RPT-0900-202-A
Frequency Band	Up-Link : 890.1 ~ 901.1MHz Down-Link : 935.1 ~ 946.1MHz
-3dB Bandwidth	11MHz ±0.5MHz
Gain	Up-Link & Down-Link : 90dB
ALC	20dB Range
Output Power	Up Link : +27dBm (2CH), Down Link : +33dBm (2CH)
Out of Band Gain	±400KHz : 50dB, ±600KHz : 40dB ±1MHz : 35dB, ±5MHz : 25dB
Spurious Emission	≤-36dBm
IP3	≥63dBm
Flatness	≤3dB
Noise Figure	≤6dB
VSWR	≤1 : 1.5
Remote/Local Monitoring & Control	GSM900 Modem / GUI
Impedance	50Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 170W Max.
Operating Temperature	-10°C ~ +55°C
Operating Environment	IP 52
Connectors	N-Female x 2
Size / Weight	413 x 490 x 153mm / 25kg

GSM1800 2W Repeater

RPT-1800-202-A

Features

- GSM1800 2W Repeater
- Medium Power Solution
- Compact Size
- Wall or Pole Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-1800-202-A
Frequency Band	Up-Link : 1,760 ~ 1,775MHz, 1782.5 ~ 1,785MHz Down-Link : 1,885 ~ 1,870MHz, 1,877.5 ~ 1,880MHz
-3dB Bandwidth	15MHz ±0.5MHz, 2.5MHz ±0.5MHz
Gain	Up-Link & Down-Link : 90dB
ALC	30dB Range
Output Power	Up Link : +33dBm(2CH), Down Link : +30dBm(2CH)
Out of Band Gain	±400KHz : 50dB, ±600KHz : 40dB, ±1MHz : 35dB ±5MHz : 25dB
Spurious Emission	≤-30dBm
IP3	≥63dBm
Flatness	≤3dB
Noise Figure	≤6dB
VSWR	≤1 : 1.5
Remote/Local Monitoring & Control	GSM1800 Modem / GUI
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 170W Max.
Operating Temperature	-10℃ ~ +55℃
Operating Environment	IP 52
Connectors	N-Female x 2
Size / Weight	413 x 490 x 153mm / 22kg

WCDMA 2W Repeater

RPT-2100-202-A

Features

- WCDMA 2W Repeater
- Medium Power Solution
- Compact Size
- Wall or Pole Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-2100-202-A
Frequency Band	Up-Link : 1,935 ~ 1,945MHz Down-Link : 2,125 ~ 2,135MHz
Output Power	D/L : +33dBm, U/L : +30dBm (WCDMA 2FA)
Gain	Up-Link & Down-Link : 90dB
ALC	30dB Range / 1dB Step
Band Selective	10M BW 5M BW (First FA), 5M BW (2nd FA) Selective
ACLR	± 5MHz : 45dBc, ± 10MHz : 50dBc
Flatness	≤ 2dB
Noise Figure	≤ 5dB
VSWR	≤ 1 : 1.5
Remote/Local Monitoring & Control	WCDMA Modem / GUI
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 100W Max.
Operating Temperature	-10°C ~ +55°C
Operating Environment	IP 52
Connectors	N-Female x 2
Size / Weight	320 x 450 x 160mm / 15kg

Dual Band 2W Repeater

RPT-2100/1800-202-A

Features

- GSM 1800 & WCDMA Dual Band 2W Repeater
- Medium Power Solution
- Compact Size
- Wall or Pole Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-2100/1800-202-A	
	2G : GSM 1800	3G : WCDMA
Frequency Band	Up-Link : 1,760 ~ 1,770MHz Down-Link : 1,855 ~ 1,865MHz	Up-Link : 1,935 ~ 1,945MHz Down-Link : 2,135 ~ 2,145MHz
-3dB Bandwidth	10MHz ± 0.5dB	≥ 9MHz
Gain	Up & Down Link : 90dB	
AGC	30dB Range	
Output Power	+33dBm/+30dBm(2CH)	+33dBm/+30dBm(2FA)
Out of Band Gain	± 400KHz : 50dB, ± 600KHz : 40dB ± 1MHz : 35dB, ± 5MHz : 25dB	
Spurious Emission	≤ -36dBm	
ACLR		± 5MHz : 45dBc, ± 10MHz : 50dBc
IP3	≥ 63dB	
Flatness	≤ 3dB	≤ 2dB
Noise Figure	≤ 6dB	
VSWR	≤ 1 : 1.5	
Remote/Local Monitoring & Control	GSM Modem / USB	
Impedance	50 Ω	
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 350W Max.	
Operating Temperature	-10°C ~ +55°C	
Operating Environment	IP 55	
Connectors	N-Female x 2	
Size / Weight	362 x 620 x 340mm / 30kg	

GSM1800 5W Repeater

RPT-1800-502-A

Features

- GSM1800 5W Repeater
- High Power Solution
- Compact Size
- Wall or Pole Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-1800-502-A
Frequency Band	Up-Link : 1,760 ~ 1,770MHz Down-Link : 1,855 ~ 1,865MHz
-3dB Bandwidth	10MHz ±0.5MHz
Gain	Up-Link & Down-Link : 90dB
ALC	30dB Range
Output Power	+37dBm/+30dBm(2CH)
Out of Band Gain	±400KHz : 50dB, ±600KHz : 40dB ±1MHz : 35dB, ±5MHz : 25dB
Spurious Emission	≤-36dBm
IP3	≥69dBm
Flatness	≤3dB
Noise Figure	≤6dB
VSWR	≤1 : 1.5
Remote/Local Monitoring & Control	GSM1800 Modem / USB
Impedance	50Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 400W Max.
Operating Temperature	-10°C ~ +55°C
Operating Environment	IP 55
Connectors	N-Female x 2
Size / Weight	362 x 620 x 340mm / 40kg

WCDMA 5W Repeater

RPT-2100-502-A

Features

- WCDMA 5W Repeater
- High Power Solution
- Compact Size
- Wall or Pole Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-2100-502-A
Frequency Band	Up-Link : 1,935 ~ 1,945MHz Down-Link : 2,135 ~ 2,145MHz
Output Power	≥ 9MHz
Gain	Up-Link & Down-Link : 90dB
ALC	30dB Range
Output Power	+37dBm/+30dBm(2FA)
ACLR	± 5MHz : 45dBc, ± 10MHz : 50dBc
Flatness	≤ 2dB
Noise Figure	≤ 5dB
VSWR	≤ 1 : 1.5
Remote/Local Monitoring & Control	WCDMA Modem / USB
Impedance	50 Ω
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 100W Max.
Operating Temperature	-10°C ~ +55°C
Operating Environment	IP 55
Connectors	N-Female x 2
Size / Weight	362 x 620 x 340mm / 40kg

Dual Band 5W Repeater

RPT-2100/1800-502-A

Features

- GSM1800 & WCDMA Dual Band 5W Repeater
- High Power Solution
- Compact Size
- Wall or Pole Mounting
- ALC Function
- Band Selective

Specification

Items	RPT-2100/1800-502-A	
	2G : GSM1800	3G : WCDMA
Frequency Band	Up-Link : 1,760 ~ 1,770MHz Down-Link : 1,855 ~ 1,865MHz	Up-Link : 1,935 ~ 1,945MHz Down-Link : 2,135 ~ 2,145MHz
-3dB Bandwidth	10MHz ±0.5dB	≥9MHz
Gain	Up & Down Link : 90dB	
AGC	30dB Range	
Output Power	+37dBm/+30dBm(2CH)	+37dBm/+30dBm(2FA)
Out of Band Gain	±400KHz : 50dB, ±600KHz : 40dB ±1MHz : 35dB, ±5MHz : 25dB	
Spurious Emission	≤-36dBm	
ACLR		±5MHz : 45dBc, ±10MHz : 50dBc
IP3	≥69dB	
Flatness	≤3dB	≤2dB
Noise Figure	≤6dB	
VSWR	≤1 : 1.5	
Remote/Local Monitoring & Control	GSM Modem / USB	
Impedance	50Ω	
Power Supply / Power Consumption	AC176 ~ 264V, 47 ~ 63Hz / 400W Max.	
Operating Temperature	-10°C ~ +55°C	
Operating Environment	IP 55	
Connectors	N-Female x 2	
Size / Weight	362 x 620 x 340mm / 40kg	

4-Channel Selective Repeater(5W)

RPT-1800-053-A

Features

- Exceptionally High Linear Operation
- Remote or Local Access for Control
- Multi User Capability
- Access Thru a GSM Modem
- Cost effective/Compact Design
- Weatherproof Casing
- ALC, AGC ASD(Auto Shut Down)
- Channel Selective(Up to 4Channel)

Installation Site

- Underground/In-Building
- Shopping Mall/Subway
- Rural Area(PN Pollution Area)
- Tunnel or Opea Area

Specification

Electrical Characteristics	Specification
Frequency	1,710 ~ 1,725MHz / 1,805 ~ 1,820MHz
Input Range	-80dBm ~ -40dBm
Gain	87dB
Gain Rang	57 ~ 87dB(30dB)
Gain Control Step	1dB step
Output Power	+27dBm / +37dBm
Number of Channel	1 ~ 4Channel
Channel Spacing	200KMz
Flatness	≤ 3dB(Max.)
Noise Figure	≤ 6dB(Max Gain)
Propagation Delay	6us under
IMD	50dBc
Input/Output VSWR	1 : 1.5under
Isolation	≥ 100dBc
ALC / AGC	30dB / 30dB

Environmental & Mechanical Characteristics

Operating Temp	-25°C ~ +55°C
Connector	DIN 7/16
Dimension(W x D x H)	650 x 450 x 300mm

Interference Cancellation Repeater(2W)

RPT- 2100-023-I (UMTS)

Features

- Adaptive, Auto Interference Cancellation Function
- Used in the Poor Antenna Isolation Area
- Easy and Fast Installation (Auto Installation)
- Application for Poor Donor Signal Area
- High Performance & Compact Size
- ALC (Auto Level Control) & MGC (Manual Gain Control)
- Local & Remote Control (Using GUI, Modem)
  -Wireless Modem Connection (OMC Option)
- Coverage Area : 1Km x 2 Service Radius

Specification

Parameter	Down-Link	Up-Link
Frequency	2,110 ~ 2,170MHz	1,920 ~ 1,960MHz
Gain	95dB	
Output Power	2W	0.5W
Input Range	-47dBm ~ -30dBm	-100dBm ~ -53dBm
Time Delay	≤ 9usec	
Band Width of -3dB	TBD	
Noise Figure	≤ 6dB	
VSWR	≤ 1 : 1.5	
Flatness	± 2dB	
AGC Range	30dB	
MGC Range	30dB	
Impedance	50 Ω	
Power Consumption	10W Max.	

Environmental & Mechanical Characteristics

Dimension	500 x 300 x 185mm
Weight	22kg
Power Supply	AC 220V
Connector Type	N-Female
Operating	-20°C ~ -60°C / ≤ 95%

Global Network

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Bramsche, Germany
-Standard round wire

Arolsen, Germany
-Standard round wire, shaped and flat

Macon, France
-Fine wire and standard round wire

Mayzieu, France
-Enamel

Quattordio, Italy (2 Facilities)
-Standard round wire, shaped and flat

Viana de Castelo, Portugal
-Fine wire

Huyton Quarry, UK
-Standard round wire

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Brownwood, Texas USA
-OSP, Fiber

Hoisington, Kansas USA
-Premise, OSP

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Atlanta, Georgia
(Headquarters)

Tarboro, North Carolina USA
-OSP

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