APPENDIX 3

Table of Design of Telecommunication Links and Terrain Profile.

1 Agno River System

(1) DESIGNATION TABLE OF PROPAGATION PATH

Carmen Rosales (Sub-Center) — Tibag (R&W)
Carmen Rosales (Sub-Center) — Wawa (R&W)
Carmen Rosales (Sub-Center) — Bañaga (W)
Carmen Rosales (Sub-Center) — Sta. Barbara (R&W)
Carmen Rosales (Sub-Center) — Mt. Sto. Tomas (Repeater)
Carmen Rosales (Sub-Center) — Carmen (R&W)
Carmen Rosales (Sub-Center) — San Roque (R&W)
Mt. Sto. Tomas (Repeater) — Binga Dam (R&W)

(2) TERRAIN PROFILE

Carmen Rosales (Sub-Center) — Tibag (R&W)
Carmen Rosales (Sub-Center) — Wawa (R&W)
Carmen Rosales (Sub-Center) — Bañaga (W)
Carmen Rosales (Sub-Center) — Sta. Barbara (R&W)
Carmen Rosales (Sub-Center) — Mt. Sto. Tomas (Repeater)
Carmen Rosales (Sub-Center) — Carmen (R&W)
Carmen Rosales (Sub-Center) — San Roque (R&W)
Mt. Sto. Tomas (Repeater) — Binga Dam (R&W)

2 Bicol river System

(1) DESIGNATION TABLE OF PROPAGATION PATH

Naga (Sub-Center) — Barongay (W)
Naga (Sab-Center) — Ocampo (R)
Naga (Sub-Center) — Ombao (R&W)
Naga (Sub-Center) — Sipocot Hill (Repeater)
Naga (Sub-Center) — Iraga (Repeater)
Sipocot Hill (Repeater) — Sipocot (R&W)
Sipocot Hill (Repeater) — Napolidan (R)
Iraga (Repeater) — Buhi (R&W)
Iraga (Repeater) — Ligao (R)
Iraga (Reapeater) — Bato (R&W)

(2) TERRAIN PROFILE

Naga (Sub-Center) — Barongay (W)

Naga (Sab-Center) — Ocampo (R)

Naga (Sub-Center) — Ombao (R&W)

Naga (Sub-Center) — Sipocot Hill (Repeater)

Naga (Sub-Center) — Iraga (Repeater)

Sipocot Hill (Repeater) — Sipocot (R&W)

Sipocot Hill (Repeater) — Napolidan (R)

Iraga (Repeater) — Buhi (R&W)

Iraga (Repeater) — Ligao (R)

Iraga (Repeater) — Bato (R&W)

3 Cagayan Rever System

(1) DESIGNATION TAELE OF PROPAGATION PATH

Tuguegarao (Sub-Center) — Tuguegarao (R&W)

Tuguegarao (Sub-Center) — Tumauini (R&W)

Tuguegarao (Sub-Center) — Iragan (Repeater)

Iragan (Repeater) —— Dalibubun (R&W)

Iragan (Repeater) —— Maris Dam (R&W)

Iragan (Repeater) —— Tumauini (R&W)

(2) TERRAIN PROFILE

Tuguegarao (Sub-Center) —Tuguegarao (R&W)

Tuguegarao (Sub-Center) —Tumauini (R&W)

Tuguegarao (Sub-Center) —Iragan (Repeater)

Iragan (Repeater) — Dalibubun (R&W)

Iragan (Repeater) —Maris Dam (R&W)

Iragan (Repeater) — Tumauini (R&W)

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Agno River System

Carmen Rosales (Sub-Center) —— Tibag (R&W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				CARMEN ROSALES SUB CENTER — TIBAG (R&W)		—		—		—	
	ALTITUDE			m	24.5	50	24.5	50	24.5	50	24.5	50
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	44.4		44.4		44.4		44.4	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7		10	3
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	−110		−110		−110		−110	
	SPHERICAL TERRAIN LOSS	Lpp		dB	−27.1		−37.5		−37.5		−27.1	
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB								
	CORRECTIVE VALUE	Lpc		dB					−10		−10	
	(TOTAL LOSS)	Lp		dB	−137.1		−147.5		−157.5		−147.1	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	FILTER LOSS											
	(TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	−125.2		−135.5		−145.5		−135.2	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40		38.5	34.8	40
	RECEIVING POWER LEVEL	Pr		dBm	−95.2	−85.2		−95.5		−107	−100.4	−95.2
	(e.m.f.)	er		dBμ	17.8	27.8		17.5		6	12.6	17.8
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e.m.f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	14.8	24.8					9.6	14.8
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	35.8	45.8					30.6	35.8
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	−7.4						−7.4	
	(Mth > LF)			dB	7.4	17.4					2.2	7.4
	S/N AT FADING			dB	28.4	38.4					23.2	28.4
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Agno River System

Carmen Rosales (Sub-Center) —— Wawa (R&W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				CARMEN ROSALES (SUB CENTER)	WAWA (R&W)	——		——		——	
	ALTITUDE			m	24.5	15	24.5	15	24.5	15	24.5	15
	ANTENNA HEIGHT	H_1, H_2		m	30	10	10	10	10	10	30	10
		h_1, h_2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	22.1		22.1		22.1		22.1	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt	W		10	1	10	10	7		10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf	dB		−103.9		−103.9		−103.9		−103.9	
	SPHERICAL TERRAIN LOSS / TERRAIN REFLECTION LOSS	Lpp	dB		−25.1		−31.1		−31.1		−25.1	
	SHADOW LOSS	Lps	dB									
	CORRECTIVE VALUE	Lpc	dB						−10		−10	
	(TOTAL LOSS)	Lp	dB		−129		−135		−145		−139	
	ANTENNA GAIN — ANTENNA GAIN	GA	dB		6	8	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo	dB									
	ANTENNA H Y B LOSS											
	FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	FILTER LOSS											
	(TOTAL)		dB		11.9		12		12		11.9	
	(GRAND TOTAL)	Ls	dB		−117.1		−123		−133		−127.1	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt	dBm		30	40	40	40		38.5	30	40
	RECEIVING POWER LEVEL	Pr	dBm		−87.1	−77.1		−83		−94.5	−97.1	−87.1
	(e.m.f.)	er	dBμ		25.9	35.9		30		18.5	15.9	25.9
	INCOMING NOISE POWER LEVEL	Prne	dBm									
	(e.m.f.)	erne	dBμ									
	INTERNAL NOISE LEVEL	Prnl	dBμ									
	NOISE INCREASE	Δn	dB									
	TOTAL RECEIVING NOISE POWER LEVEL	Prn	dBm								−110	−110
	THRESHOLD LEVEL	Pth	dBm		−110	−110					9	9
	CRESTFACTOR	Cf	dB		9	9					12.9	22.9
	THRESHOLD MARGIN	Mth	dB		22.9	32.9					12	12
	S/N IMPROVEMENT	I	dB		12	12					33.9	43.9
	STANDARD S/N	S/N	dB		43.9	53.9						
JUDGEMENT	FADING VALUE PRESUMED	LF	dB		−5.2						−5.2	
	(Mth) − LF		dB		17.7	27.7					7.7	17.7
	S/N AT FADING		dB		38.7	48.7					28.7	38.7
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Agno River System

Carmen Rosales (Sub-Center) —— Bonāgo (W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				CARMEN ROSALES — BANAGA (SUB CENTER) (W)		—		—		—	
	ALTITUDE			m	24.5	2	24.5	2	24.5	2	24.5	2
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	42.8		42.8		42.8		42.8	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	10	10	10	7	8	10	10
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	−109.7		−109.7		−109.7		−109.7	
	SPHERICAL TERRAIN LOSS	Lpp		dB	−20.3		−25.3		−25.3		−20.3	
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB	−11 −4.3 −6		−11.5 −4.3 −6		−11.5 −4.3 −6		−11 −4.3 −6	
	CORRECTIVE VALUE	Lpc		dB					0.8		0.8	
	(TOTAL LOSS)	Lp		dB	−151.3		−156.8		−156		−150.5	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	11	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	FILTER LOSS											
	(TOTAL)			dB	14.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	−136.4		−144.8		−144		−138.6	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	40	40	40	40	39	38.5	40	40
	RECEIVING POWER LEVEL	Pr		dBm	−96.4	−96.4		−104.8	−105	−103	−98.6	−98.6
	(e. m. f.)	er		dBμ	16.6	16.6		8.2	8	10	14.4	14.4
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e. m. f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	13.6	13.6					11.4	11.4
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	34.6	34.6			35	32	32.4	32.4
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	−7.3						−7.3	
	(Mth > LF)			dB	6.3	6.3					4.1	4.1
	S/N AT FADING			dB	27.3	27.3					25.1	25.1
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Agno River System

Carmen Rosales (Sub-Center) — Sto. Barbara (R&W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				CARMEN ROSALES (SUB CENTER) — Sto Barbara (R&W)		—		—		—	
	ALTITUDE			m	24.5	8	24.5	8	24.5	8	24.5	8
	ANTENNA HEIGHT	H_1, H_2		m	30	10	10	10	10	10	30	10
		h_1, h_2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D	Km		25.6		25.6		25.6		25.6	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt	W		10	10	10	10	7	8	10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf	dB		− 105.2		− 105.2		− 105.2		− 105.2	
	SPHERICAL TERRAIN LOSS	Lpp	dB		−9 , −20		−18 , −20		−18 , −20		−9 , −20	
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps	dB		− 7.5 − 6 − 6.5		− 8.6 − 6 − 6.5		− 8.6 − 6 − 6.5		− 7.5 − 6 − 6.5	
	CORRECTIVE VALUE	Lpc	dB						15.3		15.3	
	(TOTAL LOSS)	Lp	dB		− 154.2		− 164.3		− 149		− 138.9	
	ANTENNA GAIN — ANTENNA GAIN	GA	dB		6	13	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo	dB									
	ANTENNA H Y B LOSS											
	FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	FILTER LOSS											
	(TOTAL)		dB		16.9		12		12		11.9	
	(GRAND TOTAL)	Ls	dB		−137.3		−152.3		−137		−127	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt	dBm		40	40	40	40	39	38.5	30	40
	RECEIVING POWER LEVEL	Pr	dBm		−97.3	−97.3		−112.3	−98	−98.5	−97	−87
	(e. m. f.)	er	dBμ		15.7	15.7		0.7	15	14.5	16	26
	INCOMING NOISE POWER LEVEL	Prne	dBm									
	(e. m. f.)	erne	dBμ									
	INTERNAL NOISE LEVEL	Prnl	dBμ									
	NOISE INCREASE	Δn	dB									
	TOTAL RECEIVING NOISE POWER LEVEL	Prn	dBm									
	THRESHOLD LEVEL	Pth	dBm		−110	−110					−110	−110
	CRESTFACTOR	Cf	dB		9	9					9	9
	THRESHOLD MARGIN	Mth	dB		12.7	12.7					13	23
	S/N IMPROVEMENT	I	dB		12	12					12	12
	STANDARD S/N	S/N	dB		33.7	33.7			35	35	34	44
JUDGEMENT	FADING VALUE PRESUMED	LF	dB		− 5.6						− 5.6	
	(Mth > LF)		dB		7.1	7.1					7.4	17.4
	S/N AT FADING		dB		28.1	28.1					28.4	38.4
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Agno River System

Carmen Rosales (Sub-Center) — Mt. Sto. Tomas (Repeater)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				CARMEN ROSALES - Mt. Sto. Tomas (SUB CENTER) (Repeater)		—		—		—	
	ALTITUDE			m	24.5	2024	24.5	2024	24.5	2024	24.5	2024
	ANTENNA HEIGHT	H1, H2		m	30	30	15	8	15	8	30	30
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	51.8		51.8		51.8		51.8	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	45	25	25	25	25	45	45
	TRANSMITTING OUTPUT POWER	Pt	W		10	10	8		8		10	10
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf	dB		−111.3		−111.3		−111.3		−111.3	
	SPHERICAL TERRAIN LOSS / TERRAIN REFLECTION LOSS	Lpp	dB									
	SHADOW LOSS	Lps	dB		−31		−31		−31		−31	
	CORRECTIVE VALUE	Lpc	dB						1.5		1.5	
	(TOTAL LOSS)	Lp	dB		−142.3		−142.3		−140.8		−140.8	
	ANTENNA GAIN — ANTENNA GAIN	GA	dB		6	6	2	8	2	8	6	6
	AZIMUTHAL PATTERN LOSS	Lo	dB									
	ANTENNA H Y B LOSS											
	FEEDER LOSS				−1.575	−1.575	−1.6	−1.6	−1.6	−1.6	−1.575	−1.575
	FILTER LOSS											
	(TOTAL)		dB		8.9		6.8		6.8		8.9	
	(GRAND TOTAL)	Ls	dB		−133.4		−135.5		−134		−131.9	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt	dBm		40	40		39		39	40	40
	RECEIVING POWER LEVEL	Pr	dBm		−93.4	−93.4		−96.5		−95	−91.9	−91.9
	(e. m. f.)	er	dBμ		19.6	19.6		16.5		18	21.1	21.1
	INCOMING NOISE POWER LEVEL	Prne	dBm									
	(e. m. f.)	erne	dBμ									
	INTERNAL NOISE LEVEL	Prni	dBμ									
	NOISE INCREASE	Δn	dB									
	TOTAL RECEIVING NOISE POWER LEVEL	Prn	dBm									
	THRESHOLD LEVEL	Pth	dBm		−110	−110					−110	−110
	CRESTFACTOR	Cf	dB		9	9					9	9
	THRESHOLD MARGIN	Mth	dB		16.6	16.6					18.1	18.1
	S/N IMPROVEMENT	I	dB		12	12					12	12
	STANDARD S/N	S/N	dB		37.6	37.6					39.1	39.1
JUDGEMENT	FADING VALUE PRESUMED	LF	dB		−8.2						−8.2	
	(Mth > LF)		dB		8.4	8.4					9.9	9.9
	S/N AT FADING		dB		29.4	29.4					30.9	30.9
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Agno River System

Carmen Rosales (Sub-Center) —— Carmen (R & W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)

CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				CARMEN ROSALES — Carmen (SUB CENTER) (R&W)		---		---		---	
	ALTITUDE			m	24.5	24	24.5	24	24.5	24	24.5	24
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	1.7		1.7		1.7		1.7	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7		10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpl		dB	-81.7		-81.7		-81.7		-81.7	
	SPHERICAL TERRAIN LOSS	Lpp		dB								
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB								
	CORRECTIVE VALUE	Lpc		dB					-13		-13	
	(TOTAL LOSS)	Lp		dB	-81.7		-81.7		-94.7		-94.7	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				-1.575	-0.525	-2	-2	-2	-2	-1.575	-0.525
	FILTER LOSS											
	(TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	-69.8		-69.7		-82.7		-82.8	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40		38.5	30	40
	RECEIVING POWER LEVEL	Pr		dBm	-39.8	-29.8		-29.7		-44.2	-52.8	-42.8
	(e.m.f.)	er		dBμ	73.2	83.2		83.3		68.8	60.2	70.2
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e.m.f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	-110	-110					-110	-110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	70.2	80.2					57.2	67.2
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	91.2	101.2					78.2	88.2
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	-3.2						-3.2	
	(Mth > LF)			dB	67	77					54	64
	S/N AT FADING			dB	88	98					75	85
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mor. '77

Agno River System

Carmen Rosales (Sub-Center) —— San Roque (R & W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				CARMEN ROSALES (SUB CENTER) — San Roque (R&W)		—		—		—	
	ALTITUDE			m	24.5	98	24.5	98	24.5	98	24.5	98
	ANTENNA HEIGHT	H_1, H_2		m	30	10	15	8	15	8	30	10
		h_1, h_2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	27.7		27.7		27.7		27.7	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	15	25	25	25	25	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	8		8		10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	−105.9		−105.9		−105.9		−105.9	
	PROPAGATION LOSS — SPHERICAL TERRAIN LOSS	Lpp		dB	−21.7		−31.6		−31.6		−21.7	
	PROPAGATION LOSS — TERRAIN REFLECTION LOSS											
	PROPAGATION LOSS — SHADOW LOSS	Lps		dB								
	PROPAGATION LOSS — CORRECTIVE VALUE	Lpc		dB					−1.3		−1.3	
	PROPAGATION LOSS — (TOTAL LOSS)	Lp		dB	−127.6		−137.5		−138.8		−128.9	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	2	8	2	8	6	8
	ANTENNA GAIN — AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA GAIN — ANTENNA H Y B LOSS											
	ANTENNA GAIN — FEEDER LOSS				−1.575	−0.525	−1.6	−1.6	−1.6	−1.6	−1.575	−0.525
	ANTENNA GAIN — FILTER LOSS											
	ANTENNA GAIN — (TOTAL)			dB	11.9		6.8		6.8		11.9	
	(GRAND TOTAL)	Ls		dB	−115.7		−130.7		−132		−117	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40		39		39	30	40
	RECEIVING POWER LEVEL	Pr		dBm	−85.7	−75.7		−91.7		−93	−87	−77
	(e. m. f.)	er		dBμ	27.3	37.3		21.3		20	26	36
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e. m. f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	24.3	34.3					23	33
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	45.3	55.3					44	54
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	−5.8						−5.8	
	(Mth > LF)			dB	18.5	28.5					17.2	27.2
	S/N AT FADING			dB	39.5	49.5					38.2	48.2
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mor. '77

Agno River System

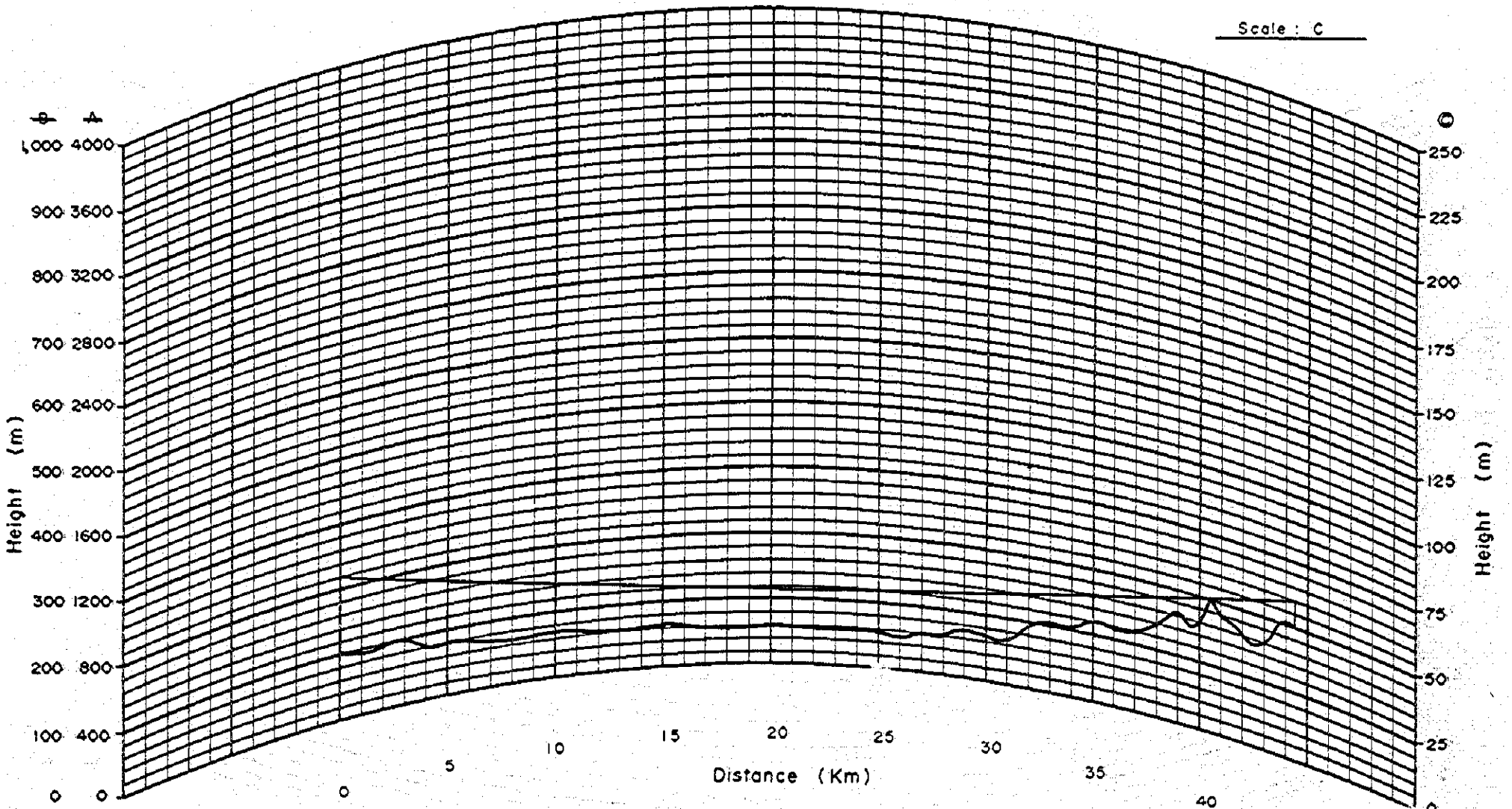
Mt. Sto. Tomas (Repeater) — Binga Dam (R & W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	SPAN				Mt. Sto. Tomas (Repeater)	Binga Dam (R & W)	—		—		—	
	ALTITUDE			m	2024	480	2024	480	2024	480	2024	480
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	18.65		18.65		18.65		18.65	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	3	10	10	7	9	10	3
SPAN LOSS	PROPAGATION LOSS	PROPAGATION LOSS	Lpf	dB	−102.4		−102.4		−102.4		−102.4	
		SPHERICAL TERRAIN LOSS	Lpp	dB								
		TERRAIN REFLECTION LOSS										
		SHADOW LOSS	Lps	dB	−12 −9 −22		−12 −9 −22		−12 −9 −22		−12 −9 −22	
		CORRECTIVE VALUE	Lpc	dB					1.9		1.9	
		(TOTAL LOSS)	Lp	dB	−145.4		−145.4		−143.5		−143.5	
	ANTENNA GAIN	ANTENNA GAIN	GA	dB	6	8	8	8	8	8	6	8
		AZIMUTHAL PATTERN LOSS	Lo	dB								
		ANTENNA H Y B LOSS										
		FEEDER LOSS			−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
		FILTER LOSS										
		(TOTAL)		dB	11.9		12		12		11.9	
	(GRAND TOTAL)		Ls	dB	−133.5		−133.4		−131.5		−131.6	
S/N CALCULATION	TRANSMITTING OUTPUT POWER		Pt	dBm	34.8	40	40	40	39.5	38.5	34.8	40
	RECEIVING POWER LEVEL		Pr	dBm	−98.7	−93.5		−93.4	−88	−93	−96.8	−91.6
	(e. m. f.)		er	dBμ	14.3	19.5		19.6	25	20	16.2	21.4
	INCOMING NOISE POWER LEVEL		Prne	dBm								
	(e. m. f.)		erne	dBμ								
	INTERNAL NOISE LEVEL		Prni	dBμ								
	NOISE INCREASE		Δn	dB								
	TOTAL RECEIVING NOISE POWER LEVEL		Prn	dBm								
	THRESHOLD LEVEL		Pth	dBm	−110	−110					−110	−110
	CRESTFACTOR		Cf	dB	9	9					9	9
	THRESHOLD MARGIN		Mth	dB	11.3	16.5					13.2	18.4
	S/N IMPROVEMENT		I	dB	12	12					12	12
	STANDARD S/N		S/N	dB	32.3	37.5			46	35	34.2	39.4
JUDGEMENT	FADING VALUE PRESUMED		LF	dB	−4.9						−4.9	
	(Mth > LF)			dB	6.4	11.6					8.3	13.5
	S/N AT FADING			dB	27.4	32.6					29.3	34.5
	REMARKS											

Terrain Profile (K=4/3)

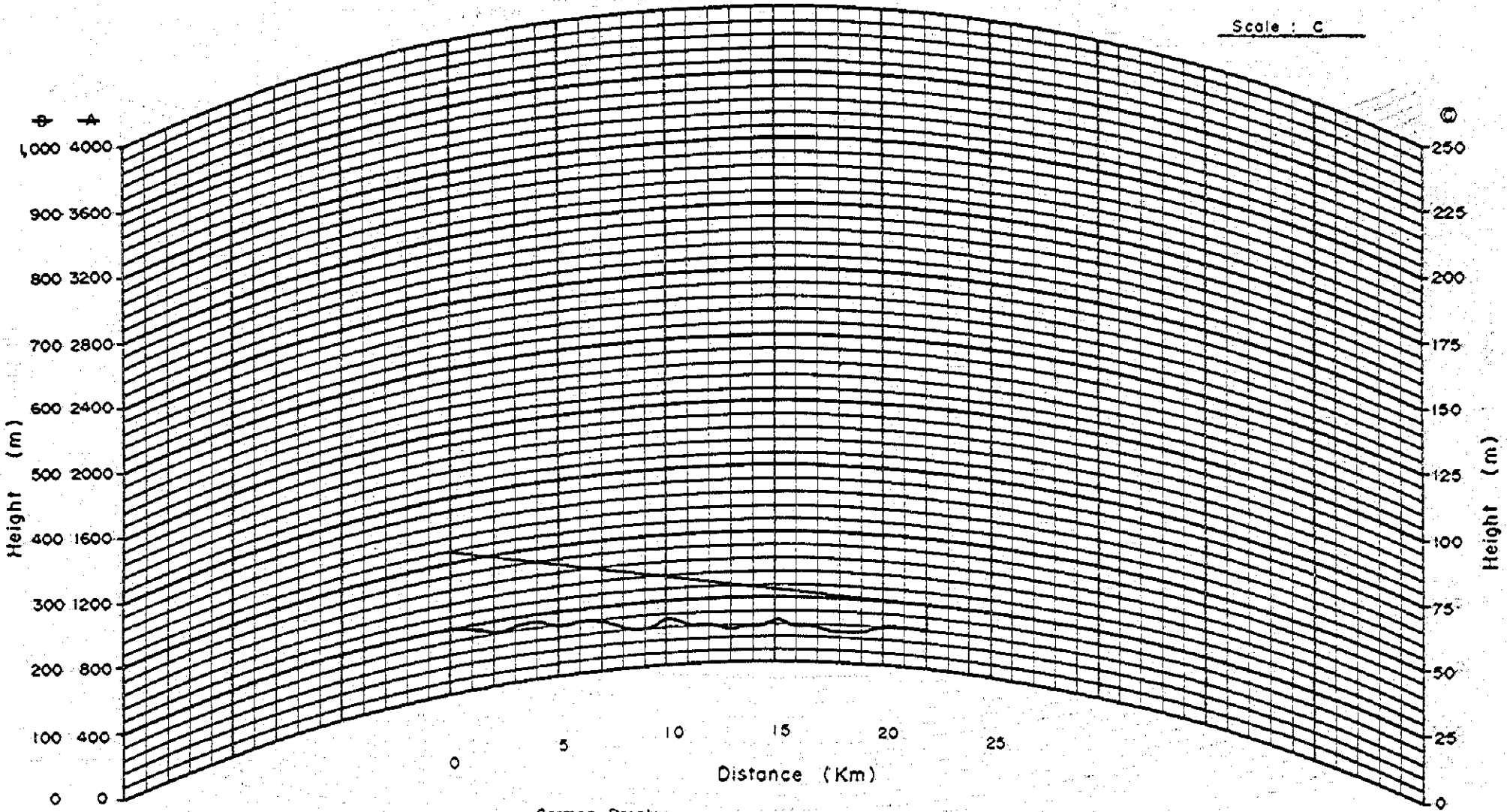
Scale : C



Carmen Rosales (Sub Center)				Tibag (R & W)		
Altitude	24.5	m	44.4 Km	Altitude	50	m
Antenna Height	30	m		Antenna Height	10	m

Terrain Profile (K=4/3)

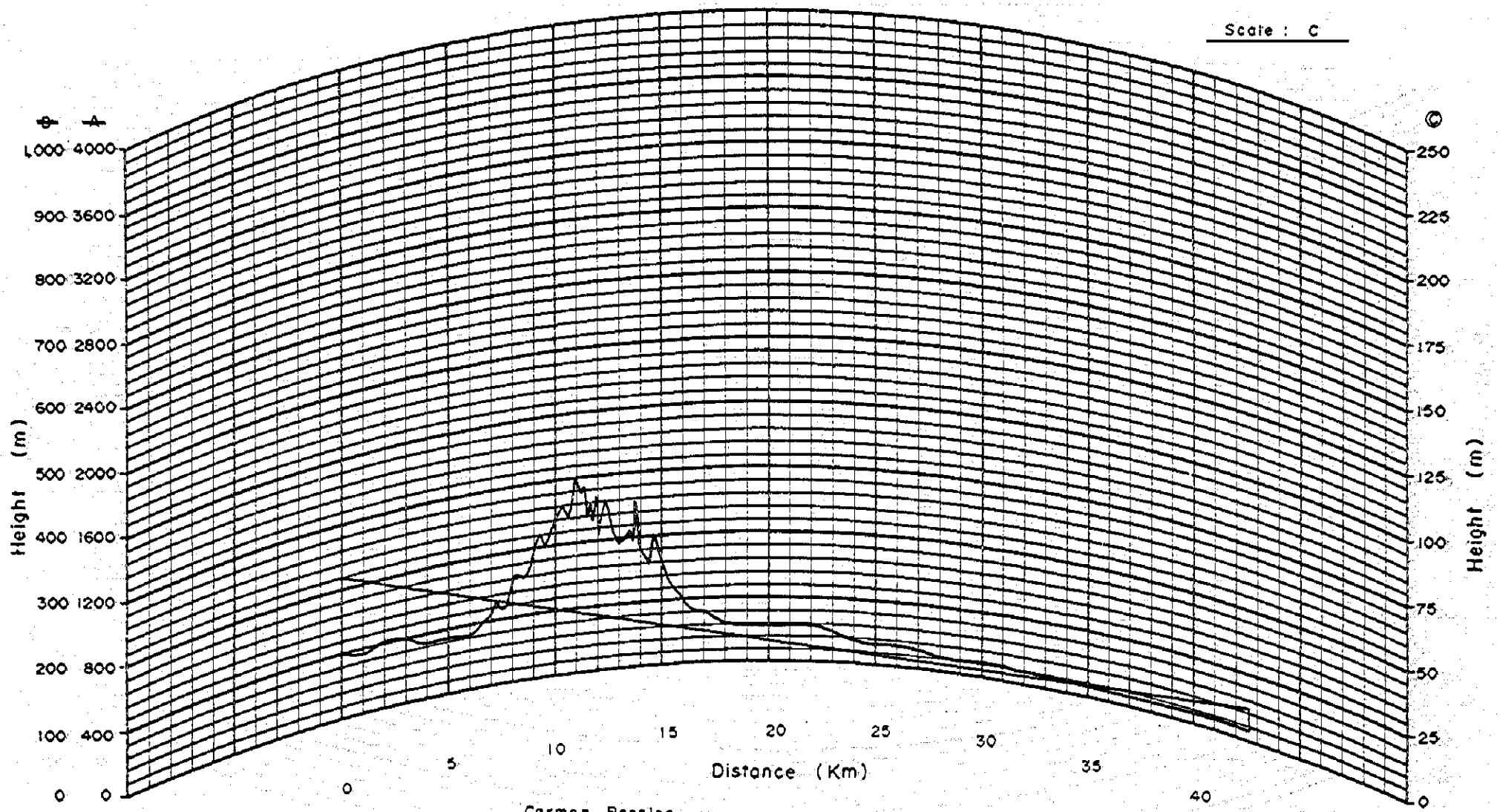
Scale : C



Carmen Rosales (Sub Center)				Wawa (R & W.)		
Altitude	24.5	m	22.1 Km	Altitude	15	m
Antenna Height	30	m		Antenna Height	10	m

Terrain Profile (K=4/3)

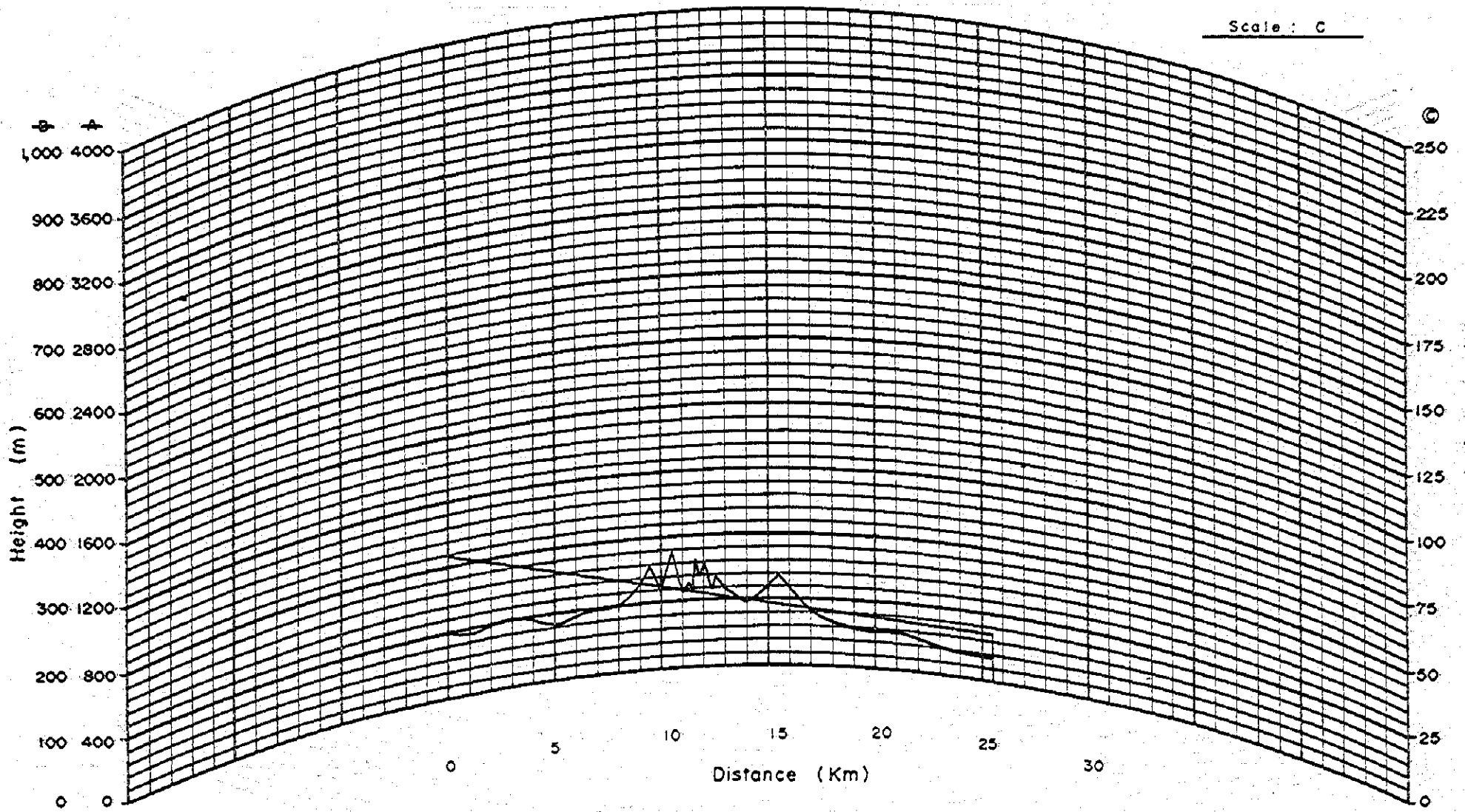
Scale : C



Carmen Rosales (Sub Center)			42.8 Km	Bañaga (W)		
Altitude	24.5	m		Altitude	2	m
Antenna Height	30	m		Antenna Height	10	m

Terrain Profile (K=4/3)

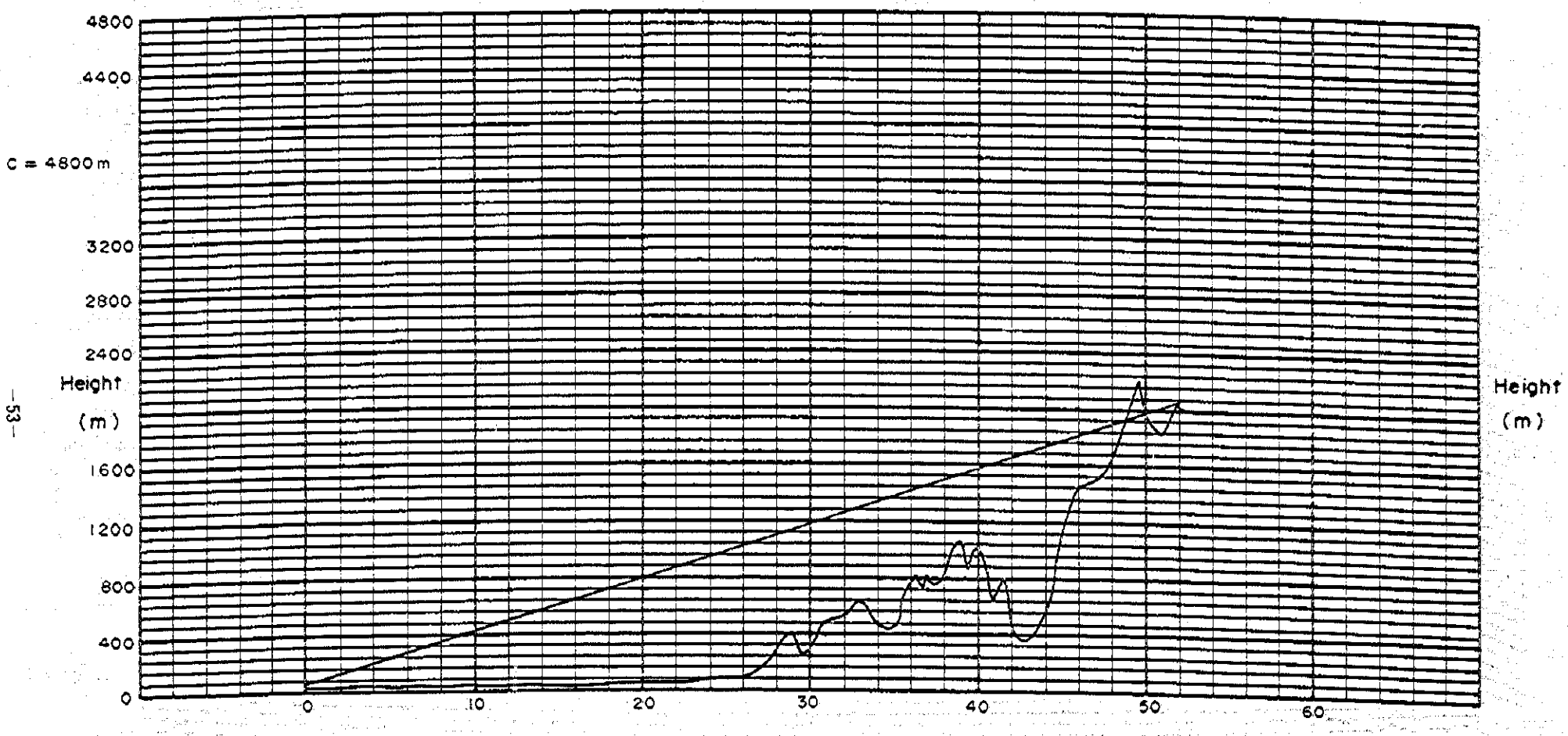
Scale : C



Carmen Rosales (Sub Center)				Sto. Barbara (R & W)		
Altitude	24.5	m	25.6 Km →	Altitude	8	m
Antenna Height	30	m		Antenna Height	10	m

Terrain Profile (K=4/3)

Scale : C

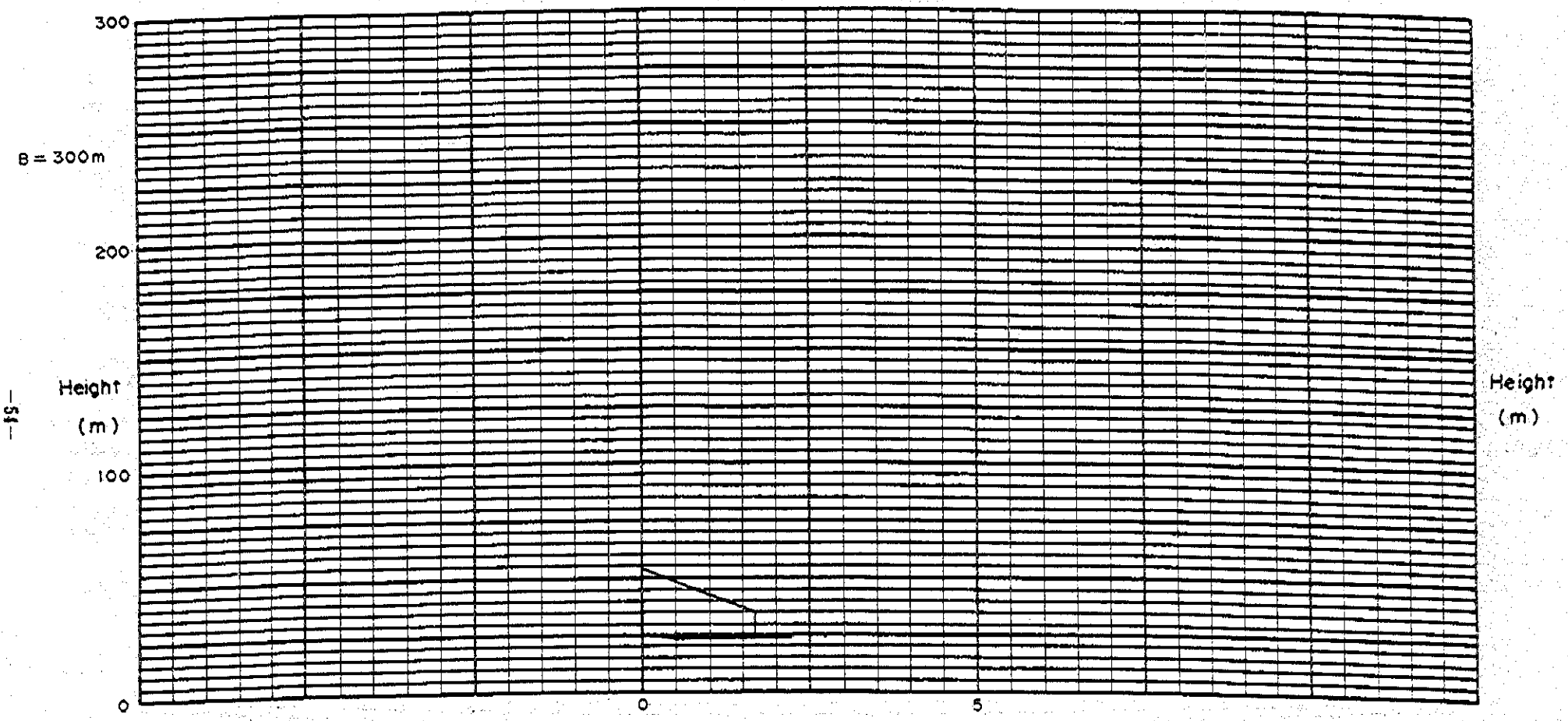


Carmen Rosabs (Sub Center)		Mt. Sto Tomas (Repeater)
Altitude 24.5 m		Altitude 2024 m
Antenna Height 30 m	51.8 Km	Antenna Height 30 m

C = 80 km

Terrain Profile (K=4/3)

Scale : B.

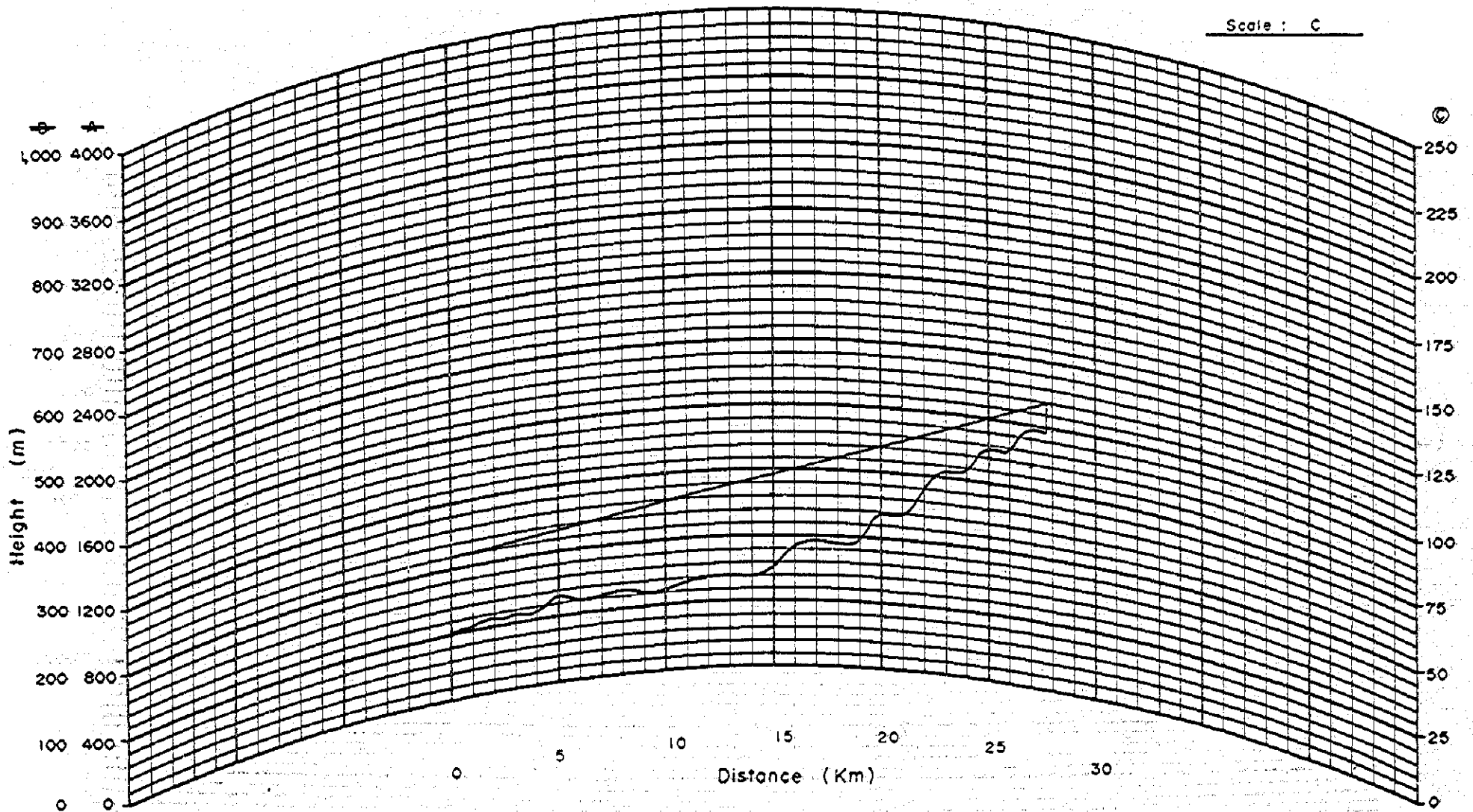


B = 20km

Carmen Rosales (Sub Center)			Carmen (R & W)	
Altitude	24.5 m		Altitude	24 m
Antenna Height	30 m	1.7 Km	Antenna Height	10 m

Terrain Profile (K=4/3)

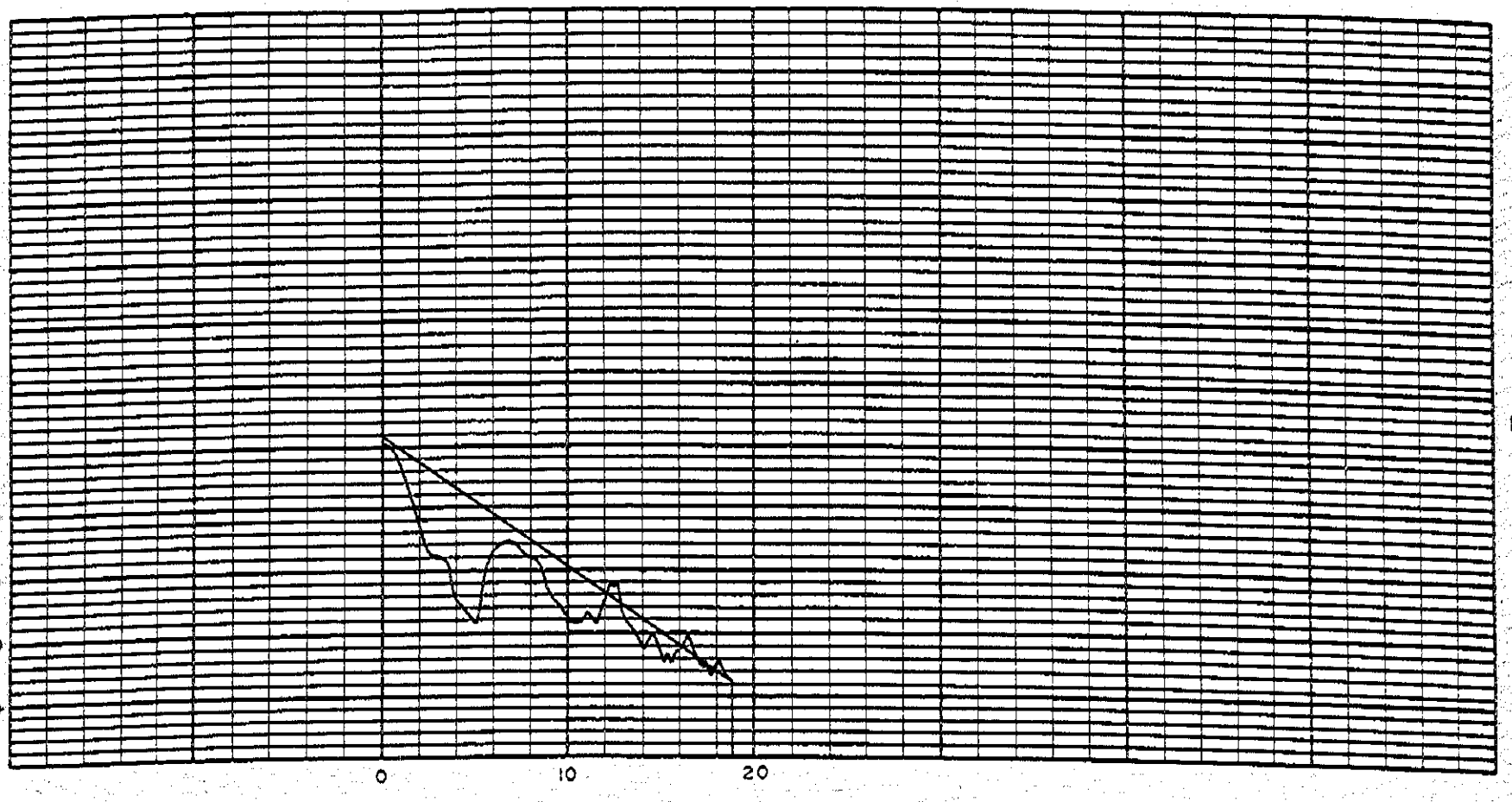
Scale : C



Carmen Rosales (Sub Center)				San Roque (R&W)		
Altitude	24.5	m	27.7 Km	Altitude	98	m
Antenna Height	30	m		Antenna Height	10	m

Terrain Profile (K=4/3)

Scale : C



C = 80 km

Mt. Sto Tomas (Repeater)		Binga Dam (R & W)
Altitude 2024 m		Altitude 480 m
Antenna Height 30 m	18.65 Km	Antenna Height 10 m

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Bicol River System

Naga (Sub-Center) —— Barongay (W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Naga — Barongay (Sub-Center) (W)		—		—		—	
	ALTITUDE			m	2	1	2	1	2	1	2	1
	ANTENNA HEIGHT	H1 , H2		m	30	10	10	10	10	10	30	10
		h1 , h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	11.2		11.2		11.2		11.2	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7		10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	-98.5		-98.5		-98.5		-98.5	
	SPHERICAL TERRAIN LOSS	Lpp		dB	-19		-24.5		-24.5		-19	
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB								
	CORRECTIVE VALUE	Lpc		dB					-10		-10	
	(TOTAL LOSS)	Lp		dB	-117.5		-123		-133		-127.5	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				-1.575	-0.525	-2	-2	-2	-2	-1.575	-0.525
	FILTER LOSS											
	(TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	-105.6		-111		-121		-115.6	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40		38.5	30	40
	RECEIVING POWER LEVEL	Pr		dBm	-75.6	-65.6		-71		-82.5	-85.6	-75.6
	(e.m.f.)	er		dBμ	37.4	47.4		42		30.5	27.4	37.4
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e.m.f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	-110	-110					-110	-110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	34.4	44.4					24.4	34.4
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	55.4	65.4					45.4	55.4
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	-4.1						-4.1	
	(Mth > LF)			dB	30.3	40.3					20.3	30.3
	S/N AT FADING			dB	51.3	61.3					41.3	61.3
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Bicol River System

Naga (Sub-Center) —— Ocampo (R)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

				CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.										
	SPAN			Naga – Ocampo (Sub-Center) (R)		—		—		—	
	ALTITUDE		m	2	53	2	53	2	53	2	53
	ANTENNA HEIGHT	H_1, H_2	m	30	10	10	10	10	10	30	10
		h_1, h_2	m								
	OUTLINE OF PROPAGATION PATH										
	DISTANCE	D	Km	23.35		23.35		23.35		23.35	
	ANTENNA	MODEL		3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION		V	V	V	V	V	V	V	V
		PATTERN									
	FEEDER	MODEL		AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt	W	10	1	10	10	7	9	10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf	dB	−104.6		−104.6		−104.6		−104.6	
	PROPAGATION LOSS — SPHERICAL TERRAIN LOSS / TERRAIN REFLECTION LOSS	Lpp	dB	−8		−15		−15		−8	
	PROPAGATION LOSS — SHADOW LOSS	Lps	dB	−7.5 −8.5		−9 −8.5		−9 −8.5		−7.5 −8.5	
	PROPAGATION LOSS — CORRECTIVE VALUE	Lpc	dB					−12.4		−12.4	
	PROPAGATION LOSS — (TOTAL LOSS)	Lp	dB	−128.6		−137.1		−149.5		−141	
	ANTENNA GAIN — ANTENNA GAIN	GA	dB	6	8	8	8	8	8	6	8
	ANTENNA GAIN — AZIMUTHAL PATTERN LOSS	Lo	dB								
	ANTENNA GAIN — ANTENNA H Y B LOSS										
	ANTENNA GAIN — FEEDER LOSS			−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	ANTENNA GAIN — FILTER LOSS										
	ANTENNA GAIN — (TOTAL)		dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls	dB	−116.7		−125.1		−137.5		−129.1	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt	dBm	30	40	40	40	39.5	38.5	30	40
	RECEIVING POWER LEVEL	Pr	dBm	−86.7	−76.7		−85	−89.5	−99	−99.1	−89.1
	(e.m.f.)	er	dBμ	26.3	36.3		28	23.5	14	13.9	23.9
	INCOMING NOISE POWER LEVEL	Prne	dBm								
	(e.m.f.)	erne	dBμ								
	INTERNAL NOISE LEVEL	Prnl	dBμ								
	NOISE INCREASE	Δn	dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn	dBm								
	THRESHOLD LEVEL	Pth	dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf	dB	9	9					9	9
	THRESHOLD MARGIN	Mth	dB	23.3	33.3					10.9	20.9
	S/N IMPROVEMENT	I	dB	12	12					12	12
	STANDARD S/N	S/N	dB	44.3	54.3			43	46	31.9	41.9
JUDGEMENT	FADING VALUE PRESUMED	LF	dB	−5.3						−5.3	
	(Mth > LF)		dB	18	28					5.6	15.6
	S/N AT FADING		dB	39	49					26.6	36.6
	REMARKS										

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Bicol River System

Naga (Sub-Center) —— Ombao (R & W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	SPAN				Naga – Ombao (Sub-Center) (R&W)		—		—		—	
	ALTITUDE			m	2	10	2	10	2	10	2	10
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	17.6		17.6		17.6		17.6	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7	9	10	1
SPAN LOSS	PROPAGATION LOSS: PROPAGATION LOSS	Lpf		dB	– 102.5		– 102.5		– 102.5		– 102.5	
	PROPAGATION LOSS: SPHERICAL TERRAIN LOSS	Lpp		dB	– 20.3		– 28		– 28		– 20.3	
	PROPAGATION LOSS: TERRAIN REFLECTION LOSS											
	PROPAGATION LOSS: SHADOW LOSS	Lps		dB	– 4.5		– 5		– 5		– 4.5	
	PROPAGATION LOSS: CORRECTIVE VALUE	Lpc		dB					– 1		– 1	
	PROPAGATION LOSS: (TOTAL LOSS)	Lp		dB	– 127.3		– 135.5		– 136.5		– 128.3	
	ANTENNA GAIN: ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	ANTENNA GAIN: AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA GAIN: ANTENNA H Y B LOSS											
	ANTENNA GAIN: FEEDER LOSS				-1.575	-0.525	-2	-2	-2	-2	-1.575	-0.525
	ANTENNA GAIN: FILTER LOSS											
	ANTENNA GAIN: (TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	– 115.4		– 123.5		– 124.5		– 116.4	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40	39.5	38.5	30	40
	RECEIVING POWER LEVEL	Pr		dBm	-85.4	-75.4		-83.5	-85	-85	-86.4	-76.4
	(e.m.f.)	er		dBμ	27.6	37.6		29.5	28	28	26.6	36.6
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e.m.f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	-110	-110					-110	-110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	24.6	34.6					23.6	33.6
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	45.6	55.6			50	50	44.6	54.6
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	– 4.8						– 4.8	
	(Mth > LF)			dB	19.8	29.8					18.8	28.8
	S/N AT FADING			dB	40.8	50.8					39.8	49.8
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Bicol River System

Naga (Sub-Center) —— Sipocot Hill (Repeater)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)

CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Naga -- Sipocot Hill (Sub-Center) (Repeater)		—		—		—	
	ALTITUDE			m	2	100	2	100	2	100	2	100
	ANTENNA HEIGHT	H1, H2		m	30	30	10	10	10	10	30	30
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	27.85		27.85		27.85		27.85	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	45	16	16	16	16	45	45
	TRANSMITTING OUTPUT POWER	Pt		W	10	10	10	10	7	7	10	10
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	-106.5		-106.5		-106.5		-106.5	
	SPHERICAL TERRAIN LOSS	Lpp		dB			-10		-10			
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB	-2		-3		-3		-2	
	CORRECTIVE VALUE	Lpc		dB					-20		-20	
	(TOTAL LOSS)	Lp		dB	-108.5		-119.5		-139.5		-128.5	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	6	8	8	8	8	6	6
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				-1.575	-1.575	-2	-2	-2	-2	-1.575	-1.575
	FILTER LOSS											
	(TOTAL)			dB	8.9		12		12		8.9	
	(GRAND TOTAL)	Ls		dB	-99.6		-107.5		-127.5		-119.6	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	40	40	40	40	38.5	38.5	40	40
	RECEIVING POWER LEVEL	Pr		dBm	-59.6	-59.6		-67.5	-89		-79.6	-79.6
	(e.m.f.)	er		dBμ	53.4	53.4		45.5	24	—	33.4	33.4
	INCOMING NOISE POWER LEVEL	Pne		dBm								
	(e.m.f.)	ene		dBμ								
	INTERNAL NOISE LEVEL	Pni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Pn		dBm								
	THRESHOLD LEVEL	Pth		dBm	-110	-110					-110	-110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	50.4	50.4					30.4	30.4
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	71.4	71.4			45	45	51.4	51.4
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	-5.8						-5.8	
	(Mth > LF)			dB	44.6	44.6					24.6	24.6
	S/N AT FADING			dB	65.6	65.6					45.6	45.6
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Bicol River System

Naga (Sub-Center) —— Irago (Repeater)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

				CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.										
	SPAN			Naga – Irago (Sub-Center) (Repeater)		—		—		—	
	ALTITUDE		m	2	42	2	42	2	42	2	42
	ANTENNA HEIGHT	H1, H2	m	30	30	10	10	10	10	30	30
		h1, h2	m								
	OUTLINE OF PROPAGATION PATH										
	DISTANCE	D	Km	33.6		33.6		33.6		33.6	
	ANTENNA	MODEL		3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION		V	V	V	V	V	V	V	V
		PATTERN									
	FEEDER	MODEL		AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH	m	45	45	16	16	16	16	45	45
	TRANSMITTING OUTPUT POWER	Pt	W	10	10	10	10	7	7	10	10
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf	dB	−108		−108		−108		−108	
	SPHERICAL TERRAIN LOSS	Lpp	dB	− 7		− 19		− 19		− 7	
	TERRAIN REFLECTION LOSS										
	SHADOW LOSS	Lps	dB	− 6 − 6 − 7		− 9 − 6 − 6		− 9 − 6 − 6		− 6 − 6 − 7	
	CORRECTIVE VALUE	Lpc	dB					3.5		3.5	
	(TOTAL LOSS)	Lp	dB	−134		−148		−144.5		−130.5	
	ANTENNA GAIN — ANTENNA GAIN	GA	dB	6	6	8	8	8	8	6	6
	AZIMUTHAL PATTERN LOSS	Lo	dB								
	ANTENNA H Y B LOSS										
	FEEDER LOSS			−1.575	−1.575	−2	−2	−2	−2	−1.575	−1.575
	FILTER LOSS										
	(TOTAL)		dB	8.9		12		12		8.9	
	(GRAND TOTAL)	Ls	dB	−125.1		−136		−132.5		−121.6	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt	dBm	40	40	40	40	38.5	38.5	40	40
	RECEIVING POWER LEVEL	Pr	dBm	−85.1	−85.1		−96	−94		−81.6	−81.6
	(e.m.f.)	er	dBμ	27.9	27.9		17	19	—	21.4	21.4
	INCOMING NOISE POWER LEVEL	Prne	dBm								
	(e.m.f.)	erne	dBμ								
	INTERNAL NOISE LEVEL	Prni	dBμ								
	NOISE INCREASE	Δn	dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn	dBm								
	THRESHOLD LEVEL	Pth	dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf	dB	9	9					9	9
	THRESHOLD MARGIN	Mth	dB	24.9	24.9					28.4	28.4
	S/N IMPROVEMENT	I	dB	12	12					12	12
	STANDARD S/N	S/N	dB	45.9	45.9			35	41.5	49.4	49.4
JUDGEMENT	FADING VALUE PRESUMED	LF	dB	− 6.4						− 6.4	
	(Mth > LF)		dB	18.5	18.5					22	22
	S/N AT FADING		dB	39.5	39.5					43	43
	REMARKS										

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Bicol River System

Sipocot Hill (Repeater) —— Sipocot (R&W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Sipocot Hill - Sipocot (R&W) (Repeater)		—		—		—	
	ALTITUDE			m	100	20	100	20	100	20	100	20
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	3.75		3.75		3.75		3.75	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7	—	10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpl		dB	−89		−89		−89		−89	
	PROPAGATION LOSS — SPHERICAL TERRAIN LOSS	Lpp		dB								
	PROPAGATION LOSS — TERRAIN REFLECTION LOSS											
	PROPAGATION LOSS — SHADOW LOSS	Lps		dB			−9		−9			
	PROPAGATION LOSS — CORRECTIVE VALUE	Lpc		dB					−15		−15	
	PROPAGATION LOSS — (TOTAL LOSS)	Lp		dB	−89		−98		−113		−104	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	ANTENNA GAIN — AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA GAIN — ANTENNA H Y B LOSS											
	ANTENNA GAIN — FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	ANTENNA GAIN — FILTER LOSS											
	ANTENNA GAIN — (TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	−77.1		−86		−101		−92.1	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40	—	38.5	30	40
	RECEIVING POWER LEVEL	Pr		dBm	−47.1	−37.1		−46	—	−62.5	−62.1	−52.1
	(e.m.f.)	er		dBμ	65.9	75.9		67	—	50.5	50.9	60.9
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e.m.f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prnl		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	62.9	72.9					47.9	57.9
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	83.9	93.9			—	50	68.9	78.9
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	−3.4						−3.4	
	(Mth > LF)			dB	59.5	69.5					44.5	54.5
	S/N AT FADING			dB	80.5	90.5					65.5	75.5
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mor. '77

Bicol River System

Sipocot Hill (Repeater) —— Napolidan (R)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Sipocot Hill-Napolidon (Repeater) (R)		—		—		—	
	ALTITUDE			m	100	100	100	100	100	100	100	100
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	13.1		13.1		13.1		13.1	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7	--	10	3
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	-100		-100		-100		-100	
	PROPAGATION LOSS — SPHERICAL TERRAIN LOSS	Lpp		dB								
	PROPAGATION LOSS — TERRAIN REFLECTION LOSS											
	PROPAGATION LOSS — SHADOW LOSS	Lps		dB	-2 -2 -2 -4 -3 -3 -3		-4 -3 -4 -4 -4.5 -3 -4.5		-4 -3 -4 -4 -4.5 -3 -4.5		-2 -2 -2 -4 -3 -3 -3	
	PROPAGATION LOSS — CORRECTIVE VALUE	Lpc		dB					-23.5		-23.5	
	PROPAGATION LOSS — (TOTAL LOSS)	Lp		dB	-119		-127		-150.5		-142.5	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	ANTENNA GAIN — AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA GAIN — ANTENNA H.Y B LOSS											
	ANTENNA GAIN — FEEDER LOSS				-1.575	-0.525	-2	-2	-2	-2	-1.575	-0.525
	ANTENNA GAIN — FILTER LOSS											
	ANTENNA GAIN — (TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	-107.1		-115		-138.5		-130.6	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40		38.5	34.8	40
	RECEIVING POWER LEVEL	Pr		dBm	-77.1	-67.1		-75	—	-100	-95.8	-90.6
	(e.m.f.)	er		dBμ	35.9	45.9		38	--	13	17.2	22.4
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e.m.f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	-110	-110					-110	-110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	32.9	42.9					14.2	19.4
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	53.9	63.9			—	40	35.2	40.4
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	-4.3						-4.3	
	(Mth > LF)			dB	28.6	38.6					9.9	15.1
	S/N AT FADING			dB	49.6	59.6					30.9	36.1
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Bicol River System

Iraga (Repeater) —— Buhi (R & W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Iraga – Buhi (Repeater) (R&W)		—		—		—	
	ALTITUDE			m	42	95	42	95	42	95	42	95
	ANTENNA HEIGHT	H_1, H_2		m	30	10	10	10	10	10	30	10
		h_1, h_2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D	Km		12.5		12.5		12.5		12.5	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt	W		10	1	10	10	7	7	10	3
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf	dB		– 99		– 99		– 99		– 99	
	PROPAGATION LOSS — SPHERICAL TERRAIN LOSS	Lpp	dB									
	PROPAGATION LOSS — TERRAIN REFLECTION LOSS											
	PROPAGATION LOSS — SHADOW LOSS	Lps	dB		– 20 – 6		– 21 – 6		– 21 – 6		– 20 – 6	
	PROPAGATION LOSS — CORRECTIVE VALUE	Lpc	dB						– 19.5		– 19.5	
	PROPAGATION LOSS — (TOTAL LOSS)	Lp	dB		– 125		– 126		– 145.5		– 144.5	
	ANTENNA GAIN — ANTENNA GAIN	GA	dB		6	8	8	8	8	8	6	8
	ANTENNA GAIN — AZIMUTHAL PATTERN LOSS	Lo	dB									
	ANTENNA GAIN — ANTENNA H Y B LOSS											
	ANTENNA GAIN — FEEDER LOSS				– 1.575	– 0.525	– 2	– 2	– 2	– 2	– 1.575	– 0.525
	ANTENNA GAIN — FILTER LOSS											
	ANTENNA GAIN — (TOTAL)		dB		11.9		12		12		11.9	
	(GRAND TOTAL)	Ls	dB		– 113.1		– 114		– 133.5		– 132.6	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt	dBm		30	40	40	40	38.5	38.5	34.8	40
	RECEIVING POWER LEVEL	Pr	dBm		– 83.1	– 73.1		– 74	– 95		– 97.8	– 92.6
	(e. m. f.)	er	dBμ		29.9	39.9		39	18	—	15.2	20.4
	INCOMING NOISE POWER LEVEL	Prne	dBm									
	(e. m. f.)	erne	dBμ									
	INTERNAL NOISE LEVEL	Prni	dBμ									
	NOISE INCREASE	Δn	dB									
	TOTAL RECEIVING NOISE POWER LEVEL	Prn	dBm									
	THRESHOLD LEVEL	Pth	dBm		– 110	– 110					– 110	– 110
	CRESTFACTOR	Cf	dB		9	9					9	9
	THRESHOLD MARGIN	Mth	dB		26.9	36.9					12.2	17.4
	S/N IMPROVEMENT	I	dB		12	12					12	12
	STANDARD S/N	S/N	dB		47.9	57.9			36	40	33.2	38.4
JUDGEMENT	FADING VALUE PRESUMED	LF	dB		– 4.3						– 4.3	
	(Mth) LF)		dB		22.6	32.6					7.9	13.1
	S/N AT FADING		dB		43.6	53.6					28.9	34.1
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Bicol River System

Iraga (Repeater) —— Ligao (R)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	SPAN				Iraga — Ligao (Repeater) (R)		—		—		—	
	ALTITUDE			m	42	30	42	30	42	30	42	30
	ANTENNA HEIGHT	H_1, H_2		m	30	10	10	10	10	10	30	10
		h_1, h_2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	24.5		24.5		24.5		24.5	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7	7	10	10
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	−105		−105		−105		−105	
	SPHERICAL TERRAIN LOSS	Lpp		dB	− 2		− 5		− 5		− 2	
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB	− 6 −20		− 6 −20		− 6 −20		− 6 −20	
	CORRECTIVE VALUE	Lpc		dB					−17.5		−17.5	
	(TOTAL LOSS)	Lp		dB	−133		−136		−153.5		−150.5	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	FILTER LOSS											
	(TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	−121.1		−124		−141.5		−138.6	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40	38.5	38.5	40	40
	RECEIVING POWER LEVEL	Pr		dBm	−91.1	−81.1		−84	−102	−103	−98.6	−98.6
	(e.m.f.)	er		dBμ	21.9	31.9		29	11	10	14.4	14.4
	INCOMING NOISE POWER LEVEL	Pne		dBm								
	(e.m.f.)	ene		dBμ								
	INTERNAL NOISE LEVEL	Pni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Pn		dBm								
	THRESHOLD LEVEL	Pth		dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	18.9	28.9					11.4	11.4
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	39.9	49.9			38	37	32.4	32.4
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	− 5.5						− 5.5	
	(Mth > LF)			dB	13.4	23.4					5.9	5.9
	S/N AT FADING			dB	34.4	44.4					26.9	26.9
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Bicol River System

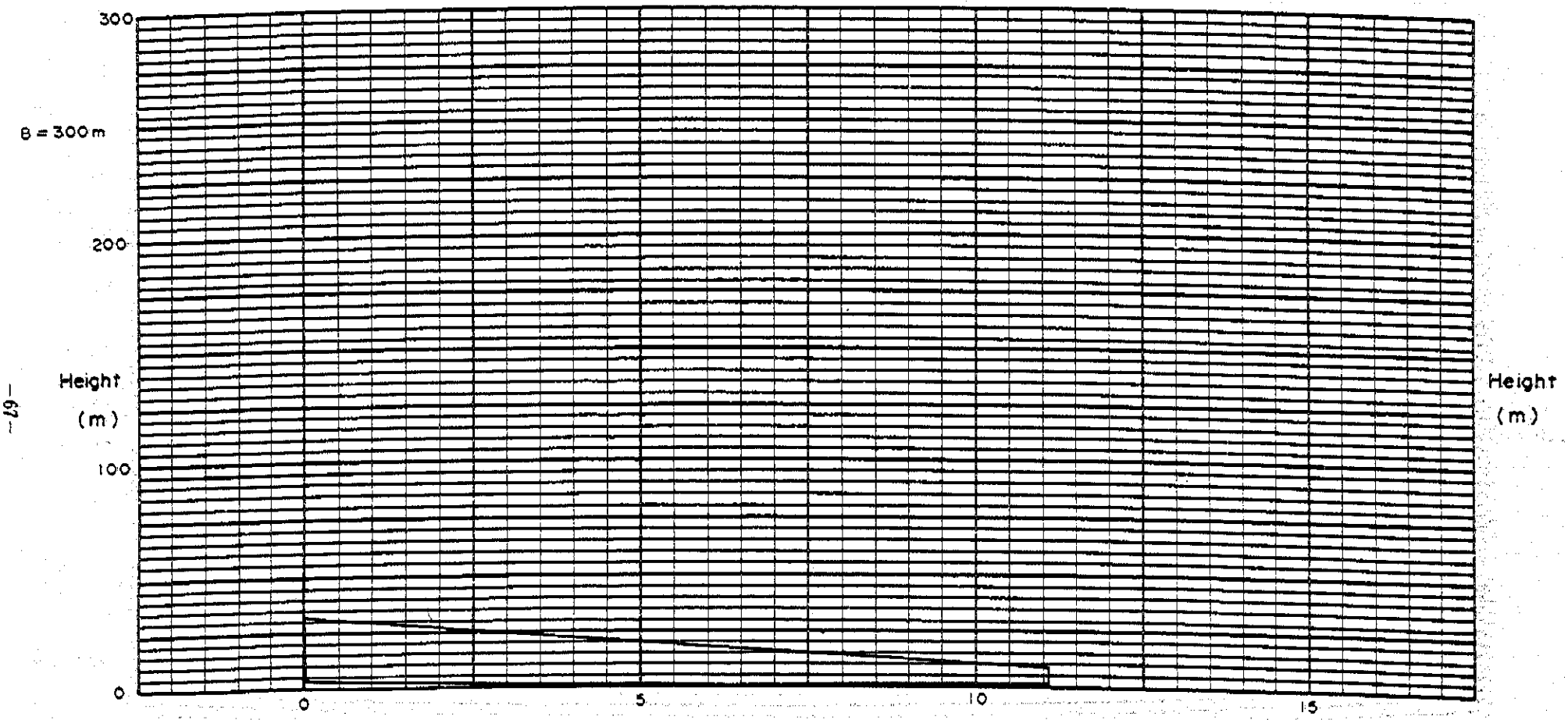
Iraga (Repeater) —— Bato (R & W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Iraga — (Repeater)	Bato (R&W)	—		—		—	
	ALTITUDE			m	42	10	42	10	42	10	42	10
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	8.4		8.4		8.4		8.4	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	15	16	16	16	16	45	16
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7		10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	−91.5		−91.5		−91.5		−91.5	
	SPHERICAL TERRAIN LOSS	Lpp		dB	− 3.5		− 5.5		− 5.5		− 3.5	
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB	− 3		− 4		− 4		− 3	
	CORRECTIVE VALUE	Lpc		dB					− 20		− 20	
	(TOTAL LOSS)	Lp		dB	−98		−101		−121		−118	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	FILTER LOSS											
	(TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	−86.1		−89		−109		−106.9	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40		38.5	30	40
	RECEIVING POWER LEVEL	Pr		dBm	−56.1	−46.1		−49		−70.5	−76.1	−66.1
	(e.m.f.)	er		dBμ	56.9	66.9		64		42.5	36.9	46.9
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e.m.f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prni		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	53.9	63.9					33.9	43.9
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	74.9	84.9					54.9	64.9
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	−3.8						−3.8	
	(Mth > LF)			dB	50.1	60.1					30.1	40.1
	S/N AT FADING			dB	71.1	81.1					50.1	60.1
	REMARKS											

Terrain Profile (K=4/3)

Scale : B

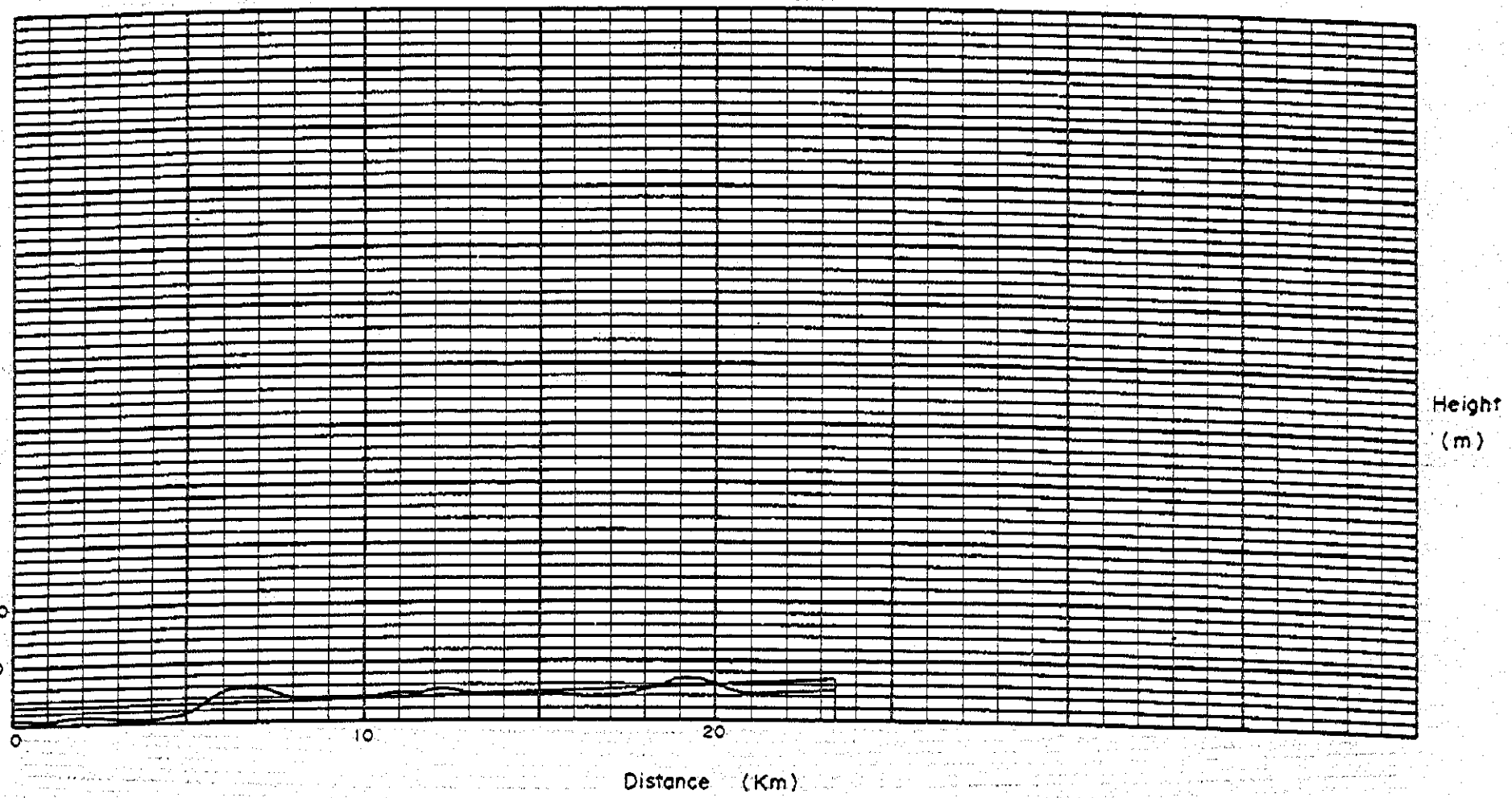


B = 20km

Naga (Sub-center)			11.2 Km	Barongay (W)		
Altitude	2	m		Altitude	1	m
Antenna Height	30	m		Antenna Height	10	m

Terrain Profile (K=4/3)

Scale : A

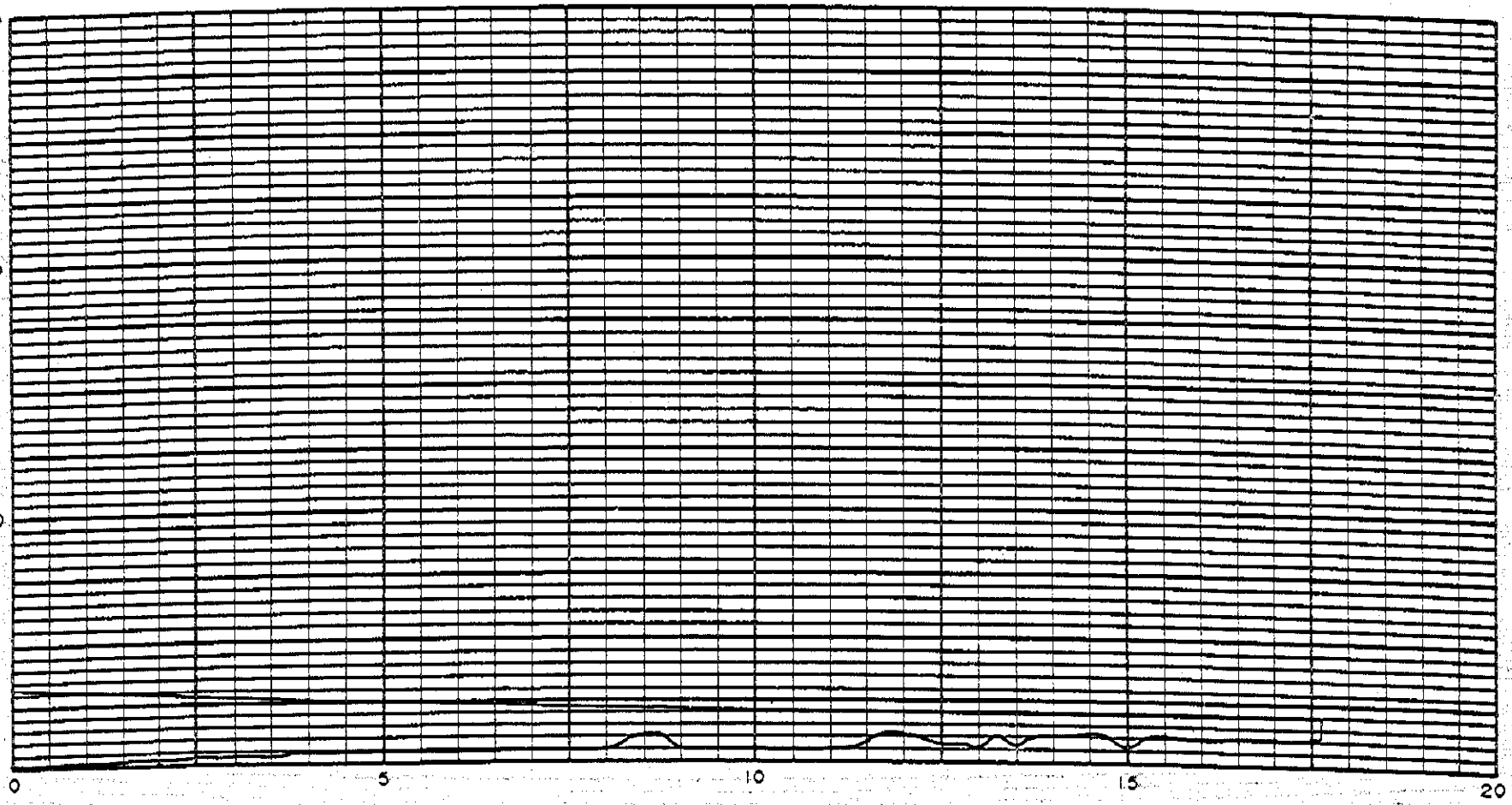


A = 40 km

Naga (Sub Center)			Ocampo (R)
Altitude	2 m		Altitude 53 m
Antenna Height	30 m	23.35 Km	Antenna Height 10 m

Terrain Profile (K=4/3)

Scale : B

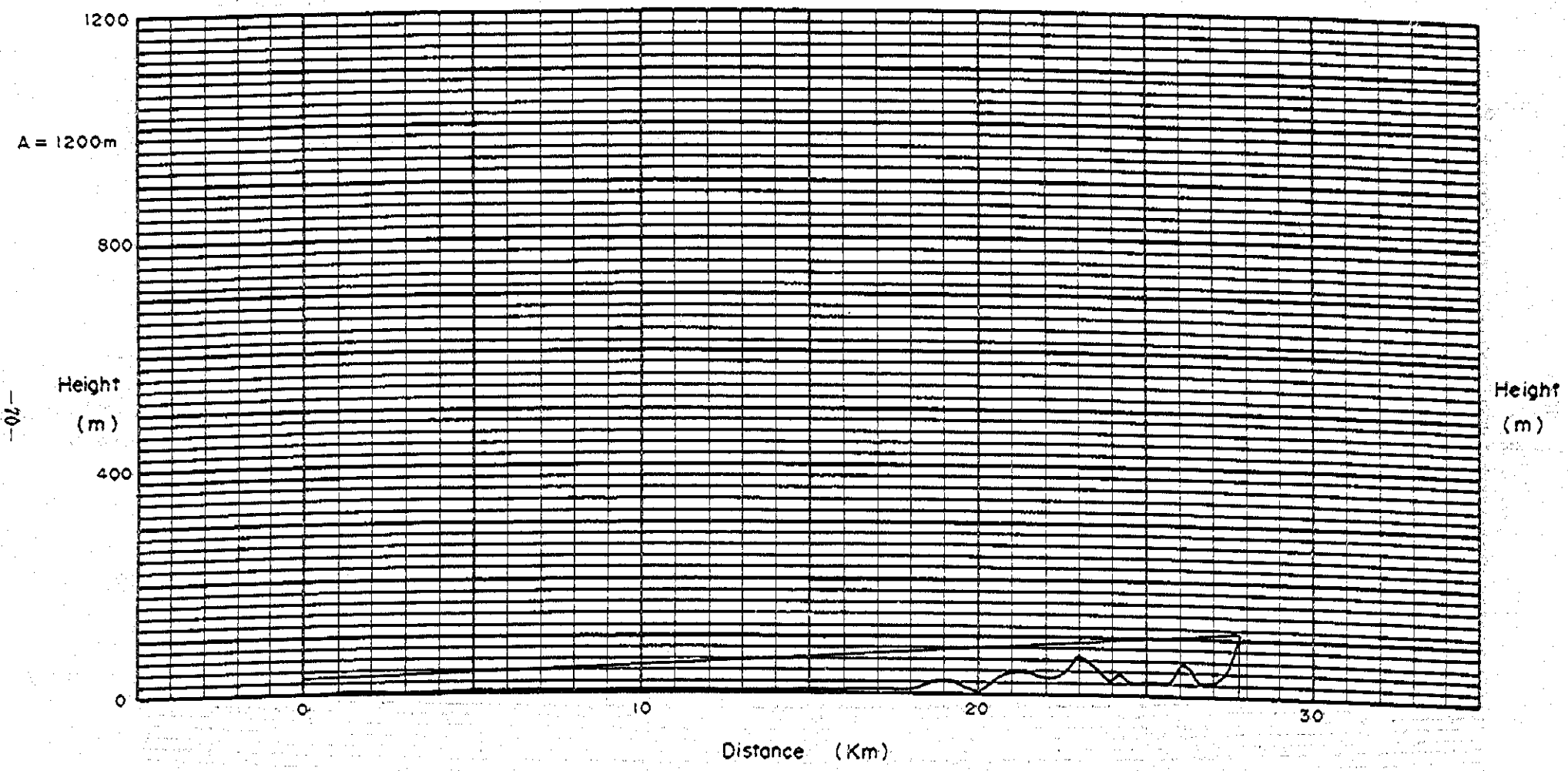


B = 20km

Naga (Sub-center)			Ombao (R&W)
Altitude	2 m		Altitude 10 m
Antenna Height	30 m	17.6 Km	Antenna Height 10 m

Terrain Profile (K=4/3)

Scale : A

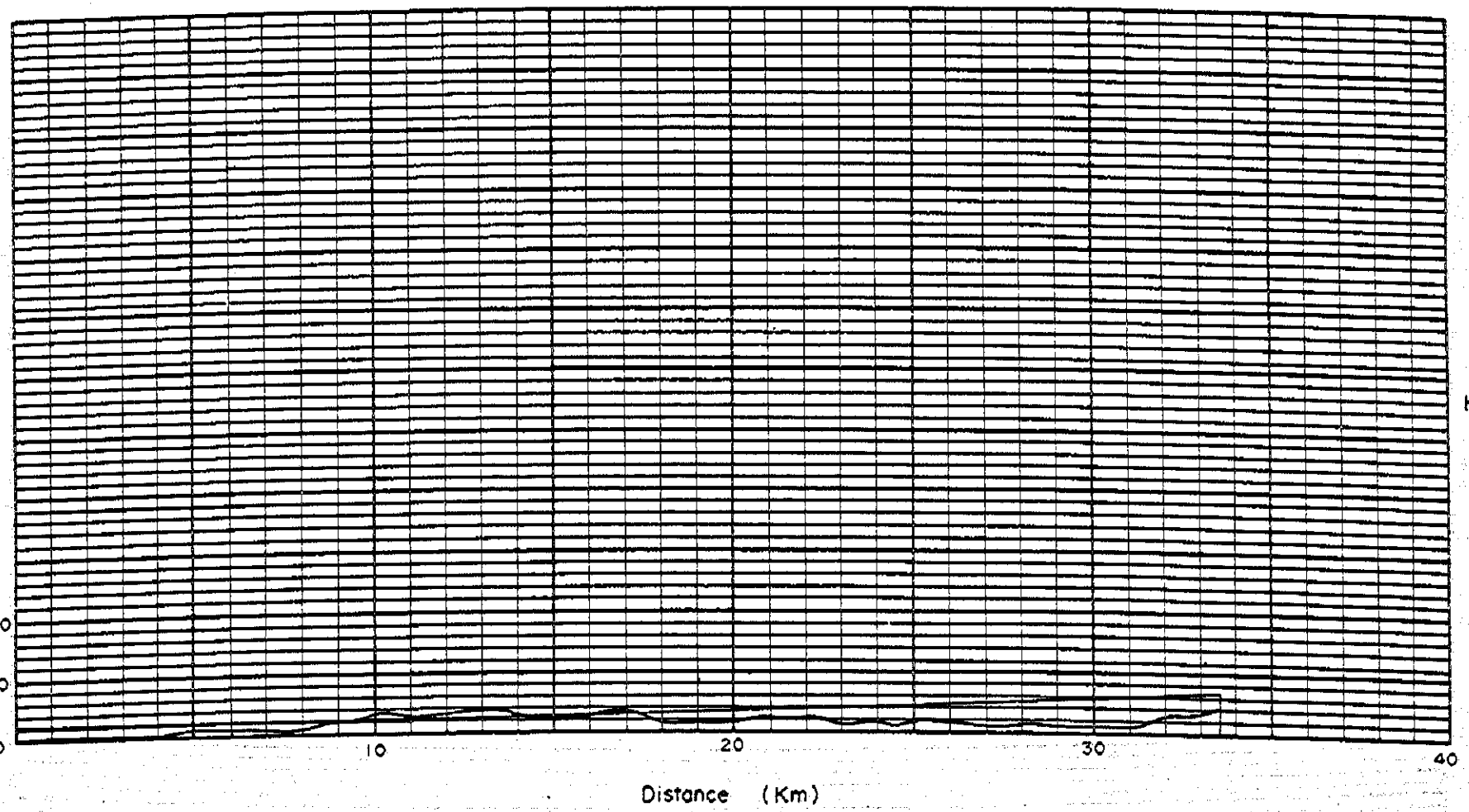


A = 40 km

Naga (Sub-center)			27.85 Km	Sipocot Hill (Repeater)		
Altitude	2	m		Altitude	100	m
Antenna Height	30	m		Antenna Height	30	m

Terrain Profile (K=4/3)

Scale : A

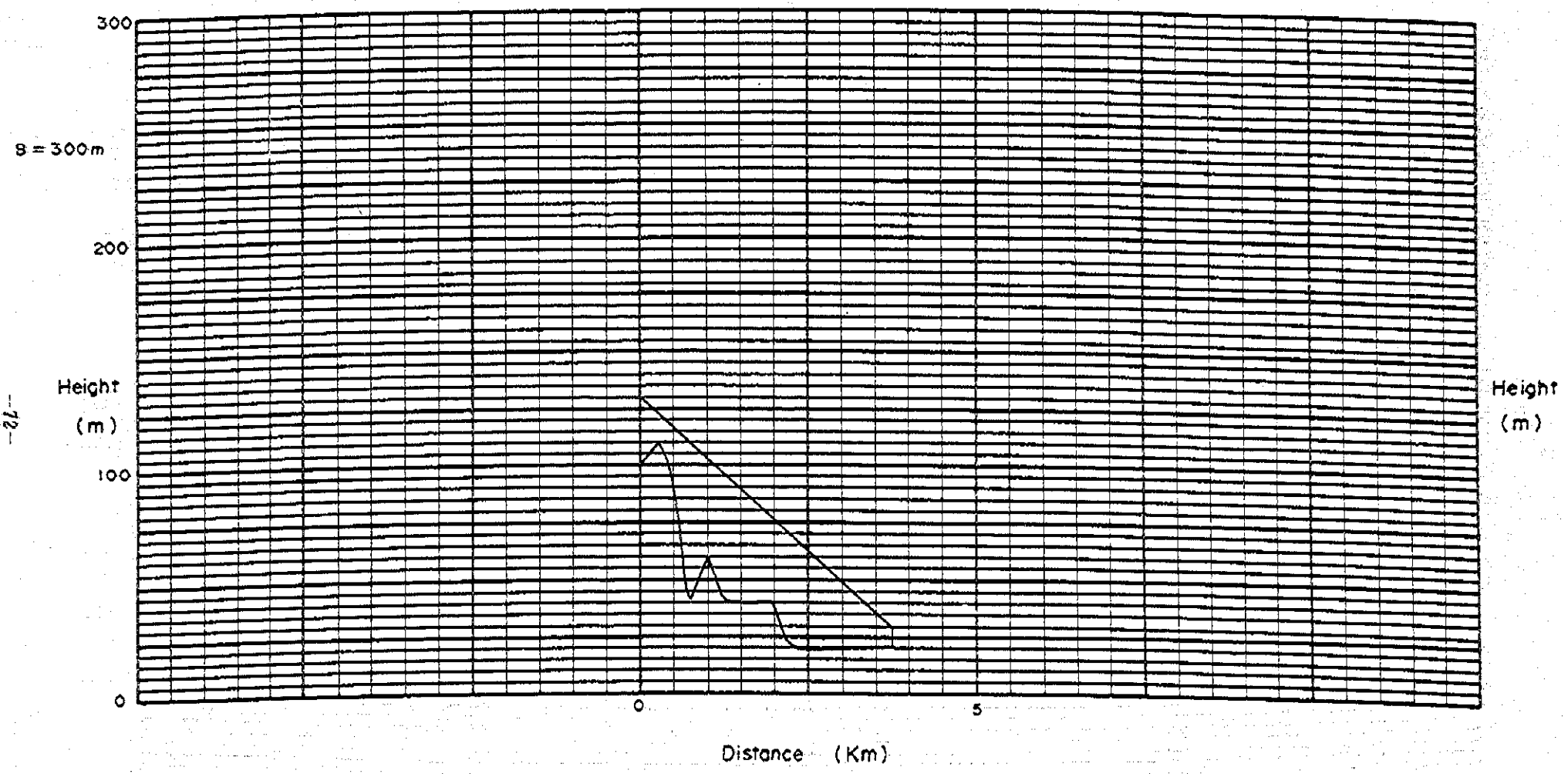


A = 40 km

Naga (Sub Center)		Iriga (Repeater)
Altitude 2 m	33.6 Km	Altitude 42 m
Antenna Height 30 m		Antenna Height 30 m

Terrain Profile (K=4/3)

Scale : B

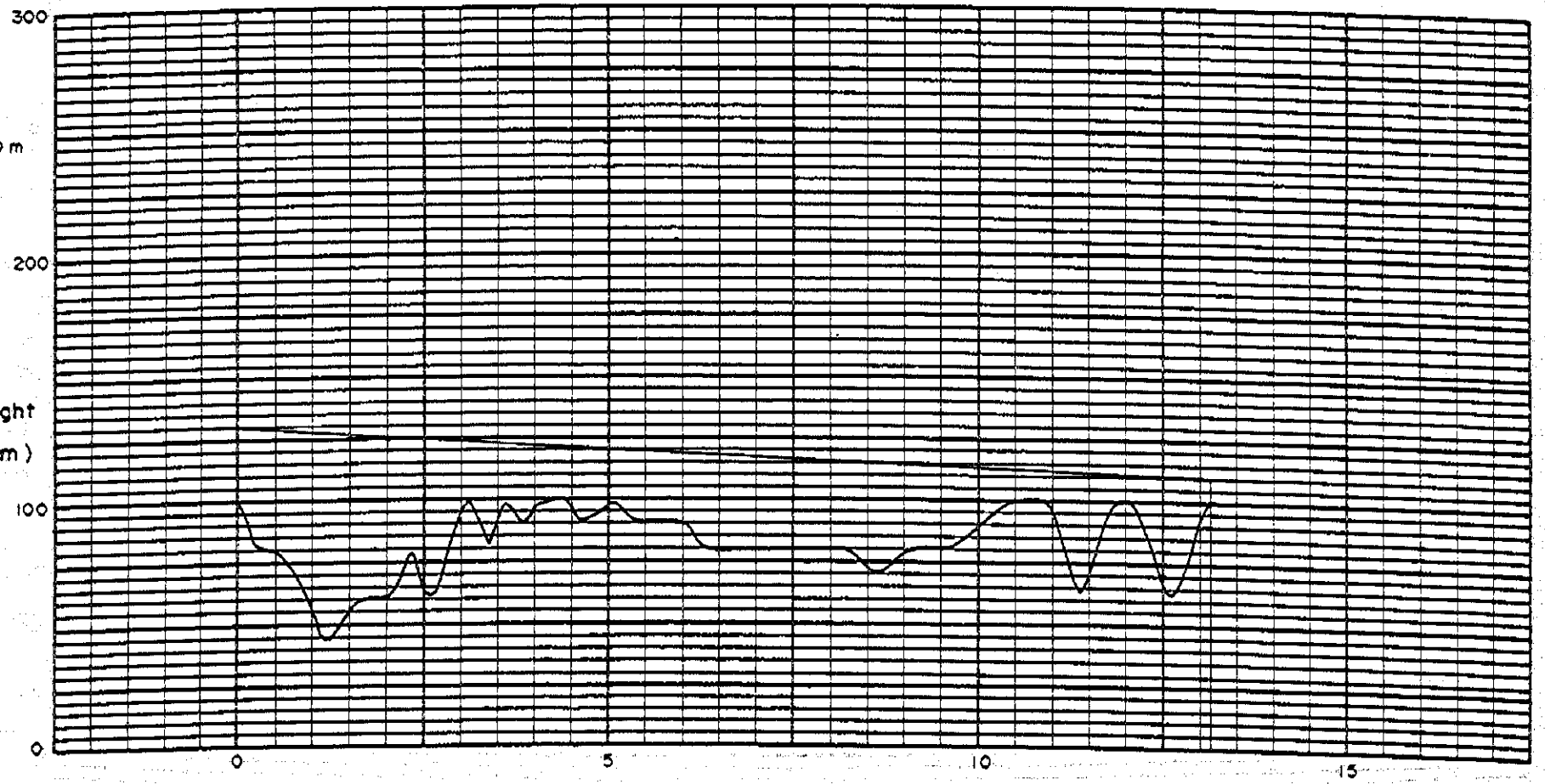


B = 20km

Sipocot hill (Repeater)			Sipocot (R & W)
Altitude	100 m		Altitude 20 m
Antenna Height	30 m	3.75 Km	Antenna Height 10 m

Terrain Profile (K=4/3)

Scale : B

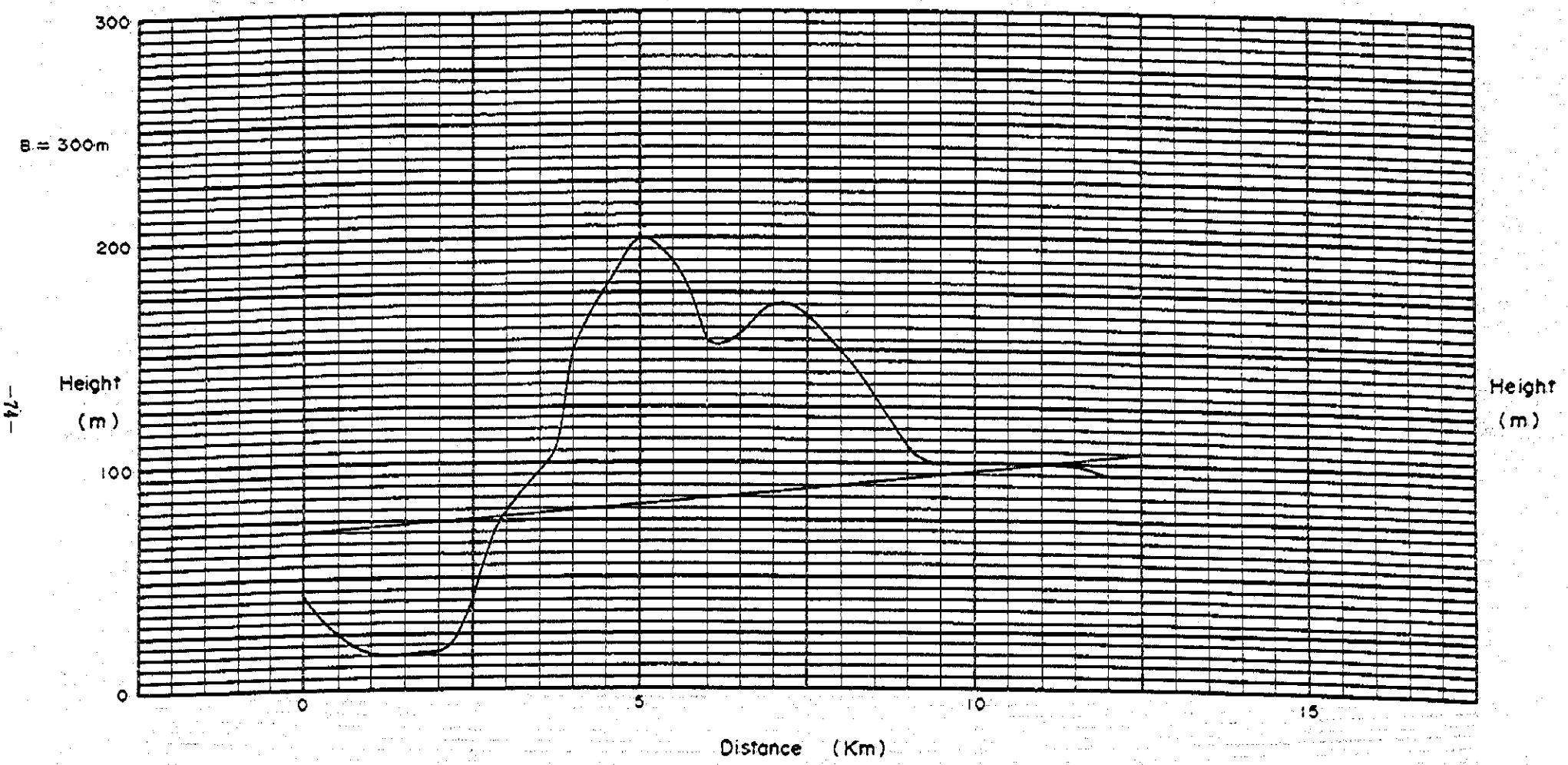


B = 20km

Sipocot hill (Repeater)			Napolidan (R')	
Altitude	100 m	13.05 Km	Altitude	100 m
Antenna Height	30 m		Antenna Height	10 m

Terrain Profile (K=4/3)

Scale : B

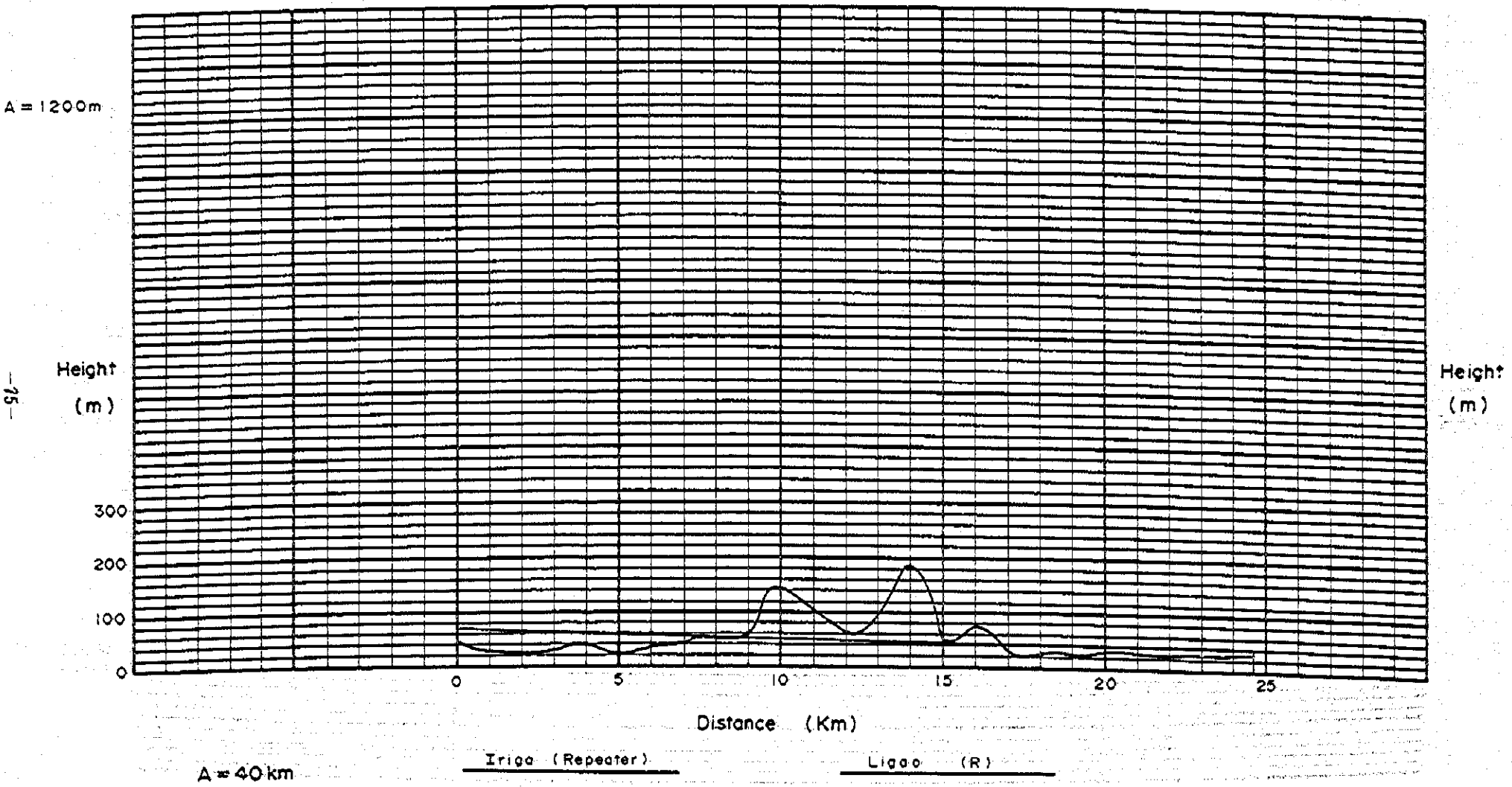


B = 20km

Iriga (Repeater)			Buhi (R & W)
Altitude	42 m		Altitude 95 m
Antenna Height	30 m	12.5 Km	Antenna Height 10 m

Terrain Profile (K=4/3)

Scale : A

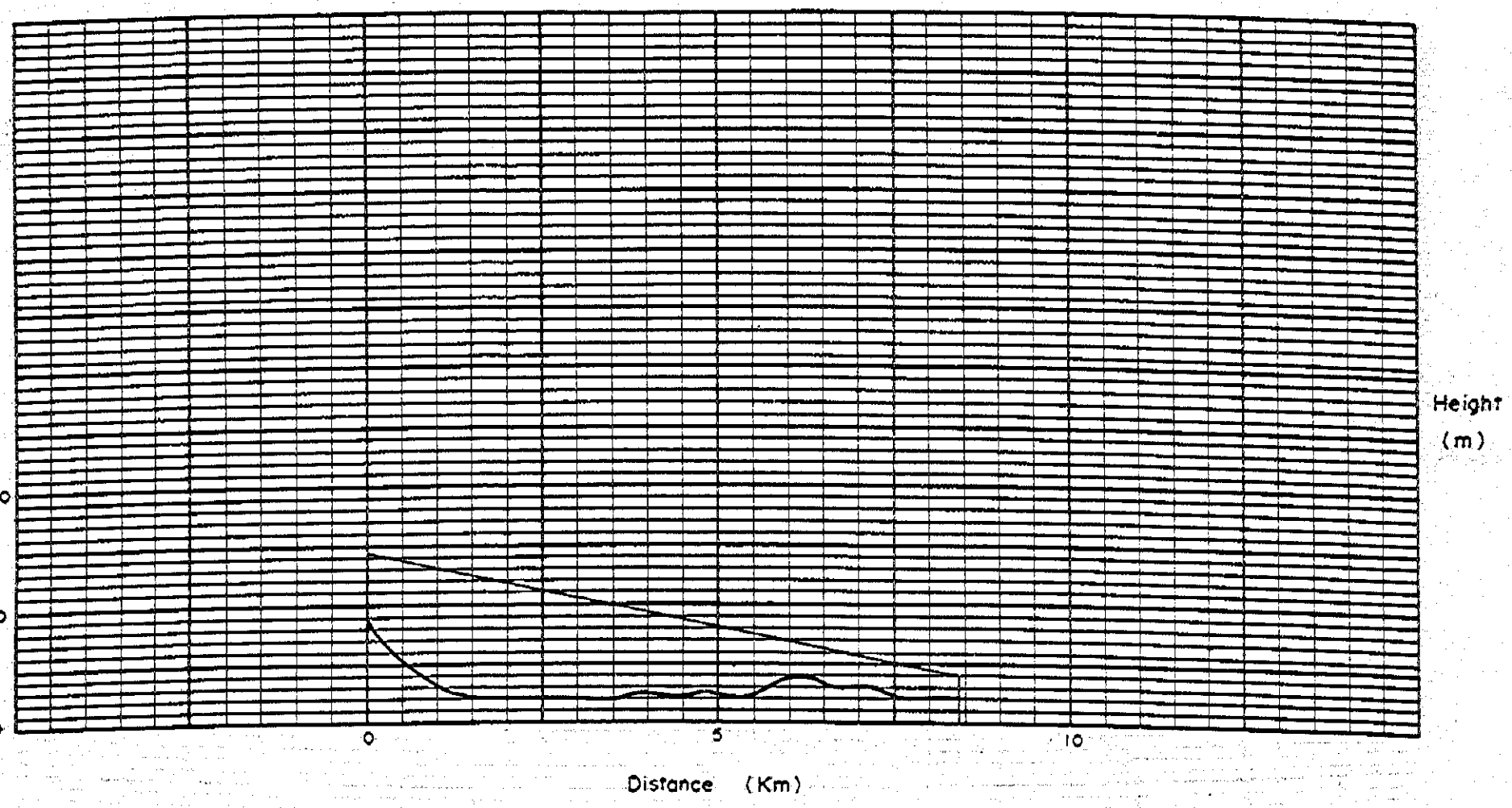


A = 40 km

Iriga (Repeater)			Ligao (R)
Altitude 42 m			Altitude 30 m
Antenna Height 30 m	24.5 Km		Antenna Height 10 m

Terrain Profile (K=4/3)

Scale : B



A = 40 km
B = 20 km

Iriga (Repeater)			8.4 Km	Bato (R & W)		
Altitude	42	m		Altitude	10	m
Antenna Height	30	m		Antenna Height	10	m

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Cagayan River System

Tuguegarao (Sub-Center) —— Tuguegarao (R & W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Tuguegarao - Tuguegarao (Sub-Center) (R&W)		—		—		—	
	ALTITUDE			m	20	15	20	15	20	15	20	15
	ANTENNA HEIGHT	H_1, H_2		m	30	10	10	10	10	10	30	10
		h_1, h_2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	40		40		40		40	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7		10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	− 89.5		− 89.5		− 89.5		− 89.5	
	SPHERICAL TERRAIN LOSS	Lpp		dB	− 2.5		− 16.5		− 16.5		− 2.5	
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB								
	CORRECTIVE VALUE	Lpc		dB					− 10		− 10	
	(TOTAL LOSS)	Lp		dB	− 92		− 106		− 116		− 102	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	FILTER LOSS											
	(TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	− 80.1		− 94		− 104		− 90.1	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40		38.5	30	40
	RECEIVING POWER LEVEL	Pr		dBm	− 50.1	− 40.1		− 54		− 65.5	− 60.1	− 50.1
	(e. m. f.)	er		dBμ	62.9	72.9		59		47.5	52.9	62.9
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e. m. f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prnl		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	59.9	69.9					49.9	59.9
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	80.9	90.9					70.9	80.9
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	− 3.4						− 3.4	
	(Mth > LF)			dB	56.5	66.5					46.5	56.5
	S/N AT FADING			dB	77.5	87.5					67.5	77.5
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Cagayan River System

Tuguegarao (Sub-Center) —— Tumauini (R&W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Tuguegarao-Tumauini (Sub-Center) (R&W)		—		—		—	
	ALTITUDE			m	20	30	20	30	20	30	20	30
	ANTENNA HEIGHT	H_1, H_2		m	30	10	10	10	10	10	30	10
		h_1, h_2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	38.1		38.1		38.1		38.1	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	10	10	10	7	8	10	10
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	−109		−109		−109		−109	
	SPHERICAL TERRAIN LOSS	Lpp		dB	− 9		− 14		− 14		− 9	
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB	− 6 − 6 − 6 − 6 − 6 − 6		− 6 − 6 − 6 − 6 − 6.5 − 6		− 6 − 6 − 6 − 6 − 6 − 6		− 6 − 6 − 6 − 6 − 6 − 6	
	CORRECTIVE VALUE	Lpc		dB					2		2	
	(TOTAL LOSS)	Lp		dB	−154		−159.5		−157.5		−152	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	11	8	8	8	8	6	8
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	FILTER LOSS											
	(TOTAL)			dB	14.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	−139.1		−147.5		−145.5		−140.1	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	40	40	40	40		38.5	40	40
	RECEIVING POWER LEVEL	Pr		dBm	−99.1	−99.1		−107.5		−107	−100.1	−100.1
	(e.m.f.)	er		dBμ	13.9	13.9		5.5	—	6	12.9	12.9
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e.m.f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prnl		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	10.9	10.9					9.9	9.9
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	31.9	31.9					30.9	30.9
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	− 6.8						− 6.8	
	(Mth > LF)			dB	4.1	4.1					3.1	3.1
	S/N AT FADING			dB	25.1	25.1					24.1	24.1
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Cagayan River System

Tuguegarao (Sub-Center) —— Iragon (Repeater)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Tuguegarao – Iragon (Sub-Center) (Repeater)		—		—		—	
	ALTITUDE			m	20	100	20	100	20	100	20	100
	ANTENNA HEIGHT	H_1, H_2		m	30	30	10	10	10	10	30	30
		h_1, h_2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	56.4		56.4		56.4		56.4	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	45	16	16	16	16	45	45
	TRANSMITTING OUTPUT POWER	Pt		W	10	10	10	10	7	7	10	10
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	– 112.5		– 112.5		– 112.5		– 112.5	
	PROPAGATION LOSS — SPHERICAL TERRAIN LOSS / TERRAIN REFLECTION LOSS	Lpp		dB								
	PROPAGATION LOSS — SHADOW LOSS	Lps		dB	– 1 – 5 – 7	– 7 – 6	– 3 – 5 – 8	– 8 – 7	– 3 – 5 – 8	– 8 – 7	– 1 – 5 – 7	– 7 – 6
	PROPAGATION LOSS — CORRECTIVE VALUE	Lpc		dB					– 9		– 9	
	PROPAGATION LOSS — (TOTAL LOSS)	Lp		dB	– 138.5		– 143.5		– 152.5		– 147.5	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	6	8	8	8	8	6	6
	ANTENNA GAIN — AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA GAIN — ANTENNA H Y B LOSS											
	ANTENNA GAIN — FEEDER LOSS				– 1.575	– 1.575	– 2	– 2	– 2	– 2	– 1.575	– 1.575
	ANTENNA GAIN — FILTER LOSS											
	ANTENNA GAIN — (TOTAL)			dB	8.8		12		12		8.8	
	(GRAND TOTAL)	Ls		dB	– 129.7		– 131.5		– 140.5		– 138.7	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	40	40	40	40	38.5	38.5	40	40
	RECEIVING POWER LEVEL	Pr		dBm	– 89.7	– 89.7		– 91.5	– 102	– 101	– 98.7	– 98.7
	(e. m. f.)	er		dBμ	23.3	23.3			11	12	14.3	14.3
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e. m. f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prnl		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	– 110	– 110					– 110	– 110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	20.3	20.3					11.3	11.3
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	41.3	41.3			34	32	32.3	32.3
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	– 8.6						– 8.6	
	(Mth > LF)			dB	11.7	11.7					2.7	2.7
	S/N AT FADING			dB	32.7	32.7					23.7	23.7
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Cagayan River System

Iragon (Repeater) ——— Dalibubun (R&W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	SPAN				Iragon – (Repeater)	Dalibubun (R&W)	—		—		—	
	ALTITUDE			m	100	80	100	80	100	80	100	80
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	0		Km	60.8							
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	8.5	7	10	10
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf		dB	– 113		– 113		– 113		– 113	
	SPHERICAL TERRAIN LOSS	Lpp		dB								
	TERRAIN REFLECTION LOSS											
	SHADOW LOSS	Lps		dB	– 6 – 6 – 8.5 – 6		– 7.5 – 6 – 9 – 8		– 7.5 – 6 – 9 – 8		– 6 – 6 – 8.5 – 6	
	CORRECTIVE VALUE	Lpc		dB					– 13.8		– 13.8	
	(TOTAL LOSS)	Lp		dB	– 139.5		– 143.5		– 157.3		– 153.3	
	ANTENNA GAIN — ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	11
	AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA H Y B LOSS											
	FEEDER LOSS				– 1.575	– 0.525	– 2	– 2	– 2	– 2	– 1.575	– 0.525
	FILTER LOSS											
	(TOTAL)			dB	11.9		12		12		14.9	
	(GRAND TOTAL)	Ls		dB	– 127.6		– 131.5		– 145.3		– 138.4	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40		39.3	40	40
	RECEIVING POWER LEVEL	Pr		dBm	– 97.6	– 87.6		– 91.5		– 106	– 98.4	– 98.4
	(e. m. f.)	er		dBμ	15.4	25.4		21.5	—	7	14.6	14.6
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e. m. f.)	ernе		dBμ								
	INTERNAL NOISE LEVEL	Prnl		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	– 110	– 110					– 110	– 110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	12.4	22.4					11.6	11.6
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	33.4	43.4			29	33.7	32.6	32.6
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	– 9.1						– 9.1	
	(Mth > LF)			dB	3.3	13.3					2.5	2.5
	S/N AT FADING			dB	24.3	34.3					23.5	23.5
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Cagayan River System

Iragan (Repeater) ——— Maris Dam (R&W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Iragan – Maris Dam (Repeater) (R&W)		—		—		—	
	ALTITUDE			m	100	90	100	90	100	90	100	90
	ANTENNA HEIGHT	H1, H2		m	30	10	10	10	10	10	30	10
		h1, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D		Km	51.7		51.7		51.7		51.7	
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	5D-2V	5D-2V	5D-2V	5D-2V	AFZE50-4	AFZE50-4
		LENGTH		m	45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt		W	10	1	10	10	7	7	10	3
SPAN LOSS	PROPAGATION LOSS: PROPAGATION LOSS	Lpf		dB	−112		−112		−112		−112	
	PROPAGATION LOSS: SPHERICAL TERRAIN LOSS	Lpp		dB	− 4		− 4		− 4		− 4	
	PROPAGATION LOSS: TERRAIN REFLECTION LOSS											
	PROPAGATION LOSS: SHADOW LOSS	Lps		dB	− 6 −15		− 6 −18		− 6 −18		− 6 −15	
	PROPAGATION LOSS: CORRECTIVE VALUE	Lpc		dB					− 6.5		− 6.5	
	PROPAGATION LOSS: (TOTAL LOSS)	Lp		dB	−137		−140		−156.5		−143.5	
	ANTENNA GAIN: ANTENNA GAIN	GA		dB	6	8	8	8	8	8	6	8
	ANTENNA GAIN: AZIMUTHAL PATTERN LOSS	Lo		dB								
	ANTENNA GAIN: ANTENNA H Y B LOSS											
	ANTENNA GAIN: FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	ANTENNA GAIN: FILTER LOSS											
	ANTENNA GAIN: (TOTAL)			dB	11.9		12		12		11.9	
	(GRAND TOTAL)	Ls		dB	−125.1		−128		−134.5		−131.6	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt		dBm	30	40	40	40		38.5	34.8	40
	RECEIVING POWER LEVEL	Pr		dBm	−95.1	−85.1		−88		−96	−96.8	−91.6
	(e.m.f.)	er		dBμ	17.9	27.9		25	—	17	16.2	21.4
	INCOMING NOISE POWER LEVEL	Prne		dBm								
	(e.m.f.)	erne		dBμ								
	INTERNAL NOISE LEVEL	Prnl		dBμ								
	NOISE INCREASE	Δn		dB								
	TOTAL RECEIVING NOISE POWER LEVEL	Prn		dBm								
	THRESHOLD LEVEL	Pth		dBm	−110	−110					−110	−110
	CRESTFACTOR	Cf		dB	9	9					9	9
	THRESHOLD MARGIN	Mth		dB	14.9	24.9					13.2	18.4
	S/N IMPROVEMENT	I		dB	12	12					12	12
	STANDARD S/N	S/N		dB	35.9	45.9			40	39	34.2	39.4
JUDGEMENT	FADING VALUE PRESUMED	LF		dB	−8.2						−8.2	
	(Mth > LF)			dB	6.7	16.7					5	10.2
	S/N AT FADING			dB	27.7	37.7					26	31.2
	REMARKS											

175 (MHz) BAND DESIGNATION TABLE OF PROPAGATION PATH

Date ; 18th Mar. '77

Cagayan River System

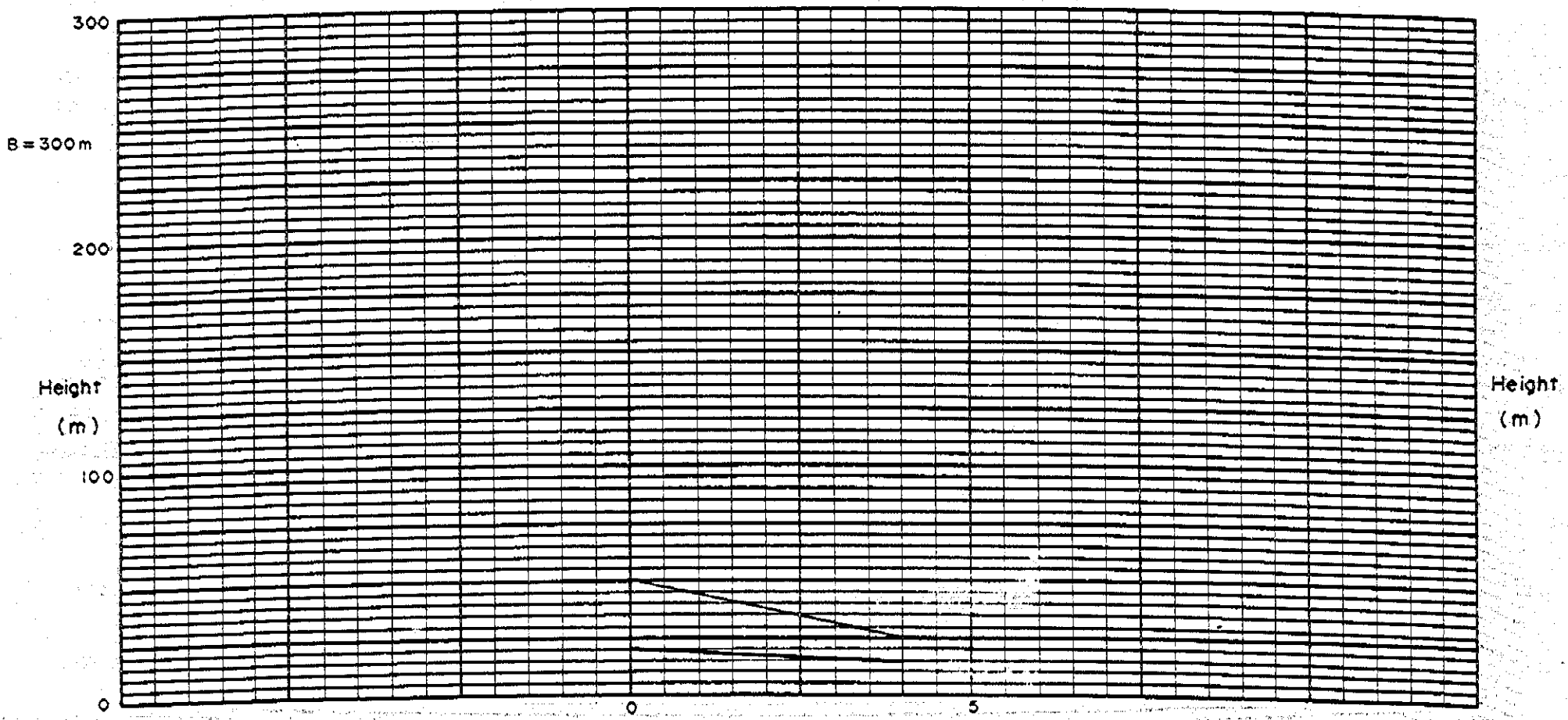
Iragan (Repeater) ——— Tumauini (R&W)

MODE OF COMMUNICATION : SIMPLEX	METHOD OF MODULATION : FM	IMPEDANCE : 50 (Ω)	SPECIFIED RELIABILITY : 99.9 (%)
CALCULATION OF FADING VALUE PRESUMED : 0.1 (dB/Km) x d (Km) + 3 (dB)			

					CALCULATED DESIGN VALUES		CALCULATED DATE BEFORE TEST		DATE OF ACTUAL TEST		DESIGNAL VALUES DETERMINAL AFTER TEST	
SPAN CONDITION	CALCULATION NO.											
	SPAN				Iragan — Tumauini (Repeater) (R&W)		—		—		—	
	ALTITUDE			m	100	30						
	ANTENNA HEIGHT	Hi, H2		m	30	10	10	10	10	10	30	10
		hi, h2		m								
	OUTLINE OF PROPAGATION PATH											
	DISTANCE	D	Km		18.65							
	ANTENNA	MODEL			3-STAGE CO-LINEAR	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	YAGI 3E	3-STAGE CO-LINEAR	YAGI 3E
		POLARIZATION			V	V	V	V	V	V	V	V
		PATTERN										
	FEEDER	MODEL			AFZE50-4	AFZE50-4	50-2V	50-2V	50-2V	50-2V	AFZE50-4	AFZE50-4
		LENGTH	m		45	15	16	16	16	16	45	15
	TRANSMITTING OUTPUT POWER	Pt	W		10	1	10	10	7	8	10	1
SPAN LOSS	PROPAGATION LOSS — PROPAGATION LOSS	Lpf	dB		−103		−103		−103		−103	
	PROPAGATION LOSS — SPHERICAL TERRAIN LOSS	Lpp	dB									
	PROPAGATION LOSS — TERRAIN REFLECTION LOSS											
	PROPAGATION LOSS — SHADOW LOSS	Lps	dB		−2.5 −3.5		−3 −4.5		−3 −4.5		−2.5 −3.5	
	PROPAGATION LOSS — CORRECTIVE VALUE	Lpc	dB						−13		−13	
	PROPAGATION LOSS — (TOTAL LOSS)	Lp	dB		−109		−110.5		−123.5		−122	
	ANTENNA GAIN — ANTENNA GAIN	GA	dB		6	8	8	8	8	8	6	8
	ANTENNA GAIN — AZIMUTHAL PATTERN LOSS	Lo	dB									
	ANTENNA GAIN — ANTENNA H.Y B LOSS											
	ANTENNA GAIN — FEEDER LOSS				−1.575	−0.525	−2	−2	−2	−2	−1.575	−0.525
	ANTENNA GAIN — FILTER LOSS											
	ANTENNA GAIN — (TOTAL)		dB		11.9		12		12		11.9	
	(GRAND TOTAL)	Ls	dB		−97.1		−98.5		−111.5		−110.1	
S/N CALCULATION	TRANSMITTING OUTPUT POWER	Pt	dBm		30	40	40	40		38.5	30	40
	RECEIVING POWER LEVEL	Pr	dBm		−67.1	−57.1		−58.5		−73	−80.1	−70.1
	(e.m.f.)	er	dBμ		45.9	55.9		54.5	—	40	32.9	42.9
	INCOMING NOISE POWER LEVEL	Prne	dBm									
	(e.m.f.)	erne	dBμ									
	INTERNAL NOISE LEVEL	Prni	dBμ									
	NOISE INCREASE	Δn	dB									
	TOTAL RECEIVING NOISE POWER LEVEL	Prn	dBm									
	THRESHOLD LEVEL	Pth	dBm		−110	−110					−110	−110
	CRESTFACTOR	Cf	dB		9	9					9	9
	THRESHOLD MARGIN	Mth	dB		42.9	52.9					29.9	39.9
	S/N IMPROVEMENT	I	dB		12	12					12	12
	STANDARD S/N	S/N	dB		63.9	73.9					50.9	60.9
JUDGEMENT	FADING VALUE PRESUMED	LF	dB		−4.9						−4.9	
	(Mth > LF)		dB		38	48					25	35
	S/N AT FADING		dB		59	69					46	56
	REMARKS											

Terrain Profile (K=4/3)

Scale : B

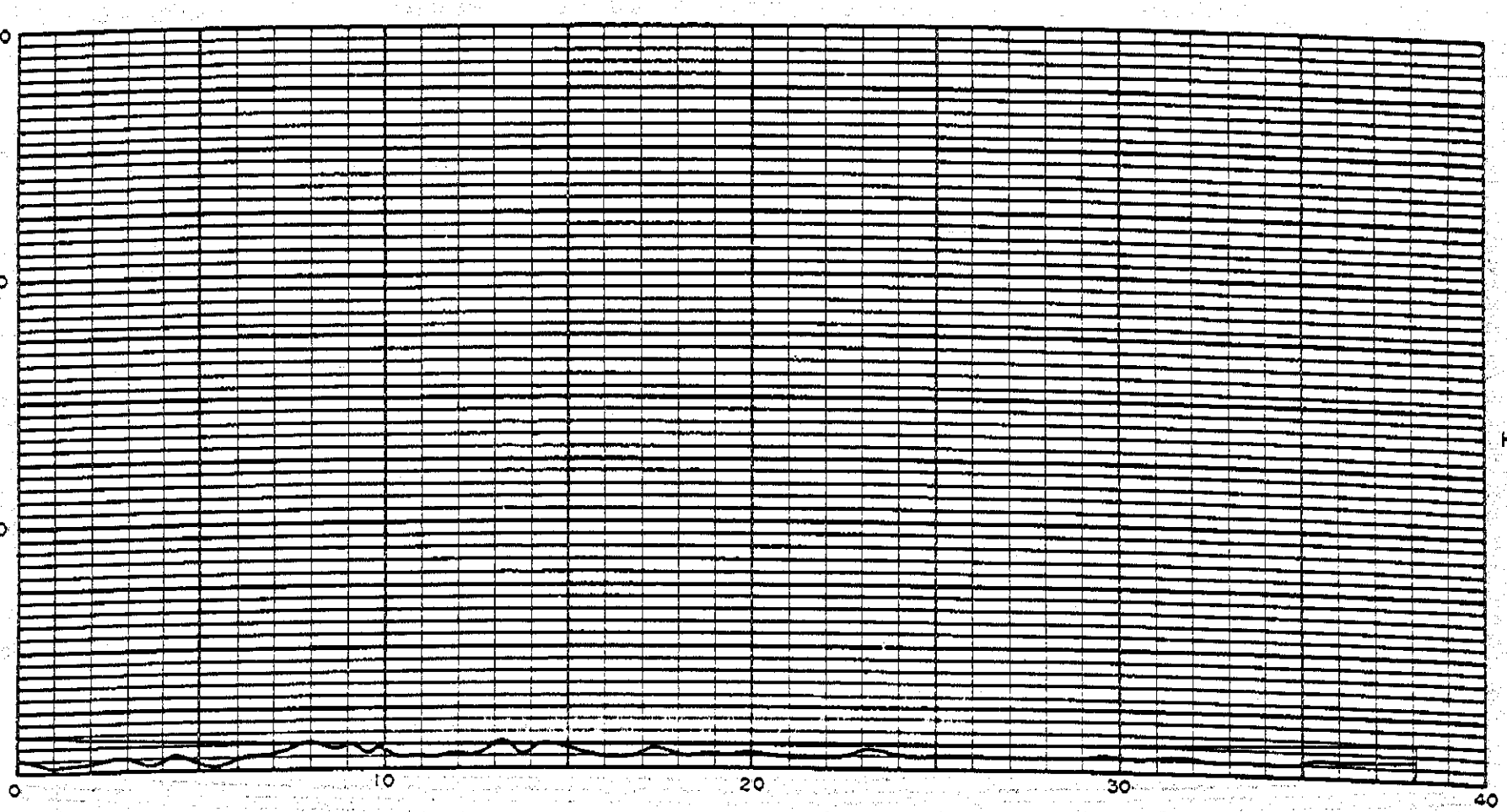


B = 20km

Tuguegarao (Sub-center)		Tuguegarao (R'S W)
Altitude 20 m		Altitude 15 m
Antenna Height 30 m	4.0 Km	Antenna Height 10 m

Terrain Profile (K=4/3)

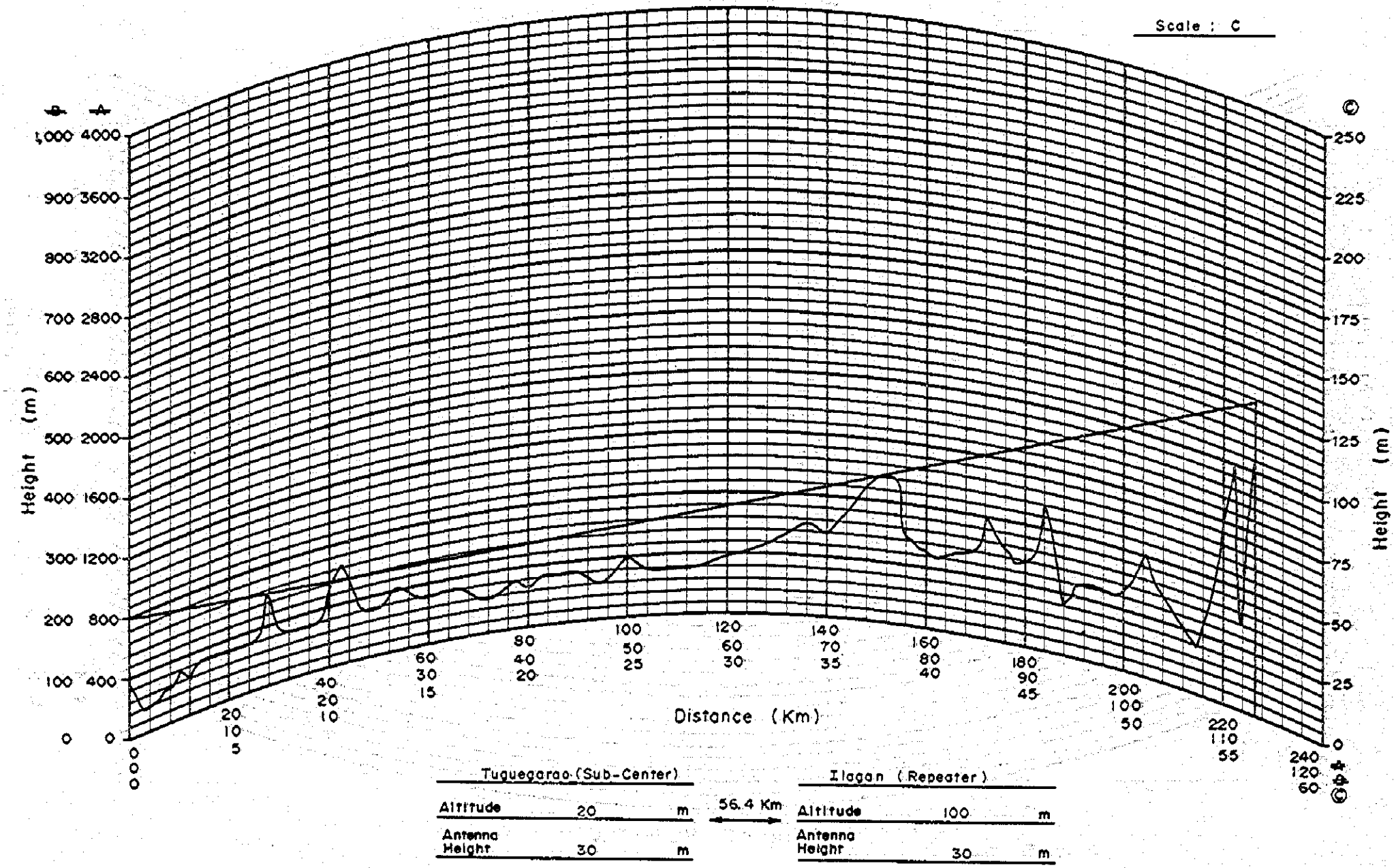
Scale : A



A = 40 km

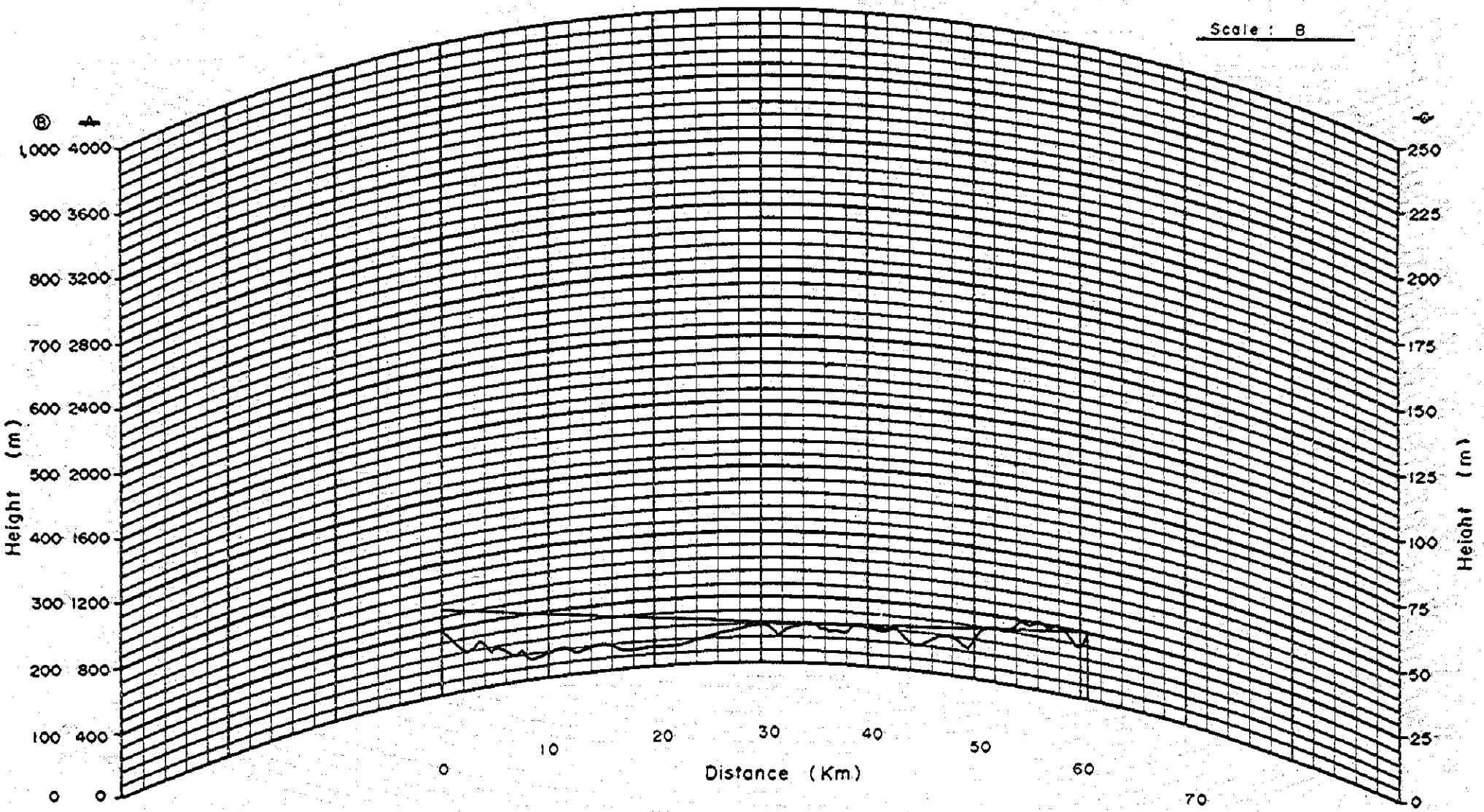
Tuguegarao (Sub-Center)				Tumacini (R & W)	
Altitude	20 m			Altitude	30 m
Antenna Height	30 m	38.1	Km	Antenna Height	10 m

Terrain Profile (K=4/3)



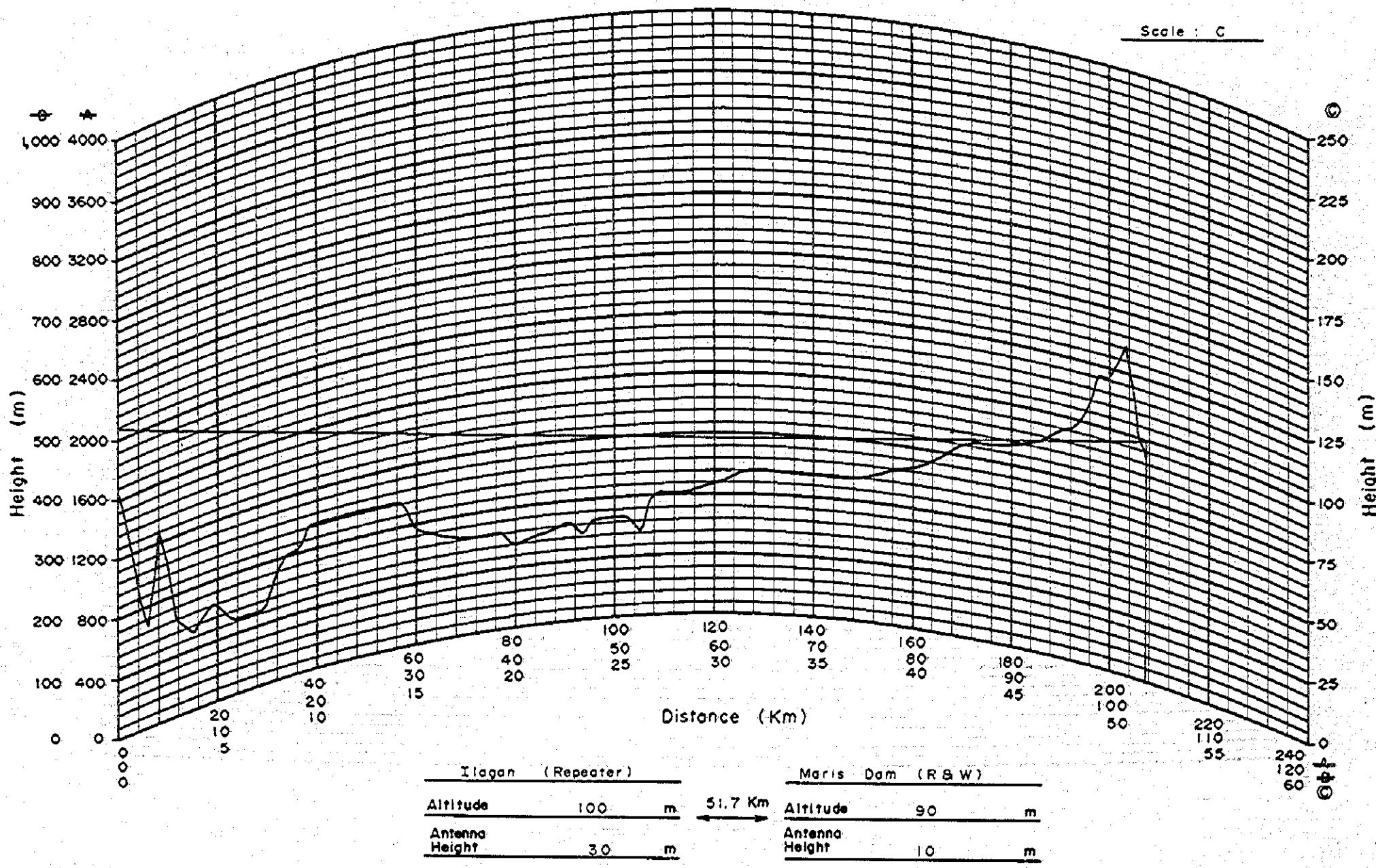
Terrain Profile (K=4/3)

Scale : 8



Ilagan (Repeater)			60.8 Km	Dalibubun (R & W)		
Altitude	100	m	⟷	Altitude	80	m
Antenna Height	30	m		Antenna Height	10	m

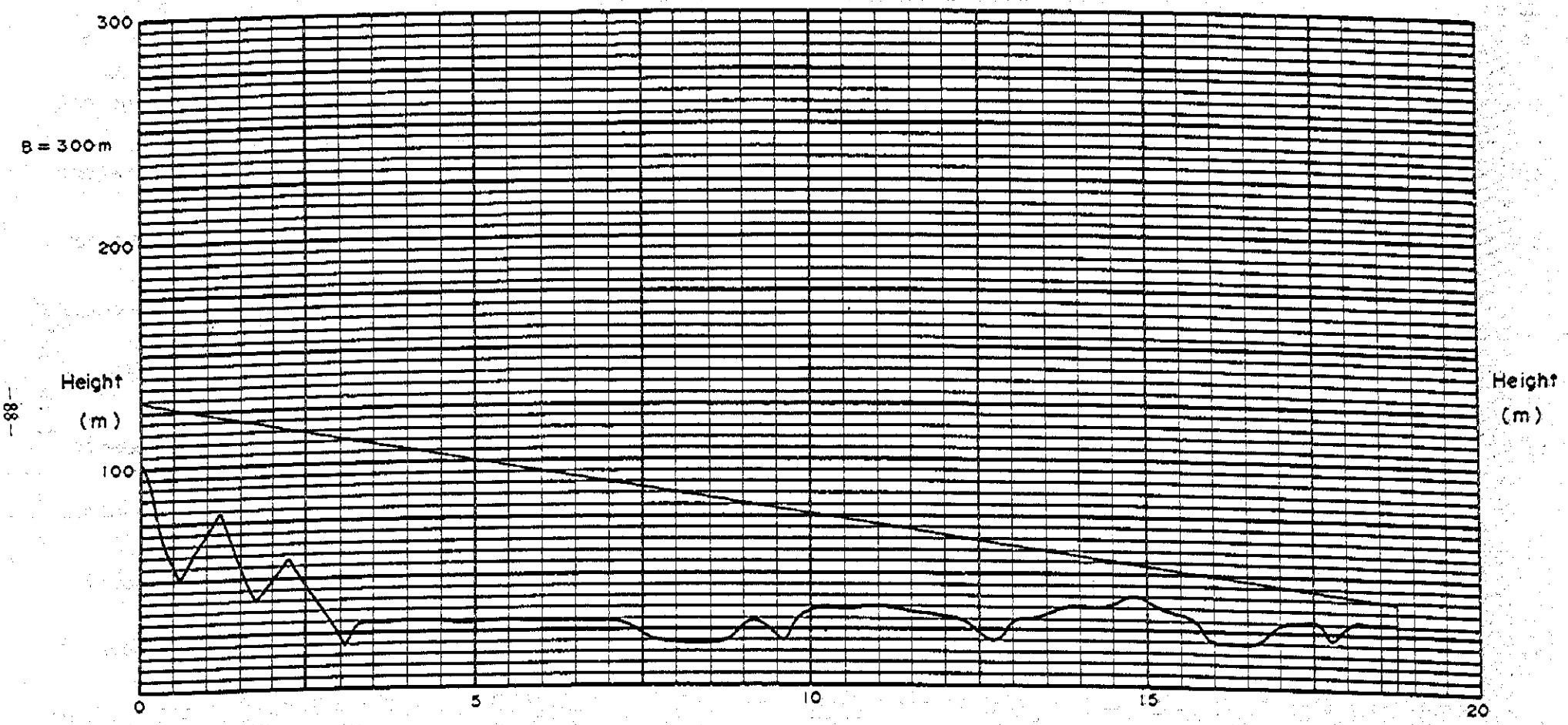
Terrain Profile (K=4/3)



Iligan (Repeater)			51.7 Km	Maris Dam (R & W)		
Altitude	100	m		Altitude	90	m
Antenna Height	30	m		Antenna Height	10	m

Terrain Profile (K=4/3)

Scale : B



B = 20km

Iligan (Repeater)			Tumauini (R & W)	
Altitude	100 m		Altitude	30 m
Antenna Height	30 m	18.65 Km	Antenna Height	10 m