

5. Radio Circuit Design Table for Simplex Radio Link

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Karlík. T				1806(WL)				
			Distance =				12.84 Km				
Item to be Calculated			Design value Before Test				value on Test	Design value on Operation			
								Up link			
Power Output	Pt	dBm	40.0	10.0W			40.0	10.0W			
Free Space Loss	Lpf	dB	-91.5				-91.5				
Loss	Adds	Lps	dB	-20.7			-20.7				
	Reflection Loss	LAL	dB	-0.0			-0.0				
	Topography Coefficient	tf	dB	-10.0			-10.0				
Supplementary value by the Test		Z	dB	---			-3.6dB				
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.6	10D2E 15m			
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m			
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0				
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2			
	Antenna directivity	La	dB	-0.0			-0.0	0°			
Antenna Gain(T)	Gal	dB	2.2	Sleeve		8.0	3el-Yagi				
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		2.0	Sleeve				
Span Loss	Ltd	dB	-114.4			(-78.0dBm)	-124.2				
Receiving Input Voltage		dB μV	---	By Tested-->		35.0dB μV	---				
Receiving Power	Pr	dBm	-74.4	38.6 dB μV			-84.2				
Internal Noise Power	Prni	dBm					-125.2				
External Noise Power	Prne	dBm					-121.9	NC=5.0dB			
Receiver Noise Power	Prn	dBm					-120.2				
S/N at High Frequency	C/N	dB					36.0				
S/N Improvement coefficient	I	dB					9.1	70% Modulation			
S/N at Nominal Condition	S/N	dB					45.1	Sta.S/N=37.1dB			
Fading Value Presumed	fd	dB					4.3	0.1dB/Km+3dB			
S/N at Fading	S/Nfd	dB					40.8				
Threshold Level relative to required S/N	PL	dBm					-99.3				
Margin to Threshold level (PL)	ML	dB					15.1				
Fading margin to ML	Mf	dB					10.8				
RESULT							O.K	S/N>Sta.S/N			
NOTES			Frequency; 70.260 MHZ				70.260 MHz				
			TX Karlík. T		RX 1806(WL)		TX 1806(WL)		RX Karlík. T		
			GL(T)	1490.0m	350.0m	350.0m	1490.0m				
			Ant(T)H	5.0m	10.0m	10.0m	10.0m				
			※1	Switch Loss:	0.0dB	※2	Divider:	3.5dB			
				Other Loss:	0.0dB		BPF:	1.5dB			
							Switch:	1.0dB			
							Duplexer:	0.0dB			
							to MUX	0.3dB			
							Antenna Direction(From TXSta.)	187.7°			
			Maximum Frequency Deviation;		±5.0KHzp-p	Bandwidth;		12.0KHz			
			Maximum Voice Frequency;		3.0KHz	Noise Figure;		8.0dB			

70MHZ BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Karlık. T		↔	1805(WL)	
					Distance =	8.58 Km	
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation	
						Up link	
Power Output	Pr	dBm	40.0	10.0W		40.0	10.0W
Free Space Loss	Lpf	dB	-88.0			-88.0	
Loss	Diffraction Loss	Lps	dB	-24.1		-24.1	
	Reflection Loss	LAL	dB	-0.0		-0.0	
	Topography Coefficient	tf	dB	-10.0		-10.0	
	Supplementary value by the Test	Z	dB	—		-1.7	
Ant.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	-0.6	10D2E 15m
sys.	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m	-0.8	10D2E 20m
Loss	Couical Arrester Loss	Lfa	dB	-0.0		-1.0	
	Other Loss	Ld	dB	-0.0	※1	-6.0	※2
	Antenna directivity	La	dB	-0.0		-0.0	0°
	Antenna Gain(T)	Gat	dB	2.2	Sleeve	8.0	3el-Yagi
	Antenna Gain(R)	Gar	dB	7.2	3el-Yagi	2.0	Sleeve
	Span Loss	Ld	dB	-114.3		(-76.0dBm)	-122.2
	Receiving Input Voltage		dB μV	—	By Tested→	37.0dB μV	—
	Receiving Power	Pr	dBm	-74.3	38.7 dB μV	-82.2	
	Internal Noise Power	Pmi	dBm			-125.2	
	External Noise Power	Pme	dBm			-121.9	NC-5.0dB
	Receiver Noise Power	Pm	dBm			-120.2	
	S/N at High Frequency	C/N	dB			38.0	
	S/N Improvement coefficient	I	dB			9.1	70% Modulation
	S/N at Nominal Condition	S/N	dB			47.1	Sta.S/N=36.7dB
	Fading Value Presumed	fd	dB			3.9	0.1dB/Km+3dB
	S/N at Fading	S/Nfd	dB			43.2	
	Threshold Level relative to required S/N	PL	dBm			-99.3	
	Margin to Threshold level (PL)	ML	dB			17.1	
	Fading margin to ML	MF	dB			13.2	
RESULT						O.K	S/N>Sta.S/N
NOTES			Frequency; 70.260 MHZ		70.260 MHz		
			TX	RX	TX	RX	
			Karlık. T	1805(WL)	1805(WL)	Karlık. T	
			GL(T)	1490.0m	310.0m	310.0m	1490.0m
			Ant(T)H	5.0m	10.0m	10.0m	10.0m
			※1 Switch Loss:	0.0dB	※2 Divider:	3.5dB	
			Other Loss:	0.0dB	BPF:	1.5dB	
					Switch:	1.0dB	
					Duplexer:	0.0dB	
					to MUX	0.3dB	
					Antenna Direction(From TXSta.)	212.0°	
			Maximum Frequency Deviation; ±5.0KHzp-p		Bandwidth; 12.0KHz		
			Maximum Voice Frequency; 3.0KHz		Noise Figure; 8.0dB		

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Karlík T		↔	1818(Egner)		
					Distance =	17.29 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		30.0	1.0W	
Free Space Loss	Lpf	dB	-94.1			-94.1		
Add's Loss	Diffraction Loss	Lps	dB	-10.0		-10.0		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test			Z	dB	16.3dB	16.3		
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.6	10D2E 15m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gar	dB	2.2	Sleeve		8.0	3el-Yagi	
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		2.0	Sleeve	
Span Loss	Ltl	dB	-106.3		(-50.0dBm)	-96.2		
Receiving Input Voltage		dB μV		By Tested →	63.0dB μV			
Receiving Power	Pr	dBm	-66.3	46.7 dB μV		-66.2		
Internal Noise Power	Prni	dBm				-125.2		
External Noise Power	Prne	dBm				-121.9	NC=5.0dB	
Receiver Noise Power	Prn	dBm				-120.2		
S/N at High Frequency	C/N	dB				54.0		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				63.1	Sta.S/N=37.5dB	
Fading Value Presumed	fd	dB				4.7	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				58.4		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				33.1		
Fading margin to ML	Mf	dB				28.4		
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency; 70.260 MHZ			70.260 MHZ		
			TX		RX	TX	RX	
			Karlík T		1818(Egner)	1818(Egner)	Karlík T	
GL(T)			1490.0m		150.0m	150.0m	1490.0m	
Ant(T)H			5.0m		10.0m	10.0m	10.0m	
			※1	Switch Loss:	0.0dB	※2	Divider:	
				Other Loss:	0.0dB		BPF:	
							Switch:	
							Duplexer:	
							to MUX	
							0.3dB	
							Antenna Direction(From TXSta.)	
							33.7°	
			Maximum Frequency Deviation;		±5.0KHzp-p	Bandwidth;		
			Maximum Voice Frequency;		3.0KHz	Noise Figure;		
						12.0KHz		
						8.0dB		

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Karlık T.		↔	Karsanti(RG)		
					Distance	15.06 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-92.9			-92.9		
Loss	Diffraction Loss	Lps	dB	-43.2		-43.2		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
	Supplementary value by the Test	Z	dB	---				
Ant. Sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.8	10D2E 20m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m
	Coaxial Arrestor Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gar	dB	2.2	Sleeve		8.0	3el-Yagi	
Antenna Gain(R)	Garr	dB	7.2	3el-Yagi		2.0	Sleeve	
Span Loss	Ltl	dB	-138.3			-144.7		
Receiving Input Voltage		dB μV	---	By Tested →		---		
Receiving Power	Pr	dBm	-98.3	14.7 dB μV		-104.7		
Internal Noise Power	Prni	dBm				-125.2		
External Noise Power	Prne	dBm				-121.9	NC=5.0dB	
Receiver Noise Power	Prn	dBm				-120.2		
S/N at High Frequency	C/N	dB				15.5		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				24.6	Sta.S/N=37.3dB	
Fading Value Presumed	fd	dB				4.5	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				20.1		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				-5.4		
Fading margin to ML	Mf	dB				-9.9		
RESULT						Not sufficient	S/N < Sta.S/N	
NOTES			Frequency; 70.260 MHz			70.260 MHz		
			TX	RX		TX	RX	
			Karlık T.	Karsanti(RG)	Karsanti(RG)	Karsanti(RG)	Karlık T.	
			GL(T)	1490.0m	850.0m	850.0m	1490.0m	
Ant(T/H)	5.0m	10.0m	10.0m	10.0m				
※1	Switch Loss:	0.0dB	※2	Divider:	3.5dB			
	Other Loss:	0.0dB		BPF:	1.5dB			
				Switch:	1.0dB			
				Duplexer:	0.0dB			
				to MUX	0.3dB			
				Antenna Direction(From TXStn.)	88.8°			
Maximum Frequency Deviation;		±5.0KHzp-p		Bandwidth;		12.0KHz		
Maximum Voice Frequency;		3.0KHz		Noise Figure;		8.0dB		

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Kartık. T			Hasandede (Alternative point)		
			↔					
			Distance =			14.97 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-92.8			-92.8		
Loss	Diffraction Loss	Lps	-25.6			-25.6		
	Reflection Loss	LAL	-0.0			-0.0		
	Topography Coefficient	tf	-10.0			-10.0		
	Supplementary value by the Test	Z	—		-6.9dB	-6.9		
Ant.	Feeder Loss(T)	Lft	-0.8	10D2V 20m	↑	-0.8	10D2E 20m	
sys.	Feeder Loss(R)	Lfr	-0.8	10D2V 20m		-0.8	10D2E 20m	
Loss	Coaxial Arrester Loss	Lfa	-0.0			-1.0		
	Other Loss	Ld	-0.0	※1		-6.0	※2	
	Antenna directivity	La	-0.0			-0.0	0°	
Antenna Gain(T)	Gar	dB	2.2	Sleeve		11.0	5el-Yagi	
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		2.0	Sleeve	
Span Loss	Ld	dB	-120.6		(-87.5dBm)	-130.9		
Receiving Input Voltage		dB μV	—	By Tested→	25.5dB μV	—		
Receiving Power	Pr	dBm	-80.6	32.4 dB μV		-90.9		
Internal Noise Power	Prni	dBm				-125.2		
External Noise Power	Prne	dBm				-121.9	NC=5.0dB	
Receiver Noise Power	Prn	dBm				-120.2		
S/N at High Frequency	C/N	dB				29.3		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				38.4	Sta.S/N=37.3dB	
Fading Value Presumed	fd	dB				4.5	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				33.9		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				8.4		
Fading margin to ML	Mf	dB				3.9		
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency: 70.260 MHZ			70.260 MHz		
			TX		RX	TX		RX
			Kartık. T		Hasandede		Hasandede	
			GL(T)		1050.0m		1050.0m	
			Ant(T)H		10.0m		15.0m	
			※1 Switch Loss:		0.0dB		※2 Divider:	
			Other Loss:		0.0dB		BPF:	
							Switch:	
							Duplexer:	
							to MUX	
							0.3dB	
							Antenna Direction(From TXSta.)	
							72.9°	
			Maximum Frequency Deviation;		±5.0KHzp-p		Bandwidth;	
			Maximum Voice Frequency;		3.0KHz		Noise Figure;	
							12.0KHz	
							8.0dB	

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Fekede Dağı			1801(WL)			
			↔						
			Distance =			11.89 Km			
Item to be Calculated			Design value Before Test			value on Test	Design value on Operation		
							Up link		
Power Output	Pt	dBm	40.0	10.0W		34.8	3.0W		
Free Space Loss	Lpf	dB	-90.8			-90.8			
Loss	Diffraction Loss	Lps	-28.3			-28.3			
	Reflection Loss	LAL	-0.0			-0.0			
	Topography Coefficient	tf	-10.0			-10.0			
Supplementary value by the Test		Z	---		15.3dB	15.3			
Ant.	Feeder Loss(T)	Lft	-0.8	10D2V 20m	↑	-1.0	10D2E 25m		
	Feeder Loss(R)	Lfr	-0.8	10D2V 20m		-0.8	10D2E 20m		
Loss	Coaxial Arrestor Loss	Lfa	-0.0			-1.0			
	Other Loss	Ld	-0.0	※1		-6.0	※2		
	Antenna directivity	La	-0.0		-0.0	0°			
Antenna Gain(T)	Gat	dB	2.2	Sleeve		6.5	3el-w-Yagi		
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		2.0	Sleeve		
Span Loss	Ltl	dB	-121.3		(-66.0dBm)	-114.1			
Receiving Input Voltage		dB μV	---	By Tested->	47.0dB μV	---			
Receiving Power	Pr	dBm	-81.3	31.7 dB μV		-79.3			
Internal Noise Power	Prni	dBm				-125.2			
External Noise Power	Prne	dBm				-121.9	NC=5.0dB		
Receiver Noise Power	Prn	dBm				-120.2			
S/N at High Frequency	C/N	dB				40.9			
S/N Improvement coefficient	I	dB				9.1	70% Modulation		
S/N at Nominal Condition	S/N	dB				50.0	Sen S/N=37.0dB		
Fading Value Presumed	fd	dB				4.2	0.1dB/Km+3dB		
S/N at Fading	S/Nfd	dB				45.8			
Threshold Level relative to required S/N	PL	dBm				-99.3			
Margin to Threshold level (PL)	ML	dB				20.0			
Fading margin to ML	Mf	dB				15.8			
RESULT						O.K	S/N>Sen.S/N		
NOTES			Frequency; 70.260 MHz			70.260 MHz			
			TX		RX		TX		RX
			Fekede Dağı		1801(WL)		1801(WL)		Fekede Dağı
			OL(T)	1838.0m		680.0m	680.0m		1838.0m
Ant(T)H	10.0m		10.0m	18.0m		10.0m			
※1 Switch Loss:		0.0dB		※2 Divider:		3.5dB			
Other Loss:		0.0dB		BPF:		1.5dB			
				Switch:		1.0dB			
				Duplexer:		0.0dB			
				to MUX		0.3dB			
				Antenna Direction(from TXSta.)		277.9°			
Maximum Frequency Deviation;			±5.0KHz-p			Band width;			
Maximum Voice Frequency;			3.0KHz			Noise Figure;			
						8.0dB			

70MHZ BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Feke Dağı \longleftrightarrow Saimbeyli(RG)					
			Distance = 18.18 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pr	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-94.5			-94.5		
Addis Loss	Diffraction Loss	Lps	dB	-31.1		-31.1		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test		Z	dB	---		-3.2dB	-3.2	
Ant.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	▲	-0.8 10D2V 20m	
sys.	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8 10D2V 20m	
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0 ※2	
	Antenna directivity	La	dB	-0.0			-0.0 0°	
Antenna Gain(T)		Gat	dB	2.2	Sleeve		8.0 3el-Yagi	
Antenna Gain(R)		Gar	dB	7.2	3el-Yagi		2.0 Sleeve	
Span Loss		Ltd	dB	-127.8		(-91.0dBm)	-137.4	
Receiving Input Voltage			dB μ V	---	By Tested \rightarrow	22.0dB μ V	---	
Receiving Power		Pr	dBm	-87.8	25.2 dB μ V		-97.4	
Internal Noise Power		Prni	dBm				-125.2	
External Noise Power		Prne	dBm				-121.9 NC=5.0dB	
Receiver Noise Power		Prn	dBm				-120.2	
S/N at High Frequency		C/N	dB				22.8	
S/N Improvement coefficient		I	dB				9.1 70% Modulation	
S/N at Nominal Condition		S/N	dB				31.9 Stn.S/N=37.6dB	
Fading Value Presumed		fd	dB				4.8 0.1dB/Km+3dB	
S/N at Fading		S/Nfd	dB				27.1	
Threshold Level relative to required S/N		PL	dBm				-99.3	
Margin to Threshold level (PL)		ML	dB				1.9	
Fading margin to ML		Mf	dB				-2.9	
RESULT						Not sufficient	S/N < Stn.S/N	
NOTES			Frequency: 70.260 MHz			70.260 MHz		
			TX Feke Dağı		RX Saimbeyli(RG)		TX Saimbeyli(RG)	
GL(T)			1838.0m		980.0m		980.0m	1838.0m
Ant(T)H			10.0m		10.0m		10.0m	10.0m
※1			Switch Loss:		0.0dB		※2	Divider: 3.5dB
			Other Loss:		0.0dB			BPF: 1.5dB
								Switch: 1.0dB
								Duplexer: 0.0dB
							to MUX	0.3dB
							Antenna Direction(From TXStn.)	230.3°
			Maximum Frequency Deviation;		± 5.0 KHzp-p		Bandwidth; 12.0KHz	
			Maximum Voice Frequency;		3.0KHz		Noise Figure; 8.0dB	

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Fekte Dağı \longleftrightarrow Mansurlu(RG)						
			Distance = 24.16 Km						
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation			
						Up link			
Power Output	Pr	dBm	40.0	10.0W		40.0	10.0W		
Free Space Loss	Lpf	dB	-97.0			-97.0			
Loss	Diffraction Loss	Lps	dB	-67.8		-67.8			
	Reflection Loss	LAL	dB	-0.0		-0.0			
	Topography Coefficient	tf	dB	-10.0		-10.0			
	Supplementary value by the Test	Z	dB	—	27.0dB	27.0			
Ant.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.8	10D2E 20m	
Sys.	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m	
Loss	Coaxial Arrestor Loss	Lfe	dB	-0.0			-1.0		
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2	
	Antenna directivity	La	dB	-0.0			-0.0	0°	
	Antenna Gain(T)	Gst	dB	2.2	Sleeve		8.0	3el-Yagi	
	Antenna Gain(R)	Gsr	dB	7.2	3el-Yagi		2.0	Sleeve	
Span Loss	Ltd	dB	-167.0		(-100.0dBm)		-146.4		
Receiving Input Voltage		dB μ V	—	By Tested \rightarrow	13.0dB μ V	—			
Receiving Power	Pr	dBm	-127.0	-14.0 dB μ V			-106.4		
Internal Noise Power	Prni	dBm					-125.2		
External Noise Power	Prne	dBm					-121.9	NC=5.0dB	
Receiver Noise Power	Prn	dBm					-120.2		
S/N at High Frequency	C/N	dB					13.8		
S/N Improvement coefficient	I	dB					9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB					22.9	Stn S/N=38.2dB	
Fading Value Presumed	fd	dB					5.4	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB					17.5		
Threshold Level relative to required S/N	PL	dBm					-99.3		
Margin to Threshold level (PL)	ML	dB					-7.1		
Fading margin to ML	Mf	dB					-12.5		
RESULT						Not sufficient	S/N < Stn.S/N		
NOTES			Frequency; 70.260 MHz		70.260 MHz				
			TX	RX	TX	RX			
			Fekte Dağı	Mansurlu(RG)	Mansurlu(RG)	Fekte Dağı			
			GL(T) Ant(T)H	1838.0m 10.0m	970.0m 10.0m	970.0m 10.0m	1838.0m 10.0m		
	※1 Switch Loss:	0.0dB	Other Loss:	0.0dB	※2 Divider:	3.5dB	BPF:	1.5dB	
					Switch:	1.0dB	Duplexer:	0.0dB	
					to MUX	0.3dB			
					Antenna Direction(From TXStn.)	83.0°			
	Maximum Frequency Deviation;	±5.0KHzp-p		Bandwidth;	12.0KHz				
	Maximum Voice Frequency;	3.0KHz		Noise Figure;	8.0dB				

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Feke Dağı \longleftrightarrow Karataş T.					
			Distance = 22.60 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		34.8	3.0W	
Free Space Loss	Lpf	dB	-96.4			-96.4		
Adds	Diffraction Loss	Lps	dB	-8.5		-8.5		
Loss	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
	Supplementary value by the Test	Z	dB	—				
Ant. sys.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.8	10D2E 20m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m
Loss	Coaxial Arrestor Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gat	dB	2.2	Sleeve		2.0	Sleeve	
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		2.0	Sleeve	
Span Loss	Ltl	dB	-107.1				-119.5	
Receiving Input Voltage		dB μ V	—	By Tested-->		—		
Receiving Power	Pr	dBm	-67.1	45.9 dB μ V	┌		-84.7	
Internal Noise Power	Prni	dBm					-125.2	
External Noise Power	Prue	dBm					-121.9	NC=5.0dB
Receiver Noise Power	Prn	dBm					-120.2	
S/N at High Frequency	C/N	dB					35.5	
S/N Improvement coefficient	I	dB					9.1	70% Modulation
S/N at Nominal Condition	S/N	dB					44.6	Sta S/N=38.1dB
Fading Value Presumed	fd	dB					5.3	0.1dB/Km+3dB
S/N at Fading	S/Nfd	dB					39.3	
Threshold Level relative to required S/N	PL	dBm					-99.3	
Margin to Threshold level (PL)	ML	dB					14.6	
Fading margin to ML	Mf	dB					9.3	
RESULT						O.K	S/N > Sta.S/N	
NOTES			Frequency: 70.260 MHz		70.260 MHz			
			TX	RX	TX	RX		
			Feke Dağı	Karataş T.	Karataş T.	Feke Dağı		
			GL(T) Ant(T)H	1838.0m 10.0m	1520.0m 10.0m	1520.0m 10.0m	1838.0m 10.0m	
	※1	Switch Loss: Other Loss:	0.0dB 0.0dB	※2	Divider: BPF: Switch: Duplexer:	3.5dB 1.5dB 1.0dB 0.0dB		
				to MUX		0.3dB		
				Antenna Direction(From TXSta.)		83.9°		
		Maximum Frequency Deviation; Maximum Voice Frequency;	±5.0KHzp-p 3.0KHz	Bandwidth; Noise Figure;	12.0KHz 8.0dB			

70MHZ BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Feko Dağı \longleftrightarrow				Feko (RG)		
			Distance =				7.13 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation			
						Up link			
Power Output	Pr	dBm	-40.0	10.0W		40.0	10.0W		
Free Space Loss	Lpf	dB	-86.4			-86.4			
Adds	Diffraction Loss	Lps	dB	-39.0		-39.0			
Loss	Reflection Loss	LAL	dB	-0.0		-0.0			
	Topography Coefficient	tf	dB	-10.0		-10.0			
Supplementary value by the Test			Z	dB	---				
Ant.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-1.0	10D2E 25m	
57s.	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m	
Loss	Coaxial Arrestor Loss	Lfa	dB	-0.0			-1.0		
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2	
	Antenna directivity	La	dB	-0.0			-0.0	0°	
Antenna Gain(T)			Gst	dB	2.2	Sleeve	9.5	3el-w-Yagi	
Antenna Gain(R)			Gsr	dB	7.2	3el-Yagi	2.0	Sleeve	
Span Loss			Ld	dB	-127.6		-132.7		
Receiving Input Voltage				dB μ V	---	By Tested-->	---		
Receiving Power			Pr	dBm	-87.6	25.4 dB μ V	-92.7		
Internal Noise Power			Pni	dBm			-125.2		
External Noise Power			Prne	dBm			-121.9	NC-5.0dB	
Receiver Noise Power			Pru	dBm			-120.2		
S/N at High Frequency			C/N	dB			27.5		
S/N Improvement coefficient			I	dB			9.1	70% Modulation	
S/N at Nominal Condition			S/N	dB			36.6	Sta.S/N=36.5dB	
Fading Value Presumed			fd	dB			3.7	0.1dB/Km+3dB	
S/N at Fading			S/Nd	dB			32.9		
Threshold Level relative to required S/N			PL	dBm			-99.3		
Margin to Threshold level (PL)			ML	dB			6.6		
Fading margin to ML			Mf	dB			2.9		
RESULT							O.K	S/N>Sta.S/N	
NOTES			Frequency; 70.260 MHz			70.260 MHz			
			TX		RX		TX		RX
			Feko Dağı		Feko (RG)		Feko (RG)		Feko Dağı
			GL(T)	1838.0m		560.0m	560.0m		1838.0m
Ant(T)H	10.0m		10.0m	18.0m		10.0m			
※1 Switch Loss:			0.0dB		※2 Divider: 3.5dB				
Other Loss:			0.0dB		BPF: 1.5dB				
					Switch: 1.0dB				
					Duplexer: 0.0dB				
					to MUX 0.3dB				
					Antenna Direction(From TXSta.) 9.3°				
Maximum Frequency Deviation;			±5.0KHzp-p		Band width; 12.0KHz				
Maximum Voice Frequency;			3.0KHz		Noise Figure; 8.0dB				

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Karataş T. \longleftrightarrow Mansurlu(RG)					
			Distance = 1.60 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	-40.0	10.0W		30.0	1.0W	
Free Space Loss	Lpf	dB	-73.4			-73.4		
Adds	Lps	dB	-26.1			-26.1		
Loss	Reflection Loss	LAL	-0.0			-0.0		
	Topography Coefficient	tf	-10.0			-10.0		
Supplementary value by the Test		Z	---					
Ant. sys.	Feeder Loss(T)	Lft	-0.8	10D2V 20m	↑	-0.6	10D2E 15m	
	Feeder Loss(R)	Lfr	-0.8	10D2V 20m		-0.8	10D2E 20m	
Loss	Coaxial Arrestor Loss	Lfa	-0.0			-1.0		
	Other Loss	Ld	-0.0	※1		-6.0	※2	
Antenna directivity		La	-0.0			-0.0	0°	
Antenna Gain(T)		Gar	2.2	Sleeve		6.5	3el-w-Yagi	
Antenna Gain(R)		Gar	7.2	3el-Yagi		2.0	sleeve	
Span Loss		Lsf	-101.7			-109.4		
Receiving Input Voltage				By Tested-->				
Receiving Power		Pr	-61.7	51.3 dB μ V	┌	-79.4		
Internal Noise Power		Prni				-125.2		
External Noise Power		Prne				-121.9	NC=5.0dB	
Receiver Noise Power		Prn				-120.2		
S/N at High Frequency		C/N				40.8		
S/N Improvement coefficient		I				9.1	70% Modulation	
S/N at Nominal Condition		S/N				49.9	Stn.S/N=38.7dB	
Fading Value Presumed		fd				3.2	0.1dB/Km+3dB	
S/N at Fading		S/Nfd				46.7		
Threshold Level relative to required S/N		PL				-99.3		
Margin to Threshold level (PL)		ML				19.9		
Fading margin to ML		Mf				16.7		
RESULT						O.K	S/N>Stn.S/N	
NOTES			Frequency; 70.260 MHz		70.260 MHz			
			TX	RX	TX	RX		
			Karataş T.	Mansurlu(RG)	Mansurlu(RG)	Karataş T.		
			GL(T) Ant(T)H	1520.0m 10.0m	970.0m 10.0m	970.0m 10.0m	1520.0m 10.0m	
※1 Switch Loss: 0.0dB Other Loss: 0.0dB			※2 Divider: 3.5dB BPF: 1.5dB Switch: 1.0dB Duplexer: 0.0dB					
			2 Span		3.0dB			
			Antenna Direction(From TXStn.)		70.9°			
Maximum Frequency Deviation;			±5.0KHzp-p		Bandwidth;		12.0KHz	
Maximum Voice Frequency;			3.0KHz		Noise Figure;		8.0dB	

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Süt Tepe		↔	Tufanbeyli			
					Distance =	25.81 Km			
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation			
						Up link			
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W		
Free Space Loss	Lpf	dB	-97.6			-97.6			
Loss	Diffraction Loss	Lps	dB	-22.0		-22.0			
	Reflection Loss	LAL	dB	-0.0		-0.0			
	Topography Coefficient	tf	dB	-10.0		-10.0			
Supplementary value by the Test			Z	dB	—				
Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.8	10D2E 20m	
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m	
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0		
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2	
	Antenna directivity	La	dB	-0.0			-0.0	0°	
Antenna Gain(T)	Gat	dB	2.2	Sleeve		6.5	3el-w-Yagi		
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		2.0	Sleeve		
Span Loss	Ltl	dB	-121.8			-129.7			
Receiving Input Voltage		dB μV	—	By Tested→		—			
Receiving Power	Pr	dBm	-81.8	31.2 dB μV	└	-89.7			
Internal Noise Power	Prni	dBm				-125.2			
External Noise Power	Prne	dBm				-121.9	NC=5.0dB		
Receiver Noise Power	Prn	dBm				-120.2			
S/N at High Frequency	C/N	dB				30.5			
S/N Improvement coefficient	I	dB				9.1	70% Modulation		
S/N at Nominal Condition	S/N	dB				39.6	Stn.S/N=38.4dB		
Fading Value Presumed	fd	dB				5.6	0.1dB/Km+3dB		
S/N at Fading	S/Nfd	dB				34.0			
Threshold Level relative to required S/N	PL	dBm				-99.3			
Margin to Threshold level (PL)	ML	dB				9.6			
Fading margin to ML	Mf	dB				4.0			
RESULT						O.K	S/N>Stn.S/N		
NOTES			Frequency; 70.260 MHz			70.260 MHz			
			TX	RX		TX	RX		
			Süt Tepe	Tufanbeyli	Tufanbeyli	Süt Tepe			
			GL(T) 2013.0m	1450.0m	1450.0m	2013.0m			
Ant(T)H 10.0m	10.0m	15.0m	10.0m						
	※1 Switch Loss: 0.0dB	0.0dB	※2 Divider: 3.5dB						
	Other Loss: 0.0dB		BPF: 1.5dB						
			Switch: 1.0dB						
			Duplexer: 0.0dB						
			to MUX 0.3dB						
			Antenna Direction(From TXStn.) 186.1°						
	Maximum Frequency Deviation; ±5.0KHzp-p		Bandwidth; 12.0KHz						
	Maximum Voice Frequency; 3.0KHz		Noise Figure; 8.0dB						

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Sallangac T. \longleftrightarrow Catalan Dam		Distance = 17.67 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation				
						Up link				
Power Output	Pr	dBm	40.0	10.0W		30.0	1.0W			
Free Space Loss	Lpf	dB	-94.3			-94.3				
Loss	Diffraction Loss	Lps	dB	-0.0		-0.0				
	Reflection Loss	I.AL	dB	-0.0		-0.0				
	Topography Coefficient	tf	dB	-10.0		-10.0				
Supplementary value by the Test		Z	dB	—	13.5dB	13.5				
Ant.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	-0.8	10D2E 20m			
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m	-0.8	10D2E 20m			
Loss	Coaxial Arrestor Loss	Lfa	dB	-0.0		-1.0				
	Other Loss	Ld	dB	-0.0	※1	-6.0	※2			
	Antenna directivity	La	dB	-0.0		-1.1	48°			
Antenna Gain(T)	Gat	dB	2.2	Sleeve		6.5	3el-w-Yagi			
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		4.0	2el-Yagi			
Span Loss	Ld	dB	-96.5		(-43.0dBm)	-90.0				
Receiving Input Voltage		dB μV	—	By Tested →	70.0dB μV	—				
Receiving Power	Pr	dBm	-56.5	56.5 dB μV		-60.0				
Internal Noise Power	Prni	dBm				-125.2				
External Noise Power	Prue	dBm				-121.9	NC=5.0dB			
Receiver Noise Power	Prn	dBm				-120.2				
S/N at High Frequency	CN	dB				60.2				
S/N Improvement coefficient	I	dB				9.1	70% Modulation			
S/N at Nominal Condition	S/N	dB				69.3	Sn.S/N=37.6dB			
Fading Value Presumed	fd	dB				4.8	0.1dB/Km+3dB			
S/N at Fading	S/Nfd	dB				64.5				
Threshold Level relative to required S/N	PL	dBm				-99.3				
MARGIN to Threshold level (PL)	ML	dB				39.3				
Fading margin to ML	Mf	dB				34.5				
RESULT						O.K	S/N>Stn.S/N			
NOTES			Frequency: 70.260 MHz		70.260 MHz					
			TX		RX		TX		RX	
			Sallangac T.		Catalan Dam		Catalan Dam		Sallangac T.	
			GL(T)	569.0m		150.0m	150.0m		569.0m	
Ant(T)H	10.0m		10.0m	10.0m		10.0m				
※1	Switch Loss:		0.0dB	※2	Divider:		3.5dB			
	Other Loss:		0.0dB		BPF:		1.5dB			
					Swicb:		1.0dB			
					Duplexer:		0.0dB			
					to MUX		0.3dB			
					Antenna Direction(From TXStn.)		325.3°			
Maximum Frequency Deviation:		±5.0KHz-p		Bandwidth:		12.0KHz				
Maximum Voice Frequency:		3.0KHz		Noise Figure:		8.0dB				

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Sallangac T. \longleftrightarrow 1820(WL)					
			Distance = 3.98 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	-40.0	10.0W		30.0	1.0W	
Free Space Loss	Lpf	dB	-81.3			-81.3		
Loss	Diffraction Loss	Lps	dB	-23.6		-23.6		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test		Z	dB	—	4.1dB	4.1		
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.6	10D2E 15m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m
	Coaxial Arrestor Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	15°
Antenna Gain(T)	Gat	dB	2.2	Sleeve		4.0	2el-Yagi	
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		6.5	3el-w-Yagi	
Span Loss	Ld	dB	-107.1		(-63.0dBm)	-108.7		
Receiving Input Voltage		dB μ V	—	By Tested→	50.0dB μ V	—		
Receiving Power	Pr	dBm	-67.1	45.9 dB μ V		-78.7		
Internal Noise Power	Prni	dBm				-125.2		
External Noise Power	Prne	dBm				-121.9	NC=5.0dB	
Receiver Noise Power	Prn	dBm				-120.2		
S/N at High Frequency	C/N	dB				41.5		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				50.6	Sta.S/N=38.9dB	
Fading Value Presumed	fd	dB				3.4	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				47.2		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				20.6		
Fading margin to ML	MF	dB				17.2		
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency; 70.260 MHZ		70.260 MHz			
			TX Sallangac T.		RX 1820(WL)	TX 1820(WL)		RX Sallangac T.
			GL(T) 569.0m		170.0m	170.0m	569.0m	
			Ant(T)H 10.0m		10.0m	10.0m	10.0m	
※1 Switch Loss: 0.0dB		Other Loss: 0.0dB		※2 Divider: 3.5dB		BPF: 1.5dB		
				Switch: 1.0dB		Duplexer: 0.0dB		
				2 Span		3.0dB		
				Antenna Direction(From TXStn.) 28.9°				
		Maximum Frequency Deviation; ±5.0KHzp-p		Bandwidth; 12.0KHz		Noise Figure; 8.0dB		
		Maximum Voice Frequency; 3.0KHz						

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Sallangac T.		↔	1825(WL)		
					Distance =	4.21 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-81.8			-81.8		
Loss	Adds	Lps	dB	-42.7		-42.7		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	rf	dB	-10.0		-10.0		
	Supplementary value by the Test	Z	dB	---	12.7dB	12.7		
Ant. sys.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.8	10D2E 20m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-10.0	172.3°
Antenna Gain(T)	Gar	dB	2.2	Sleeve		6.5	3el-w-Yagi	
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		4.0	2el-Yagi	
Span Loss	Lfd	dB	-126.7		(-74.0dBm)	-129.9		
Receiving Input Voltage		dB μV	---	By Tested->	39.0dB μV	---		
Receiving Power	Pr	dBm	-86.7	26.3 dB μV		-89.9		
Internal Noise Power	Pmi	dBm				-125.2		
External Noise Power	Pme	dBm				-121.9	NC-5.0dB	
Receiver Noise Power	Pm	dBm				-120.2		
S/N at High Frequency	C/N	dB				30.3		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				39.4	Stn S/N=38.9dB	
Fading Value Presumed	fd	dB				3.4	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				36.0		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				9.4		
Fading margin to ML	Mf	dB				6.0		
RESULT						O.K	S/N>Stn.S/N	
NOTES			Frequency: 70.260 MHz		70.260 MHz			
			TX	RX	TX	RX		
			Sallangac T.	1825(WL)	1825(WL)	Sallangac T.		
			GL(T) Ant(T)H	569.0m 10.0m	225.0m 10.0m	225.0m 15.0m	569.0m 10.0m	
	※1 Switch Loss: Other Loss:	0.0dB 0.0dB	※2 Divider: BPF: Switch: Duplexer:	3.5dB 1.5dB 1.0dB 0.0dB				
			2 Span	3.0dB				
			Antenna Direction(From TXStn.)	201.3°				
	Maximum Frequency Deviation; Maximum Voice Frequency;	±5.0KHz-p 3.0KHz	Bandwidth; Noise Figure;	12.0KHz 8.0dB				

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Sallangac T. \longleftrightarrow		1817(WL)		
			Distance =		17.63 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation	
						Up link	
Power Output	Pt	dBm	40.0	10.0W		30.0	1.0W
Free Space Loss	Lpf	dB	-94.3			-94.3	
Add's Loss	Diffraction Loss	Lps	dB	-20.1		-20.1	
	Reflection Loss	LAL	dB	-0.0		-0.0	
	Topography Coefficient	tf	dB	-10.0		-10.0	
	Supplementary value by the Test	Z	dB	—	11.6dB	11.6	
Ant.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	-0.6	10D2E 15m
SYS.	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m	-0.8	10D2E 20m
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0		-1.0	
	Other Loss	Ld	dB	-0.0	※1	-6.0	※2
	Antenna directivity	La	dB	-0.0		-1.0	40°
	Antenna Gain(T)	Gat	dB	2.2	Sleeve	6.5	3el-w-Yagi
	Antenna Gain(R)	Gar	dB	7.2	3el-Yagi	4.0	2el-Yagi
	Span Loss	Lst	dB	-116.6		(-65.0dBm)	-111.7
	Receiving Input Voltage		dB μ V	—	By Tested \rightarrow	48.0dB μ V	—
	Receiving Power	Pr	dBm	-76.6	36.4 dB μ V	-81.7	
	Internal Noise Power	Prni	dBm			-125.2	
	External Noise Power	Prne	dBm			-121.9	NC=5.0dB
	Receiver Noise Power	Prn	dBm			-120.2	
	S/N at High Frequency	C/N	dB			38.5	
	S/N Improvement coefficient	I	dB			9.1	70% Modulation
	S/N at Nominal Condition	S/N	dB			47.6	Sta S/N=40.3dB
	Fading Value Presumed	fd	dB			4.8	0.1dB/Km+3dB
	S/N at Fading	S/Nd	dB			42.8	
	Threshold Level relative to required S/N	PL	dBm			-99.3	
	Margin to Threshold level (PL)	ML	dB			17.6	
	Fading margin to ML	Mf	dB			12.8	
RESULT						O.K	S/N > Sta.S/N
NOTES			Frequency: 70.260 MHZ		70.260 MHZ		
			TX	RX	TX	RX	
			Sallangac T.	1817(WL)	1817(WL)	Sallangac T.	
			GL(T)	160.0m	160.0m	569.0m	
			Ant(T)H	10.0m	10.0m	10.0m	
			※1 Switch Loss:	0.0dB	※2 Divider:	3.5dB	
			Other Loss:	0.0dB	BPF:	1.5dB	
					Switch:	1.0dB	
					Duplexer:	0.0dB	
					2 Span	3.0dB	
					Antenna Direction(From TXSta.)	53.8°	
			Maximum Frequency Deviation;	± 5.0 KHz-p	Bandwidth;	12.0KHz	
			Maximum Voice Frequency;	3.0KHz	Noise Figure;	8.0dB	

70MHZ BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Sallangac T. ↔ 1828(WL)							
			Distance = 25.63 Km							
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation				
						Up link				
Power Output	Pr	dBm	40.0	10.0W		40.0	10.0W			
Free Space Loss	Lpf	dB	-97.5			-97.5				
Adds.	Lps	dB	-16.3			-16.3				
Loss	Reflection Loss	LAL	-0.0			-0.0				
	Topography Coefficient	tf	-10.0			-10.0				
Supplementary value by the Test			Z	dB	---					
Ant.	Feeder Loss(T)	Lft	-0.8	10D2V 20m	↑	-1.0	10D2E 25m			
sys.	Feeder Loss(R)	Lfr	-0.8	10D2V 20m		-0.8	10D2E 20m			
Loss	Coaxial Arrester Loss	Lfa	-0.0			-1.0				
	Other Loss	Ld	-0.0	※1		-6.0	※2			
	Antenna directivity	La	-0.0			-0.0	0'			
Antenna Gain(T)	Gat	dB	2.2	Sleeve		6.5	3el-w-Yagi			
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		4.0	2el-Yagi			
Span Loss	Ltd	dB	-116.0			-122.1				
Receiving Input Voltage		dB μV	---	By Tested-->		---				
Receiving Power	Pr	dBm	-76.0	37.0 dB μV		-82.1				
Internal Noise Power	Prni	dBm				-125.2				
External Noise Power	Prne	dBm				-121.9	NC=5.0dB			
Receiver Noise Power	Prn	dBm				-120.2				
S/N at High Frequency	C/N	dB				38.1				
S/N Improvement coefficient	I	dB				9.1	70% Modulation			
S/N at Nominal Condition	S/N	dB				47.2	Sta.S/N=41.1dB			
Fading Value Presumed	fd	dB				5.6	0.1dB/Km+3dB			
S/N at Fading	S/Nfd	dB				41.6				
Threshold Level relative to required S/N	PL	dBm				-99.3				
Margin to Threshold level (PL)	ML	dB				17.2				
Fading margin to ML	Mf	dB				11.6				
RESULT						O.K	S/N>Sta.S/N			
NOTES			Frequency, 70.260 MHz		70.260 MHz					
			TX		RX		RX			
			Sallangac T.		1828(WL)		1828(WL)		Sallangac T.	
			GL(T)	569.0m		78.0m		78.0m		569.0m
Ant(T)H	10.0m		10.0m		18.0m		10.0m			
	※1	Switch Loss:	0.0dB		※2	Divider:	3.5dB			
		Other Loss:	0.0dB			BPF:	1.5dB			
						Switch:	1.0dB			
						Duplexer:	0.0dB			
					2 Span		3.0dB			
					Antenna Direction(From TXSta.)		13.6'			
				Maximum Frequency Deviation;	±5.0KHz-p	Bandwidth;	12.0KHz			
				Maximum Voice Frequency;	3.0KHz	Noise Figure;	8.0dB			

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Sallangac T.		↔	Karaisalı(RG)		
					Distance =	12.97 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		30.0	1.0W	
Free Space Loss	Lpf	dB	-91.6			-91.6		
Loss	Adds Diffraction Loss	Lps	dB	-3.0		-3.0		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
	Supplementary value by the Test	Z	dB	—	0.8dB	0.8		
Ant. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.6	10D2E 15m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-1.0	41°
Antenna Gain(T)	Gal	dB	2.2	Sleeve		6.5	3el-w-Yagi	
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		4.0	2el-Yagi	
Span Loss	Lfd	dB	-96.8		(-56.0dBm)	-102.7		
Receiving Input Voltage		dB μV	—	By Tested →	57.0dB μV	—		
Receiving Power	Pr	dBm	-56.8	56.2 dB μV		-72.7		
Internal Noise Power	Prni	dBm				-125.2		
External Noise Power	Prne	dBm				-121.9	NC=-5.0dB	
Receiver Noise Power	Prn	dBm				-120.2		
S/N at High Frequency	C/N	dB				47.5		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				56.6	Sen S/N=40.1dB	
Fading Value Presumed	fd	dB				4.3	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				52.3		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				26.6		
Fading margin to ML	Mf	dB				22.3		
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency; 70.260 MHz			70.260 MHz		
			TX Sallangac T.		RX Karaisalı(RG)	TX Karaisalı(RG)	RX Sallangac T.	
			GL(T) 569.0m	241.0m	241.0m	569.0m		
			Ant(T)H 10.0m	10.0m	10.0m	10.0m		
			※1 Switch Loss: 0.0dB	0.0dB	※2 Divider: 3.5dB			
			Other Loss: 0.0dB	0.0dB	BPF: 1.5dB			
					Switch: 1.0dB			
					Duplexer: 0.0dB			
					MUX+2 Span	3.3dB		
					Antenna Direction(From TXSta.)	54.1°		
			Maximum Frequency Deviation;	±5.0KHz-p	Bandwidth;	12.0KHz		
			Maximum Voice Frequency;	3.0KHz	Noise Figure;	8.0dB		

70MHZ BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Bileçe T.			Çiftehan(RG)			
			Distance =			7.15 Km			
Item to be Calculated			Design value Before Test			value on Test	Design value on Operation		
							Up link		
Power Output	Pt	dBm	40.0	10.0W		30.0	1.0W		
Free Space Loss	Lpf	dB	-86.4			-86.4			
Adds	Diffraction Loss	Lps	dB	-27.9		-27.8			
Loss	Reflection Loss	LAL	dB	-0.0		-0.0			
	Topogtraphy Coefficient	u	dB	-10.0		-10.0			
	Supplementary value by the Test	Z	dB	---	15.5dB	15.5			
Ant. sys.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	-0.6	10D2E 15m		
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m	-0.5	AFZE50-4 20m		
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0		-1.0			
	Other Loss	Ld	dB	-0.0	※1	-6.0	※2		
	Antenna directivity	La	dB	-0.0		-1.1	320°		
	Antenna Gsin(T)	Gst	dB	2.2	Sleeve	6.5	3el-w-Yagi		
	Antenna Gsin(R)	Gsr	dB	7.2	3el-Yagi	4.0	2el-Yagi		
	Span Loss	Ld	dB	-116.5		(-61.0dBm)	-107.4		
	Receiving Input Voltage		dB μV	---	By Tested →	52.0dB μV	---		
	Receiving Power	Pr	dBm	-76.5	36.5 dB μV	-77.4			
	Internal Noise Power	Prni	dBm			-125.2			
	External Noise Power	Prne	dBm			-121.5	NC=5.0dB		
	Receiver Noise Power	Prn	dBm			-120.2			
	S/N at High Frequency	C/N	dB			42.8			
	S/N Improvement coefficient	I	dB			9.1	70% Modulation		
	S/N at Nominal Condition	S/N	dB			51.9	Stn.S/N=39.2dB		
	Fading Value Presumed	fd	dB			3.7	0.1dB/Km+3dB		
	S/N at Fading	S/Nfd	dB			48.2			
	Threshold Level relative to required S/N	PL	dBm			-99.3			
	Margin to Threshold level (PL)	ML	dB			21.9			
	Fading margin to ML	Mf	dB			18.2			
RESULT						O.K	S/N>Stn.S/N		
NOTES			Frequency: 70.260 MHZ			70.260 MHZ			
			TX		RX		TX		RX
			Bileçe T.		Çiftehan(RG)		Çiftehan(RG)		Bileçe T.
			GL(T)	2350.0m		960.0m	960.0m		2350.0m
Anz(T)H	5.0m		10.0m	10.0m		10.0m			
	※1	Swiçh Loss:	0.0dB	Other Loss:	0.0dB	※2	Dividar:		
							BPF:		
							Swiçh:		
							Duplexer:		
						2 Span	3.0dB		
						Antenna Direction(From TXStn.)	160.3°		
				Maximum Frequency Deviation;	±5.0KHz-p	Bandwidth;	12.0KHz		
				Maximum Voice Frequency;	3.0KHz	Noise Figure;	8.0dB		

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Bilege T.		↔	Kamışlı(RG)		
					Distance =	17.45 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	-40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-94.2			-94.2		
Adds	Diffraction Loss	Lps	dB	-39.7		-39.6		
Loss	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test		Z	dB	—	21.1dB	21.1		
Ant. sys.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.8	10D2E 20m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.5	AFZE50-4 20m
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-0.5	28°
Antenna Gain(T)		Gar	dB	2.2	Sleeve		6.3	3el-w-Yagi
Antenna Gain(R)		Gar	dB	7.2	3el-Yagi		4.0	2el-Yagi
Span Loss		Lfd	dB	-136.1		(-75.0dBm)	-121.0	
Receiving Input Voltage			dB μV	—	By Tested-->	38.0dB μV	—	
Receiving Power		Pr	dBm	-96.1	16.9 dB μV		-81.0	
Internal Noise Power		Prni	dBm				-125.2	
External Noise Power		Prne	dBm				-121.9	NC=5.0dB
Receiver Noise Power		Prn	dBm				-120.2	
S/N at High Frequency		C/N	dB				39.2	
S/N Improvement coefficient		I	dB				9.1	70% Modulation
S/N at Nominal Condition		S/N	dB				48.3	Stn S/N=40.2dB
Fading Value Presumed		fd	dB				4.7	0.1dB/Km+3dB
S/N at Fading		S/Nfd	dB				43.6	
Threshold Level relative to required S/N		PL	dBm				-99.3	
Margin to Threshold level (PL)		ML	dB				18.3	
Fading margin to ML		Mf	dB				13.6	
RESULT						O.K	S/N>Stn.S/N	
NOTES			Frequency; 70.260 MHz		70.260 MHz			
			TX	RX	TX	RX		
			Bilege T.	Kamışlı(RG)	Kamışlı(RG)	Bilege T.		
			GL(T) 2350.0m	1130.0m	1130.0m	2350.0m		
Ant(T)H 5.0m	10.0m	15.0m	10.0m					
※1	Switch Loss: Other Loss:	0.0dB 0.0dB	※2	Divider: BPF: Switch: Duplexer:	3.5dB 1.5dB 1.0dB 0.0dB			
			2 Span		3.0dB			
			Antenna Direction(From TXStn.)		229.0°			
	Maximum Frequency Deviation; Maximum Voice Frequency;	±5.0KHzp-p 3.0KHz	Bandwidth; Noise Figure;	12.0KHz 8.0dB				

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Bilege T.		↔	Camardı(RG)		
					Distance =	45.37 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-102.5			-102.5		
Loss	Diffraction Loss	Lps	dB	-35.4		-35.4		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test			Z	dB	—	5.1dB	5.1	
Ant. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.4	AFZE50-4 15m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.5	AFZE50-4 20m
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gar	dB	2.2	Sleeve		9.5	5el-w-Yagi	
Antenna Gain(R)	Gor	dB	7.2	3el-Yagi		4.0	2el-Yagi	
Span Loss	Ltd	dB	-140.1		(-95.0dBm)	-137.2		
Receiving Input Voltage		dB μV	—	By Tested→	18.0dB μV	—		
Receiving Power	Pr	dBm	-100.1	12.9 dB μV		-97.2		
Internal Noise Power	Prni	dBm				-125.2		
External Noise Power	Prne	dBm				-121.9	NC=5.0dB	
Receiver Noise Power	Prn	dBm				-120.2		
S/N at High Frequency	C/N	dB				23.0		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				32.1	Stn S/N=43.0dB	
Fading Value Presumed	fd	dB				7.5	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				24.6		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Mmargin to Threshold level (PL)	ML	dB				2.1		
Fading margin to ML	Mf	dB				-5.4		
RESULT						Not sufficient	S/N<Stn S/N	
NOTES			Frequency; 70.260 MHZ		70.260 MHz			
			TX	RX	TX	RX		
			Bilege T.	Camardı(RG)	Camardı(RG)	Bilege T.		
			GL(T) Ant(T)H	2350.0m 5.0m	1490.0m 10.0m	1490.0m 10.0m	2350.0m 10.0m	
※1 Switch Loss: 0.0dB			※2 Divider: 3.5dB					
Other Loss: 0.0dB			BPF: 1.5dB					
			Switch: 1.0dB					
			Duplexer: 0.0dB					
			2 Span			3.0dB		
			Antenna Direction(From TXStn.)			201.2°		
Maximum Frequency Deviation;			±5.0KHzp-p		Bandwidth; 12.0KHz			
Maximum Voice Frequency;			3.0KHz		Noise Figure; 8.0dB			

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Bilege T.		↔	Camardh (Alternative point)		
					Distance =	46.14 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-102.6			-102.6		
Loss	Diffraction Loss	Lps	dB	-18.5		-18.5		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test			Z	dB	—			
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.4	AFZE50-4 15m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.5	AFZE50-4 20m
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gat	dB	2.2	Sleeve		9.5	3el-w-Yagi	
Antenna Gain(R)	Gwr	dB	7.2	3el-Yagi		4.0	2el-Yagi	
Span Loss	Ltd	dB	-123.3			-125.5		
Receiving Input Voltage		dB μV	—	By Tested-->		—		
Receiving Power	Pr	dBm	-83.3	29.7 dB μV		-85.5		
Internal Noise Power	Prni	dBm				-125.2		
External Noise Power	Prne	dBm				-121.9	NC=5.0dB	
Receiver Noise Power	Prn	dBm				-120.2		
S/N at High Frequency	C/N	dB				34.7		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				43.8	Sta S/N=43.1dB	
Fading Value Presumed	fd	dB				7.6	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				36.2		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				13.8		
Fading margin to ML	Mf	dB				6.2		
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency: 70.260 MHZ			70.260 MHZ		
			TX	RX		TX	RX	
			Bilege T.	Camardh		Camardh	Bilege T.	
			GL(T)	1670.0m		1670.0m	2350.0m	
Ant(T)H	5.0m		10.0m	10.0m				
※1	Switch Loss:	0.0dB	※2	Divider:	3.5dB			
	Other Loss:	0.0dB		BPF:	1.5dB			
				Switch:	1.0dB			
				Duplexer:	0.0dB			
				2 Span	3.0dB			
				Antenna Direction(From TXSta.)	200.5°			
				Maximum Frequency Deviation;	±5.0KHzp-p			
				Maximum Voice Frequency;	3.0KHz			
				Bandwidth;	12.0KHz			
				Noise Figure;	8.0dB			

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Bilege T. ↔ Catalan Dam						
			Distance = 51.60 Km						
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation			
						Up link			
Power Output	Pc	dBm	40.0	10.0W		40.0	10.0W		
Free Space Loss	Lpf	dB	-103.6			-103.6			
Addis Loss	Diffraction Loss	Lps	dB	-15.5		-15.5			
	Reflection Loss	LAL	dB	-0.0		-0.0			
	Topography Coefficient	tr	dB	-10.0		-10.0			
Supplementary value by the Test			Z	dB	---				
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	-1.0	10D2E 20m		
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m	-0.5	AFZE50-4 20m		
	Coaxial Arrestor Loss	Lfa	dB	-0.0		-1.0			
	Other Loss	Ld	dB	-0.0	※1	-6.0	※2		
	Antenna directivity	La	dB	-0.0		-3.9	103°		
Antenna Gain(T)			Gain	dB	2.2	Sleeve	9.5	5el-w-Yagi	
Antenna Gain(R)			Gmr	dB	7.2	3el-Yagi	4.0	2el-Yagi	
Span Loss			Ld	dB	-121.3		-128.0		
Receiving Input Voltage				dB μV	---	By Tested-->			
Receiving Power			Pr	dBm	-81.3	31.7 dB μV	-88.0		
Internal Noise Power			Pni	dBm			-125.2		
External Noise Power			Pne	dBm			-121.9	NC=5.0dB	
Receiver Noise Power			Prn	dBm			-120.2		
S/N at High Frequency			C/N	dB			32.2		
S/N Improvement coefficient			I	dB			9.1	70% Modulation	
S/N at Nominal Condition			S/N	dB			41.3	Stn.S/N=41.0dB	
Fading Value Presumed			fd	dB			8.2	0.1dB/Km+3dB	
S/N at Fading			S/Nfd	dB			33.1		
Threshold Level relative to required S/N			PL	dBm			-99.3		
Margin to Threshold level (PL)			ML	dB			11.3		
Fading margin to ML			Mf	dB			3.1		
RESULT						O.K	S/N>Sta.S/N		
NOTES			Frequency; 70.260 MHZ			70.260 MHz			
			TX		RX		TX		RX
			Bilege T.		Catalan Dam		Catalan Dam		Bilege T.
			GL(T)	2350.0m	150.0m	1790.0m	2350.0m	10.0m	10.0m
Ant(T)H	5.0m	10.0m	10.0m	10.0m	10.0m	10.0m			
			※1	Swach Loss:	0.0dB	※2	Divider:	3.5dB	
				Other Loss:	0.0dB		BPF:	1.5dB	
							Swach:	1.0dB	
							Duplexer:	0.0dB	
						to MUX		0.3dB	
						Antenna Direction(From TXStn.)		303.4°	
			Maximum Frequency Deviation;		± 5.0KHzp-p	Bandwidth;		12.0KHz	
			Maximum Voice Frequency;		3.0KHz	Noise Figure;		8.0dB	

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Bilege T. \longleftrightarrow				Pozantı(RG)			
			Distance =				7.09 Km			
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation				
						Up link				
Power Output	Pt	dBm	40.0	10.0W		34.8	3.0W			
Free Space Loss	Lpf	dB	-86.3			-86.3				
Loss	Adds Diffraction Loss	Lps	dB	-23.0		-23.0				
	Reflection Loss	LAL	dB	-0.0		-0.0				
	Topography Coefficient	ct	dB	-10.0		-10.0				
Supplementary value by the Test:			Z	dB	—					
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.8	10D2E 20m		
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.5	AFZE50-4 20m		
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0			
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2		
	Antenna directivity	La	dB	-0.0			-3.4	97°		
Antenna Gain(T)	Gat	dB	2.2	Sleeve		6.5	3el-w-Yagi			
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		4.0	2el-Yagi			
Span Loss	Lst	dB	-111.5			-120.5				
Receiving Input Voltage		dB μV	—	By Tested-->		—				
Receiving Power	Pr	dBm	-71.5	41.5 dB μV		-85.7				
Internal Noise Power	Prni	dBm				-125.2				
External Noise Power	Prne	dBm				-121.9	NC=5.0dB			
Receiver Noise Power	Prn	dBm				-120.2				
S/N at High Frequency	C/N	dB				34.5				
S/N Improvement coefficient	I	dB				9.1	70% Modulation			
S/N at Nominal Condition	S/N	dB				43.6	Sta.S/N=39.2dB			
Fading Value Presumed	fd	dB				3.7	0.1dB/Km+3dB			
S/N at Fading	S/Nfd	dB				39.9				
Threshold Level relative to required S/N	PL	dBm				-99.3				
Margin to Threshold level (PL)	ML	dB				13.6				
Fading margin to ML	Mf	dB				9.9				
RESULT						O.K	S/N>Sta.S/N			
NOTES			Frequency; 70.260 MHZ		70.260 MHz					
			TX		RX		TX		RX	
			Bilege T.		Pozantı(RG)		Pozantı(RG)		Bilege T.	
			GL(T)	2350.0m	780.0m	780.0m	2350.0m	10.0m	10.0m	10.0m
Ant(T)H	5.0m	10.0m	10.0m	10.0m						
※1 Switch Loss:		0.0dB		※2 Divider:		3.5dB				
Other Loss:		0.0dB		BPF:		1.5dB				
				Switch:		1.0dB				
				Duplexer:		0.0dB				
				2 Span		3.0dB				
				Antenna Direction(From TXStn.)		297.2°				
Maximum Frequency Deviation;		±5.0KHzp-p		Bandwidth;		12.0KHz				
Maximum Voice Frequency;		3.0KHz		Noise Figure;		8.0dB				

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Kalkoyak T. \longleftrightarrow Sarız(RG)					
			Distance = 16.23 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-93.5			-93.5		
Loss	Diffraction Loss	Lps	dB	-12.6		-12.6		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test			Z	dB				
Ant. sys.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	-0.6	10D2E 15m	
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m	-0.8	10D2E 20m	
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0		-1.0		
	Other Loss	Ld	dB	-0.0	※1	-6.0	※2	
	Antenna directivity	La	dB	-0.0		-0.0	0°	
Antenna Gain(T)	Gar	dB	2.2	Sleeve		6.5	3el-w-Yagi	
Antenna Gain(R)	Gwr	dB	7.2	3el-Yagi		2.0	Sleeve	
Span Loss	Ld	dB	-108.3			-116.0		
Receiving Input Voltage		dB μ V		By Tested-->				
Receiving Power	Pr	dBm	-68.3	44.7 dB μ V		-76.0		
Internal Noise Power	Pni	dBm				-125.2		
External Noise Power	Pme	dBm				-121.9	NC-5.0dB	
Receiver Noise Power	Pra	dBm				-120.2		
S/N at High Frequency	C/N	dB				44.2		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				53.3	Sta.S/N=37.4dB	
Fading Value Presumed	fd	dB				4.6	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				48.7		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				23.3		
Fading margin to ML	Mf	dB				18.7		
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency; 70.260 MHz		70.260 MHz			
			TX	RX	TX	RX		
			Kalkoyak T.	Sarız(RG)	Sarız(RG)	Kalkoyak T.		
			GL(T) Ant(T)H	2485.0m 5.0m	1580.0m 10.0m	1580.0m 10.0m	2485.0m 10.0m	
			※1	Switch Loss: 0.0dB Other Loss: 0.0dB	※2	Divider: 3.5dB BPF: 1.5dB Switch: 1.0dB Duplexer: 0.0dB		
					to MUX	0.3dB		
					Antenna Direction(from TXSta.)	231.5°		
			Maximum Frequency Deviation; ± 5.0 KHz-p Maximum Voice Frequency; 3.0KHz		Bandwidth; 12.0KHz Noise Figure; 8.0dB			

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Kilkoyak T. ↔ Sirvan Dağı					
			Distance = 33.26 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-99.8			-99.8		
Loss	Loss							
	Adds	Lps	dB	-0.0		-0.0		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
	Supplementary value by the Test	Z	dB	—				
Ant.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	▲	-0.8	10D2E 20m
sys.	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m
Loss	Coaxial Arrestor Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gar	dB	2.2	Sleeve		6.5	3el-w-Yagi	
Antenna Gain(R)	Gwr	dB	7.2	3el-Yagi		2.0	Sleeve	
Span Loss	Lsl	dB	-102.0				-109.9	
Receiving Input Voltage		dB μV	—	By Tested→		—		
Receiving Power	Pr	dBm	-62.0	51.0 dB μV	□	-69.9		
Internal Noise Power	Prni	dBm				-125.2		
External Noise Power	Prne	dBm				-121.9	NC=5.0dB	
Receiver Noise Power	Prn	dBm				-120.2		
S/N at High Frequency	C/N	dB				50.3		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				59.4	Sta.S/N=39.1dB	
Fading Value Presumed	fd	dB				6.3	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				53.1		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				29.4		
Fading margin to ML	Mf	dB				23.1		
RESULT						O.K	S/N > Sta.S/N	
NOTES			Frequency; 70.260 MHz		70.260 MHz			
			TX	RX	TX	RX		
			Kilkoyak T.	Sirvan Dağı	Sirvan Dağı	Kilkoyak T.		
			GL(T) Ant(T)H	2485.0m 5.0m	2300.0m 10.0m	2300.0m 10.0m	2485.0m 10.0m	
			※1	Switch Loss: 0.0dB Other Loss: 0.0dB	※2	Divider: 3.5dB BPF: 1.5dB Switch: 1.0dB Duplexer: 0.0dB		
					to MUX	0.3dB		
					Antenna Direction(From TXSta.)		187.9°	
			Maximum Frequency Deviation; ±5.0KHzp-p Maximum Voice Frequency; 3.0KHz		Bandwidth; 12.0KHz Noise Figure; 8.0dB			

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Sut Tepe ←				Kilkoyak T.	
			Distance =				42.44 Km	
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-101.9			-101.9		
Add: Loss	Diffraction Loss	Lps	dB	-0.0		-0.0		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	α	dB	-10.0		-10.0		
Supplementary value by the Test			Z	dB	---			
Ant. sys.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	-0.8	10D2E 20m	
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m	-0.8	10D2E 20m	
Loss	Coaxial Arrestor Loss	Lfa	dB	-0.0		-1.0		
	Other Loss	Ld	dB	-0.0	※1	-6.0	※2	
	Antenna directivity	La	dB	-0.0		-0.0	0°	
Antenna Gain(T)	Gat	dB	2.2	Sleeve		2.0	Sleeve	
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		2.0	Sleeve	
Span Loss	Lst	dB	-104.1			-116.5		
Receiving Input Voltage		dB μV	---	By Tested →		---		
Receiving Power	Pr	dBm	-64.1	48.9 dB μV		-76.5		
Internal Noise Power	Prii	dBm				-125.2		
External Noise Power	Prie	dBm				-121.9	NC=5.0dB	
Receiver Noise Power	Pri	dBm				-120.2		
S/N at High Frequency	C/N	dB				43.7		
S/N Improvement coefficient	I	dB				9.1	70% Modulation	
S/N at Nominal Condition	S/N	dB				52.8	Sta S/N=40.0dB	
Fading Value Presumed	fd	dB				7.2	0.1dB/Km+3dB	
S/N at Fading	S/Nfd	dB				45.6		
Threshold Level relative to required S/N	PL	dBm				-99.3		
Margin to Threshold level (PL)	ML	dB				22.8		
Fading margin to ML	Mf	dB				15.6		
RESULT						O.K	S/N>Sta.S/N	
NOTES	Frequency;		70.260 MHZ		70.260 MHz			
	TX		RX		TX		RX	
	SUT Tepe		Kilkoyak T.		Kilkoyak T.		SUT Tepe	
	GL(T)	2013.0m	2485.0m	2485.0m	2013.0m			
Ant(T)H	10.0m	10.0m	15.0m	10.0m				
※1	Switch Loss:	0.0dB	Other Loss:	0.0dB	※2	Divider:	3.5dB	
						BPF:	1.5dB	
						Switch:	1.0dB	
						Duplexer:	0.0dB	
					to MUX		0.3dB	
					Antenna Direction(From TXStn.)		202.4°	
	Maximum Frequency Deviation;		±5.0KHzp-p		Bandwidth;		12.0KHz	
	Maximum Voice Frequency;		3.0KHz		Noise Figure;		8.0dB	

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Sirvan Dağı \longleftrightarrow Pınarbaşı(RG)					
			Distance = 4.71 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pr	dBm	40.0	10.0W		30.0	1.0W	
Free Space Loss	Lpf	dB	-82.8			-82.8		
Loss	Adds Diffraction Loss	Lps	dB	-6.0		-6.0		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test			Z	dB				
Ant. sys.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.6	10D2E 15m
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gat	dB	2.2	Sleeve		8.0	3el-Yagi	
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		2.0	Sleeve	
Span Loss	Ltd	dB	-91.0				-97.2	
Receiving Input Voltage		dB μV		By Tested-->				
Receiving Power	Pr	dBm	-51.0	62.0 dB μV			-67.2	
Internal Noise Power	Prni	dBm					-125.2	
External Noise Power	Prne	dBm					-121.9	NC=5.0dB
Receiver Noise Power	Prn	dBm					-120.2	
S/N at High Frequency	C/N	dB					53.0	
S/N Improvement coefficient	I	dB					9.1	70% Modulation
S/N at Nominal Condition	S/N	dB					62.1	Stn.S/N=36.3dB
Fading Value Presumed	fd	dB					3.5	0.1dB/Km+3dB
S/N at Fading	S/Nfd	dB					58.6	
Threshold Level relative to required S/N	PL	dBm					-99.3	
Margin to Threshold level (PL)	ML	dB					32.1	
Fading margin to ML	Mf	dB					28.6	
RESULT						O.K	S/N>Stn.S/N	
NOTES			Frequency; 70.260 MHz		70.260 MHz			
			TX	RX	TX	RX		
			Sirvan Dağı	Pınarbaşı(RG)	Pınarbaşı(RG)	Sirvan Dağı		
			GL(T) 2300.0m Ant(T)H 5.0m	1540.0m 10.0m	1540.0m 10.0m	2300.0m 10.0m		
※1 Switch Loss: 0.0dB Other Loss: 0.0dB			※2 Divider: 3.5dB BPF: 1.5dB Switch: 1.0dB Duplexer: 0.0dB					
			to MUX			0.3dB		
			Antenna Direction(From TXStn.)			160.5°		
Maximum Frequency Deviation;			±5.0KHzp-p			Bandwidth;		
Maximum Voice Frequency;			3.0KHz			Noise Figure;		
						12.0KHz		
						8.0dB		

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Sirvan Dağı \longleftrightarrow Toklar(RG)						
			Distance = 45.51 Km						
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation			
						Up link			
Power Output	Pr	dBm	40.0	10.0W		40.0	10.0W		
Free Space Loss	Lpf	dB	-102.5			-102.5			
Loss	Diffraction Loss	Lps	dB	-0.0		-0.0			
	Reflection Loss	LAL	dB	-0.0		-0.0			
	Topography Coefficient	tf	dB	-10.0		-10.0			
Supplementary value by the Test			Z	dB	---				
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	A	-0.6	10D2E 15m	
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m	
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0		
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2	
	Antenna directivity	La	dB	-0.0			-0.0	0°	
Antenna Gain(T)	Gat	dB	2.2	Sleeve		8.0	3el-Yagl		
Antenna Gain(R)	Gar	dB	7.2	3el-Yagl		2.0	Sleeve		
Span Loss	Ltl	dB	-104.7			-110.9			
Receiving Input Voltage		dB μ V	---	By Tested-->		---			
Receiving Power	Pr	dBm	-64.7	48.3 dB μ V		-70.9			
Internal Noise Power	Prni	dBm				-125.2			
External Noise Power	Prne	dBm				-121.9	NC=5.0dB		
Receiver Noise Power	Prn	dBm				-120.2			
S/N at High Frequency	C/N	dB				49.3			
S/N Improvement coefficient	I	dB				9.1	70% Modulation		
S/N at Nominal Condition	S/N	dB				58.4	Sta.S/N=40.4dB		
Fading Value Presumed	fd	dB				7.6	0.1dB/Km+3dB		
S/N at Fading	S/Nfd	dB				50.8			
Threshold Level relative to required S/N	PL	dBm				-99.3			
Margin to Threshold level (PL)	ML	dB				28.4			
Fading margin to ML	Mf	dB				20.8			
RESULT						O.K	S/N>Sta.S/N		
NOTES			Frequency; 70.260 MHz			70.260 MHz			
			TX Sirvan Dağı		RX Toklar(RG)		TX Toklar(RG)		RX Sirvan Dağı
			GL(T) 2300.0m		1540.0m		1440.0m		2300.0m
			Ant(T)H 5.0m		10.0m		10.0m		10.0m
※1 Switch Loss:		0.0dB		※2 Divider:		3.5dB			
Other Loss:		0.0dB		BPF:		1.5dB			
				Switch:		1.0dB			
				Duplexer:		0.0dB			
				to MUX		0.3dB			
				Antenna Direction(From TXSta.)		49.4°			
			Maximum Frequency Deviation; ± 5.0 KHzp-p		Bandwidth;		12.0KHz		
			Maximum Voice Frequency; 3.0KHz		Noise Figure;		A.0dB		

70MHZ BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Sirvan Dağı		↔	Kazancık(RG)			
					Distance =	45.42 Km			
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation			
						Up link			
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W		
Free Space Loss	Lpf	dB	-102.5			-102.5			
Add's Loss	Diffraction Loss	Lps	dB	-0.0		-0.0			
	Reflection Loss	LAL	dB	-0.0		-0.0			
	Topography Coefficient	tf	dB	-10.0		-10.0			
Supplementary value by the Test		Z	dB	—					
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.6	10D2E 15m	
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m	
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0		
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2	
	Antenna directivity	La	dB	-0.0			-0.0	0°	
Antenna Gain(T)	Get	dB	2.2	Sleeve		8.0	3el-Yagi		
Antenna Gain(R)	Ger	dB	7.2	3el-Yagi		2.0	Sleeve		
Span Loss	Ltl	dB	-104.7			-110.9			
Receiving Input Voltage		dBμV	—	By Tested-->		—			
Receiving Power	Pr	dBm	-64.7	48.3 dBμV		-70.9			
Internal Noise Power	Prni	dBm				-125.2			
External Noise Power	Prne	dBm				-121.9	NC=5.0dB		
Receiver Noise Power	Prn	dBm				-120.2			
S/N at High Frequency	C/N	dB				49.3			
S/N Improvement coefficient	I	dB				9.1	70%Modulation		
S/N at Nominal Condition	S/N	dB				58.4	Sta.S/N=40.3dB		
Fading Value Presumed	fd	dB				7.5	0.1dB/Km+3dB		
S/N at Fading	S/Nfd	dB				50.9			
Threshold Level relative to required S/N	PL	dBm				-99.3			
Margin to Threshold level (PL)	ML	dB				28.4			
Fading margin to ML	Mf	dB				20.9			
RESULT						O.K	S/N>Sta.S/N		
NOTES			Frequency; 70.260 MHz			70.260 MHz			
			TX Sirvan Dağı		RX Kazancık(RG)		TX Kazancık(RG)		RX Sirvan Dağı
			GL(T) 2300.0m		1540.0m		1578.0m		2300.0m
			Ant(T/H) 5.0m		10.0m		10.0m		10.0m
※1 Switch Loss:		0.0dB		※2 Divider:		3.5dB			
Other Loss:		0.0dB		BPF:		1.5dB			
				Switch:		1.0dB			
				Duplexer:		0.0dB			
				to MUX		0.3dB			
				Antenna Direction(From TXSta.)		197.3°			
		Maximum Frequency Deviation;		±5.0KHzp-p		Bandwidth;			
		Maximum Voice Frequency;		3.0KHz		Noise Figure;			
						12.0KHz			
						8.0dB			

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Alayli(Ziyaret T.) ↔ Feke Dağı						
			Distance = 29.53 Km						
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation			
						Up link			
Power Output	Pr	dBm	40.0	10.0W		40.0	10.0W		
Free Space Loss	Lpf	dB	-98.7			-98.7			
Loss	Diffraction Loss	Lps	dB	-0.0		-0.0			
	Reflection Loss	LAL	dB	-0.0		-0.0			
	Topography Coefficient	tf	dB	-10.0		-10.0			
	Supplementary value by the Test	Z	dB	---					
Ant.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	-1.2	10D2E 30m		
sys.	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m	-0.8	10D2E 20m		
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0		-1.0			
	Other Loss	Ld	dB	-0.0	※1	-6.0	※2		
	Antenna directivity	La	dB	-0.0		-0.0	0°		
	Antenna Gain(T)	Gar	dB	2.2	Sleeve	2.0	sleeve		
	Antenna Gain(R)	Grr	dB	7.2	3el-Yagi	2.0	sleeve		
	Span Loss	Lsl	dB	-100.9		-113.7			
	Receiving Input Voltage		dB μV	---	By Tested →	---			
	Receiving Power	Pr	dBm	-60.9	52.1 dB μV	-73.7			
	Internal Noise Power	Prni	dBm			-125.2			
	External Noise Power	Prne	dBm			-121.9	NC=5.0dB		
	Receiver Noise Power	Prn	dBm			-120.2			
	S/N at High Frequency	C/N	dB			46.5			
	S/N Improvement coefficient	I	dB			9.1	70% Modulation		
	S/N at Nominal Condition	S/N	dB			55.6	Sta.S/N=38.8dB		
	Fading Value Presumed	fd	dB			6.0	0.1dB/Km+3dB		
	S/N at Fading	S/Nfd	dB			49.6			
	Threshold Level relative to required S/N	PL	dBm			-99.3			
	Margin to Threshold level (PL)	ML	dB			25.6			
	Fading margin to ML	Mf	dB			19.6			
RESULT						O.K	S/N>Sta.S/N		
NOTES			Frequency; 70.260 MHz			70.260 MHz			
			TX Alayli(Ziyaret T.)		RX Feke Dağı		TX Feke Dağı		RX Alayli(Ziyaret T.)
			GL(T)	2485.0m		1838.0m	1838.0m		2250.0m
			Ant(T)H	5.0m		10.0m	20.0m		10.0m
	※1	Switch Loss:	0.0dB		※2	Divider:	3.5dB		
		Other Loss:	0.0dB			BPF:	1.5dB		
						Swich:	1.0dB		
						Duplexor:	0.0dB		
					to MUX		0.3dB		
					Antenna Direction(From TXSta.)		9.2°		
				Maximum Frequency Deviation;	±5.0KHzp-p	Bandwidth;	12.0KHz		
				Maximum Voice Frequency;	3.0KHz	Noise Figure;	8.0dB		

70MHZ BAND CIRCUIT DESIGN TABLE

Frequency Under Design 70.260MHz

SPAN			Alaylı (Ziyaret T.) \longleftrightarrow Tomarza(RG)					
			Distance = 37.82 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-100.9			-100.9		
Loss	Adds	Lps	dB	-0.0		-0.0		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test		Z	dB	---				
Ant. sys.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	-0.6	10D2E 15m	
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m	-1.2	10D2E 30m	
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0		-1.0		
	Other Loss	Ld	dB	-0.0	※1	-6.0	※2	
	Antenna directivity	La	dB	-0.0		-1.1	44°	
Antenna Gain(T)		Gat	dB	2.2	Steeve	6.5	3el-w-Yagi	
Antenna Gain(R)		Gar	dB	7.2	3el-Yagi	4.0	2el-Yagi	
Span Loss		Ld	dB	-103.1		-110.3		
Receiving Input Voltage			dB μ V	---	By Tested-->	---		
Receiving Power		Pr	dBm	-63.1	49.9 dB μ V	-70.3		
Internal Noise Power		Prni	dBm			-125.2		
External Noise Power		Prne	dBm			-121.9	NC=5.0dB	
Receiver Noise Power		Prn	dBm			-120.2		
S/N at High Frequency		C/N	dB			49.9		
S/N Improvement coefficient		I	dB			9.1	70% Modulation	
S/N at Nominal Condition		S/N	dB			59.0	Sta S/N=42.3dB	
Fading Value Presumed		fd	dB			6.8	0.1dB/Km+3dB	
S/N at Fading		S/Nfd	dB			52.2		
Threshold Level relative to required S/N		PL	dBm			-99.3		
Margin to Threshold level (PL)		ML	dB			29.0		
Fading margin to ML		Mf	dB			22.2		
RESULT						O.K	S/N>Sta S/N	
NOTES			Frequency; 70.260 MHz		70.260 MHz			
			TX Alaylı (Ziyaret T.)		RX Tomarza(RG)		TX Tomarza(RG) RX Alaylı (Ziyaret T.)	
			GL(T) 2250.0m	1390.0m	1390.0m	2250.0m		
			Ant(T)H 5.0m	10.0m	10.0m	20.0m		
※1 Switch Loss: 0.0dB		Other Loss: 0.0dB		※2 Divider: 3.5dB		BPF: 1.5dB		
				Switch: 1.0dB		Duplexer: 0.0dB		
				2 Span		3.0dB		
				Antenna Direction(From TXSta.)		153.8°		
		Maximum Frequency Deviation; ± 5.0 KHz-p		Bandwidth;		12.0KHz		
		Maximum Voice Frequency; 3.0KHz		Noise Figure;		8.0dB		

70MHZ BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Alaylı (Ziyaret T.) \longleftrightarrow 1822(WL)				
			Distance = 33.24 Km				
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation	
						Up link	
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W
Free Space Loss	Lpf	dB	-99.8			-99.8	
Add Loss	Diffraction Loss	Lps	-8.0			-8.0	
	Reflection Loss	LAL	-0.0			-0.0	
	Topography Coefficient	tf	-10.0			-10.0	
Supplementary value by the Test			Z	dB	—		
Ant. sys.	Feeder Loss(T)	Lft	-0.8	10D2V 20m	↑	-1.0	10D2E 25m
	Feeder Loss(R)	Lfr	-0.8	10D2V 20m		-1.2	10D2E 30m
Loss	Coaxial Arrester Loss	Lfa	-0.0			-1.0	
	Other Loss	Ld	-0.0	※1		-6.0	※2
	Antenna directivity	La	-0.0			-0.0	0°
Antenna Gain(T)	Gar	dB	2.2	Sleeve		6.5	3el-w-Yagi
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		4.0	2el-Yagi
Span Loss	Ltd	dB	-110.0			-116.5	
Receiving Input Voltage		dB μV	—	By Tested-->		—	
Receiving Power	Pr	dBm	-70.0	43.0 dB μV		-76.5	
Internal Noise Power	Prni	dBm				-125.2	
External Noise Power	Prne	dBm				-121.9	NC=5.0dB
Receiver Noise Power	Prn	dBm				-120.2	
S/N at High Frequency	C/N	dB				43.7	
S/N Improvement coefficient	I	dB				9.1	70% Modulation
S/N at Nominal Condition	S/N	dB				52.8	Sta S/N=41.8dB
Fading Value Presumed	fd	dB				6.3	0.1dB/Km+3dB
S/N at Fading	S/Nfd	dB				46.5	
Threshold Level relative to required S/N	PL	dBm				-99.3	
Margin to Threshold level (PL)	ML	dB				22.8	
Fading margin to ML	Mf	dB				16.5	
RESULT						O.K	S/N>Sta.S/N
NOTES	Frequency:		70.260 MHZ		70.260 MHZ		
	TX		RX		TX		RX
	Alaylı (Ziyaret T.)		1822(WL)		1822(WL)		Alaylı (Ziyaret T.)
	GL(T)	2250.0m		1270.0m	1270.0m		2250.0m
Ant(T)H	5.0m		10.0m	18.0m		20.0m	
	※1	Switch Loss:		0.0dB	※2	Divider:	3.5dB
		Other Loss:		0.0dB		BPF:	1.5dB
						Switch:	1.0dB
						Duplexer:	0.0dB
					2 Span		3.0dB
					Antenna Direction(From TXSta.)		109.7°
			Maximum Frequency Deviation;	± 5.0KHz p-p		Bandwidth;	12.0KHz
			Maximum Voice Frequency;	3.0KHz		Noise Figure;	8.0dB

70MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Kuzören T. ↔ Alaylı (Ziyaret T.)						
			Distance = 30.13 Km						
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation			
						Up link			
Power Output	Pr	dBm	40.0	10.0W		40.0	10.0W		
Free Space Loss	Lpf	dB	-98.9			-98.9			
Add: Loss	Diffraction Loss	Lps	dB	-19.4		-19.4			
	Reflection Loss	LAL	dB	-0.0		-0.0			
	Topography Coefficient	tf	dB	-10.0		-10.0			
Supplementary value by the Test		Z	dB	—					
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.8	10D2E 20m	
	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-1.2	10D2E 30m	
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0		
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2	
	Antenna directivity	La	dB	-0.0			-0.0	26°	
Antenna Gain(T)	Gat	dB	2.2	Sleeve		4.0	2el-Yagi		
Antenna Gain(R)	Gar	dB	7.2	3el-Yagi		6.5	3el-w-Yagi		
Span Loss	Lsl	dB	-120.5			-126.8			
Receiving Input Voltage		dB μV	—	By Tested→		—			
Receiving Power	Pr	dBm	-80.5	32.5 dB μV	□	-86.8			
Internal Noise Power	Pni	dBm				-125.2			
External Noise Power	Pne	dBm				-121.9	NC=5.0dB		
Receiver Noise Power	Pra	dBm				-120.2			
S/N at High Frequency	C/N	dB				33.4			
S/N Improvement coefficient	I	dB				9.1	70% Modulation		
S/N at Nominal Condition	S/N	dB				42.5	Sta.S/N=38.8dB		
Fading Value Presumed	fd	dB				6.0	0.1dB/Km+3dB		
S/N at Fading	S/Nfd	dB				36.5			
Threshold Level relative to required S/N	PL	dBm				-99.3			
Margin to Threshold level (PL)	ML	dB				12.5			
Fading margin to ML	Mf	dB				6.5			
RESULT						O.K	S/N>Sta.S/N		
NOTES			Frequency; 70.260 MHz		70.260 MHz				
			TX Kuzören T.		RX Alaylı (Ziyaret T.)		TX Alaylı (Ziyaret T.)		RX Kuzören T.
			GL(T) 1800.0m		2250.0m		2250.0m		1800.0m
			Ant(T)H 5.0m		10.0m		20.0m		10.0m
※1 Switch Loss: 0.0dB		Other Loss: 0.0dB		※2 Divider: 3.5dB		BPF: 1.5dB	Switch: 1.0dB		
				Duplexer: 0.0dB					
				to MUX		0.3dB			
				Antenna Direction(From TXSta.)		263.8°			
		Maximum Frequency Deviation; ±5.0KHzp-p		Bandwidth; 12.0KHz		Noise Figure; 8.0dB			
		Maximum Voice Frequency; 3.0KHz							

70MHZ BAND CIRCUIT DESIGN TABLE

Frequency Under Design

70.260MHz

SPAN			Kuzören T. \longleftrightarrow Seyhli (RG)							
			Distance = 2.41 Km							
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation				
						Up link				
Power Output	Pt	dBm	-40.0	10.0W		40.0	10.0W			
Free Space Loss	Lpf	dB	-77.0			-77.0				
Adds	Diffraction Loss	Lps	dB	-23.2		-23.2				
Loss	Reflection Loss	LAL	dB	-0.0		-0.0				
	Topography Coefficient	tf	dB	-10.0		-10.0				
Supplementary value by the Test			Z	dB	—					
Ant.	Feeder Loss(T)	Lft	dB	-0.8	10D2V 20m	↑	-0.6	10D2E 15m		
sys.	Feeder Loss(R)	Lfr	dB	-0.8	10D2V 20m		-0.8	10D2E 20m		
Loss	Coaxial Arrester Loss	Lfa	dB	-6.0			-1.0			
	Other Loss	Ld	dB	-0.0	※1		-6.0	※2		
	Antenna directivity	La	dB	-0.0			-15.0	110°		
Antenna Gain(T)			Gain	dB	2.2	Sleeve	8.0	3el-Yagi		
Antenna Gain(R)			Gain	dB	7.2	3el-Yagi	8.0	3el-Yagi		
Span Loss			Lsl	dB	-102.4		-117.6			
Receiving Input Voltage				dB μ V	—	By Testad-->	—			
Receiving Power			Pr	dBm	-62.4	50.6 dB μ V	-77.6			
Internal Noise Power			Prni	dBm			-125.2			
External Noise Power			Prne	dBm			-121.9	NC=5.0dB		
Receiver Noise Power			Prn	dBm			-120.2			
S/N at High Frequency			C/N	dB			42.6			
S/N Improvement coefficient			I	dB			9.1	70% Modulation		
S/N at Nominal Condition			S/N	dB			51.7	Sta S/N=38.7dB		
Fading Value Presumed			fd	dB			3.2	0.1dB/Km+3dB		
S/N at Fading			S/Nfd	dB			48.5			
Threshold Level relative to required S/N			PL	dBm			-99.3			
Margin to Threshold level (PL)			ML	dB			21.7			
Fading margin to MI.			Mf	dB			18.5			
RESULT							O.K	S/N>Sta.S/N		
NOTES			Frequency: 70.260 MHz		70.260 MHz					
			TX		RX		TX		RX	
			Kuzören T.		Seyhli (RG)		Seyhli (RG)		Kuzören T.	
			GL(T)	1800.0m		1380.0m		1380.0m		1800.0m
Ant(T)H	5.0m		10.0m		10.0m		10.0m			
※1 Switch Loss:		0.0dB		※2 Divider:		3.5dB				
Other Loss:		0.0dB		BPF:		1.5dB				
				Switch:		1.0dB				
				Duplexer:		0.0dB				
				2 Span		3.0dB				
				Antenna Direction(From TXSta.)		13.4°				
Maximum Frequency Deviation:			±5.0KHz-p		Bandwidth:			12.0KHz		
Maximum Voice Frequency:			3.0KHz		Noise Figure:			8.0dB		

400MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

411.700MHz

SPAN			DSİ Adana \longleftrightarrow Taşçı						
			Distance = 14.25 Km						
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation			
						Up link			
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W		
Free Space Loss	Lpf	dB	-107.8			-107.8			
Add's Loss	Diffraction Loss	Lps	dB	-0.0		-0.0			
	Reflection Loss	LAL	dB	-11.7		-2.8			
	Topography Coefficient	cf	dB	-10.0		-10.0			
Supplementary value by the Test		Z	dB	---	-16.5dB	-16.5			
Ant. SYS.	Feeder Loss(T)	Lft	dB	-2.2	10D2V 20m	↑	-2.2	10D2E 20m	
	Feeder Loss(R)	Lfr	dB	-2.2	10D2V 20m		-2.7	AFZE50-4 45m	
Loss	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0		
	Other Loss	Ld	dB	-0.0	※1		-1.0	※2	
	Antenna directivity	La	dB	-0.0			-2.6	29°	
Antenna Gain(T)	Gat	dB	2.2	Sleeve		12.5	8el-w-Yagi		
Antenna Gain(R)	Gar	dB	11.2	5el-Yagi		11.0	5el-w-Yagi		
Span Loss	Lst	dB	-120.5		(-97.0dBm)	-123.1			
Receiving Input Voltage		dB μ V	---	By Tested-->	16.0dB μ V	---			
Receiving Power	Pr	dBm	-80.5	32.5 dB μ V		-83.1			
Internal Noise Power	Prni	dBm				-125.0			
External Noise Power	Prne	dBm				-127.3	NC=2.0dB		
Receiver Noise Power	Prn	dBm				-123.0			
S/N at High Frequency	C/N	dB				39.9			
S/N Improvement coefficient	I	dB				1.3	70% Modulation		
S/N at Nominal Condition	S/N	dB				41.2	Stn S/N=44.3dB		
Fading Value Presumed	fd	dB				5.9	0.2dB/Km+3dB		
S/N at Fading	S/Nfd	dB				35.3			
Threshold Level relative to required S/N	PL	dBm				-89.3			
Margin to Threshold level (PL)	ML	dB				6.2			
Fading margin to ML	Mf	dB				0.3			
RESULT						Not sufficient	S/N<Stn S/N		
NOTES			Frequency; 411.700 MHz		411.700 MHz				
			TX	RX	TX	RX			
			DSİ Adana	Taşçı	DSİ Adana				
			GL(T) 20.0m	16.0m	20.0m				
Ant(T)H 21.5m	10.0m	15.0m	40.0m						
※1	Switch Loss: 0.0dB	Other Loss: 0.0dB	※2	Divider: 0.0dB	BPF: 0.0dB	Switch: 1.0dB	Duplexer: 0.0dB		
			to MUX	0.9dB					
			Antenna Direction(From TXStn.)	2.5°					
			Maximum Frequency Deviation;	±2.5KHzp-p	Bandwidth;	8.0KHz			
			Maximum Voice Frequency;	3.0KHz	Noise Figure;	10.0dB			

400MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design 411.700MHz

SPAN			DSİ Adana ↔ Kuranşa					
			Distance = 27.52 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-113.5			-113.5		
Loss	Diffraction Loss	Lps	dB	-0.0		-0.0		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
	Supplementary value by the Test	Z	dB	—				
Ant.	Feeder Loss(T)	Lft	dB	-2.2	10D2V 20m	↑	-2.2	10D2E 20m
sys.	Feeder Loss(R)	Lfr	dB	-2.2	10D2V 20m		-2.7	AFZES0-4 45m
Loss	Coaxial Arrestor Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-9.0	※2
	Antenna directivity	La	dB	-0.0		-0.0	0°	
	Antenna Gain(T)	Gat	dB	2.2	Sleeve		13.0	8el-Yagi
	Antenna Gain(R)	Gar	dB	11.2	5el-Yagi		11.0	5el-w-Yagi
	Span Loss	Ltl	dB	-114.5			-114.4	
	Receiving Input Voltage		dB μV	—	By Tested →		—	
	Receiving Power	Pr	dBm	-74.5	38.5 dB μV		-74.4	
	Internal Noise Power	Prni	dBm				-125.0	
	External Noise Power	Prne	dBm				-127.3	NC=2.0dB
	Receiver Noise Power	Prn	dBm				-123.0	
	S/N at High Frequency	C/N	dB				48.6	
	S/N Improvement coefficient	I	dB				1.3	70% Modulation
	S/N at Nominal Condition	S/N	dB				49.9	Sta.S/N=46.9dB
	Fading Value Presumed	fd	dB				8.5	0.2dB/Km+3dB
	S/N at Fading	S/Nfd	dB				41.4	
	Threshold Level relative to required S/N	PL	dBm				-89.3	
	Margin to Threshold level (PL)	ML	dB				14.9	
	Fading margin to ML	Mf	dB				6.4	
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency; 411.700 MHz		411.700 MHz			
			TX	RX	TX	RX		
			DSİ Adana	Kuranşa	Kuranşa	DSİ Adana		
			GL(T) 20.0m	5.0m	5.0m	20.0m		
Ant(T)H 21.5m	10.0m	20.0m	40.0m					
※1	Switch Loss: 0.0dB	※2	Divider: 3.5dB					
	Other Loss: 0.0dB		BPF: 1.5dB					
			Switch: 1.0dB					
			Duplexer: 3.0dB					
			to MUX	0.9dB				
			Antenna Direction(From TXSta.)	31.4°				
Maximum Frequency Deviation;		±2.5KHz-p		Bandwidth;		8.0KHz		
Maximum Voice Frequency;		3.0KHz		Noise Figure;		10.0dB		

400MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

411.700MHz

SPAN			DSI Adana ← → Yenice					
			Distance = 25.13 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		44.0	25.0W	
Free Space Loss	Lpf	dB	-112.7			-112.7		
Loss	Adds Diffraction Loss	Lps	dB	-0.0		-0.0		
	Reflection Loss	LAL	dB	-16.7		-7.7		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test		Z	dB	---				
Ant. Loss	Feeder Loss(T)	Lft	dB	-2.2	10D2V 20m		-2.2	10D2E 20m
	Feeder Loss(R)	Lfr	dB	-2.2	10D2V 20m		-2.7	AFZE50-4 45m
	Coaxial Arrestor Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-1.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gat	dB	2.2	Sleeve		11.0	5el-w-Yagi	
Antenna Gain(R)	Gar	dB	11.2	5el-Yagi		11.0	5el-w-Yagi	
Span Loss	Ltd	dB	-130.4			-115.3		
Receiving Input Voltage		dBμV	---	By Tested-->		---		
Receiving Power	Pr	dBm	-90.4	22.6 dBμV		-71.3		
Internal Noise Power	Prni	dBm				-125.0		
External Noise Power	Prne	dBm				-127.3	NC=2.0dB	
Receiver Noise Power	Prn	dBm				-123.0		
S/N at High Frequency	C/N	dB				51.7		
S/N Improvement coefficient	I	dB				1.3	70% Modulation	
S/N at Nominal Condition	S/N	dB				53.0	Sta.S/N=41.4dB	
Fading Value Presumed	fd	dB				8.0	0.2dB/Km+3dB	
S/N at Fading	S/Nfd	dB				45.0		
Threshold Level relative to required S/N	PL	dBm				-94.3		
Margin to Threshold level (PL)	ML	dB				23.0		
Fading margin to ML	Mf	dB				15.0		
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency: 411.700 MHZ		411.700 MHZ			
			TX	RX	TX	RX		
			DSI Adana	Yenice	Yenice	DSI Adana		
			GL(T)	20.0m	30.0m	16.0m	20.0m	
			Am(T)H	21.5m	10.0m	15.0m	40.0m	
			※1	Switch Loss:	0.0dB	※2	Divider:	
				Other Loss:	0.0dB		BPF:	
							Switch:	
							Duplexer:	
							to MUX	
							0.9dB	
							Antenna Direction(From TXSta.)	
							84.4°	
			Maximum Frequency Deviation;		±2.5KHz-p	Band width;		
			Maximum Voice Frequency;		3.0KHz	Noise Figure;		
						8.0KHz		
						10.0dB		

400MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

411.700MHz

SPAN			DSİ Adana ←→ Doğankent					
			Distance = 13.59 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		44.0	25.0W	
Free Space Loss	Lpf	dB	-107.4			-107.4		
Loss	Adds	Lps	dB	-0.0		-0.0		
	Diffraction Loss	Lpd	dB	-0.0		-0.0		
	Reflection Loss	LAL	dB	-11.3		-2.4		
	Topography Coefficient	tt	dB	-10.0		-10.0		
Supplementary value by the Test			Z	dB				
Ant. Loss	Feeder Loss(T)	Lft	dB	-2.2	10D2V 20m	↑	-2.2	10D2E 20m
	Feeder Loss(R)	Lfr	dB	-2.2	10D2V 20m		-2.7	AFZE50-4 45m
	Coaxial Arrestor Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-1.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gar	dB	2.2	Sleeve		11.0	5el-w-Yagi	
Antenna Gain(R)	Gar	dB	11.2	5el-Yagi		11.0	5el-w-Yagi	
Span Loss	Ltl	dB	-119.7			-104.7		
Receiving Input Voltage		dB μV		By Tested-->				
Receiving Power	Pr	dBm	-79.7	33.3 dB μV		-60.7		
Internal Noise Power	Pri	dBm				-125.0		
External Noise Power	Prne	dBm				-127.3	NC=2.0dB	
Receiver Noise Power	Pri	dBm				-123.0		
S/N at High Frequency	C/N	dB				62.3		
S/N Improvement coefficient	I	dB				1.3	70% Modulation	
S/N at Nominal Condition	S/N	dB				63.6	Stn S/N=39.1dB	
Fading Value Presumed	fd	dB				5.7	0.2dB/Km+3dB	
S/N at Fading	S/Nfd	dB				57.9		
Threshold Level relative to required S/N	PL	dBm				-94.3		
Margin to Threshold level (PL)	ML	dB				33.6		
Fading margin to ML	Mf	dB				27.9		
RESULT						O.K	S/N>Stn.S/N	
NOTES	Frequency:		411.700 MHz		411.700 MHz			
	TX		DSİ Adana		RX		Doğankent	
	GL(T)	20.0m	16.0m	Doğankent	16.0m	DSİ Adana	20.0m	
	Ant(T)H	21.5m	10.0m	15.0m	40.0m			
	※1	Swich Loss:	0.0dB	※2	Divider:	0.0dB		
	Other Loss:	0.0dB		BPF:	0.0dB			
				Swich:	1.0dB			
				Duplexer:	0.0dB			
				to MUX	0.9dB			
				Antenna Direction(From TXSta.)	5.6°			
Maximum Frequency Deviation;		±2.5KHzp-p		Band width;		8.0KHz		
Maximum Voice Frequency;		3.0KHz		Noise Figure;		10.0dB		

400MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

411.700MHz

SPAN			DSI Adana		↔	Karayusufulu		
					Distance =	16.96 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pr	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-109.3			-109.3		
Loss	Diffraction Loss	Lps	dB	-0.0		-0.0		
	Reflection Loss	LAL	dB	-13.2		-4.3		
	Topography Coefficient	tf	dB	-10.0		-10.0		
	Supplementary value by the Test	Z	dB	---				
Ant. Loss	Feeder Loss(T)	Lft	dB	-2.2	10D2V 20m	↑	-2.2	10D2E 20m
	Feeder Loss(R)	Lfr	dB	-2.2	10D2V 20m		-2.7	AFZE50-4 45m
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-1.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	3°
Antenna Gain(T)	Gat	dB	2.2	Sleeve		12.5	8el-w-Yagi	
Antenna Gain(R)	Gar	dB	11.2	5el-Yagi		11.0	5el-w-Yagi	
Span Loss	Lst	dB	-123.5			-107.0		
Receiving Input Voltage		dB μV	---	By Tested-->		---		
Receiving Power	Pr	dBm	-83.5	29.5 dB μV		-67.0		
Internal Noise Power	Pmi	dBm				-125.0		
External Noise Power	Pme	dBm				-127.3	NC=2.0dB	
Receiver Noise Power	Pm	dBm				-123.0		
S/N at High Frequency	C/N	dB				56.0		
S/N Improvement coefficient	I	dB				1.3	70% Modulation	
S/N at Nominal Condition	S/N	dB				57.3	Sta.S/N=39.8dB	
Fading Value Presumed	fd	dB				6.4	0.2dB/Km+3dB	
S/N at Fading	S/Nfd	dB				50.9		
Threshold Level relative to required S/N	PL	dBm				-94.3		
Margin to Threshold level (PL)	ML	dB				27.3		
Fading margin to ML	Mf	dB				20.9		
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency: 411.700 MHz			411.700 MHz		
			TX	RX		TX	RX	
			DSI Adana	Karayusufulu		Karayusufulu	DSI Adana	
			GL(T)	20.0m	10.0m	16.0m	20.0m	
			Ant(T)H	21.5m	10.0m	15.0m	40.0m	
			※1	Switch Loss:	0.0dB	※2	Divider:	
				Other Loss:	0.0dB		BPF:	
							Switch:	
							Duplexer:	
						to MUX	0.9dB	
						Antenna Direction(from TXSta.)	28.0°	
			Maximum Frequency Deviation;		±2.5KHz-p	Band width;		
			Maximum Voice Frequency;		3.0KHz	Noise Figure;		
						8.0KHz		
						10.0dB		

400MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

411.700MHz

SPAN			Tabaklar \longleftrightarrow Kuranga					
			Distance = 15.85 Km					
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-108.7			-108.7		
Loss	Diffraction Loss	Lps	dB	-0.0		-0.0		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test			Z	dB				
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-2.2	10D2V 20m	A	-2.2	10D2E 20m
	Feeder Loss(R)	Lfr	dB	-2.2	10D2V 20m		-2.2	10D2E 20m
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-9.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gat	dB	2.2	Sleeve		13.0	8el-Yagi	
Antenna Gain(R)	Gar	dB	11.2	5el-Yagi		12.5	8el-w-Yagi	
Span Loss	Lsf	dB	-109.7			-107.6		
Receiving Input Voltage		dB μ V		By Tested-->				
Receiving Power	Pr	dBm	-69.7	43.3 dB μ V		-67.6		
Internal Noise Power	Pmi	dBm				-125.0		
External Noise Power	Pme	dBm				-127.3	NC=2.0dB	
Receiver Noise Power	Pm	dBm				-123.0		
S/N at High Frequency	C/N	dB				55.4		
S/N Improvement coefficient	I	dB				1.3	70% Modulation	
S/N at Nomial Condition	S/N	dB				56.7	Sta S/N=47.6dB	
Fading Value Presumed	fd	dB				6.2	0.2dB/Km+3dB	
S/N at Fading	S/Nfd	dB				50.5		
Threshold Level relative to required S/N	PL	dBm				-89.3		
Margin to Threshold level (PL)	ML	dB				21.7		
Fading margin to ML	Mf	dB				15.5		
RESULT						O.K	S/N>Sta.S/N	
NOTES			Frequency: 411.700 MHZ		411.700 MHZ			
			TX	RX	TX	RX	TX	RX
			Tabaklar	Kuranga	Kuranga	Tabaklar	Tabaklar	Tabaklar
			GL(T) Ant(T)H	3.0m 10.0m	5.0m 10.0m	5.0m 15.0m	3.0m 15.0m	3.0m 15.0m
			※1	Switch Loss: Other Loss:	0.0dB 0.0dB	※2	Divider: BPF: Swich: Duplexer:	3.5dB 1.5dB 1.0dB 3.0dB
					MUX+2 Span	3.9dB		
					Antenna Direction(From TXStn.)		252.3°	
			Maximum Frequency Deviation; Maximum Voice Frequency;		±2.5KHep-p 3.0KHz	Bandwidth; Noise Figure;	8.0KHz 10.0dB	

400MHz BAND CIRCUIT DESIGN TABLE

Frequency Under Design

411.700MHz

SPAN			Baharlı		↔	Kuranga		
					Distance =	19.42 Km		
Item to be Calculated			Design value Before Test		value on Test	Design value on Operation		
						Up link		
Power Output	Pt	dBm	40.0	10.0W		40.0	10.0W	
Free Space Loss	Lpf	dB	-110.5			-110.5		
Loss	Diffraction Loss	Lps	dB	-0.0		-0.0		
	Reflection Loss	LAL	dB	-0.0		-0.0		
	Topography Coefficient	tf	dB	-10.0		-10.0		
Supplementary value by the Test		Z	dB	---				
Ant. sys. Loss	Feeder Loss(T)	Lft	dB	-2.2	10D2V 20m	↑	-2.2	10D2E 20m
	Feeder Loss(R)	Lfr	dB	-2.2	10D2V 20m		-2.2	10D2E 20m
	Coaxial Arrester Loss	Lfa	dB	-0.0			-1.0	
	Other Loss	Ld	dB	-0.0	※1		-9.0	※2
	Antenna directivity	La	dB	-0.0			-0.0	0°
Antenna Gain(T)	Gar	dB	2.2	Steeve		13.0	8el-Yagi	
Antenna Gain(R)	Gar	dB	11.2	5el-Yagi		12.5	8el-w-Yagi	
Span Loss	Ld	dB	-111.5			-109.4		
Receiving Input Voltage		dB μV	---	By Tested-->		---		
Receiving Power	Pr	dBm	-71.5	41.5 dB μV		-69.4		
Internal Noise Power	Prni	dBm				-125.0		
External Noise Power	Prne	dBm				-127.3	NC=2.0dB	
Receiver Noise Power	Prn	dBm				-123.0		
S/N at High Frequency	C/N	dB				53.6		
S/N Improvement coefficient	I	dB				1.3	70% Modulation	
S/N at Nominal Condition	S/N	dB				54.9	Stn S/N=43.3dB	
Fading Value Presumed	fd	dB				6.9	0.2dB/Km+3dB	
S/N at Fading	S/Nfd	dB				48.0		
Threshold Level relative to required S/N	PL	dBm				-94.3		
Margin to Threshold level (PL)	ML	dB				24.9		
Fading margin to ML	Mf	dB				18.0		
RESULT						O.K	S/N>Stn.S/N	
NOTES			Frequency: 411.700 MHz			411.700 MHz		
			TX	RX		TX	RX	
			Baharlı	Kuranga		Kuranga	Baharlı	
			GL(T) Ant(T)H	10.0m 10.0m	5.0m 10.0m	5.0m 15.0m	10.0m 15.0m	
	※1 Switch Loss: Other Loss:	0.0dB 0.0dB	※2 Divider: BPF: Switch: Duplexer:	3.5dB 1.5dB 1.0dB 3.0dB				
			MUX+2 Span	3.9dB				
			Antenna Direction(From TXStn.)	260.0°				
	Maximum Frequency Deviation; Maximum Voice Frequency;	±2.5KHzp-p 3.0KHz	Bandwidth; Noise Figure;	8.0KHz 10.0dB				

