

## 6. Radio Wave Propagation Test Data

## RADIO PROPAGATION TEST DATA SHEET

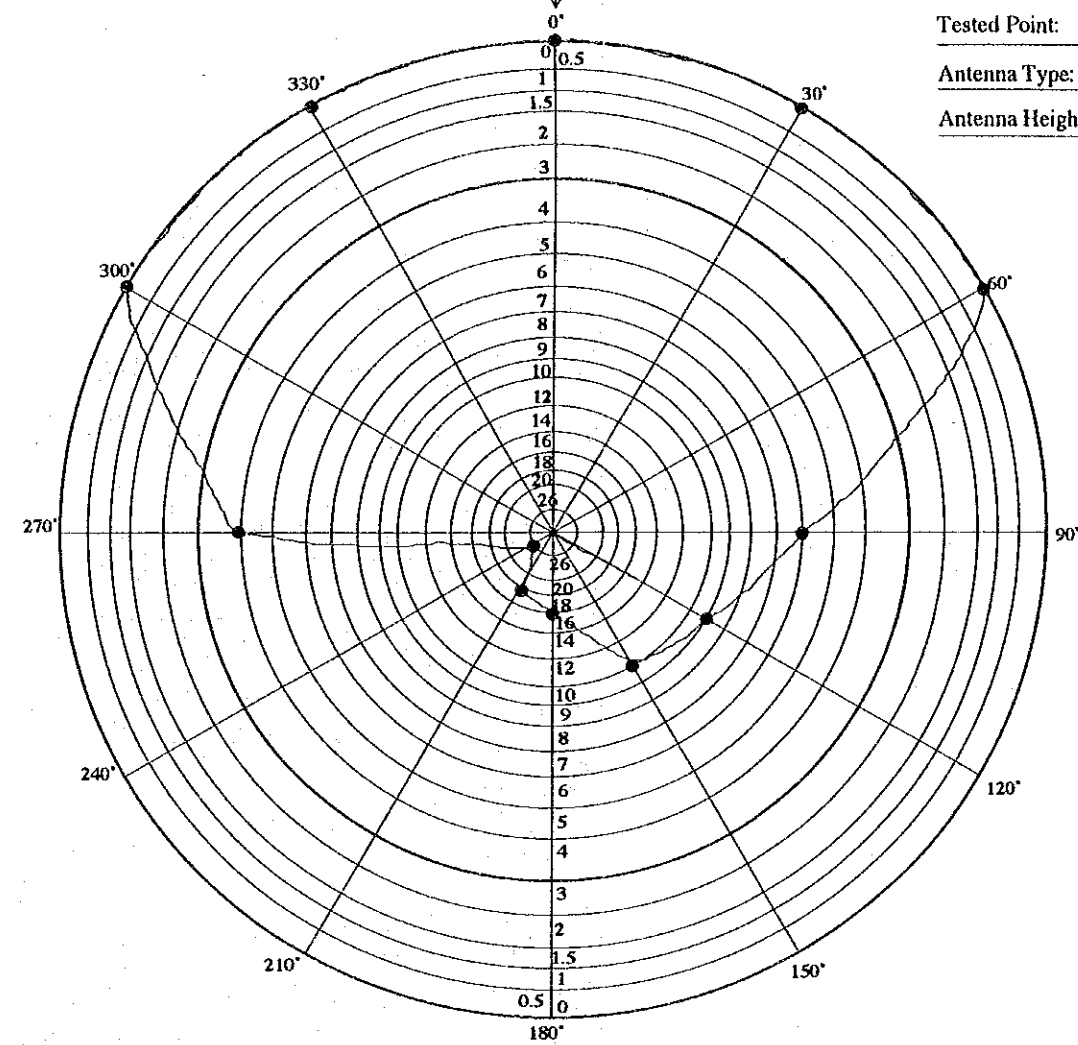
NO. 70-3

Measured by: DENSETSU ENGINEERING CORP.

Test Span	Karlik . T— 1806 (WL)		Date: 12 . NOV . 1993	Weather: Clear
			Time: 12 . 30 . 00	
Measuring Point	Station Name		Station Name	
	Karlik..T		1806 (WL)	
Frequency	70.26 MHz (Vertical,Polarization)			
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el,Yagi	Gain 7.15 dB
	Height 5 m		Height 10 m	
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length 20 m	Loss 0.9 dB	Length 20 m	Loss 0.9 dB
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0.1 W
Receiving Voltage	True Direction N: 7 °		True Direction N: 187 °	
S / N	S = -4 dB	S / N >56 dB	S = -3 dB	S / N >57 dB
	N = <-60 dB		N = <-60 dB	
Field Strength Meter	ML-518A			
Signal Generator	MG-54E			
Level Meter	LM-310			

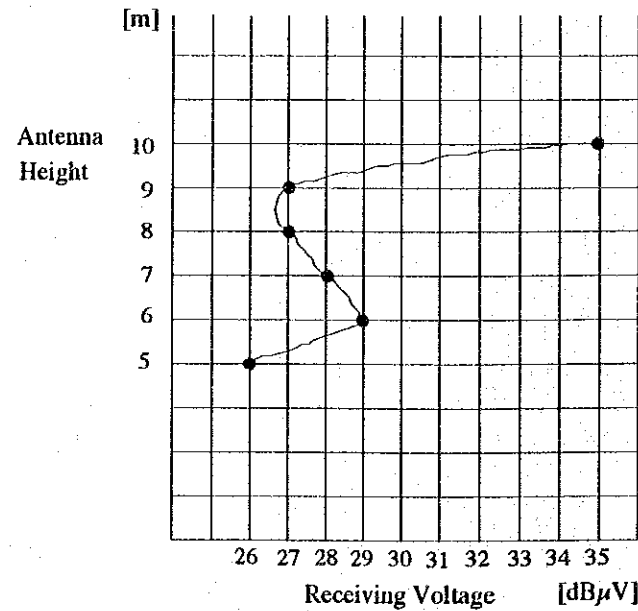
### Antenna Polarization Pattern

Direction = Karlik . T (T.N: 187 °)



Tested Point: 1806 (WL)  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

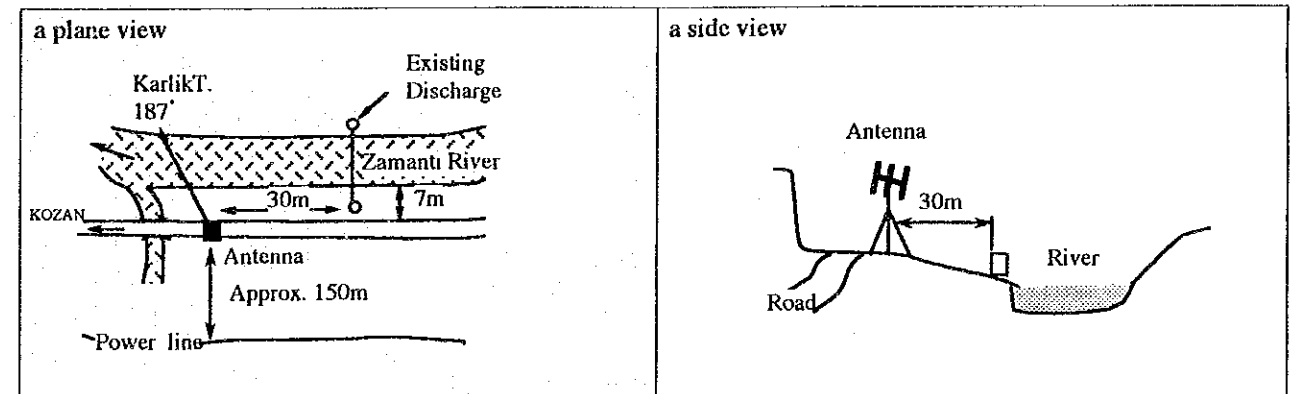
### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dBµV]
10	35
9	27
8	27
7	28
6	29
5	26

Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dBµV]	35	35	35	29	26	25	19	17	9	31	35	38

### Sketch at measuring point



THE REPUBLIC OF TURKEY  
DEVLET SU İŞLERİ  
GENEL MÜDÜRLÜĞÜ

FLOOD CONTROL, FORECASTING  
AND WARNING SYSTEM FOR  
SEYHAN RIVER BASIN  
JAPAN INTERNATIONAL COOPERATION AGENCY

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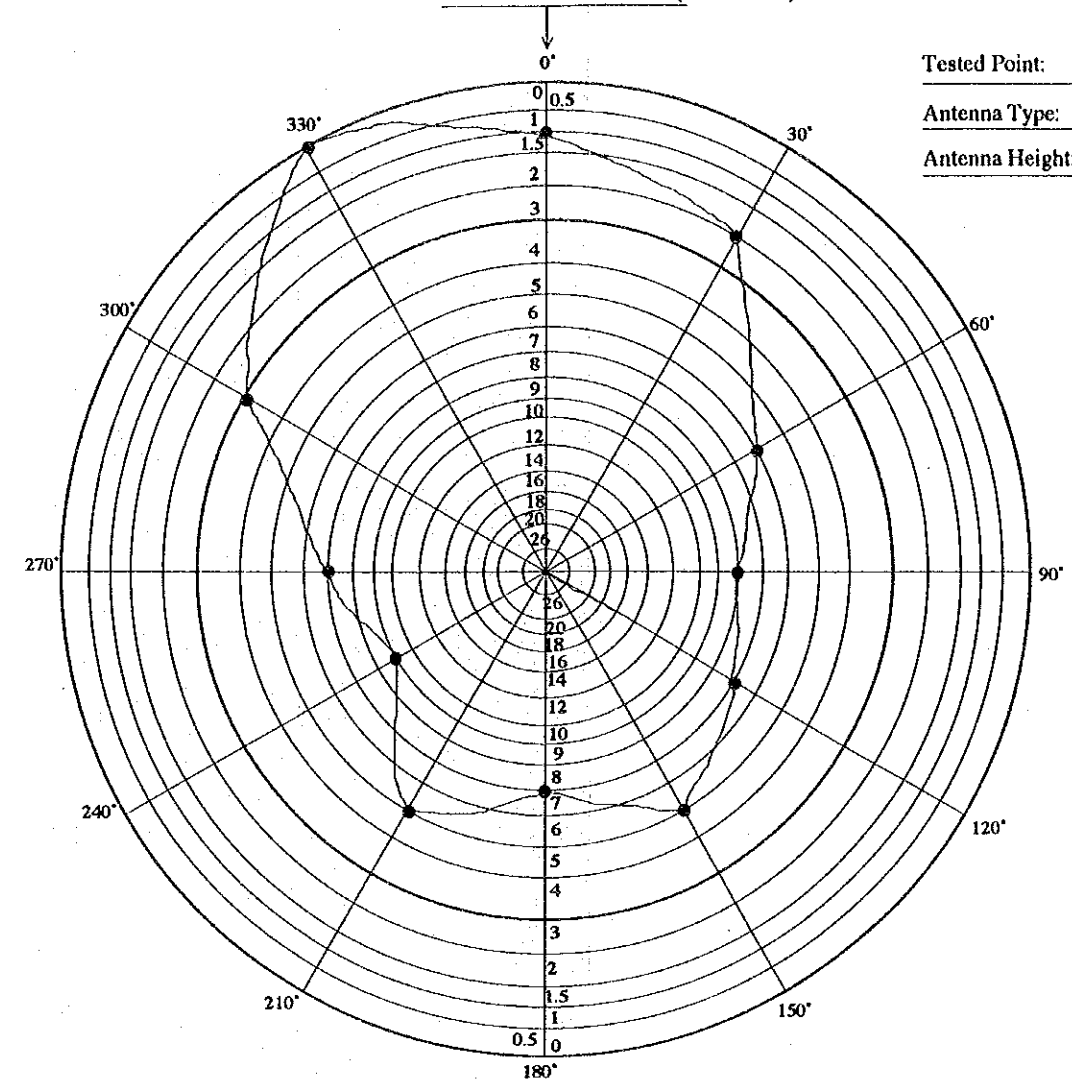
NO. 70-4

Measured by; DENSETSU ENGINEERING CORP.

Test Span	Karlık . T— 1805 (WL)	Date: 12 . NOV . 1993	Weather: Clear
		Time: 14 . 30 . 00	
Measuring Point	Station Name	Station Name	
	Karlık..T	1805(WL)	
	N: 37° 33' 08" E: 35° 33' 44" 1490 m	N: 37° 37' 04" E: 35° 36' 49" 310 m	G.L.
Frequency	70.26 MHz (Vertical,Polarization)		
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el,Yagi
	Height 5 m		Gain 7.15 dB
Coaxial Cable	Type 10D-2V		Type 10D-2V
	Length 20 m	Loss 0.9 dB	Length 20 m
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W
			Reflect 0 W
Receiving Voltage	True Direction N: 32°		True Direction N: 212°
S / N	S = -3.5 dB	S / N >56.5 dB	S = -4.5 dB
	N = <60 dB		N = <60 dB
Field Strength Meter	ML-518A		
Signal Generator	MG-54E		
Level Meter	LM-310		

### Antenna Polarization Pattern

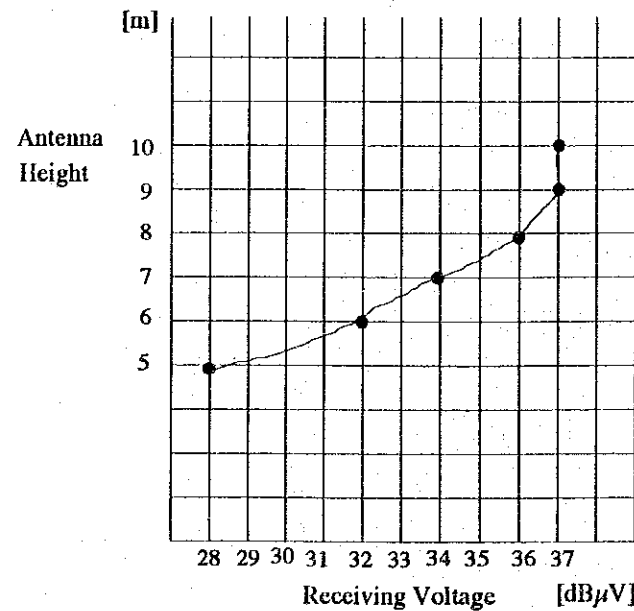
Direction = Karlık . T (T.N: 212 °)



Tested Point: 1805 (WL)  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

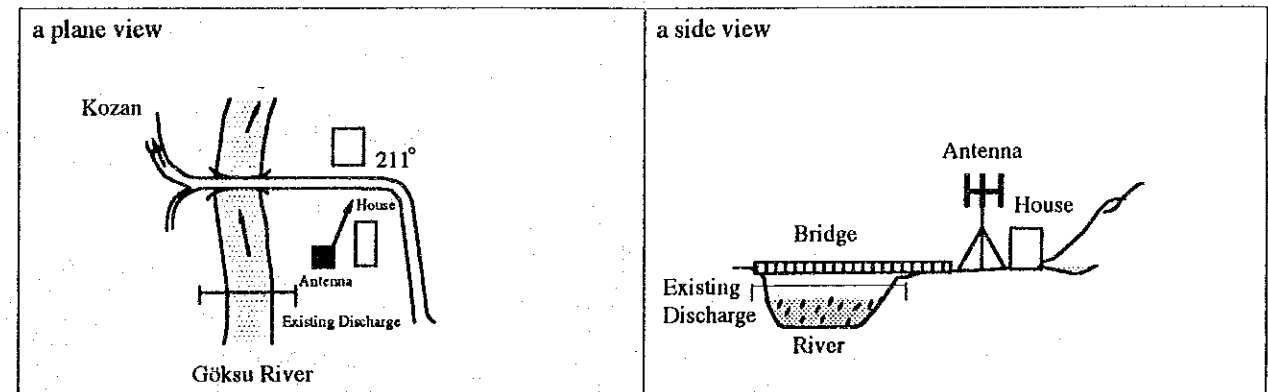
Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dBµV]	37	36	32	30	31	33	31	33	29	31	35	38

### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dBµV]
10	37
9	37
8	36
7	34
6	32
5	28

### Sketch at measuring point



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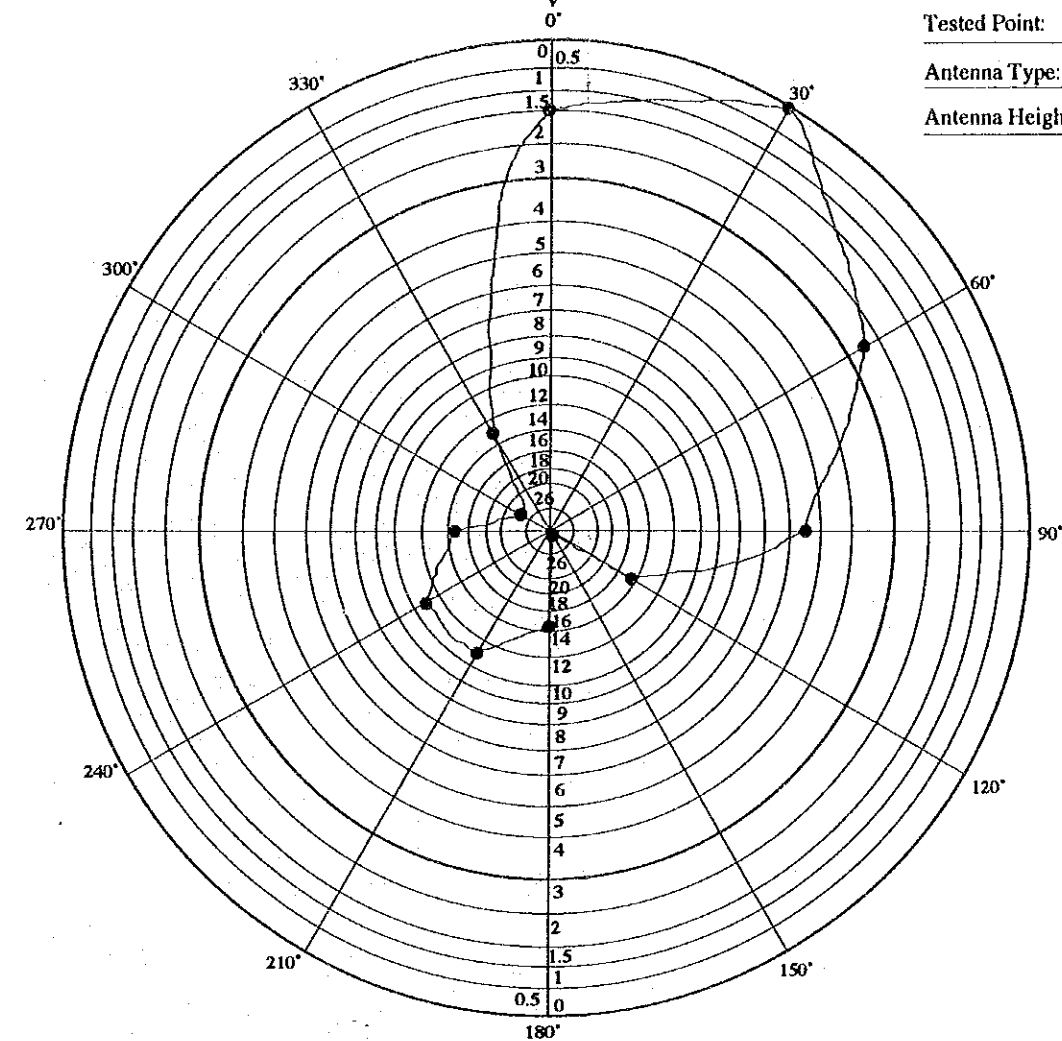
NO. 70-1

Measured by; DENSETSU ENGINEERING CORP.

Test Span	Karlık.t — 1818(WL)	Date: 9 . NOV .1993	Weather: Cloudy
		Time: 11 . 45 . 00	
Measuring Point	Station Name	Station Name	
	Karlık.t	1818(WL) Eğner	
	N: 37° 33' 08" E: 35° 33' 44"	N: 37° 25' 22" E: 35° 27' 13"	G.L. 1490 m / 150 m
Frequency	70.26 MHz (Vertical, Polarization)		
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el, Yagi
	Height 5 m		Gain 7.15 dB
Coaxial Cable	Type 10D-2V		Type 10D-2V
	Length 20 m	Loss 0.9 dB	Length 20 m
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W
			Reflect 0.2 W
Receiving Voltage	True Direction N: 213°	dB $\mu$ V	True Direction N: 33°
			63 dB $\mu$ V
S / N	S = -3 dB	S / N >57 dB	S = -5 dB
	N = <-60 dB		N = <-60 dB
Field Strength Meter	ML-518A		
Signal Generator	MG-54E		
Level Meter	LM-310		
Note: Tested point was Eğner village.			

### Antenna Polarization Pattern

Direction = DSI Adana (T.N: 33°)



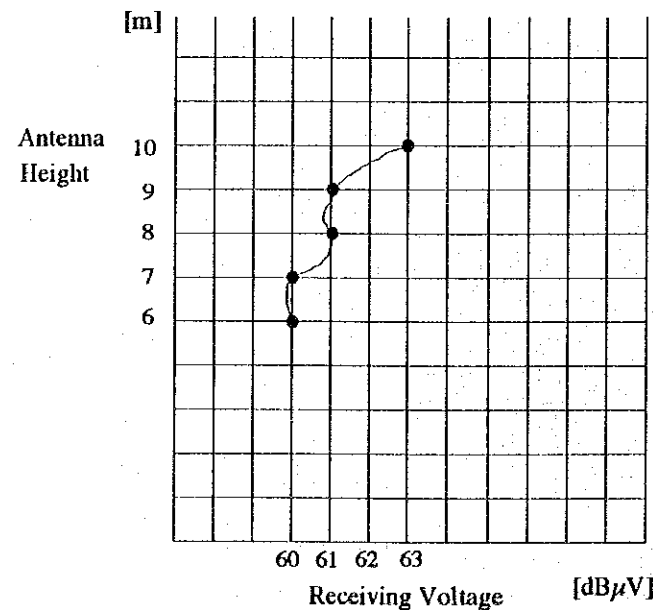
Tested Point: 1818(WL)

Antenna Type: 3el Yagi

Antenna Height: 10 m

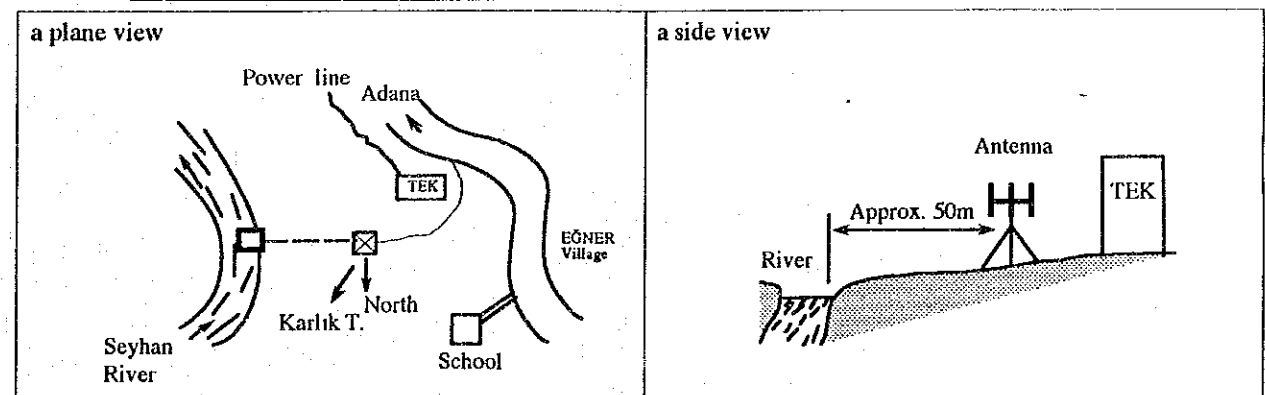
Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dB $\mu$ V]	63	64.5	62	59	50	30	50	53	53	50	40	51

### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dB $\mu$ V]
10	63
9	61
8	61
7	60
6	60

### Sketch at measuring point



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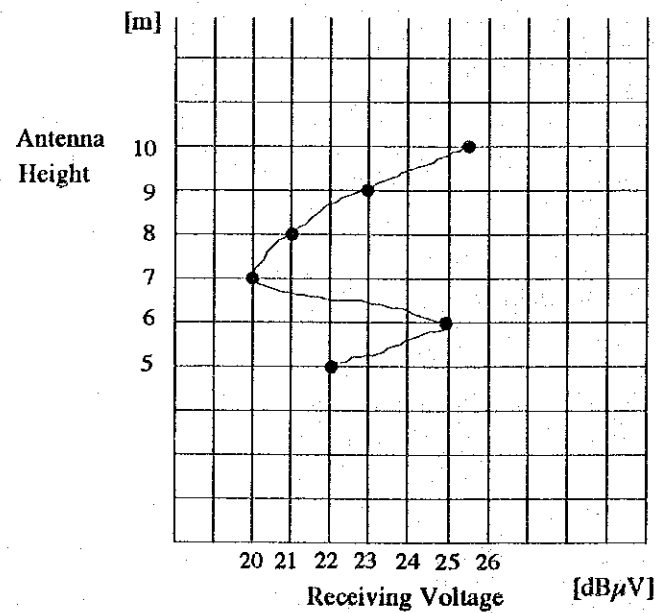
## RADIO PROPAGATION TEST DATA SHEET

NO. 70-2

Measured by; DENSETSU ENGINEERING CORP.

Test Span	Karlık.t — Hasandede (Rep. or RG)	Date: 10 . NOV . 1993	Weather: Cloudy
		Time: 13 . 30 . 00	
	Station Name	Station Name	
Measuring Point	Karlık.t	G.L.	Hasandede
	N: 37° 33' 08" E: 35° 33' 44"	1490 m	N: 37° 30' 45" E: 35° 24' 00" 1050m
Frequency	70.26 MHz (Vertical,Polarization)		
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el,Yagi
	Height 5 m		Gain 7.15 dB
Coaxial Cable	Type 10D-2V		Type 10D-2V
	Length 20 m	Loss 0.9 dB	Length 20 m
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W
			Reflect 0.1 W
Receiving Voltage	True Direction N: 253 °	dBμV	True Direction N: 73 °
			25.5 dBμV
S / N	S = -4 dB	S / N 52 dB	S = -4 dB
	N = -56 dB		N = -55 dB
Field Strength Meter	ML-518A		
Signal Generator	MG-54E		
Level Meter	LM-310		

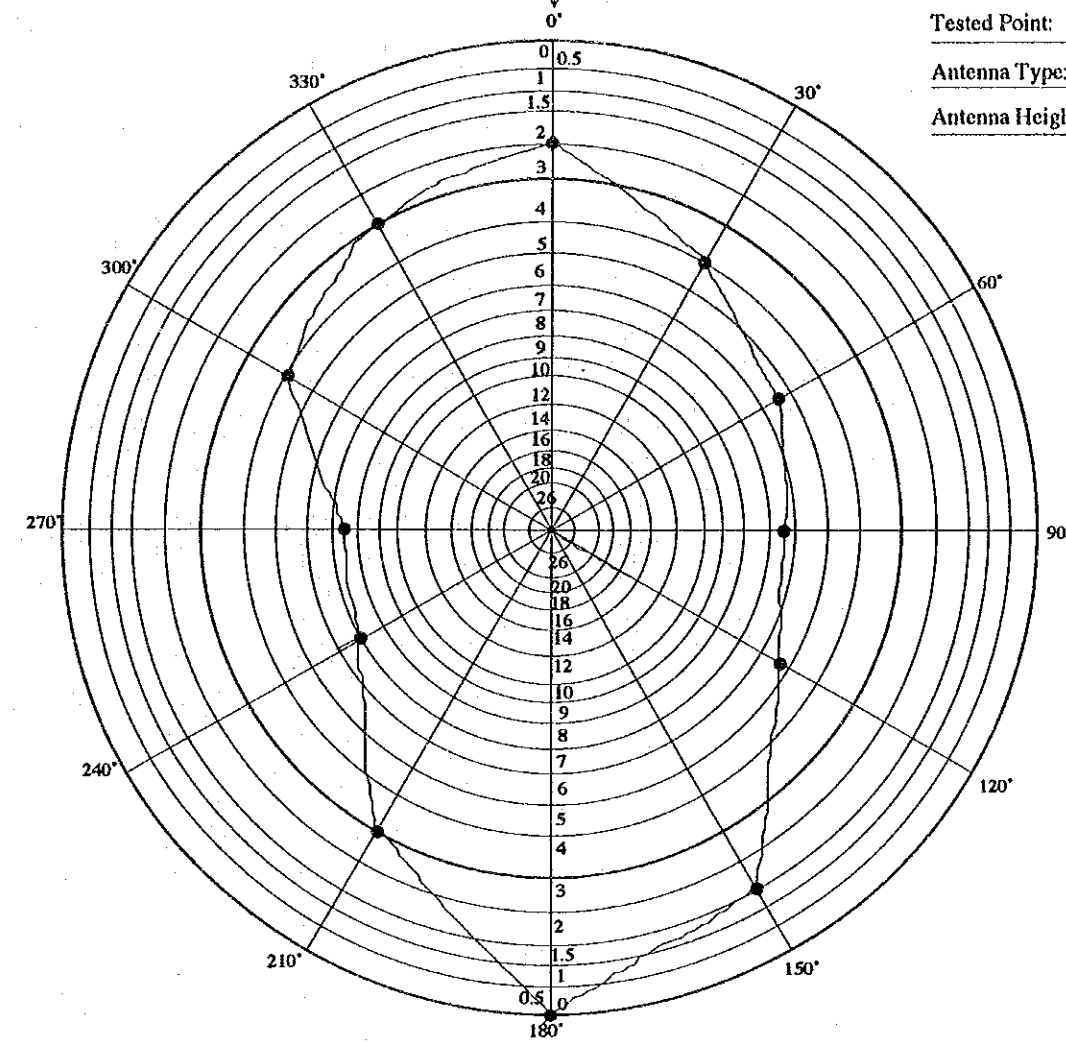
### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dBμV]
10	25.5
9	23
8	21
7	20
6	25
5	22

### Antenna Polarization Pattern

Direction = Karlık .T (T.N: 31 °)



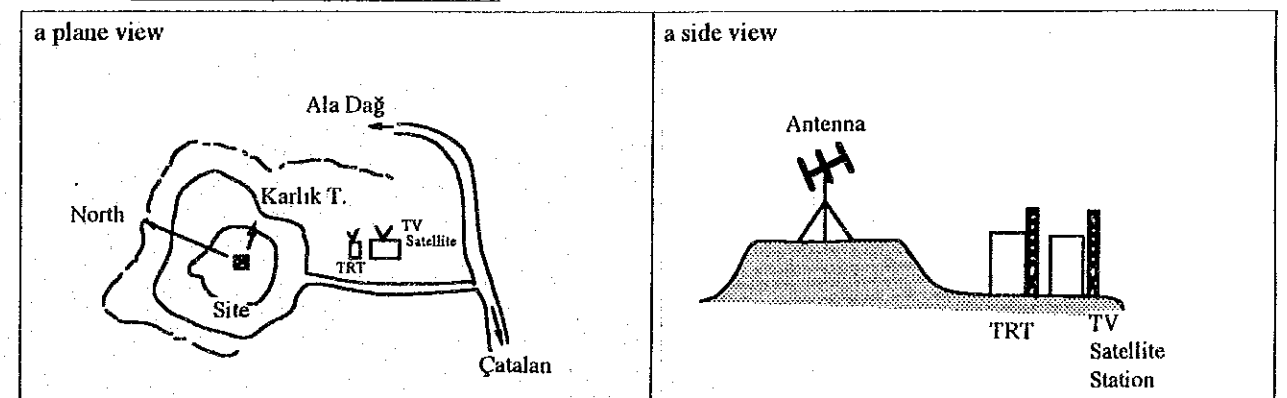
Tested Point: Hasandede

Antenna Type: 3el Yagi

Antenna Height: 10 m

Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dBμV]	25.5	23.5	22	21	22	26	27.5	24.5	20.5	20	23.5	24.5

### Sketch at measuring point



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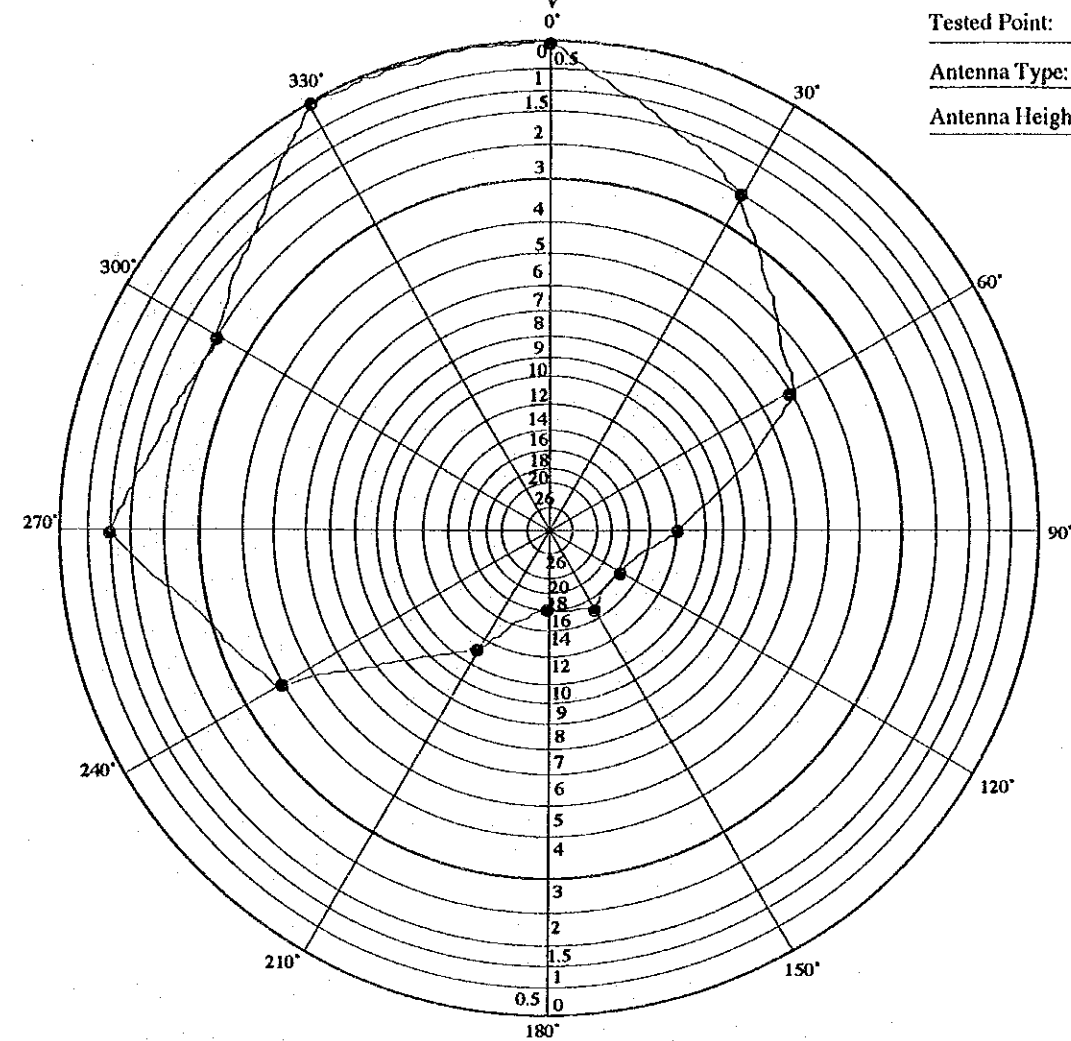
NO. 70-12

Measured by: DENSETSU ENGINEERING CORP.

Test Span	Fekede Dağı — 1801(WL)		Date: 25 . NOV . 1993	Weather: Cloudy
			Time: 15 . 00 . 00	
Measuring Point	Station Name		Station Name	
	Fekede Dağı		1801(WL)	
	N: 37° 52' 55" E: 35° 55' 44"	G.L. 1838 m	N: 37° 52' 02" E: 36° 03' 47"	G.L. 680 m
Frequency	70.26 MHz (Vertical Polarization)			
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el, Yagi	Gain 7.15 dB
	Height 10 m		Height 10 m	
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length 20 m	Loss 0.9 dB	Length 20 m	Loss 0.9 dB
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0 W
Receiving Voltage	True Direction N: 98°		True Direction N: 278°	
S / N	S = -3 dB	S / N > 57 dB	S = -4 dB	S / N > 56 dB
	N = < -60 dB		N = < -60 dB	
Field Strength Meter	ML-518A			
Signal Generator	MG-54E			
Level Meter	LM-310			

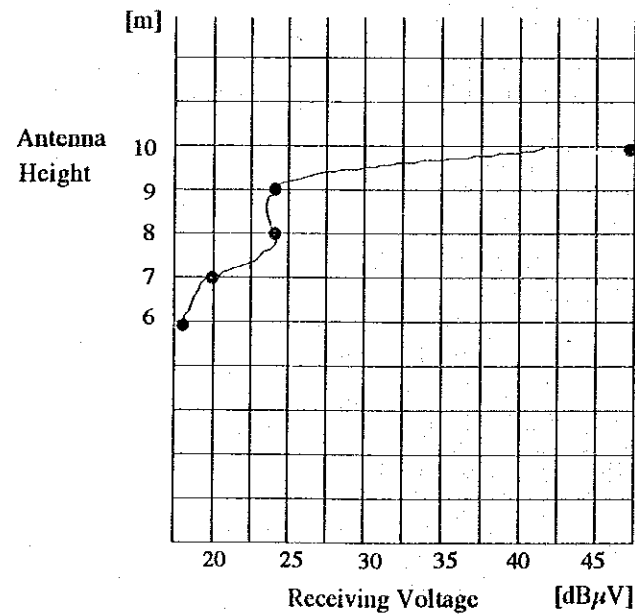
### Antenna Polarization Pattern

Direction = Fekede Dağı (T.N: 278°)



Tested Point: 1801(WL)  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

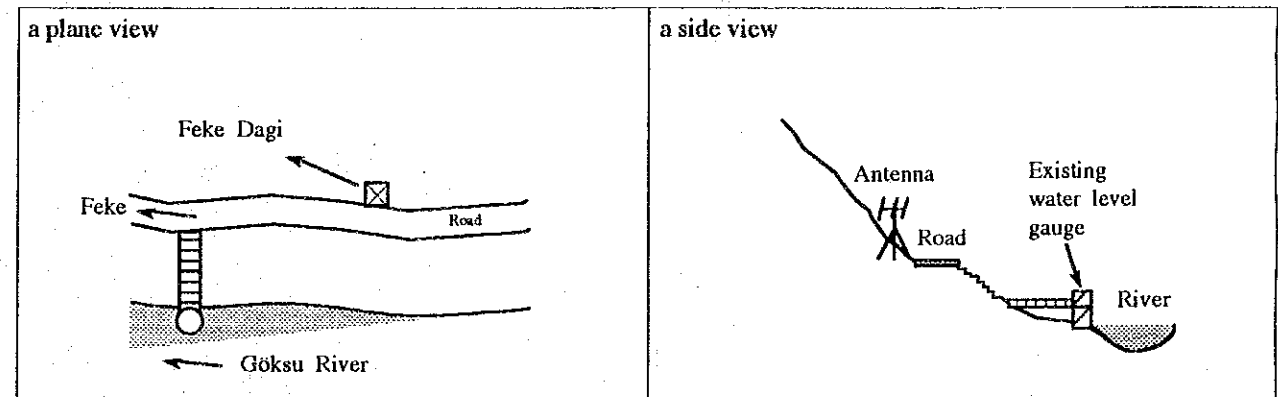
### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dBμV]
10	47
9	24
8	24
7	20
6	18

Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dBμV]	47	45	42	35	31	32	31	36	43	46	45	47

### Sketch at measuring point



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NO. 70-11

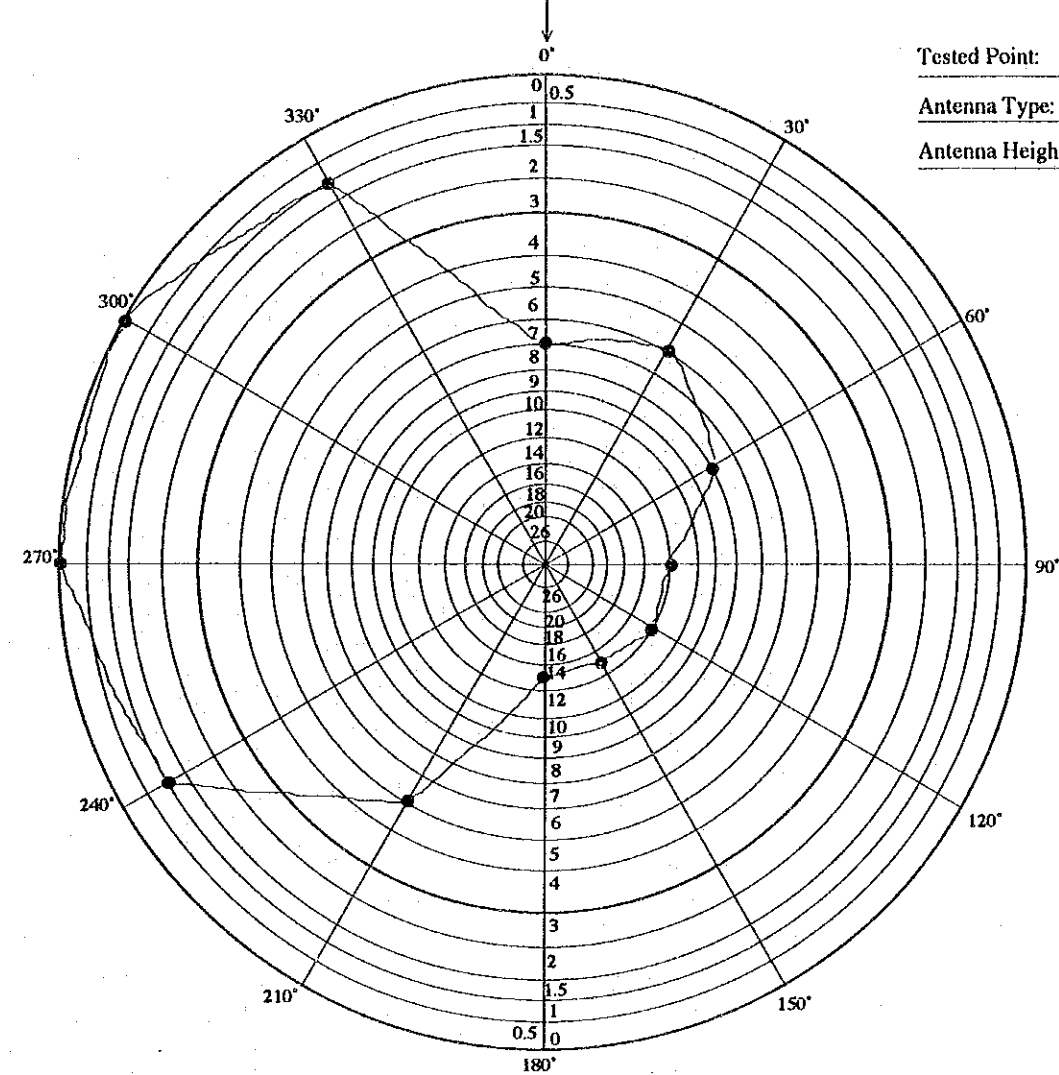
Measured by; DENSETSU ENGINEERING CORP.

Test Span	Feke Dağı — Saimbeyli(RG)	Date: 25 . NOV . 1993	Weather: Clear
		Time: 12 . 00 . 00	

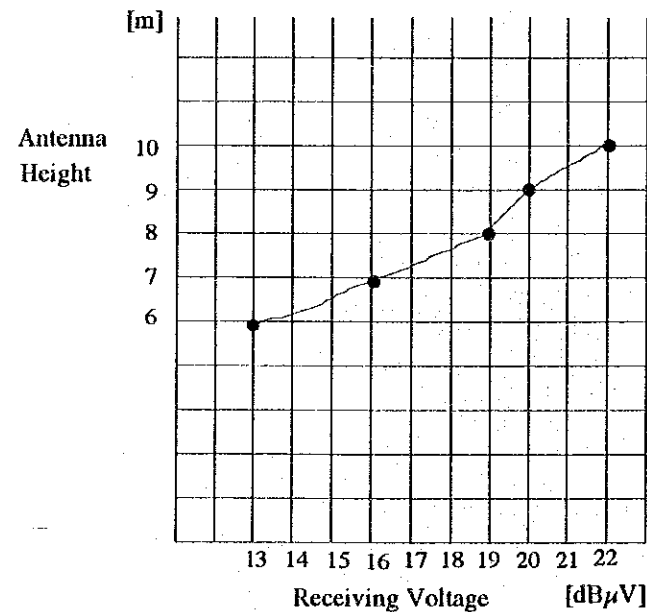
	Station Name		Station Name	
Measuring Point	Feke Dağı		Saimbeyli(RG) (DML)	
	N: 37° 52' 55" E: 35° 55' 44"	G.L. 1838 m	N: 37° 59' 12" E: 36° 05' 17"	G.L. 980 m
Frequency	70.26 MHz (Vertical, Polarization)			
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el, Yagi	Gain 7.15 dB
	Height 10 m		Height 10 m	
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length 20 m	Loss 0.9 dB	Length 20 m	Loss 0.9 dB
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0 W
Receiving Voltage	True Direction N: 50°		True Direction N: 230°	22 dB $\mu$ V
	N: °		N: °	
S / N	S = -3 dB	S / N 50 dB	S = -4 dB	S / N 46 dB
	N = -53 dB		N = -50 dB	
Field Strength Meter	ML-518A			
Signal Generator	MG-54E			
Level Meter	LM-310			

### Antenna Polarization Pattern

Direction = Feke Dağı (T.N: 230°)



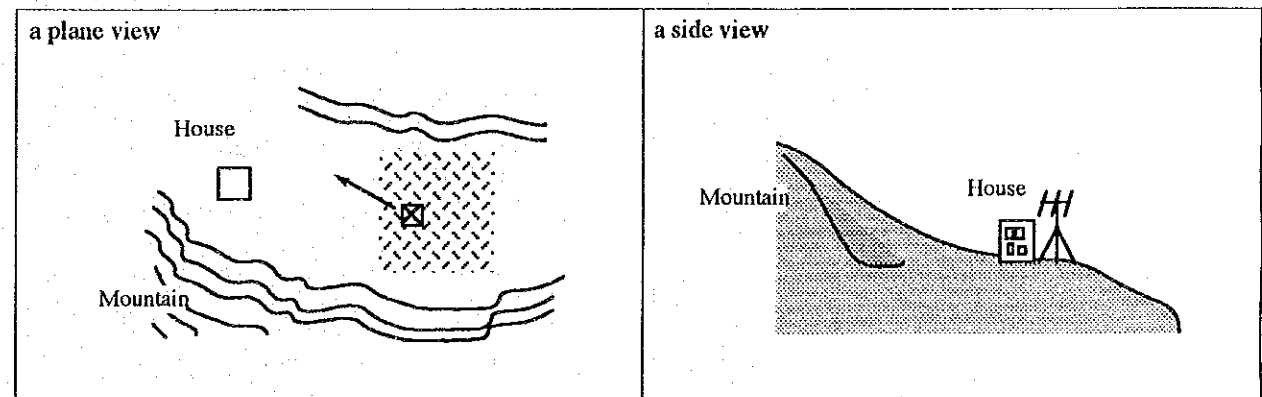
### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dB $\mu$ V]
10	22
9	20
8	19
7	16
6	13

Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dB $\mu$ V]	22	23	21	17	17	16	16	24	28	29	29	28

### Sketch at measuring point



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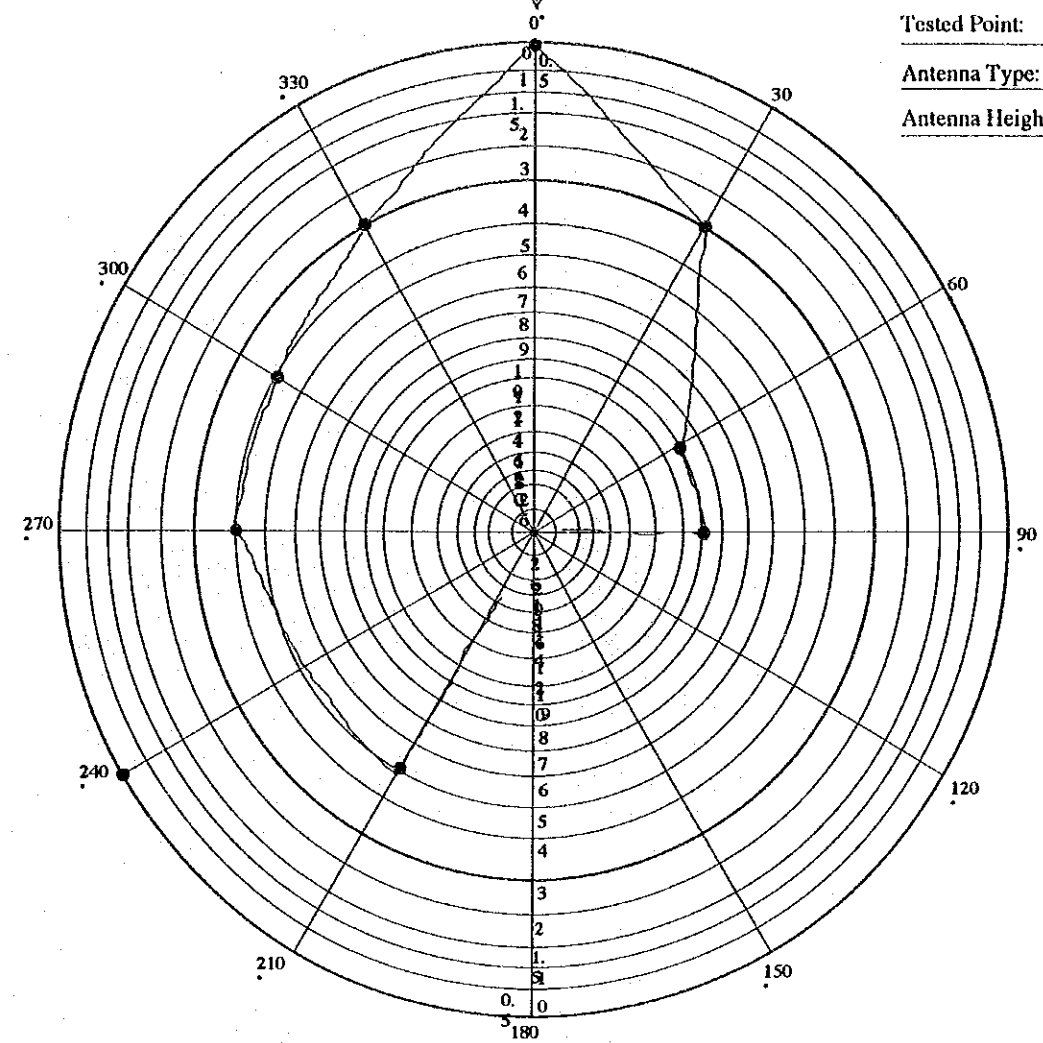
NO. 70-10

Measured by; DENSETSU ENGINEERING CORP.

Test Span	Fekede Dağı — Mansurlu(RG)		Date:	24 . NOV . 1993		Weather:	Clear	
			Time:	13 . 30 . 00				
Measuring Point	Station Name		Station Name					
	Fekede Dağı		Mansurlu(RG)		G.L.		G.L.	
	N: 37° 52' 55" E: 35° 55' 44"		N: 37° 51' 21" E: 35° 39' 20"		1838 m		970 m	
Frequency	70.26 MHz (Vertical, Polarization)							
Antenna	Type	Sleeve	Gain	2.15 dB	Type	3el, Yagi	Gain	7.15 dB
	Height	10 m			Height	10 m		
Coaxial Cable	Type	10D-2V			Type	10D-2V		
	Length	20 m	Loss	0.9 dB	Length	20 m	Loss	0.9 dB
Transmitting Power	Forward	10 W	Reflect	0 W	Forward	10 W	Reflect	0 W
Receiving Voltage	True Direction	N: 263°			True Direction	N: 83°		
S / N	S =	-3 dB	S / N	29 dB	S =	-4.5 dB	S / N	29.5 dB
	N =	-32 dB			N =	-34 dB		
Field Strength Meter	ML-518A							
Signal Generator	MG-54E							
Level Meter	LM-310				Note: Meteorological station was closed.			
	Tested point was near the ex-DML.							

### Antenna Polarization Pattern

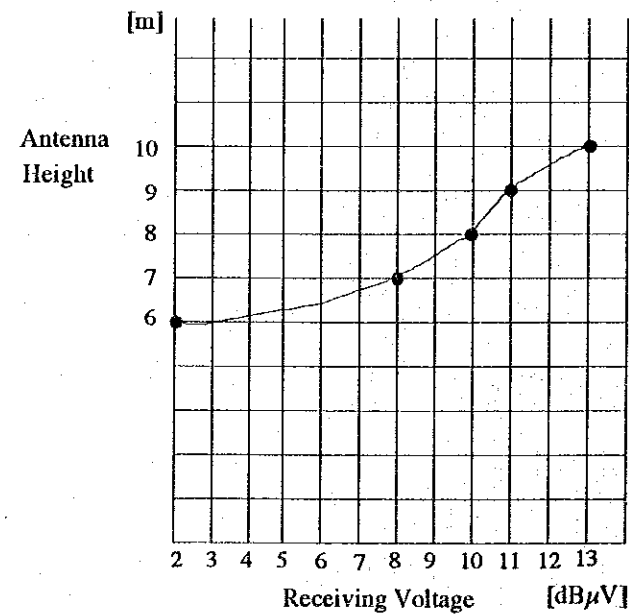
Direction = Fekede Dağı (T.N:83°)



Tested Point: Mansurlu(RG)  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

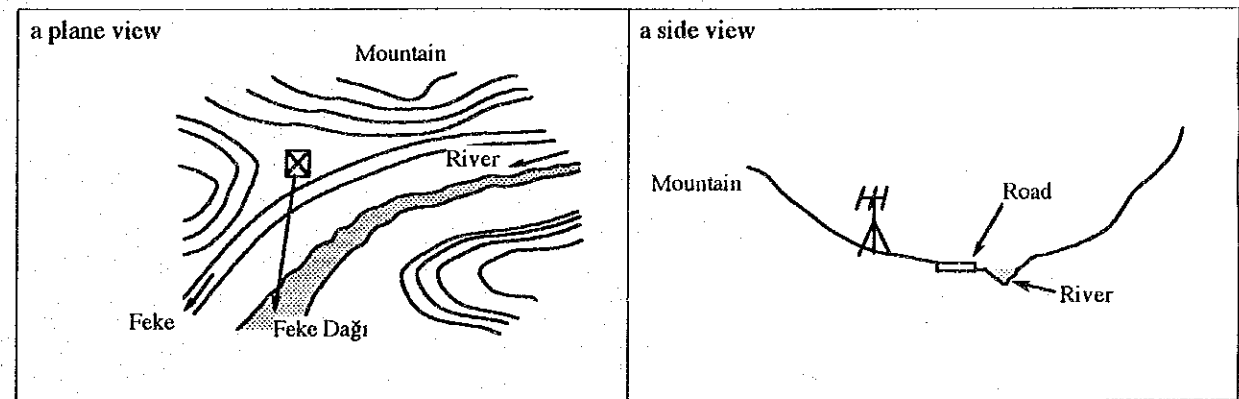
Degre	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dBμV]	13	10	4	4	—	—	—	8	13	9	9	10

### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dBμV]
10	13
9	11
8	10
7	8
6	2

### Sketch at measuring point



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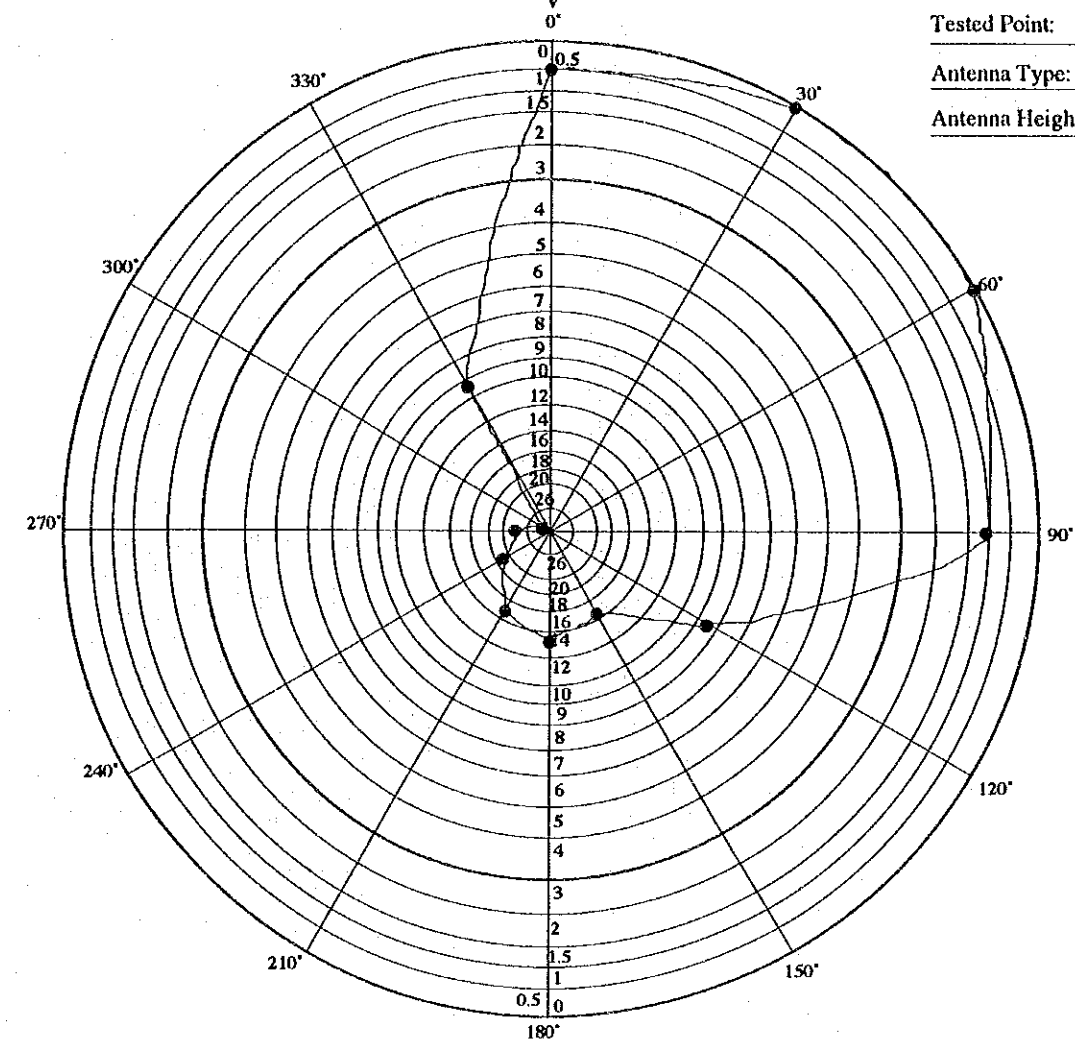
NO. 70-8

Measured by; DENSETSU ENGINEERING CORP.

Test Span	Sallangac T. — Çatalan Dam		Date: 17 . NOV . 1993	Weather: Light Rain
			Time: 10 . 00 . 00	
Measuring Point	Station Name		Station Name	
	Sallangac T.	G.L.	Çatalan Dam	G.L.
	N: 37° 19' 41" E: 35° 10' 31"		N: 37° 11' 50" E: 35° 17' 19"	
Frequency	70.26 MHz (Vertical, Polarization)			
Antenna	Type	Sleeve	Gain	2.15 dB
	Type	3el, Yagi	Gain	7.15 dB
	Height	10 m	Height	10 m
Coaxial Cable	Type	10D-2V	Type	10D-2V
	Length	20 m	Loss	0.9 dB
	Length	20 m	Loss	0.9 dB
Transmitting Power	Forward	10 W	Reflect	0 W
	Forward	10 W	Reflect	0 W
Receiving Voltage	True Direction	N: 145°		dB $\mu$ V
	True Direction	N: 325°	70	dB $\mu$ V
	N:			dB $\mu$ V
S / N	S =	-3.5 dB	S / N	>56.5 dB
	N =	<-60 dB	S =	-4 dB
	N =	<-60 dB	S / N	>56 dB
Field Strength Meter	ML-518A			
Signal Generator	MG-54E			
Level Meter	LM-310			

## Antenna Polarization Pattern

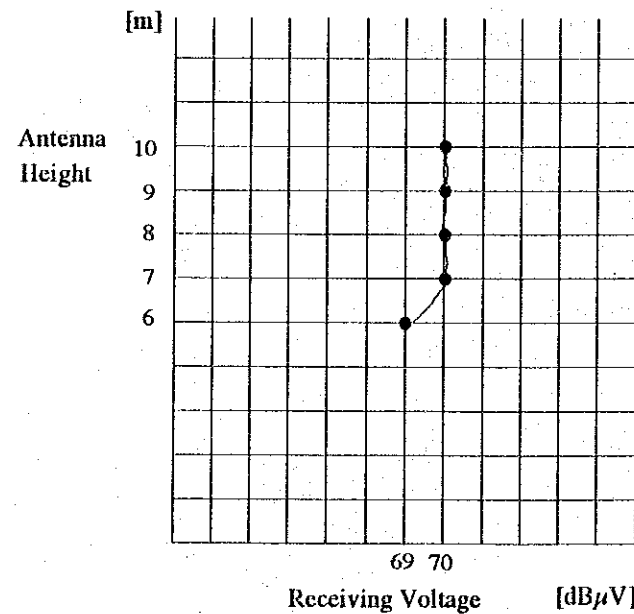
Direction = Sallangac T. (T.N:325°)



Tested Point: Çatalan Dam  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

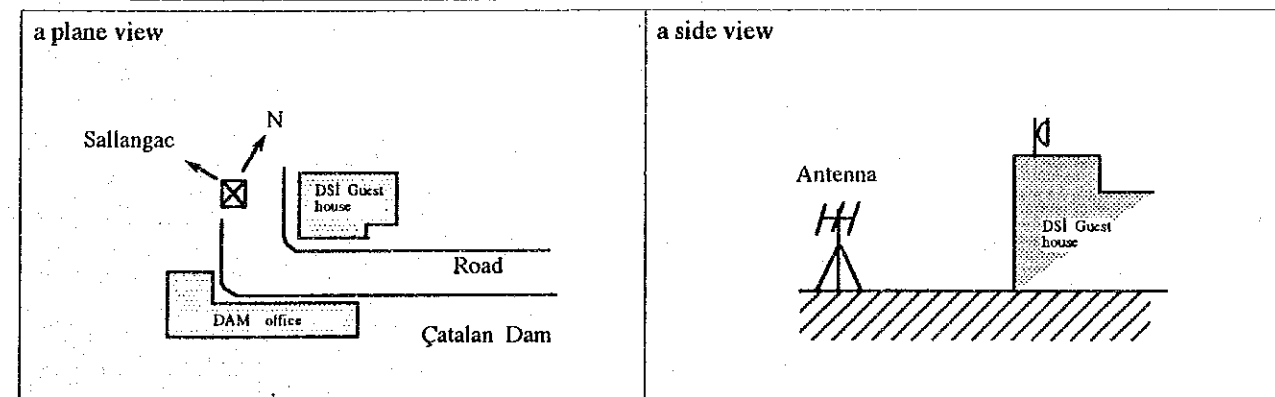
Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dB $\mu$ V]	70	70.5	70.5	49.5	62	56	57	56	51	46	40	60

## Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dB $\mu$ V]
10	70
9	70
8	70
7	70
6	69

## Sketch at measuring point



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NO. 70-9

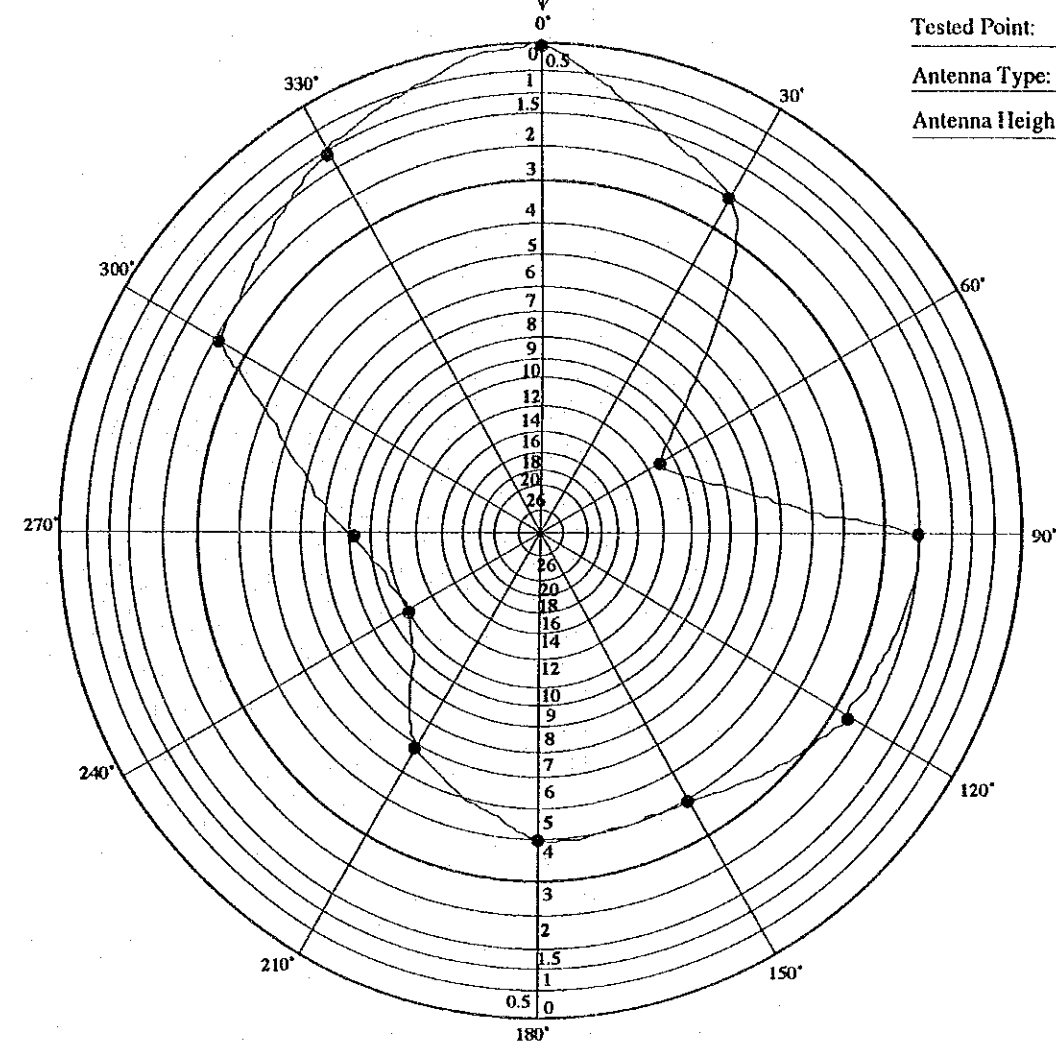
Measured by: DENSETSU ENGINEERING CORP.

Test Span	Sallangac T. — 1820(WL)	Date: 17 . NOV . 1993	Weather:
		Time: 14 . 00 . 00	Light Rain

	Station Name		Station Name	
Measuring Point	Sallangac T.		1820(WL)	
	N: 37° 19' 41" E: 35° 10' 31"	G.L. 569 m	N: 37° 17' 48" E: 35° 09' 13"	G.L. 170 m
Frequency	70.26 MHz (Vertical,Polarization)			
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el,Yagi	Gain 7.15 dB
	Height 10 m		Height 10 m	
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length 20 m	Loss 0.9 dB	Length 20 m	Loss 0.9 dB
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0 W
Receiving Voltage	True Direction N: 209°	dB $\mu$ V	True Direction N: 29°	50 dB $\mu$ V
	N: °	dB $\mu$ V	N: °	dB $\mu$ V
S / N	S = -3.5 dB	S / N >56.5 dB	S = -4 dB	S / N >56 dB
	N = <-60 dB		N = <-60 dB	
Field Strength Meter	ML-518A			
Signal Generator	MG-54E			
Level Meter	LM-310			

### Antenna Polarization Pattern

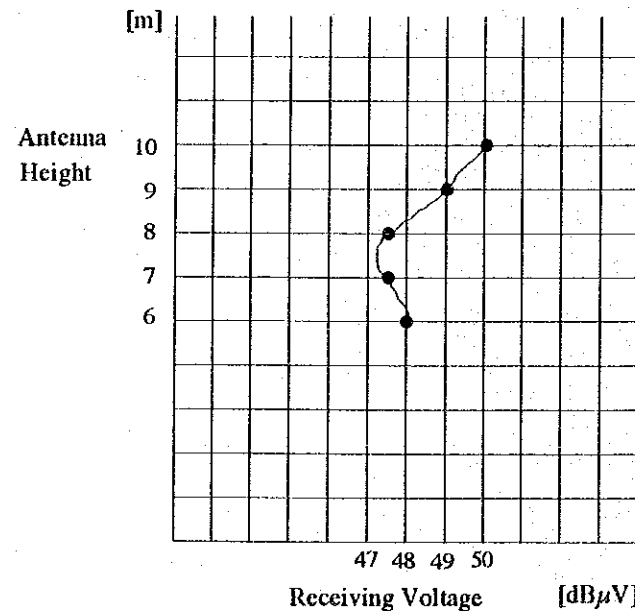
Direction = Sallangac T (T.N:29°)



Tested Point: 1820(WL)  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

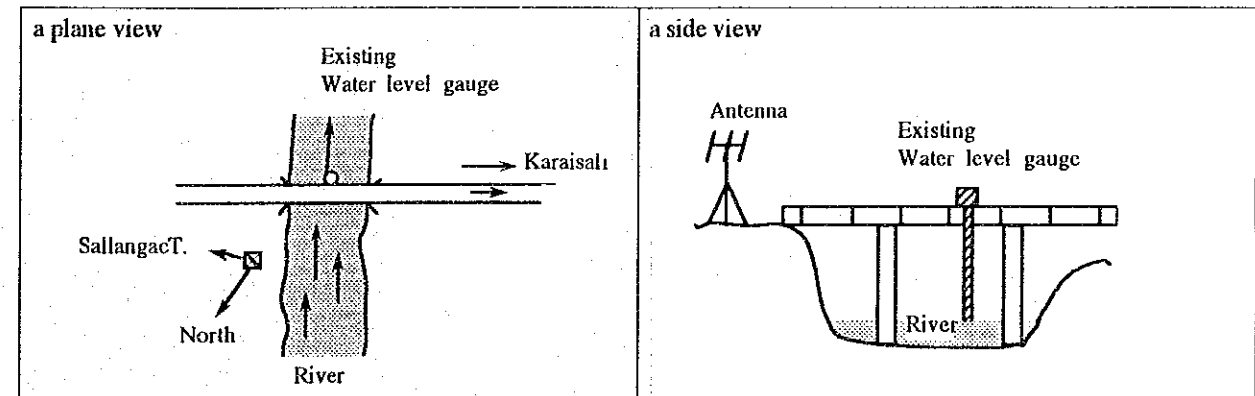
Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dB $\mu$ V]	50	48	39	48	47.5	46	46	44	40	42	48	49

### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dB $\mu$ V]
10	50
9	49
8	47.5
7	47.5
6	48

### Sketch at measuring point



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GENEL MÜDÜRLÜĞÜ

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JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE  
RADIO PROPAGATION TEST  
DATA SHEET

**RADIO PROPAGATION TEST DATA SHEET**

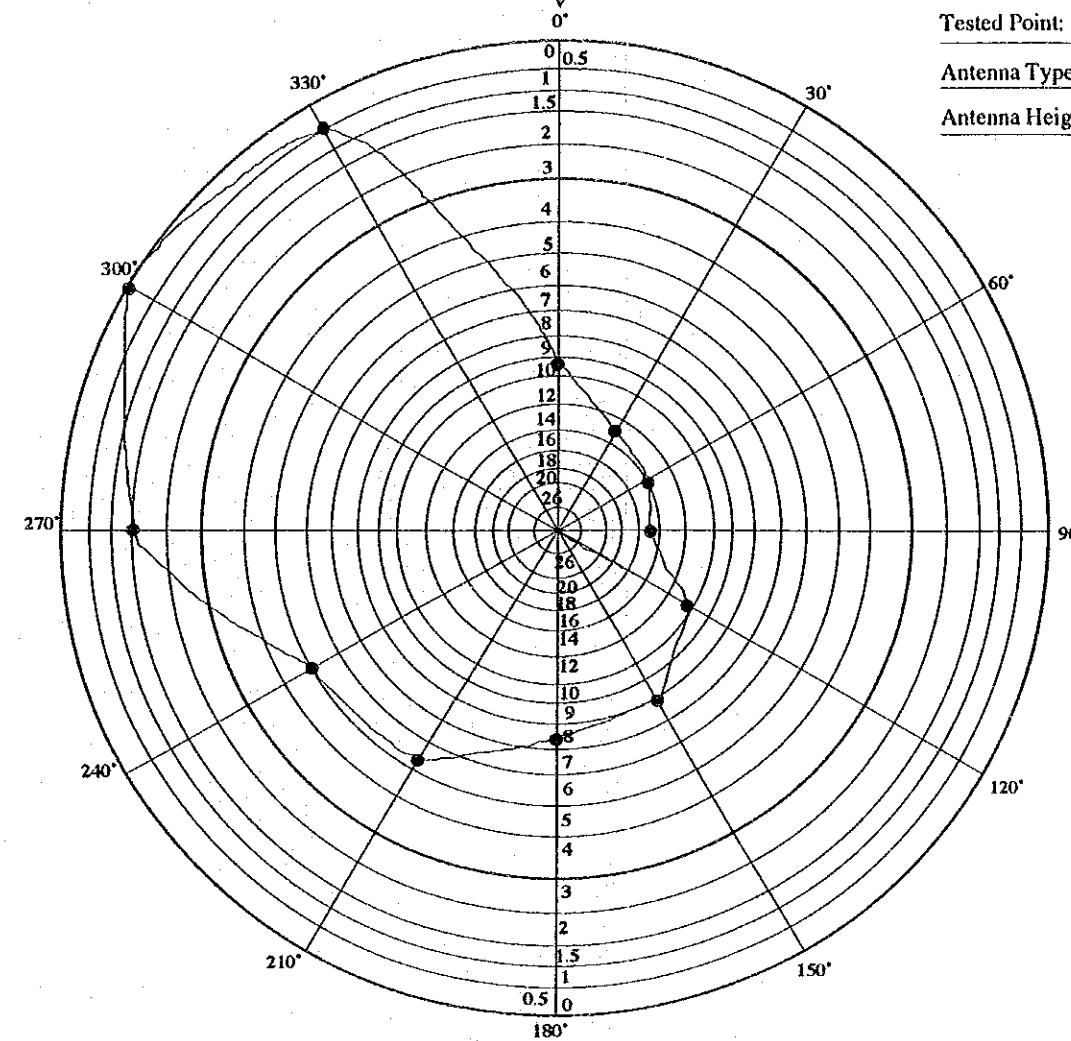
NO. 70-5

Measured by; DENSETSU ENGINEERING CORP.

Test Span	Sallangac T. — 1825 (WL)		Date: 15 . NOV . 1993	Weather: Clear
			Time: 10 . 00 . 00	
Measuring Point	Station Name		Station Name	
	Sallangac T.	G.L.	1825(WL)	G.L.
	N: 37° 19' 41" E: 35° 10' 31"	569 m	N: 37° 21' 48" E: 35° 11' 33"	225 m
Frequency	70.26 MHz (Vertical, Polarization)			
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el, Yagi	Gain 7.15 dB
	Height 10 m		Height 10 m	
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length 20 m	Loss 0.9 dB	Length 20 m	Loss 0.9 dB
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0 W
Receiving Voltage	True Direction N: 21°		True Direction N: 201°	39 dB $\mu$ V
	N: °		N: °	
S / N	S = -3.5 dB	S / N >56.5 dB	S = -4 dB	S / N >56 dB
	N = <-60 dB		N = <-60 dB	
Field Strength Meter	ML-518A			
Signal Generator	MG-54E			
Level Meter	LM-310			

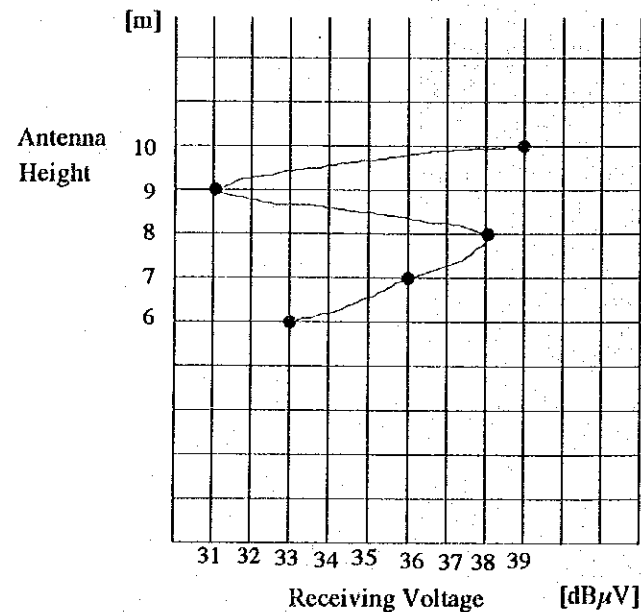
**Antenna Polarization Pattern**

Direction = Sallangac T (T.N: 201°)



Tested Point: 1825 (WL)  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

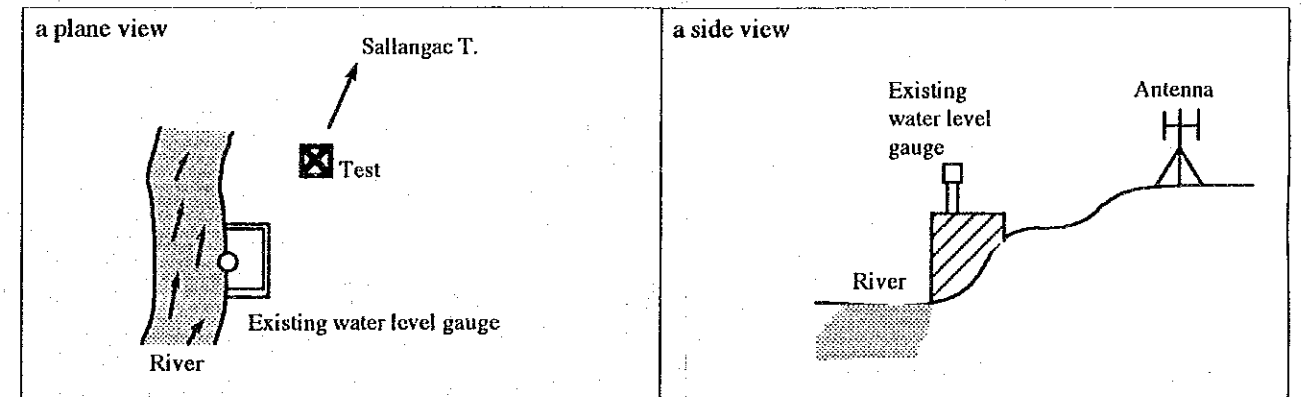
**Antenna Height Pattern**



Antenna Height [m]	Receiving Voltage [dB $\mu$ V]
10	39
9	31
8	38
7	36
6	33

Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dB $\mu$ V]	39	35	34.5	33.5	38	40.5	41	43	43.5	47	48.5	48

**Sketch at measuring point**



THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ	FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY	TITLE RADIO PROPAGATION TEST DATA SHEET
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## RADIO PROPAGATION TEST DATA SHEET

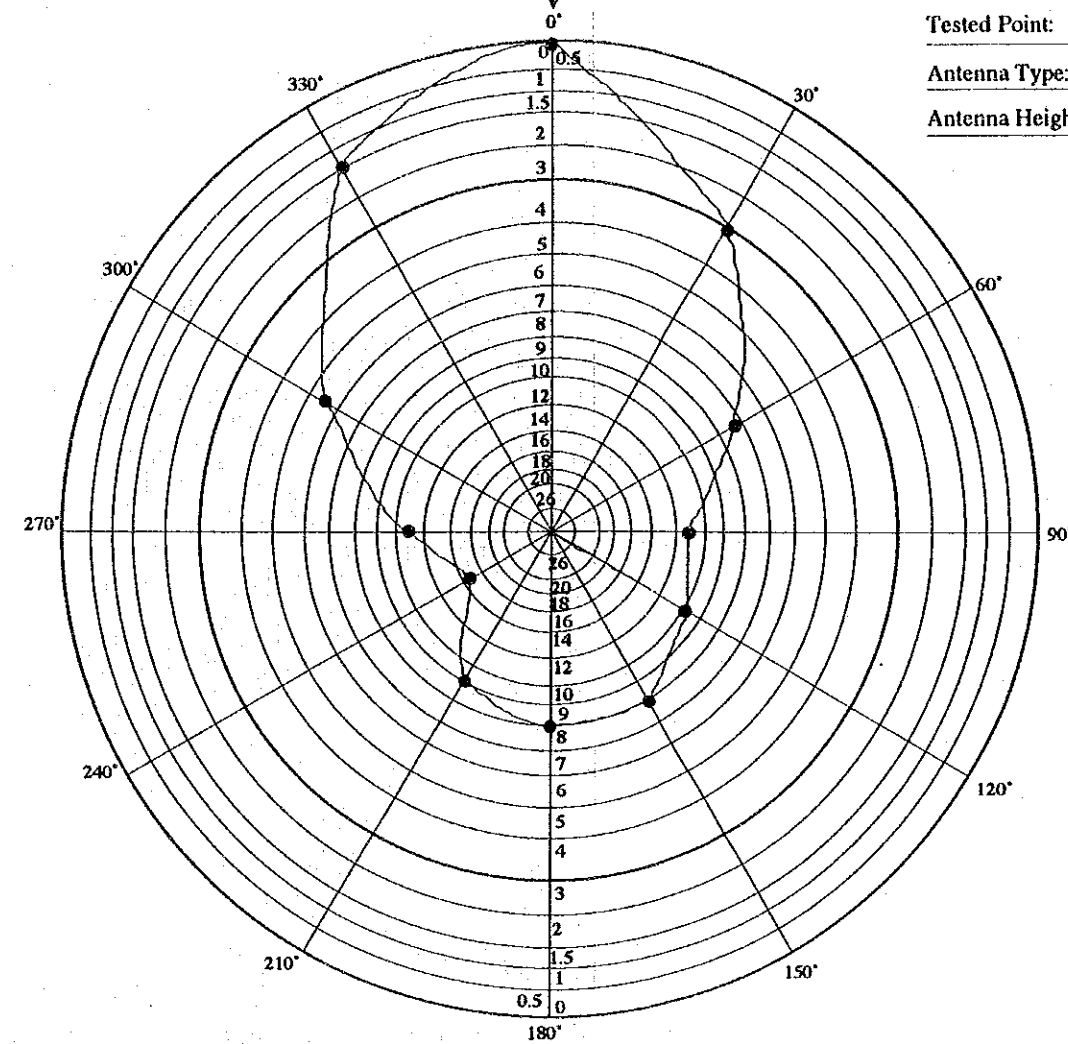
NO. 70-6

Measured by: DENSETSU ENGINEERING CORP.

Test Span	Sallangac T. — 1817(WL)		Date:	15 . NOV . 1993		Weather:	Clear						
			Time:	14 . 00 . 00									
Measuring Point	Station Name			Station Name									
	Sallangac T.			1817(WL)			G.L.						
	N: 37° 19' 41" E: 35° 10' 31" 569 m			N: 37° 14' 03" E: 35° 00' 54" 160 m									
Frequency	70.26 MHz (Vertical, Polarization)												
Antenna	Type	Sleeve	Gain	2.15	dB	Type	3el, Yagi	Gain	7.15	dB			
	Height	10 m		Height	10 m								
Coaxial Cable	Type			10D-2V			Type			10D-2V			
	Length	20	m	Loss	0.9	dB	Length	20	m	Loss	0.9	dB	
Transmitting Power	Forward	10	W	Reflect	0	W	Forward	10	W	Reflect	0	W	
Receiving Voltage	True Direction	N: 234°				dB $\mu$ V	True Direction	N: 53°				48	dB $\mu$ V
		N: °				dB $\mu$ V		N: °				dB $\mu$ V	
S / N	S =	-3.5	dB	S / N	>56.5	dB	S =	-5	dB	S / N	>55	dB	
	N =	<-60	dB				N =	<-60	dB				
Field Strength Meter	ML-518A												
Signal Generator	MG-54E												
Level Meter	LM-310												

### Antenna Polarization Pattern

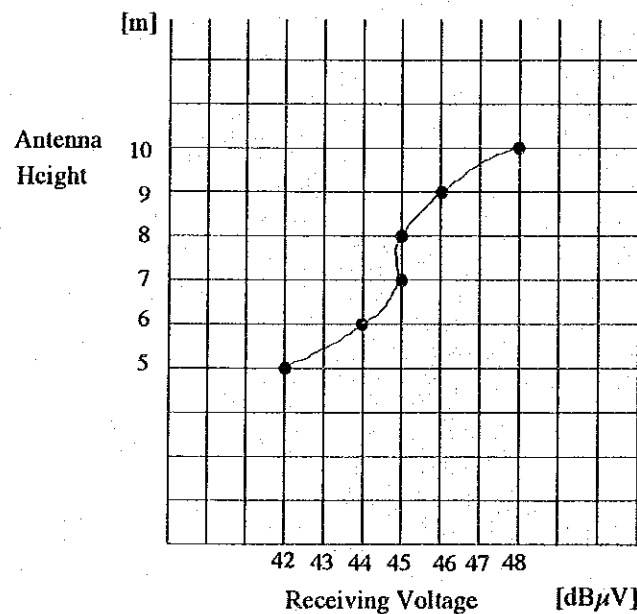
Direction = Sallangac T (T.N: 53°)



Tested Point: 1817 (WL)  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

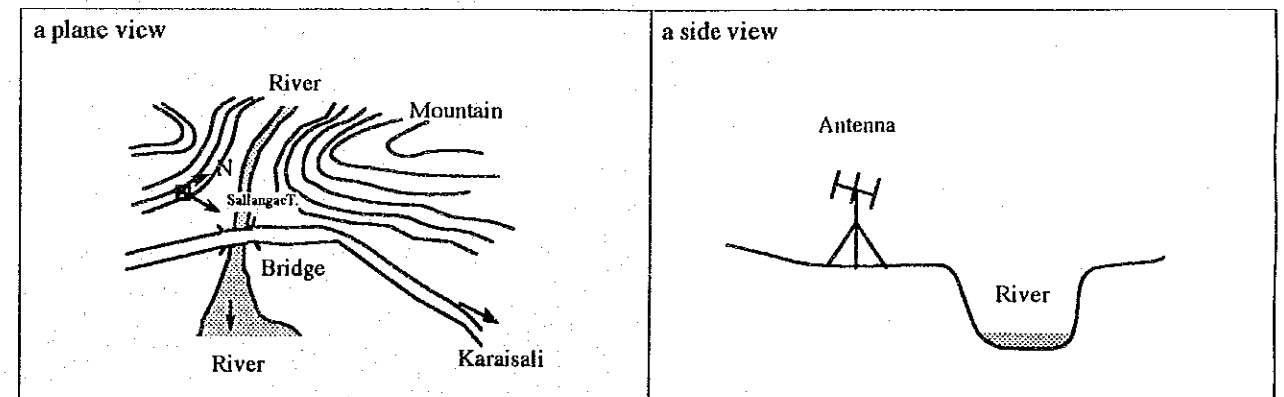
Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dB $\mu$ V]	48	45	40.5	37	38	40	40	39	33	35	42.5	46.5

### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dB $\mu$ V]
10	48
9	46
8	45
7	45
6	44
5	42

### Sketch at measuring point



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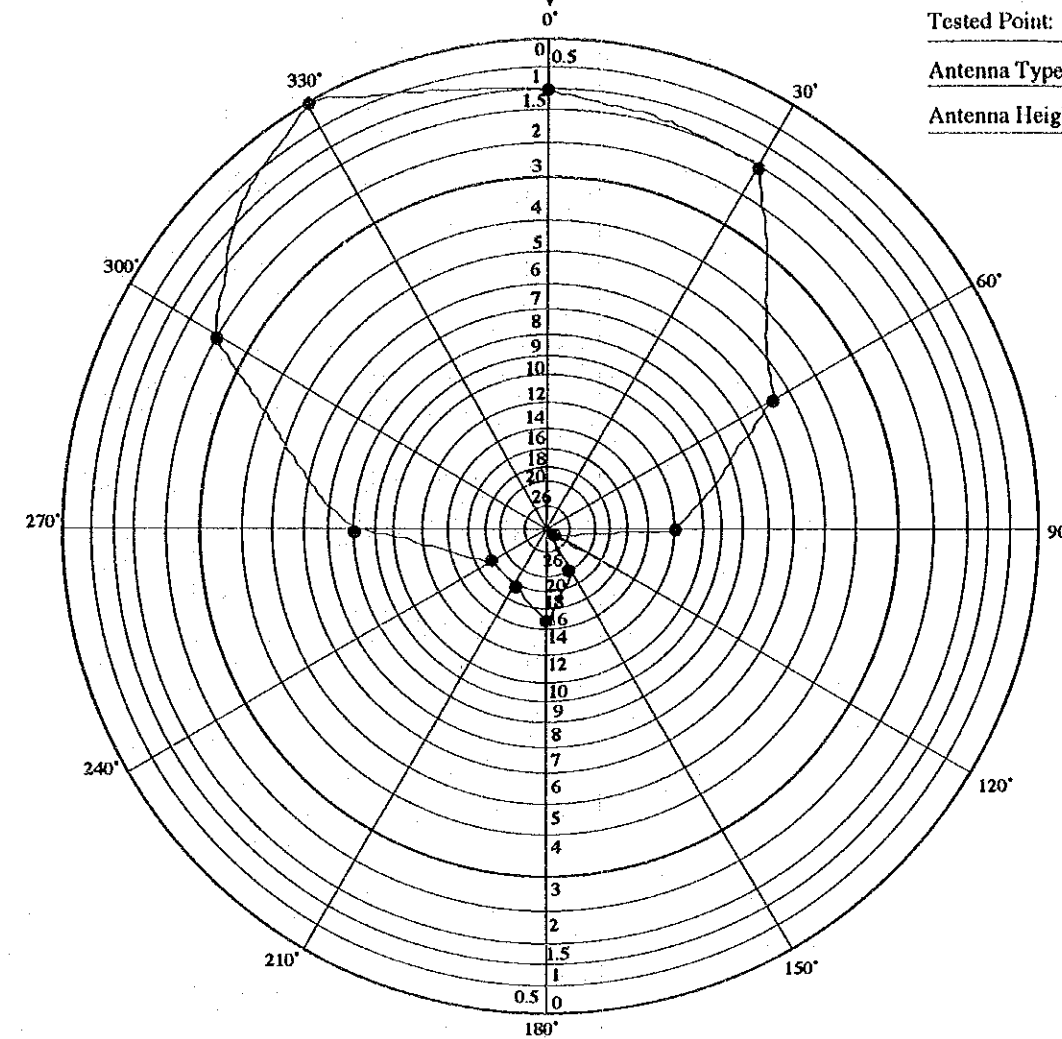
NO. 70-7

Measured by; DENSETSU ENGINEERING CORP.

Test Span	Sallangac T. — Karaisalı(RG)		Date:	15 . NOV . 1993		Weather:	Clear	
			Time:	16 . 00 . 00				
Measuring Point	Station Name		Station Name					
	Sallangac T.	G.L.	Karaisalı(RG) DMI	G.L.				
Frequency	70.26 MHz (Vertical, Polarization)							
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el, Yagi	Gain 7.15 dB				
	Height 10 m			Height 10 m				
Coaxial Cable	Type 10D-2V		Type 10D-2V					
	Length 20 m	Loss 0.9 dB	Length 20 m	Loss 0.9 dB				
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0 W				
Receiving Voltage	True Direction N: 235°		True Direction N: 54°					
S / N	S = -3.5 dB	S / N >56.5 dB	S = -4.5 dB	S / N >55.5 dB				
	N = <-60 dB		N = <-60 dB					
Field Strength Meter	ML-518A							
Signal Generator	MG-54E							
Level Meter	LM-310							

### Antenna Polarization Pattern

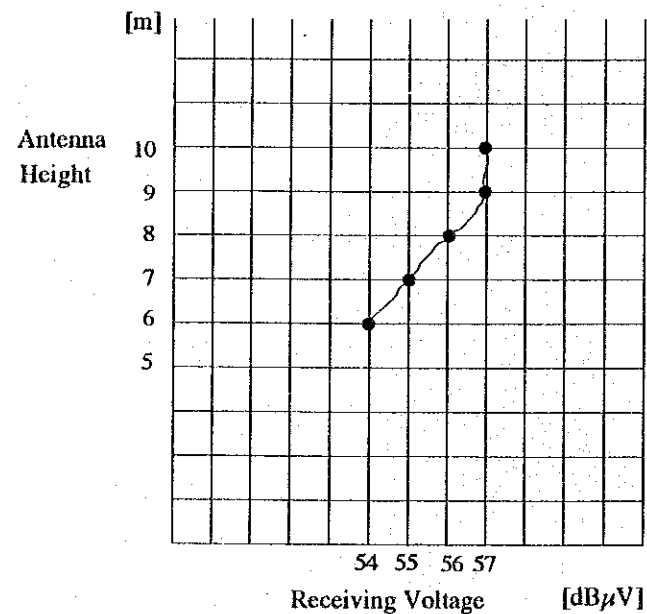
Direction = Sallangac T (T.N: 54°)



Tested Point: Karaisalı(RG)  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

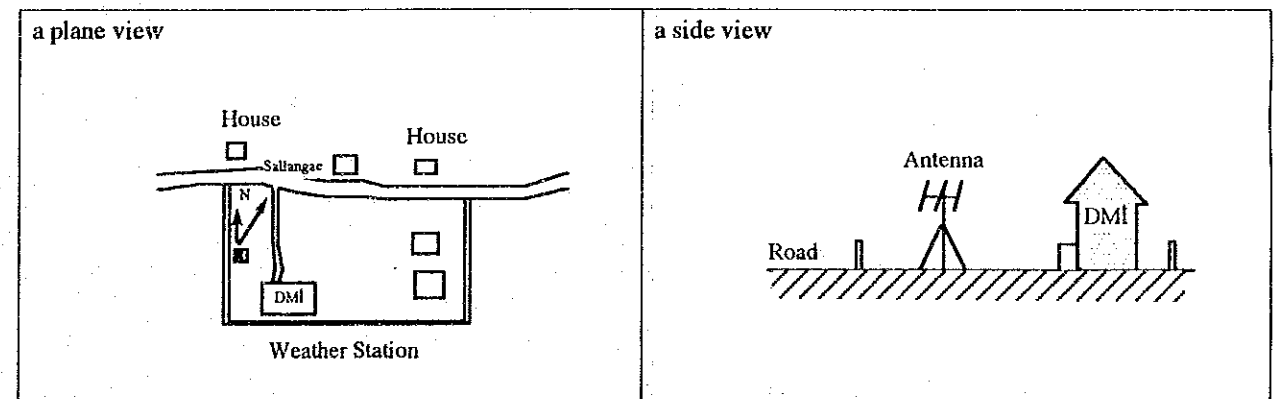
Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dBμV]	57	56.5	52.5	46	29	38	43	40	40	50	56	58

### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dBμV]
10	57
9	57
8	56
7	55
6	54

### Sketch at measuring point



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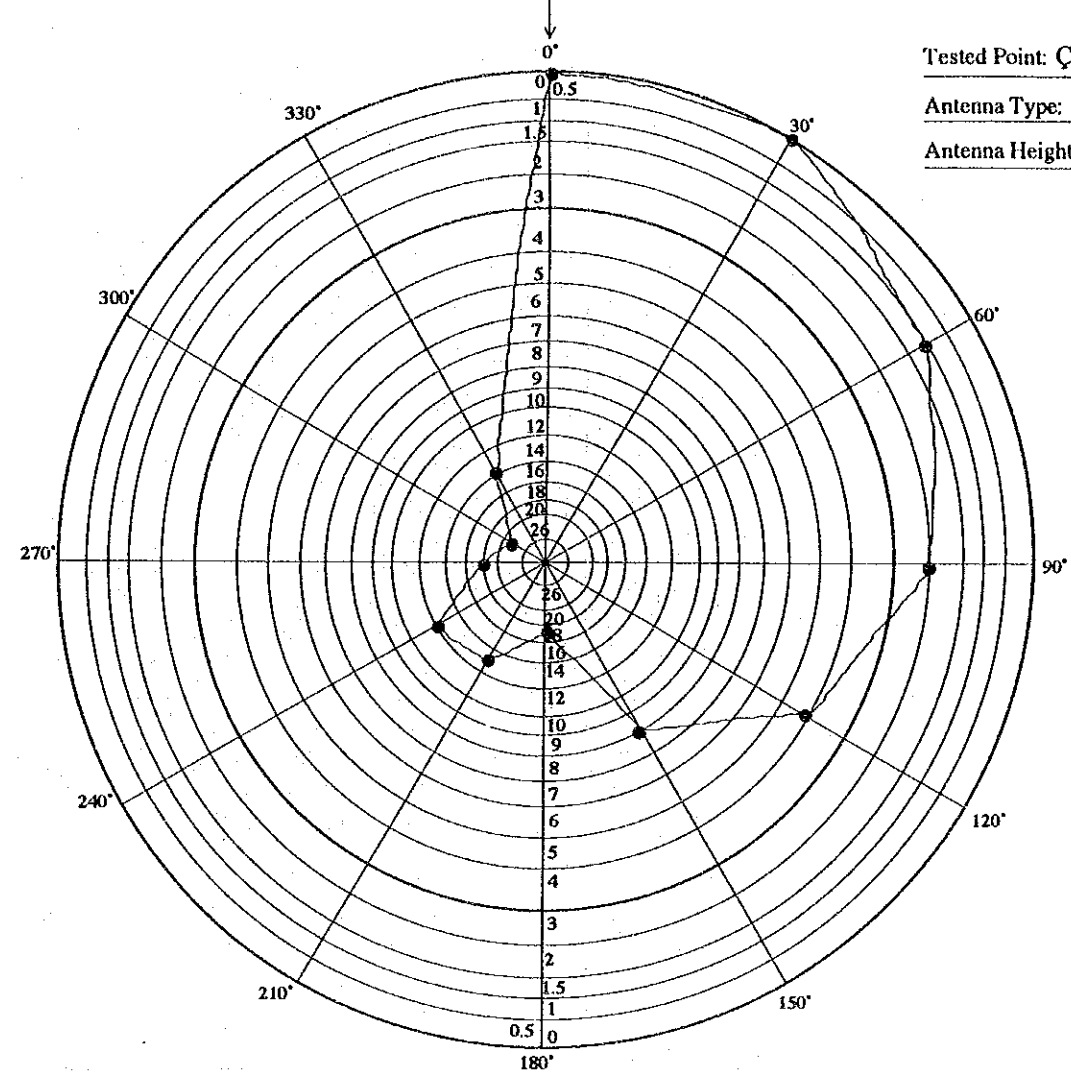
NO. 70-15

Measured by; DENSETSU ENGINEERING CORP.

Test Span	Bilege T. — Çiftehan(RG)		Date: 30 . NOV . 1993	Weather: Cloudy
			Time: 14 . 00 . 00	
Measuring Point	Station Name		Station Name	
	Bilege T.		Çiftehan(RG)	
	N: 37° 27' 09" E: 34° 48' 04"	G.L 2350 m	N: 37° 30' 47" E: 34° 46' 26"	G.L 960 m
Frequency	70.26 MHz (Vertical,Polarization)			
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el,Yagi	Gain 7.15 dB
	Height 5 m		Height 10 m	
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length 20 m	Loss 0.9 dB	Length 20 m	Loss 0.9 dB
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0 W
Receiving Voltage	True Direction N: 160°	dBµV	True Direction N: 340°	52 dBµV
	N: °	dBµV	N: °	dBµV
S / N	S = -3.5 dB	S / N <56.5 dB	S = -4 dB	S / N <56 dB
	N = >60 dB		N = >60 dB	
Field Strength Meter	ML-518A			
Signal Generator	MG-54E			
Level Meter	LM-310		Note: R.G station was not found.	
	Tested point was the Forest Department			

## Antenna Polarization Pattern

Direction = Bilege T. (T.N:160°)

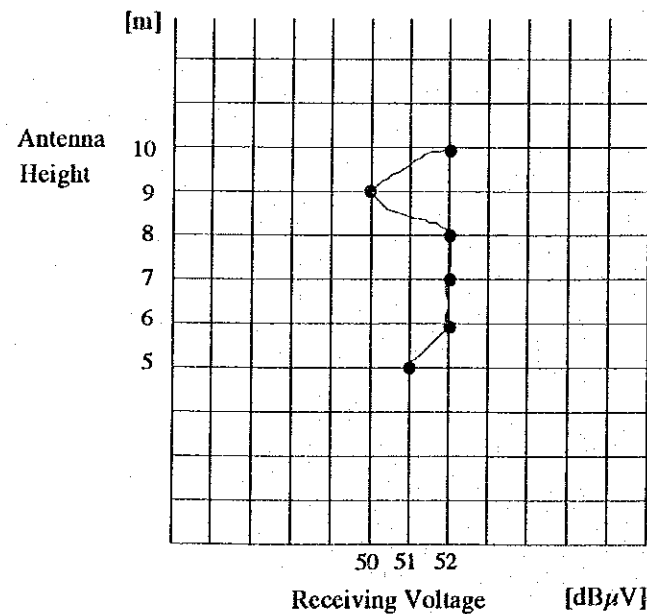


Tested Point: Çiftehan(RG)

Antenna Type: 3el Yagi

Antenna Height: 10 m

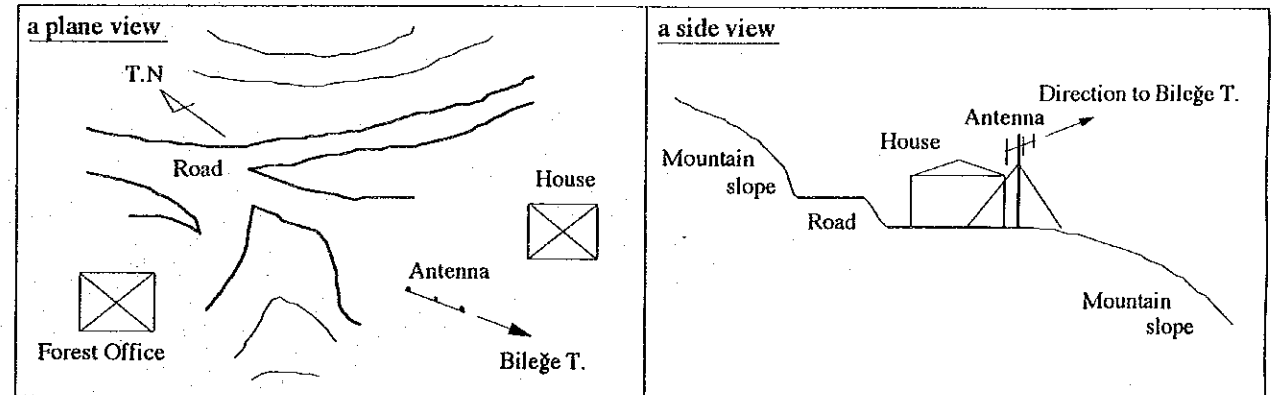
## Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dBµV]
10	52
9	50
8	52
7	52
6	52
5	51

Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dBµV]	52	52	51	50	48	44	35	39	40	34	29	38

## Sketch at measuring point



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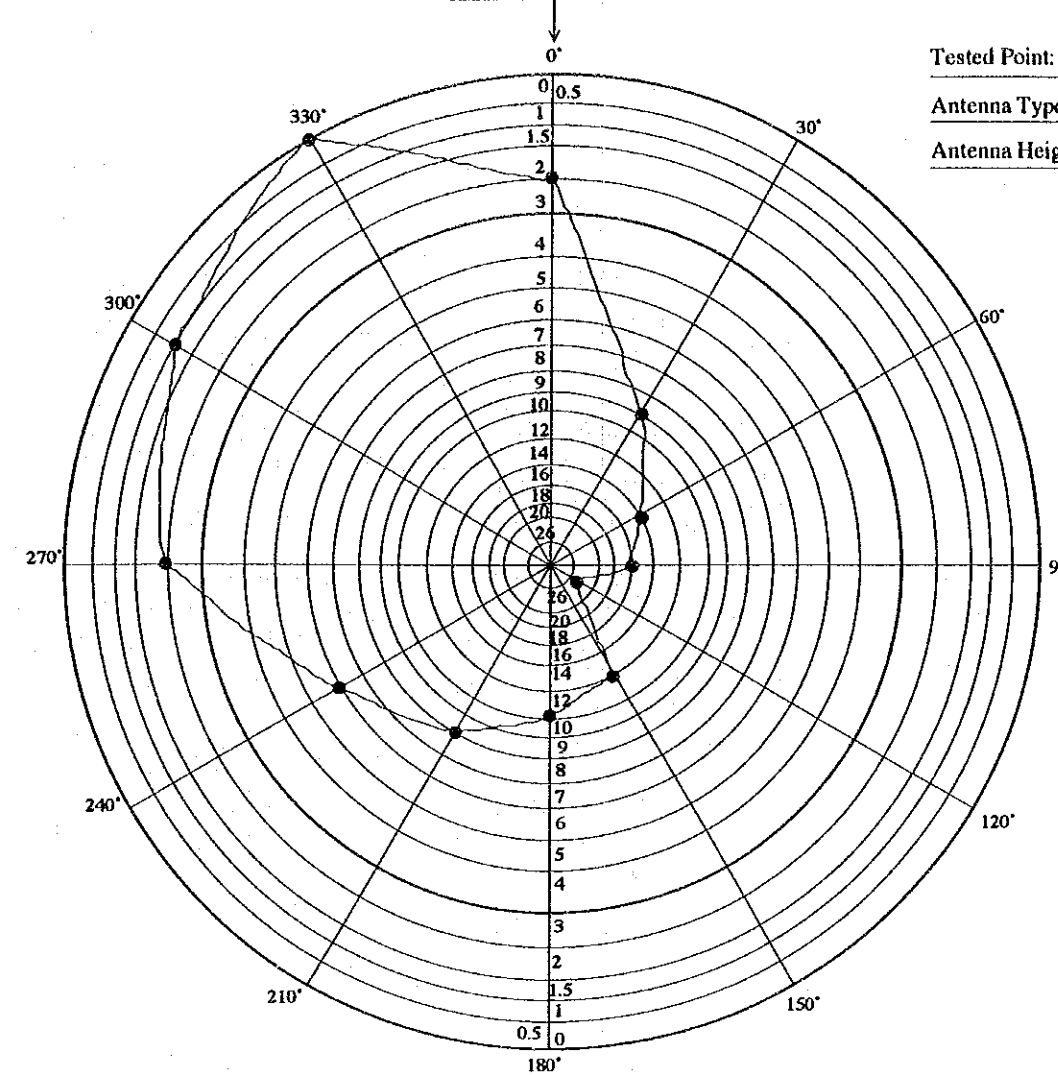
NO. 70-14

Measured by; DENSETSU ENGINEERING CORP.

Test Span	Bilege T. — Kamışlı(RG)		Date: 29 . NOV . 1993	Weather: Clear
			Time: 15 . 00 . 00	
Measuring Point	Station Name		Station Name	
	Bilege T.		Kamışlı(RG) (DSL)	
	N: 37° 27' 09" E: 34° 48' 04"	G.L 2350 m	N: 37° 33' 21" E: 34° 57' 00"	G.L 1130 m
Frequency	70.26 MHz (Vertical,Polarization)			
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el,Yagi	Gain 7.15 dB
	Height 5 m		Height 10 m	
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length 20 m	Loss 0.9 dB	Length 20 m	Loss 0.9 dB
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0 W
Receiving Voltage	True Direction N: 49°		True Direction N: 229°	38 dBμV
	N: °		N: °	
S / N	S = -4 dB	S / N 56 dB	S = -4 dB	S / N 54 dB
	N = -60 dB		N = -58 dB	
Field Strength Meter	ML-518A			
Signal Generator	MG-54E			
Level Meter	LM-310			

### Antenna Polarization Pattern

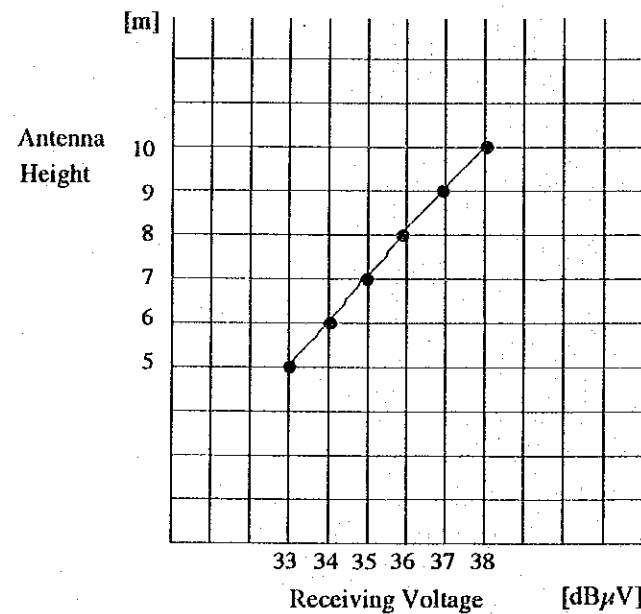
Direction = Bilege . T (T.N:229°)



Tested Point: Kamışlı(RG)  
Antenna Type: 3el Yagi  
Antenna Height: 10 m

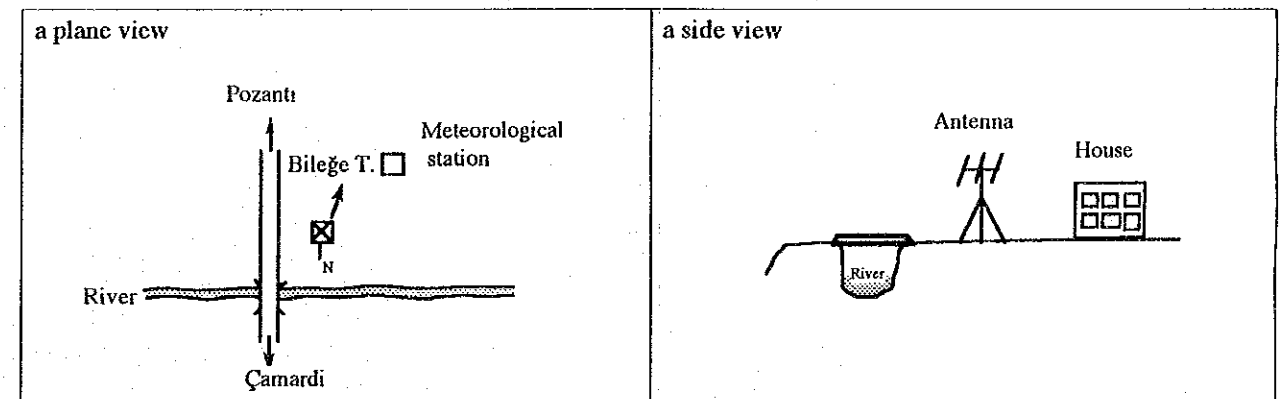
Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dBμV]	38	31	26	24	16	28	30	32	34	38	39	40

### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dBμV]
10	38
9	37
8	36
7	35
6	34
5	33

### Sketch at measuring point



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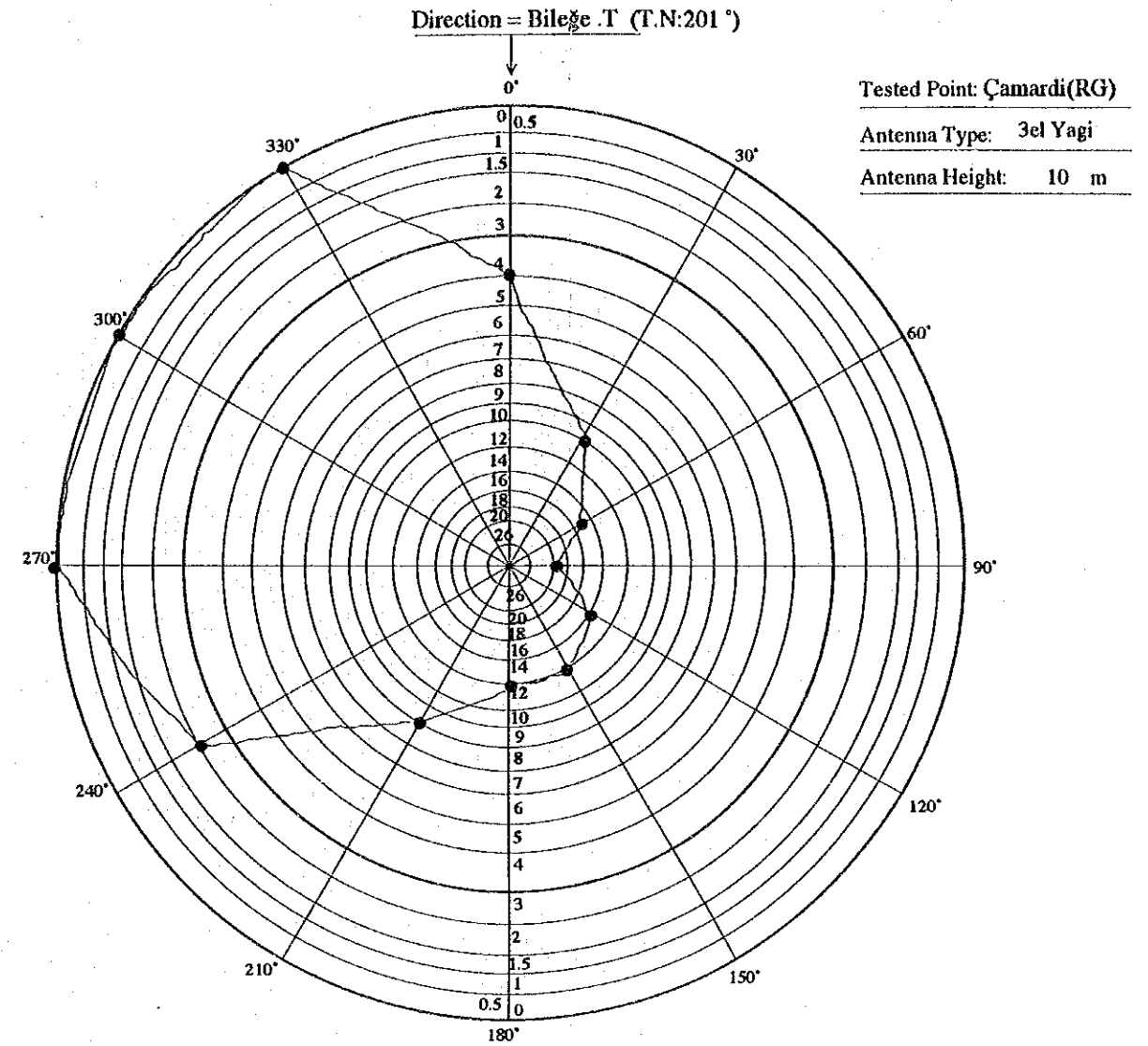
**RADIO PROPAGATION TEST DATA SHEET**

NO. 70-13

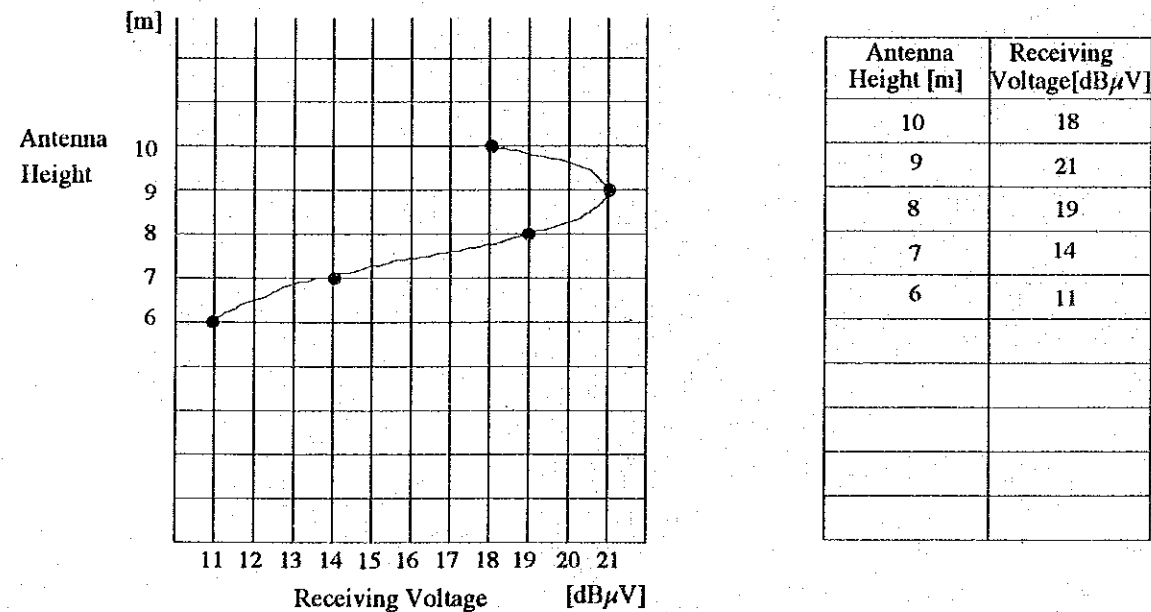
Measured by; DENSETSU ENGINEERING CORP.

Test Span	Bilege T. — Camardi(RG)		Date: 29 . NOV . 1993	Weather: Clear
			Time: 13 . 30 . 00	
Measuring Point	Station Name		Station Name	
	Bilege T.		G.L	Camardi(RG) (DMI)
Frequency	70.26 MHz (Vertical,Polarization)			
Antenna	Type Sleeve	Gain 2.15 dB	Type 3el,Yagi	Gain 7.15 dB
	Height 5 m		Height 10 m	
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length 20 m	Loss 0.9 dB	Length 20 m	Loss 0.9 dB
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0 W
Receiving Voltage	True Direction N: 21 °	dBμV	True Direction N: 201 °	18 dBμV
	N: °	dBμV	N: °	dBμV
S / N	S = -3.5 dB	S / N 46.5 dB	S = -4 dB	S / N 46 dB
	N = -50 dB		N = -50 dB	
Field Strength Meter	ML-518A			
Signal Generator	MG-54E			
Level Meter	LM-310			

**Antenna Polarization Pattern**

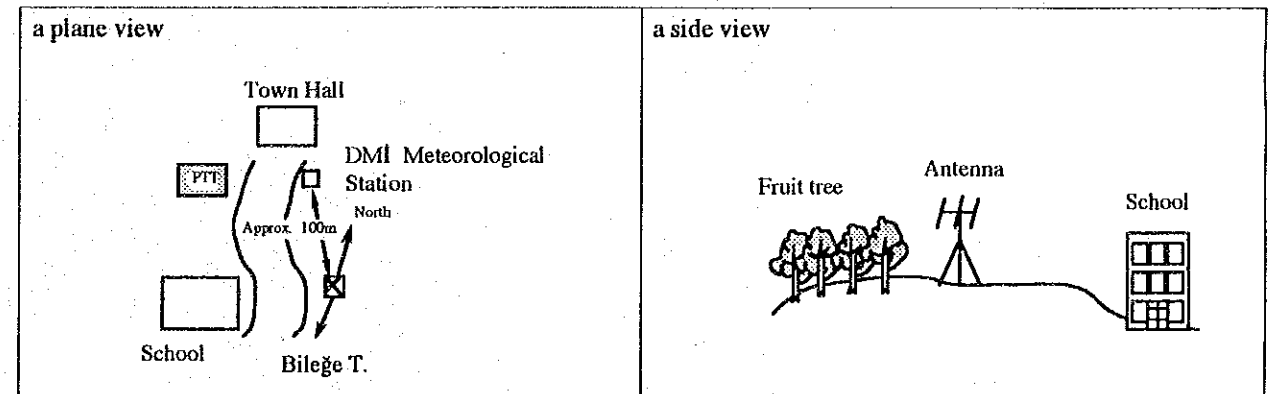


**Antenna Height Pattern**



Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dBμV]	18	12	5	2	8	10	10	14	20	22	22	22

**Sketch at measuring point**



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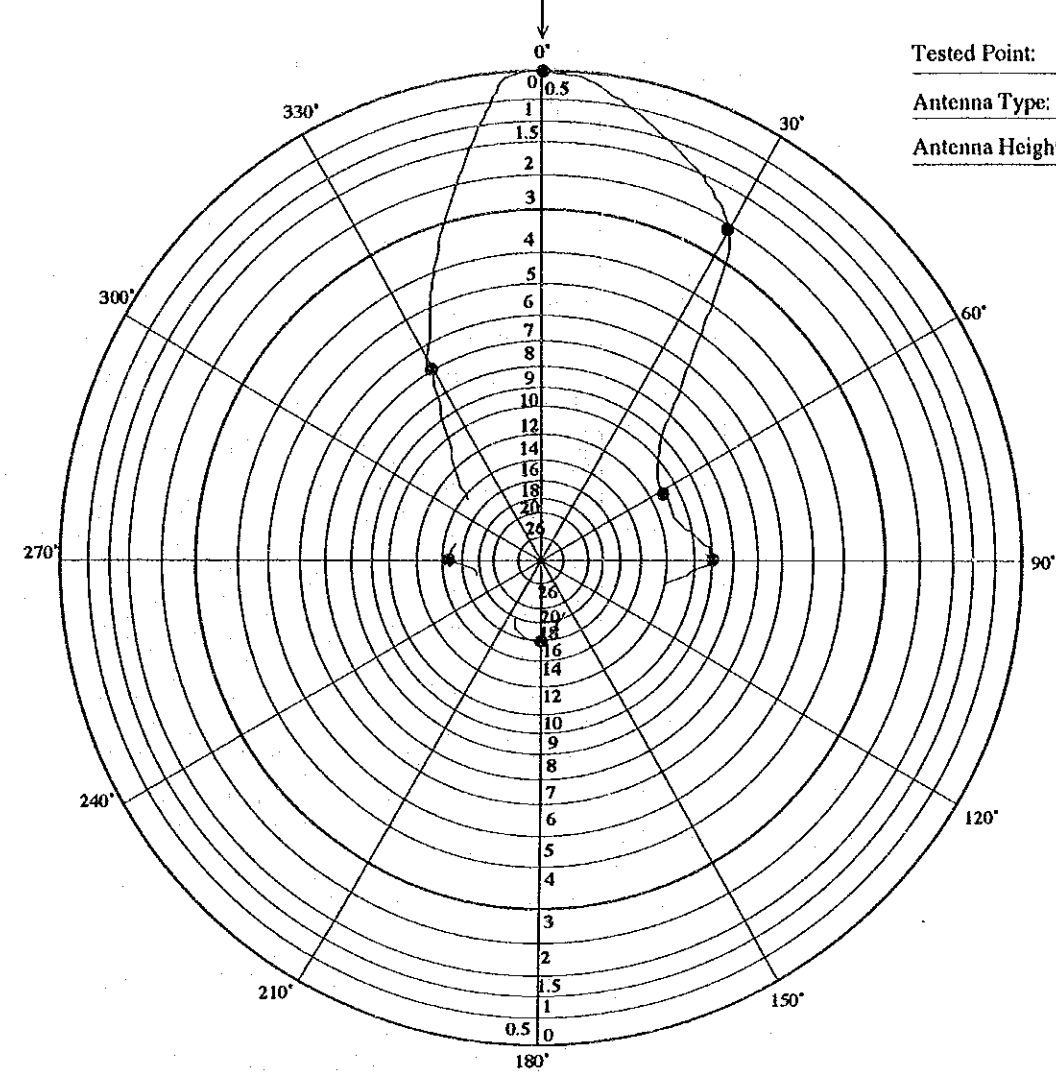
NO. 400-3

Measured by; DENSETSU ENGINEERING CORP.

Test Span	DSİ Adana — Taşçı		Date: 2 . DEC .1993	Weather: Clear
			Time: 13 . 30 . 00	
Measuring Point	Station Name		Station Name	
	DSİ Adana	G.L.	Taşçı	G.L.
	N: 37° 00' 18" E: 35° 19' 54" 20 m		N: 36° 52' 37" E: 35° 19' 29" 16 m	
Frequency	411.7 MHz (Vertical, Polarization)			
Antenna	Type Sleeve	Gain 2.15 dB	Type Sel, Yagi	Gain 11.15 dB
	Height 21.5 m		Height 10 m	
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length 20 m	Loss 2.2 dB	Length 20 m	Loss 2.2 dB
Transmitting Power	Forward 10 W	Reflect 0 W	Forward 10 W	Reflect 0.1 W
Receiving Voltage	True Direction N: 182°	dB $\mu$ V	True Direction N: 2°	16 dB $\mu$ V
	N: °	dB $\mu$ V	N: °	dB $\mu$ V
S / N	S = -6 dB	S / N 33 dB	S = -7 dB	S / N 34 dB
	N = -39 dB		N = -41 dB	
Field Strength Meter	ML-518A			
Signal Generator	MG-54D			
Level Meter	LM-310			

### Antenna Polarization Pattern

Direction = DSİ Adana (T.N: 2°)

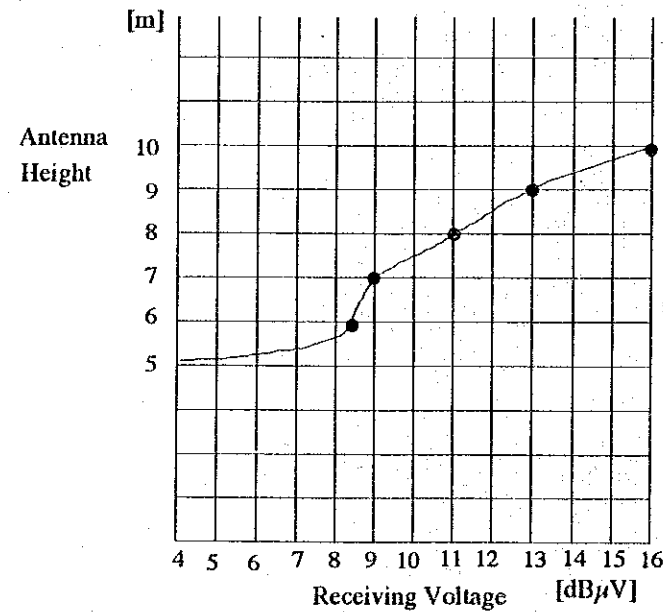


Tested Point: Taşçı

Antenna Type: Sel Yagi

Antenna Height: 10 m

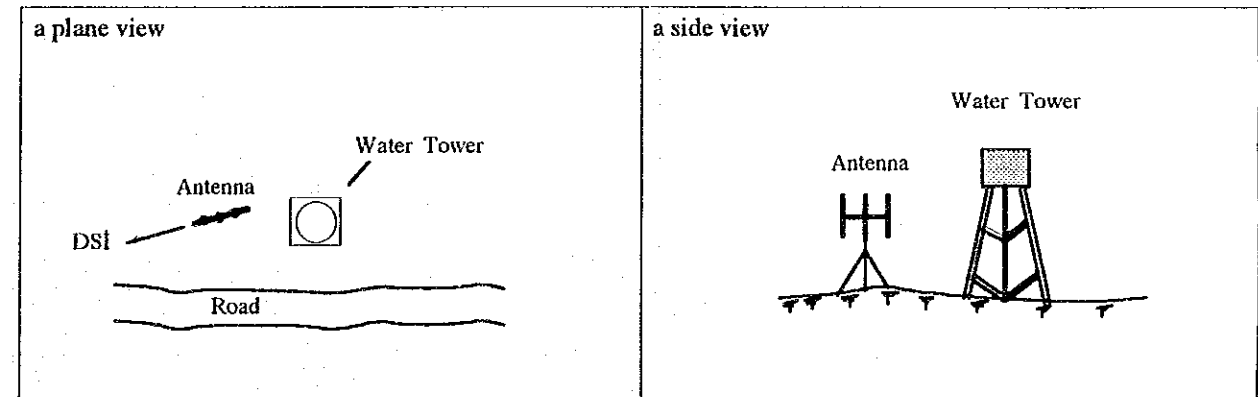
### Antenna Height Pattern



Antenna Height [m]	Receiving Voltage [dB $\mu$ V]
10	16
9	13
8	11
7	9
6	8.5
5	3

Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dB $\mu$ V]	16	14	5	7	—	—	0	—	—	1	—	9

### Sketch at measuring point



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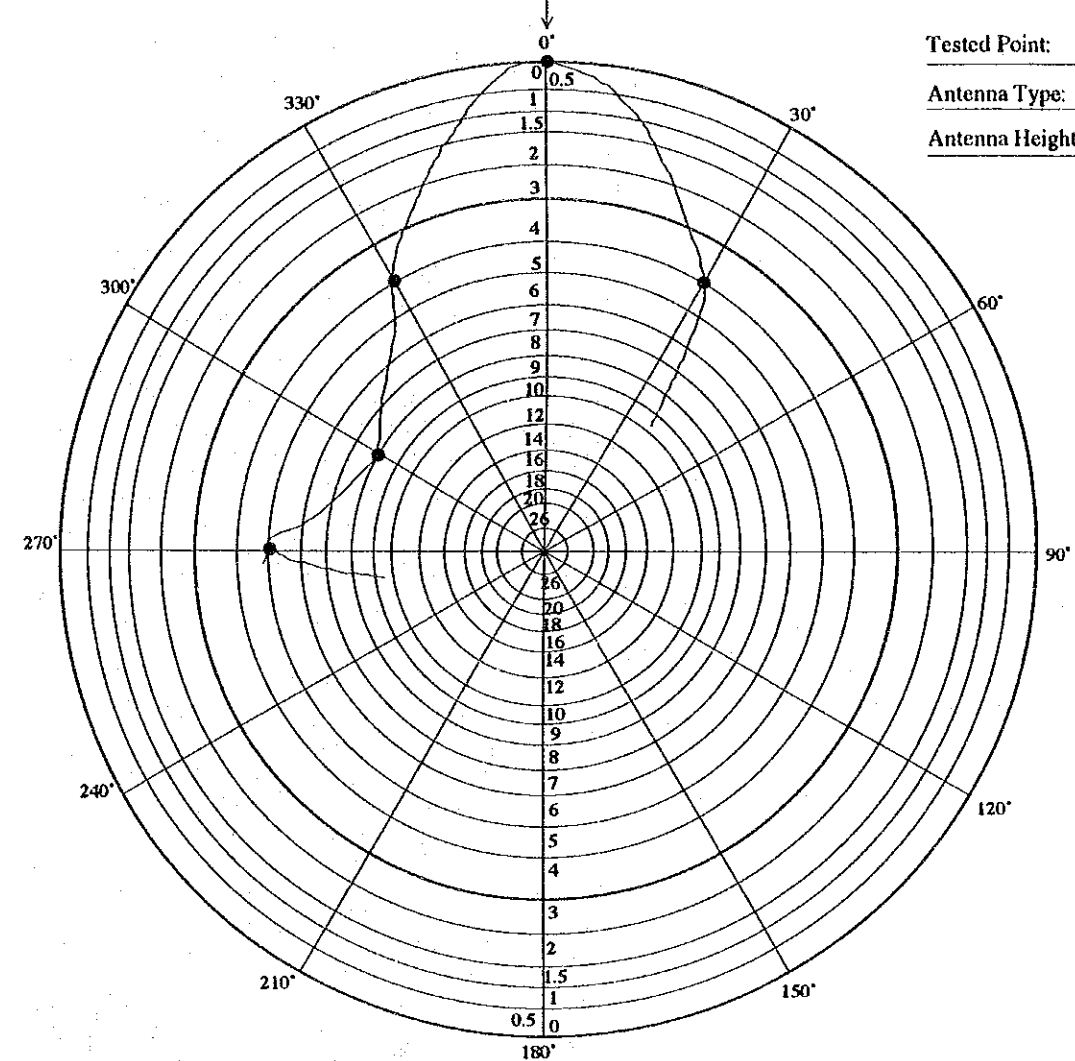
NO. 400-2

Measured by; DENSETSU ENGINEERING CORP.

Test Span	DSİ Adana — Kuraşa		Date: 2 · DEC · 1993	Weather: Clear
			Time: 10 · 30 · 00	
Measuring Point	Station Name		Station Name	
	DSİ Adana	G.L.	Kuraşa	G.L.
	N: 37° 00' 18" E: 35° 19' 54"		N: 36° 47' 37" E: 35° 10' 14"	
Frequency	411.7 MHz (Vertical, Polarization)			
Antenna	Type	Sleeve	Gain	2.15 dB
	Type	Sel, Yagi	Gain	11.15 dB
	Height	21.5 m	Height	10 m
Coaxial Cable	Type 10D-2V		Type 10D-2V	
	Length	20 m	Loss	2.2 dB
	Length	20 m	Loss	2.2 dB
Transmitting Power	Forward	10 W	Reflect	0 W
	Forward	10 W	Reflect	0 W
Receiving Voltage	True Direction	N: 211°		9 dB $\mu$ V
		N: °		N: °
S / N	S =	-6.5 dB	S / N	28.5 dB
	N =	-35 dB	S =	-7.5 dB
			N =	-50 dB
Field Strength Meter	ML-518A			
Signal Generator	MG-54D			
Level Meter	LM-310			

**Antenna Polarization Pattern**

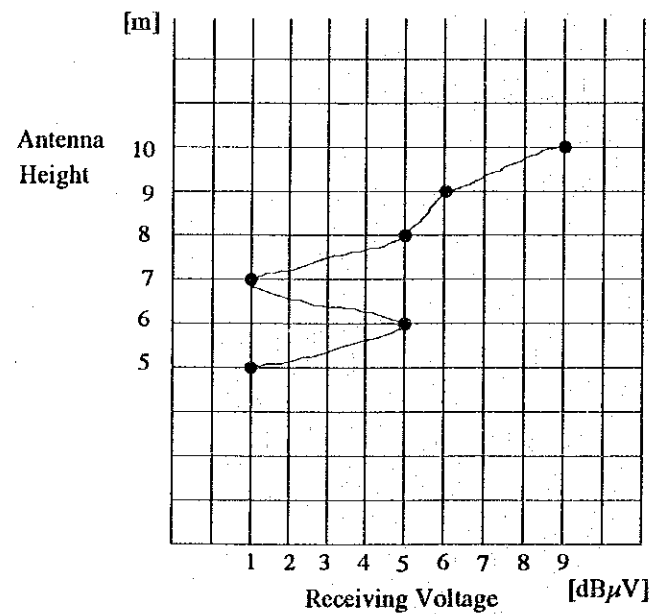
Direction = DSİ Adana (T.N: 31°)



Tested Point: Kuraşa  
Antenna Type: Sel Yagi  
Antenna Height: 10 m

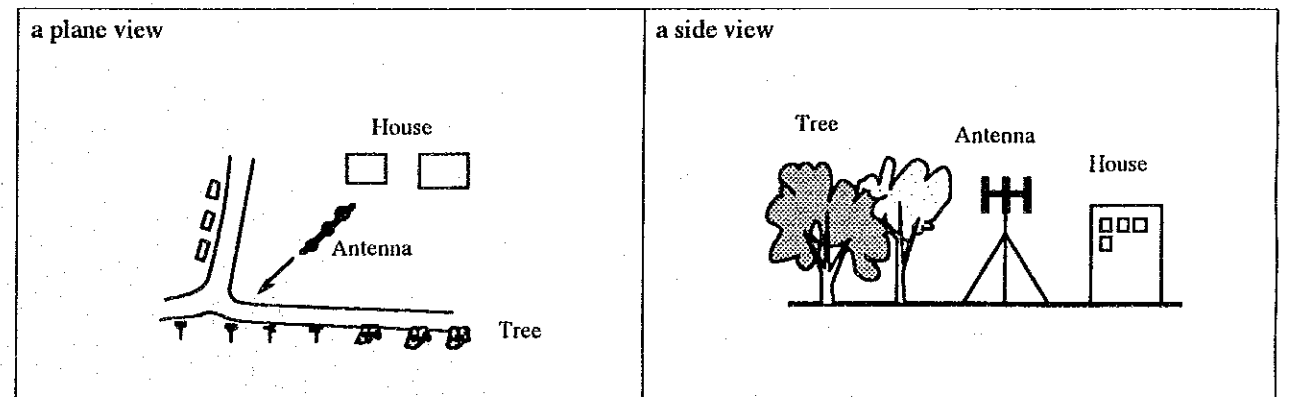
Degree	0°	30°	60°	90°	120°	150°	180°	210°	240°	270°	300°	330°
Receiving Voltage [dB $\mu$ V]	9	5	—	—	—	—	—	—	—	4	1	5

**Antenna Height Pattern**



Antenna Height [m]	Receiving Voltage [dB $\mu$ V]
10	9
9	6
8	5
7	1
6	5
5	1

**Sketch at measuring point**



THE REPUBLIC OF TURKEY  
DEVLET SU İŞLERİ  
GENEL MÜDÜRLÜĞÜ

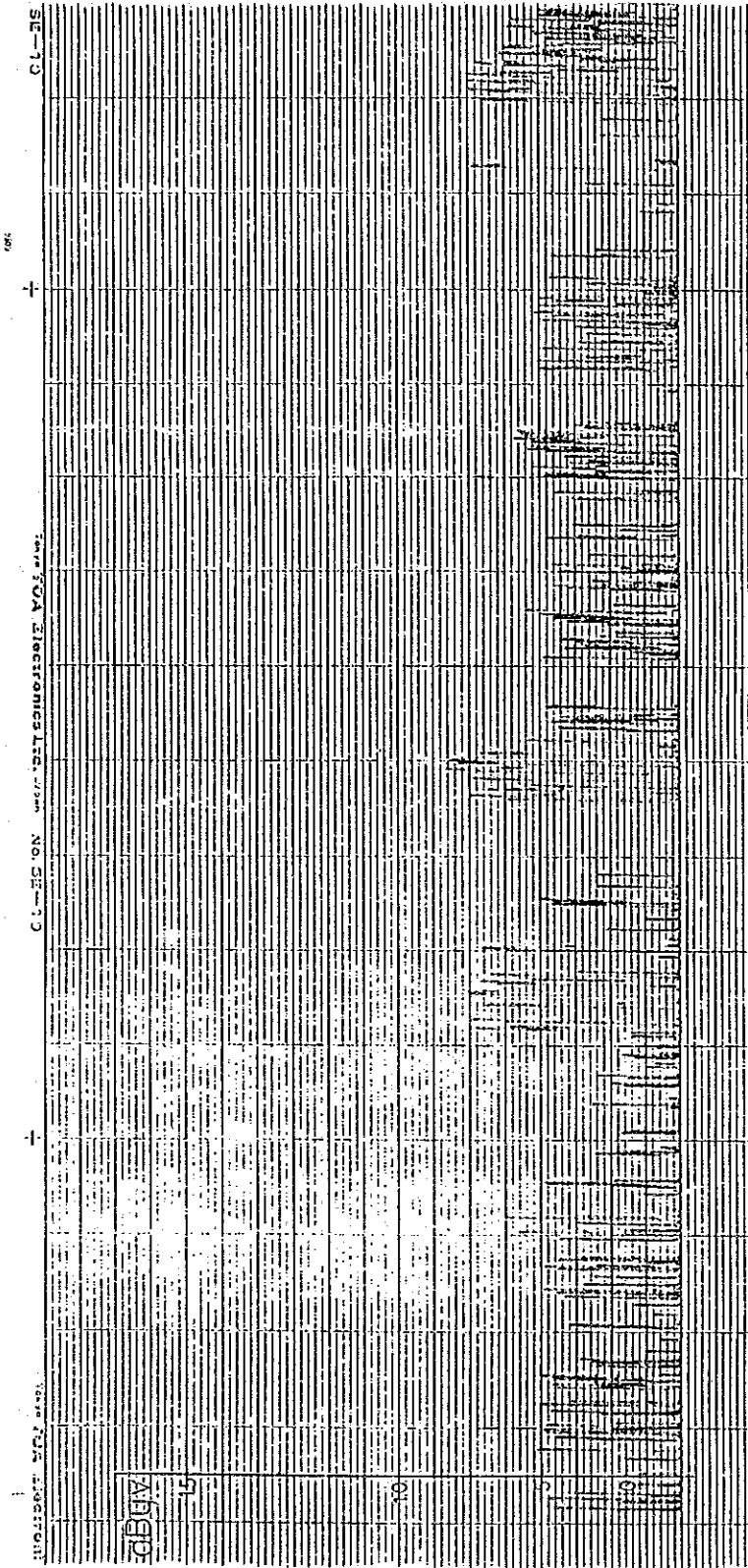
FLOOD CONTROL, FORECASTING  
AND WARNING SYSTEM FOR  
SEYHAN RIVER BASIN  
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE  
RADIO PROPAGATION TEST  
DATA SHEET



## 7. External Noise Record





- Station: Hasandede
- Date: November 10, 1993
- Time: 11:30 to 11:45
- Frequency: 70.26MHz
- Antenna: 3EL Yagi
- Chart speed: 20mm/min.

THE REPUBLIC OF TURKEY  
DEVLET SU İŞLERİ  
GENEL MÜDÜRLÜĞÜ

FLOOD CONTROL, FORECASTING  
AND WARNING SYSTEM FOR  
SEYHAN RIVER BASIN  
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE  
EXTERNAL NOISE RECORD

1

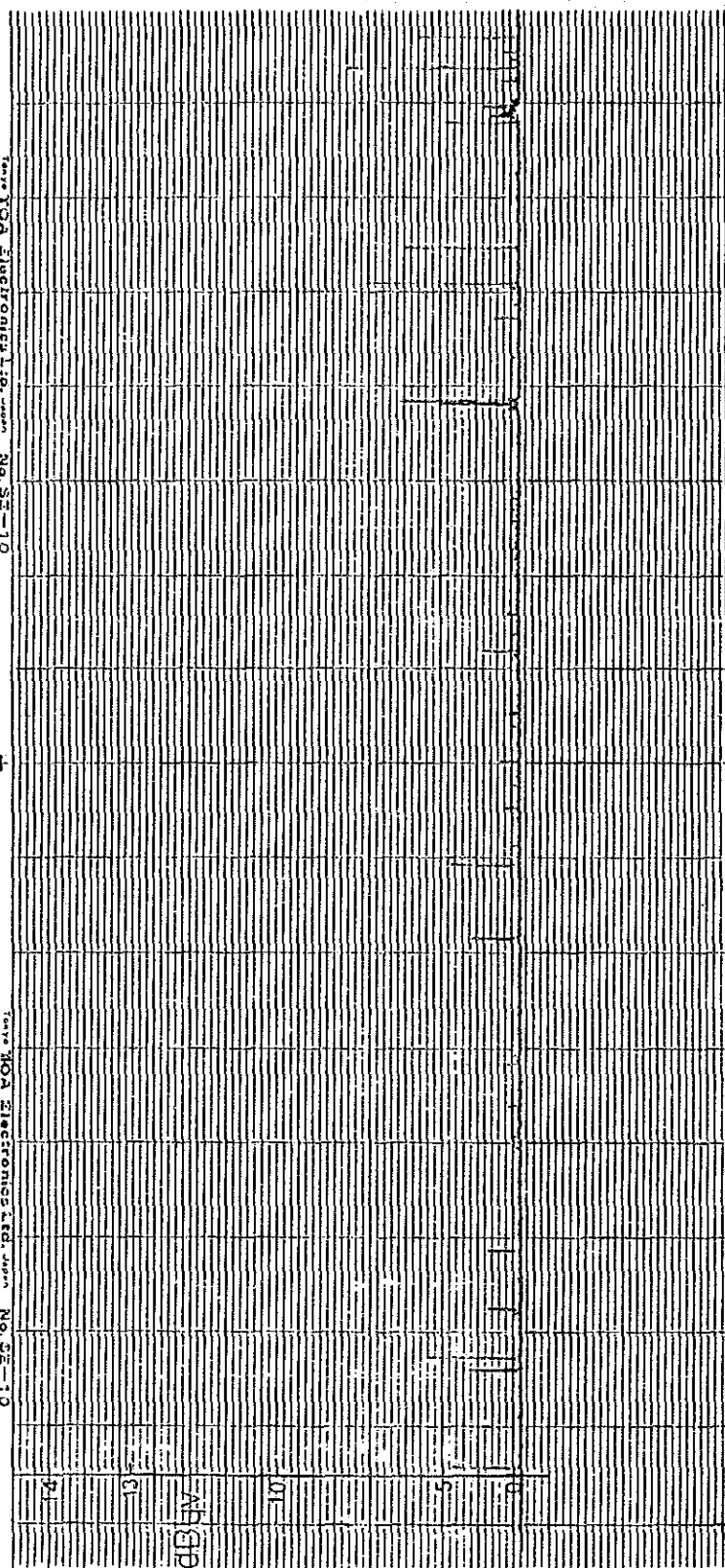
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+

1

YOKI ELECTRONICS LTD. No. SE-10

YOKI ELECTRONICS LTD. No. SE-10

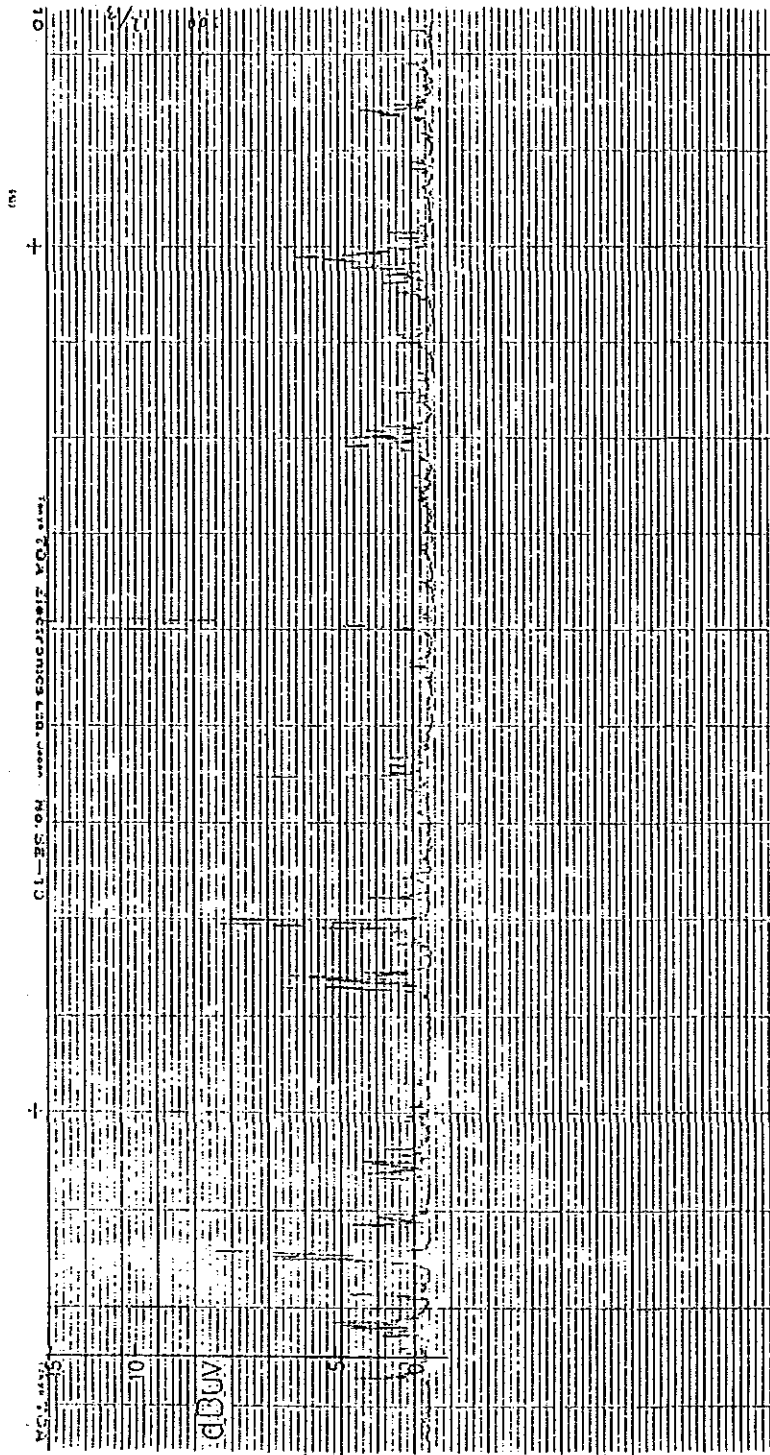


- Station: 1818 (Egner)
- Date: November 9, 1993
- Time: 14:05 to 14:20
- Frequency: 70.26MHz
- Antenna: 3EL Yagi
- Chart speed: 20mm/min.

THE REPUBLIC OF TURKEY  
 DEVLET SU İŞLERİ  
 GENEL MÜDÜRLÜĞÜ

FLOOD CONTROL, FORECASTING  
 AND WARNING SYSTEM FOR  
 SEYHAN RIVER BASIN  
 JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE  
 EXTERNAL NOISE RECORD



- Station: DSİ Adana
- Date: December 3, 1993
- Time: 10:00 to 10:14
- Frequency: 411.7MHz
- Antenna: Sleeve antenna
- Chart speed: 20mm/min.

THE REPUBLIC OF TURKEY  
DEVLET SU İŞLERİ  
GENEL MÜDÜRLÜĞÜ

FLOOD CONTROL, FORECASTING  
AND WARNING SYSTEM FOR  
SEYHAN RIVER BASIN  
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE

EXTERNAL NOISE RECORD





# **Data Book C**

**Feasibility Grade Design  
and  
Estimate of Project Cost**

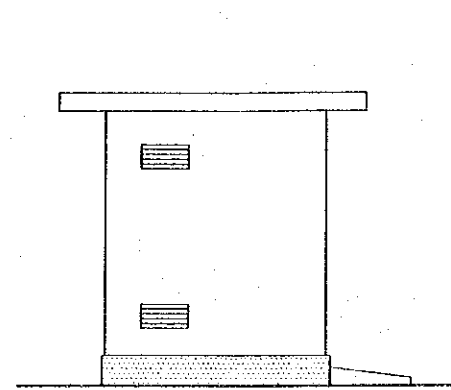
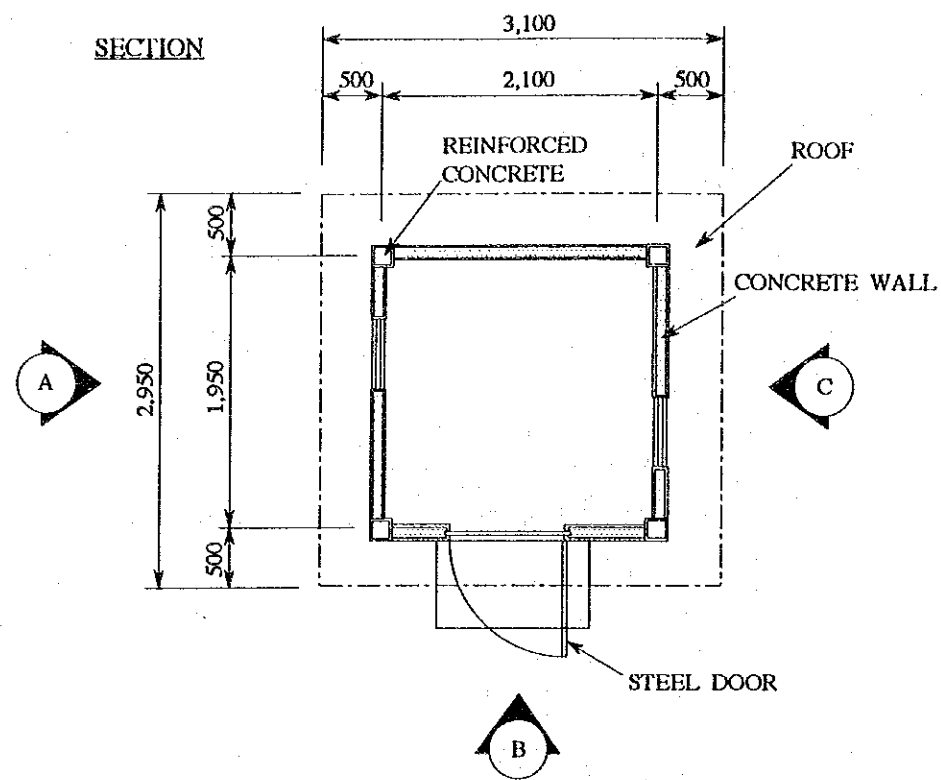


## Table of Contents

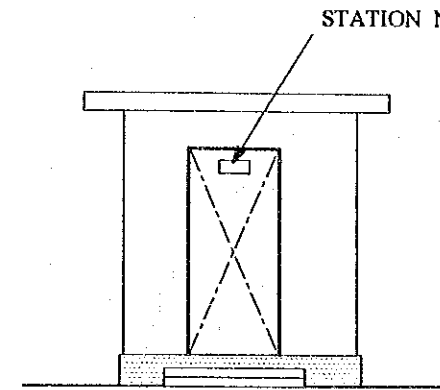
1. Feasibility Grade Design
2. List of Major Equipment Unit Cost and Civil Work and Installation Unit Cost



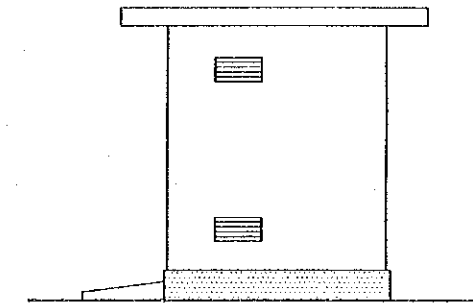
## 1. Feasibility Grade Design



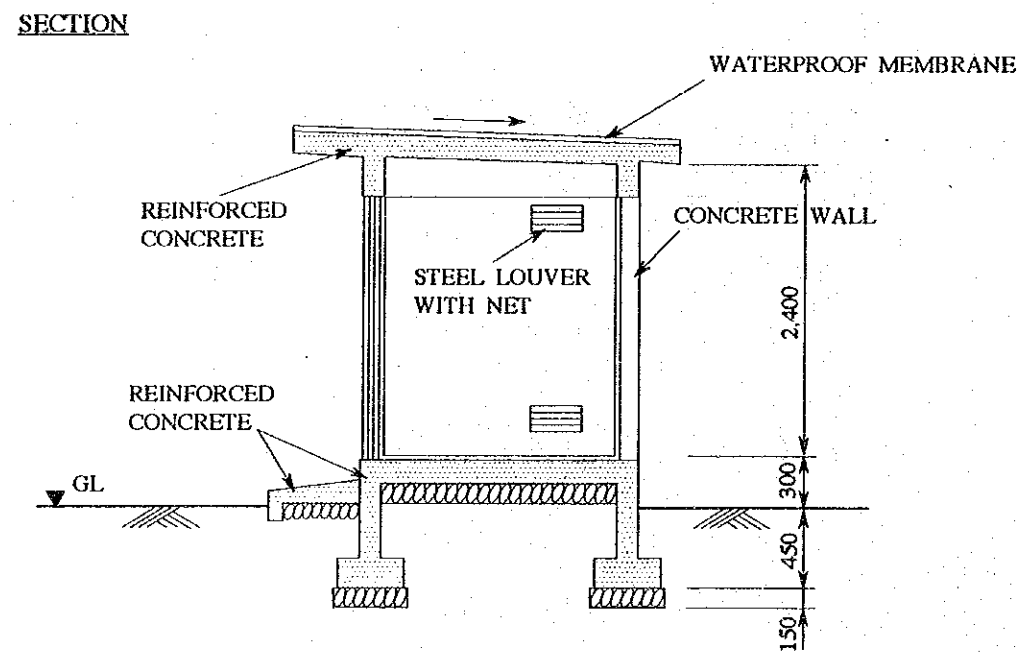
ELEVATION - A



ELEVATION - B



ELEVATION - C



1. FEATURES

- (1) WITHOUT GLASS WINDOWS
- (2) CABLE INLET FOR FOLLOWING PURPOSE
  - SOLAR CELLS PANEL
  - RAIN GAUGE
  - WATER LEVEL GAUGE
  - ANTENNA FEEDER
  - GROUNDING
- (3) AMPLE VENTILATION PROVIDED BY AIR-VENTS (NATURAL VENTILATION)

2. APPLICATION

- (1) RAINFALL GAUGING STATION
- (2) WATER LEVEL GAUGING STATION FOR TELEMETRY EQUIPMENT
- (3) SMALL UNATTENDED REPEATER STATION

THE REPUBLIC OF TURKEY

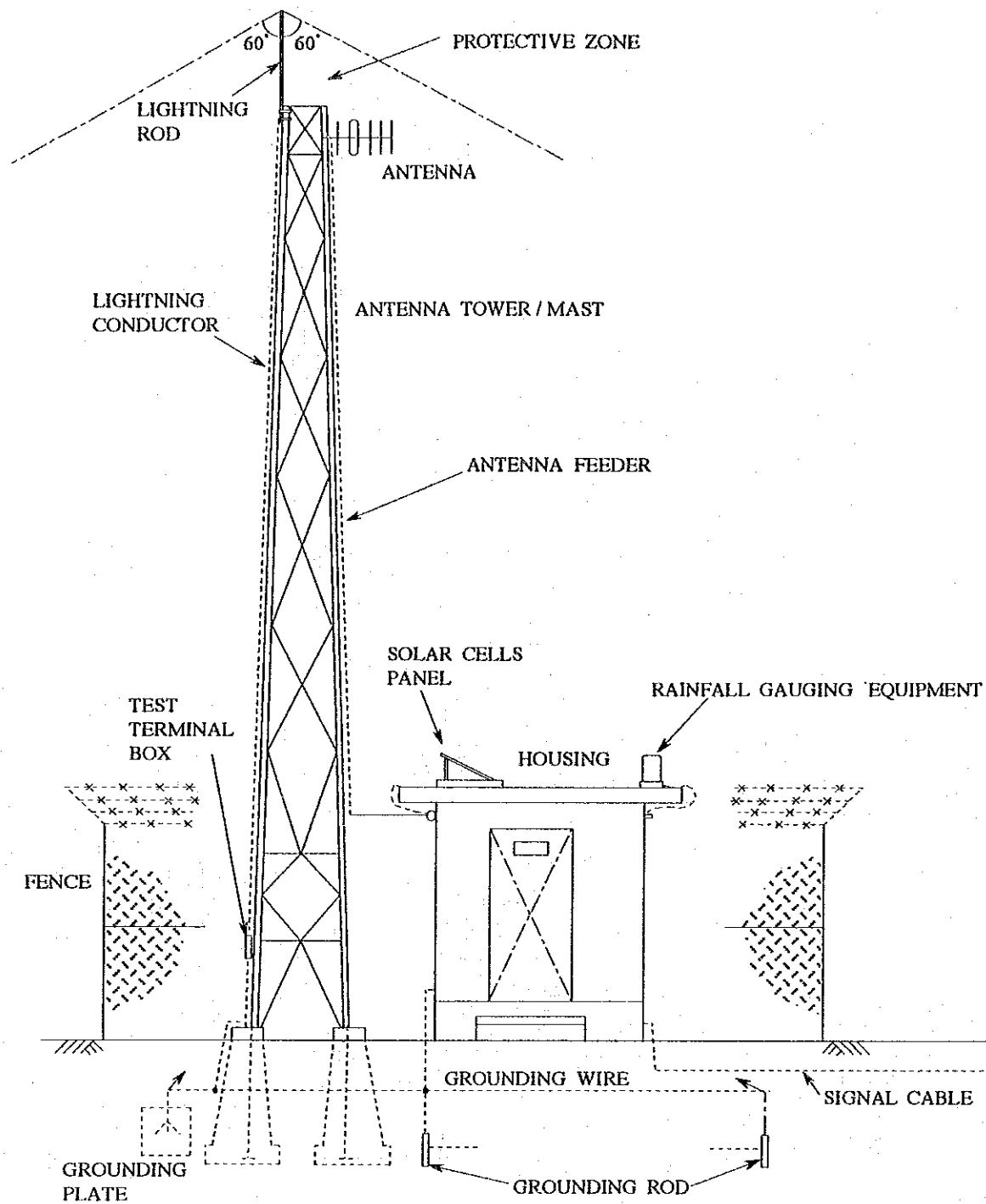
DEVLET SU İŞLERİ  
GENEL MÜDÜRLÜĞÜ

FLOOD CONTROL, FORECASTING  
AND WARNING SYSTEM FOR  
SEYHAN RIVER BASIN

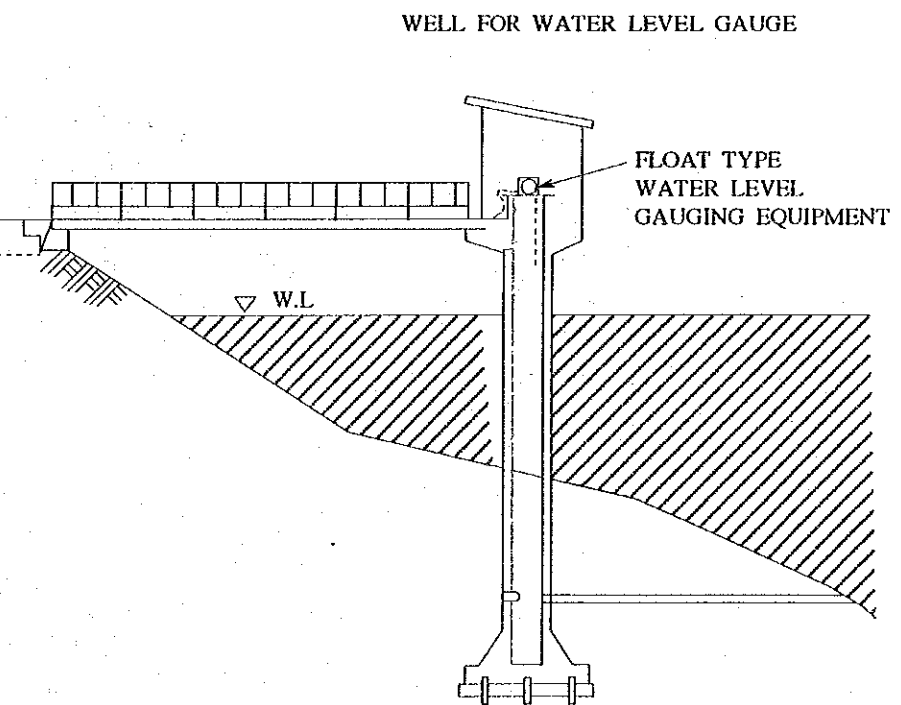
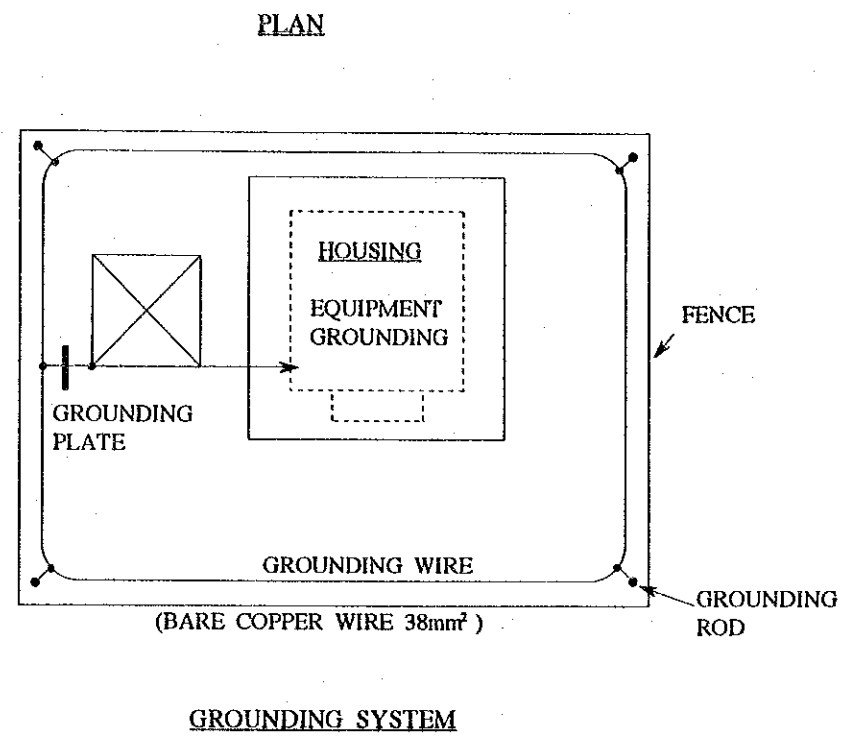
JAPAN INTERNATIONAL COOPERATION AGENCY

TITLE

TYPICAL GAUGING/RADIO  
STATION HOUSE

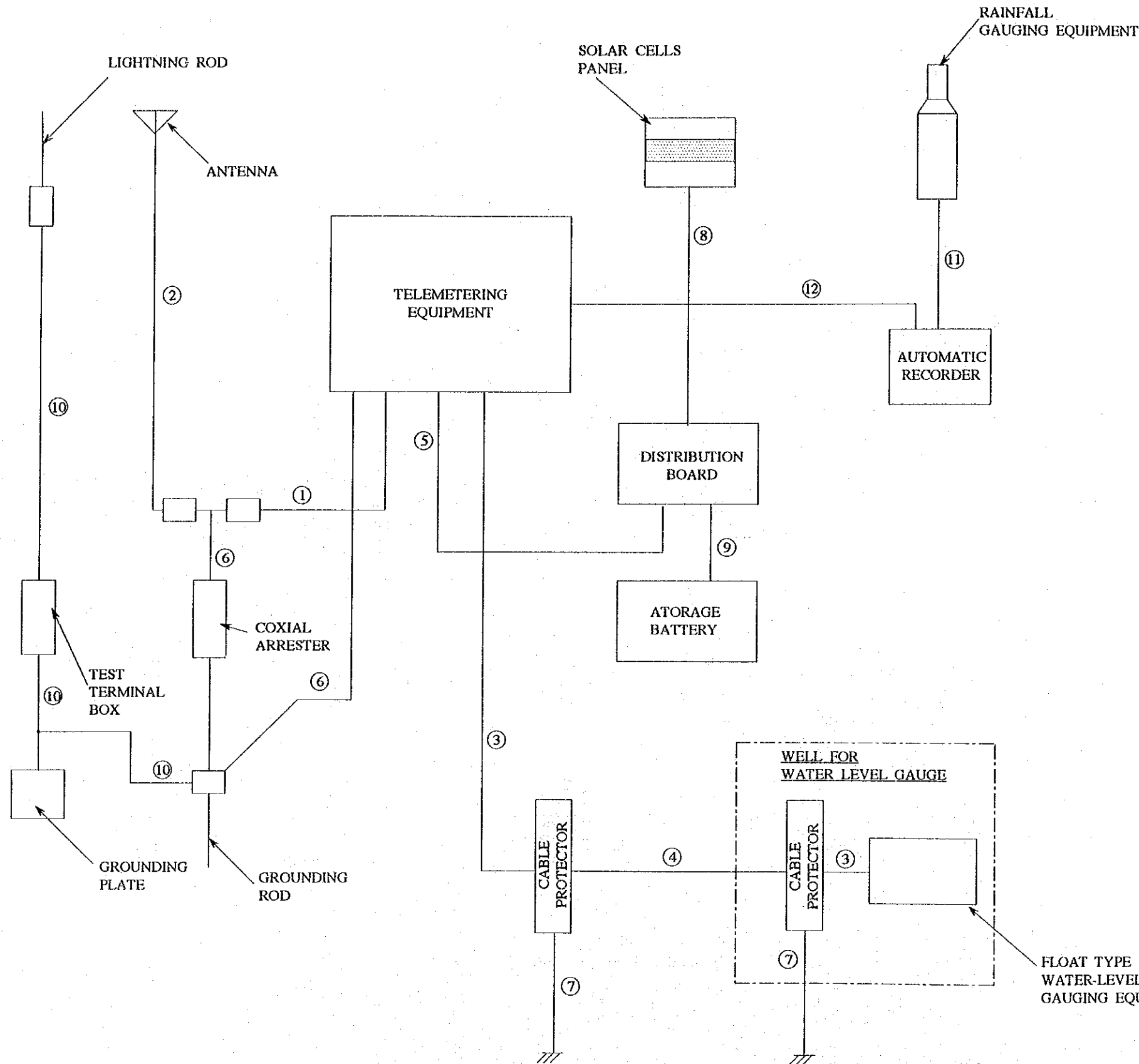


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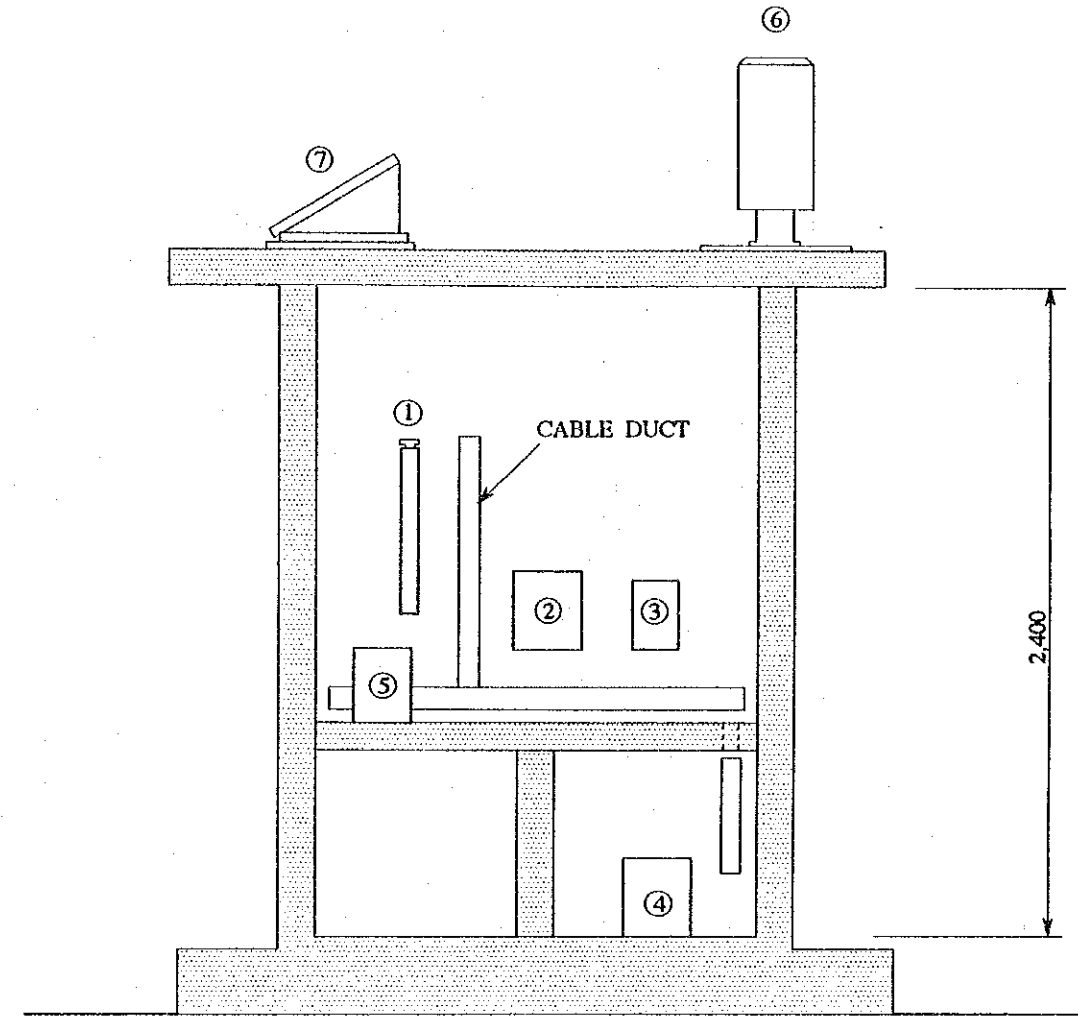
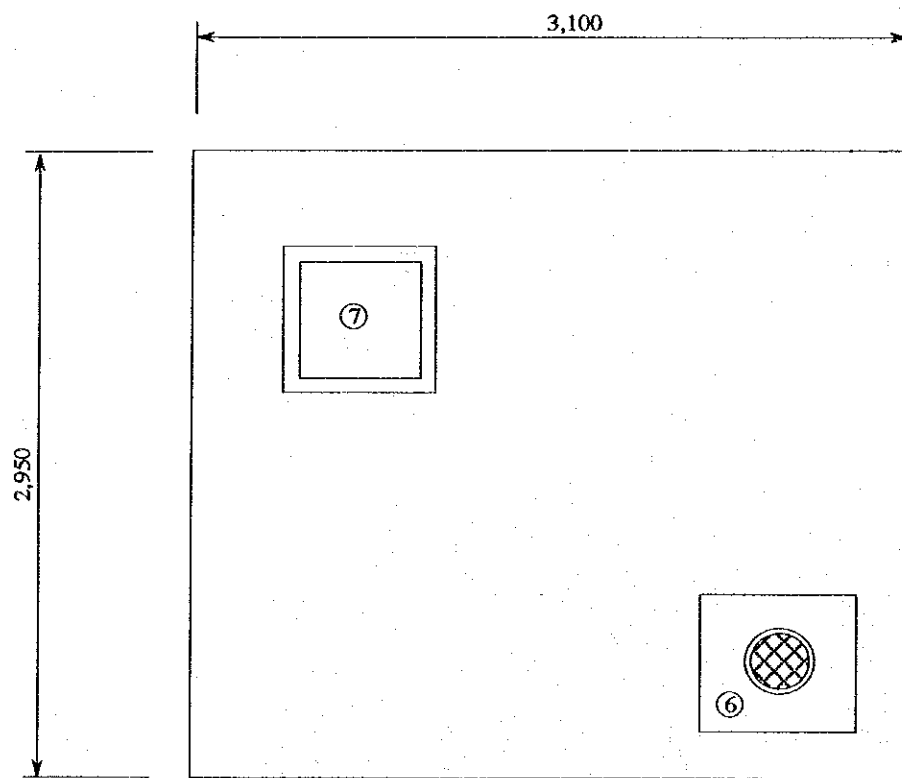
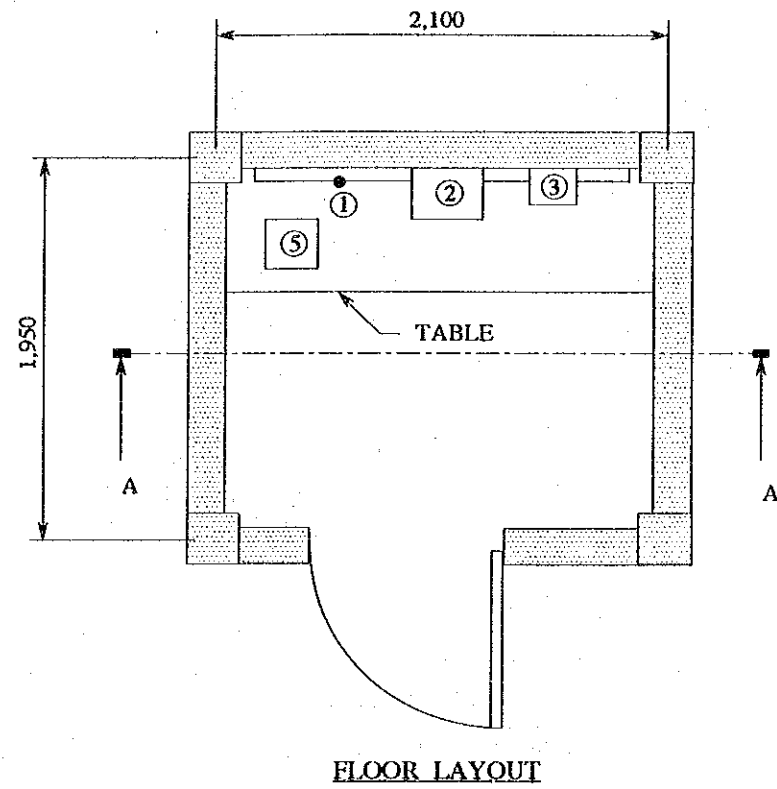
<p>THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ</p>	<p>FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY</p>	<p>TITLE TYPICAL ARRANGEMENT OF RAINFALL AND WATER LEVEL GAUGING STATION</p>
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No.	CABLE	MODEL / TYPE
①	COAXIAL CABLE	5D-2V
②	COAXIAL CABLE	10D-2E
③	SIGNAL CABLE	SWVP-0.5φ x 60C
④	SIGNAL CABLE	CPEV (S) 0.9φ x 30P
⑤	POWER CABLE	VCT 2mm <sup>2</sup> x 4C
⑥	GROUNDING CABLE	1V 5.5mm <sup>2</sup>
⑦	GROUNDING CABLE	1V 5.5mm <sup>2</sup>
⑧	POWER CABLE	CVVS 2mm <sup>2</sup> x 2C
⑨	POWER CABLE	CVV 2mm <sup>2</sup> x 2C
⑩	GROUNDING WIRE	BARE COPPER WIRE 38mm <sup>2</sup>
⑪	SIGNAL CABLE	CVVS 1.25mm <sup>2</sup> x 2C
⑫	SIGNAL CABLE	VCT 0.75mm <sup>2</sup> x 2C

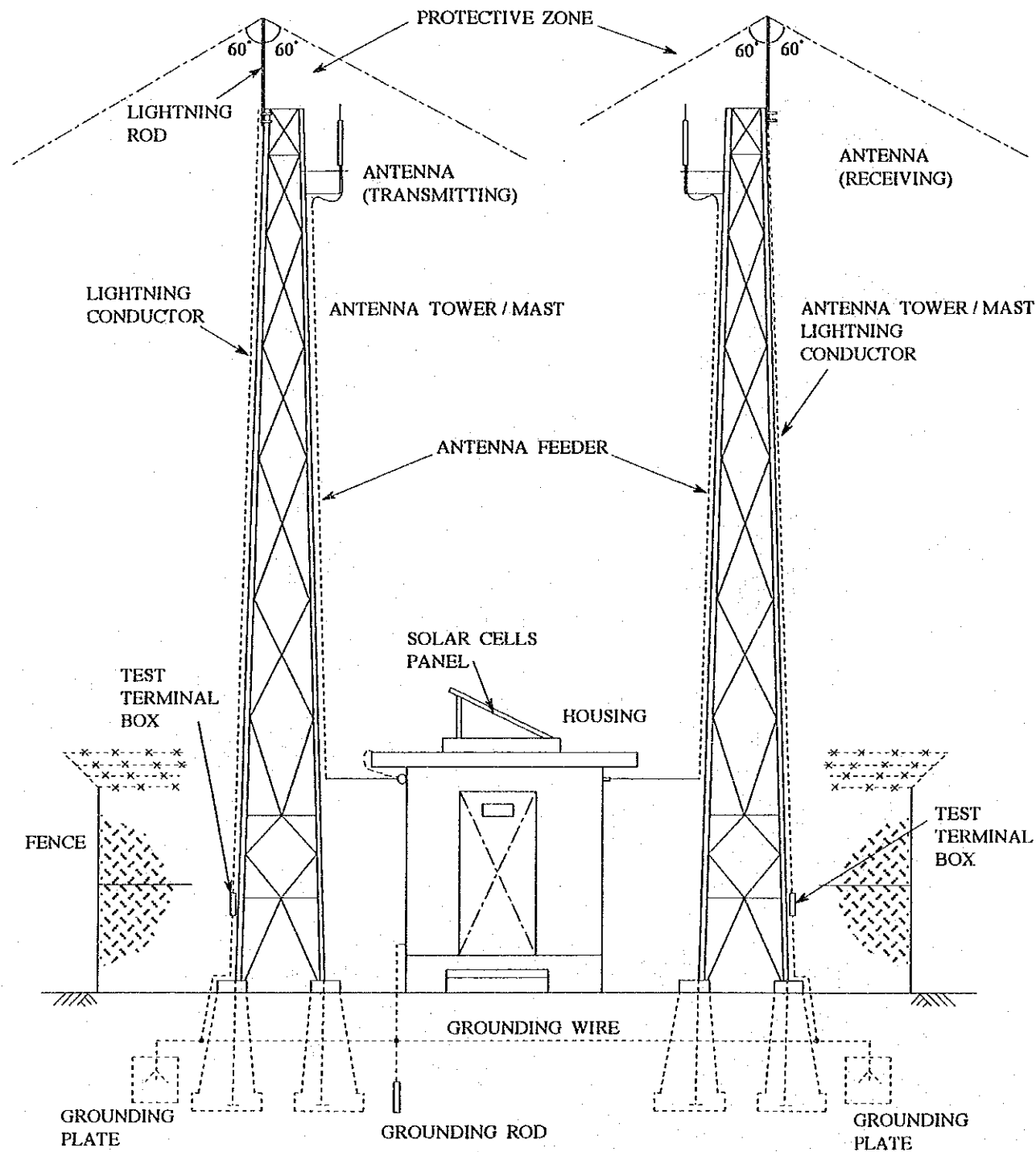
THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ	FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVER BASIN	TITLE
	JAPAN INTERNATIONAL COOPERATION AGENCY	TYPICAL WIRING DIAGRAM FOR RAIN FALL AND WATER LEVEL GAUGEING STAION



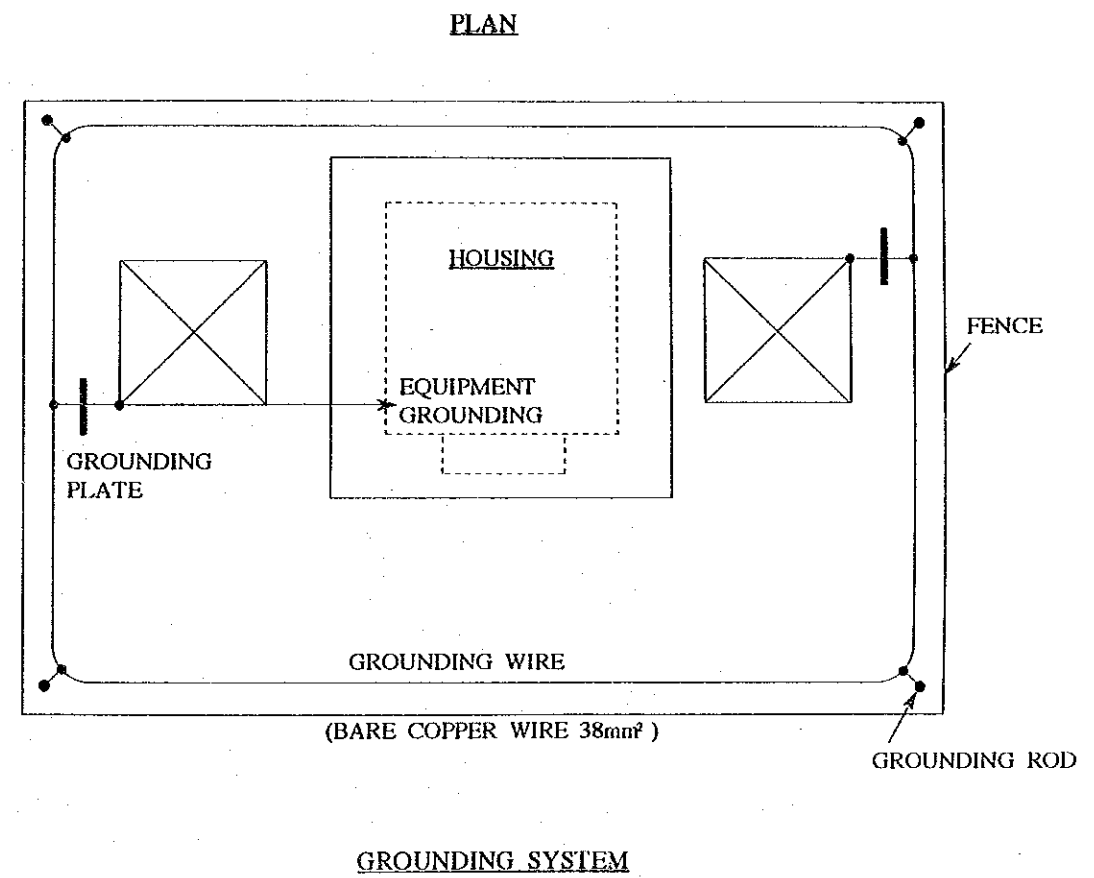
**LEGEND:**

- ① COAXIAL ARRESTER (70MHz BAND)
- ② TELEMETERING EQUIPMENT
- ③ DISTRIBUTION BOARD FOR SOLAR CELLS
- ④ STORAGE BATTERY
- ⑤ AUTOMATIC RECORDER FOR RAINFALL GAUGE
- ⑥ RAINFALL GAUGING EQUIPMENT
- ⑦ SOLAR CELLS

<b>THE REPUBLIC OF TURKEY</b> DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ	<b>FLOOD CONTROL, FORECASTING          AND WARNING SYSTEM FOR          SEYHAN RIVER BASIN</b> JAPAN INTERNATIONAL COOPERATION AGENCY	<b>TITLE</b> TYPICAL EQUIPMENT LAYOUT FOR RAINFALL GAUGING STATION
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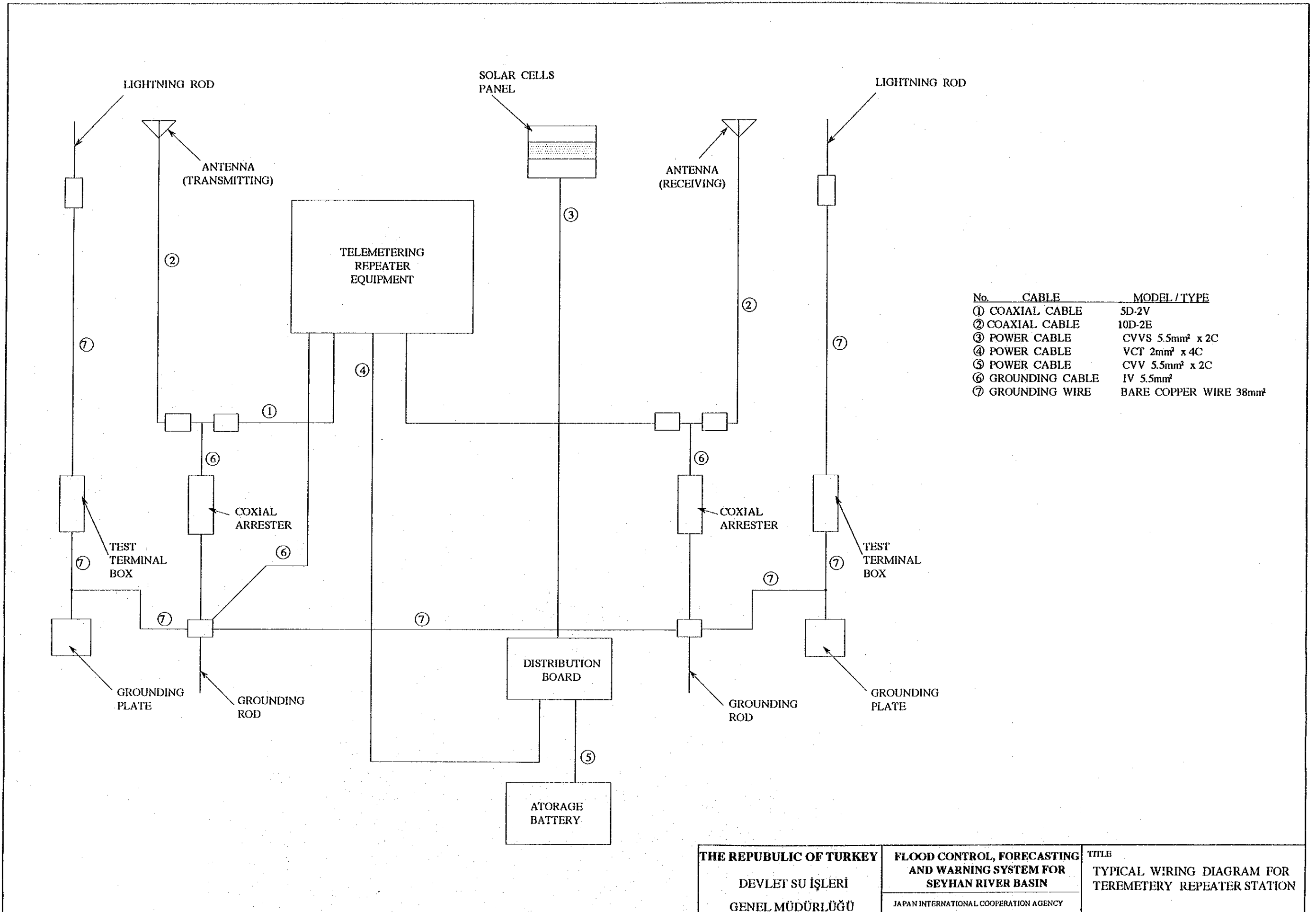


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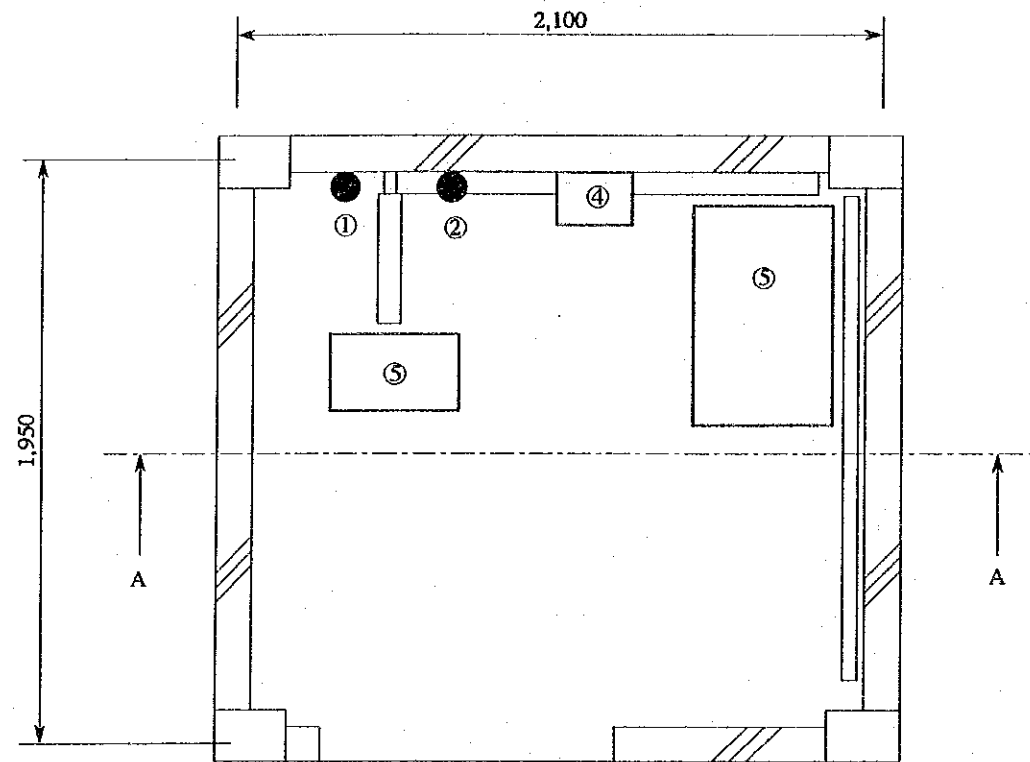


GROUNDING SYSTEM

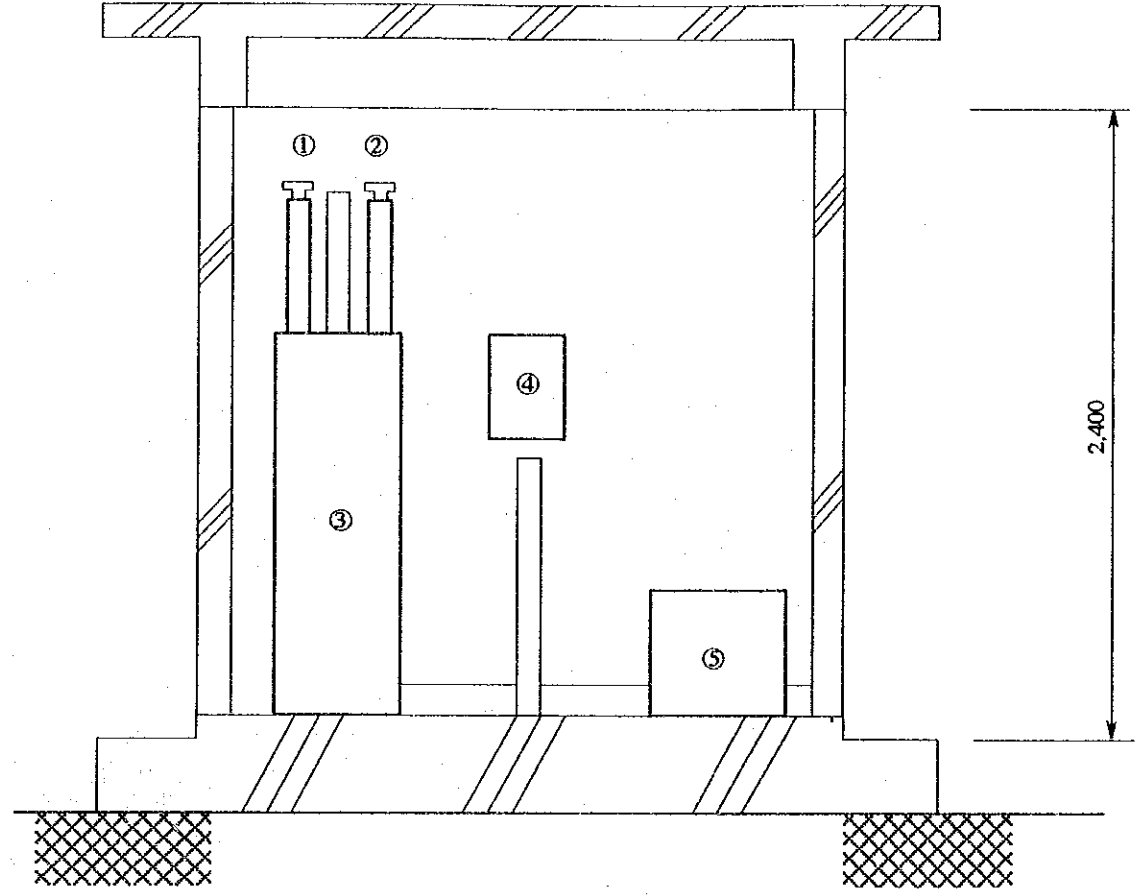
<p>THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ</p>	<p>FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY</p>	<p>TITLE TYPICAL ARRANGEMENT OF TELEMETRY REPEATER STATION</p>
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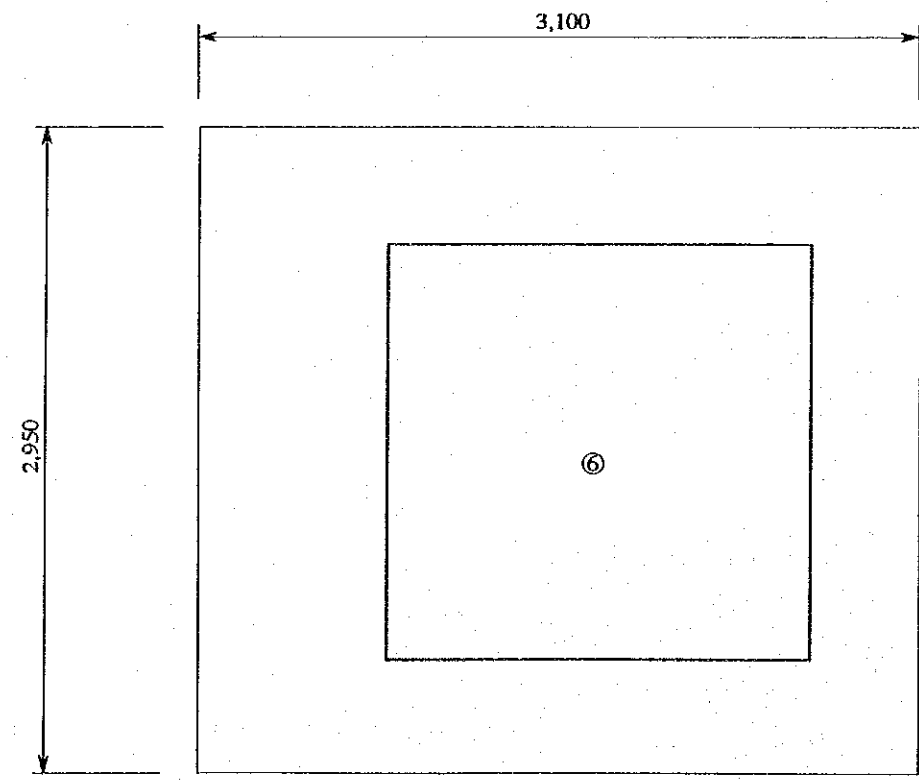
<p>THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ</p>	<p>FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY</p>	<p>TITLE TYPICAL WIRING DIAGRAM FOR TEREMETERY REPEATER STATION</p>
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FLOOR LAYOUT



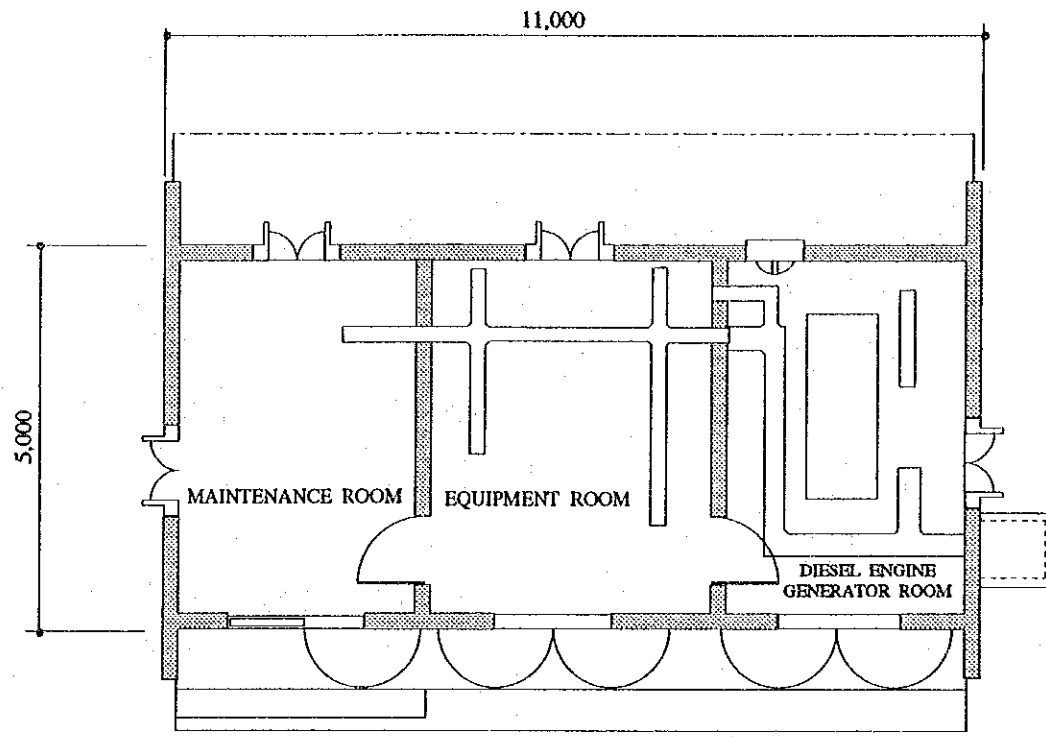
SECTION A-A



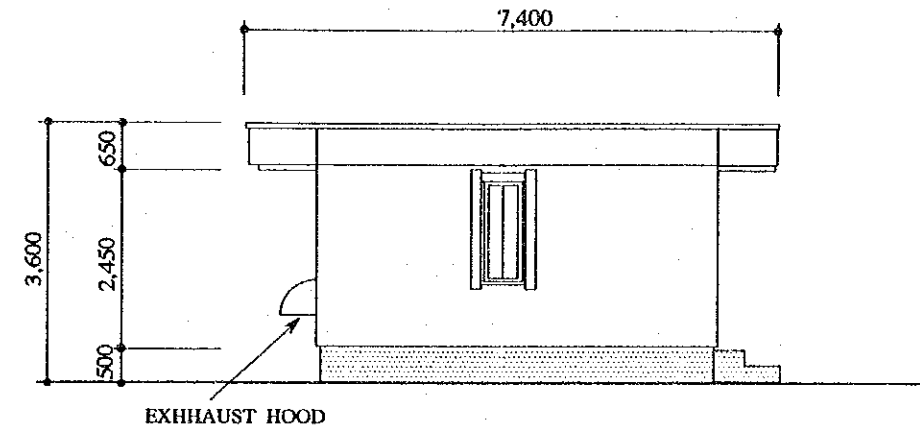
ROOF

- LEGEND:
- ① COAXIAL ARRESTER
  - ② COAXIAL ALLESTER
  - ③ REPEATER EQUIPMENT
  - ④ DISTRIBUTION BOARD FOR SOLAR CELLS
  - ⑤ STORAGE BATTERY
  - ⑥ SOLAR CELLS

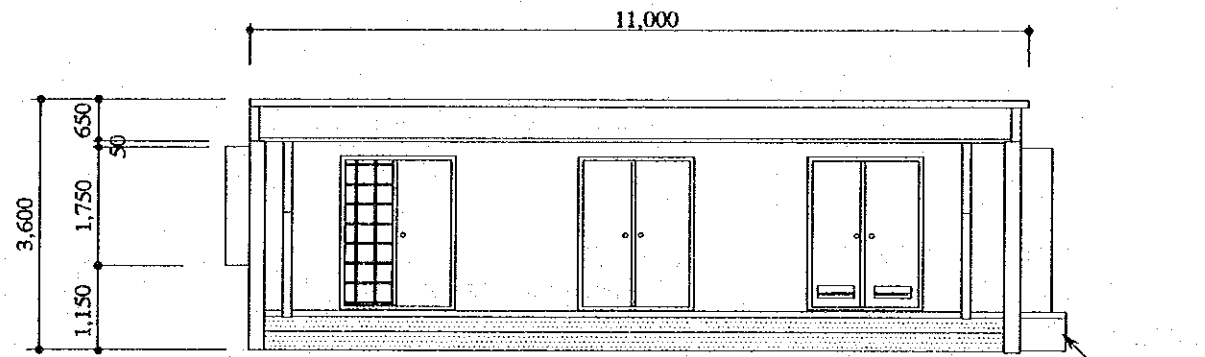
THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ	FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVER BASIN	TITLE
	JAPAN INTERNATIONAL COOPERATION AGENCY	
		TYPICAL EQUIPMENT LAYOUT FOR TELEMETERY REPEATER STATION



**PLAN**

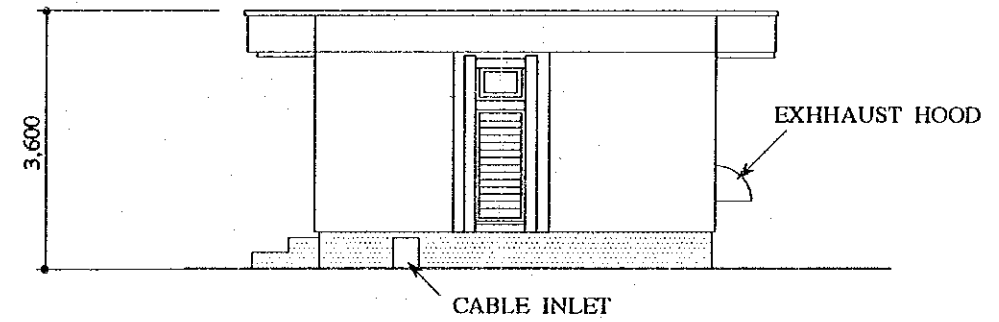


**LEFT SIDE ELEV.**



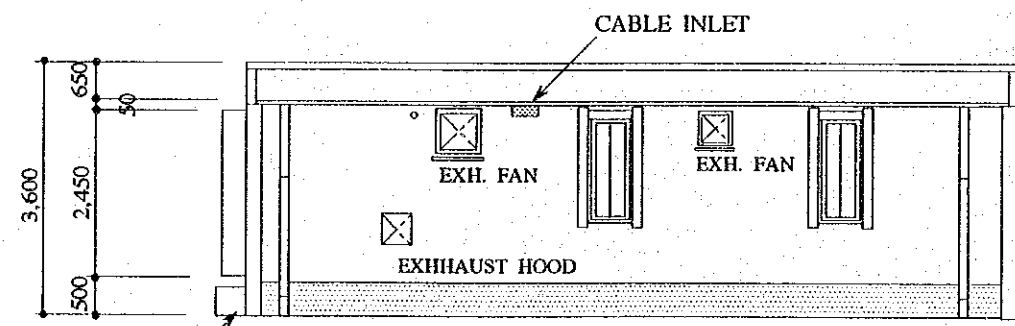
**FRONT ELEVATION**

CABLE INLET



**RIGHT SIDE ELEV.**

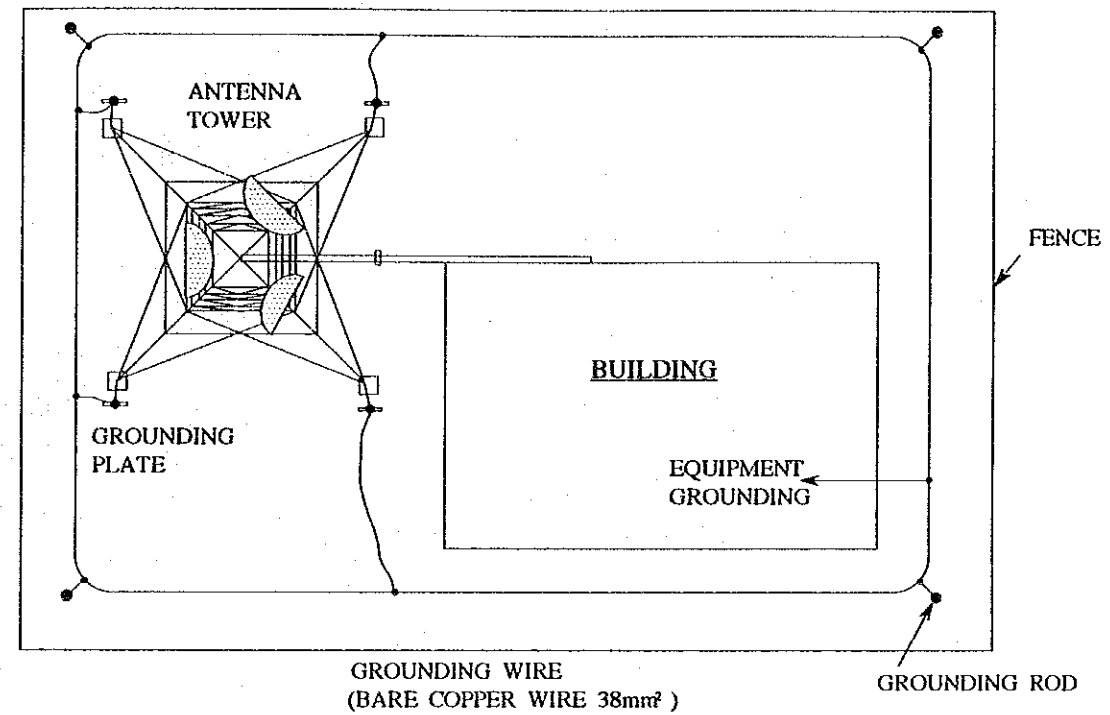
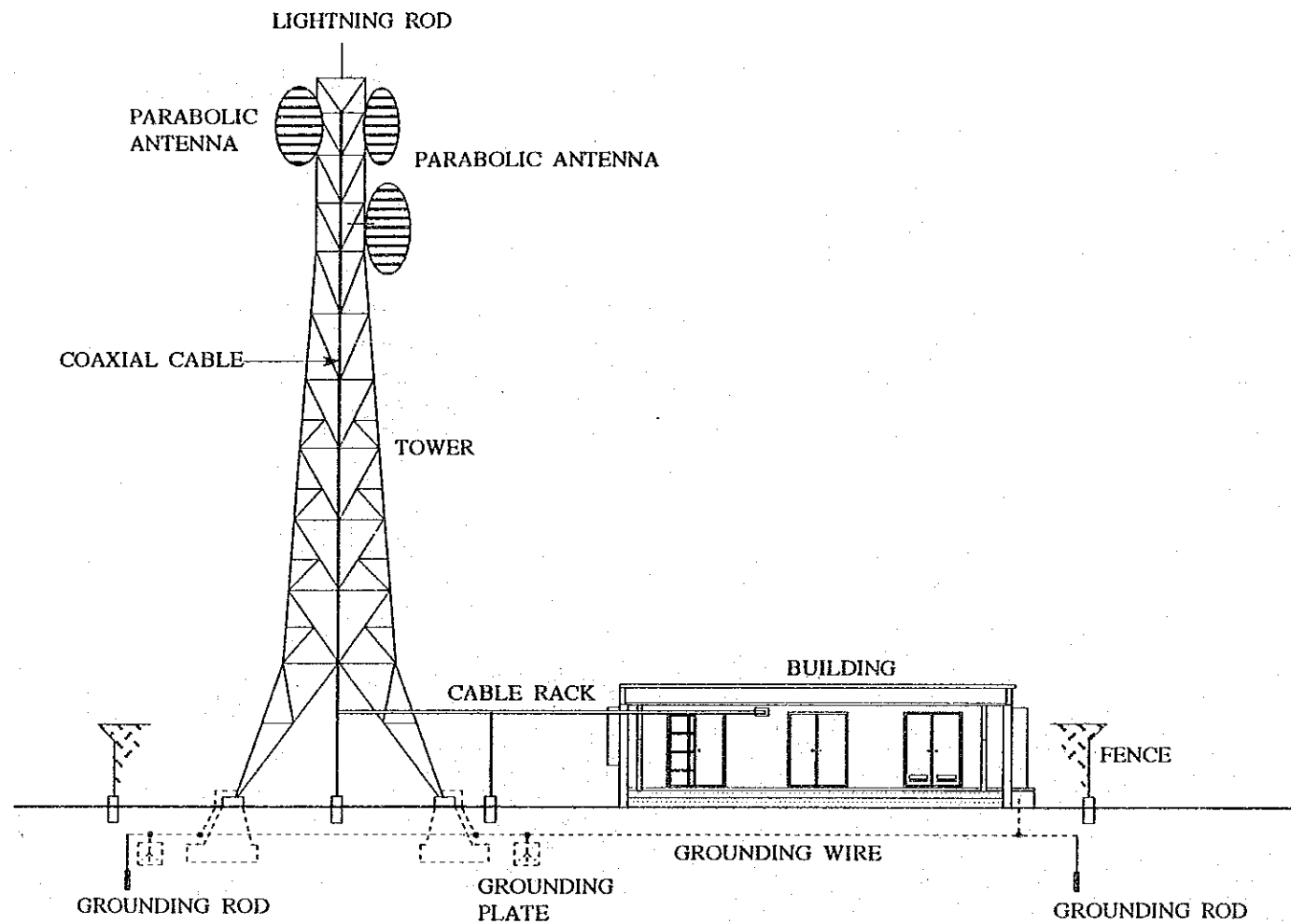
CABLE INLET



**REAR ELEVATION**

CABLE INLET

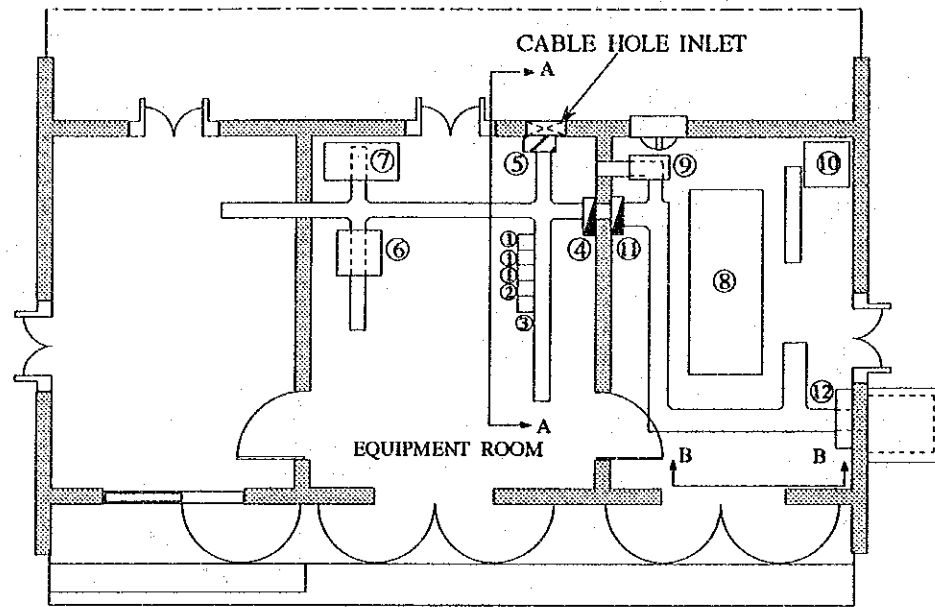
<p>THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ</p>	<p>FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY</p>	<p>TITLE TYPICAL MULTIPLEX RADIO STATION BUILDING</p>
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**GROUNDING SYSTEM**

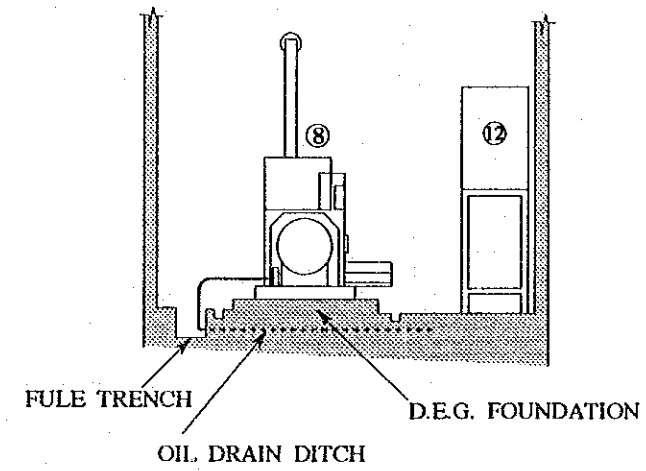
**PLAN**

<p>THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ</p>	<p>FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVERBASIN JAPAN INTERNATIONAL COOPERATION AGENCY</p>	<p>TITLE TYPICAL ARRANGEMENT OF MULTIPLEX RADIO REPEATER STATION</p>
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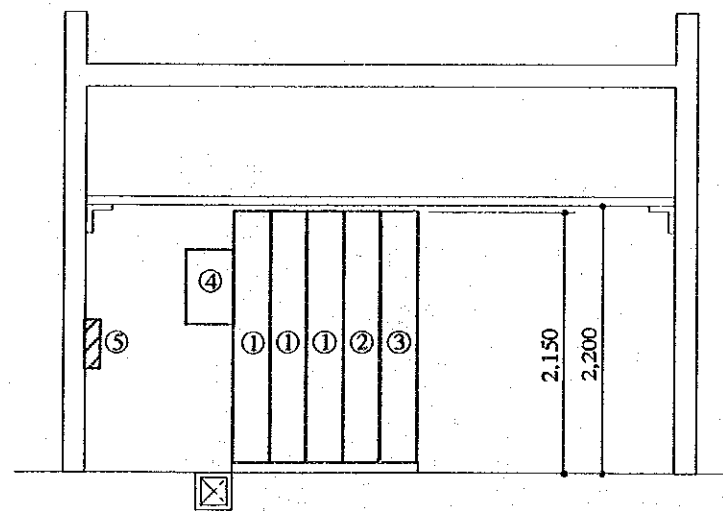


**PLAN**

**DAILY FUEL TANK**



**SECTION "B-B"**



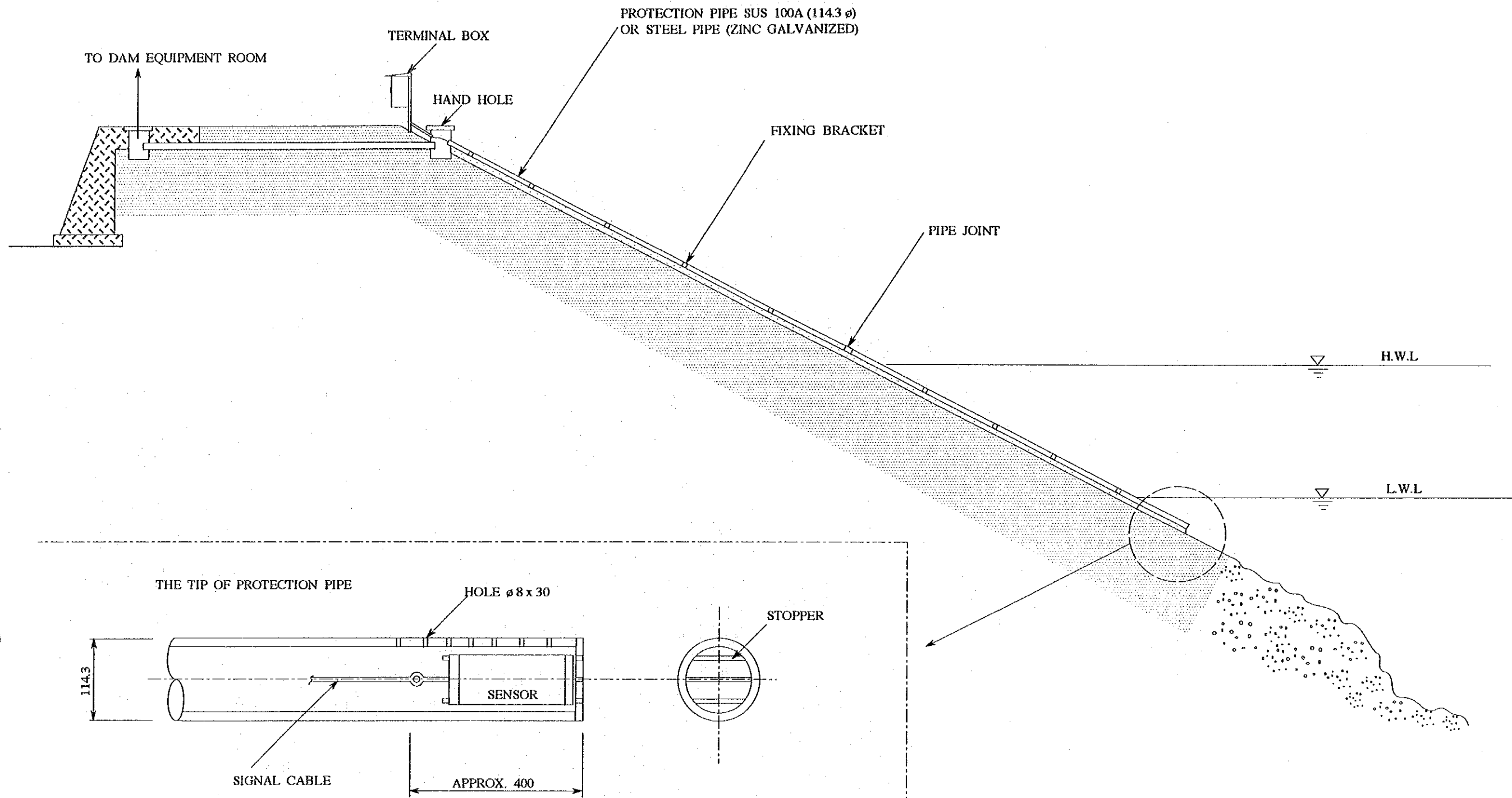
**SECTION "A-A"**

**LEGEND:**

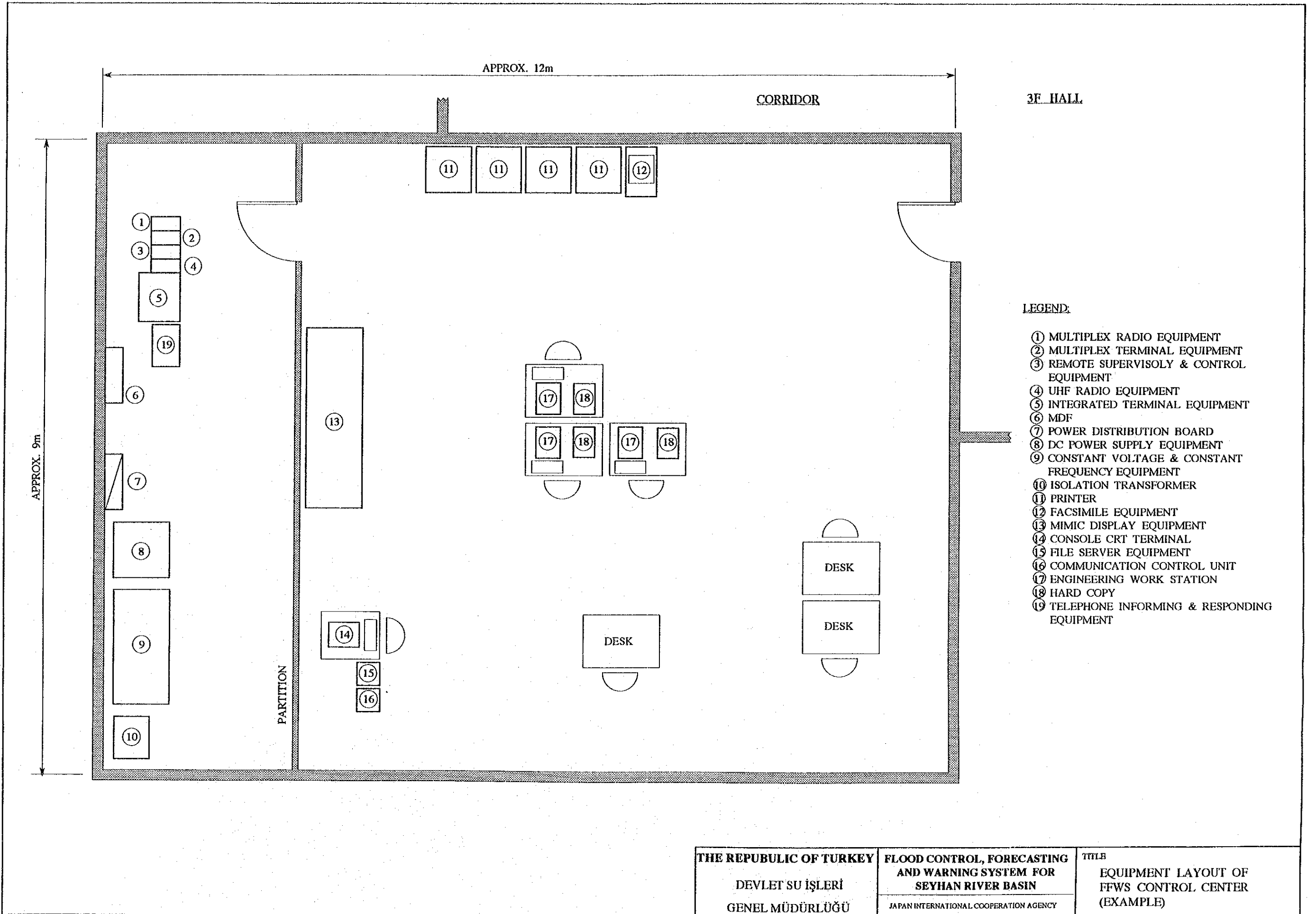
- ① MULTIPLEX RADIO EQUIPMENT
- ② MULTIPLEX TERMINAL EQUIPMENT
- ③ REMOTE SUPERVISORY & CONTROL EQUIPMENT
- ④ POWER DISTRIBUTION BOARD
- ⑤ MDF
- ⑥ DC POWER SUPPLY EQUIPMENT
- ⑦ STORAGE BATTERY
- ⑧ DIESEL ENGINE GENERATOR
- ⑨ ISOLATION TRANSFORMER
- ⑩ DAILY FUEL OIL TANK
- ⑪ AC POWER DISTRIBUTION BOARD
- ⑫ LOW TENSION PANEL

<p>THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ</p>	<p>FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY</p>	<p>TITLE TYPICAL EQUIPMENT LAYOUT FOR MULTIPLEX REPEATER STATION</p>
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<p>THE REPUBLIC OF TURKEY DEVLET SU İŞLERİ GENEL MÜDÜRLÜĞÜ</p>	<p>FLOOD CONTROL, FORECASTING AND WARNING SYSTEM FOR SEYHAN RIVER BASIN JAPAN INTERNATIONAL COOPERATION AGENCY</p>	<p>TITLE TYPICAL ARRANGMENT OF PROTECTION PIPE FOR PRESSURE TYPE WATER LEVEL GAUGE</p>
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**2. List of Major Equipment Unit Cost and Civil Work  
and Installation Unit Cost**



**1. Unit Cost of Major Equipment of Flood Forecasting and Warning System for Seyhan River Basin**

(CIF İskenderun)

Items of Major Equipment		Unit Price	Remarks
		Unit: US\$	
<b>1.</b>	<b>Telemetering Facility</b>		
1.1	Telemetering supervisory equipment	183,520	W/operation console and printer
1.2	Communication control unit	247,710	W/CRT console, hard disk unit and printer
1.3	Telephone informing/replying equipment	82,420	W/control unit
1.4	Telemetering repeater equipment ( $\mu$ -V)	44,280	W/2 sets of radio equipment and antenna
1.5	Telemetering repeater equipment (V-V)	48,360	W/2 sets of radio equipment and antenna
1.6	Telemetering repeater equipment (Cross)	88,540	W/4 sets of radio equipment and antenna
1.7	Telemetering equipment	20,310	W/radio equipment and antenna
1.8	Rainfall gauging equipment	6,770	W/rain gauge and automatic recorder
1.9	Temperature gauging equipment	16,500	W/transmitter, converter and recorder
1.10	Water level gauging equipment (Float type)	12,660	W/cable protector with arrester
1.11	Water level gauging equipment (Pressure type)	59,530	W/converter, recorder and junction box
<b>2.</b>	<b>Data Processing Facility</b>		
2.1	File server equipment	132,790	W/CD-ROM and CMT
2.2	EWS (Engineering Work Station)	119,050	W/hard copy unit and printer
2.3	Software	622,710	
<b>3.</b>	<b>Data Display Facility</b>		
3.1	EWS (Engineering Work Station)	94,780	W/hard copy unit and printer
3.2	Data display terminal	37,280	W/hard copy unit
3.3	Mimic display terminal	412,090	W/control unit
3.4	Software	347,990	
<b>4.</b>	<b>Multiplex Radio Communications Facility</b>		
4.1	Multiplex radio equipment	73,340	W/remote control unit and antenna
4.2	PCM carrier terminal equipment	17,770	
4.3	Integrated terminal equipment	48,080	
<b>5.</b>	<b>Liaison Radio Communications Facility</b>		
5.1	Single channel radio equipment	8,410	W/3-stage colinear antenna
5.2	Terminal radio equipment	16,380	W/selective calling unit and antenna
<b>6.</b>	<b>Power Supply Facility</b>		
6.1	AC Uninterruptible power supply equipment	147,510	DEG 20kVA+IT 15kVA+CVCF 10kVA
6.2	AC Uninterruptible power supply equipment	109,820	DEG 10kVA+IT 7.5kVA+CVCF 3kVA
6.3	AC Uninterruptible power supply equipment	35,260	IT 5kVA+CVCF 2kVA
6.4	DC Power supply equipment	29,310	DC 24V 60A/DC 24V 300AH
6.5	DC Power supply equipment	5,500	DC 12V 5A/DC 12V 60AH
6.6	DC Power supply equipment	7,240	DC 12V 5A/DC 12V 100AH
6.7	DC Power supply equipment	16,950	DC 12V 15A/DC 12V 300AH
6.8	Solar battery power supply equipment	7,050	DC 12V10W/DC 12V 100AH
6.9	Solar battery power supply equipment	13,740	DC 12V35W/DC 12V 300AH
6.10	Solar battery power supply equipment	18,320	DC 12V10W/DC 12V 400AH

Note: Foreign currency exchange rate; 1US\$=109.2 Yen given as of February 1, 1994

## 2. Unit Cost of Civil Work and Installation of Flood Forecasting and Warning System for Seyhan River Basin

(Unit: TL) As of February, 1994

No.	Item	Model (Description)	Material Cost										Steel Sub Total	Material Sub Total	Material Total	
			Steel		Cement		Aggregate		Brick		Timber					
			Unit Price	Qty (t)	Unit Price	Qty (t)	Unit Price	Qty (m3)	Unit Price	Qty (pieces)	Unit Price	Qty (m3)				
A1	(Antenna Tower)	10m	7,200,000	0.8	1,200,000	1.0	100,000	7.0						5,760,000	1,900,000	7,660,000
A2		15m	7,200,000	0.8	1,200,000	1.4	100,000	8.1						5,760,000	2,480,000	8,250,000
A3		20m	7,200,000	1.3	1,200,000	2.3	100,000	13.9						9,360,000	4,150,000	13,510,000
A4		30m	7,200,000	2.6	1,200,000	4.0	100,000	24.0						18,720,000	7,200,000	25,920,000
A5		40m	7,200,000	9.4	1,200,000	8.3	100,000	50.9						67,680,000	14,960,000	82,640,000
A5		45m	7,200,000	12.5	1,200,000	12.1	100,000	72.6						90,000,000	21,780,000	111,780,000
A7		60m	7,200,000	20.5	1,200,000	16.8	100,000	100.8						147,600,000	30,240,000	177,840,000
	(Building)															
B1	Rainfall station	8m2	5,400,000	1.3	1,200,000	1.8	100,000	9.5						7,020,000	16,410,000	23,430,000
B2	Water level station	15m2	5,400,000	2.1	1,200,000	2.4	100,000	14.4						11,340,000	21,620,000	32,960,000
B3	Well	12m2	5,400,000	3.0	1,200,000	17.5	100,000	105.0						16,200,000	47,100,000	63,300,000
B4	Repeater station (VHF)	15m2	5,400,000	2.1	1,200,000	2.4	100,000	14.4						11,340,000	21,620,000	32,960,000
B5	Repeater station (Multiplex)	60m2	5,400,000	2.5	1,200,000	12.0	100,000	72.0						13,500,000	69,370,000	82,870,000
B6	Warning station	15m2	5,400,000	2.1	1,200,000	2.4	100,000	14.4						11,340,000	5,620,000	16,960,000
	(Ancillary Facility)															
C1	Protection pipe	Pressure type water level gauge(100m)	13,300,000	0.2	1,200,000	7.2	100,000	24.0						2,660,000	11,040,000	13,700,000
C2	Cable duct	(100m)	7,200,000	0.2	1,200,000	7.2	100,000	24.0						1,440,000	11,040,000	12,480,000
C3	Road construction	(700m)						288.0							0	24,480,000

No.	Item	Model (Description)	Manpower Cost				Machinery/Equipment Cost				Indirect Cost	Design Cost	Total Installation Cost
			Civil Engineer		Electrical Engineer		Total	Total	Total	Total			
			Ave. Basic Cost	Day	Ave. Basic Cost	Day							
A1	(Antenna Tower)	10m	500,000	7	500,000	7	100,000	15	8,500,000	3,919,680	2,600,000	2,424,000	25,103,680
A2		15m	500,000	10	500,000	10	100,000	20	12,000,000	5,865,240	3,622,500	3,037,500	32,775,240
A3		20m	500,000	10	500,000	10	100,000	40	14,000,000	39,892,480	4,537,500	4,126,500	76,066,480
A4		30m	500,000	20	500,000	20	100,000	60	21,000,000	70,588,720	7,050,000	7,038,000	131,566,720
A5		40m	500,000	30	500,000	30	100,000	120	32,000,000	97,917,440	11,740,000	17,196,000	241,493,440
A6		45m	500,000	50	500,000	50	100,000	180	48,000,000	101,276,160	17,445,000	23,967,000	302,468,160
A7		60m	500,000	80	500,000	80	100,000	300	75,000,000	131,513,600	26,310,000	37,926,000	448,589,600
	(Building)												
B1	Rainfall station	8m2	500,000	5	500,000	5	100,000	50	10,000,000	7,504,000	6,602,500	5,014,500	52,551,000
B2	Water level station	15m2	500,000	10	500,000	10	100,000	100	20,000,000	8,304,000	10,405,000	7,944,000	79,613,000
B3	Well	12m2	500,000	20	500,000	20	100,000	400	55,000,000	12,224,000	25,525,000	17,745,000	173,794,000
B4	Repeater station (VHF)	15m2	500,000	10	500,000	10	100,000	100	20,000,000	8,304,000	10,405,000	7,944,000	79,613,000
B5	Repeater station (Multiplex)	60m2	500,000	20	500,000	20	100,000	300	47,500,000	16,640,000	29,217,500	19,555,500	195,783,000
B6	Warning station	15m2	500,000	10	500,000	10	100,000	100	20,000,000	8,304,000	6,405,000	5,544,000	57,213,000
	(Ancillary Facility)												
C1	Protection pipe	Pressure type Water level gauge(100m)	500,000	5	500,000	5	100,000	60	8,500,000	8,960,000	4,885,000	3,330,000	39,375,000
C2	Cable duct	(100m)	500,000	5	500,000	5	100,000	60	8,500,000	7,520,000	4,885,000	3,147,000	36,332,000
C3	Road construction	(700m)	500,000	4	500,000	4	100,000	100	12,000,000	12,000,000	9,120,000	5,472,000	63,072,000





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