

External Antenna

Approval Sheet

MODEL : KMC-800DH-08

Written by,

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Nov 28, 2003

Komatech

KOMA-TECH Co., Ltd.

		Subject	Fixed Antenna Approval Sheet	
Document No.	KOEX-PO-7101-23		Rev.	IR
Model Name	KMC-800DH-08 (WTE-500)		Date	Nov 28, 2003
Application System	Cellular, US-PCS	Customer	Modottel	
Notice				
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	E / N Check	E / N Check	M / N Check	Approval
KOMA-TECH				

	Check	Check	Check	Approval
Modottel				

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Fixed Antenna
1. Approval History Sheet

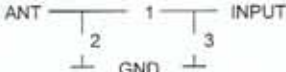
Approval Revision Sheet

NO	DATE	Before	After	Reason	REV
1	2003.11.28			Approval	IR
2					
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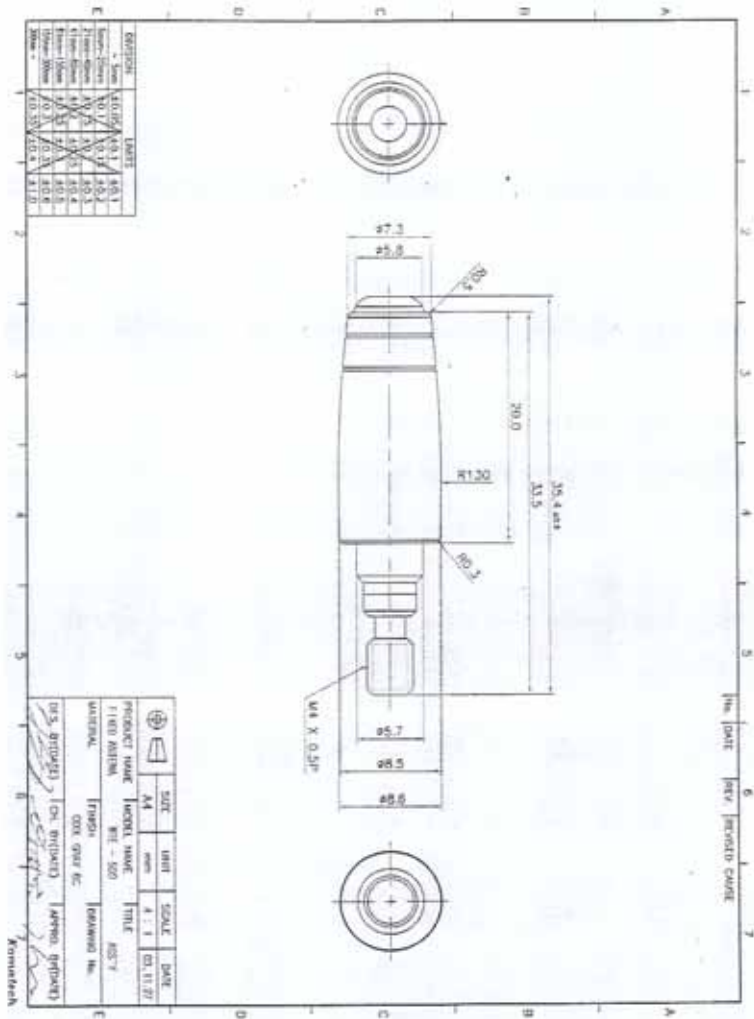
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Fixed Antenna

2. Electrical & Mechanical Specifications

Specification Sheet		
Electrical Specification	Frequency Range	
	Cellular	US-PCS
Band Width	70(MHz)	140(MHz)
V.S.W.R (Min)	Less than 3.5:1	Less than 3.5:1
Gain (Max)	More than -2dBi	More than -2dBi
Average Gain (Max)	More than -5dBi	More than -7dBi
Input Impedance	50 (Ω)	
Polarization	Vertical / Linear	
Power	2W	
Mechanical Specification		
Antenna Size	Fixed	35.4 ± 0.5 mm
Weight		2.0 (g)
Radiator Material / Body		Ni-co coil / Nylon
Operation Temperature		-30 ~ 70 (°C)
Operation Humidity		10 ~ 90 (%)
Option	[Matching circuit] 1. 0 ohm 2. 15nH 3. 27nH	
		
Others		

3. Mechanical Drawing



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4. Mechanical Specifications

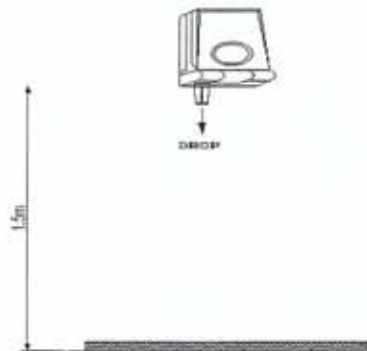
4-1 Drop Test

The antenna is attached to a dummy weighted radio(82g)

It should withstand 1 drop directed towards the antenna on to a steel plate 0.5M*0.5M with thickness 20mm The drop height is 1.5M.

Drop test will be done in retracted position with the Angle 90°.

The antenna shall satisfy the electrical and mechanical Specifications after the test.



4-2 Push Test

With the antenna connector mounted in an appropriate test fixture, apply axial tension load 7Kg·f along the longitude axis to the antenna cap during 30 sec.

The sample is subjected to visual checking as well as electrical and mechanical working characteristics and must not have suffered from irreversible electrical and mechanical damage.



< FIG. 4 >

4-3 Torque Test

No electrical and mechanical deformation is admitted when the helical is turned with a torque of 3Kg•f. The gripper clamps the antenna base helical at distance of 12mm of the telephone fixture. Then the handle of the gripper should be rotated in the CW Direction until the additional moment 3Kg•f is generated.

No loosening of joints between details of the antenna should Be revealed after the test.

The antenna shall satisfy the electrical Specifications & mechanical specifications after the test.



< FIG. 4 >

4-4 Packaging

The antenna will be packed in compartmentalized formed trays.

There are 50 antennas per tray (see fig 4-4-1)

The trays are packed in a corrugated board over box, 100 trays per a box.(see fig 4-4-2)

A front of a box will be labeled for shipping according to the standards outlined list. (Company condition change)

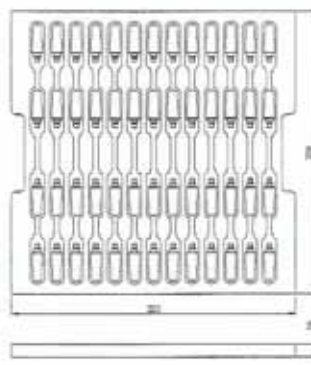


FIG.4-4-1

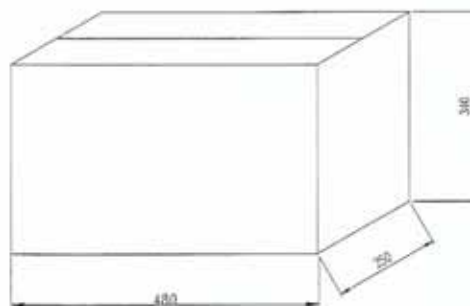


FIG 4-4-2

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Fixed Antenna

5. Reliability Specifications

● Standard Temperature Range (IEC Specifications)

- Standard Temperature: 15 ~ 35 °C
- Humidity : 10 ~ 90% RH
- Atmospheric Press : 86-106kPa

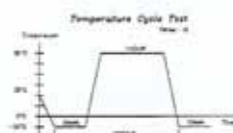
5-1 Temperature Cycling

Place complete antenna in an environmental chamber at temperature $t_1 = -30^\circ$ expose antenna to this temperature during 30 minutes.

Increase temperature to value of $t_2 = 80^\circ$ during 60 minutes, and soak at this temperature during 30 minutes. Relative humidity must be 50% RH. Repeat this cycle 10 times

- After test is complete: There shall be no visual deterioration or esthetical and mechanical performance.

Electrical characteristics should be within the specified range



5-2 Low Temperature Test

place complete antenna in an environmental chamber at temperature $t_1 = 20^\circ$ expose antenna to this temperature during 1 minute.

Increase temperature to value of $t_2 = -30^\circ$ during 1 hour, and soak at this temperature during 24 hours continue.

- After test is complete: There shall be no visual deterioration or esthetical and mechanical performance.

Electrical characteristics should be within the specified range.

5-3 Static Humidity Test

Place complete antenna in an environmental chamber at $+20^\circ\text{C}$.

Increase temperature at speed of 1° per a minute during 2 hours $+55^\circ\text{C}$ with humidity increasing to 90% RH and Soak antenna with these parameters for 24 hours. After the finish initial ambient parameters should be achieved during 1 hour.

After the test perform an inspection of the tested samples.

- After test is complete: There shall be no visual deterioration or esthetical and mechanical performance.

Electrical characteristics should be within the specified range.

5-4 Salt Spray

Place complete antenna in salt spray cabinet at temperature $+35^\circ\text{C}$ with the salt fog of NaCl solution(5%): soak time (72 hours).

- After test is complete: There shall be no visual deterioration or esthetical and mechanical performance.

Electrical characteristics should be within the specified range.

5-5 Plating Management

1. Enduring Test

After applying round-test on cap at turns of 30 times per a minute with an eraser(500g) for N times(800T), it should be no damage in a cap.

2. Medical Test

Spray methyl alcohol on a cap do 30 times scratch test per a minute with an eraser(500g) after test it should be no damage on a cap.
(Do 800 times total medical test)

3. Cross-cutting Test

After cutting a cap at districts of 1mm, then repeat on-off test with OPP-tape for 5 times. It should be no damage on a cap

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Fixed Antenna

6. Measurement Setup

6-1. Test Equipments

Network Analyzer	HP8753ES
Calibration Kit	HP85033D
High Resistance Meter	HP4277A
Withstanding Voltage Tester	TOS-8750
Adaptor	SMA Type Female ↔ SMA male
Measurement Cable	8120-4779 (Hewlett Packard)

6-2. Test Equipments Setting

2.1 Display	Dual channel : On
	Split display : On
2.2 Menu	Number of points : 201
	Power : 0 dBm
2.3 Measure	Channel 1 : S11
	Channel 2 : S21

6-3. Calibration

Calibration-Cal. Kit : 50 Ω

Calibration menu → Full-2 Port

Reflection

Forward : Open → Short → Load

Reverse : Open → Short → Load

Done

Transmission

Do Both → FWD + REV

Done

Isolation

Omit Isolation

Done

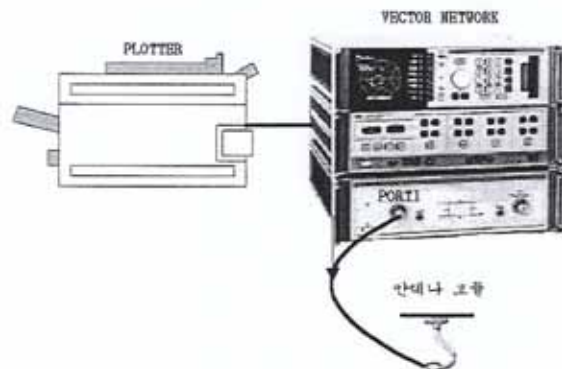
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Fixed Antenna

7. Test Procedure

7-1. V.S.W.R.

- Step 1. Connect ANT Port With Cable included Adaptor to Port1 of Network Analyzer.
- Step 2. Point out Markers on Network Analyzer Display at Cellular,US-PCS frequency band.
- Step 3. Inspect V.S.W.R < 3.5 (Cellular,US-PCS)
- Step 4. Measurement.



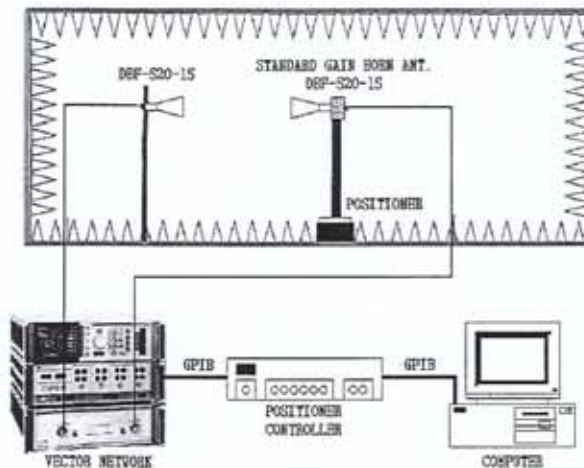
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Fixed Antenna

7. Test Procedure

7-2. Gain and Pattern (Far Field Chamber)

- Step 1. Calibrate Chamber System for Gain Measurement Using Dipole & Horn Antenna. At the Same Time Set Up Software Program for Chamber System Control.
- Step 2. Change Over from a Dipole & Horn Antenna to Measuring Antenna on Target Positioned.
- Step 3. Start a Software Program for Chamber System Control & Measuring
- Step 4. Measurement Data



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8. Measurement Data

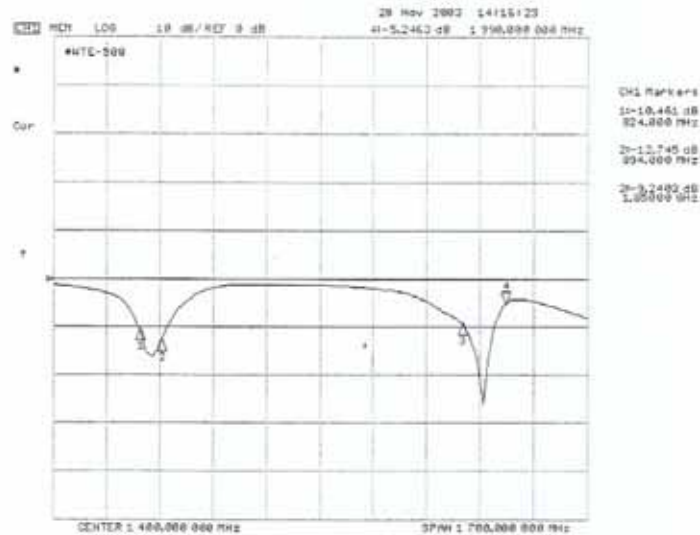
Model Name	KMC-800DH-08 (WTE-500)	Authorized by	Han Young ,Jung
Written by	Kwang Lea ,Kim	Designer	Jong Woo ,Lee
Instrument	Network Analyzer: 8753ES (HP)		
Subject	Fixed Antenna		
Frequency	Cellular (824MHz ~ 894MHz) , US-PCS (1850MHz ~ 1990MHz)		

Items	Spec.		Test Result (H-Plane)	
	Cellular	US-PCS	Cellular	US-PCS
V.S.W.R (min)	< 3.5	< 3.5	< 1.60:1	< 2.05:1
Gain (max) H-Plane	-2dBi	-2dBi	1.96dBi	-0.55dBi
Average Gain (max) H-Plane	-5dBi	-7dBi	0.53dBi	-6.68dBi

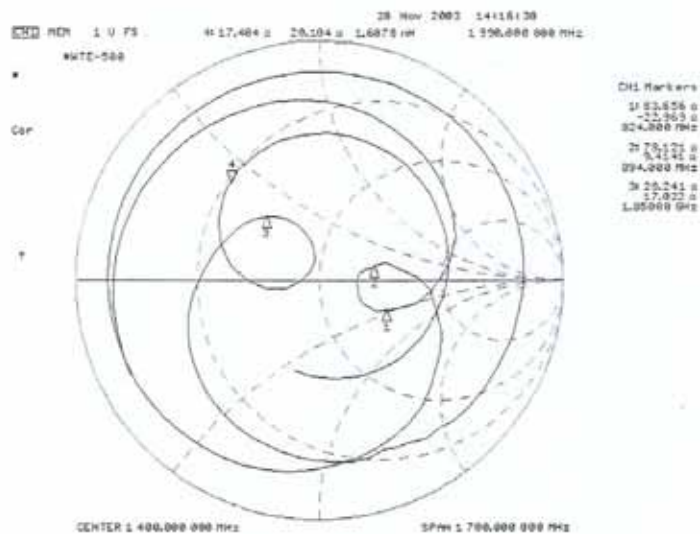
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7-1

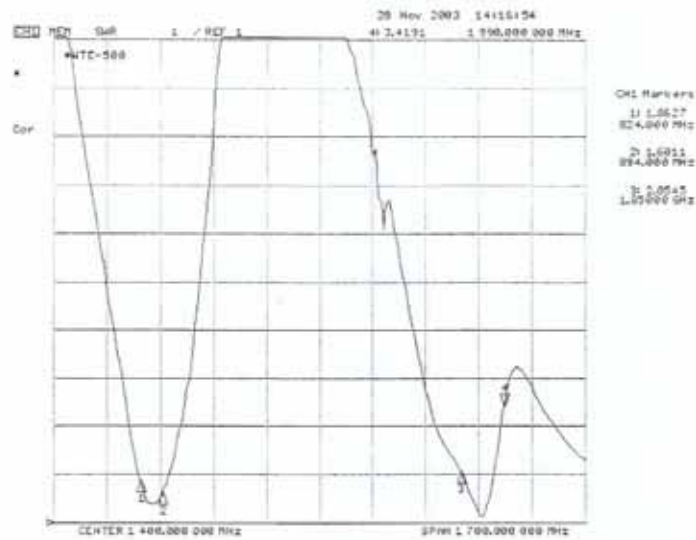
Return loss



Smith chart



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VSWR

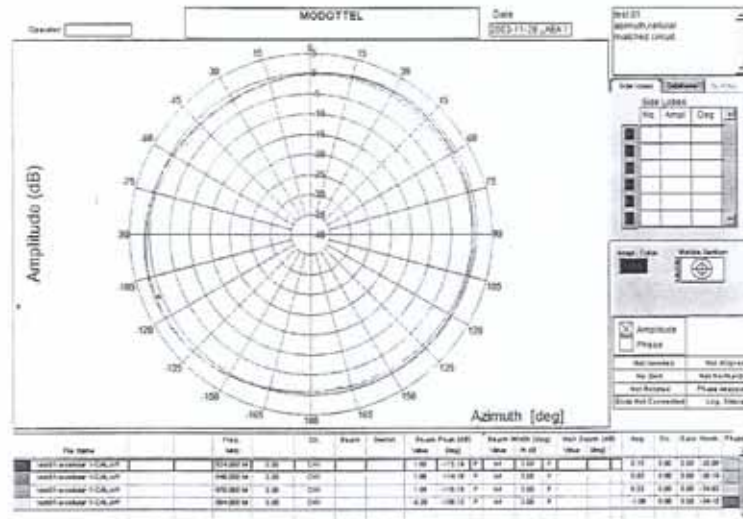


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7-2 Radiation Pattern

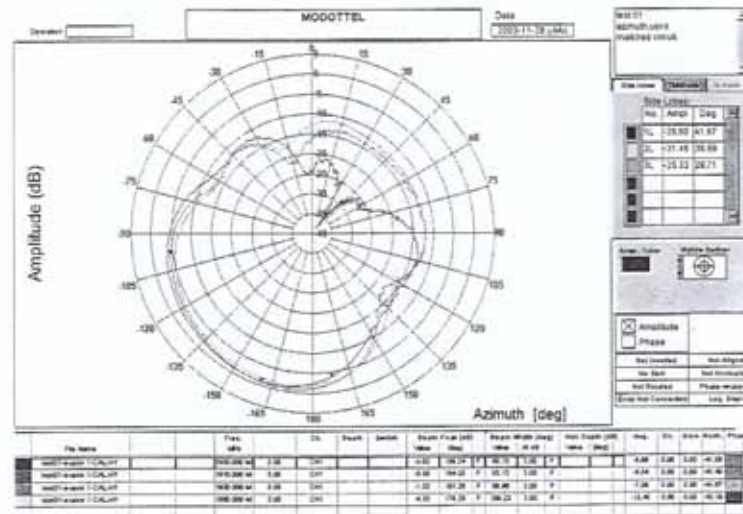
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H-Plane

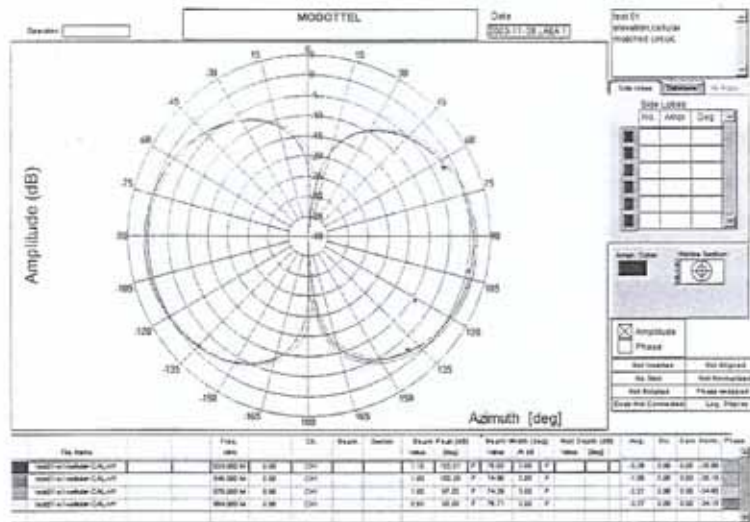


#US-PCS

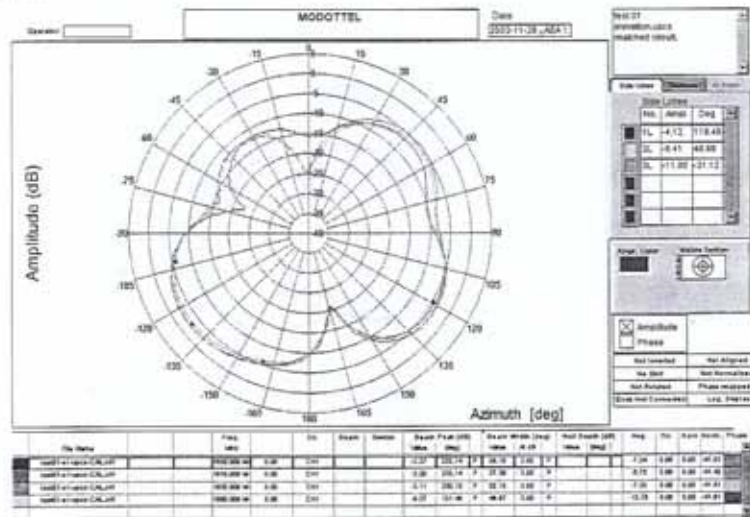
H-Plane



#Cellular E1-Plane

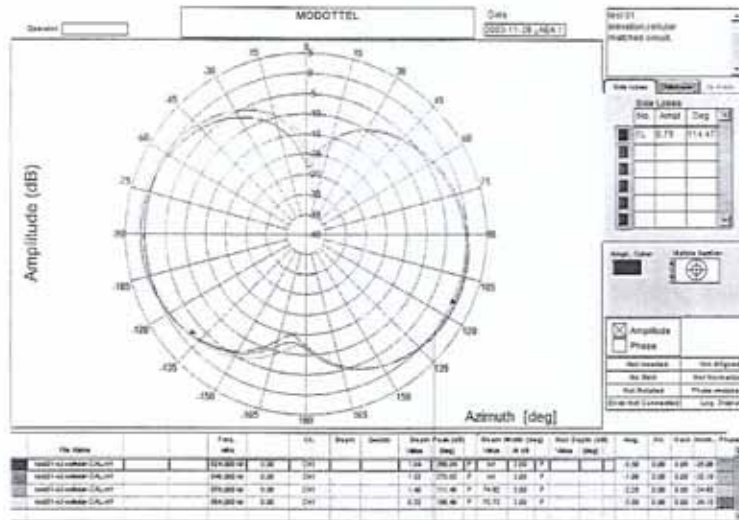


#US-PCS E1-Plane



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#Cellular

E2-Plane



#US-PCS

E2-Plane

