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RF Exposure Calculations

Description of EUT

EUT	:	TeLLUS WLAN Access Point
Model No.	:	TWL-A11
Granted FCC ID	:	PB6-00091
Frequency Range	:	2.412 GHz ~ 2.462GHz
Antenna Kit	:	2 SX connectors for external antennas
Supported Channel	:	11 Channel
Modulation Skill	:	DBPSK, DQPSK, CCK
Power Cable	:	Non-shielded, 190cm long, No bead
Data Cable	:	RJ45: Non-shielded, 10-meter, No ferrite bead
Power Type	:	AC to DC Switching Adapter Input: 100 ~ 240VAC, 47/63Hz, 0.3A Output: +5VDC, 1.5A
Applicant	:	TeLLUS GROUP CORPORATION. 4/F, 15 Industry E Rd. IX, Science-Based Industrial Park, Hsinchu, Taiwan, R.O.C.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	100	6
3.0-30	1842/f	4.89/f	900/f ²	6
30-300	61.4	0.163	1.0	6
300-1500	--	--	f/300	6
1500-100,000	--	--	5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	100	30
1.34-30	824/f	2.19/f	180/f ²	30
30-300	27.5	0.073	0.2	30
300-1500	--	--	f/1500	30
1500-100,000	--	--	1.0	30

According to **OET BULLETIN 56 Fourth Edition/August 1999**,
Equation for Predicting RF Fields:

$$S = \frac{P G}{4 R^2} = \frac{9.12 \times 1.413}{4 (20)^2} = 2.564 \times 10^{-3} \text{ mW/cm}^2$$

Where: S = power density (in appropriate units, e.g. mW/cm²)

P = power input to the antenna (in appropriate units, e.g., mW)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator

R = distance to the center of radiation of the antenna (appropriate units, e.g., cm)

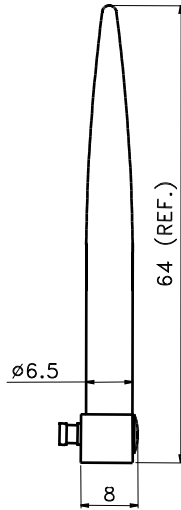
The Numeric gain G of antenna with a gain specified in dB is determined by:

$$G = \text{Log}^{-1} (\text{dB antenna gain}/10)$$

$$G = \text{Log}^{-1} (1.5 / 10) = 1.413$$

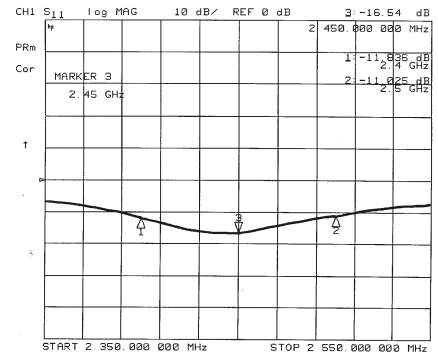
2.4GHz Right Angle Antenna

IM-352

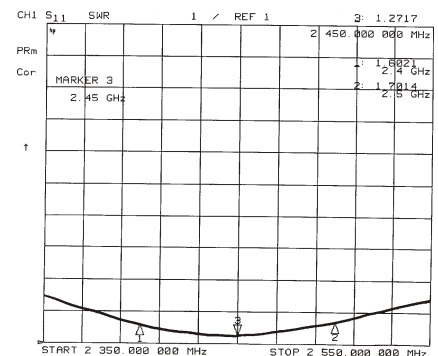


Unit: mm

Return Loss



VSWR



TECHNICAL DATA

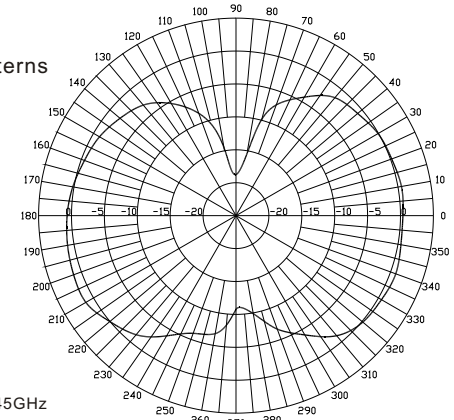
●Electrical Properties

Frequency Range	: 2.4 ~ 2.5GHz
Impedance	: 50 Ohms nominal
VSWR	: ≤ 2.0
Gain	: 1.5dBi
Radiation	: Omni
Polarization	: Vertical
Electrical Wave	: $1/4 \lambda$ Dipole
Standard Connector	: MMCX (male)

●Mechanical Properties

Antenna Cover	: Polyurethane
Base	: Polycarbonate
Color	: Black
Operation Temperature	: $-20^{\circ}\text{C} \sim +65^{\circ}\text{C}$
Storage Temperature	: $-30^{\circ}\text{C} \sim +75^{\circ}\text{C}$

E-Plane Field Patterns



H-Plane Field Patterns

