

Measurement of MPE

1. Foreword

In adopt with the Human Exposure IEEE C95.1, and according to the FCC 1.1310. The *Maximum Permissible Exposure (MPE)* is obligated to measure in order to prove the safety of radiation harmfulness to the human body.

The *Gain* of the antenna used is measured in an *Anechoic chamber*. The *maximum total power to the antenna* is to be recorded. By adopting the ***Friis Transmission Formula*** and the *power gain of the antenna*, we can find the distance right away from the product, where the limit of the MPE is.

2. Description of EUT

Granted FCC ID	:	L8G800005
Product name	:	802.11b WLAN Access Point
Model name	:	8800-710 / 8800-711
Classification	:	Mobile Device (i) Under normal use condition, the antenna is at least 20cm away from the user; (ii) Warning statement for keeping 20cm separation distance and the prohibition of operating next to the person has been printed in the user's manual
Frequency Range	:	2.412 GHz ~ 2.462GHz
Antenna Kit	:	Inside the housing
Supported Channel	:	11 Channel
Modulation Skill	:	DBPSK, DQPSK, CCK
Power Type	:	Powered by the Switching Power Adaptor Manufacturer: DVE Model: DSA-0151F-05 A I/P: AC 100-120V, 50/60Hz, 40VA O/P: +5V DC, 2.8A

3. 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

[The EUT is tested in transmit and receive modes and in the first, middle and the last channel separately. The following shows only our observation have the greatest emissions.]

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

$$\text{Friis Transmission Formula: } S = \frac{PG}{4pR^2} = \frac{41.879 \times 1.549}{4p(20)^2} = 1.291 \times 10^{-2} \text{ mW/cm}^2$$

$$\text{Estimated safe separation: } R = \sqrt{\frac{PG}{4p}} = \sqrt{\frac{41.879 \times 1.549}{4p}} = 2.272 \text{ cm}$$

Remarks: "The safe estimated separation that the user must maintain from the antenna is at least 2.272 cm."

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:

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

$$G = \text{Log}^{-1} (1.90 / 10) = 1.549$$

GAT2 – WWS11

● Specifications

Frequency Range	2.4~2.5GHz
Impedance	50 Ohms nominal
VSWR	≤ 1.9
Gain	1.9dBi
Radiation	Omni
Polarization	Vertical
Antenna Cover	Polyurethane
Swivel Mechanism	Polycarbonate
Operation Temperature	-20°C~+65°C
Storage Temperature	-30°C~+75°C

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CH1 S11 LOG 10 dB/REF 0 dB

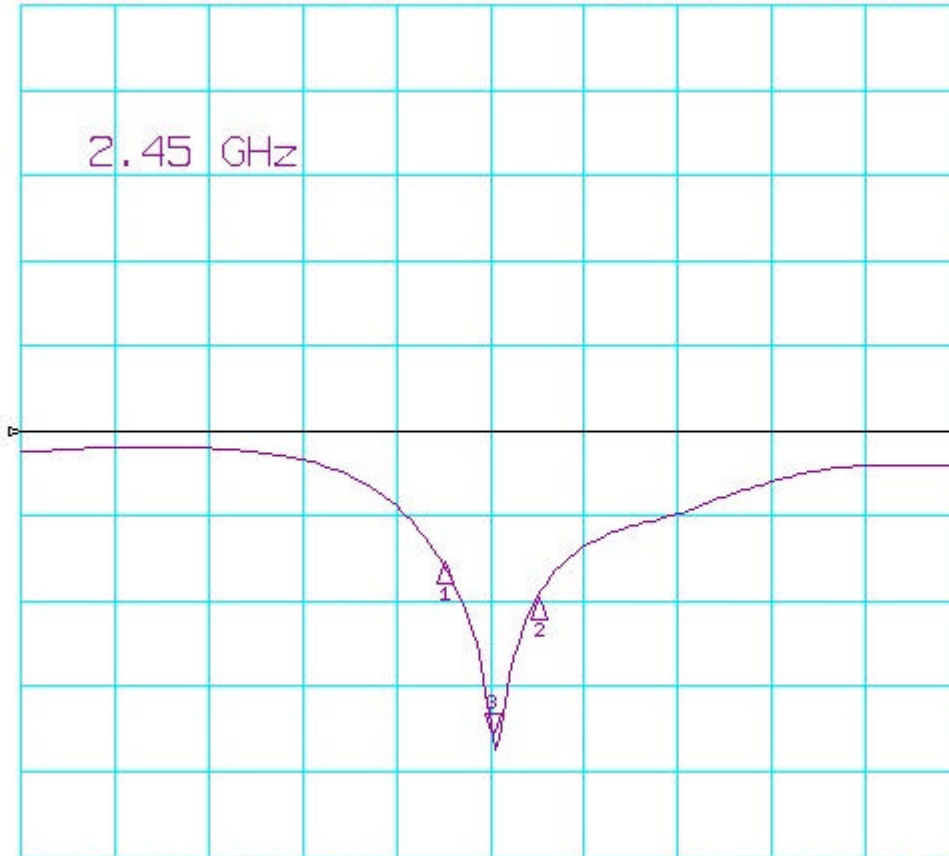
3:-35.773 dB 2 450.000 000 MHz

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Cor

2.45 GHz

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CENTER 2 450.000 000 MHz

SPAN 1 000.000 000 MHz

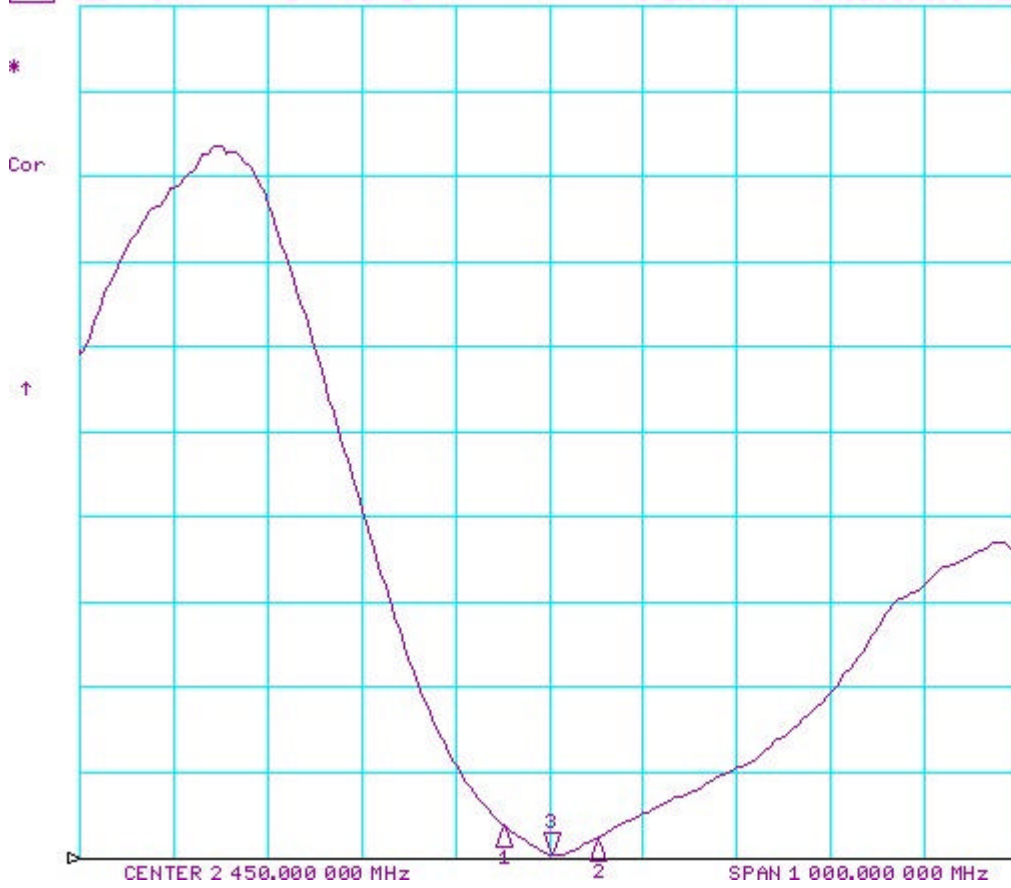
CH1 Markers

1:-15.624 dB
2.40000 GHz

2:-19.769 dB
2.50000 GHz

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CH1 S11 SWR 1 / REF 1 3: 1.0322 2 450.000 000 MHz



CH1 Markers

1: 1.3650
2.40000 GHz

2: 1.1929
2.50000 GHz

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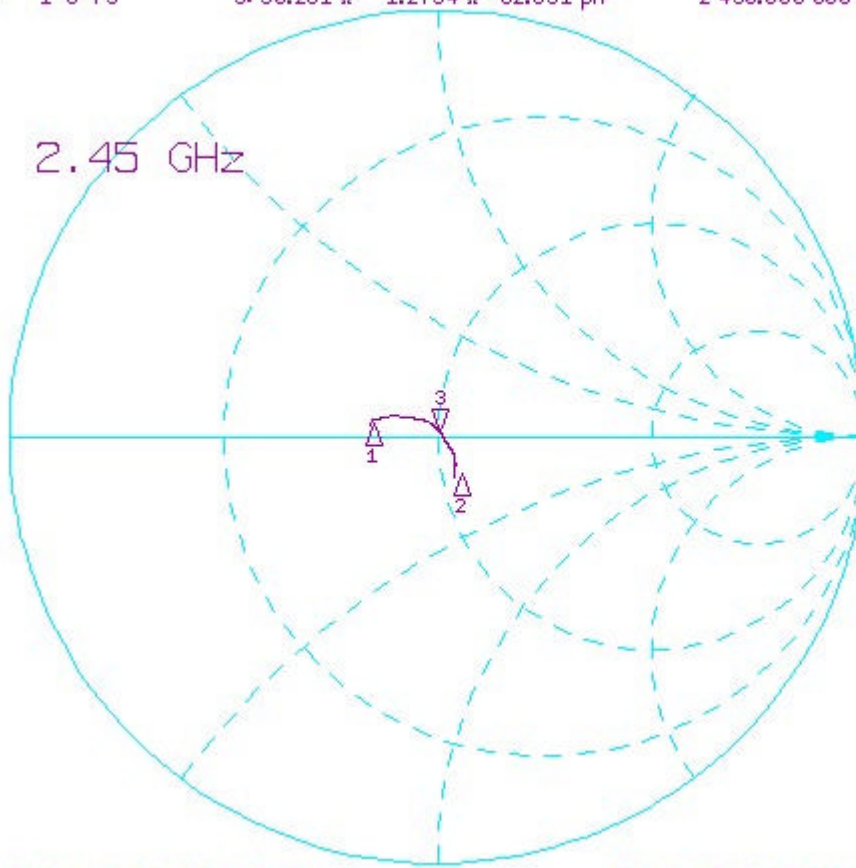
CH1 S11 1 U FS 3: 50.281 Ω 1.2754 Ω 82.851 pF 2 450.000 000 MHz

*

CA

2.45 GHz

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CENTER 2 450.000 000 MHz

SPAN 100.000 000 MHz

CH1 Markers

1: 36.541 Ω
2: 54.433 Ω
2.40000 GHz
-9.8965 Ω
2.50000 GHz

