

FA-70 Radiation Hazard Calculation Result

Standards applied: Industry Canada RSS-102
FCC Rule 47 CFR § 2.1091

Device Description:

The FA-70 is Class B AIS transponder. The output of the transmitter is 5W and frequency range is 156.025 MHz to 162.025 MHz. The transponder connects to a VHF Marine antenna through a cable and connector. The antenna is typically mounted more than 0.2 m away from person.

EUT	CLASS B AIS TRANSPONDER
MODEL	FA-70
Maximum conducted power	5 W
Duty cycle	0.53 % (*TX period : 26.67msec, TX minimum Interval : 5 sec)
Averaged output power	0.0267 W
Distance	0.2 m
Antenna Gain	2.14dBi
Frequency	156.025 MHz ~ 162.025MHz

*Refer to IEC 62287-2/ 12.2.3

Reference Levels:

Frequency Range	Power Density Limit	Reference
48-300 MHz	1.291 W/m ²	RSS-102 Table 4
30-300 MHz	0.2 mW/cm ²	FCC 47 CFR § 1.1310 Table 1 (b)

1. Calculation Formula

The power density S at a point on the axis at a distance d from a transmitting antenna is given by the Friis free-space transmission formula

$$S = \frac{P_T G}{4\pi d^2} \quad (1)$$

Where

P_T is the net power delivered to the antenna,

G is the effective antenna gain with respect to an isotropic antenna

Reference document :IEEE Std C95.3 -2002/ 5.5.1.1 Free-space standard field method

2. Calculation Result

a) From (1), the following formula is used to calculate the distance

$$d = \sqrt{\frac{P_T G}{4\pi S}} \quad (2)$$

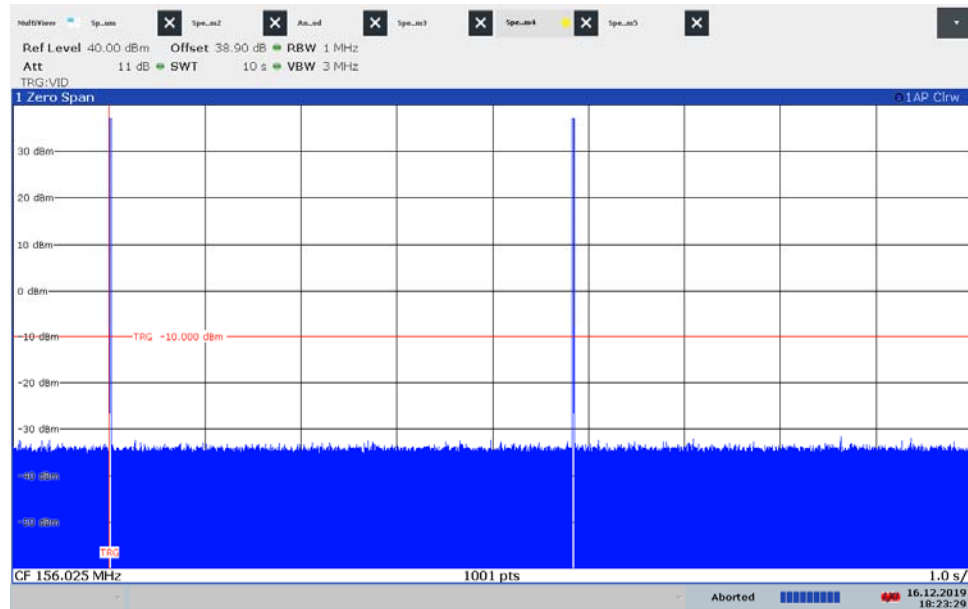
considering the antenna thickness (CX4-3/FEC: ϕ 18 mm)

$$d' = \sqrt{\frac{P_T G}{4\pi S}} - 0.009 \quad (3)$$

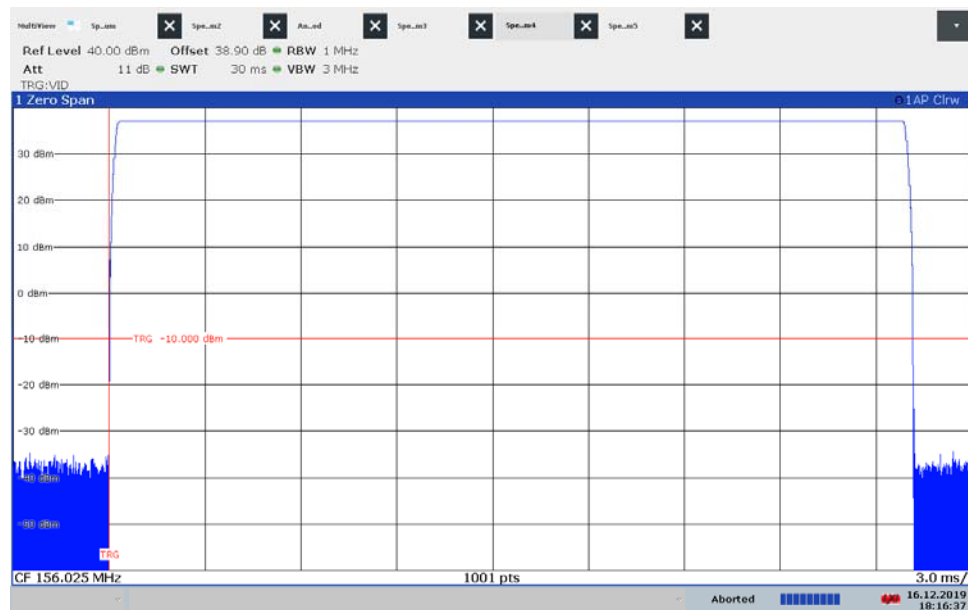
	Result
Distance at 0.2 mW/cm ² (=2 W/m ²)	0.03 m
Distance at 1.291 W/m ²	0.04 m
Power density at 0.2 m	0.095 W/m ²

TX On/Off Timing plot

156.025MHz

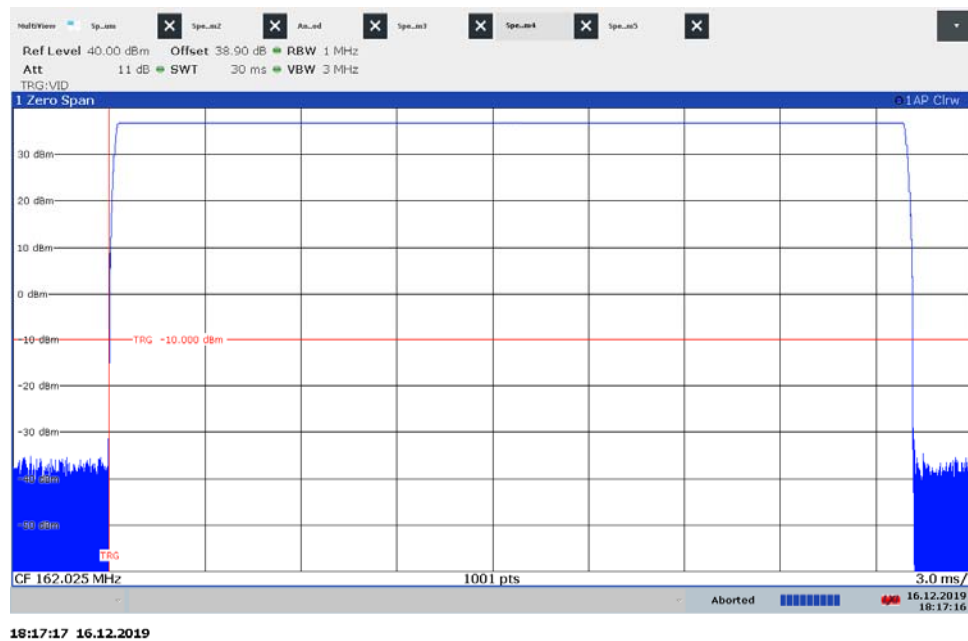
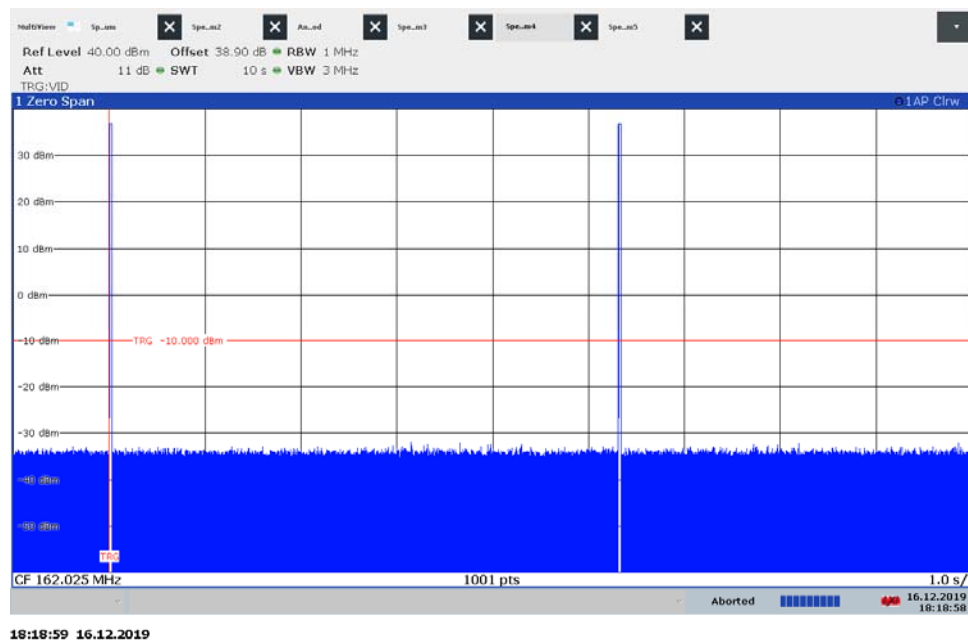


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162.025MHz



Note : Selection interval (SI)= 1 sec.

Refer to ITU-R M.1375-5 Table 16 (RI=5 sec)