

The MPE Data of NKE-2255

Type NKE-2255-6HS, NKE-2255-7, NKE-2255-9
 X-band Scanner Unit

REV1.0 26th July 2019

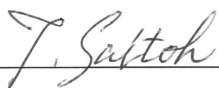
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Authorization

Evaluated by Mr. Toshihiro Saitoh
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26th July 2019

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1. Regulation

47 CFR §1.1310 Radiofrequency radiation exposure

Table 1. LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

(A) Limits for Occupational / Controlled Exposure

Frequency range [MHz]	Power density [mW/cm ²]	Averaging time [minutes]
1,5000-100,000	5.0	6

2. Result

Power density of NKE-2255-6HS, NKE-2255-7 and NKE-2255-9 are satisfied MPE limits (5.0mW/cm²) in all region.

Calculated Maximum power density in all region

NKE-2255-6HS	NKE-2255-7	NKE-2255-9
1.348 mW/cm ²	0.934 mW/cm ²	0.576 mW/cm ²

3. Details

EUT	NKE-2255-6HS	NKE-2255-7	NKE-2255-9
P	16250 mW		
f	9410 MHz		
λ	3.188 cm		
G	30.1 dBi	30.5 dBi	31.9 dBi
R_{nf}	2407.0 cm	3476.0 cm	5638.1 cm
R_{ff}	5776.8 cm	8342.4 cm	13531.4 cm
S_{nf}	1.348 mW/cm ²	0.934 mW/cm ²	0.576 mW/cm ²
S_t _{max}	//	//	//
S_{ff} _{max}	0.040 mW/cm ²	0.021 mW/cm ²	0.011 mW/cm ²

※ **P** is maximum average power of the EUT. (Peak Power 25kW, Maximum Duty Cycle 0.00065)

※ **f** is typical value.

※ **G** is measured value refer to "The Test Data of Antenna".

Calculated by prediction method refer to "OET Bulletin 65" as follows:

$$R_{nf} = \frac{D^2}{4\lambda}$$

$$R_{ff} = \frac{0.6D^2}{\lambda}$$

$$S_{nf} = \frac{16\eta P}{\pi D^2}$$

$$S_t = \frac{S_{nf} R_{nf}}{R} \rightarrow S_{t|_{\max}} = \frac{S_{nf} R_{nf}}{R_{nf}} = S_{nf}$$

$$S_{ff} = \frac{PG}{4\pi R^2} \rightarrow S_{ff|_{\max}} = \frac{PG}{4\pi R_{ff}^2}$$

P : average power

λ : wavelength

η : aperture efficiency

G : antenna gain

D : maximum dimension of antenna

R_{nf} : distance to extending of near-field

R_{ff} : distance to beginning of far-field

S_{nf} : power density in near-field region

S_t : power density in transition region

S_{ff} : power density in far-field region