

FCC ID: SWN-TD40UT

According to KDB 447498 D01 General RF Exposure Guidance v06.

For frequencies below 100 MHz, the following may be considered for SAR test exclusion (also illustrated in Appendix C).

- 1) For test separation distance > 50 mm and < 200 mm, the power threshold at the corresponding test separation distance at 100 MHz in setp b) is mutiplied by $[1 + \log(100/f_{(MHz)})]$
- 2) For test separation distance ≤ 50 mm, the power threshold determined by the equation in C) 1) for 50mm and 100 MHz is multiplied by $1/2$

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \times [\sqrt{f(\text{MHz})}] \leq 3.0$$

1. SAR test exclusion threshold: 3.0

Step a): at 100 MHz and 50 mm, power threshold = $(3.0 * 50) / \text{sqrt}(0.1) = 474.342$ mW

Step b1): $474.342 + (50 - 50) \times (27.145/150) = 474.342$ mW

Step c1): $474.342 \times [1 + \log(100/27.145)] = 742.967$ mW

Step c2): $742.967/2 = 371.484$ mW

Frequency	Max. tune-up tolerance	Duty	Duty Factor	Result	Limit
27.145 MHz	794.328 mW (29.00 dBm)	45.85	6.77	167.109 mW (22.23 dBm)	371.484 mW

Note;

The EUT has two buttons (Constant, Nick) and each button transmits with same duty cycle.

The only difference is transmission time.

Nick : one pulse with duty cycle.

Constant : press and hold the button to automatically stop for up to 12 seconds with duty cycle.

Calculation;

t1 = 3.05 ms, t2 = 0.95 ms, t3 = 0.85 ms, t4 = 1.35 ms, t5 = 1.75 ms, t6 = 1.65 ms, t7 = 0.75 ms,
t8 = 1.55 ms, t9 = 1.15 ms, t10 = 1.45 ms, t11 = 1.05 ms, t12 = 2.45 ms

$$T_{on} = \{ t1 + (2 * t2) + t3 + (3 * t4) + t5 + (4 * t6) + t7 + (3 * t8) + (2 * t9) + (5 * t10) + t11 + t12 \}$$

$$T_{on} = 36.65 \text{ ms.}$$

$$T_{on+off} = 79.93 \text{ ms.}$$

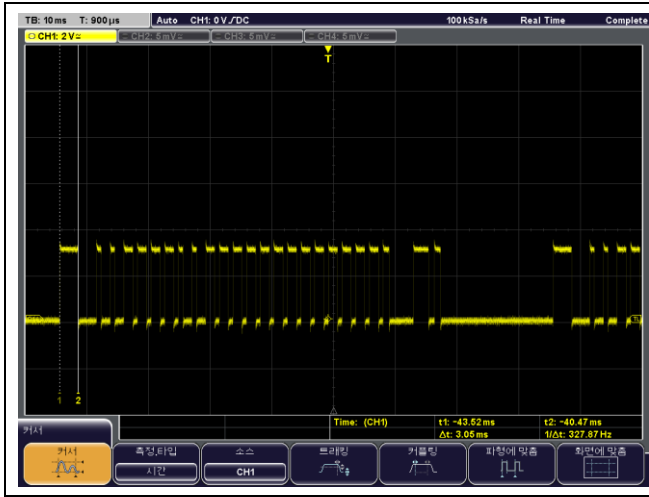
$$\text{Duty Cycle} = 20\log (T_{on} / T_{on+off}) = 20\log (0.4585) = -6.77 \text{ dB}$$

2. Conclusion: No SAR is required.

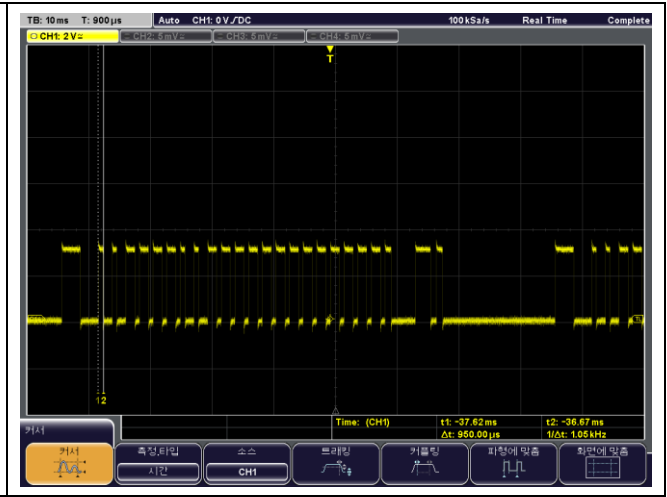
Note: Measured maximum output power : 26.30 dBm / Tune-up tolerance : 27 dBm \pm 2 dB

Test Plots;

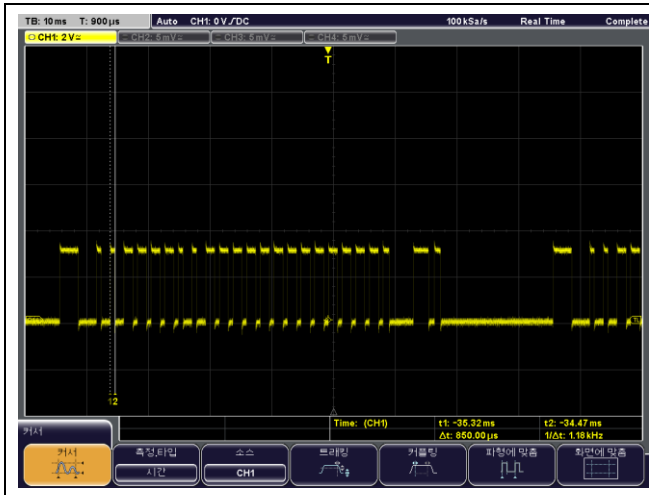
t1



t2



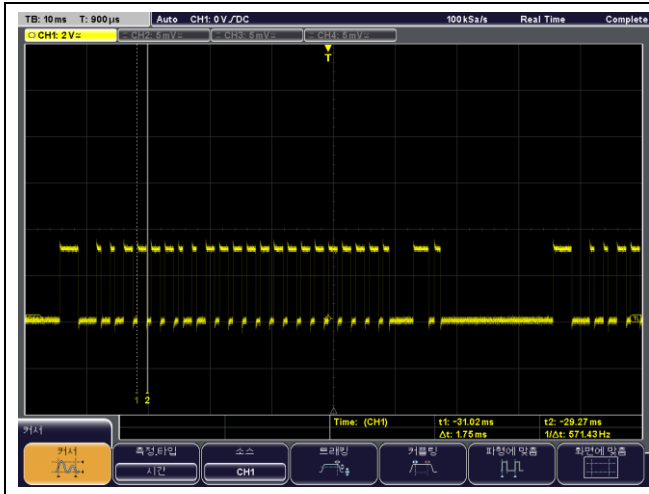
t3



t4



t5



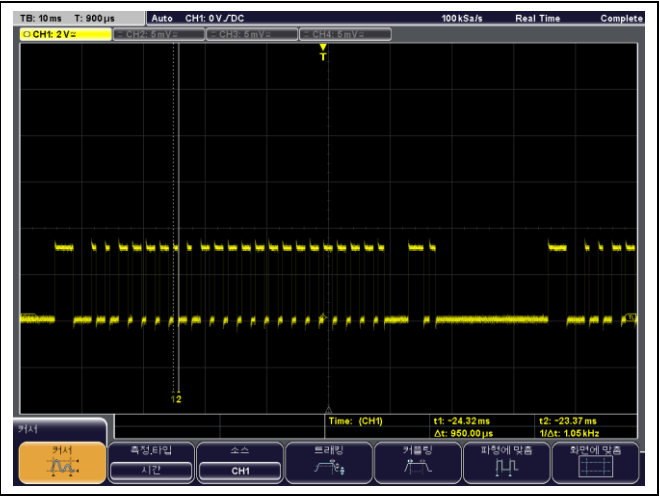
t6



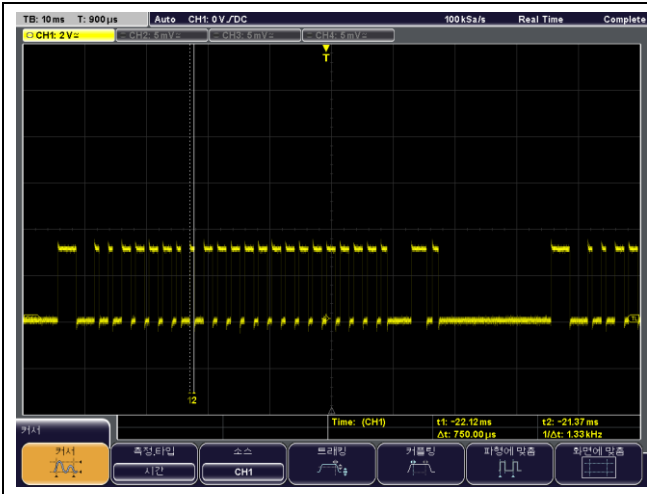
t4



t2



t7



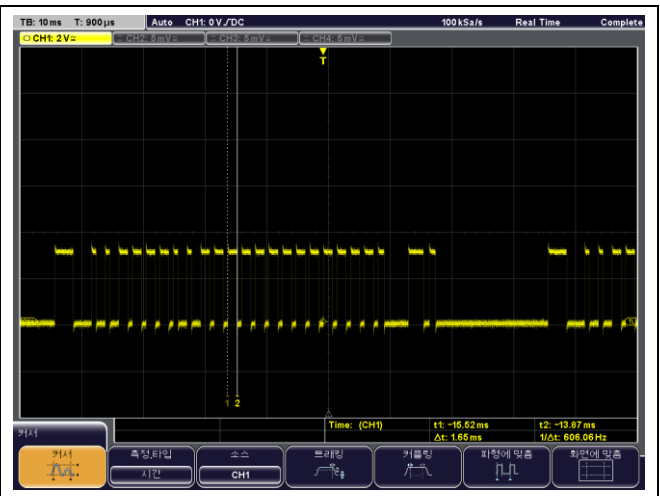
t8



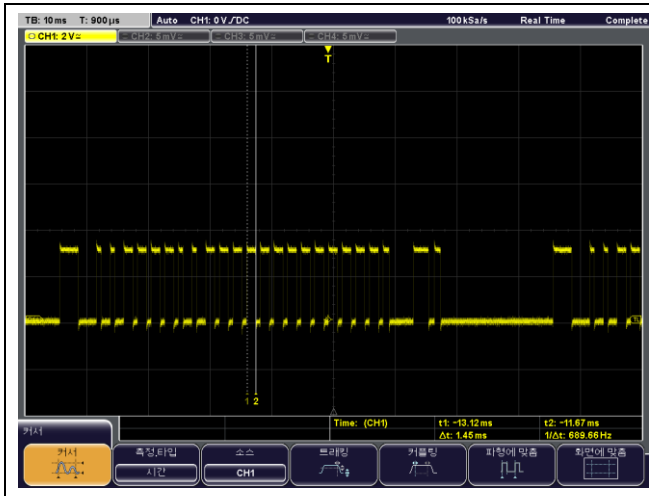
t9



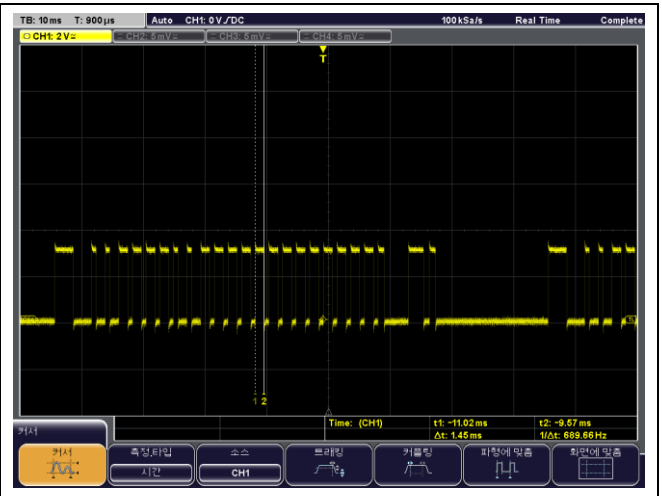
t6



t10



t10



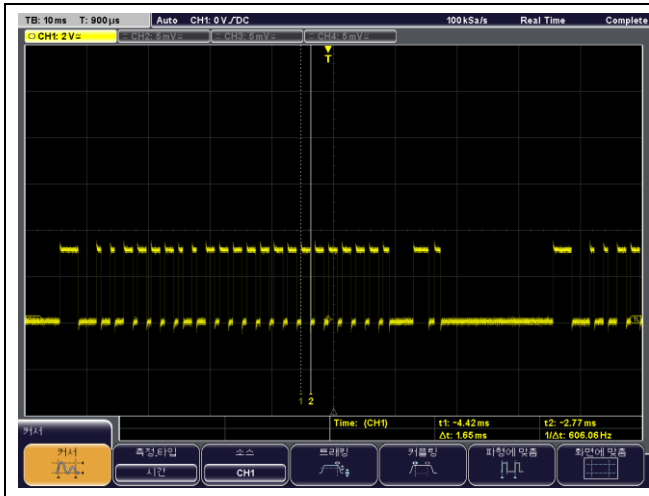
t10



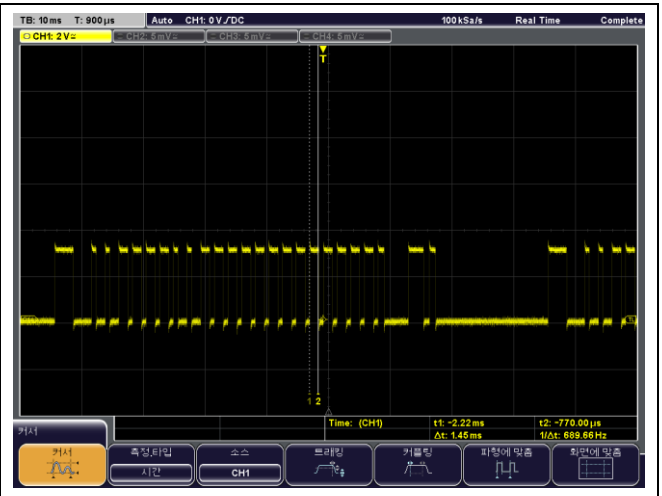
t4



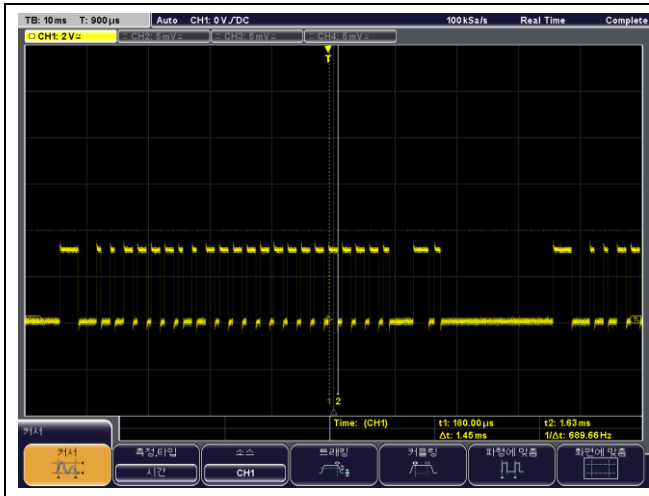
t6



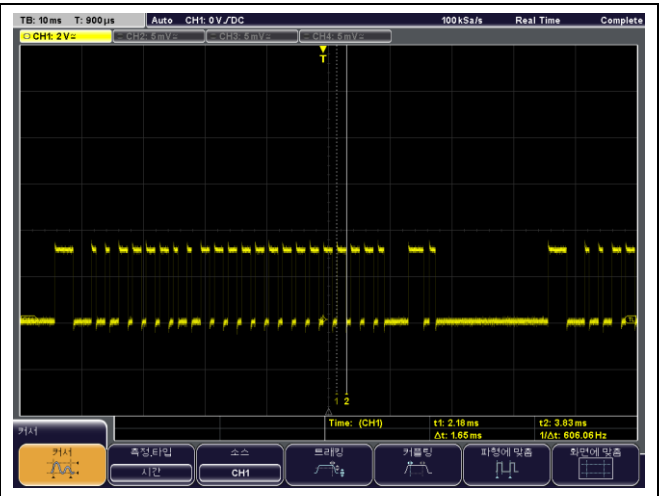
t10



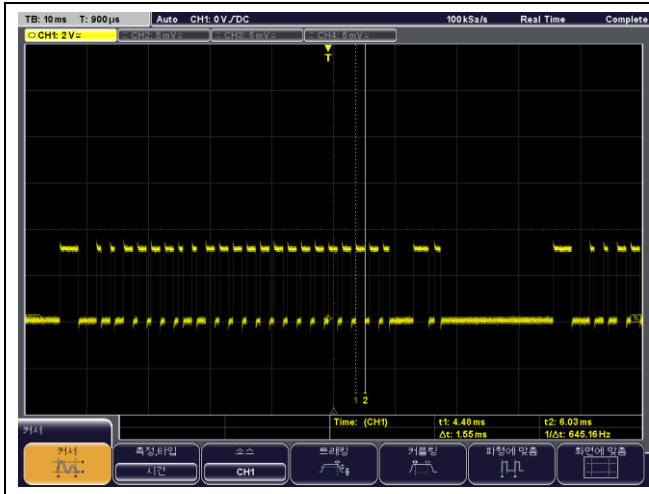
t10



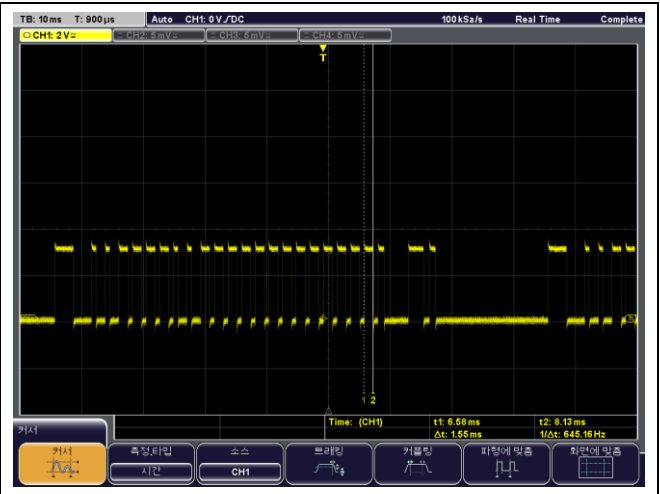
t6



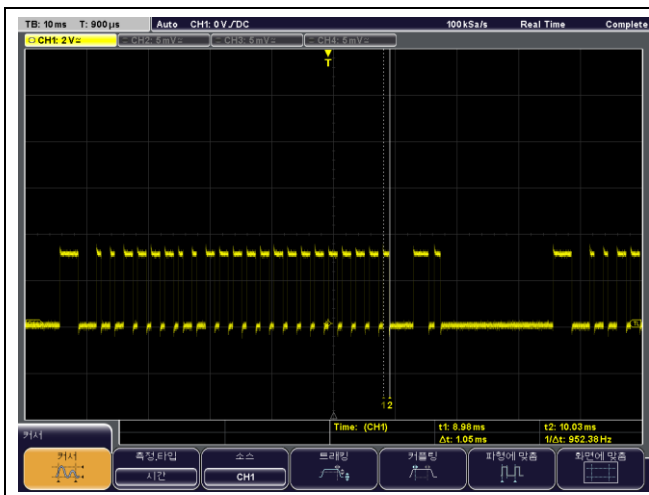
t8



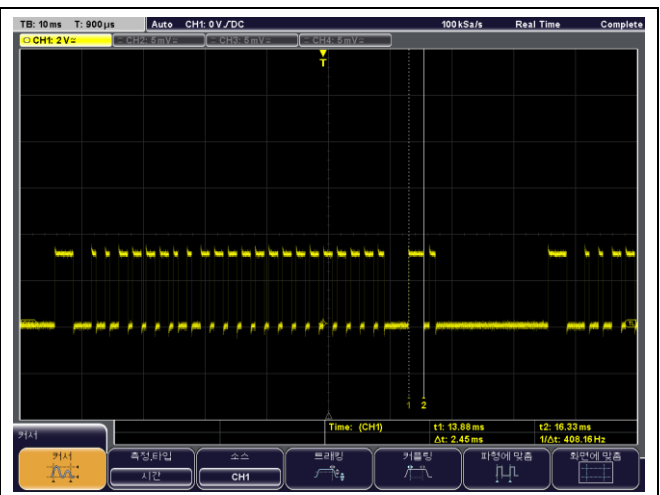
t8



t11

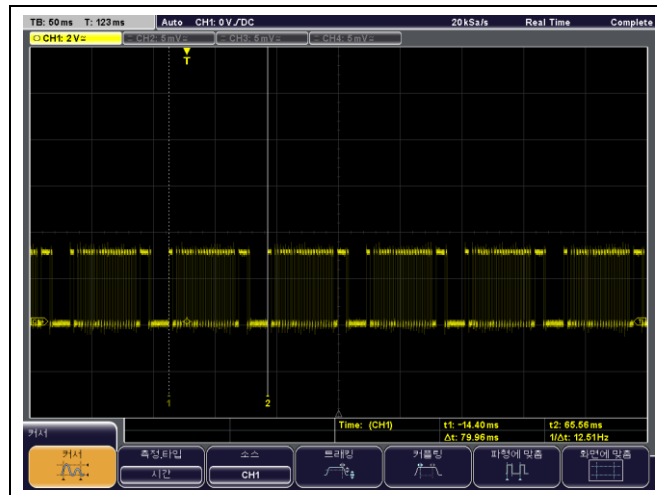
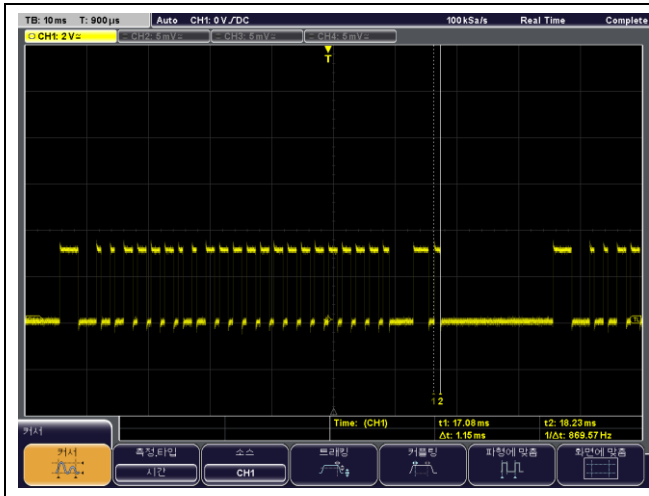


t12



t₉

T_{on+off}



Period