

FCC ID # B32V240MPLUS V240M Specific Absorption Rate Duty Factor Analysis



VERIFONE CONFIDENTIAL

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1. Product Description

Designed as a standalone, portable wireless Point of Sale terminal, the v240m POS (EUT, FCC ID # B32V240MPLUS) is used to process card payments at retail locations. Three forms of payment interfaces are available: traditional Magnetic Strip Reader (MSR), Contact Smart Card (PSCR) and Contactless Smart Card (CTLS). The EUT transmits only in data mode, without any voice support, during specific times within a transaction.

1.1 Use Case: TRANSACTION AND PAYMENT PROCESS

A typical transaction at a merchant is defined in the following table. The worst time and best time it takes to complete each step has been labeled as <T*>. These numbers have been measured by Verifone engineers during Verification/Validation and Quality Assurance tests.

Label	Time length	Radio State	Step and Description
<T1>	5 sec (min)	OFF	Payment information collected: Merchant enters payment info, such as amount, switches control to customer, who acknowledges the amount and selects payment method (MSR, PSCR, CTLS).
<T2>	5 sec (min)	OFF	EUT reads the information off the payment medium: a customer's credit or debit card may be swiped across MSR, entered into PSCR, tapped on CTLS. NFC payment also accepted (e.g. ApplePay, AliPay).
<T3>	10 sec (max) With retries: 30 sec (max)	ON	EUT Dials into payment servers over the radio network (depends on factors such as busy holiday season). In case connection fails, re-attempts allowed per VFI = 3.
<T4>	3 sec (max)	ON	EUT confirms funds availability in customer's bank account, gets authorization and connection is closed.
<T5>	5 sec (min)	OFF	Transaction ends and receipt is printed. Some receipts take longer to print based on logos, quantity of items to list, battery charge status, etc.

1.2 Duty Factor Calculations

Total transaction time = $\langle T1 \rangle + \langle T2 \rangle + \langle T3 \rangle + \langle T4 \rangle + \langle T5 \rangle$

Radio activity time = $\langle T3 \rangle + \langle T4 \rangle$

Ratio of Radio activity time to Total transaction time (**Duty Factor**): Radio activity time / Total transaction time

1.2.1 Duty Factor based on Min transaction time

Total transaction time = $\langle T1 \rangle + \langle T2 \rangle + \langle T3 \rangle + \langle T4 \rangle + \langle T5 \rangle = 5 + 5 + 10 + 3 + 5 = 28$ seconds

Radio activity time = $\langle T3 \rangle + \langle T4 \rangle = 10 + 3 = 13$ seconds

Ratio of Radio activity time to Total transaction time (**Duty Factor**): $13 / 28 = 0.4643$

1.2.2 Duty Factor based on Max transaction time (with radio retries)

Total transaction time = $\langle T1 \rangle + \langle T2 \rangle + \langle T3 \rangle + \langle T4 \rangle + \langle T5 \rangle = 5 + 5 + 30 + 3 + 5 = 48$ seconds

Radio activity time = $\langle T3 \rangle + \langle T4 \rangle = 30 + 3 = 33$ seconds

Ratio of Radio activity time to Total transaction time (**Duty Factor**): $33 / 48 = 0.6875$ (max)

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