

Simple Inspection for Faulty TC-3000C

Application Note

v1.0

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1. Simple Inspection for Faulty TC-3000C

The performance test of TC-3000C is based on the performance test method of the instrument through the user's equipment diagnosis specified in the user manual.

The method presented in this document is an inspection method that can determine the status using the relative measurement values when two TC-3000C are prepared and the test environment configuration described in the manual will be difficult. (Signal Generator, Spectrum Analyzer, Power Meter, etc.)

CAUTION

First, set the equipment as a reference that is considered to be in good condition and set the other TC-3000C as the DUT. In this case, be careful with the reference setting that can cause errors in determining the faulty unit.

1.1 Test Configuration

Equipment 1 : Reference unit



Equipment 2 : Measured unit (DUT)



RF Cable



1.2 Test Equipment and Accessories

No. I	Items	Quantity	
1	TC-3000C	more than 2	
2	SS-402, N(m) to N(m) cable, 2 m	1	

1.3 Test Conditions

1 Instrument Initialization

Before testing, initialize the parameters by PRESET (FCN + INCR SET) for the Reference and the DUT respectively. (See A.1 How to initialize the instrument)

2 Use recommended firmware

Use Firmware Version of v3.60 or later in System Information. (See A.2 How to check Firmware version)

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1.4 Measurement Procedure

1.4.1 Receiver Performance Test

Use reference equipment as a transmitter to test if the DUT receives correctly.



Figure 1-2 Setup for receiver performance test

1.4.1.1 Test Procedure

Initialize the reference and DUT units.
 Set TX Power of the reference system to 0 dBm.
 Menu → "Configuration" → M3 (RF Settings) → F2 (TX Power) → 0 dBm
 Press Discoverable button in Reference.
 Menu → Link Analyzer → Discoverable (F6)



4 In the DUT unit, set the cable loss value of 2.4 GHz indicated on the label of the connected RF cable as the compensation value. (See A.3 How to enter Path Loss)



1.4.1.2 Judgment

Take the average of the Pavg for each channel obtained in the above test and check that each DUT is within +/- 1.5dB of the average value. If it escapes, it may be suspicious of badness.

Reference's TX Power	Result (DUT's Pavg measurement)	Criteria
0 dBm		0 dBm ± 1.5 dB
-60 dBm		-60 dBm ± 1.5 dB

CAUTION

Decide DUT's RX ATT according to the TX Power of Reference.

- * Set the RX ATT of DUT to ON, in case TX power of reference is 0 dBm,
- * Set the RX ATT of DUT is set to OFF, in case TX power of reference is -60 dBm

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1.4.2 Transmission Performance Test

The reference unit becomes the receiver and test if DUT's transmission is normal. The test need to be repeated by placing the reference and DUT in reversed position during the reception performance test of the instrument



Figure 1-3 Setup for transmission performance test

1.4.2.1 Test Procedure

1 Initialize the reference and DUT units.

(2) In the reference unit, set the cable loss value of 2.4 GHz indicated on the label of the connected RF cable as the compensation value. (See A.3 How to enter Path Loss)







1.4.2.2 Judgment

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Take the average of the Pavg for each channel obtained in the above test and check that each DUT is within +/- 1.5dB of the average value. If it escapes, it may be suspicious of badness.

DUT's TX Power	Result (Reference's Pavg measurement)	Criteria	
0 dBm		0 dBm ± 1.5 dB	
-60 dBm		-60 dBm ± 1.5 dB	

Appendix A.

Appendix

A.1 How to initialize the instrument

• FON (FCN) + (INCR SET) = PRESET , all settings are initialized.



A.2 How to check Firmware version



Menu \rightarrow "" \rightarrow M4 (Peripherals) \rightarrow F8 (System Info)

A.3 How to enter Path Loss

BUT Type: Defines the type of DUT; selecting General performs general RF measurements		Parameters DUT Type
	HCI_Pert: HCI Type of DUT defines the port through which the DUT is connected to the Tester; None is for stand-alone devices	BT HCI Port None
	$\underline{Baud}\ \underline{Rato}$: Defines the baud rate of a DUT's HCI port; UART only	
	$\underline{error\ stop\ TC}\colon$ Defines whether to stop the Test Cases when an error occurs during execution	error stop TC
	<u>Htm. of recover</u> : Defines the number of attempts to recover the link while Test Cases are running	Num. of recover
	<u>Path Loss (dB)</u> : Defines the amount of the power loss in the full path between Tester and DUT	Path Loss(dB) 1.50
	- Status - FCN- T:USB1 D:none	
	OUT's path loss is set to 1.5 dB STBY N/A	More 1/4
	Tester DUT RF Settings Peripherals Network	Configuration



NOTICE

Enter the Cable Loss value at 2450 MHz of SS-402 N (m) to N (m) 2m cable provided at the factory.

RF Cable Measurment [Freq.][Cable Loss] 900MHz -0.906dB 1750MHz -1.270dB 1850MHz -1.282dB 2450MHz -1.500dB 5750MHz -2.353dB
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A.4 How to set Output Power Parameter

• Set Number of packets to 10 and Hopping Mode to OFF in basic settings and press Start button.

Tc Output Power (TP/TRM/CA/BV-01-C)	Start
Use Default	Parameters
# BT channels (separated by '-') 0-39-78	
Packet Type Longest	Edit
Number of packets 10	
Test/Normal Mode Transmit	0-1
Hopping Mode OFF	Select All
Upper Limit of average power in dBm 400	
Lower Limit of average power in dBm +6.00	Clear All
Upper Limit of peak power in dBm 23.00	
Yer Power Density (TP/TRM/CA/8V-02-C)	0
Power Control (TP/TRM/CA/BV-03-C)	Hesut
TX Output Spec. Freq. Range (TP/TRM/CA/8V-04-C)	
Y TX Output Spec20dB BW (TP/TRM/CA/BV-05-C)	Report
TX Output Spec. Adj.Ch. (TP/TRM/CA/BV-06-C)	
Te Modulation Characteristics (TP/TRM/CA/8V-07-C)	0
	Copy Report
FOR TUSER Dation	
STBY N/A	More 1/2
RF	Test Cases