



RADIO TEST REPORT

Test Report No. : 29BE0265-HO-01-B-R1

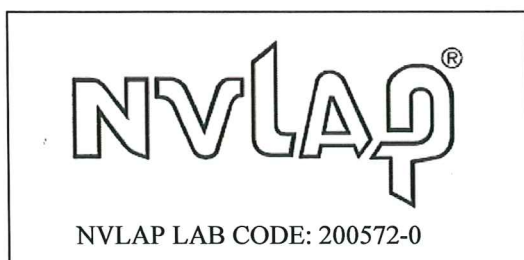
Applicant : **FUJITSU TEN LIMITED**
Type of Equipment : **Car navigation**
Model No. : **FT0005A**
FCC ID : **BABFT0005A**
Test regulation : **FCC Part 15 Subpart C 2008
Section 15.247**
Test Result : **Complied**

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2. The results in this report apply only to the sample tested.
3. This sample tested is in compliance with the above regulation.
4. The test results in this report are traceable to the national or international standards.
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6. Original test report number of this report is 29BE0265-HO-01-B.

Date of test: January 7 to 18, 2009

Tested by: *Takayuki Shimada* *Kazufumi Nakai* *Takeshi Choda*
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SECTION 1: Customer information

Company Name : FUJITSU TEN LIMITED
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Contact Person : Hiroshi Uda

SECTION 2: Equipment under test (E.U.T.)

2.1 Identification of E.U.T.

Type of Equipment : Car navigation
Model No. : FT0005A
Serial No. : 1: Used for Antenna Terminal Conducted tests
2: Used for Radiated Spurious Emission test
Rating : DC 13.2V
Receipt Date of Sample : December 22, 2008
Country of Mass-production : China
Condition of EUT : Engineering prototype
(Not for Sale: This sample is equivalent to mass-produced items.)
Modification of EUT : No Modification by the test lab

2.2 Product Description

Model No: FT0005A (referred to as the EUT in this report) is the Car navigation.

Feature of EUT: An in-vehicle navigation system to listen AM / FM / DVD in a car.

It has a Bluetooth function which gives a hands-free function for a cellular phone with an above in-vehicle audio system (a loud speaker equipped in a car is used.)

Clock frequency(ies) in the system: 32.768 KHz (CPU), 8.61MHz (Drawing clock), 10MHz (micro CON),
16.9344 MHz (micro CON), 24MHz (BT), 27MHz (CPU), 48 MHz (micro CON),
63.83MHz (clock)

[Bluetooth]

Equipment Type : Transceiver
Frequency of Operation : 2402MHz to 2480MHz
Bandwidth & Channel Spacing : 1MHz & 1MHz
Type of Modulation : FHSS
Antenna Type : Chip Antenna (AMD0302-ST01)
Antenna Gain : 1.65dBi
Antenna Connector Type : UFL-R-SMT-1(10)
Power Supply (inner) : DC3.3V

[GPS Receiver]

Equipment type : Receiver
Operating voltage : Digital VCC=3.0V, Analog VCC=2.8V, Core VCC=1.1V
Frequency of operation : 1575.42MHz
Antenna Type : External Antenna
Antenna Connector Type : High-frequency connector
Method of Frequency Generation : TCXO
Operating Temperature : -40 deg. C. to +85 deg. C.

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SECTION 3: Test specification, procedures & results

3.1 Test Specification

Test Specification : FCC Part15 Subpart C: 2008, final revised on May 19, 2008

Title : FCC 47CFR Part15 Radio Frequency Devices Subpart C Intentional Radiators
Section 15.247 Operation within the bands 902-928MHz,
2400-2483.5MHz, and 5725-5850MHz

The EUT complies with FCC Part 15 Subpart B: 2008, final revised on May 19, 2008.

FCC 15.31 (e)

This EUT provides stable voltage(DC3.3V) constantly to RF Part regardless of input voltage. Therefore, this EUT complies with the requirement.

FCC Part 15.203 Antenna requirement

It is impossible for end users to replace the antenna, because the antenna is mounted inside of the EUT. Therefore, the equipment complies with the antenna requirement of Section 15.203.

3.2 Procedures and results

[FHSS]

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst Margin	Results
1	Conducted emission	FCC: ANSI C63.4:2003 7. AC powerline conducted emission measurements	FCC: Section 15.207	Conducted	N/A*1)	N/A	N/A
		IC: RSS-Gen 7.2.2	IC: RSS-Gen 7.2.2				
2	Carrier Frequency Separation	FCC: FCC Public Notice DA 00-705	FCC: Section 15.247(a)(1)	Conducted	N/A	See data.	Complied
		IC: -	IC: RSS-210 A8.1 (b)				
3	20dB Bandwidth	FCC: FCC Public Notice DA 00-705	FCC: Section 15.247(a)(1)	Conducted	N/A		N/A
		IC: -	IC: RSS-210 A8.1 (a)				
4	Number of Hopping Frequency	FCC: FCC Public Notice DA 00-705	FCC: Section 15.247(a)(1)(iii)	Conducted	N/A		Complied
		IC: -	IC: RSS-210 A8.1 (d)				
5	Dwell time	FCC: FCC Public Notice DA 00-705	FCC: Section 15.247(a)(1)(iii)	Conducted	N/A		Complied
		IC: -	IC: RSS-210 A8.1 (d)				
6	Maximum Peak Output Power	FCC: FCC Public Notice DA 00-705	FCC: Section 15.247(b)(1)	Conducted	N/A		Complied
		IC: RSS-Gen 4.8	IC: RSS-210 A8.4 (2)				
7	Band Edge Compliance	FCC: FCC Public Notice DA 00-705	FCC: Section 15.247(d)	Conducted	N/A		Complied
		IC: -	IC: RSS-210 A8.5				
8	Spurious Emission	FCC: FCC Public Notice DA 00-705	FCC: Section 15.247(d)	Conducted/ Radiated	N/A	[Tx] 4.3dB 126.638MHz Vertical [Rx] 6.5dB 607.470MHz Horizontal	Complied
		IC: RSS-Gen 4.9 RSS-Gen 4.10	IC: RSS-210 A8.5 RSS-Gen 7.2.1 and 7.2.3				

Note: UL Japan, Inc.'s EMI Work Procedures No. QPM05 and QPM15.

*1) The test is not applicable since the EUT is not the device that is designed to be connected to the public utility (AC) power line.

*These tests were performed without any deviations from test procedure except for addition or exclusion.

* In case any questions arise about test procedure, ANSI C63.4: 2003 is also referred.

3.3 Addition to standards

No.	Item	Test Procedure	Specification	Remarks	Deviation	Worst margin	Results
1	99% Occupied Bandwidth	IC: RSS-Gen 4.6.1	IC: RSS-Gen 4.6.1	Conducted	N/A	N/A	N/A

3.4 Uncertainty

EMI

The following uncertainties have been calculated to provide a confidence level of 95% using a coverage factor k=2.

Test room	Conducted emission	Radiated emission (10m*)			Radiated emission (3m*)			Radiated emission (3m*)	
	150kHz-30MHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	9kHz-30MHz	30MHz-300MHz	300MHz-1GHz	1GHz-18GHz	18GHz-40GHz
No.1 semi-anechoic chamber (±)	3.7dB	3.1dB	4.4dB	4.2dB	3.2dB	3.8dB	3.9dB	5.9dB	6.1dB
No.2 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.4dB	4.0dB	5.9dB	6.1dB
No.3 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	4.6dB	4.0dB	5.9dB	6.1dB
No.4 semi-anechoic chamber (±)	3.7dB	-	-	-	3.2dB	3.9dB	3.9dB	5.9dB	6.1dB

*10m/3m = Measurement distance

Radiated emission test(3m)

The data listed in this test report has enough margin, more than the site margin.

Other test except Conducted Emission and Spurious Emission (Radiated)

The measurement uncertainty for this test is 3.0dB.

3.5 Test Location

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	FCC Registration Number	IC Registration Number	Width x Depth x Height (m)	Size of reference ground plane (m) / horizontal conducting plane	Other rooms
No.1 semi-anechoic chamber	313583	2973C-1	19.2 x 11.2 x 7.7m	7.0 x 6.0m	No.1 Power source room
No.2 semi-anechoic chamber	655103	2973C-2	7.5 x 5.8 x 5.2m	4.0 x 4.0m	-
No.3 semi-anechoic chamber	148738	2973C-3	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.3 Preparation room
No.3 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.4 semi-anechoic chamber	134570	2973C-4	12.0 x 8.5 x 5.9m	6.8 x 5.75m	No.4 Preparation room
No.4 shielded room	-	-	4.0 x 6.0 x 2.7m	N/A	-
No.5 semi-anechoic chamber	-	-	6.0 x 6.0 x 3.9m	6.0 x 6.0m	-
No.6 shielded room	-	-	4.0 x 4.5 x 2.7m	4.75 x 5.4 m	-
No.6 measurement room	-	-	4.75 x 5.4 x 3.0m	4.75 x 4.15 m	-
No.7 shielded room	-	-	4.7 x 7.5 x 2.7m	4.7 x 7.5m	-
No.8 measurement room	-	-	3.1 x 5.0 x 2.7m	N/A	-
No.9 measurement room	-	-	8.0 x 4.5 x 2.8m	2.0 x 2.0m	-
No.10 measurement room	-	-	2.6 x 2.8 x 2.5m	2.4 x 2.4m	-
No.11 measurement room	-	-	3.1 x 3.4 x 3.0m	2.4 x 3.4m	-

* Size of vertical conducting plane (for Conducted Emission test) : 2.0 x 2.0m for No.1, No.2, No.3, and No.4 semi-anechoic chambers and No.3 and No.4 shielded rooms.

3.6 Test set up, Data of EMI, and Test instruments

Refer to APPENDIX 1 to 3.

SECTION 4: Operation of E.U.T. during testing

4.1 Operating Mode(s)

Test Item	Operating Mode	Tested frequency
Suprious Emission (Conducted/Radiated)	Bluetooth Transmitting (Tx), DH5, Payload: PRBS9 (Hopping OFF)	2402MHz(L) 2441MHz(M) 2480MHz(H)
	Bluetooth Receiving (Rx), DH5	2441MHz(M)
Carrier Frequency Separation	Bluetooth Transmitting (Tx), DH5, Payload: PRBS9 (Hopping ON)	2402MHz(L) 2441MHz(M) 2480MHz(H)
	-Inquiry	2441MHz(M)
20dB Bandwidth Maximum Peak Output Power	Bluetooth Transmitting (Tx), DH5, Payload: PRBS9 (Hopping OFF)	2402MHz(L) 2441MHz(M) 2480MHz(H)
	-Inquiry	2441MHz(M)
Number of Hopping Frequency	Bluetooth Transmitting (Tx), DH5, Payload: PRBS9 (Hopping ON)	-
	-Inquiry	-
Dwell time	Bluetooth Transmitting (Tx), DH5, Payload: PRBS9 (Hopping ON) -DH1 -DH3 -DH5	-
	- Inquiry	-
Band Edge Compliance (Conducted)	Bluetooth Transmitting (Tx), DH5, Payload: PRBS9 -Hopping ON -Hopping OFF	2402MHz(L) 2480MHz(H)
	(Radiated)	Bluetooth Transmitting (Tx), DH5, Payload: PRBS9 (Hopping OFF)
99% Occupied Bandwidth	Bluetooth Transmitting (Tx), DH5, Payload: PRBS9 -Hopping ON -Hopping OFF	2402MHz(L) 2441MHz(M) 2480MHz(H)

As a result of preliminary test, the formal test was performed with the above modes, which had the maximum payload (except Dwell time test)

Remarks: Test was not performed at AFH mode, because the decrease of number of channel (min: 20ch) at AFH mode does not influence on the output power and bandwidth of the EUT. However, the limit level 125mWof AFH mode was used for the test.

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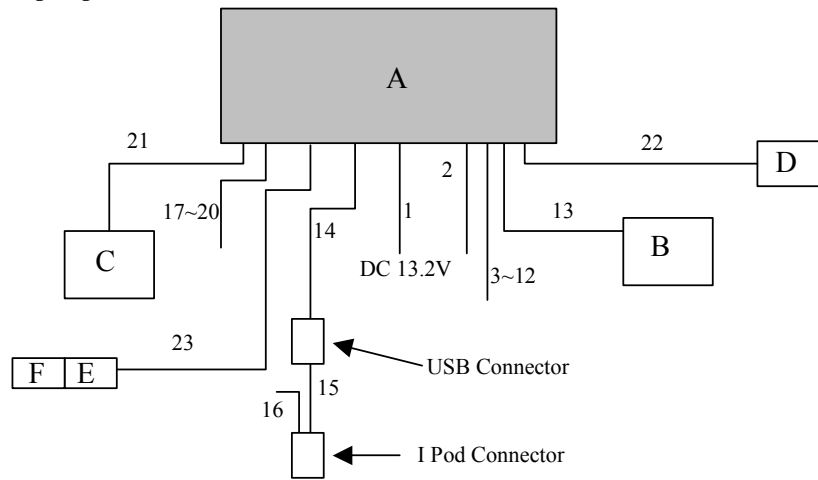
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4.2 Configuration and peripherals



*Cabling and setup were taken into consideration and test data was taken under worse case conditions.

Description of EUT and Support equipment

No.	Item	Model number	Serial number	Manufacturer	Remark
A	Car navigation	FT0005A	1*1) 2*2)	FUJITSU TEN	EUT
B	Hands free mic	-	-	-	-
C	BACK EYE Camera	BEC108	132001- 04300141	FUJITSU TEN	-
D	GPS Antenna	-	195000- 04800700	-	-
E	IMPEDANCE TRANSFORMER	MB-009	40063	-	-
F	TERMINATOR	NYRM-50	932211	-	-

*1) Used for Antenna Terminal Conducted Test

*2) Used for Radiated Spurious emission test

List of cables used

No.	Name	Length (m)	Shield		Remark
			Cable	Connector	
1	DC Cable	1.7	Unshielded	Unshielded	-
2	Speaker Cable	3.5	Unshielded	Unshielded	-
3	VTR IN	5.2	Shielded	Shielded	-
4	AUDIO (L) IN	5.2	Shielded	Shielded	-
5	AUDIO (R) IN	5.2	Shielded	Shielded	-
6	Rear Video OUT	5.2	Shielded	Shielded	-
7	FL AUDIO OUT	5.2	Shielded	Shielded	-
8	FR AODUIO OUT	5.2	Shielded	Shielded	-
9	RL AUDIO OUT	5.2	Shielded	Shielded	-
10	RR AUDIO OUT	5.2	Shielded	Shielded	-
11	NON FADER Audio L OUT	5.2	Shielded	Shielded	-
12	NON FADER Audio R OUT	5.2	Shielded	Shielded	-
13	Mic Cable	5.3	Unshielded	Unshielded	-
14	USB Cable	0.5	Shielded	Shielded	-
15	USB Cable	1.5	Shielded	Shielded	-
16	Audio Cable (L/R)	1.5	Shielded	Shielded	-
17	Signal Cable	6.4	Unshielded	Unshielded	-
18	Signal Cable	6.4	Unshielded	Unshielded	-
19	Signal Cable	7.8	Unshielded	Unshielded	-
20	Signal Cable	6.0	Unshielded	Unshielded	-
21	Signal Cable	12.0	Unshielded	Unshielded	-
22	Coaxial Cable	4.0	Shielded	Shielded	-
23	Coaxial Cable	1.0	Shielded	Shielded	-

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SECTION 5: Spurious Emission

[Conducted]

Test Procedure

The Out of Band Emission was measured with a spectrum analyzer connected to the antenna port.
The following spectrum analyzer setting was used:

- RBW: 100kHz
- VBW: 300kHz
- Sweep: Auto
- Detector: Peak
- Trace: Max Hold

Test data : APPENDIX 2

Test result : Pass

[Radiated]

Test Procedure

EUT was placed on a urethane platform of nominal size, 1.0m by 1.5m, raised 0.8m above the conducting ground plane. The Radiated Electric Field Strength intensity has been measured in a Semi Anechoic Chamber with a ground plane and at a distance of 3m(Below 10GHz) and 1m(Upper 10GHz).

The height of the measuring varied between 1 and 4m and EUT was rotated a full revolution in order to obtain the maximum value of the electric field intensity.

The measurements were performed for both vertical and horizontal antenna polarization with the Test Receiver, or the Spectrum Analyzer.

The radiated emission measurements were made with the following detector function of the test receiver and the Spectrum analyzer.

The result also satisfied with the general limits specified in section FCC 15.209(a) / RSS-210 2.7 (IC).

Frequency	Below 1GHz	Above 1GHz
Instrument used	Test Receiver	Spectrum Analyzer
Detector	QP: BW 120kHz	PK: RBW:1MHz/VBW: 1MHz
IF Bandwidth		AV *1): RBW:1MHz/VBW: 10Hz or 270kHz*2)

*1) When using Spectrum analyzer, the test was made with adjusting span to zero by using peak hold.

*2) VBW was determined that it is calculation based on the frequency of the radio transmitted signal from EUT.
Since pulse emission and duty cycle was less than 100%.

The test was made on EUT at the normal use position.

Test data : APPENDIX 2

Test result : Pass

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SECTION 6: Bandwidth

20 dB Bandwidth

Test Procedure

The bandwidth was measured with a spectrum analyzer connected to the antenna port.
The following spectrum analyzer setting was used:

- Span: 3MHz
- RBW: 30kHz
- VBW: 30kHz
- Sweep: Auto
- Detector: Peak
- Trace: Max Hold

Test data : APPENDIX 2
Test result : Pass

99% Occupied Bandwidth

Test Procedure

The bandwidth was measured with a spectrum analyzer connected to the antenna port.
The following spectrum analyzer setting was used:

- Span: Enough width to display 20dB Bandwidth
- RBW: as close to 1% of the Span as is possible without being below 1%
- VBW: Three times of RBW
- Sweep: Auto
- Detector: Peak
- Trace: Max Hold

Test data : APPENDIX 2
Test result : Pass

SECTION 7: Maximum Peak Output Power

Test Procedure

The Maximum Peak Output Power was measured with a power meter (tested bandwidth: 50MHz) connected to the antenna port.

Test data : APPENDIX 2
Test result : Pass

SECTION 8: Carrier Frequency Separation

Test Procedure

The carrier frequency separation was measured with a spectrum analyzer connected to the antenna port. The following spectrum analyzer setting was used:

- Span: 3MHz (Inquiry: 5MHz)
- RBW: 100kHz
- VBW: 300kHz
- Sweep: Auto
- Detector: Peak
- Trace: Max Hold

Test data : APPENDIX 2
Test result : Pass

SECTION 9: Number of Hopping Frequency

Test Procedure

The Number of Hopping Frequency was measured with a spectrum analyzer connected to the antenna port. The following spectrum analyzer setting was used:

- Span: 30MHz
- RBW: 300kHz
- VBW: 1MHz
- Sweep: Auto
- Detector: Peak
- Trace: Max Hold

Test data : APPENDIX 2
Test result : Pass

SECTION 10: Dwell time

Test Procedure

The Dwell time was measured with a spectrum analyzer connected to the antenna port.
The following spectrum analyzer setting was used:

- Span: Zero Span
- RBW: 1MHz
- VBW: 1MHz or 3MHz
- Sweep: as necessary to capture the entire dwell time per hopping channel
- Detector: function peak
- Trace: Max Hold

Test data : APPENDIX 2
Test result : Pass