CONFORMANCE TEST REPORT
FOR
FCC 47 CFR, Part 15 Subpart B

Report No.: 13-03-MAS-005

Client:	FUJITSU TEN LIMITED
Product:	COMPUTER ASSY, THEFT WARNING
Trade Name:	----
Model No.:	FTL480
FCC ID:	BABFTL480
Manufacturer/supplier:	FUJITSU TEN LIMITED

Date test item received:	2013/03/01
Date test campaign completed:	2013/03/14
Date of issue:	2013/03/14

Total number of pages of this test report: 13 pages
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Internal photos 2 pages
Setup photos 1 pages

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Manufacturer	: FUJITSU TEN LIMITED
Address	: 2-28, Gosho-dori, 1-chome, Hyogo-ku, Kobe 652-8510 Japan
EUT	: COMPUTER ASSY, THEFT WARNING
Trade name	: ----
Model No.	: FTL480
Power Source	: DC 12V
Regulations applied	: FCC 47 CFR, Part 15 Subpart B
Test Specifications	: Class B

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③ Filing: FCC, Industry Canada, VCCI
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⑤ FCC Registration Number: 91095, 392735, 278818
⑥ Industry Canada Site Registration number: IC 2949A-2

NVLAP Lab Code 200133-0

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1. GENERAL INFORMATION

1.1 Product Description

The EUT is a receiver used for a vehicle alarm system. This device is intended to use for keyless entry system.
Receive frequency: 433.92 MHz.

1.2 Test Methodology

Both conducted and radiated emissions were performed according to the procedures in ANSI C63.4 (2003).

1.3 Test Facility

The Semi-Anechoic Chamber and conducted measurement facility used to collect the radiated and conducted data are located inside the Building at No.8, Lane 29, Wen-ming Road, Lo-shan Tsun, Kweishan Hsiang, Taoyuan, Taiwan, R.O.C.
This site has been accreditation as a FCC filing site.

2. PROVISIONS APPLICABLE

2.1 Definition

Unintentional radiator:

A device that intentionally generates radio frequency energy for use within the device, or that sends radio frequency signals by conduction to associated equipment via connecting wiring, but which is not intended to emit RF energy by radiation or induction.

Class B Digital Device:

A digital device which is marketed for use in a residential environment notwithstanding use in a commercial, business and industrial environment. Examples of such devices include, but are not limited to, personal computers, calculators, and similar electronic devices that are marketed for use by the general public.

Note: A manufacturer may also qualify a device intended to be marketed in a commercial, business, or industrial environment as a Class B digital device, and in fact is encouraged to do so, provided the device complies with the technical specifications for a Class B Digital Device. In the event that a particular type of device has been found to repeatedly cause harmful interference to radio communications, the Commission may classify such a digital device as a Class B Digital Device, Regardless of its intended use.

2.2 Requirement for Compliance

(1) Conducted Emission Requirement

For unintentional device, according to **FCC§15.107(a)** Line Conducted Emission Limits class B is as following:

Frequency MHz	Quasi Peak dB μV	Average dB μV
0.15 - 0.5	66-56	56-46
0.5 - 5.0	56	46
5.0 - 30.0	60	50

For unintentional device, according to **CISPR 22** Line Conducted Emission Limits class B is as following:

Frequency MHz	Quasi Peak dB μV	Average dB μV
0.15 - 0.5	66-56	56-46
0.5 - 5.0	56	46
5.0 - 30.0	60	50

For unintentional device, according to **AS/NZS 3548** Line Conducted Emission Limits class B is as following:

Frequency MHz	Quasi Peak dB μV	Average dB μV
0.15 - 0.5	66-56	56-46
0.5 - 5.0	56	46
5.0 - 30.0	60	50

(2) Radiated Emission Requirement

For unintentional device, according to **FCC §15.109(a)**, the field strength of radiated emissions from unintentional except for class A digital device radiators at a distance of 3 meters shall not exceed the following values:

Frequency MHz	Distance Meters	Radiated μV/m	Radiated dB μV/m
30 - 88	3	100	40.0
88 - 216	3	150	43.5
216 - 960	3	200	46.0
above 960	3	500	54.0

For unintentional device, according to **CISPR 22** Radiated Emission Limits class B is as following:

Frequency MHz	Distance Meters	Radiated dB μV/m
30 to 230	10	30
230 to 1000	10	37

For unintentional device, according to **AS/ NZS 3548** Radiated Emission Limits class B is as following:

Frequency MHz	Distance Meters	Radiated dB μV/m
30 to 230	10	30
230 to 1000	10	37

2.3 Labelling Requirement

The device shall bear the following statement in a conspicuous location on the device:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

2.4 User Information

The users manual or instruction manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

For a Class B digital device or peripheral, the instructions furnished the user shall include the following or similar statement, placed in a prominent location in the text of the manual:

Note:

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communication. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-- Reorient or relocate the receiving antenna.

-- Increase the separation between the equipment and receiver.

-- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-- Consult the dealer or an experienced radio / TV technician for help.

3. SYSTEM TEST CONFIGURATION

3.1 EUT configuration and operating

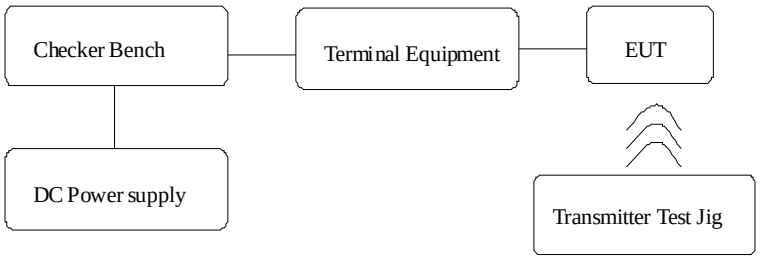
The EUT connected with the following peripheral devices.

Receive Mode: Supply DC power to EUT and run the receive function.

3.2 Devices for Tested System

Description	Manufacturer	Model No.	I/O Cable
* COMPUTER ASSY, THEFT WARNING	FUJITSU TEN LIMITED	FTL480	----
DC Power Supply	GW	GPS-3030D	1.8m*1, Unshielded Power Line 1.0m*1 Unshielded Signal Line
Checker Bench	N/A	N/A	1.0m*1, Unshielded Power Line 0.3m*1 Unshielded Signal Line
Terminal Equipment	N/A	N/A	2.0m*1 Unshielded Signal Line
Transmitter Test Jig	N/A	N/A	----

"*" means Equipment Under Test



3.3 Deviation Statement

(If any deviation from additions to or exclusions from test method must be stated)

N/A

3.4 Modification Record

N/A

4. RADIATED EMISSION MEASUREMENT

4.1 Applicable Standard

For unintentional radiator digital devices, the radiated emission shall comply with § 15.109(a). And according to §15.109 (g), as an alternative to the radiated emission limits is CISPR 22.

4.2 Measurement Procedure

A.Preliminary Measurement For Portable Devices.

For portable devices, the following procedure was performed to determine the maximum emission axis of EUT:

1. With the receiving antenna is H polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
2. With the receiving antennna is V polarization, rotate the EUT in turns with three orthogonal axes to determine the axis of maximum emission.
3. Compare the results derived from above two steps. So, the axis of maximum emission from EUT was determined and the configuration was used to perform the final measurement.

B. Final Measurement

1. Setup the configuration per figure 1 and 2 for frequencies measured below and above 1 GHz respectively. Turn on EUT and make sure that it is in continuous operating function.
2. For emission frequencies measured below 1 GHz, a pre-scan is performed in a semi-anechoic chamber to determine the accurate frequencies of higher emissions and then each selected frequency is precisely measured. As the same purpose, for emission measured above 1 GHz, a pre-scan also be performed with a 1 meter measuring distance before final test.
3. For emission measured below and above 1 GHz, set the spectrum analyzer on a 120 kHz and 1 MHz resolution bandwidth respectively for each frequency measured in step 2.
4. The search antenna is to be raised and lowered over a range from 1 to 4 meters in horizontally polarized orientation. Position the highness when the highest value is indicated on spectrum analyzer, then change the orientation of EUT on test table over a range from 0 ° to 360 ° with a speed as slow as possible, and keep the azimuth that highest emission is indicated on the spectrum analyzer. Vary the antenna position again and record the highest value as a final reading. A RF test receiver is also used to confirm emissions measured.

Figure 1: Frequencies measured below 1 GHz configuration

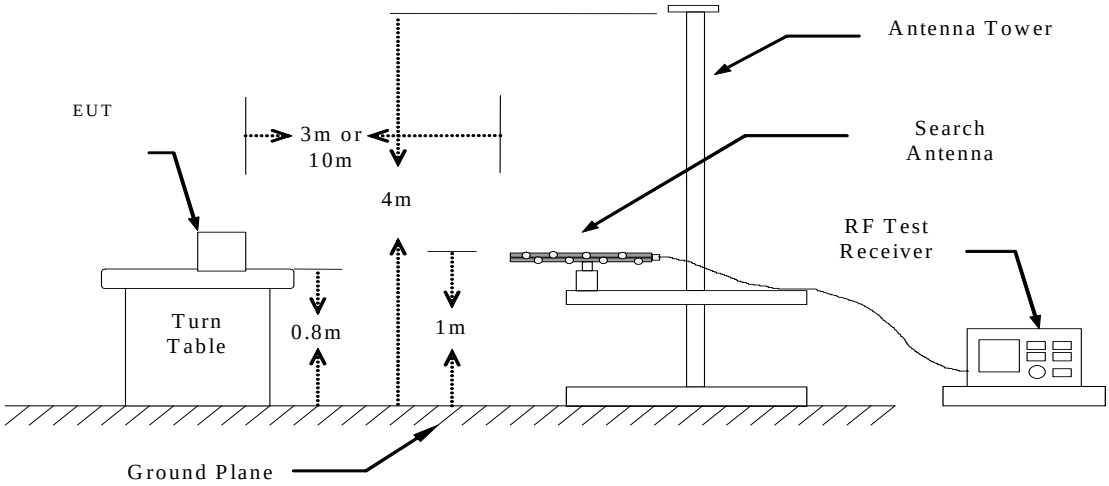
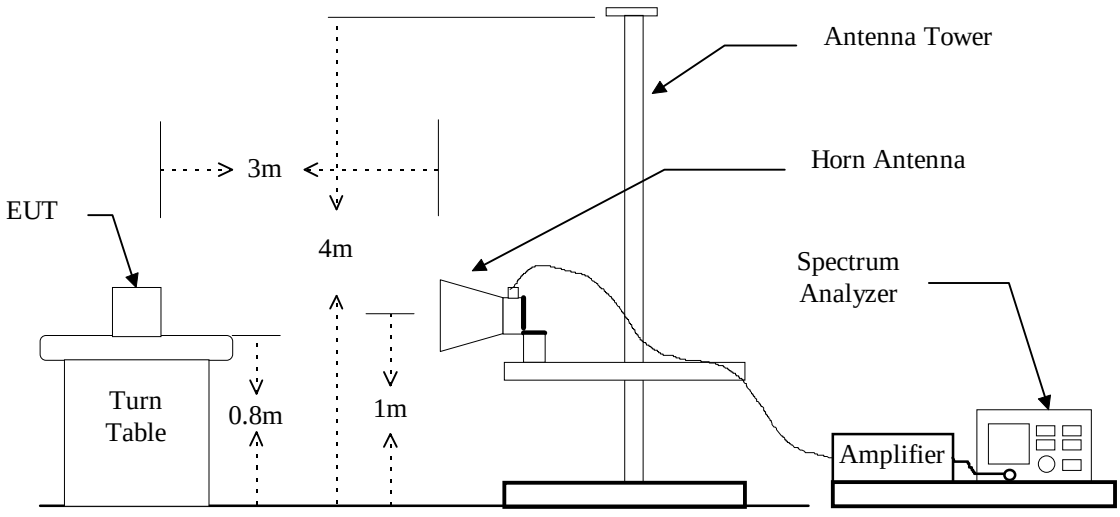


Figure 2 : Frequencies measured above 1 GHz configuration



4.3 Radiated Emission Data

File: 13-03-MAS-005 **Data:** #3 **Date:** 2013/3/12 **Temperature:** 22 ℃

Time: PM 02:18:14 **Humidity:** 61 %

Condition: FCC Part15 RE-Class B **Polarization:** Horizontal

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	31.9440	16.58	peak	19.39	35.97	40.00	-4.03
2	121.3627	13.53	peak	13.11	26.64	43.50	-16.86
3	300.2004	12.12	peak	17.95	30.07	46.00	-15.93
4	576.2325	11.13	peak	23.37	34.50	46.00	-11.50
5	725.9118	11.49	peak	25.62	37.11	46.00	-8.89
6	914.4690	12.47	peak	28.64	41.11	46.00	-4.89

Condition: FCC Part15 RE-Class B **Polarization:** Vertical

No.	Frequency (MHz)	Reading (dBuV/m)	Detector	Corrected dB/m	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)
1	31.9440	17.43	peak	19.39	36.82	40.00	-3.18
2	43.6072	22.16	peak	13.54	35.70	40.00	-4.30
3	53.3267	24.23	peak	9.47	33.70	40.00	-6.30
4	88.3166	18.56	peak	10.26	28.82	43.50	-14.68
5	125.2505	15.93	peak	13.30	29.23	43.50	-14.27
6	358.5170	12.52	peak	19.43	31.95	46.00	-14.05

Note:

1. Place of Measurement: Measuring site of the ETC.
2. If the data table appeared symbol of "***" means the value was too low to be measured.
3. The symbol of "#" means the noise was too low, so record the peak value.
4. The estimated measurement uncertainty of the result measurement is
   ±4.6dB (30MHz≦f<300MHz).
   ±4.4dB (300MHz≦f≦1000MHz).
   ±4.1dB (1GHz≦f≦18GHz).

4.4 Field Strength Calculation

The field strength is calculated by adding the Antenna Factor, High Pass Filter Loss and Cable Loss, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation calculation is as follows:

Result = Reading + Corrected Factor

where

Corrected Factor = Antenna Factor + Cable Loss - Amplifier Gain

4.5 Radiated Measuring Instrument

The following instrument are used for radiated emissions measurement:

Equipment	Manufacturer	Model No.	Serial No.	Calibrated until
EMI Receiver	R&S	ESIB 7	100328	07/10/2013
BiLog Antenna	ETC	MCTD2986	N/A	11/25/2013
Horn Antenna	EMCO	3115	9107-3729	07/17/2013
PRE-Amplifier	Agilent	8449B	3008A01648	03/26/2013
Spectrum Analyzer	R&S	FSU46	13040904-001	01/08/2014
Spectrum Analyzer	Agilent	E4446A	MY48250073	09/27/2013
Signal Generator	Agilent	83640B	3844A01143	10/07/2013
Mobile Antenna	N/A	N/A	N/A	N/A

Note: The standards used to perform this calibration are traceable to NML/ROC and NIST/USA.

Measuring instrument setup in measured frequency band when specified detector function is used:

Frequency Band (MHz)	Instrument	Function	Resolution Bandwidth	Video Bandwidth
30 to 1000	RF Test Receiver	Quasi-Peak	120 kHz	300 kHz

5. CONDUCTED EMISSION MEASUREMENT

This EUT is excused from investigation of conducted emission, for it is powered by battery only. According to § 15.027 (d), measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines.