



Zacta

TEST REPORT

Report number : JPD-TR-17215-0

Issue date : October 27, 2017

The device, as described herewith, was tested pursuant to applicable test procedure and complies with the requirements of;

FCC Part15 Subpart C IC RSS-210

The test results are traceable to the international or national standards.

Applicant	: Yuyama Mfg. Co., Ltd.
Equipment under test (EUT)	: Full Automatic Tablet Packer
Model number	: YS-TR-152FDXⅢ-UC4
FCC ID	: WSLFDX3
IC Certification Number	: 8213A-FDX3

Date of test : October 3, 4, 11, 12, 2017
Test place : TÜV SÜD Zacta Ltd. Yonezawa Testing Center
5-4149-7, Hachimanpara, Yonezawa-shi,
Yamagata, 992-1128 Japan
Phone: +81-238-28-2881 Fax: +81-238-28-2888
Test results : Complied

The results in this report are applicable only to the equipment tested.
This report shall not be re-produced except in full without the written approval of TÜV SÜD Zacta Ltd.
This test report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, ILAC-MRA or any agency of the federal government.

Tested by

Taiki Watanabe

Approved by

Hiroaki Suzuki

Lab Manager of RF Lab



Table of contents

	Page
1. Summary of Test	3
1.1 Purpose of test	3
1.2 Standards	3
1.3 List of applied test to the EUT	3
1.4 Modification to the EUT by laboratory	3
2. Equipment Under Test	4
2.1 General Description of equipment	4
2.2 EUT information	4
2.3 Variation of the family model(s)	5
2.4 Operating mode	5
3. Configuration of equipment	6
3.1 Equipment(s) used	6
3.2 Cable(s) used	6
3.3 System configuration	6
4. Occupied Bandwidth	7
4.1 Measurement procedure	7
4.2 Limit	7
4.3 Measurement result	7
4.4 Trace data	8
5. Operation within the band 13.110-14.010MHz	9
5.1 Measurement procedure	9
5.2 Calculation method	9
5.3 Limit	10
5.4 Test data	10
5.5 Trace data	11
6. Radiated Emissions	12
6.1 Measurement procedure	12
6.2 Calculation method	13
6.3 Limit	14
6.4 Test data	15
7. Frequency Tolerance	17
7.1 Measurement procedure	17
7.2 Limit	17
7.3 Test data	18
8. AC Power Line Conducted Emissions	19
8.1 Measurement procedure	19
8.2 Calculation method	19
8.3 Limit	19
8.4 Test data	20
9. Uncertainty of measurement	22
10. Laboratory Information	23
Appendix A. Test equipment	24

1. Summary of Test

1.1 Purpose of test

It is the original test in order to verify conformance to FCC Part 15 Subpart C and IC RSS-210.

1.2 Standards

CFR47 FCC Part 15 Subpart C
IC RSS-210

1.2.1 Test Methods

ANSI C63.10-2013

1.2.2 Deviation from standards

None

1.3 List of applied test to the EUT

Test items Section	Classification of EUT	Condition	Result
IC RSS-Gen 6.6	Occupied Bandwidth	Conducted	PASS
FCC 15.209 FCC 15.225 (a)(b)(c)(d) IC RSS-210 B.6	Operation within the band 13.110-14.010MHz	Radiated	PASS
FCC 15.209 FCC 15.225 (d) IC RSS-Gen 6.4, 6.5, 6.9 7.1	Transmitter Radiated Spurious Emissions	Radiated	PASS
FCC 15.225 (e) IC RSS-Gen 6.11	Frequency Tolerance	Conducted	PASS
FCC 15.207	AC Power Line Conducted Emissions	Conducted	PASS

1.3.1 Test set up

Floor-Standing

1.4 Modification to the EUT by laboratory

None

2. Equipment Under Test

2.1 General Description of equipment

EUT is the Full Automatic Tablet Packer.

2.2 EUT information

Applicant	: Yuyama Mfg. Co., Ltd. 3-3-1 Meisinguchi, Toyonaka, Osaka 561-0841 Japan Phone: 06-6332-1315 Fax: 06-6333-2135
Equipment under test	: Full Automatic Tablet Packer
Trade name	: YUYAMA
Model number	: YS-TR-152FDXⅢ-UC4
Serial number	: AL136XXX1
EUT condition	: Prototype
Power ratings	: AC120V
Size	: (W)610 × (D)668 × (H)1977 mm
Environment	: Indoor use
Terminal limitation	: 0°C to 35°C
RF Specification	
Frequency range	: 13.56MHz
Modulation method	: ASK
Antenna type	: Loop antenna

2.3 Variation of the family model(s)

YS-TR-112FDX III
YS-TR-128FDX III
YS-TR-136FDX III
YS-TR-152FDX III
YS-TR-112FDX III-UC1
YS-TR-128FDX III-UC1
YS-TR-136FDX III-UC1
YS-TR-152FDX III-UC1
YS-TR-112FDX III-UC2
YS-TR-128FDX III-UC2
YS-TR-136FDX III-UC2
YS-TR-152FDX III-UC2
YS-TR-112FDX III-UC3
YS-TR-128FDX III-UC3
YS-TR-136FDX III-UC3
YS-TR-152FDX III-UC3
YS-TR-112FDX III-UC4
YS-TR-128FDX III-UC4
YS-TR-136FDX III-UC4
YS-TR-152FDX III-UC4 - Tested

The difference in the model number of the family model is the difference in the number of cassettes of tablets to be set.

There is no difference in wireless function.

2.4 Operating mode

[Transmit mode]

- i) Start NFC test mode

3. Configuration of equipment

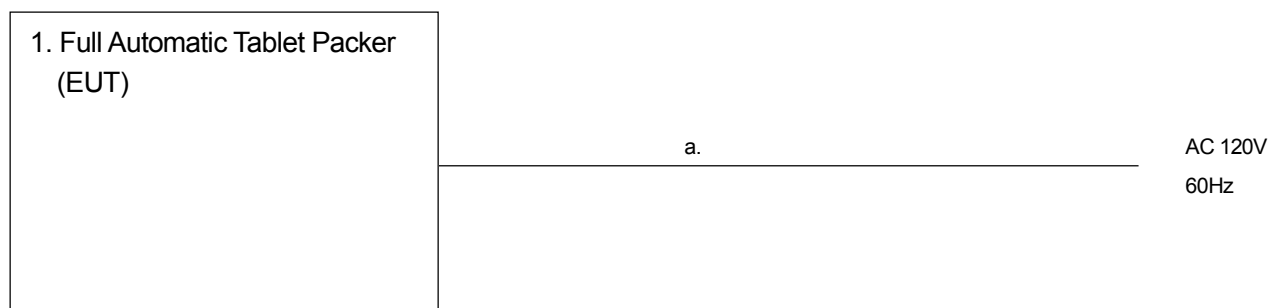
3.1 Equipment(s) used

No.	Equipment	Company	Model No.	Serial No.	FCC ID	Comment
1	Full Automatic Tablet Packer	YUYAMA	YS-TR-152FDX III-UC4	AL136XXX1	WSLFDX3	EUT

3.2 Cable(s) used

No.	Cable	Length[m]	Shield	Connector	Comment
a	AC cable	3	Yes	Metal	

3.3 System configuration



Note1: Numbers assigned to equipment or cables on this diagram correspond to the list in "3.1 Equipment(s) used" and "3.2 Cable(s) used".

4. Occupied Bandwidth

4.1 Measurement procedure [IC RSS-Gen 6.6]

The transmitter output is connected to the spectrum analyzer. The RBW is set to 1% to 3% of the 99% bandwidth. The VBW is set to 3 times the RBW. The sweep time is coupled. The spectrum analyzer internal 99% bandwidth function is utilized.

The spectrum analyzer is set to;

- RBW=1kHz, VBW=3kHz, Span=100kHz, Sweep=auto, Detector=Sample

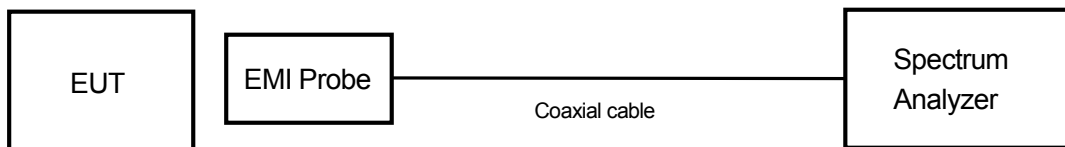
The EUT was set to operate with following conditions.

- 13.56MHz

The test mode of EUT is as follows.

- Transmit mode

- Test configuration



4.2 Limit

None

4.3 Measurement result

Date : October 12, 2017

Temperature : 22.2 [°C]

Humidity : 54.1 [%]

Test place : Constant temperature room

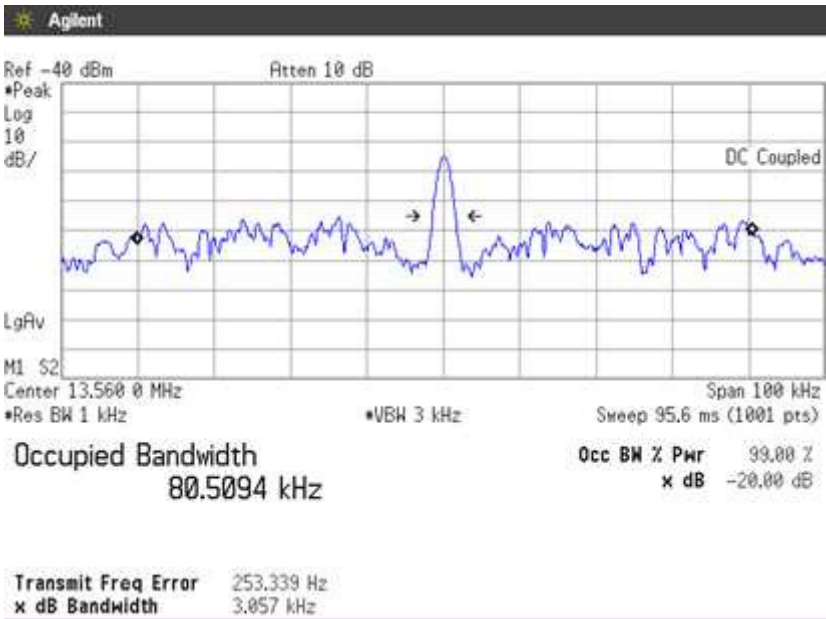
Test engineer : Taiki Watanabe

Frequency (MHz)	Occupied Bandwidth (kHz)
13.56	80.5094



Zacta

4.4 Trace data



5. Operation within the band 13.110-14.010MHz

5.1 Measurement procedure

[FCC 15.209, 15.225 (a)(b)(c)(d), IC RSS-210 B.6]

Test was applied by following conditions.

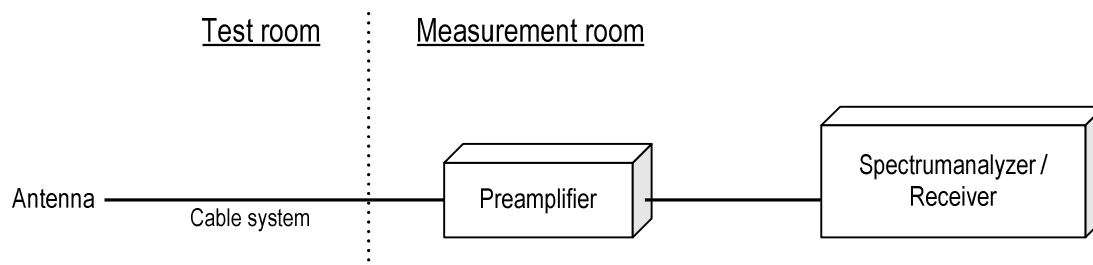
Test method	: ANSI C63.10
Frequency range	: 13.110MHz to 14.010MHz
Test place	: 10m Semi-anechoic chamber No.1
EUT was placed on	: Electrical insulating material
Antenna distance	: 10m

Test receiver setting

- Detector	: Quasi-peak
- Bandwidth	: 9kHz

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements frequency range 13.110MHz to 14.010MHz were performed with test receiver in above setting. The turntable and the Loop antenna are rotated by 360 degrees and stopped at azimuth of producing the maximum emission. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition.

- Test configuration



5.2 Calculation method

Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)

Margin = Limit – Emission level

5.3 Limit

- (a) The field strength of any emissions within the band 13.553-13.567MHz shall not exceed 15,848uV/m at 30m.
- (b) Within the band 13.410-13.553MHz and 13.567-13.710MHz, the field strength of any emissions shall not exceed 334uV/m at 30m.
- (c) Within the band 13.110-13.410MHz and 13.710-14.010MHz, the field strength of any emissions shall not exceed 106uV/m at 30m.
- (d) The field strength of any emissions appearing outside of the 13.110-14.010MHz and shall not exceed the general radiated emission limits in FCC 15.209.

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = 20log Emission [uV/m]
3. Measurements were corrected to 30m using $40\log(10/30) = -19.1\text{dB}$

5.4 Test data

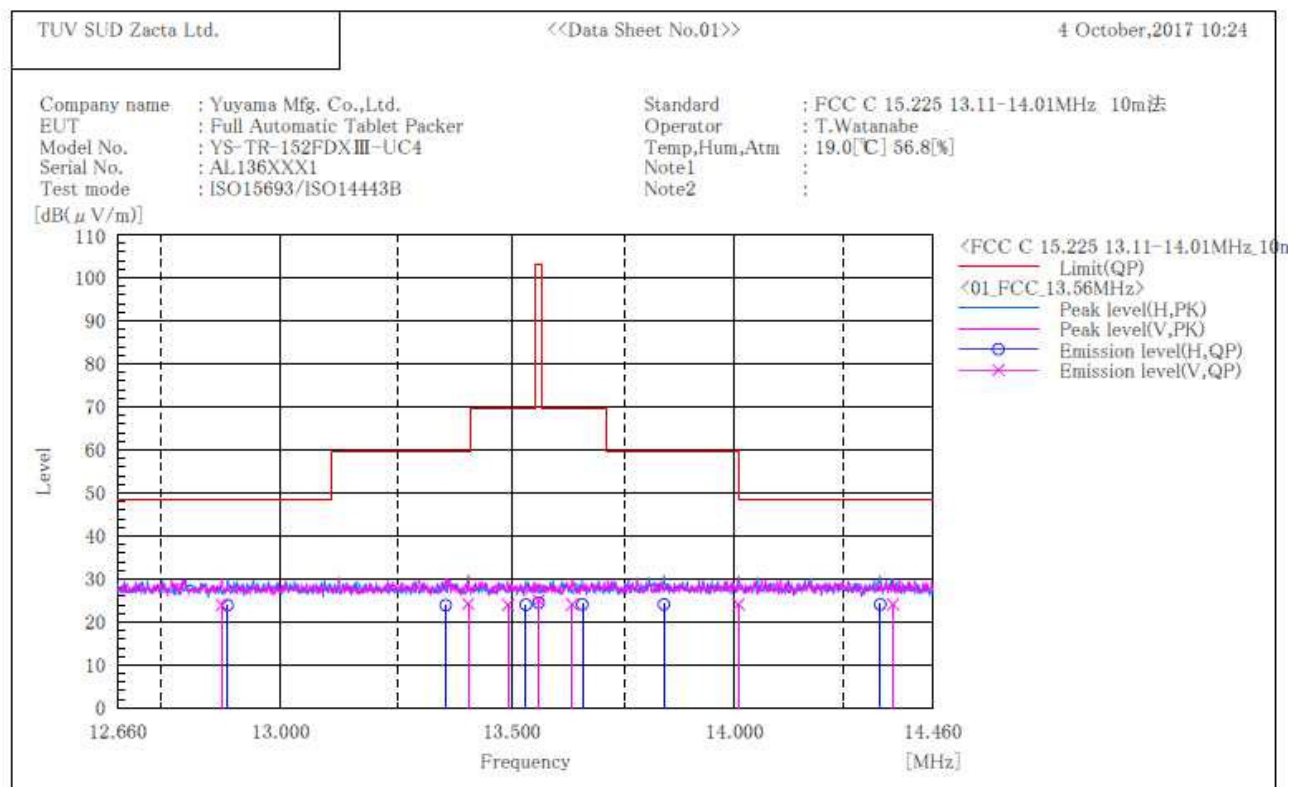
Date : October 4, 2017
 Temperature : 19.0 [°C]
 Humidity : 56.8 [%]
 Test place : 10m Semi-anechoic chamber No.1

Test engineer : Taiki Watanabe

Frequency range (MHz)	Frequency (MHz)	Level		Limit (dBuV/m)	Margin (dB)	Result
		Measured at 10m (dBuV/m)	Measured at 30m (dBuV/m)			
13.553-13.567	13.560	25.0	5.9	84.0	78.1	PASS
13.41-13.553	13.492	24.0	4.9	50.5	45.6	PASS
13.567-13.71	13.634	24.1	5.0	50.5	45.5	PASS
13.11-13.41	13.405	24.2	5.1	40.5	35.4	PASS
13.71-14.01	14.009	24.1	5.0	40.5	35.5	PASS
12.66-13.11	12.877	23.9	4.8	29.5	24.7	PASS
14.01-14.46	14.367	24.1	5.0	29.5	24.5	PASS

5.5 Trace data

***** RADIATED EMISSION *****
 [10m Semi-anechoic chamber #1]



Final Result

No.	Frequency	(P)	Reading	c. f	Result	Limit	Margin	Height	Angle	Remark
	[MHz]		QP		QP	QP	QP			
			[dB(μV)]	[dB(1/m)]	[dB(μV/m)]	[dB(μV/m)]	[dB]	[cm]	[°]	
1	13.560	V	28.0	-3.0	25.0	103.1	78.1	100.0	351.0	
2	13.492	V	27.0	-3.0	24.0	69.6	45.6	100.0	154.0	
3	13.634	V	27.1	-3.0	24.1	69.6	45.5	100.0	31.0	
4	13.405	V	27.2	-3.0	24.2	59.6	35.4	100.0	211.0	
5	14.009	V	27.1	-3.0	24.1	59.6	35.5	100.0	46.0	
6	12.877	V	27.0	-3.1	23.9	48.6	24.7	100.0	211.0	
7	14.367	V	27.1	-3.0	24.1	48.6	24.5	100.0	98.0	
8	13.560	H	27.5	-3.0	24.5	103.1	78.6	100.0	242.0	
9	13.532	H	27.0	-3.0	24.0	69.6	45.6	100.0	351.0	
10	13.657	H	27.1	-3.0	24.1	69.6	45.5	100.0	267.0	
11	13.356	H	26.9	-3.0	23.9	59.6	35.7	100.0	344.0	
12	13.840	H	27.1	-3.0	24.1	59.6	35.5	100.0	177.0	
13	12.889	H	27.0	-3.1	23.9	48.6	24.7	100.0	276.0	
14	14.337	H	27.1	-3.0	24.1	48.6	24.5	100.0	340.0	

6. Radiated Emissions

6.1 Measurement procedure

[FCC 15.209, 15.225 (d), IC RSS-Gen 6.4, 6.5, 6.9, 7.1]

Test was applied by following conditions.

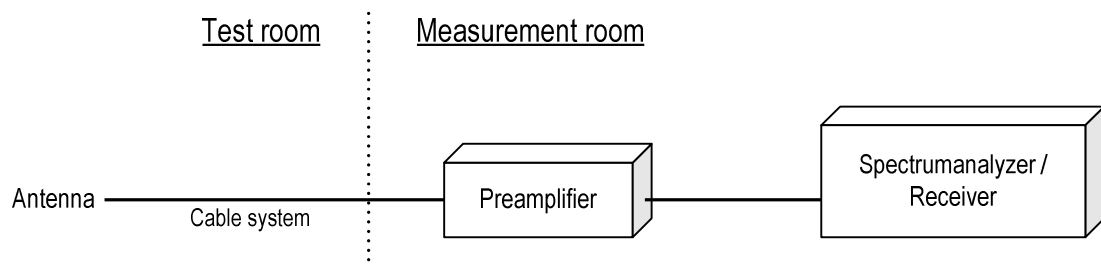
Test method	: ANSI C63.10
Frequency range	: 9kHz to 30MHz
Test place	: 10m Semi-anechoic chamber No.1
EUT was placed on	: Electrical insulating material
Antenna distance	: 10m
Test receiver setting	
- Detector	: Average (9kHz-90kHz, 110kHz-490kHz), Quasi-peak
- Bandwidth	: 200Hz, 9kHz

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area test site.

Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 937606.

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements up to 30MHz were performed with test receiver in above setting. The turntable and the Loop antenna are rotated by 360 degrees and stopped at azimuth of producing the maximum emission. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition.

- Test configuration



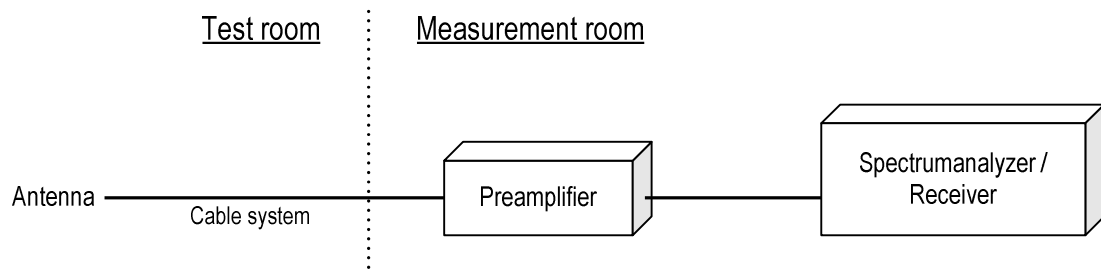
Test was applied by following conditions.

Test method	: ANSI C63.10
Frequency range	: 30MHz to 1000MHz
Test place	: 3m Semi-anechoic chamber
EUT was placed on	: Electrical insulating material
Antenna distance	: 3m

Test receiver setting	
- Detector	: Quasi-peak
- Bandwidth	: 120kHz

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Then, emission measurements up to 1000MHz were performed with test receiver in above setting. In order to find the maximum emissions, antenna is adjusted between 1m and 4m in height and varied its polarization (horizontal and vertical), and EUT azimuth was also varied by rotating turntable 0 to 360 degrees. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition.

- Test configuration



6.2 Calculation method

[9kHz to 150kHz]

Emission level = Reading + (Ant. factor + Cable system loss)

Margin = Limit – Emission level

[150kHz to 1000MHz]

Emission level = Reading + (Ant. factor + Cable system loss – Amp. Gain)

Margin = Limit – Emission level

6.3 Limit

Frequency [MHz]	Field strength		Distance [m]
	[uV/m]	[dBuV/m]	
0.009-0.490	$2400 / F$ [kHz]	$20\log E$ [uV/m]	300
0.490-1.705	$24000 / F$ [kHz]	$20\log E$ [uV/m]	30
1.705-30	30	29.5	30
30-88	100	40.0	3
88-216	150	43.5	3
216-960	200	46.0	3
Above 960	500	54.0	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level [dBuV/m] = $20\log$ Emission [uV/m]
3. Measurements were corrected to 30m using $40\log (10/30) = -19.1\text{dB}$

6.4 Test data

Date : October 3, 2017
 Temperature : 21.3 [°C]
 Humidity : 52.6 [%]
 Test place : 10m Semi-anechoic chamber No.1

Test engineer :
 Taiki Watanabe

Date : October 4, 2017
 Temperature : 19.0 [°C]
 Humidity : 56.8 [%]
 Test place : 3m Semi-anechoic chamber

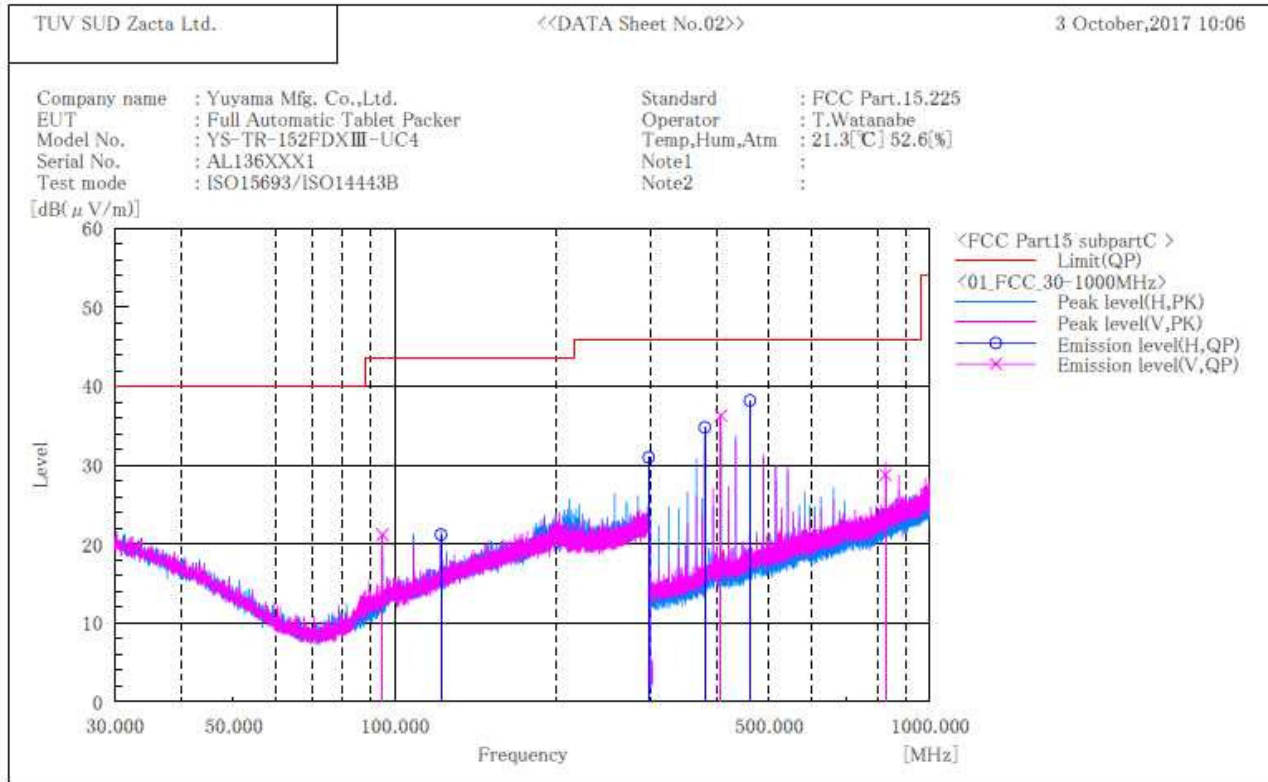
Test engineer :
 Taiki Watanabe

[9kHz to 30MHz]

Frequency (MHz)	Reading [dBuV] At 10m	c.f [dB(1/m)]	Result [dBuV/m] At 10m	Result [dBuV/m] At 30m	Limit [dBuV/m] At 30m	Margin (dB)	Result
27.12	25.9	-1.7	24.2	5.1	29.5	24.4	PASS

[30MHz to 1000MHz]

***** RADIATED EMISSION *****
[3m Semi-anechoic chamber]



Final Result

No.	Frequency [MHz]	(P)	Reading QP [dB(μV)]	c.f [dB(1/m)]	Result QP [dB(μV/m)]	Limit QP [dB(μV/m)]	Margin QP [dB]	Height [cm]	Angle [°]
1	94.920	V	34.1	-12.9	21.2	43.5	22.3	100.0	38.0
2	122.037	H	30.2	-9.0	21.2	43.5	22.3	100.0	193.0
3	298.310	H	32.9	-1.9	31.0	46.0	15.0	210.0	37.0
4	379.689	H	43.5	-8.7	34.8	46.0	11.2	121.0	45.0
5	406.797	V	44.2	-7.9	36.3	46.0	9.7	177.0	22.0
6	461.040	H	45.1	-6.9	38.2	46.0	7.8	100.0	323.0
7	825.012	V	30.2	-1.4	28.8	46.0	17.2	100.0	0.0

7. Frequency Tolerance

7.1 Measurement procedure

[FCC 15.205 (e), IC RSS-Gen 6.11]

The EUT was placed of an inside of an constant temperature chamber as the temperature in the chamber was varied between -30°C and +50°C. The temperature was incremented by 10°C intervals and the unit was allowed to stabilize at each measurement. The center frequency of the transmitting channel was evaluated at each temperature and the frequency deviation from the channels center frequency was recorded.

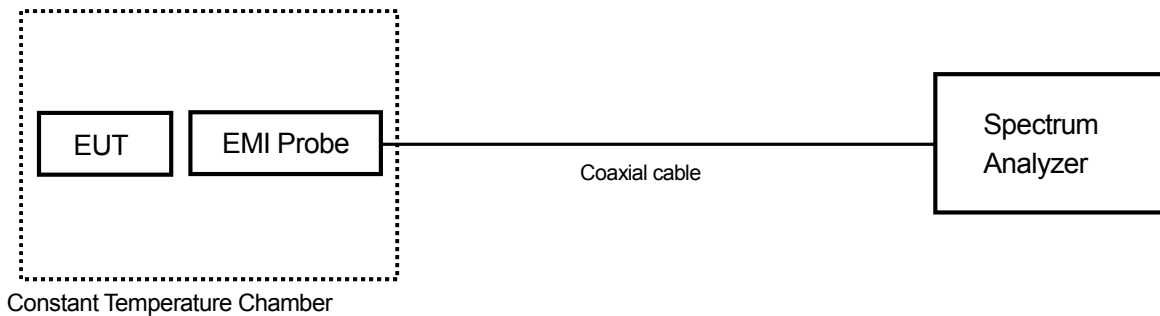
The EUT was set to operate with following conditions.

- 13.56MHz

The test mode of EUT is as follows.

- Transmit mode

- Test configuration



7.2 Limit

The Frequency tolerance of the carrier signal shall be maintained within +/- 0.01% over a temperature variation of -30 degrees to +50 degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

7.3 Test data

Date : October 11, 2017
 Temperature : 23.1 [°C]
 Humidity : 51.4 [%]
 Test place : Constant temperature room

Test engineer : Taiki Watanabe

Date : October 12, 2017
 Temperature : 22.2 [°C]
 Humidity : 54.1 [%]
 Test place : Constant temperature room

Test engineer : Taiki Watanabe

Reference Frequency: EUT Channel 13.56MHz at 20°C											
Limit: ±0.01% = ±100ppm = ±0.135603MHz											
Power Supply	Temperature	Measurements Frequency (startup)	Frequency Tolerance (startup)	Measurements Frequency (2mins)	Frequency Tolerance (2mins)	Measurements Frequency (5mins)	Frequency Tolerance (5mins)	Measurements Frequency (10mins)	Frequency Tolerance (10mins)	Limit	Result
[V]	[°C]	[MHz]	[ppm]	[MHz]	[ppm]	[MHz]	[ppm]	[MHz]	[ppm]	[ppm]	
120	50	13.560120	1.475	13.560090	-0.737	13.560125	1.844	13.560085	-1.106	± 100	PASS
	40	13.560070	-2.212	13.560070	-2.212	13.560090	-0.737	13.560110	0.737		
	30	13.560120	1.475	13.560090	-0.737	13.560120	1.475	13.560120	1.475		
	20	13.560100	-	13.560110	0.737	13.560110	0.737	13.560120	1.475		
	10	13.560120	1.475	13.560130	2.212	13.560135	2.581	13.560135	2.581		
	0	13.560185	6.268	13.560190	6.637	13.560175	5.531	13.560165	4.793		
	-10	13.560245	10.693	13.560190	6.637	13.560235	9.956	13.560245	10.693		
	-20	13.560260	11.799	13.560255	11.431	13.560240	10.324	13.560225	9.218		
	-30	13.560180	5.900	13.560210	8.112	13.560235	9.956	13.560245	10.693		
102	20	13.560125	1.844	13.560100	0.000	13.560100	0.000	13.560110	0.737		
138	20	13.560140	2.950	13.560115	1.106	13.560125	1.844	13.560125	1.844		

Note. Frequency Tolerance (ppm) = Measurements Frequency (MHz) – Reference Frequency (MHz) / Reference Frequency (MHz) x 1000000

The primary power supply voltage rating of this EUT is 85% to 115%.

8. AC Power Line Conducted Emissions

8.1 Measurement procedure [FCC 15.207]

Test was applied by following conditions.

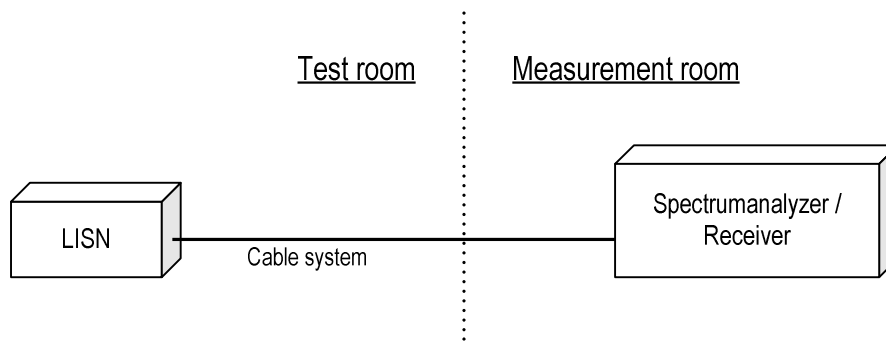
Test method	: ANSI C63.10
Frequency range	: 0.15MHz to 30MHz
Test place	: 3m Semi-anechoic chamber
EUT was placed on	: Electrical insulating material
Test receiver setting	
- Detector	: Quasi-peak, Average
- Bandwidth	: 9kHz

EUT and peripherals are connected to 50Ω/50μH Line Impedance Stabilization Network (LISN) which are connected to reference ground plane, and are placed 80cm away from EUT. Excess of AC power cable is bundled in center.

LISN for peripheral is terminated in 50Ω.

EUT operating mode is selected to emit the maximum noise. Overall frequency range is investigated with spectrum analyzer using peak detector. Maximum emission configuration is determined by manipulating the EUT, peripherals, interconnecting cables. Then, emission measurements are performed with test receiver in above setting to each current-carrying conductor of the mains port. Sufficient time for EUT, peripherals and test equipment is provided in order for them to warm up to their normal operating condition. If the average limit is met when using a quasi-peak detector receiver, the EUT shall be deemed to meet both limits.

- Test configuration



8.2 Calculation method

Emission level = Reading + (LISN. factor + Cable system loss)

Margin = Limit – Emission level

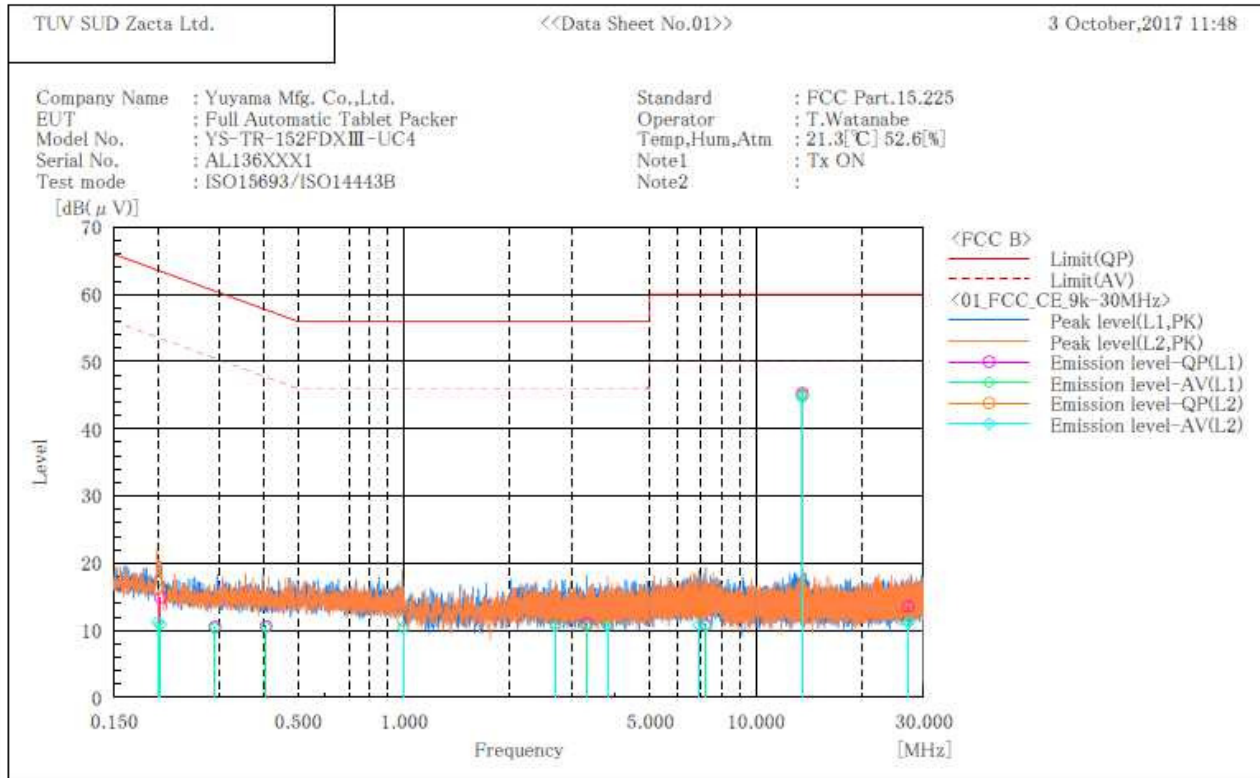
8.3 Limit

Frequency [MHz]	Limit	
	QP [dBuV]	AV [dBuV]
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

*: The limit decreases linearly with the logarithm of the frequency in the range 0.15MHz to 0.5MHz.

8.4 Test data [Transmit ON]

***** CONDUCTED EMISSION at MAINS PORT *****
[3m Semi-anechoic chamber]



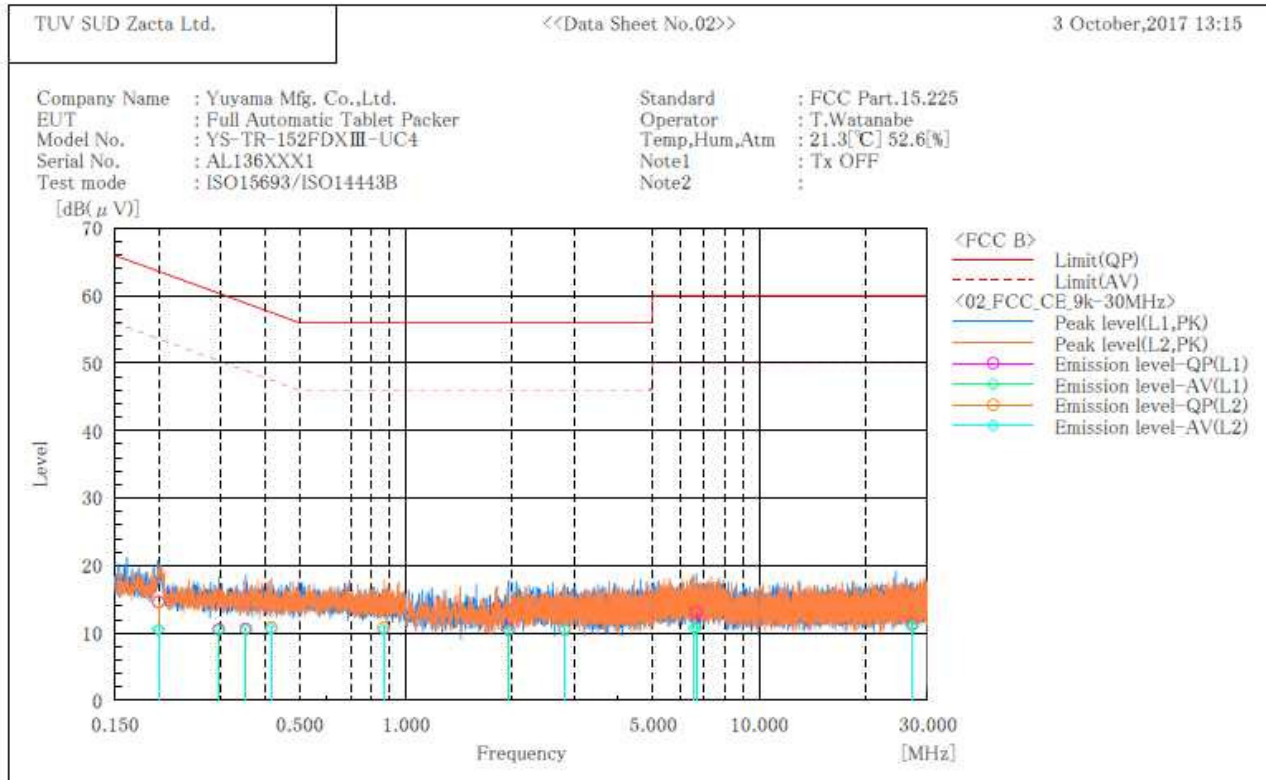
Final Result

— L1 Phase —											
No.	Frequency	Reading	Reading	c. f	Result	Result	Limit	Limit	Margin	Margin	Remark
	[MHz]	QP	AV		QP	AV	QP	AV	QP	AV	
		[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]	
1	0.204	4.5	0.5	10.4	14.9	10.9	63.4	53.4	48.5	42.5	
2	0.291	0.2	0.1	10.3	10.5	10.4	60.5	50.5	50.0	40.1	
3	0.407	0.3	0.2	10.3	10.6	10.5	57.7	47.7	47.1	37.2	
4	3.310	0.6	0.3	10.4	11.0	10.7	56.0	46.0	45.0	35.3	
5	7.223	0.3	0.2	10.5	10.8	10.7	60.0	50.0	49.2	39.3	
6	13.560	34.7	34.5	10.6	45.3	45.1	60.0	50.0	14.7	4.9	
7	27.120	2.7	0.5	10.8	13.5	11.3	60.0	50.0	46.5	38.7	

— L2 Phase —											
No.	Frequency	Reading	Reading	c. f	Result	Result	Limit	Limit	Margin	Margin	Remark
	[MHz]	QP	AV		QP	AV	QP	AV	QP	AV	
		[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]	
1	0.200	5.7	0.8	10.4	16.1	11.2	63.6	53.6	47.5	42.4	
2	0.997	1.2	0.1	10.3	11.5	10.4	56.0	46.0	44.5	35.6	
3	2.701	0.7	0.2	10.4	11.1	10.6	56.0	46.0	44.9	35.4	
4	3.796	0.5	0.2	10.4	10.9	10.6	56.0	46.0	45.1	35.4	
5	6.877	2.6	0.3	10.5	13.1	10.8	60.0	50.0	46.9	39.2	
6	13.560	34.3	34.1	10.6	44.9	44.7	60.0	50.0	15.1	5.3	
7	27.120	1.8	0.4	10.8	12.6	11.2	60.0	50.0	47.4	38.8	

[Transmit OFF]

***** CONDUCTED EMISSION at MAINS PORT *****
 [3m Semi-anechoic chamber]

**Final Result**

L1 Phase											
No.	Frequency	Reading QP	Reading AV	c. f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]	
1	0.200	4.2	0.1	10.4	14.6	10.5	63.6	53.6	49.0	43.1	
2	0.296	0.2	0.1	10.3	10.5	10.4	60.4	50.4	49.9	40.0	
3	0.353	0.3	0.2	10.3	10.6	10.5	58.9	48.9	48.3	38.4	
4	1.959	0.2	0.1	10.3	10.5	10.4	56.0	46.0	45.5	35.6	
5	6.640	2.6	0.3	10.5	13.1	10.8	60.0	50.0	46.9	39.2	
6	27.120	0.6	0.2	10.8	11.4	11.0	60.0	50.0	48.6	39.0	

L2 Phase											
No.	Frequency	Reading QP	Reading AV	c. f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV	Remark
	[MHz]	[dB (μ V)]	[dB (μ V)]	[dB]	[dB (μ V)]	[dB (μ V)]	[dB (μ V)]	[dB (μ V)]	[dB]	[dB]	
1	0.200	4.2	0.1	10.4	14.6	10.5	63.6	53.6	49.0	43.1	
2	0.417	0.5	0.3	10.3	10.8	10.6	57.5	47.5	46.7	36.9	
3	0.867	0.5	0.2	10.3	10.8	10.5	56.0	46.0	45.2	35.5	
4	2.820	0.1	0.1	10.4	10.5	10.5	56.0	46.0	45.5	35.5	
5	6.530	3.3	0.2	10.5	13.8	10.7	60.0	50.0	46.2	39.3	
6	27.120	0.6	0.2	10.8	11.4	11.0	60.0	50.0	48.6	39.0	

9. Uncertainty of measurement

Expanded uncertainties stated are calculated with a coverage Factor $k=2$.

Please note that these results are not taken into account when determining compliance or non-compliance with test result.

Test item	Measurement uncertainty
Conducted emission, AMN (9kHz – 150kHz)	$\pm 3.8\text{dB}$
Conducted emission, AMN (150kHz – 30MHz)	$\pm 3.3\text{dB}$
Radiated emission (9kHz – 30MHz)	$\pm 3.0\text{dB}$
Radiated emission (30MHz – 1000MHz)	$\pm 4.7\text{dB}$
Radiated emission (1GHz – 6GHz)	$\pm 4.9\text{dB}$
Radiated emission (6GHz – 26GHz)	$\pm 5.2\text{dB}$

10. Laboratory Information

1. Location

Name: Yonezawa Testing Center
 Address: 5-4149-7, Hachimanpara, Yonezawa-shi, Yamagata, 992-1128 Japan
 Phone: +81-238-28-2881
 Fax: +81-238-28-2888

2. Accreditation and Registration

1) NVLAP

LAB CODE: 200306-0

2) VLAC

Accreditation No.: VLAC-013

3) BSMI

Laboratory Code: SL2-IN-E-6018, SL2-A1-E-6018

4) Industry Canada

Site number	Facility	Expiration date
4224A-4	3m Semi-anechoic chamber	2017-12-03
4224A-5	10m Semi-anechoic chamber No.1	2017-12-03
4224A-6	10m Semi-anechoic chamber No.2	2019-12-14

5) VCCI Council

Registration number	Expiration date
A-0166	2019-07-03

Appendix A. Test equipment

Antenna port Conducted Test

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
Spectrum analyzer	Agilent Technologies	E4440A	US44302655	Jun. 30, 2018	Jun. 28, 2017
Micro wave cable	SUHNER	Sucoflex 102/2m	31648	Mar. 28, 2018	Mar. 13, 2017
EMI Probe	ANRITSU	MA2601C	N/A(1753)	Oct. 31, 2017	Oct. 30, 2016
Constant temperature and humidity chamber	Espec	TBL-6H30W6P2CL	3014004189	Dec. 31, 2017	Dec. 1, 2016

Radiated emission (10m Semi-anechoic chamber No.1)

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI receiver	ROHDE&SCHWARZ	ESR7	101742	Dec. 31, 2017	Dec. 21, 2016
Preamplifier	ANRITSU	MH648A	M08067	Feb. 28, 2018	Feb. 2, 2017
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	100515	Feb. 28, 2018	Feb. 17, 2017
Attenuator	TDC	TAT-43B-06	N/A(S209)	May 31, 2018	May 23, 2017
Biconical antenna	Schwarzbeck	VHA9103/BBA9106	2850	Aug. 31, 2018	Aug. 18, 2017
Log periodic antenna	Schwarzbeck	UHALP9108A	0991	Aug. 31, 2018	Aug. 18, 2017
Attenuator	TME	CFA-01/64B	N/A(S465)	May 31, 2018	May 23, 2017
Attenuator	TME	CFA-01NPJ-3	N/A(S270)	Feb. 28, 2018	Feb. 2, 2017
Microwave cable	SUHNER	SUCOFLEX104/9m	MY24758/4	Feb 28, 2018	Feb 2, 2017
		SUCOFLEX104/1m	MY24628/4	Feb 28, 2018	Feb 3, 2017
		SUCOFLEX104/2m	SN MY28398/4	Feb 28, 2018	Feb 2, 2017
		SUCOFLEX106/12m	41624/6	Feb 28, 2018	Feb 3, 2017
PC	HP	dc7800small	JPA7450FPJ	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V5.6.0	N/A	N/A
10m Semi-anechoic chamber	TOKIN	N/A	N/A (9001-NSA)	Oct. 31, 2017	Oct. 2, 2016

Radiated emission (3m Semi-anechoic chamber)

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	Sep. 30, 2018	Sep. 13, 2017
Preamplifier	ANRITSU	MH648A	M96057	Feb. 28, 2018	Feb. 1, 2017
Biconical antenna	Schwarzbeck	VHA9103/BBA9106	2155	Jul. 31, 2018	Jul. 18, 2017
Log periodic antenna	Schwarzbeck	UHALP9108A	0560	Jul. 31, 2018	Jul. 18, 2017
Attenuator	TME	CFA-01NPJ-6	N/A(S275)	Feb. 28, 2018	Feb. 3, 2017
Attenuator	TME	CFA-01NPJ-3	N/A(S272)	Feb. 28, 2018	Feb. 2, 2017
Microwave cable	SUHNER	SUCOFLEX104/9m	MY30037/4	Feb. 28, 2018	Feb. 3, 2017
		SUCOFLEX104/1m	MY24610/4	Feb. 28, 2018	Feb. 2, 2017
		SUCOFLEX104/1.5m	MY19309/4	Feb. 28, 2018	Feb. 3, 2017
		SUCOFLEX106/7m	41625/6	Feb. 28, 2018	Feb. 3, 2017
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/RE-AJ	0611193/V5.6.0	N/A	N/A
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-NSA)	May 31, 2018	May 30, 2017



Zacta

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100764	Aug. 31, 2017	Aug. 19, 2016
Attenuator	HUBER+SUHNER	6810.01.A	N/A(S411)	Feb. 28, 2018	Feb. 2, 2017
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407F	8-2003-1	Mar. 31, 2018	Mar. 13, 2017
Coaxial cable	FUJIKURA	5D-2W/4m	N/A(S350)	Feb. 28, 2018	Feb. 2, 2017
Coaxial cable	FUJIKURA	5D-2W/1m	N/A(S193)	Feb. 28, 2018	Feb. 3, 2017
Coaxial cable	SUHNER	RG214/U/10m	N/A(S194)	Feb. 28, 2018	Feb. 3, 2017
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/CE-AJ	0611193/V5.4.11	N/A	N/A

*: The calibrations of the above equipment are traceable to NIST or equivalent standards of the reference organizations.