

TEST REPORT

Report number : JPD-TR-18028-0

Issue date : May 18, 2018

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

FCC Part15 Subpart C

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

Applicant	: KYOCERA Corporation
Equipment under test (EUT)	: Tablet
Model number	: KC-T301DT
FCC ID	: JOYCA02

Date of test : April 26, 27 2018
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
Taiki Watanabe

Approved by : Hiroaki Suzuki
Hiroaki Suzuki
Lab Manager of RF Lab



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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.

1.2 Standards

CFR47 FCC Part 15 Subpart C

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
15.209	Radiated Emissions	Radiated	PASS
15.207	AC Power Line Conducted Emissions	Conducted	PASS

1.3.1 Test set up

Table-Top

1.4 Modification to the EUT by laboratory

None

2. Equipment Under Test

2.1 General Description of equipment

EUT is the Tablet.

2.2 EUT information

Applicant	:	KYOCERA Corporation Yokohama Office 2-1-1 Kagahara, Tsuzuki-ku Yokohama-shi, Kanagawa, Japan Phone: +81-45-943-6253 Fax: +81-45-943-6314
Equipment under test	:	Tablet
Trade name	:	Kyocera
Model number	:	KC-T301DT
Serial number	:	N/A
EUT condition	:	Pre-Production
Power ratings	:	AC 100 - 240 V 0.3 A
Size	:	Tablet (W) 180.0 × (D) 10.7 × (H) 270.0 mm
Environment	:	Indoor and Outdoor use
Operating environment	:	Temperature: 5°C to 40°C Humidity: 25% to 85%
RF Specification	:	
Frequency range	:	562.5kHz (Pen side) 593.75kHz (Eraser side)
Modulation method	:	AM/PM

2.3 Variation of the family model(s)

Not applicable

2.4 Operating mode

[Normal Operation]

i) Pen on the tablet's display

3. Configuration of equipment

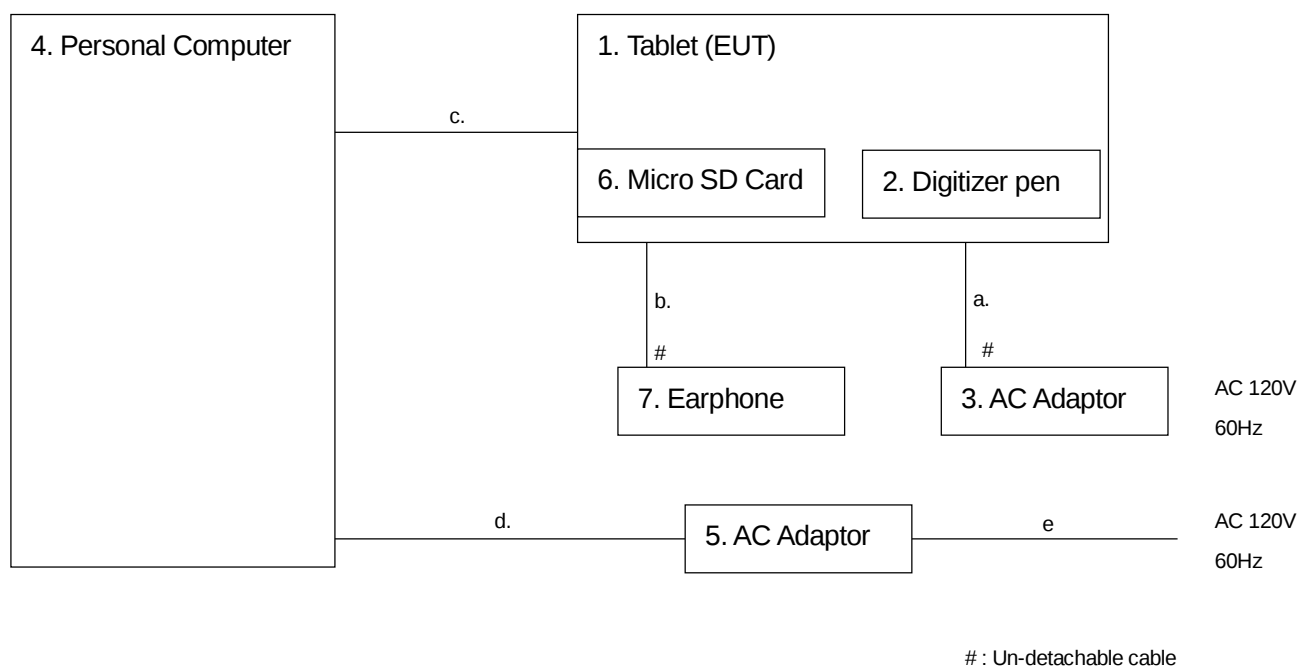
3.1 Equipment(s) used

No.	Equipment	Company	Model No.	Serial No.	FCC ID / DoC	Comment
1	Tablet	KYOCERA	KC-T301DT	N/A	JOYCA02	EUT
2	Digitizer pen	Wacom	UP-6712E	N/A	-	Accessory
3	AC adapter	SALOM ELECTRIC(XIAMEN) CO.,LTD.	ADT301	N/A	-	Accessory
4	Personal Computer	HP	Compaq6720S	CNU8321Q6M	DoC	-
5	AC adapter	HP	PA-1650-02H	W92C401BMW6TY9	-	-
6	Micro SD Card	TOSHIBA	N/A	1729CJ72686	-	-
7	Earphone	Hosiden	HDH0281	N/A	-	-

3.2 Cable(s) used

No.	Cable	Length[m]	Shield	Connector	Comment
a	DC cable	1.2	Yes	Metal	-
b	Earphone cable	1.2	No	Metal	-
c	Micro USB cable	1.0	Yes	Metal	-
d	DC cable	1.8	No	Metal	-
e	AC cable	1.8	No	Plastic	-

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. Radiated Emissions

4.1 Measurement procedure [FCC 15.209]

Test was applied by following conditions.

Test method	: ANSI C63.10
Frequency range	: 9kHz to 30MHz
Test place	: 3m Semi-anechoic chamber
EUT was placed on	: FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Antenna distance	: 3m

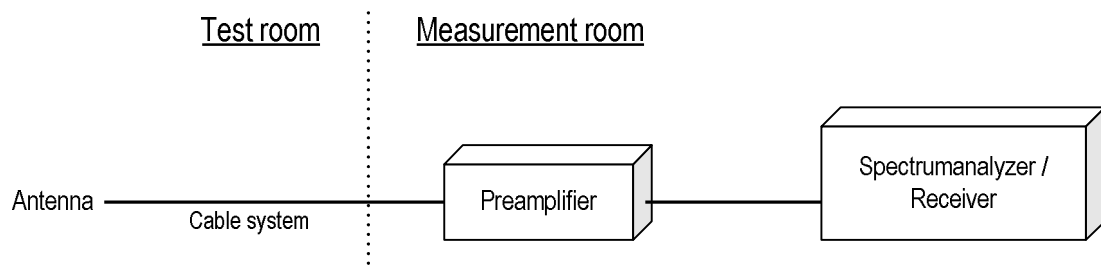
Test receiver setting	
- Detector	: Average (9kHz-90kHz, 110kHz-490kHz), Quasi-peak
- Bandwidth	: 200Hz, 120kHz

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 414788.

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



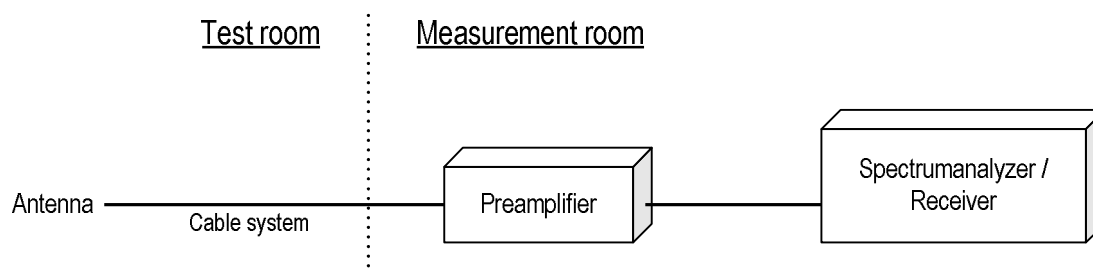
Test was applied by following conditions.

Test method	: ANSI C63.10
Frequency range	: 30MHz to 1000MHz
Test place	: 3m Semi-anechoic chamber
EUT was placed on	: FRP table / (W)2.0m × (D)1.0m × (H)0.8m
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



4.2 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

Example:

Limit @ 350.0MHz : 37.0dBμV/m

Reading = 41.1dBμV c.f = -11.8dB/m

Emission level = 41.1 - 11.8 = 29.3dBμV/m

Margin = 37.0 - 29.3 = 7.7dB

4.3 Limit

Frequency [MHz]	Field strength		Distance [m]
	[uV/m]	[dBuV/m]	
0.009-0.490	2400 / F [kHz]	20logE [uV/m]	300
0.490-1.705	24000 / F [kHz]	20logE [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	300	54.0	3

Frequency [MHz]	Limit [dBuV/m]	Distance [m]
30-300	30	10
300-1000	37	10

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 $40\log(3/30) = -40.0\text{dB}$
4. CISPR 22 limit was applied radiated emission measurements as prescribed in FCC Part 15 section 15.109(g).

4.4 Test data

Date : April 26, 2018
 Temperature : 20.3 [°C]
 Humidity : 45.5 [%]
 Test place : 3m Semi-anechoic chamber

Test engineer :

Taiki Watanabe

[9kHz to 30MHz]**562.5kHz (Pen side) Output**

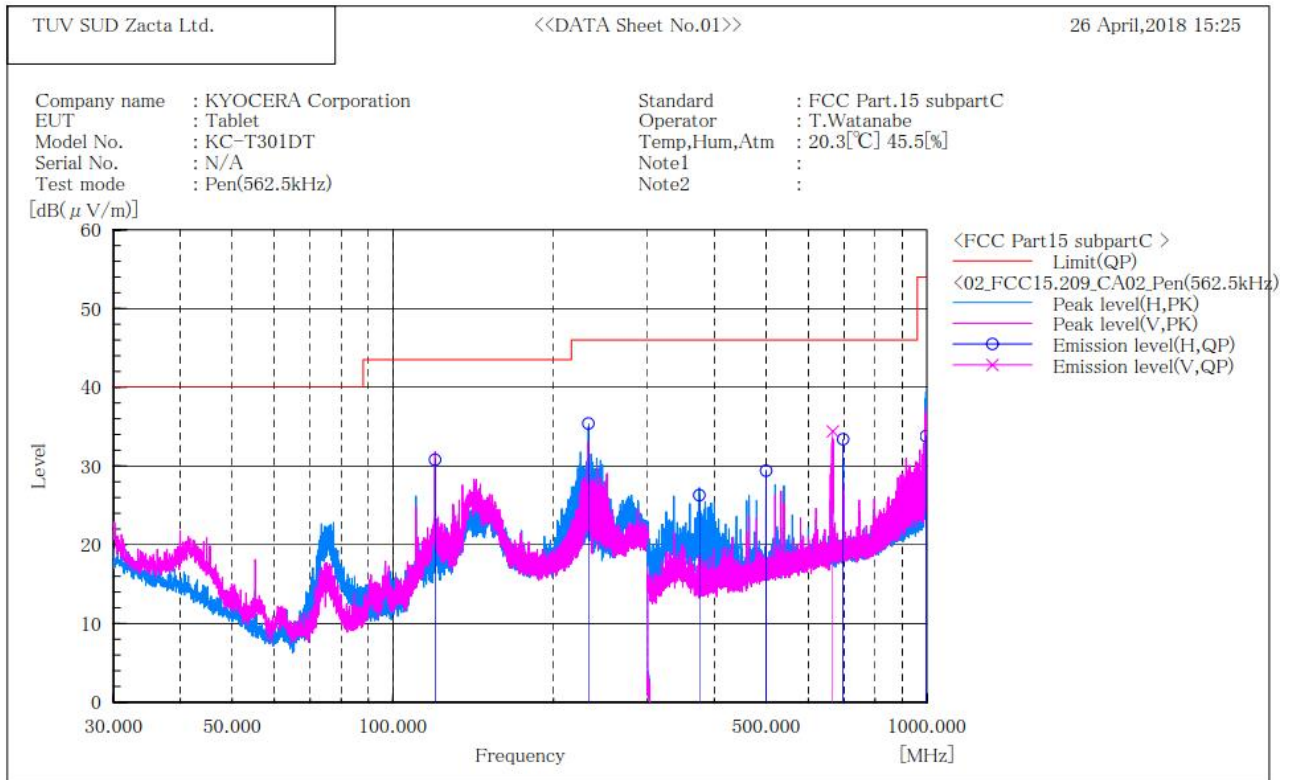
Frequency [MHz]	Reading [dBuV] At 3m	c.f [dB(1/m)]	Result [dBuV/m] At 3m	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Result
0.562	43.8	-7.1	36.7	-3.3	32.6	35.9	PASS
1.125	31.3	-7.0	24.3	-15.7	26.6	42.3	PASS

[9kHz to 30MHz]**593.75kHz (Eraser side) Output**

Frequency [MHz]	Reading [dBuV] At 3m	c.f [dB(1/m)]	Result [dBuV/m] At 3m	Result [dBuV/m]	Limit [dBuV/m]	Margin [dB]	Result
0.277	39.0	-7.1	31.9	-48.1	18.8	66.9	PASS
0.594	44.3	-7.0	37.3	-2.7	32.1	34.8	PASS
1.188	31.3	-7.0	24.3	-15.7	26.1	41.8	PASS

**[30MHz to 1000MHz]
562.5kHz (Pen side) Output**

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

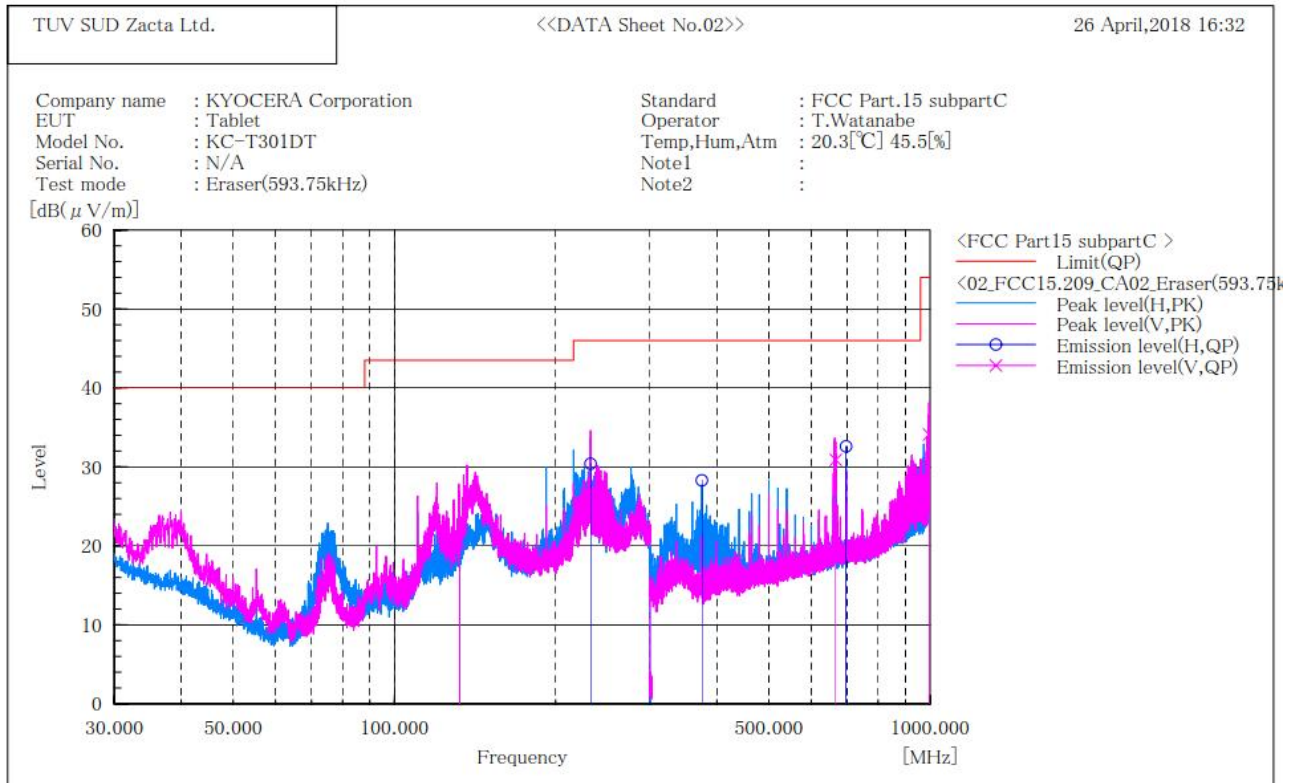


Final Result

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	119.990	H	42.8	-12.0	30.8	43.5	12.7	100.0	301.0
2	232.400	H	42.5	-7.1	35.4	46.0	10.6	187.0	54.0
3	375.002	H	38.0	-11.7	26.3	46.0	19.7	110.0	328.0
4	499.990	H	38.6	-9.2	29.4	46.0	16.6	100.0	23.0
5	666.670	V	40.9	-6.5	34.4	46.0	11.6	100.0	175.0
6	697.130	H	39.4	-6.0	33.4	46.0	12.6	170.0	351.0
7	996.400	H	34.7	-0.9	33.8	54.0	20.2	189.0	140.0

**[30MHz to 1000MHz]
593.75kHz (Eraser side) Output**

***** 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	132.400	V	31.4	-10.9	20.5	43.5	23.0	100.0	200.0
2	232.300	H	37.5	-7.1	30.4	46.0	15.6	100.0	274.0
3	375.005	H	40.0	-11.7	28.3	46.0	17.7	100.0	328.0
4	666.670	V	37.4	-6.5	30.9	46.0	15.1	100.0	182.0
5	697.131	H	38.6	-6.0	32.6	46.0	13.4	162.0	351.0
6	995.410	V	35.1	-1.0	34.1	54.0	19.9	192.0	10.0

5. AC Power Line Conducted Emissions

5.1 Measurement procedure [FCC 15.207]

Test was applied by following conditions.

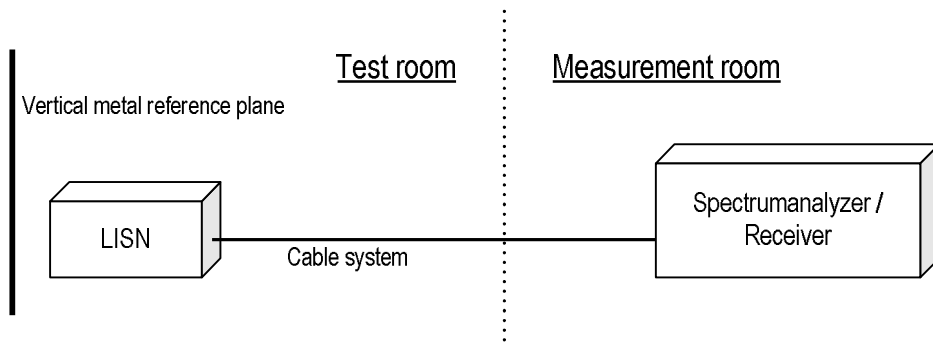
Test method	: ANSI C63.10
Frequency range	: 0.15MHz to 30MHz
Test place	: 10m Semi-anechoic chamber No.1
EUT was placed on	: FRP table / (W)2.0m × (D)1.0m × (H)0.8m
Vertical Metal Reference Plane	: (W)2.0m × (H)2.0m 0.4m away from EUT
Test receiver setting	
- Detector	: Quasi-peak, Average
- Bandwidth	: 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



5.2 Calculation method

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

Margin = Limit – Emission level

Example:

Limit @ 6.770MHz : 60.0dBμV(Quasi-peak)
: 50.0dBμV(Average)

(Quasi peak) Reading = 41.2dBμV c.f = 10.3dB
Emission level = 41.2 + 10.3 = 51.5dBμV
Margin = 60.0 – 51.5 = 8.5dB

(Average) Reading = 35.0dBμV c.f = 10.3dB
Emission level = 35.0 + 10.3 = 45.3dBμV
Margin = 50.0 – 45.3 = 4.7dB

5.3 Limit

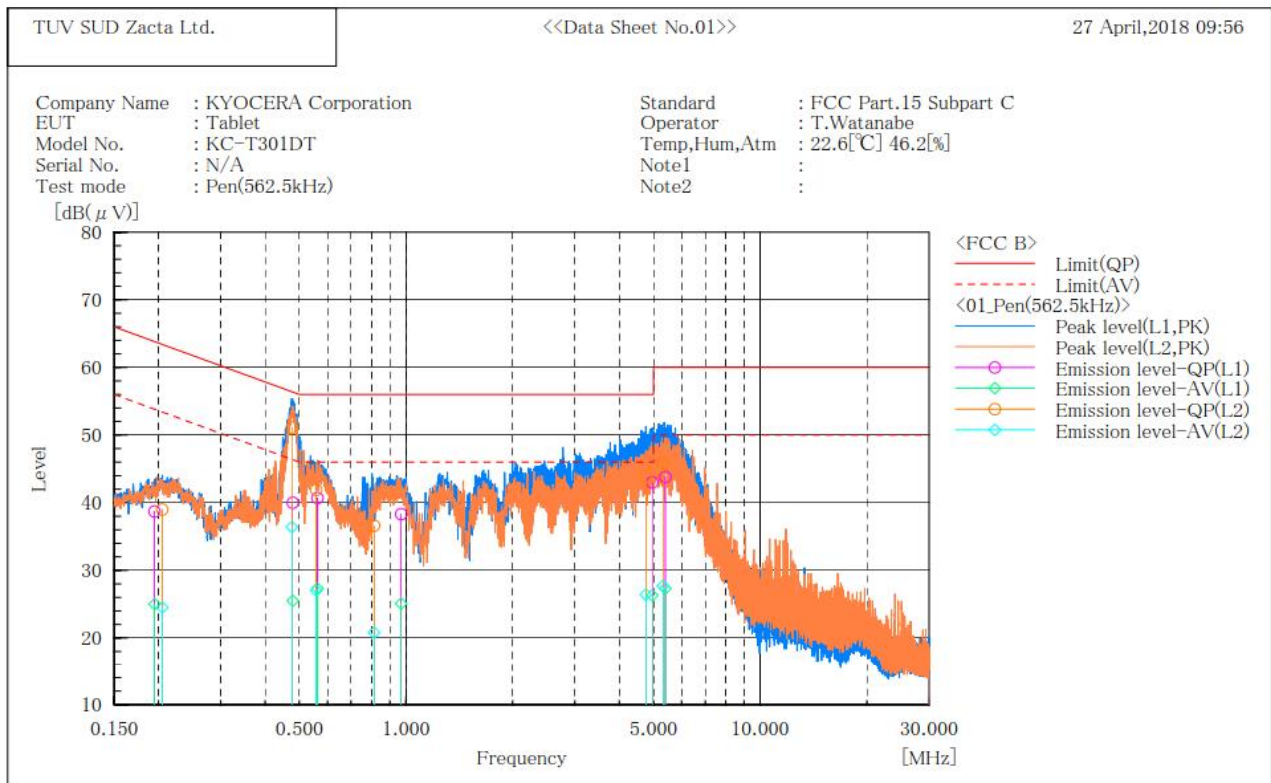
Frequency [MHz]	Limit	
	QP [dBuV]	AV [dBuV]
0.15-0.5	66-56*	56-46*
0.5-5	56	46
5-30	60	50

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

5.4 Test data

562.5kHz (Pen side) Output

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



Final Result

--- L1 Phase ---

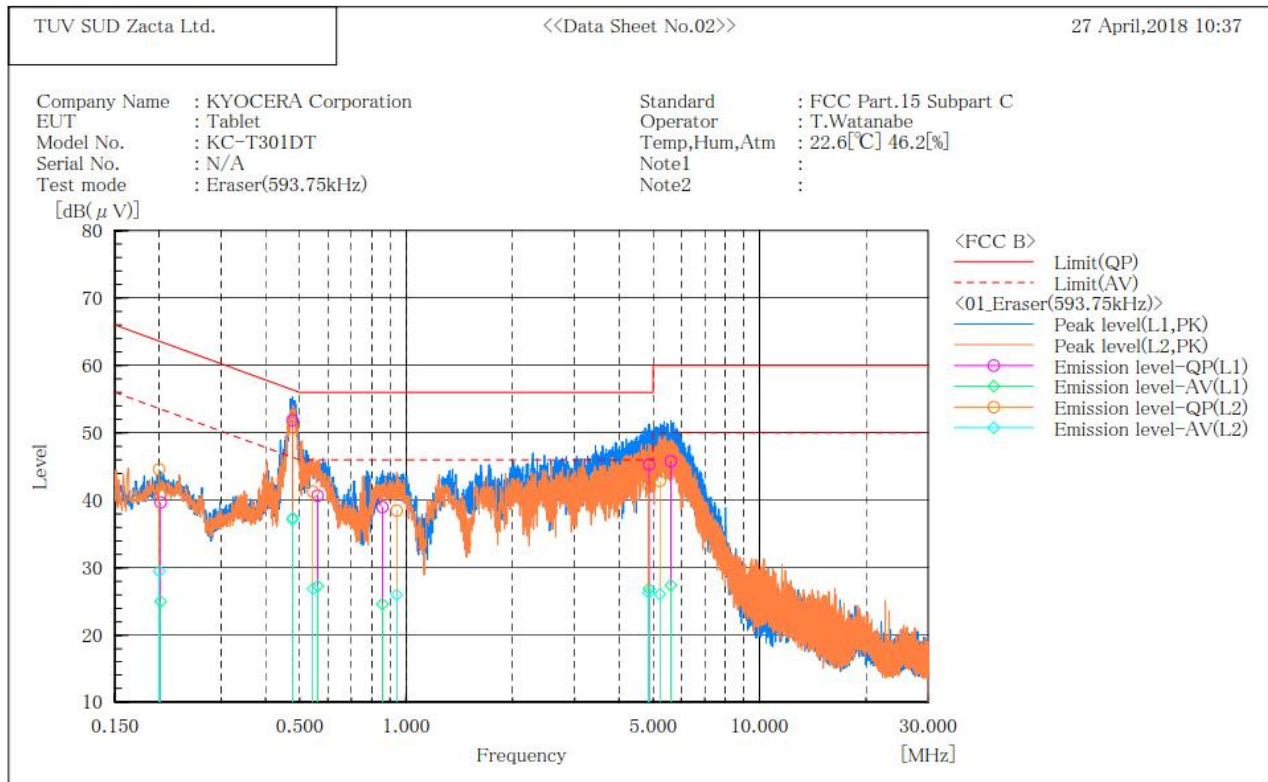
No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.195	28.2	14.5	10.5	38.7	25.0	63.8	53.8	25.1	28.8
2	0.479	29.6	15.1	10.4	40.0	25.5	56.4	46.4	16.4	20.9
3	0.562	30.3	16.9	10.4	40.7	27.3	56.0	46.0	15.3	18.7
4	0.969	27.9	14.7	10.4	38.3	25.1	56.0	46.0	17.7	20.9
5	4.959	32.3	15.6	10.7	43.0	26.3	56.0	46.0	13.0	19.7
6	5.398	33.1	16.6	10.7	43.8	27.3	60.0	50.0	16.2	22.7

--- L2 Phase ---

No.	Frequency [MHz]	Reading QP [dB(μV)]	Reading AV [dB(μV)]	c. f [dB]	Result QP [dB(μV)]	Result AV [dB(μV)]	Limit QP [dB(μV)]	Limit AV [dB(μV)]	Margin QP [dB]	Margin AV [dB]
1	0.205	28.5	14.0	10.5	39.0	24.5	63.4	53.4	24.4	28.9
2	0.476	40.7	26.0	10.4	51.1	36.4	56.4	46.4	5.3	10.0
3	0.558	31.5	16.6	10.4	41.9	27.0	56.0	46.0	14.1	19.0
4	0.813	26.2	10.4	10.4	36.6	20.8	56.0	46.0	19.4	25.2
5	4.755	33.2	15.7	10.7	43.9	26.4	56.0	46.0	12.1	19.6
6	5.318	35.2	17.0	10.7	45.9	27.7	60.0	50.0	14.1	22.3

593.75kHz (Eraser side) Output

***** 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
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.202	29.3	14.6	10.4	39.7	25.0	63.5	53.5	23.8	28.5
2	0.477	41.5	26.8	10.4	51.9	37.2	56.4	46.4	4.5	9.2
3	0.562	30.3	16.9	10.4	40.7	27.3	56.0	46.0	15.3	18.7
4	0.857	28.6	14.2	10.4	39.0	24.6	56.0	46.0	17.0	21.4
5	4.869	34.6	16.2	10.7	45.3	26.9	56.0	46.0	10.7	19.1
6	5.611	35.1	16.7	10.7	45.8	27.4	60.0	50.0	14.2	22.6

--- L2 Phase ---

No.	Frequency	Reading QP	Reading AV	c. f	Result QP	Result AV	Limit QP	Limit AV	Margin QP	Margin AV
	[MHz]	[dB(μV)]	[dB(μV)]	[dB]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB(μV)]	[dB]	[dB]
1	0.200	29.1	14.0	15.5	44.6	29.5	63.6	53.6	19.0	24.1
2	0.478	40.4	27.0	10.4	50.8	37.4	56.4	46.4	5.6	9.0
3	0.545	30.9	16.5	10.4	41.3	26.9	56.0	46.0	14.7	19.1
4	0.940	28.1	15.6	10.4	38.5	26.0	56.0	46.0	17.5	20.0
5	4.854	31.6	15.6	10.7	42.3	26.3	56.0	46.0	13.7	19.7
6	5.220	32.2	15.4	10.7	42.9	26.1	60.0	50.0	17.1	23.9

6. 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 measurement uncertainty considerations contained in ETSI TR 100 028-0011 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 – 18GHz)	$\pm 5.2\text{dB}$
Radiated emission (18GHz – 40GHz)	$\pm 5.8\text{dB}$



Zacta

7. Laboratory description

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) VLAC
Accreditation No.: VLAC-013
- 2) NVLAP
LAB CODE: 200306-0
- 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	2020-11-27
4224A-5	10m Semi-anechoic chamber No.1	2020-11-27
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

Radiated emission

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	Sep. 30, 2018	Sep. 13, 2017
Spectrum analyzer	Agilent Technologies	E4440A	US40420937	Oct. 31, 2018	Oct. 19, 2017
Preamplifier	SONOMA	310	372170	Sep. 30, 2018	Sep. 12, 2017
Loop antenna	ROHDE&SCHWARZ	HFH2-Z2	100515	Feb. 28, 2019	Feb. 20, 2018
Attenuator	TDC	TAT-43B-06	N/A(S209)	May 31, 2018	May 23, 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)	Jan. 31, 2019	Jan. 18, 2018
Attenuator	TME	CFA-01NPJ-3	N/A(S272)	Jan. 31, 2019	Jan. 18, 2018
Microwave cable	SUHNER	SUCOFLEX104/9m	MY30037/4	Jan. 31, 2019	Jan. 18, 2018
		SUCOFLEX104/1m	my24610/4	Jan. 31, 2019	Jan. 18, 2018
		SUCOFLEX104/8m	SN MY30031/4	Jan. 31, 2019	Jan. 18, 2018
		SUCOFLEX104/1.5m	MY32976/4	Jan. 31, 2019	Jan. 18, 2018
		SUCOFLEX104/1.5m	MY19309/4	Jan. 31, 2019	Jan. 19, 2018
		SUCOFLEX104/7m	41625/6	Jan. 31, 2019	Jan. 19, 2018
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
3m Semi an-echoic Chamber	TOKIN	N/A	N/A(9002-SVSWR)	May 31, 2018	May 31, 2017

Conducted emission at mains port

Equipment	Company	Model No.	Serial No.	Cal. due	Cal. date
EMI Receiver	ROHDE&SCHWARZ	ESCI	100765	Sep. 30, 2018	Sep. 13, 2017
Attenuator	HUBER+SUHNER	6810.01.A	N/A(S411)	Jan. 31, 2019	Jan. 18, 2018
Line impedance stabilization network for EUT	Kyoritsu Electrical Works, Ltd.	KNW-407F	8-2003-1	Feb. 28, 2019	Feb. 28, 2018
Line impedance stabilization network	Kyoritsu Electrical Works, Ltd.	KNW-242F	8-1096-3	Jul. 31, 2018	Jul. 4, 2017
Coaxial cable	FUJIKURA	5D-2W/4m	N/A(S350)	Jan. 31, 2019	Jan. 18, 2018
Coaxial cable	FUJIKURA	5D-2W/1m	N/A(S193)	Jan. 31, 2019	Jan. 18, 2018
Coaxial cable	HUBER+SUHNER	RG214/U/10m	N/A(S194)	Jan. 31, 2019	Jan. 18, 2018
50Ω terminator	RS	090-0510	N/A(S058)	Jan. 31, 2019	Jan. 17, 2018
PC	DELL	DIMENSION E521	75465BX	N/A	N/A
Software	TOYO Corporation	EP5/CE-AJ	0611193/V5.4.11	N/A	N/A
3m Semi-anechoic Chamber	TOKIN	N/A	N/A(9002-NSA)	May 31, 2018	May 30, 2017

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