FCC PART 15C TEST REPORT FOR CERTIFICATION On Behalf of

Chunghsin Technology Group CO.,LTD

10.1" Android Tablet

Model Number: ONA19TB003

FCC ID: 2AE2WT1015M

Prepared for:	Chunghsin Technology Group CO.,LTD		
	No. 618-2 GONGREN WEST ROAD, JIAOJIANG AREA, TAIZHOU CITY,		
	ZHEJIANG, CHINA		
Prepared By:	EST Technology Co., Ltd.		
Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong, China			
	Tel: 86-769-83081888-808		

Report Number:	ESTE-R1901044
Date of Test:	Dec. 11, 2018~Jan. 17, 2019
Date of Report:	Jan. 17, 2019



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EST Technology Co., Ltd.

Applicant: Address:	Chunghsin Technology C No. 618-2 GONGREN W ZHEJIANG, CHINA		IANG AREA, TAIZHOU CITY,		
Manufacturer: Address:	Chunghsin Technology Group CO.,LTD No. 618-2 GONGREN WEST ROAD, JIAOJIANG AREA, TAIZHOU CITY, ZHEJIANG, CHINA				
E.U.T:	10.1" Android Tablet				
Model Number:	ONA19TB003				
Power Supply:	DC 5V From Adapter Inp DC 3.7V From battery	out AC 100~240V, 50	0/60Hz, 0.3A		
Test Voltage:	DC 5V From Adapter Inp DC 5V From Adapter Inp				
Trade Name:	onn	Serial No.:			
Date of Receipt:	Dec. 11, 2018	Date of Test:	Dec. 11, 2018~Jan. 17, 2019		
Test Specification:	FCC Rules and Regulation ANSI C63.10:2013	ons Part 15 Subpart C	C:2018		
Test Result:	The device described above is tested by EST Technology Co., Ltd. The measurement results were contained in this test report and EST Technology Co., Ltd. was assumed full responsibility for the accuracy and completeness of these measurements. Also, this report shows that the EUT to be technically compliance with the FCC Rules and Regulations Part 15 Subpart C requirements.				
	This report applies to above tested sample only and shall not be reproduced in part without written approval of EST Technology Co., Ltd.				
Prepared by:	Reviewed	by:	Approved by:		
Ry	Long		* * * * * * * * * * * * * * * * * * *		
Ring / Assistant	Tony / Engine	eer	Iceman Hu / Manager		
Other Aspects: None.	*	-			
Abbreviations: OK/P=pas	ssed fail/F=failed n.a/l	V=not applicable E.	U.T=equipment under tested		

This test report is based on a single evaluation of one sample of above mentioned products, It is not permitted to be duplicated in extracts without written approval of EST Technology Co., Ltd.

1. GENERAL INFORMATION

1.1. Description of Device (EUT)

Product Name	:	10.1" Android Tablet
FCC ID	:	2AE2WT1015M
Model Number	:	ONA19TB003
Operation frequency	:	2402MHz~2480MHz
Number of channel	:	40
Antenna	:	Internal antenna (Antenna Gain: 1.32 dBi)
Modulation	:	BLE: GFSK
Sample Type	:	Prototype production



2. SUMMARY OF TEST

2.1. Summary of test result

Description of Test Item	Standard	Results
Power Line Conducted Emission	FCC Part 15: 15.207	PASS
	ANSI C63.10:2013	
	FCC Part 15: 15.209	
Radiated Emission	ANSI C63.10:2013	PASS
	KDB 558074	
	FCC Part 15: 15.247	
Band Edge Compliance	ANSI C63.10:2013	PASS
	KDB 558074	
	FCC Part 15: 15.247	
6dB Bandwidth	ANSI C63.10:2013	PASS
	KDB 558074	
	FCC Part 15: 15.247	
Peak Output Power	ANSI C63.10:2013	PASS
	KDB 558074	
	FCC Part 15: 15.247	
Power Spectral Density	ANSI C63.10:2013	PASS
	KDB 558074	
Antenna requirement	FCC Part 15: 15.203	PASS

Note: KDB 558074 D01 15.247 Meas Guidance v05



2.2. Test Facilities

EMC Lab

: Certificated by CNAS, CHINA

Registration No.: L5288

Date of registration: November 13, 2017

Certificated by FCC, USA Designation Number: CN1215

Test Firm Registration Number: 722932 Date of registration: November 21, 2017

Certificated by A2LA, USA Registration No.: 4366.01

Date of registration: November 07, 2017

Certificated by Industry Canada CAB identifier No.: CN0035

Date of registration: January 04, 2019

Certificated by VCCI, Japan

Registration No.: R-13663; C-14103 Date of registration: July 25, 2017

This Certificate is valid until: July 24, 2020

Certificated by TUV Rheinland, Germany Registration No.: UA 50413872 0001 Date of registration: July 31, 2018

Certificated by TUV/PS, Shenzhen

Registration No.: SCN1017

Date of registration: January 27, 2011

Certificated by Intertek ETL SEMKO Registration No.: 2011-RTL-L2-64 Date of registration: April 28, 2011

Certificated by Nemko, Hong Kong

Registration No.: 175193

Date of registration: May 4, 2011

Name of Firm : EST Technology Co., Ltd.

Site Location : Chilingxiang, Qishantou, Santun, Houjie, Dongguan, Guangdong,

China



2.3. Measurement uncertainty

Test Item	Uncertainty		
Uncertainty for Conduction emission test	±3.48dB		
Uncertainty for spurious emissions test	±4.60 dB(Polarize: H)		
(30MHz-1GHz)	±4.68 dB(Polarize: V)		
Uncertainty for spurious emissions test (1GHz to 18GHz)	±4.96dB		
Uncertainty for radio frequency	7×10 ⁻⁸		
Uncertainty for conducted RF Power	0.20dB		
Uncertainty for Power density test	0.26dB		

Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

2.4. Assistant equipment used for test

2.4.1. Adapter

Manufacturer : onn

M/N : BSY01J3050200U U

Input : AC 100-240V, 50/60Hz, 0.3A

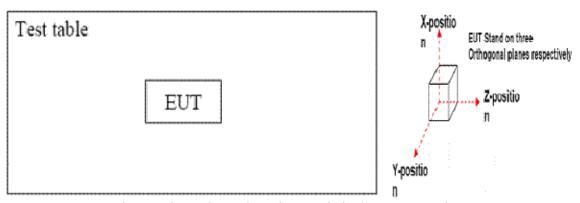
Output : DC 5.0V, 2.0A

2.5. Block Diagram

For radiated emissions test: EUT was placed on a turn table, which is 0.8 (or 1.5) meter high above ground. EUT was beset into Bluetooth test mode by software before test.



(EUT: 10.1" Android Tablet)



Note: We test X-axis, Y-axis, and Z-axis,. The Y-axis is the worst mode, so only theworst mode test data was included in the report.



2.6. Test mode

A special test software was used to control EUT work in Continuous TX mode(100% duty cycle), and select test channel, wireless mode and data rate.

Mode	Channel	Frequency
BT 4.0-BLE GFSK	Low	2402MHz
	Middle	2440MHz
	High	2480MHz

2.7. Channel List

Channel No.	Frequency (MHz)	Channel No.	Frequency (MHz)
1	2402	2	2404
3	2406	4	2408
5	2410	6	2412
7	2414	8	2416
9	2418	10	2420
11	2422	12	2424
13	2426	14	2428
15	2430	16	2432
17	2434	18	2436
19	2438	20	2440
21	2442	22	2444
23	2446	24	2448
25	2450	26	2452
27	2454	28	2456
29	2458	30	2460
31	2462	32	2464
33	2466	34	2468
35	2470	.470 36 2472	
37	2474	38	2476
39	2478	40	2480

2.8. Test Equipment

2.8.1. For conducted emission test

Equipment	Manufacturer	Model No.	Serial No.	Calibration	Last Cal.	Next Cal.
				Body		
EMI Test Receiver	Rohde	ESHS30	832354	CEPREI	June 15,18	1 Year
	& Schwarz					
Artificial Mains Network	Rohde	ENV216	101260	CEPREI	June 15,18	1 Year
	& Schwarz					
Pulse Limiter	Rohde	ESH3-Z2	101100	CEPREI	June 15,18	1 Year
	& Schwarz					
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

2.8.2. For radiated emission test(9 kHz-30MHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration	Last Cal.	Next Cal.
				Body		
EMI Test	Rohde	ESR7	101780	CEPREI	June 15,18	1 Year
Receiver	& Schwarz					
Active Loop Antenna	SCHWAREB	FMZB 1519B	1519B-088	N/A	Aug. 01,18	1 Year
	ECK					
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

2.8.3. For radiated emissions test (30-1000MHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration	Last Cal.	Next Cal.
				Body		
EMI Test	Rohde	ESR7	101780	CEPREI	June 15,18	1 Year
Receiver	& Schwarz					
Bilog Antenna	Teseq	CBL 6111D	27090	CEPREI	June 15,18	1 Year
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A

2.8.4. For radiated emission test(above 1GHz)

Equipment	Manufacturer	Model No.	Serial No.	Calibration	Last Cal.	Next Cal.
				Body		
Horn Antenna	SCHWARZB	BBHA 9120 D	BBHA912	CEPREI	June 18,18	1 Year
	ECK		0D1002			
Horn Antenna	SCHWARZB	BBHA9170	BBHA917	CEPREI	June 18,18	1Year
	ECK		0242			
Signal Amplifier	SCHWARZB	BBV9718	9718-212	CEPREI	June 15,18	1 Year
	ECK					
Spectrum Analyzer	Rohde	FSV	103173	CEPREI	June 15,18	1 Year
	&Schwarz					
PSA Series Spertrum	Agilent	E4447A	MY50180	CEPREI	June 15,18	1Year
Analyzer			031			
Test Software	Audix	e3-6.111221a	N/A	N/A	N/A	N/A



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2.8.5. For connect EUT antenna terminal test

Equipment	Manufacturer	Model No.	Serial No.	Calibration Body	Last Cal.	Next Cal.
Nectrum Analyzer	Rohde &Schwarz	FSV	103173	CEPREI	June 15,18	1 Year
Spectrum Analyzer	Agilent	E4408B	MY44211 139	CEPREI	June 15,18	1 Year



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3 POWER LINE CONDUCTED EMISSION TEST

3.1Limit

	Maximum RF	Line Voltage
Frequency	Quasi-Peak Level	Average Level
	dB(µV)	dB(µV)
150kHz ~ 500kHz	66 ~ 56*	56 ~ 46*
$500kHz \sim 5MHz$	56	46
5MHz ~ 30MHz	60	50

Notes: 1. * Decreasing linearly with logarithm of frequency.

3.2 Test Procedure

The EUT was placed on a non-metallic table, 80cm above the ground plane. The EUT Power connected to the power mains through a line impedance stabilization network (L.I.S.N. 1#). This provides a 50 ohm coupling impedance for the EUT (Please refer the block diagram of the test setup and photographs). The AC line are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10: 2013 on Conducted Emission Test.

The bandwidth of test receiver (R & S ESHS30) is set at 10kHz.

The frequency range from 150kHz to 30MHz is checked.

3.3. Test Result

PASS. (All emissions not reported below are too low against the prescribed limits.)



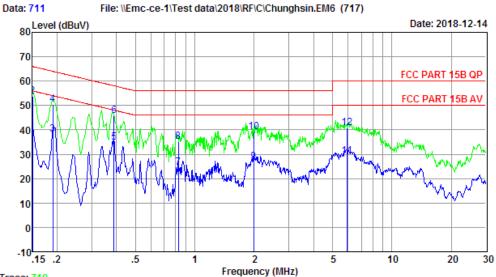
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^{2.} The lower limit shall apply at the transition frequencies.

3.4. Test data

EST Technology

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Trace: 710

Site no : 844 Shield Room

Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : LINE

: FCC PART 15B QP Limit

Engineer : WS

: 10.1"Android Tablet EUT

Power : DC 5V From Adapter Input AC 120V/60Hz

: ONA19TB003 M/N Test Mode : TX Mode

	Freq.	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuv)	Limits (dBuv)	Margin (dB)	Remark
1	0.150	9.72	0.04	29.17	38.93	56.00	17.07	Average
2	0.150	9.72	0.04	43.89	53.65	66.00	12.35	QP
3	0.190	9.71	0.04	28.44	38.19	54.02	15.83	Average
4	0.190	9.71	0.04	40.85	50.60	64.02	13.42	QP
5	0.389	9.74	0.05	24.98	34.77	48.08	13.31	Average
6	0.389	9.74	0.05	35.93	45.72	58.08	12.36	QP
7	0.826	9.76	0.05	14.64	24.45	46.00	21.55	Average
8	0.826	9.76	0.05	25.28	35.09	56.00	20.91	QP
9	1.991	9.78	0.06	17.00	26.84	46.00	19.16	Average
10	1.991	9.78	0.06	29.18	39.02	56.00	16.98	QP
11	5.929	9.85	0.07	19.16	29.08	50.00	20.92	Average
12	5.929	9.85	0.07	30.94	40.86	60.00	19.14	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.

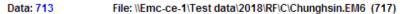
- 2. Margin= Limit Emission Level.
- 3. If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

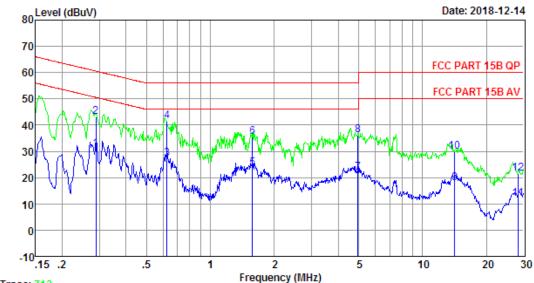
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Trace: 712

Site no : 844 Shield Room Data no. : 713

Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : NEUTRAL

Limit : FCC PART 15B QP

Engineer : WS

EUT : 10.1"Android Tablet

Power : DC 5V From Adapter Input AC 120V/60Hz

M/N : ONA19TB003 Test Mode : TX Mode

	Freq. (MHz)	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuv)	Limits (dBuv)	Margin (dB)	Remark
1	0.289	9.55	0.04	21.42	31.01	50.54	19.53	Average
2	0.289	9.55	0.04	33.59	43.18	60.54	17.36	QP
3	0.624	9.57	0.05	17.43	27.05	46.00	18.95	Average
4	0.624	9.57	0.05	31.80	41.42	56.00	14.58	QP
5	1.577	9.59	0.06	13.73	23.38	46.00	22.62	Average
6	1.577	9.59	0.06	25.95	35.60	56.00	20.40	QP
7	4.952	9.65	0.07	12.28	22.00	46.00	24.00	Average
8	4.952	9.65	0.07	26.49	36.21	56.00	19.79	QP
9	14.213	9.74	0.08	8.17	17.99	50.00	32.01	Average
10	14.213	9.74	0.08	19.93	29.75	60.00	30.25	QP
11	28.302	9.71	0.09	2.02	11.82	50.00	38.18	Average
12	28.302	9.71	0.09	11.74	21.54	60.00	38.46	QP

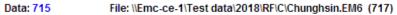
Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.

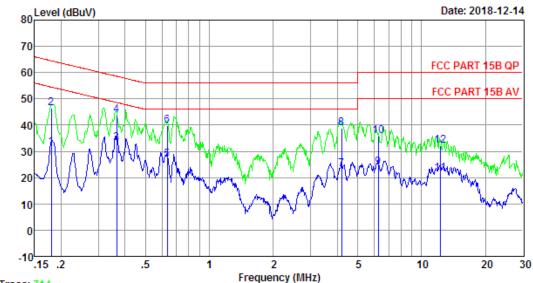
- 2. Margin= Limit Emission Level.
- If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.

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Trace: 714

Site no : 844 Shield Room Data no. : 715

Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : LINE

Limit : FCC PART 15B QP

Engineer : WS

EUT : 10.1"Android Tablet

Power : DC 5V From Adapter Input AC 240V/50Hz

M/N : ONA19TB003 Test Mode : TX Mode

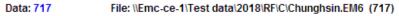
	Freq.	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuv)	Limits (dBuv)	Margin (dB)	Remark
1	0.180	9.71	0.04	21.76	31.51	54.50	22.99	Average
2	0.180	9.71	0.04	36.69	46.44	64.50	18.06	QP
3	0.365	9.74	0.05	23.28	33.07	48.61	15.54	Average
4	0.365	9.74	0.05	33.87	43.66	58.61	14.95	QP
5	0.634	9.76	0.05	16.90	26.71	46.00	19.29	Average
6	0.634	9.76	0.05	29.98	39.79	56.00	16.21	QP
7	4.202	9.82	0.07	13.29	23.18	46.00	22.82	Average
8	4.202	9.82	0.07	28.96	38.85	56.00	17.15	QP
9	6.252	9.86	0.07	13.91	23.84	50.00	26.16	Average
10	6.252	9.86	0.07	25.97	35.90	60.00	24.10	QP
11	12.253	9.94	0.08	11.69	21.71	50.00	28.29	Average
12	12.253	9.94	0.08	22.09	32.11	60.00	27.89	QP

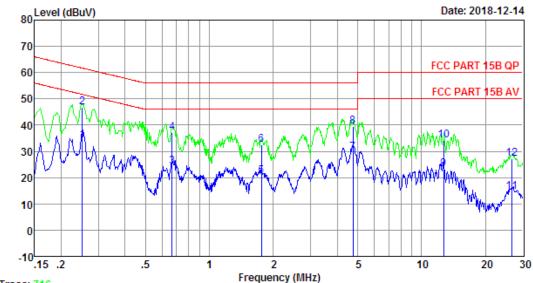
Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.

- 2. Margin= Limit Emission Level.
- If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



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Trace: 716

Site no : 844 Shield Room Data no. : 717

Env. / Ins. : Temp:24.8°C Humi:55% Press:101.50kPa LINE Phase : NEUTRAL

Limit : FCC PART 15B QP

Engineer : WS

EUT : 10.1"Android Tablet

Power : DC 5V From Adapter Input AC 240V/50Hz

M/N : ONA19TB003 Test Mode : TX Mode

	Freq.	LISN Factor (dB)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuv)	Limits (dBuv)	Margin (dB)	Remark
1	0.252	9.54	0.04	24.73	34.31	51.69	17.38	Average
2	0.252	9.54	0.04	37.08	46.66	61.69	15.03	QP
3	0.668	9.58	0.05	14.72	24.35	46.00	21.65	Average
4	0.668	9.58	0.05	27.64	37.27	56.00	18.73	QP
5	1.762	9.59	0.06	10.78	20.43	46.00	25.57	Average
6	1.762	9.59	0.06	22.93	32.58	56.00	23.42	QP
7	4.746	9.65	0.07	19.84	29.56	46.00	16.44	Average
8	4.746	9.65	0.07	29.72	39.44	56.00	16.56	QP
9	12.716	9.71	0.08	13.28	23.07	50.00	26.93	Average
10	12.716	9.71	0.08	24.39	34.18	60.00	25.82	QP
11	26.699	9.71	0.09	4.79	14.59	50.00	35.41	Average
12	26.699	9.71	0.09	17.29	27.09	60.00	32.91	QP

Remarks: 1. Emission Level= LISN Factor + Cable Loss + Reading.

- 2. Margin= Limit Emission Level.
- If the average limit is met when useing a quasi-peak detector, the EUT shall be deemed to meet both limits and measurement with average detector is unnecessary.



4 RADIATED EMISSION TEST

4.1 Limit

4.1.1 15.209 limits

Frequency (MHz)	Field Strength(μV/m)	Distance(m)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Remark : (1) Emission level $dB\mu V = 20 \log Emission level \mu V/m$

- (2) The smaller limit shall apply at the cross point between two frequency bands.
- (3) Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.

4.1.2 15.205 Restricted bands of operation

MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
¹ 0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.6 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2690 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	(²)

All the emissions appearing within 15.205 restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits.

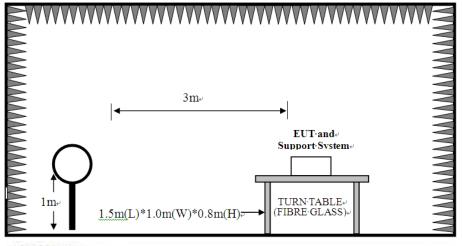
Report No. ESTE-R1901044



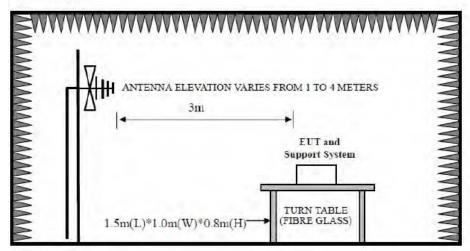
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4.2. Block Diagram of Test setup

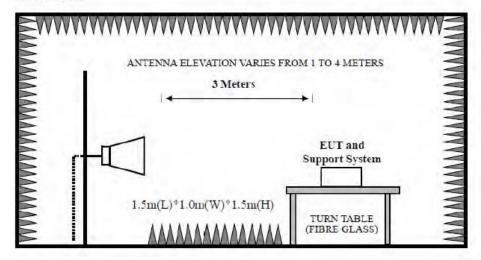
9kHz~30MHz



30~1000MHz



Above 1GHz





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4.3. Test Procedure

EUT was placed on a turn table, which is 0.8 meter high above ground for 9kHz~1000MHz test, and which is 1.5 meter high above ground for above 1GHz test. The turn table can rotate 360 degrees to determine the position of the maximum emission level. Power on the EUT and let it working in test mode, then test it. EUT is set 3 meters away from the receiving antenna, which is mounted on a antenna tower. The antenna can be moved up and down between 1 meter and 4 meters to find out the maximum emission level. Both horizontal and vertical polarization of the antenna are set on test.

The test frequency analyzer system was set to Peak Detect (300Hz RBW in 9kHz to 150kHz and 10kHz RBW in 150kHz to 30MHz) Function and Specified Bandwidth with Maximum Hold Mode.

The bandwidth of the EMI test receiver (R&S ESVS10) is set at 120kHz for frequency range from 30MHz to 1000 MHz.

The bandwidth of the Spectrum's VBW is set at 1MHz and RBW is set at 1MHz for peak emissions measurement above 1GHz and 1MHz RBW, 10Hz VBW for average emissions measure above 1GHz PEAK detector, 1MHz/1MHz for PAEK measurement, PEAK detector, 1MHz/10Hz for Average measurement

The frequency range from 30MHz to 10th harmonic (25GHz) are checked.

4.4. Test Result

PASS.

All the emissions from 30MHz to 25 GHz were comply with 15.209 limits.

- Note: 1. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.
 - 2. The frequency 2402MHz . 2440MHz and 2480 MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

Report No. ESTE-R1901044



4.5. Test Data

9 kHz – 30 MHz

Pass

Note: The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.



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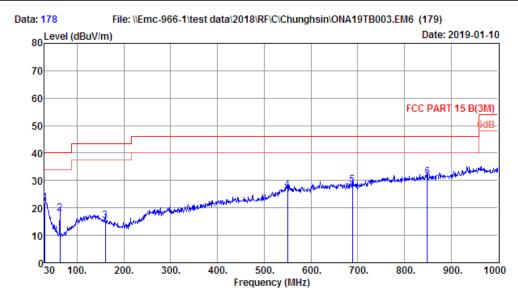
Report No.ESTE-R1901044

30-1000 MHz

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Site no. : 1# 966 Chamber Data no. : 178
Dis. / Ant. : 3m 27090 Ant. pol. : VERTICAL

Limit : FCC PART 15 B(3M)

Env. / Ins. : Temp:21.6'; Humi:50.3%; Press:101.52kPa

Engineer : Maybe

EUT : 10.1" Android Tablet

Power : DC 5V From Adapter Input AC 120V/60Hz

M/N : ONA19TB003 Test Mode : TX Mode

	Freq.	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.97	18.48	0.20	3.03	21.71	40.00	18.29	QP
2	62.98	5.06	0.42	12.54	18.02	40.00	21.98	QP
3	159.98	10.30	1.04	4.13	15.47	43.50	28.03	QP
4	549.92	20.90	2.43	3.30	26.63	46.00	19.37	QP
5	688.63	20.92	2.72	4.74	28.38	46.00	17.62	QP
6	848.68	23.78	3.17	4.32	31.27	46.00	14.73	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

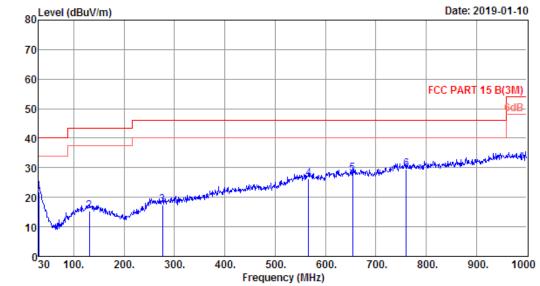
- 2. Margin= Limit Emission Level.
- 3. The emission levels that are 20dB below the official limit are not reported.

Report No. ESTE-R1901044



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File: \\Emc-966-1\test data\2018\RF\C\Chunghsin\ONA19TB003.EM6 (179) Data: 179



: 1# 966 Chamber Data no. : 179 Site no. Ant. pol. : HORIZONTAL Dis. / Ant. : 3m 27090

: FCC PART 15 B(3M) Limit

Env. / Ins. : Temp:21.6'; Humi:50.3%; Press:101.52kPa

Engineer : Maybe

EUT

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 Test Mode : TX Mode

	Freq.	ANT Factor (dB/m)	Cable Loss (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	30.00	19.00	0.19	2.66	21.85	40.00	18.15	QP
2	130.88	11.77	0.91	2.71	15.39	43.50	28.11	QP
3	276.38	12.84	1.55	3.15	17.54	46.00	28.46	QP
4	566.41	20.70	2.46	3.04	26.20	46.00	19.80	QP
5	653.71	20.99	2.73	4.32	28.04	46.00	17.96	QP
6	760.41	22.84	3.02	3.66	29.52	46.00	16.48	QP

Remarks: 1. Emission Level= Antenna Factor + Cable Loss + Reading.

- 2. Margin= Limit Emission Level.
- 3. The emission levels that are 20dB below the official limit are not reported.

Report No.ESTE-R1901044



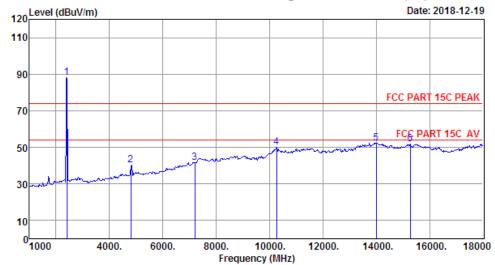
1000-18000MHz

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Fax:+86-769-83081878

File: \\Emc-966-1\test data\2018\RF\C\Chunghsin\ONA19TB003.EM6 (170) Data: 33



Site no. : site Data no. : 33 : 3m ANT9120D 1-18G Dis. / Ant. Ant. pol. : HORIZONTAL

: FCC PART 15C PEAK

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Seven

: 10.1" Android Tablet

: DC 5V From Adapter Input AC 120V/60Hz : ONA19TB003 Power

M/N Test Mode : GFSK TX 2402MHz

	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2402.00	27.35	3.21	34.94	92.64	88.26	74.00	-14.26	Peak
2	4804.00	32.06	4.67	35.06	38.84	40.51	74.00	33.49	Peak
3	7206.00	36.56	5.99	33.45	32.43	41.53	74.00	32.47	Peak
4	10265.00	39.21	9.98	34.39	35.41	50.21	74.00	23.79	Peak
5	14005.00	41.70	10.13	32.88	33.31	52.26	74.00	21.74	Peak
6	15280.00	39.86	10.97	32.84	33.74	51.73	74.00	22.27	Peak

Report No. ESTE-R1901044

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.

- 2. Margin= Limit Emission Level.
- 3. The emission levels that are 20dB below the official limit are not reported.

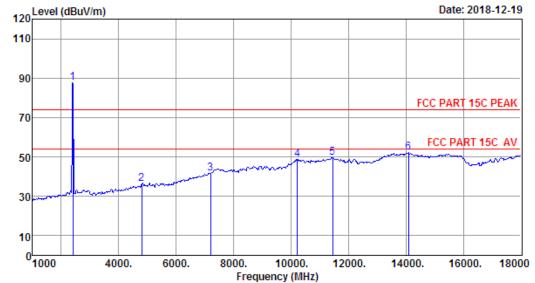


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Data no. : 34 Site no. : 1# 966 Chamber Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Seven

EUT

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 Test Mode : GFSK TX 2402MHz

	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	-	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2402.00	27.35	3.21	34.94	91.93	87.55	74.00	-13.55	Peak
2	4804.00	32.06	4.67	35.06	34.50	36.17	74.00	37.83	Peak
3	7206.00	36.56	5.99	33.45	32.51	41.61	74.00	32.39	Peak
4	10214.00	39.19	9.77	34.43	34.29	48.82	74.00	25.18	Peak
5	11455.00	40.08	8.28	32.62	33.71	49.45	74.00	24.55	Peak
6	14090.00	41.61	10.14	32.99	33.50	52.26	74.00	21.74	Peak

Report No.ESTE-R1901044

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.

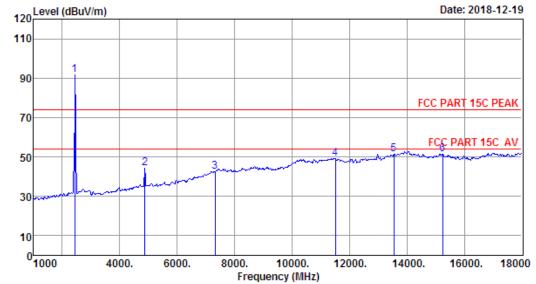
2. Margin= Limit - Emission Level.

3. The emission levels that are 20dB below the official limit are not reported.



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Data: 35 File: \\Emc-966-1\test data\2018\RF\C\Chunghsin\ONA19TB003.EM6 (170)



Data no. : 35 Site no. : 1# 966 Chamber

Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Seven

EUT

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 Test Mode : GFSK TX 2440MHz

	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2440.00	27.48	3.26	35.07	96.04	91.71	74.00	-17.71	Peak
2	4880.00	32.18	4.73	35.14	42.67	44.44	74.00	29.56	Peak
3	7320.00	36.82	6.10	33.28	32.86	42.50	74.00	31.50	Peak
4	11506.00	40.10	8.28	32.55	33.50	49.33	74.00	24.67	Peak
5	13546.00	41.34	9.73	32.54	32.77	51.30	74.00	22.70	Peak
6	15246.00	39.91	10.99	32.91	33.56	51.55	74.00	22.45	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.

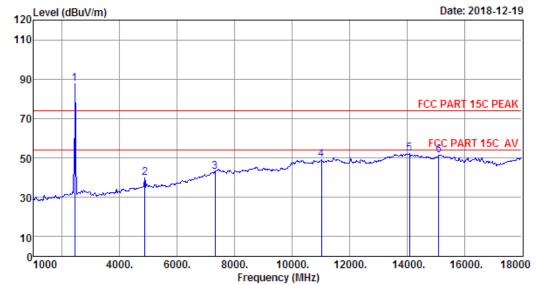
2. Margin= Limit - Emission Level.

3. The emission levels that are 20dB below the official limit are not reported.



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Data no. : 36 Site no. : 1# 966 Chamber Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Seven

EUT

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 Test Mode : GFSK TX 2440MHz

	Freq. (MHz)	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2440.00	27.48	3.26	35.07	92.00	87.67	74.00	-13.67	Peak
2	4880.00	32.18	4.73	35.14	38.17	39.94	74.00	34.06	Peak
3	7320.00	36.82	6.10	33.28	33.32	42.96	74.00	31.04	Peak
4	11030.00	39.91	8.55	33.39	33.87	48.94	74.00	25.06	Peak
5	14090.00	41.61	10.14	32.99	33.34	52.10	74.00	21.90	Peak
6	15110.00	40.13	10.87	33.19	33.61	51.42	74.00	22.58	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.

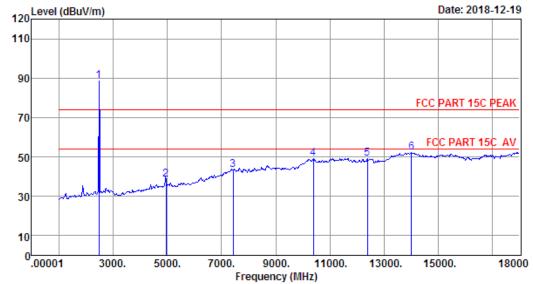
2. Margin= Limit - Emission Level.

3. The emission levels that are 20dB below the official limit are not reported.



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File: \\Emc-966-1\test data\2018\RF\C\Chunghsin\ONA19TB003.EM6 (170) Data: 37



Site no. : 1# 966 Chamber Data no. : 37 Ant. pol. : VERTICAL Dis. / Ant. : 3m ANT9120D 1-18G

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Seven

EUT

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 Test Mode : GFSK TX 2480MHz

	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.00	27.56	3.29	35.21	93.07	88.71	74.00	-14.71	Peak
2	4960.00	32.34	4.80	35.24	36.76	38.66	74.00	35.34	Peak
3	7440.00	37.09	6.13	33.08	33.42	43.56	74.00	30.44	Peak
4	10384.00	39.25	10.00	34.26	33.98	48.97	74.00	25.03	Peak
5	12390.00	39.32	8.51	32.68	34.20	49.35	74.00	24.65	Peak
6	14005.00	41.70	10.13	32.88	33.11	52.06	74.00	21.94	Peak

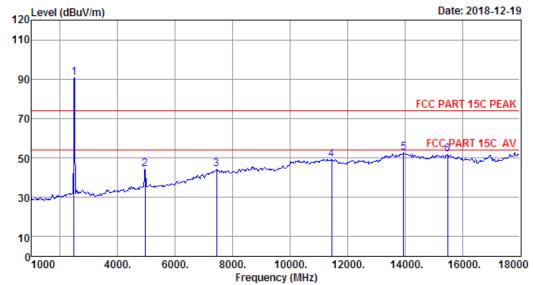
Report No.ESTE-R1901044

- 2. Margin= Limit Emission Level.
- 3. The emission levels that are 20dB below the official limit are not reported.



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Data no. : 38 Site no. : 1# 966 Chamber

Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Seven

EUT

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 Test Mode : GFSK TX 2480MHz

	Freq.	Ant. Factor (dB/m)	Cable Loss (dB)	Amp Factor (dB)	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2480.00	27.56	3.29	35.21	95.12	90.76	74.00	-16.76	Peak
2	4960.00	32.34	4.80	35.24	42.27	44.17	74.00	29.83	Peak
3	7440.00	37.09	6.13	33.08	33.99	44.13	74.00	29.87	Peak
4	11455.00	40.08	8.28	32.62	33.58	49.32	74.00	24.68	Peak
5	13954.00	41.66	10.12	32.84	33.55	52.49	74.00	21.51	Peak
6	15484.00	39.53	10.87	32.41	33.81	51.80	74.00	22.20	Peak

- 2. Margin= Limit Emission Level.
- 3. The emission levels that are 20dB below the official limit are not reported.



18000MHz - 25000MHz

Pass

Note: The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.



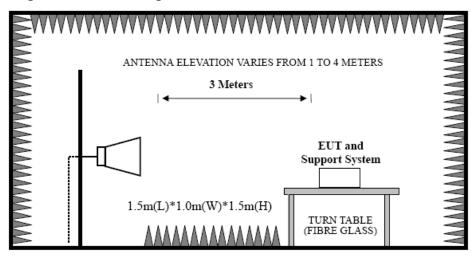
Report No.ESTE-R1901044

5 BAND EDGE COMPLIANCE TEST

5.1 Limit

All the lower and upper band-edges emissions appearing within 2310MHz to 2390MHz and 2483.5MHz to 2500MHz restricted frequency bands shall not exceed the limits shown in 15.209, all the other emissions outside operation frequency band 2400MHz to 2483.5MHz shall be at least 20dB below the fundamental emissions, or comply with 15.209 limits

5.2 Block Diagram of Test setup



5.3 Test Procedure

- 1. The EUT is placed on a turntable, which is 1.5m above the ground plane and worked at highest radiated power.
- 2. The turntable was rotated for 360 degrees to determine the position of maximum emission level.
- 3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emission.
- 4. Set the spectrum analyzer in the following setting in order to capture the lower and upper band-edges of the emission:

Peak: RBW = 1MHz, VBW = 1MHz, Detector=PEAK detector, Sweep time = auto. AV: RBW = 1MHz, VBW = 10Hz, Detector=PEAK detector, Sweep time = auto.

5.4 Test Result

Pass (The testing data was attached in the next pages.)

Note: 1. For emissions above 1GHz, if peak level comply with average limit, then the average level is deemed to comply with average limit.

2. The frequency 2402MHz and 2480 MHz is fundamental frequency which no limit, the limit on plots is automatically generated by the software, it's not fundamental limit, we can't remove it.

Report No. ESTE-R1901044

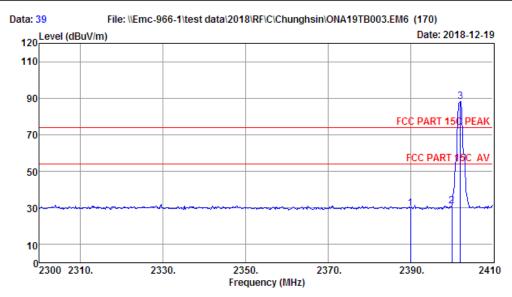


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5.5 Test Data

EST Technology

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: 1# 966 Chamber Data no. : 39 Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa

Engineer : Seven

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 M/N : GFSK TX 2402MHz Test Mode

	Freq. (MHz)			-	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1	2390.00	27.35	3.21	34.87	34.04	29.73	74.00	44.27	Peak
2	2400.00	27.35	3.21	34.94	35.49	31.11	74.00	42.89	Peak
3	2402.08	27.35	3.21	34.94	92.45	88.07	74.00	-14.07	Peak

Remarks: 1. Emission Level= Antenna Factor + Cable Loss - Amp Factor + Reading.

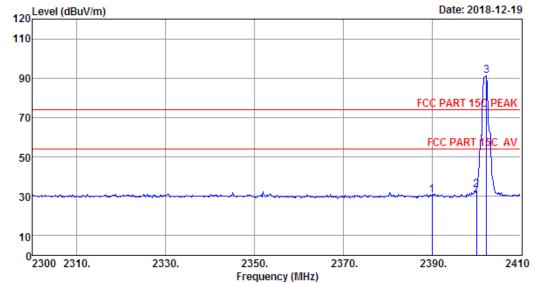
- 2. Margin= Limit Emission Level.
- 3. The emission levels that are 20dB below the official limit are not reported.



Report No. ESTE-R1901044

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: 1# 966 Chamber Data no. : 40 Site no.

Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6'; Humi:56%; Press:101.52kPa

Engineer : Seven

EUT

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 Test Mode : GFSK TX 2402MHz

	Freq.		Factor	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
1 2	2390.00			35.06 37.41	30.75 33.03	74.00 74.00	43.25 40.97	Peak Peak
3	2402.30	 			91.11	74.00	-17.11	Peak

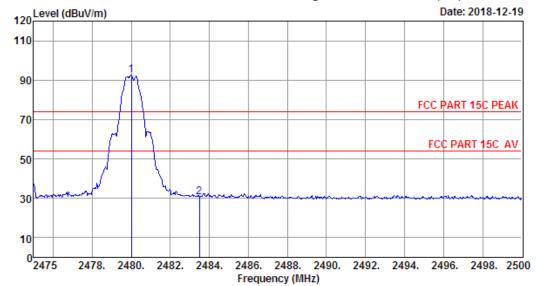
Report No.ESTE-R1901044

- 2. Margin= Limit Emission Level.
- 3. The emission levels that are 20dB below the official limit are not reported.



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: 1# 966 Chamber Site no. Data no. : 41

Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : HORIZONTAL

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa

Engineer : Seven

EUT

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 Test Mode : GFSK TX 2480MHz

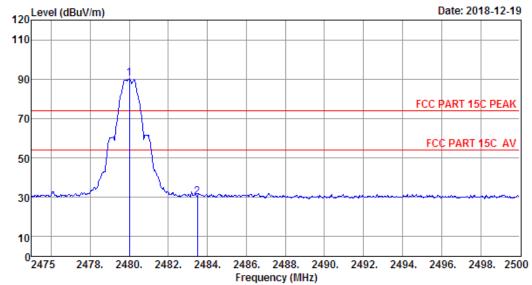
-		Factor	Reading	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
2480.00 2483.50			96.95 35.05	92.59 30.69	74.00 74.00	-18.59 43.31	Peak Peak

- 2. Margin= Limit Emission Level.
- 3. The emission levels that are 20dB below the official limit are not reported.



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Data: 42 File: \\Emc-966-1\test data\2018\RF\C\Chunghsin\ONA19TB003.EM6 (170)



Data no. : 42 : 1# 966 Chamber Site no. Dis. / Ant. : 3m ANT9120D 1-18G Ant. pol. : VERTICAL

: FCC PART 15C PEAK Limit

Env. / Ins. : Temp:23.6';Humi:56%;Press:101.52kPa

Engineer : Seven

EUT

: 10.1" Android Tablet : DC 5V From Adapter Input AC 120V/60Hz Power

: ONA19TB003 Test Mode : GFSK TX 2480MHz

-		Factor	Reading (dBuV)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Remark
2480.00 2483.50			94.82 34.56	90.46 30.20	74.00 74.00	-16.46 43.80	Peak Peak

- 2. Margin= Limit Emission Level.
- 3. The emission levels that are 20dB below the official limit are not reported.



6 6dB Bandwidth Test

6.1 Limit

For direct sequence systems, the minimum 6dB bandwidth shall be at least 500kHz

6.2 Test Procedure

- 1, The transmitter output (antenna port) was connected to the spectrum analyzer. Connect EUT antenna terminal to the spectrum analyzer with a low loss SMA cable.
- 2, Follow the test procedure as described in KDB 558074
 - (1). Set resolution bandwidth (RBW) = 100 kHz.
 - (2). Set the video bandwidth (VBW) $\geq 3 \times RBW$.
 - (3). Detector = Peak.
 - (4). Trace mode = max hold.
 - (5). Sweep = auto couple.
 - (6). Allow the trace to stabilize.
 - (7). Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

6.3 Test Result

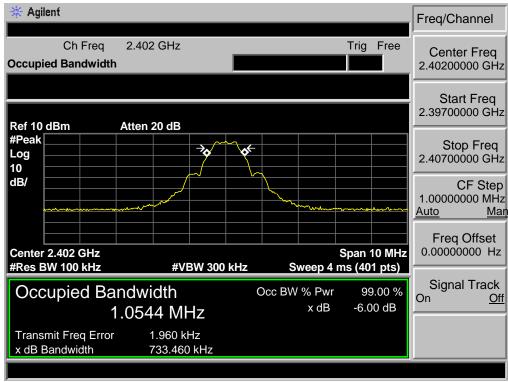
EUT: 10.1" Ar	ndroid Tablet								
M/N: ONA19TB003									
Test date: 2018	8-12-27	Test site: RF Site	Tested by: Seven						
Test Mode	СН	6dB bandwidth (MHz)	Limit (KHz)						
DT 4 0 DI F	CH1	0.733460	>500						
BT 4.0-BLE GFSK	CH20	0.747101	>500						
OFSK	CH40	0.743091	>500						
Conclusion: PASS									

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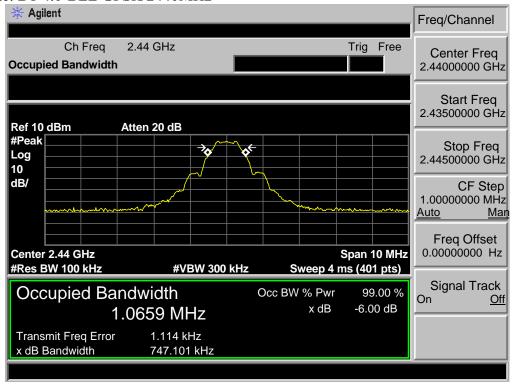


6.4 Test Data

Test Mode: BT 4.0-BLE GFSK 2402MHz

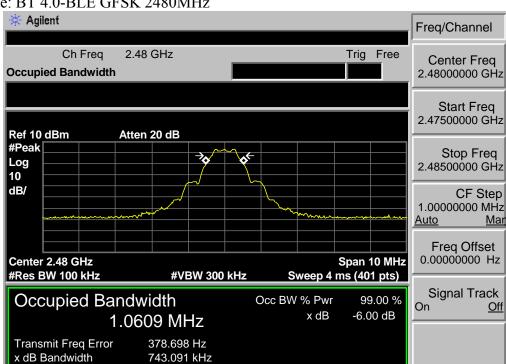


Test Mode: BT 4.0-BLE GFSK 2440MHz





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Test Mode: BT 4.0-BLE GFSK 2480MHz



7 OUTPUT POWER TEST

7.1 Limit

For systems using digital modulation in the 2400—2483.5MHz, The Peak out put Power shall not exceed 1W(30dBm)

7.2 Test Procedure

- 1, The transmitter output (antenna port) was connected to the spectrum analyzer. Connect EUT antenna terminal to the spectrum analyzer with a low loss SMA cable.
- 2, Follow the test procedure as described in KDB 558074
 - (1). Set the RBW \geq DTS bandwidth.
 - (2). Set VBW \geq 3 x RBW.
 - (3). Set span \geq 3 x RBW.
 - (4). Sweep time = auto couple.
 - (5). Detector = peak.
 - (6). Trace mode = \max hold.
 - (7). Allow trace to fully stabilize.
 - (8). Use peak marker function to determine the peak amplitude level.

Note: The cable loss and attenuator loss were offset into measure device as an amplitude offset.



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7.3 Test Result

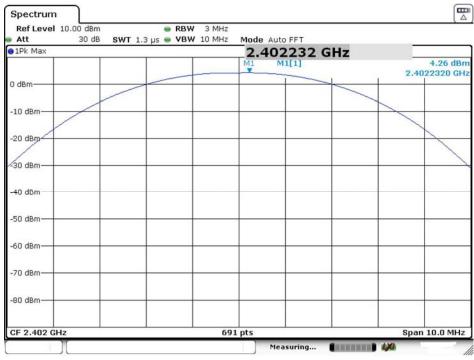
EUT: 10.1" And	lroid Tablet				
M/N: ONA19T	B003				
Test date: 2018-12-27		Test site: RF Site	Tested by: Seven		
Pass					
Test Mode	СН	Peak output Power (dBm)	Limit (dBm)		
BT 4.0-BLE GFSK	CH1	4.26	30		
	CH20	5.54	30		
	CH40	4.41	30		
Conclusion: PA	ASS				



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7.4 Test Data

Test Mode: BT 4.0-BLE GFSK 2402MHz



Test Mode: BT 4.0-BLE GFSK 2440MHz





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Test Mode: BT 4.0-BLE GFSK 2480MHz





8 POWER SPECTRAL DENSITY TEST

8.1 Limit

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8dBm in any 3kHz band during any time interval of continuous transmission.

8.2 Test Procedure

- 1, The transmitter output (antenna port) was connected to the spectrum analyzer. Connect EUT antenna terminal to the spectrum analyzer with a low loss SMA cable.
- 2, Follow the test procedure as described in KDB 558074
- (1). Set analyzer center frequency to DTS channel center frequency.
- (2). Set the span to 1.5 times the DTS bandwidth.
- (3). Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- (4). Set the VBW \geq 3 RBW.
- (5). Detector = peak.
- (6). Sweep time = auto couple.
- (7). Trace mode = max hold.
- (8). Allow trace to fully stabilize.
- (9). Use the peak marker function to determine the maximum amplitude level.
- (10). If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

8.3 Test Result

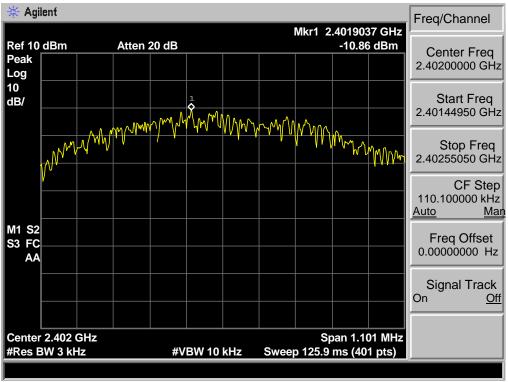
EUT: 10.1" Android Tablet						
M/N: ONA19TB003						
Test date: 2018-12-27		Test site: RF Site	Tested by: Seven			
Pass						
Test Mode	СН	Power density (dBm/3kHz)	Limit (dBm/3kHz)			
BT 4.0-BLE GFSK	CH1	-10.86	8			
	CH20	-9.61	8			
	CH40	-10.52	8			
Conclusion: PA	ASS					

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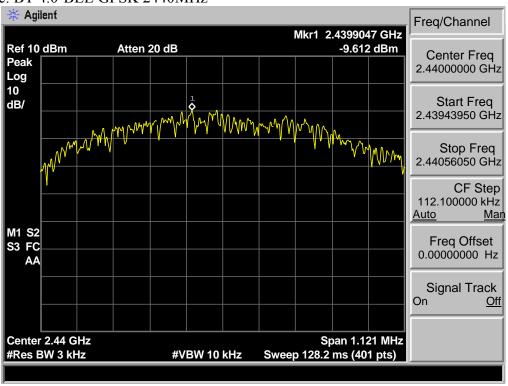


8.4 Test Data

Test Mode: BT 4.0-BLE GFSK 2402MHz



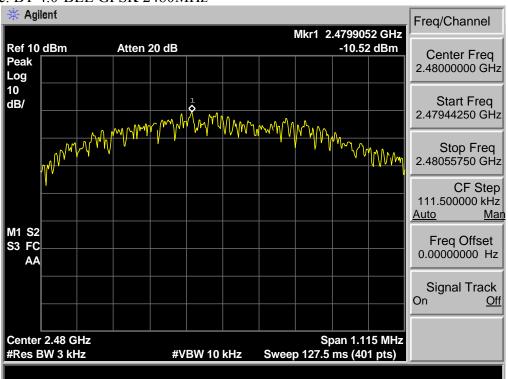
Test Mode: BT 4.0-BLE GFSK 2440MHz





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Test Mode: BT 4.0-BLE GFSK 2480MHz





9 ANTENNA REQUIREMENTS

9.1 Limit

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

9.2 Result

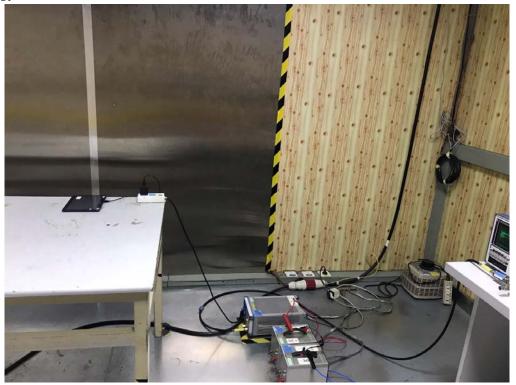
The antennas used for this product are Internal antenna and that no antenna other than that furnished by the responsible party shall be used with the device, the maximum peak gain of the transmit antenna is only 1.32 dBi.



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10 TEST SETUP PHOTO

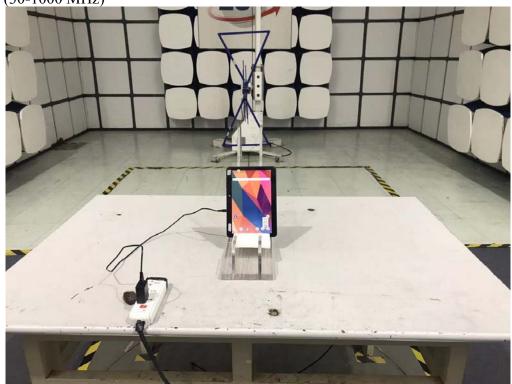
Conducted Test



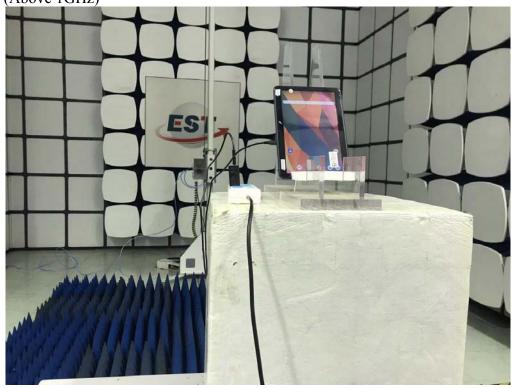




Radiated Test (30-1000 MHz)



Radiated Test (Above 1GHz)



11 PHOTO EUT

External Photos M/N: ONA19TB003









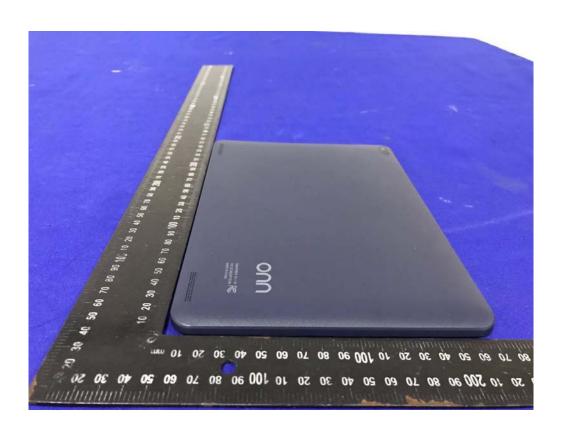






External Photos

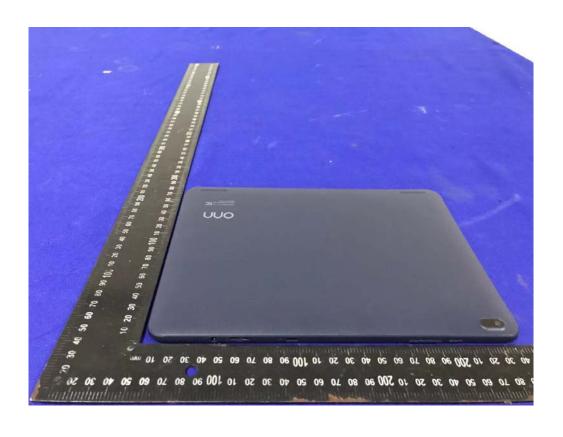






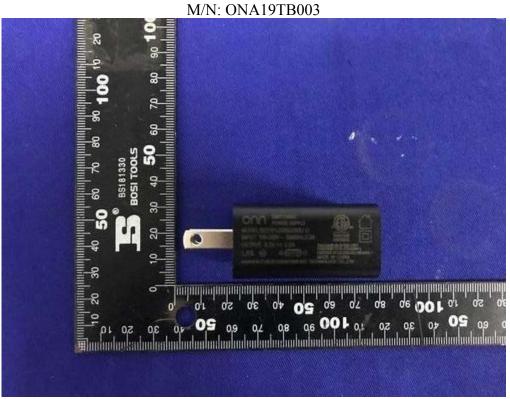
External Photos M/N: ONA19TB003







External Photos

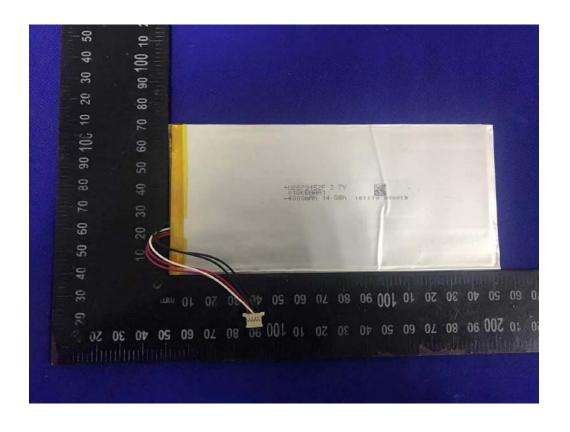




Internal Photos M/N: ONA19TB003



RF Antenna





Internal Photos M/N: ONA19TB003







Internal Photos M/N: ONA19TB003



RF Antenna Port

