

Test Report

FCC ID: 2AGWQ-TT713ULTRA

Date of issue: Mar. 22, 2018

Report Number:	MTi180122E064
Sample Description:	TABLET
Model(s):	TT-713Ultra,TT-715,TT-706,TT-779,MID-700,MID-706,MID-713, MID-706K, MID-901,MID-913
Applicant:	Shenzhen Samtech Co., Ltd.
Address:	F1-3,No.3 building,DingfengFubilun Industrial Park Shubianken Road, Songgang,Baoan, Shenzhen, China
Date of Test:	Jan. 18, 2018 to Mar. 22, 2018

Shenzhen Microtest Co., Ltd.
<http://www.mtitest.com>

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General information

Applicant's name:	Shenzhen Samtech Co., Ltd.
Address:	F1-3, No.3 building, Dingfeng Fubulun Industrial Park Shubianken Road, Songgang, Baoan, Shenzhen, China.
Manufacture's Name:	Shenzhen Samtech Co., Ltd.
Address:	F1-3, No.3 building, Dingfeng Fubulun Industrial Park Shubianken Road, Songgang, Baoan, Shenzhen, China.
Product name:	TABLET
Model name:	TT-713 Ultra
Serial Model	TT-715, TT-706, TT-779, MID-700, MID-706, MID-713, MID-706K, MID-901, MID-913
Trademark:	SAMTECH, TIGERS
Standards:	FCC Part 15.247
Test Procedure:	ANSI C63.10-2013 KDB 55074 v01r04

This device described above has been tested by Shenzhen Microtest Co., Ltd. and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.

Tested by:



Demi Mu

Mar. 22, 2018

Reviewed by:



Blue Zheng

Mar. 22, 2018

Approved by:



Smith Chen

Mar. 22, 2018

1 Technology Information of EUT

1.1 Description of EUT

Product name	TABLET
Model name	TT-713 Ultra
Serial Model	TT-715,TT-706,TT-779,MID-700,MID-706,MID-713, MID-706K, MID-901,MID-913
Operation Frequency	802.11b/g/n20:2412~2462 MHz
Number Of Channel	802.11b/g/n20:11CH
Modulation Type:	11b: DQPSK, DBPSK, DSSS, CCK 11g: BPSK, QPSK, 16QAM, 64QAM, OFDM 11n: BPSK, QPSK, 16QAM, 64QAM with OFDM
Bit Rate of Transmitter	802.11b:11/5.5/2/1 Mbps 802.11g:54/48/36/24/18/12/9/6Mbps 802.11n:65/52/6.5Mbps
Battery:	DC 3.7V 2800mAh
Adapter information:	Model:ST-00502001 Input:100-240V AC50/60Hz 03A Output: DC 5V 2A
Antenna Type	PIFA Antenna
Antenna Gain (dBi)	2dBi
Hardware Version	V1.1
Software Version	V6.0

1.2 Operation Channel List

Channel List for 802.11b/g/n(20)

Channel	Frequency (MHz)	Channel	Frequency (MHz)
01	2412	07	2442
02	2417	08	2447
03	2422	09	2452
04	2427	10	2457
05	2432	11	2462
06	2437	\	\

1.3 Test channel list

Channel List for 802.11b/g/n(20)

Channel	Channel	Frequency (MHz)
Low	01	2412
Middle	06	2437
High	11	2462

1.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Brand	Model/Type No.	Series No.	Note
E-1	TABLET	SAMTECH, TIGERS	TT-713 Ultra	/	/
E-2	Adapter	HW-050100E01	/	/	/

Note:

(1)The support equipment was authorized by Declaration of Confirmation.

(2)For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2 Facilities and Accreditations

2.1 Test laboratory

Test Laboratory	Shenzhen Microtest Co., Ltd.
Location	No.102A & 302A, East Block, Hengfang Industrial Park, Xingye Road, Xixiang, Bao'an District, Shenzhen, Guangdong, China
FCC Registration No.:	448573

2.2 Environmental Conditions

Temperature :	25 °C
Relative Humidity :	60%

2.3 Measurement Uncertainty

The reported uncertainty of measurement $y \pm U$, where expanded uncertainty U is based on a standard uncertainty multiplied by a coverage factor of $k=2$, providing a level of confidence of approximately 95 %

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 1.38\text{dB}$
2	RF power, conducted	$\pm 0.16\text{dB}$
3	Spurious emissions, conducted	$\pm 0.21\text{dB}$
4	All emissions, radiated(<1G)	$\pm 4.68\text{dB}$
5	All emissions, radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$

2.4 Equipment list

Equipment No.	Equipment Name	Manufacturer	Model	Serial No.	Calibration date	Due date
MTI-E001	Spectrum Analyzer	Agilent	E4407B	MY41441082	2017/09/18	2018/09/17
MTI-E002	CMU 200 universal radio communication tester	Rohde&schwarz	CMU 200	114587	2017/09/18	2018/09/17
MTI-E004	EMI Test Receiver	Rohde&schwarz	ESPI	1000314	2017/09/18	2018/09/17
MTI-E006	Broadband antenna	schwarbeck	VULB9163	872	2017/09/18	2018/09/17
MTI-E007	Horn antenna	schwarbeck	BBHA9120D	1201	2017/09/18	2018/09/17

MTI-E014	amplifier	America	8447D	3113A06150	2017/09/18	2018/09/17
MTI-E015	Conduction Immunity Signal Generator	Schloder	CDG6000	126A1343/2015	2017/09/18	2018/09/17
MTI-E016	Coupled decoupling network	Schloder	CDA M2/M3	A2210332/2015	2017/09/18	2018/09/17
MTI-E032	Comprehensive test instrument	Rohde&schwarz	CMW500	124192	2017/04/13	2018/04/12
MTI-E034	amplifier	Agilent	8449B	3008A02400	2017/08/22	2018/08/21
MTI-E040	Spectrum analyzer	Agilent	N9020A	MY49100060	2017/03/04	2018/03/04
MTI-E041	Signal generator	Agilent	N5182A	MY49060455	2017/02/22	2018/02/22
MTI-E042	Analog signal generator	Agilent	E4421B	GB40051240	2017/02/22	2018/02/22
MTI-E043	Power probe	Dare Instruments	RPR3006 W	16I00054SN O16	2017/02/28	2018/02/28
MTI-E047	10dB attenuator	Mini-Circuits	UNAT-10+	15542	2017/05/23	2018/05/23
MTI-E049	spectrum analyzer	Rohde&schwarz	FSP-38	100019	2017/09/18	2018/09/17
MTI-E050	PSG Signal generator	Agilent	E8257D	MY46520873	2017/04/24	2018/04/23
MTI-E051	Active Loop Antenna 9kHz - 30MHz	Schwarzbeek	FMZB 1519 B	00044	2017//2/26	2018/02/25
MTI-E052	18-40GHz amplifier	Chengdu step Micro Technology	ZLNA-18-40G-21	1608001	2017/09/18	2018/09/17
MTI-E053	15-40G Antenna	Schwarzbeek	BBHA9170	BBHA9170582	2017/09/18	2018/09/17

Note: the calibration interval of the above test instruments is 12 months and the calibrations are traceable to international system unit (SI).

3 Summary of test results

No.	Standard Section	Test Item	Result	Remark
1	15.207	Conducted Emission	Pass	
2	15.247 (a)(2)	6dB Bandwidth	Pass	
3	15.247 (b)	Peak Output Power	Pass	
4	15.247 (c)	Radiated Spurious Emission	Pass	
5	15.247 (d)	Power Spectral Density	Pass	
6	15.205	Band Edge Emission	Pass	
7	15.203	Antenna Requirement	Pass	
Note: The meaning of symbols: "N/A" – Not Applicable				

4 TEST RESULT

4.1 ANTENNA REQUIREMENT

4.1.1 STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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

4.1.2 EUT ANTENNA

The EUT antenna is integrated antenna. It comply with the standard requirement. In case of replacement of broken antenna the same antenna type must be used.

4.2 Power Line Conducted Emission Measurement

4.2.1 Limits

Frequency (MHz)	Limit	
	Quasi-peak	Average
0.15-0.5	66 to 56	56 to 46
0.5-5	56	46
5-30	60	50

Note

(1) Decreases with the logarithm of the frequency from 0.15MHz to 0.5MHz.

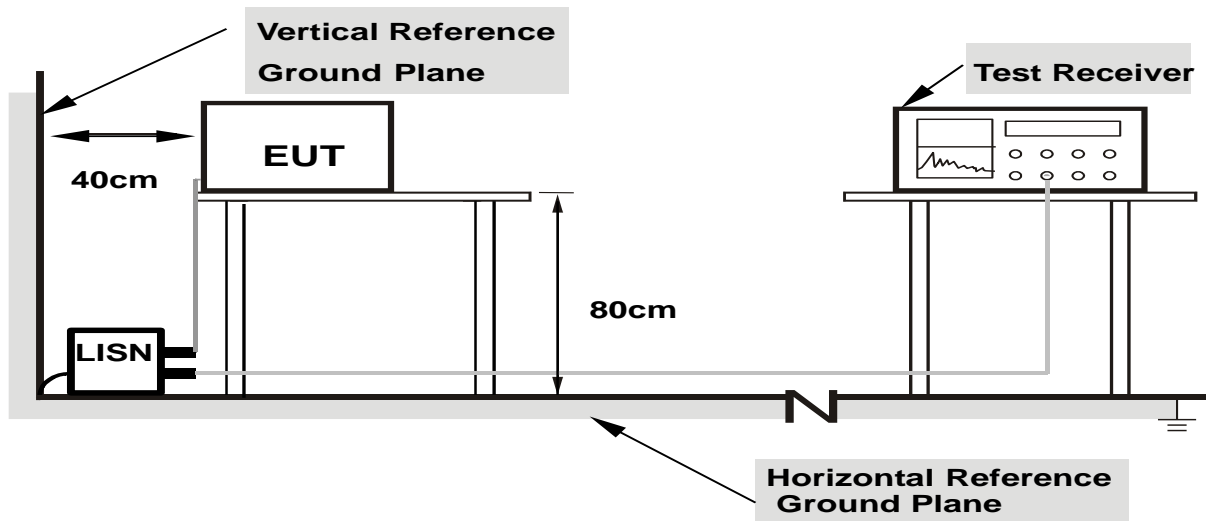
4.2.2 Test method

1. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 Ohm/50uH of coupling impedance for the measuring instrument.
2. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
3. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
4. LISN is at least 80 cm from nearest part of EUT chassis.
5. The resolution bandwidth of EMI test receiver is set at 9kHz.

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

4.2.4 Test Setup



- Note:** 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

4.2.5 Test Procedure

a. EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

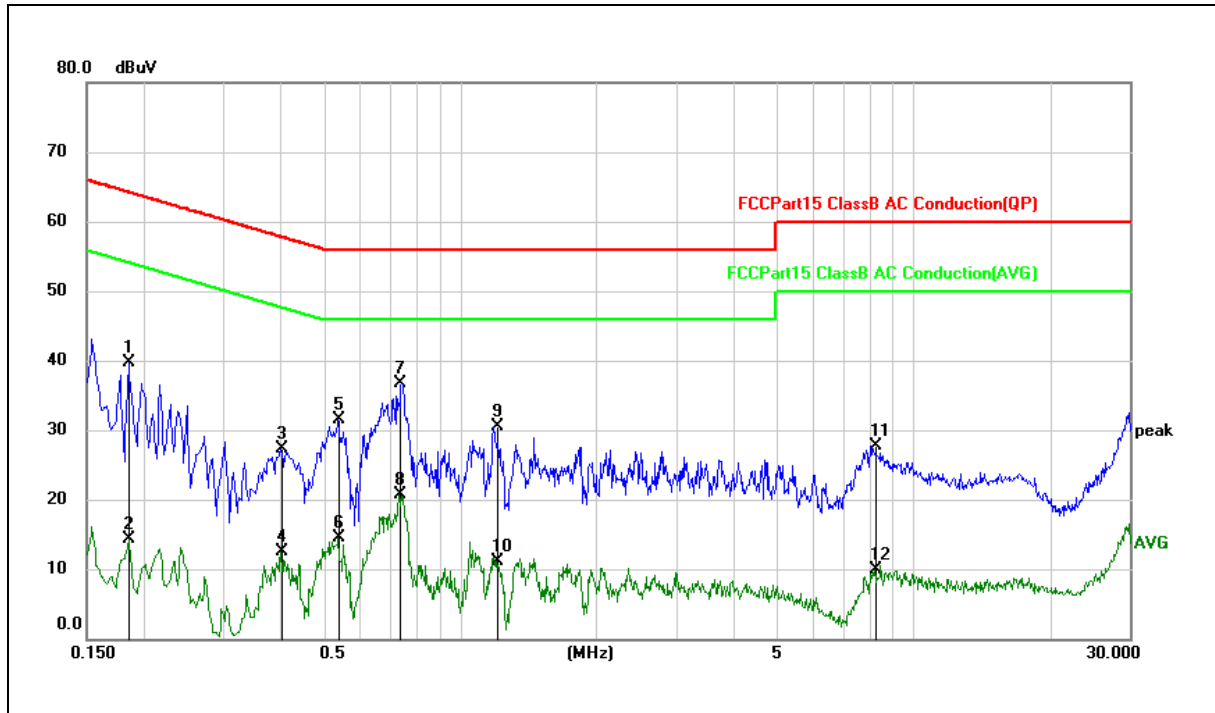
b. The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

- c. The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- d. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- e. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- f. LISN at least 80 cm from nearest part of EUT chassis.
- g. For the actual test configuration, please refer to the related Item –EUT Test Photos.

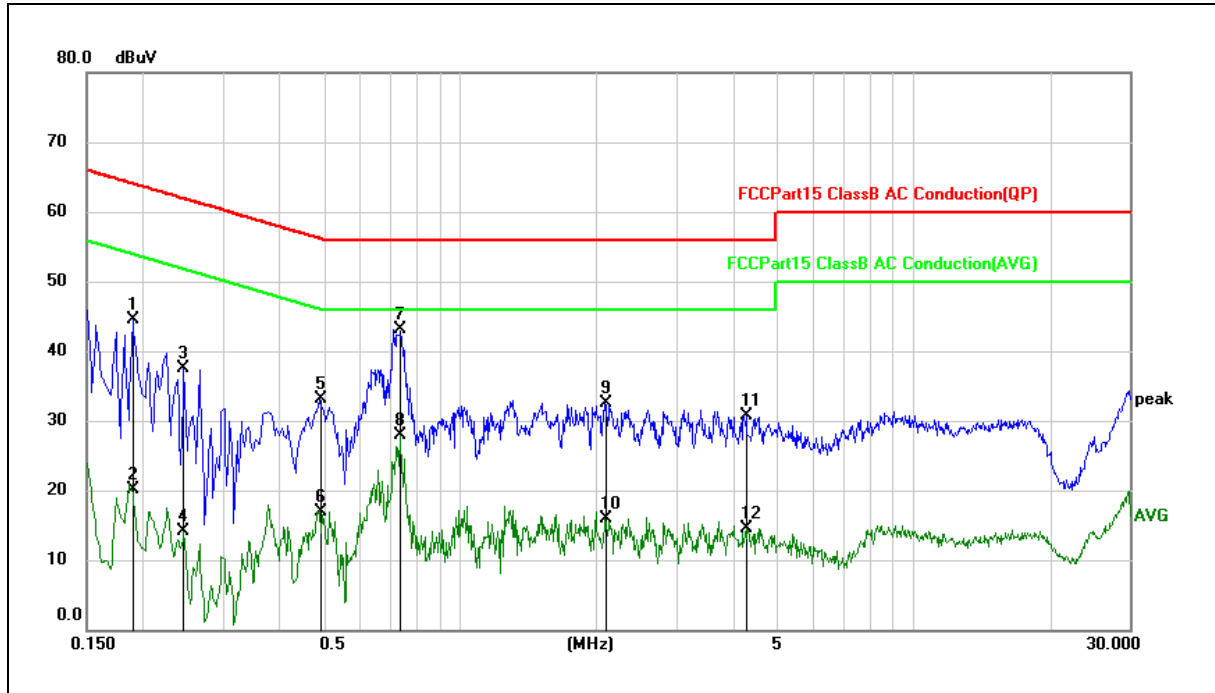
4.2.6 Test Results

EUT :	TABLET	Model Name. :	TT-713 Ultra
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	L
Test Voltage :	DC 5V from AC Adapter 230V/50Hz	Test Mode :	Mode 1



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.1860	39.72	0.02	39.74	64.21	-24.47	QP
2	0.1860	14.29	0.02	14.31	54.21	-39.90	AVG
3	0.4020	27.35	0.02	27.37	57.81	-30.44	QP
4	0.4020	12.50	0.02	12.52	47.81	-35.29	AVG
5	0.5380	31.56	0.02	31.58	56.00	-24.42	QP
6	0.5380	14.39	0.02	14.41	46.00	-31.59	AVG
7	0.7340	36.78	0.02	36.80	56.00	-19.20	QP
8	0.7340	20.62	0.02	20.64	46.00	-25.36	AVG
9	1.2059	30.43	0.02	30.45	56.00	-25.55	QP
10	1.2059	11.01	0.02	11.03	46.00	-34.97	AVG
11	8.2020	27.67	0.08	27.75	60.00	-32.25	QP
12	8.2020	9.89	0.08	9.97	50.00	-40.03	AVG

EUT :	TABLET	Model Name. :	TT-713 Ultra
Temperature :	26 °C	Relative Humidity :	54%
Pressure :	1010hPa	Phase :	N
Test Voltage :	DC 5V from AC Adapter 230V/50Hz	Test Mode :	Mode 1



No.	Frequency	Reading	Correct	Result	Limit	Margin	Remark
	(MHz)	(dBuV)	dB	(dBuV)	(dBuV)	(dB)	
1	0.1884	44.45	0.02	44.47	64.11	-19.64	QP
2	0.1884	20.00	0.02	20.02	54.11	-34.09	AVG
3	0.2460	37.41	0.02	37.43	61.89	-24.46	QP
4	0.2460	14.02	0.02	14.04	51.89	-37.85	AVG
5	0.4900	33.03	0.02	33.05	56.17	-23.12	QP
6	0.4900	16.98	0.02	17.00	46.17	-29.17	AVG
7	0.7380	43.01	0.02	43.03	56.00	-12.97	QP
8	0.7380	27.83	0.02	27.85	46.00	-18.15	AVG
9	2.0980	32.44	0.02	32.46	56.00	-23.54	QP
10	2.0980	15.85	0.02	15.87	46.00	-30.13	AVG
11	4.2740	30.62	0.04	30.66	56.00	-25.34	QP
12	4.2740	14.43	0.04	14.47	46.00	-31.53	AVG

4.3 Radiated Emission and Bandwidth Measurement

4.3.1 Limits

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

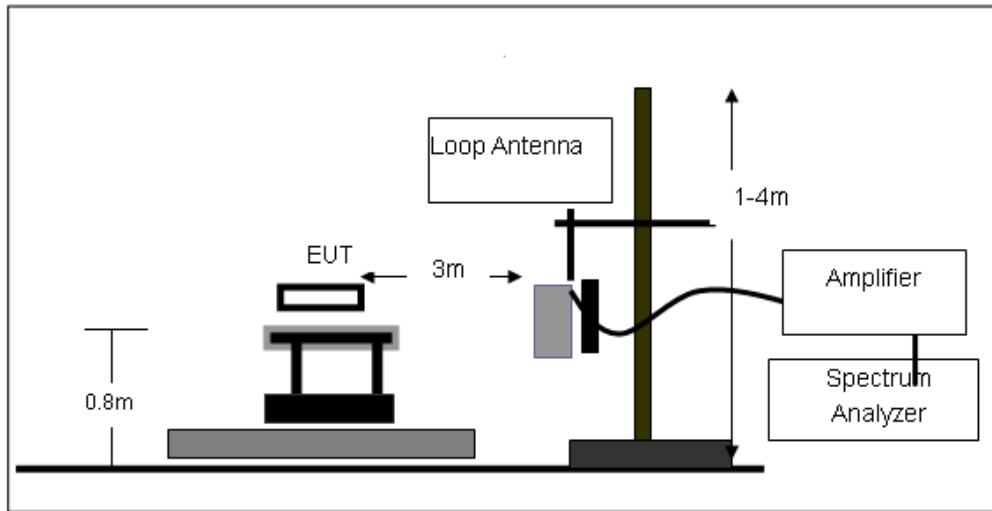
Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

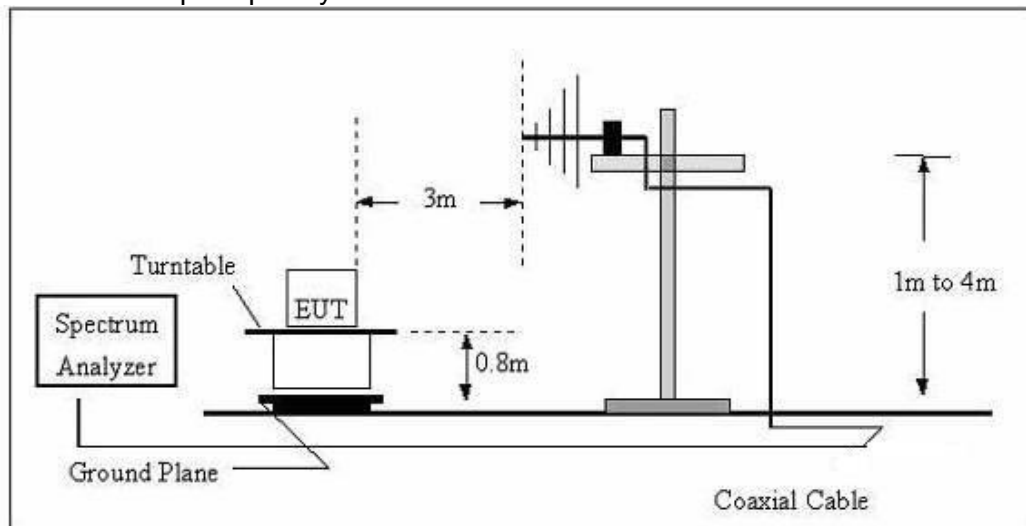
Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

4.3.2 Test Setup

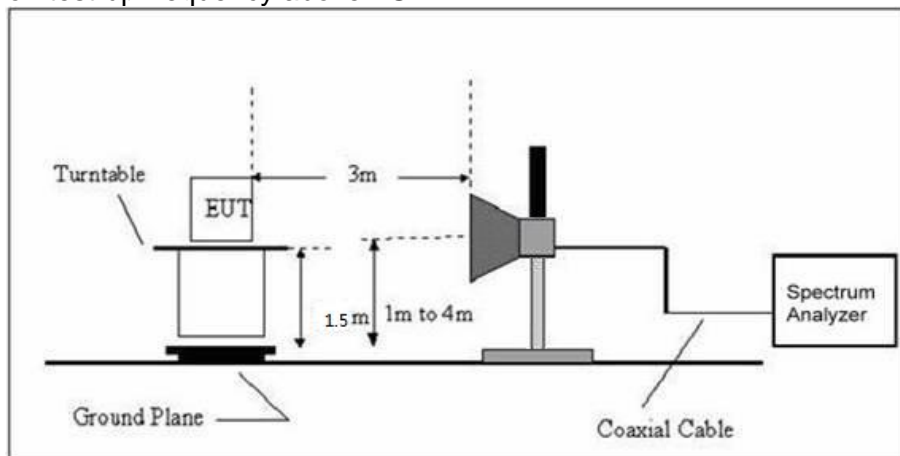
Radiated emission test-up frequency below 30MHz



Radiated emission test-up frequency 30MHz~1GHz



Radiated emission test-up frequency above 1GHz



4.3.3 Test Procedure

- a. EUT operating conditions. The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.
- b. The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- c. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter open area test site. The table was rotated 360 degrees to determine the position of the highest radiation.
- d. The height of the equipment or of the substitution antenna shall be 0.8 m; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- e. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- f. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- g. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

4.3.4 Test Results

4.3.5 Radiation emission

Below 30MHz

EUT:	TABLET	Model Name:	TT-713 Ultra
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage:	DC 5Vfrom adapter AC 120V/60Hz
Test Mode:	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	Pass
--	--	--	--	Pass

Note:

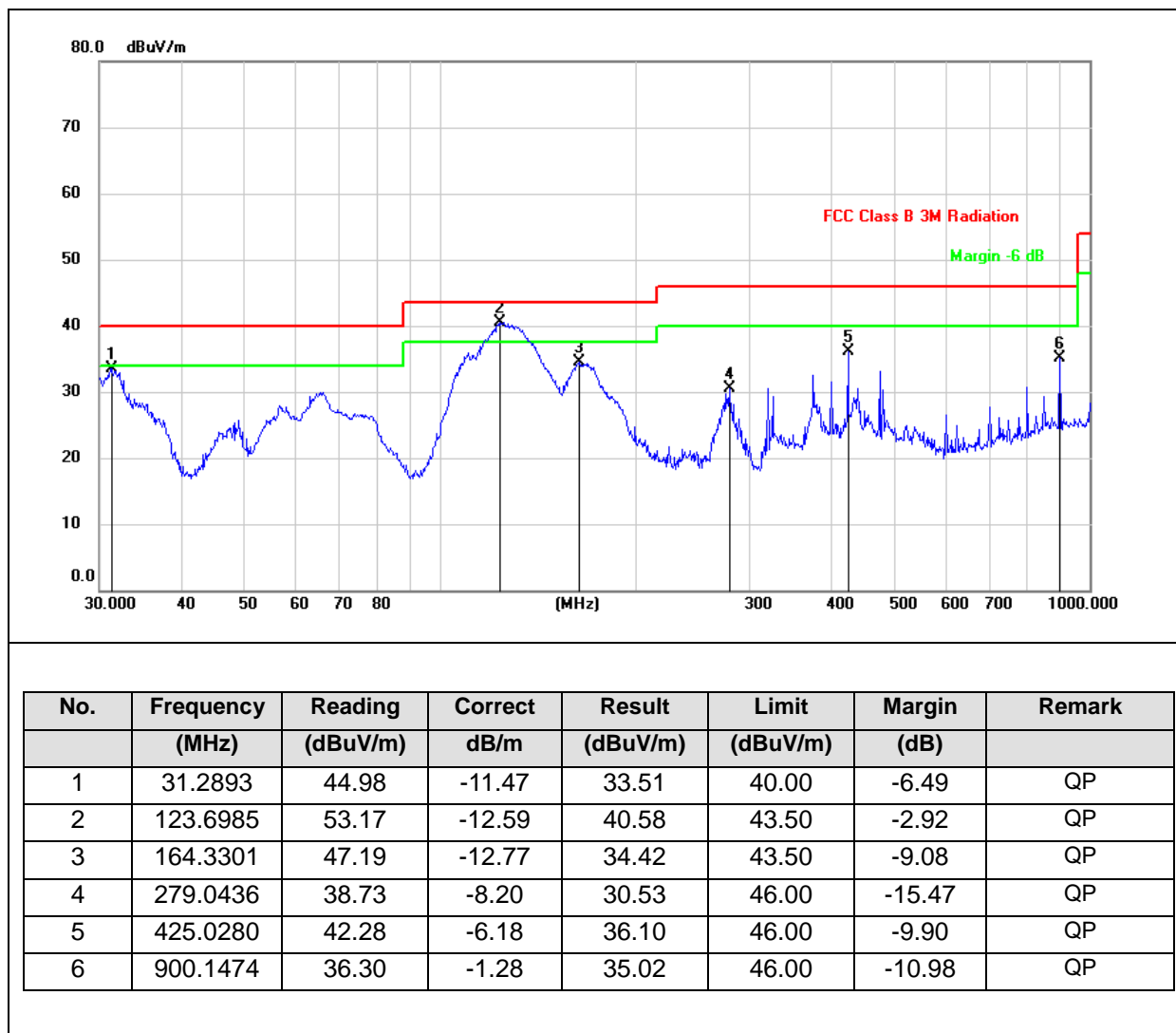
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

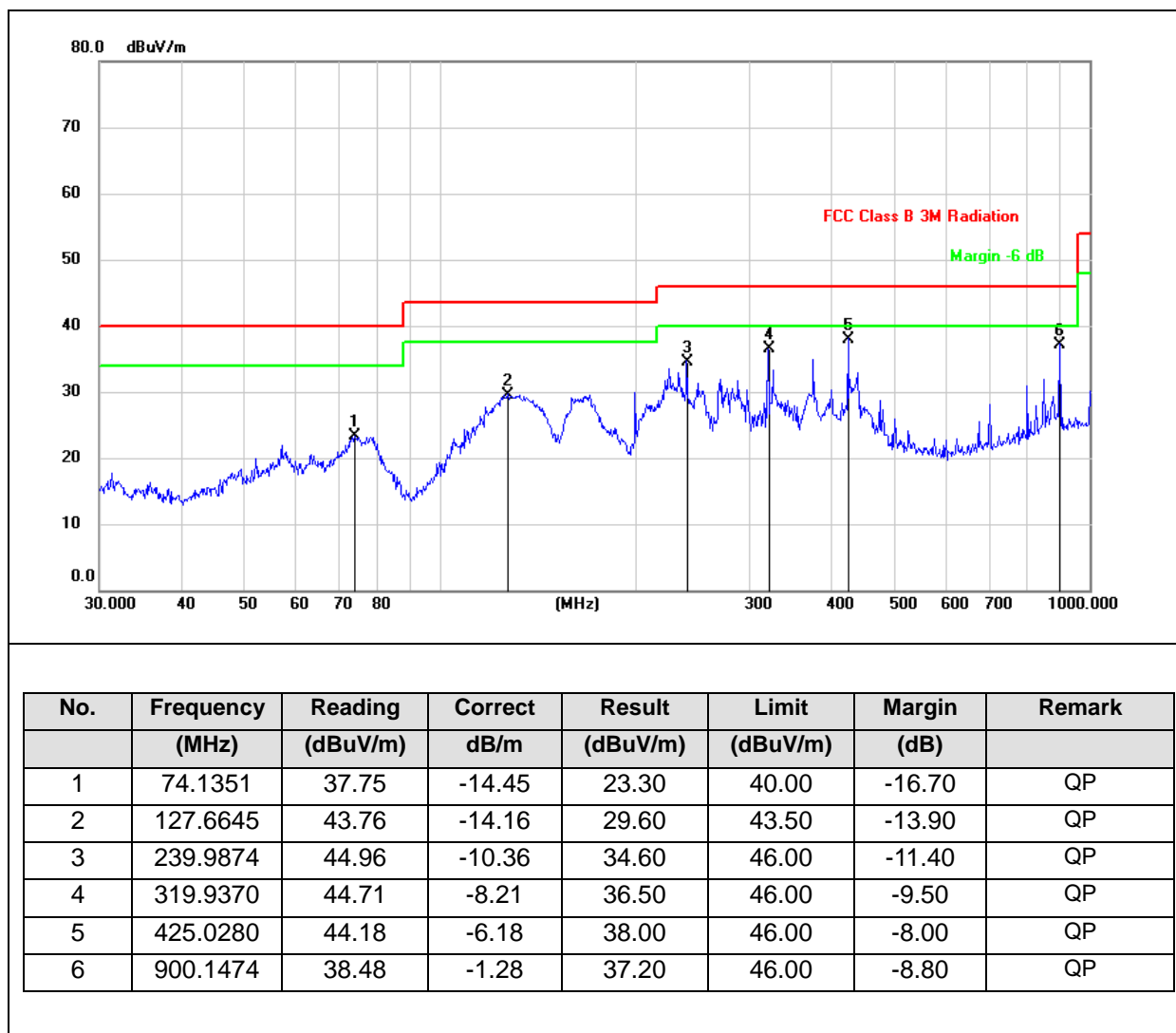
Limit line = specific limits(dBuV) + distance extrapolation factor.

Between 30MHz – 1GHz

EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Phase :	V
Test Voltage :	DC 5Vfrom adapter		



EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	20 °C	Relative Humidity :	48%
Pressure:	1010 hPa	Phase :	H
Test Voltage :	DC 5Vfrom adapter		



1G-25GHz

Note: Emission Level = Reading Level+ Factor

Note: The PK value is less than the AV value, AV value is not required. Factor added by measurement software automatically.

802.11b

Normal Voltage

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (2412 MHz)							
H	3941	49.41	-2.02	47.39	74	-26.61	PK
H	6644	48.71	-3.89	44.82	74	-29.18	PK
H	9058	46.83	0	46.83	74	-27.17	PK
H	10554	46.82	3.88	50.7	74	-23.3	PK
H	14260	43.56	9.36	52.92	74	-21.08	PK
H	14906	44.66	8.57	53.23	74	-20.77	PK
V	4094	51.85	-3.92	47.93	74	-26.07	PK
V	6423	51.28	-5.75	45.53	74	-28.47	PK
V	10435	49.35	1.75	51.1	74	-22.9	PK
V	11965	43.62	9.94	53.56	74	-20.44	PK
V	14838	44.43	9.01	53.44	74	-20.56	PK
V	16283	42.54	10.68	53.22	74	-20.78	PK
Mid Channel (2437 MHz)							
H	4039	49.41	-1.86	47.55	74	-26.45	PK
H	6644	48.71	-3.89	44.82	74	-29.18	PK
H	7256	48.43	-3.18	45.25	74	-28.75	PK
H	9211	46.97	0.58	47.55	74	-26.45	PK
H	10554	46.82	3.88	50.7	74	-23.3	PK
H	14905.6	44.66	8.55	53.21	74	-20.79	PK
V	5126	51.85	-2.65	49.2	74	-24.8	PK
V	6533	51.28	-5.26	46.02	74	-27.98	PK
V	9347	48.98	-0.42	48.56	74	-25.44	PK
V	10231	49.44	1.6	51.04	74	-22.96	PK
V	13971	43.39	9.14	52.53	74	-21.47	PK
V	14838	44.43	9.01	53.44	74	-20.56	PK
High Channel (2462 MHz)							
H	3890	49.67	-2.27	47.4	74	-26.6	PK
H	4570	48.59	-5.12	43.47	74	-30.53	PK
H	6338	49.77	-4.25	45.52	74	-28.48	PK
H	9007	47.22	-0.19	47.03	74	-26.97	PK
H	10384	46.76	3.78	50.54	74	-23.46	PK
H	14515	43.99	9.05	53.04	74	-20.96	PK
V	3278	53.36	-6.22	47.14	74	-26.86	PK
V	8497	49.98	-2.95	47.03	74	-26.97	PK
V	9670	49.4	0.5	49.9	74	-24.1	PK
V	10503	49.46	1.79	51.25	74	-22.75	PK
V	13971	44.6	9.14	53.74	74	-20.26	PK
V	15348	43.6	8.76	52.36	74	-21.64	PK

802.11g

Normal Voltage

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (2412 MHz)							
H	3992	51.4	-3.36	48.04	74	-25.96	PK
H	6644	51.94	-5.47	46.47	74	-27.53	PK
H	9585	49.19	0.26	49.45	74	-24.55	PK
H	10503	49.46	1.79	51.25	74	-22.75	PK
H	14396	43.69	9.15	52.84	74	-21.16	PK
H	15246	44.48	8.82	53.3	74	-20.7	PK
V	3890	49.67	-2.27	47.4	74	-26.6	PK
V	6338	49.77	-4.25	45.52	74	-28.48	PK
V	8361	48.11	-2.15	45.96	74	-28.04	PK
V	9653	47.19	2.23	49.42	74	-24.58	PK
V	13189	45.26	7.24	52.5	74	-21.5	PK
V	14515	43.99	9.05	53.04	74	-20.96	PK
Mid Channel (2437 MHz)							
H	3992	56.56	-3.36	53.2	74	-20.8	PK
H	5675	56.23	-7.46	48.77	74	-25.23	PK
H	6678	56.72	-5.43	51.29	74	-22.71	PK
H	8106	55.65	-4.15	51.5	74	-22.5	PK
H	9602	52.66	0.3	52.96	74	-21.04	PK
H	14719	42.95	9.05	52	74	-22	PK
V	3414	57.67	-5.84	51.83	74	-22.17	PK
V	4723	56.12	-7.83	48.29	74	-25.71	PK
V	6321	56.09	-5.87	50.22	74	-23.78	PK
V	7494	54.8	-4.77	50.03	74	-23.97	PK
V	8344	53.95	-3.43	50.52	74	-23.48	PK
V	9687	53.26	0.55	53.81	74	-20.19	PK
High Channel (2462 MHz)							
H	3720	56.47	-3.11	53.36	74	-20.64	PK
H	5267	55.65	-7.17	48.48	74	-25.52	PK
H	6100	55.01	-4.33	50.68	74	-23.32	PK
H	7783	54.59	-2.9	51.69	74	-22.31	PK
H	9789	48.62	2.75	51.37	74	-22.63	PK
H	15059	43.65	8.56	52.21	74	-21.79	PK
V	4009	57.08	-3.39	53.69	74	-20.31	PK
V	6576	57	-5.55	51.45	74	-22.55	PK
V	7443	56.11	-4.79	51.32	74	-22.68	PK
V	8446	54.99	-3.11	51.88	74	-22.12	PK
V	14260	44.65	9.19	53.84	74	-20.16	PK
V	15314	43.16	8.79	51.95	74	-22.05	PK

802.11n(20)

Normal Voltage

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
Low Channel (2412 MHz)							
H	3720	57.96	-4.6	53.36	74	-20.64	PK
H	6678	56.72	-5.43	51.29	74	-22.71	PK
H	8667	54.52	-2.43	52.09	74	-21.91	PK
H	10180	52.19	1.56	53.75	74	-20.25	PK
H	14362	44.27	9.16	53.43	74	-20.57	PK
H	14906	43.96	8.98	52.94	74	-21.06	PK
V	4026	56.64	-3.49	53.15	74	-20.85	PK
V	6644	55.74	-5.47	50.27	74	-23.73	PK
V	8089	55.11	-4.2	50.91	74	-23.09	PK
V	9976	51.96	1.37	53.33	74	-20.67	PK
V	14260	44.61	9.19	53.8	74	-20.2	PK
V	15314	43.41	8.79	52.2	74	-21.8	PK
Mid Channel (2437 MHz)							
H	3720	56.47	-3.11	53.36	74	-20.64	PK
H	5505	56.01	-6.58	49.43	74	-24.57	PK
H	7018	53.83	-3.15	50.68	74	-23.32	PK
H	8208	54.09	-2.37	51.72	74	-22.28	PK
H	10061	48.92	3.57	52.49	74	-21.51	PK
H	15314	44.32	9.01	53.33	74	-20.67	PK
V	3550	57.76	-5.38	52.38	74	-21.62	PK
V	5403	56.18	-8.38	47.8	74	-26.2	PK
V	6661	55.68	-5.46	50.22	74	-23.78	PK
V	7766	55.19	-4.61	50.58	74	-23.42	PK
V	8905	53.24	-1.7	51.54	74	-22.46	PK
V	14260	44.02	9.19	53.21	74	-20.79	PK
High Channel (2462 MHz)							
H	4145	55.33	-2.59	52.74	74	-21.26	PK
H	6083	54.49	-4.33	50.16	74	-23.84	PK
H	7103	53	-3.16	49.84	74	-24.16	PK
H	7953	53.87	-2.73	51.14	74	-22.86	PK
H	10044	48.26	3.57	51.83	74	-22.17	PK
H	13801	44.03	9.07	53.1	74	-20.9	PK
V	3584	58.01	-5.23	52.78	74	-21.22	PK
V	5080	56.77	-9.3	47.47	74	-26.53	PK
V	6831	54.61	-5.25	49.36	74	-24.64	PK
V	8684	54.83	-2.39	52.44	74	-21.56	PK
V	10299	50.69	1.65	52.34	74	-21.66	PK
V	14770	44.03	9.03	53.06	74	-20.94	PK

4.3.6 Band edge - Radiated

Frequency (MHz)	Meter Reading (dBμV)	Factor (dB)	Emission Level (dBμV/m)	Limits (dBμV/m)	Margin (dB)	Detector Type	Comment
802.11b							
2390	54.09	-10.22	43.87	74	-30.13	peak	Vertical
2390	54.01	-9.37	44.64	74	-29.36	peak	Horizontal
2400	56.38	-10.16	46.22	74	-27.78	peak	Vertical
2400	53.99	-9.28	44.71	74	-29.29	peak	Horizontal
2483.5	52.83	-9.56	43.27	74	-30.73	peak	Vertical
2483.5	56.69	-8.49	48.2	74	-25.8	peak	Horizontal
802.11g							
2390	53.93	-10.22	43.71	74	-30.29	peak	Vertical
2390	53.17	-9.37	43.8	74	-30.2	peak	Horizontal
2400	54.32	-10.16	44.16	74	-29.84	peak	Vertical
2400	52.92	-9.28	43.64	74	-30.36	peak	Horizontal
2483.5	56.83	-9.56	47.27	74	-26.73	peak	Vertical
2483.5	54.16	-8.49	45.67	74	-28.33	peak	Horizontal
802.11n20							
2390	55.58	-10.22	45.36	74	-28.64	peak	Vertical
2390	56.65	-9.37	47.28	74	-26.72	peak	Horizontal
2400	52.14	-10.16	41.98	74	-32.02	peak	Vertical
2400	53.93	-9.28	44.65	74	-29.35	peak	Horizontal
2483.5	53.53	-9.56	43.97	74	-30.03	peak	Vertical
2483.5	55.65	-8.49	47.16	74	-26.84	peak	Horizontal

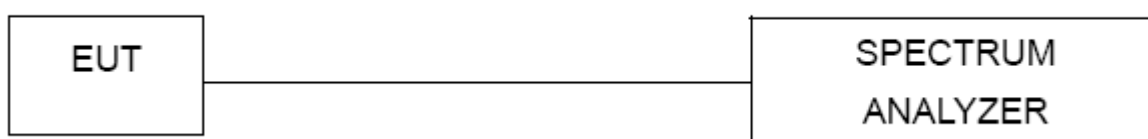
NOTE: The PK value is less than the AV value, AV value is not required.

4.4 POWER SPECTRAL DENSITY

4.4.1 LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	2400-2483.5	PASS

4.4.2 TEST SETUP



4.4.3 TEST PROCEDURE

1. The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.
2. Set analyzer center frequency to DTS channel center frequency.
3. Set the span to 1.5 times the DTS channel bandwidth.
4. Set the RBW ≥ 3 kHz.
5. Set the VBW $\geq 3 \times$ RBW.
6. Detector = peak.
7. Sweep time = auto couple.
8. Trace mode = max hold.
9. Allow trace to fully stabilize.
10. Use the peak marker function to determine the maximum amplitude level.
11. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

4.4.4 TEST RESULTS

EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	TX 802 11b Mode /CH01, CH06, CH11		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-25.770	8	PASS
2437 MHz	-25.448	8	PASS
2462 MHz	-25.733	8	PASS



EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	TX 802 11g Mode /CH01, CH06, CH11		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-24.286	8	PASS
2437 MHz	-25.848	8	PASS
2462 MHz	-26.775	8	PASS



EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1015 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	TX 802 n20 Mode /CH01, CH06, CH11		

Frequency	Power Density (dBm)	Limit (dBm)	Result
2412 MHz	-24.333	8	PASS
2437 MHz	-25.484	8	PASS
2462 MHz	-26.557	8	PASS



4.5 BANDWIDTH TEST

4.5.1 LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(a)(2)	Bandwidth	$\geq 500\text{KHz}$ (6dB bandwidth)	2400-2483.5	PASS

4.5.2 TEST SETUP



4.5.3 TEST PROCEDURE

1. Set 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.

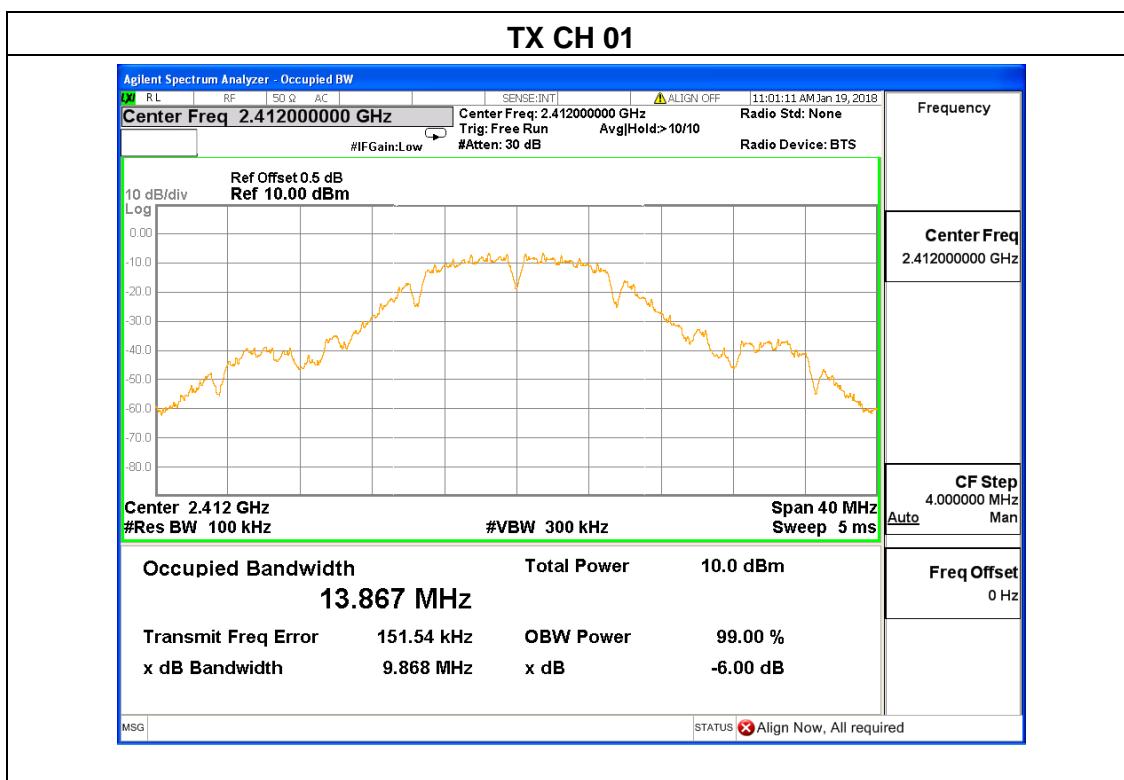
EUT OPERATION CONDITIONS

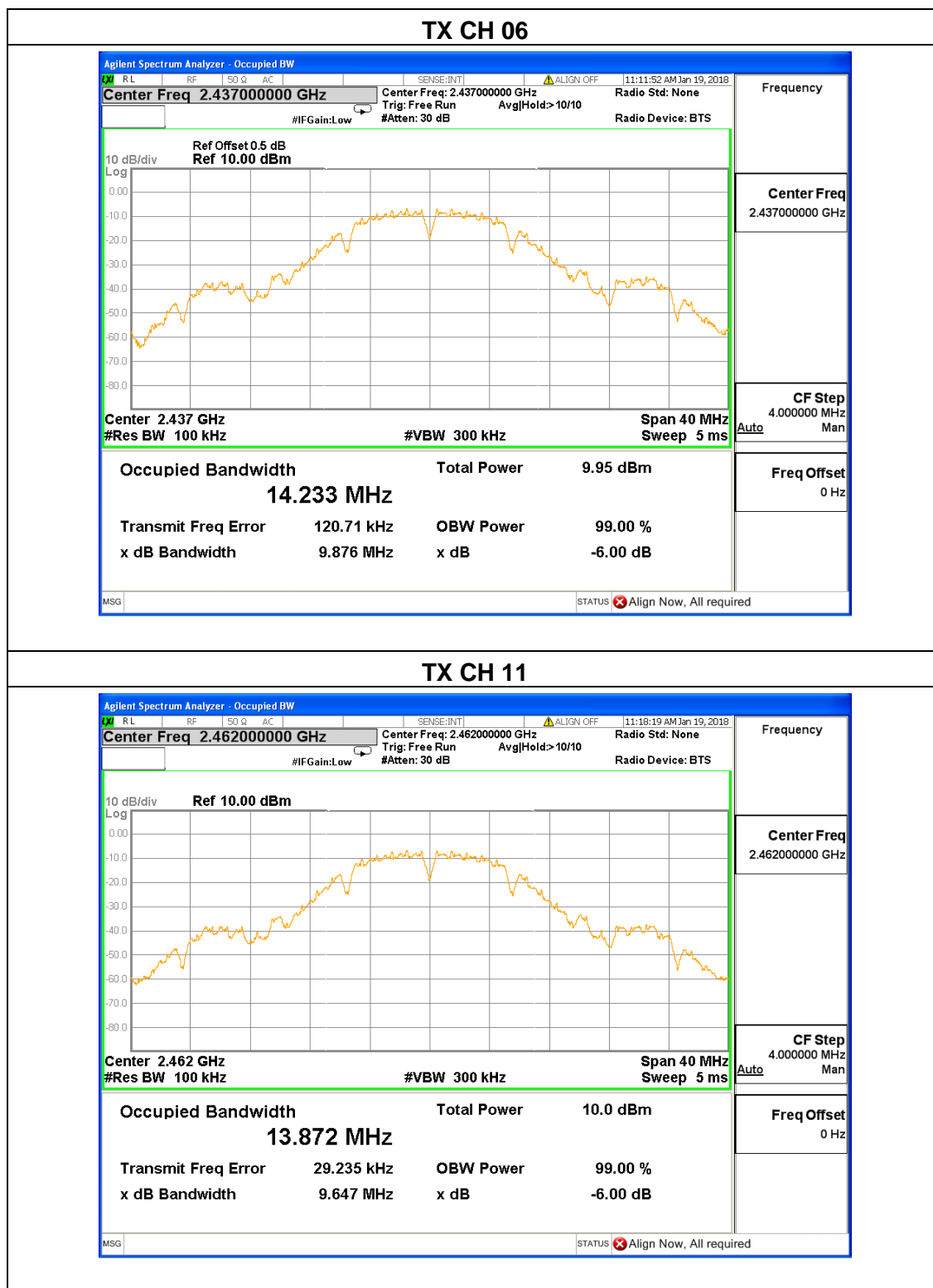
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.5.4 TEST RESULTS

EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	TX b Mode /CH01, CH06, CH11		

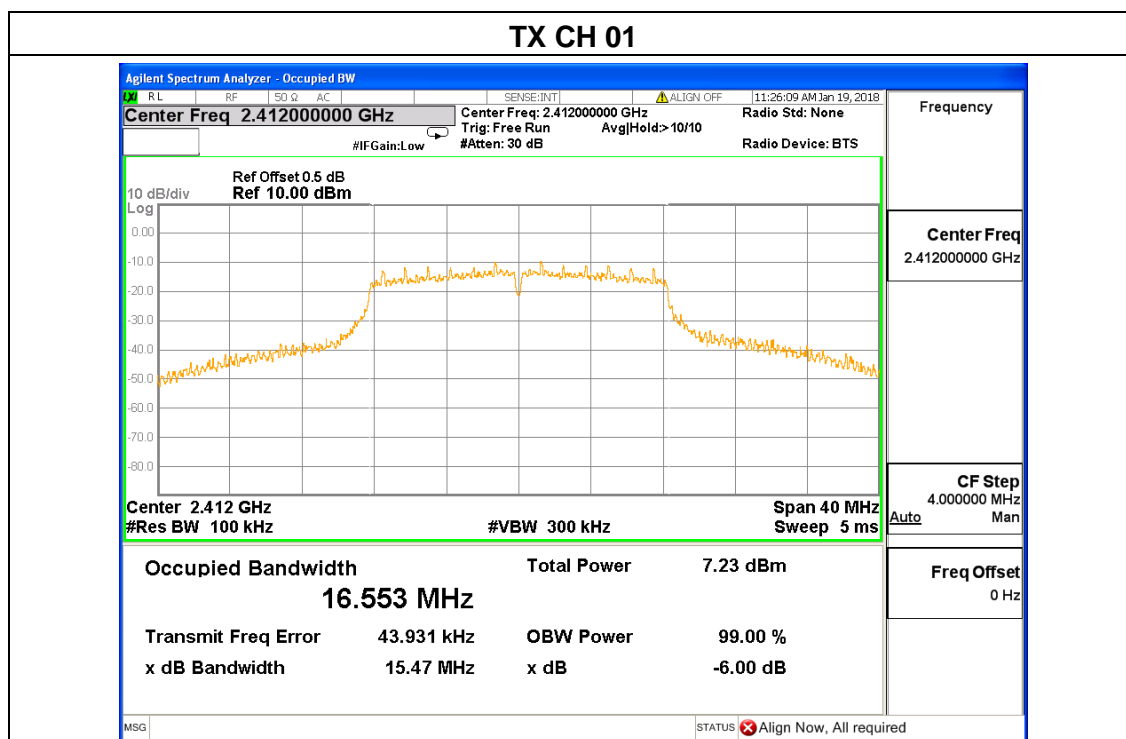
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	9.868	500	Pass
Middle	2437	9.876	500	Pass
High	2462	9.647	500	Pass

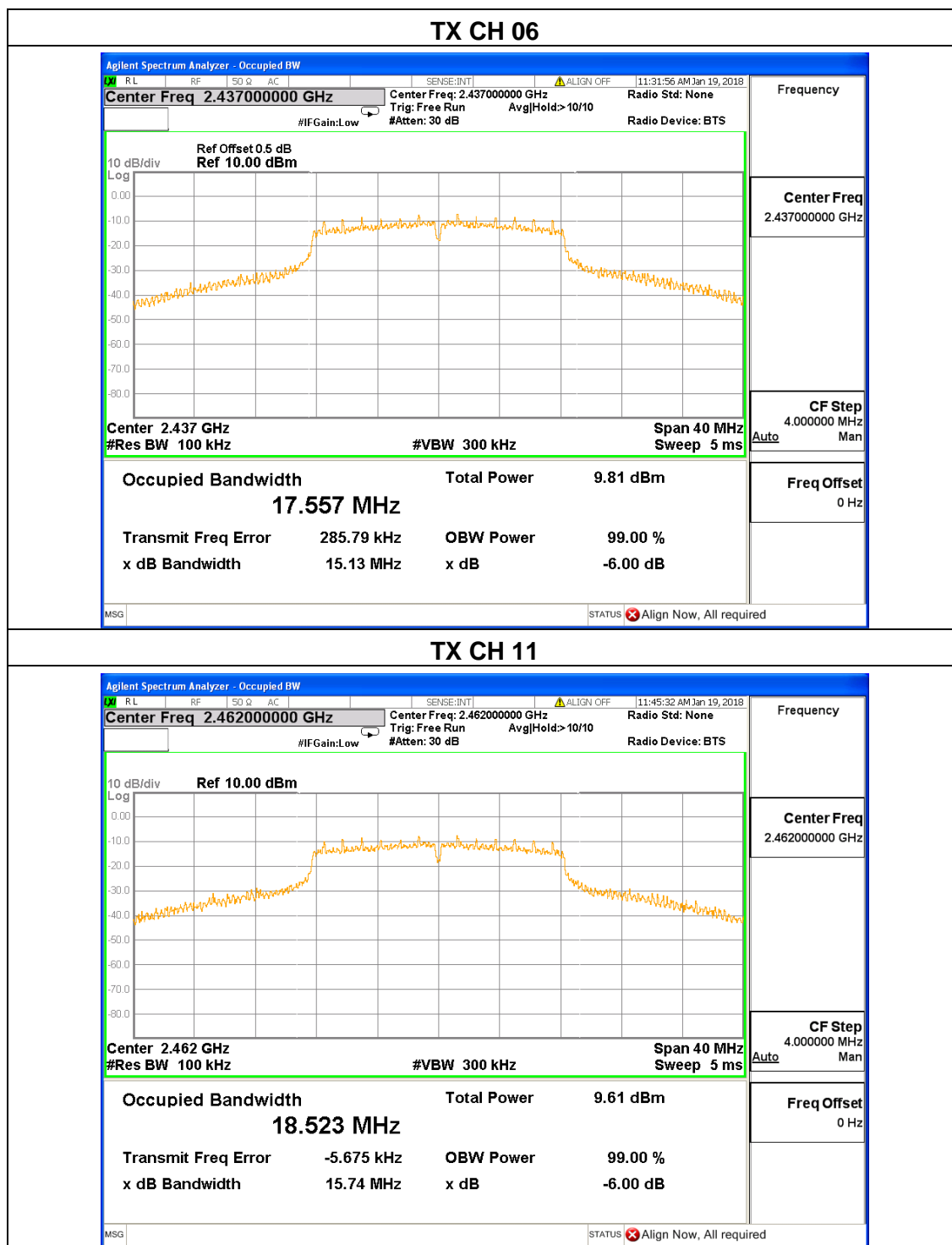




EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	TX g Mode /CH01, CH06, CH11		

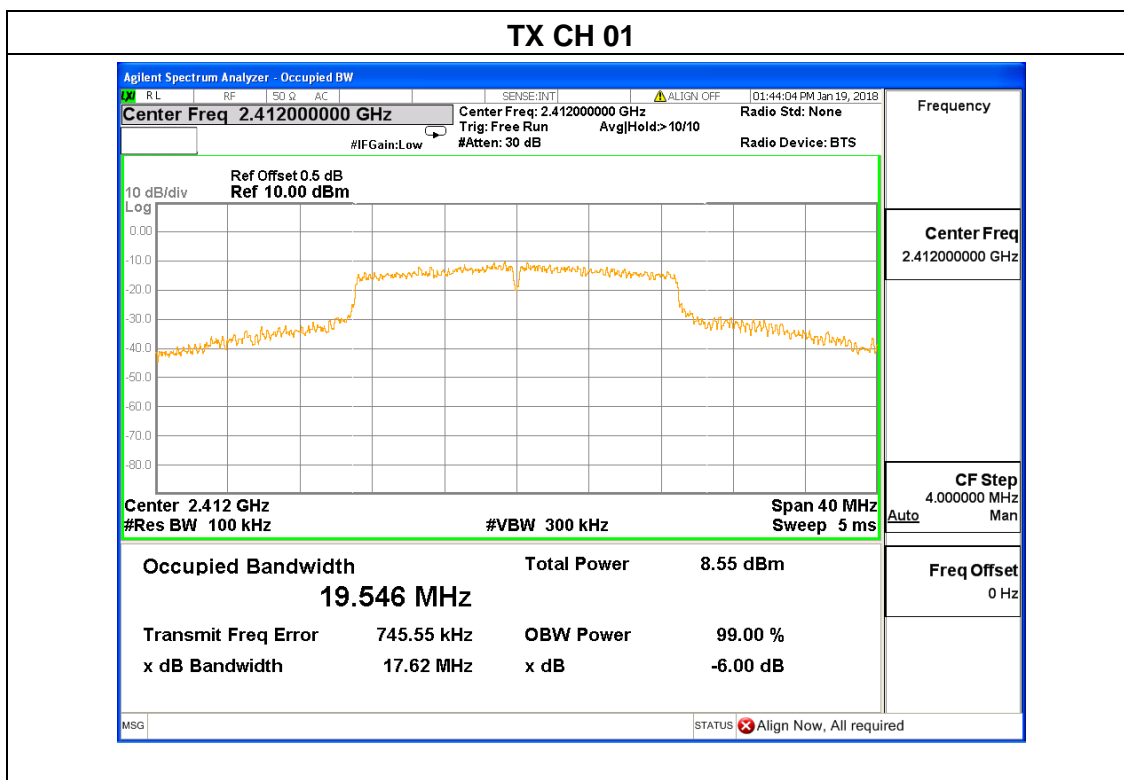
Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	15.47	500	Pass
Middle	2437	15.13	500	Pass
High	2462	15.74	500	Pass

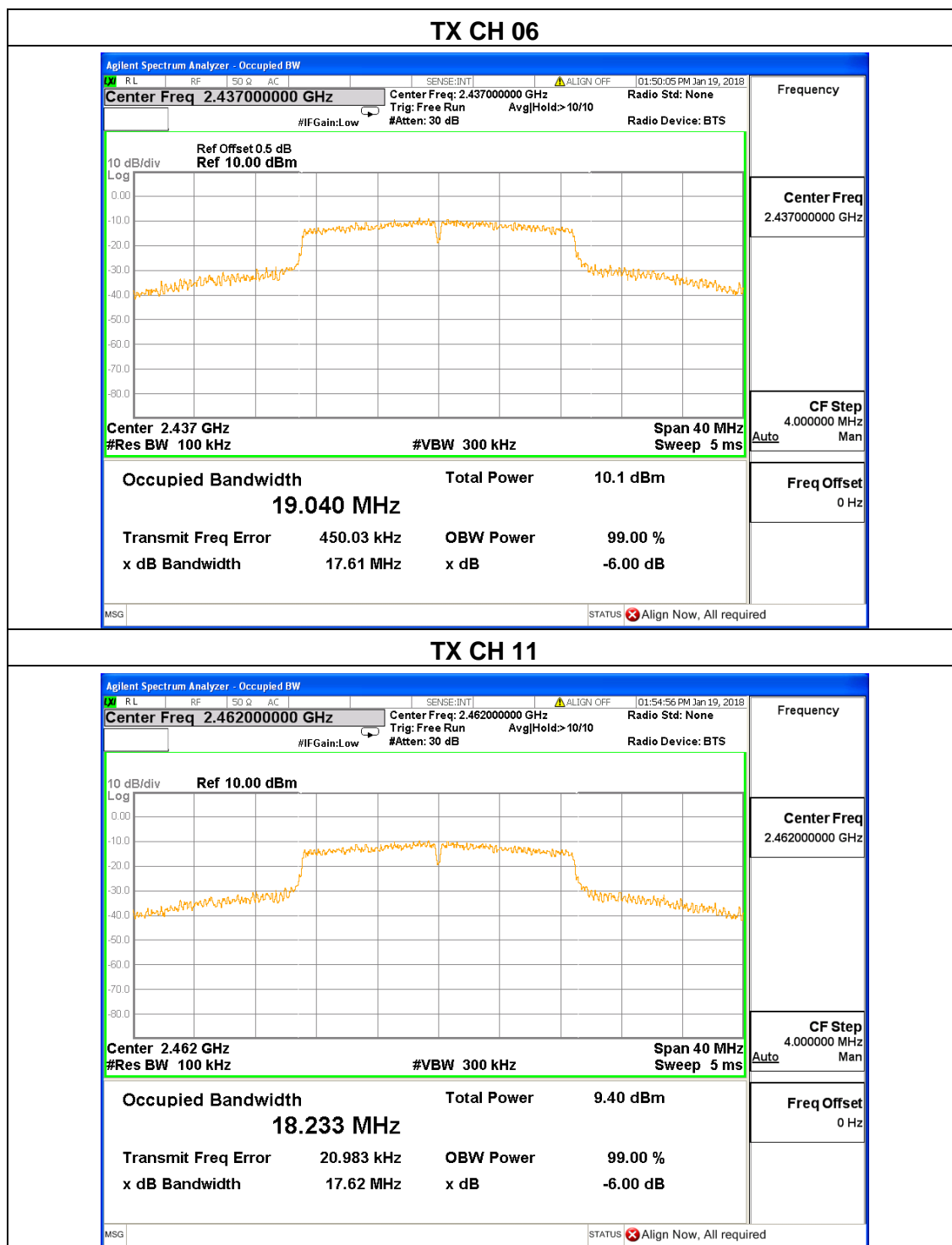




EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	TX n20 Mode /CH01, CH06, CH11		

Channel	Frequency (MHz)	6dB bandwidth (MHz)	Limit (kHz)	Result
Low	2412	17.62	500	Pass
Middle	2437	17.61	500	Pass
High	2462	17.62	500	Pass





4.6 PEAK OUTPUT POWER TEST

4.6.1 LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	2400-2483.5	PASS

4.6.2 TEST SETUP



4.6.3 TEST PROCEDURE

The EUT was directly connected to the Power meter

EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.6.4 TEST RESULTS

EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5Vfrom adapter
Test Mode :	TX b/g/n Mode /CH01, CH06, CH11		

Test Channe	Frequency	Maximum Conducted Output Power(PK)	LIMIT
	(MHz)	(dBm)	dBm
TX 802.11b			
CH01	2412	5.39	30
CH06	2437	6.05	30
CH11	2462	5.12	30
TX 802.11g			
CH01	2412	5.23	30
CH06	2437	8.62	30
CH11	2462	7.41	30
TX 802.11n20			
CH01	2412	8.55	30
CH06	2437	8.73	30
CH11	2462	9.90	30

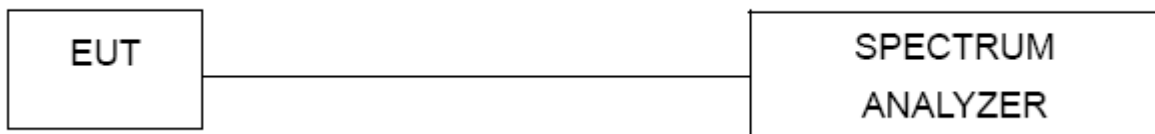
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4.7 Restried-Band edge

4.7.1 Limits

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

4.7.2 TEST SETUP



4.7.3 Test Procedure

- Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.
- Position the EUT without connection to measurement instrument. Turn on the EUT and connect its antenna terminal to measurement instrument via a low loss cable. Then set it to any one measured frequency within its operating range, and make sure the instrument is operated in its linear range.
- Set RBW to 100 kHz and VBW of spectrum analyzer to 300 kHz with a convenient frequency span including 100 kHz bandwidth from band edge.
- Measure the highest amplitude appearing on spectral display and set it as a reference level. Plot the graph with marking the highest point and edge frequency.
- Repeat above procedures until all measured frequencies were complete.

EUT OPERATION CONDITIONS

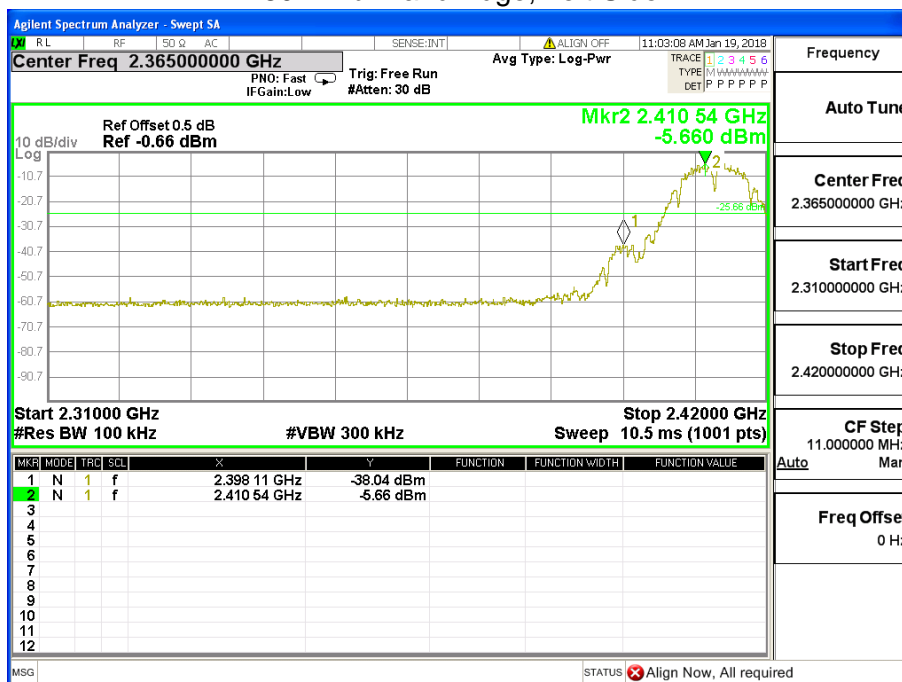
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

4.7.4 TEST RESULTS

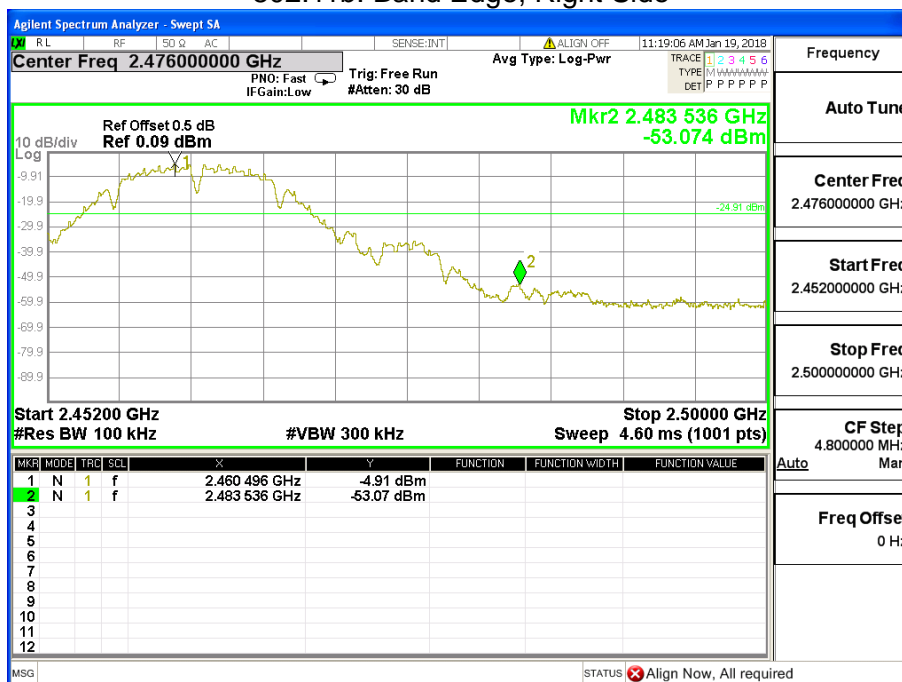
EUT :	TABLET	Model Name :	TT-713 Ultra
Temperature :	25 °C	Relative Humidity :	60%
Pressure :	1012 hPa	Test Voltage :	DC 5Vfrom adapter

Frequency Band	Delta Peak to band emission (dBc)	> Limit (dBc)	Result
802.11b mode			
Left-band	32.380	20	Pass
Right-band	48.160	20	Pass
802.11g mode			
Left-band	28.380	20	Pass
Right-band	36.220	20	Pass
802.11n20 mode			
Left-band	21.880	20	Pass
Right-band	32.520	20	Pass

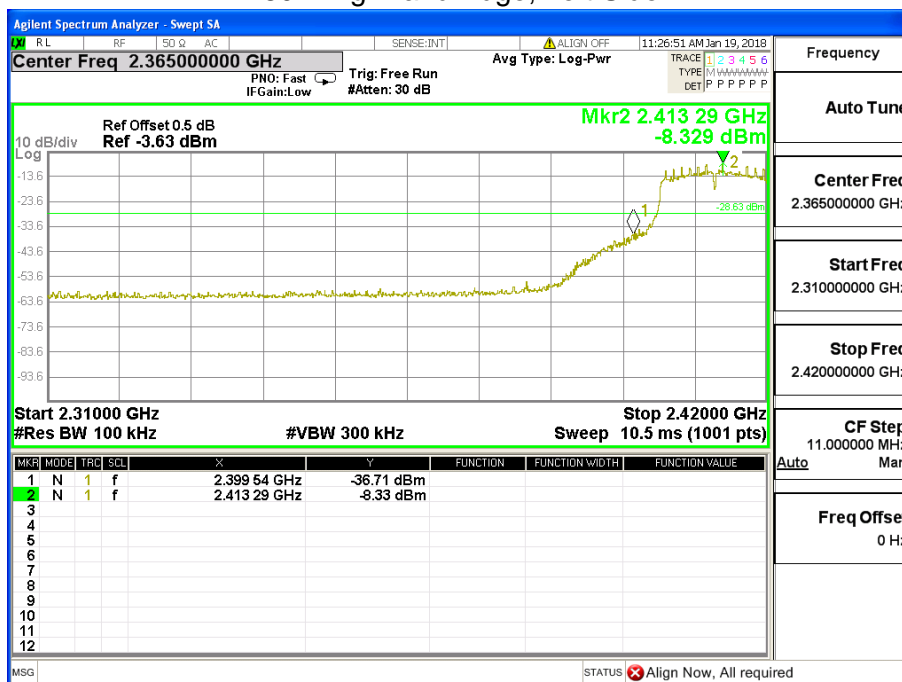
802.11b: Band Edge, Left Side



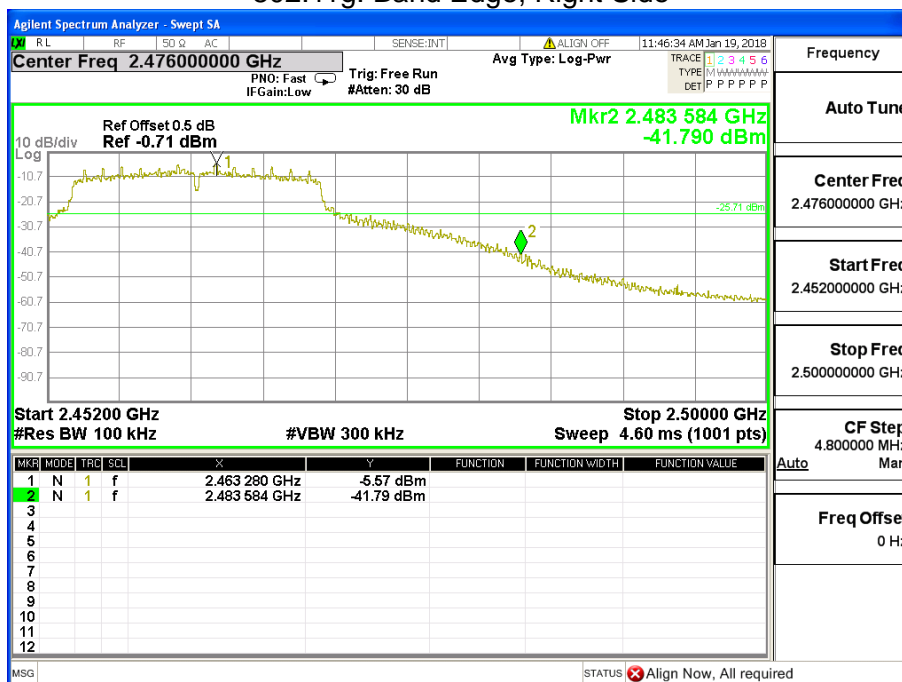
802.11b: Band Edge, Right Side



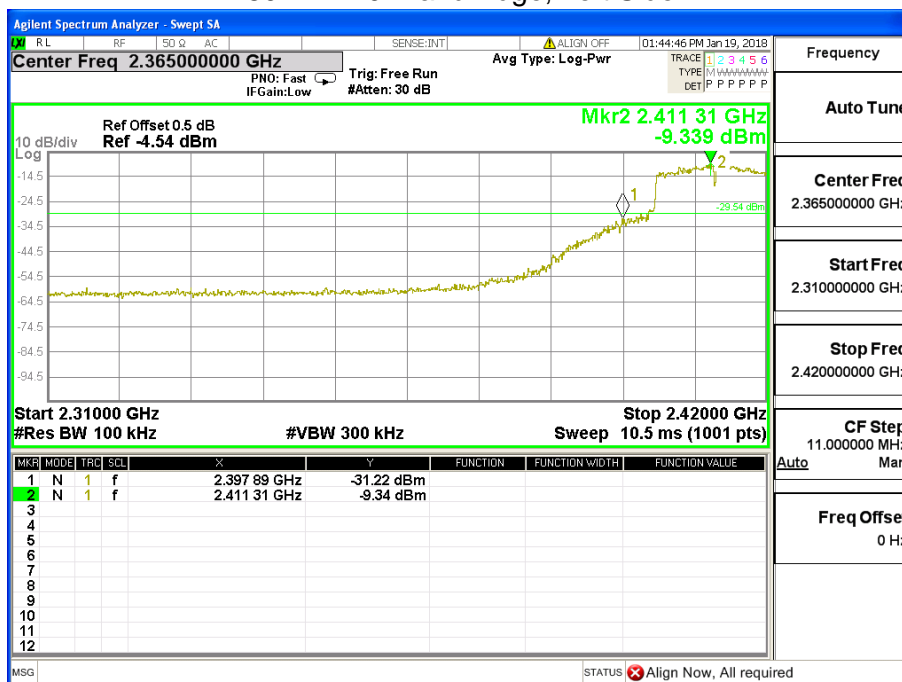
802.11g: Band Edge, Left Side



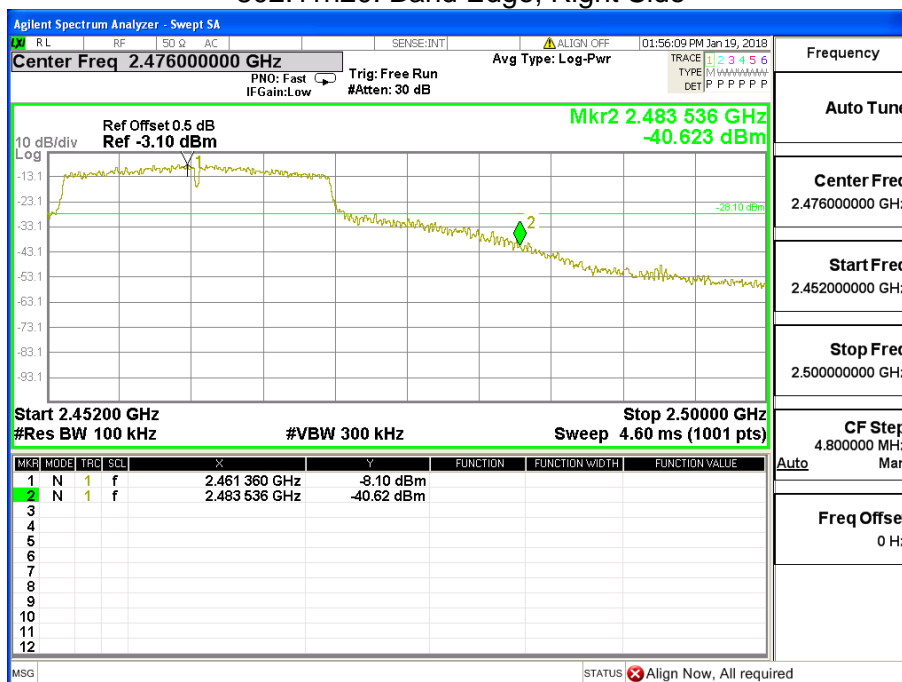
802.11g: Band Edge, Right Side



802.11n20: Band Edge, Left Side

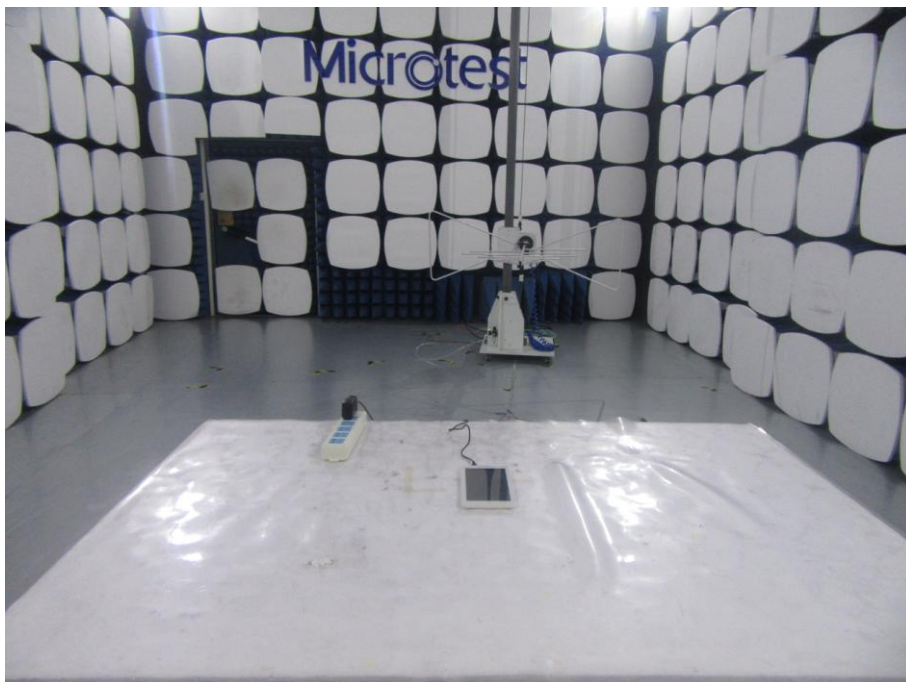


802.11n20: Band Edge, Right Side



4.8 EUT TEST PHOTO

Radiated Measurement Photos



----END OF REPORT----