

Report No.: TW2206057-03E

File reference No.: 2022-06-21

Applicant: Shenzhen Jingwah Information Technology Co., Ltd.

Product: Tablet PC

Model No.: ST8888, ST8888D, ST8888 CA, ST8888DPK, ST8888DBL

Trademark: Smartab

Test Standards: FCC Part 15.247

Test result:

It is herewith confirmed and found to comply with the

requirements set up by ANSI C63.10, FCC Part 15.247 for the

evaluation of electromagnetic compatibility

Approved By

Terry Tong

Terry Tang

Manager

Dated: June 21, 2022

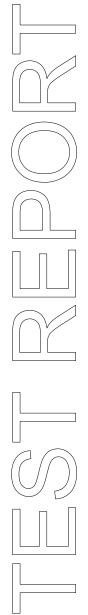
Results appearing herein relate only to the sample tested

The technical reports is issued errors and omissions exempt and is subject to withdrawal at

# SHENZHEN TIMEWAY TESTING LABORATORIES

Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le Village, Nanshan District, Shenzhen, China

Tel (755) 83448688, Fax (755) 83442996, E-Mail:info@timeway-lab.com



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# **Special Statement:**

The testing quality ability of our laboratory meet with "Quality Law of People's Republic of China" Clause 19.

The testing quality system of our laboratory meet with ISO/IEC-17025 requirements, which is approved by CNAL. This approval result is accepted by MRA of APLAC.

Our test facility is recognized, certified, or accredited by the following organizations:

## **CNAL-LAB Code: L2292**

The EMC Laboratory has been assessed and in compliance with CNAL/AC01:2002 accreditation criteria for testing Laboratories (identical to ISO/IEC 17025:2017 General Requirements) for the Competence of testing Laboratories.

# FCC-Registration No.: 744189

The EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 744189.

## Industry Canada (IC) — Registration No.:5205A

The EMC Laboratory has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 5205A.

### **A2LA** (Certification Number:5013.01)

The EMC Laboratory has been accredited by the American Association for Laboratory Accreditation (A2LA). Certification Number:5013.01

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# **Test Report Conclusion**

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#### 1.0 General Details

### 1.1 Test Lab Details

Name: SHENZHEN TIMEWAY TESTING LABORATORIES.

Address: Zone C, 1st Floor, Block B, Jun Xiang Da Building, Zhongshan Park Road West, Tong Le

Village, Nanshan District, Shenzhen, China

Telephone: (755) 83448688 Fax: (755) 83442996

Site Listed with Federal Communications commission (FCC)

Registration Number:744189 For 3m Anechoic Chamber

Site Listed with Industry Canada of Ottawa, Canada

Registration Number: IC: 5205A

For 3m Anechoic Chamber

#### 1.2 Applicant Details

Applicant: Shenzhen Jingwah Information Technology Co., Ltd.

Address: 6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community, Huaqiangbei,

Futian District, Shenzhen

Telephone: -Fax: --

#### 1.3 Description of EUT

Product: Tablet PC

Manufacturer: Shenzhen Jingwah Information Technology Co., Ltd.

Address: 6F, Bldg.4, Jinghua Square, No. 168, Zhenzhong Rd., Fuqiang Community,

Huaqiangbei, Futian District, Shenzhen

Trademark: Smartab Model Number: ST8888

Additional Model Number: ST8888D, ST8888 CA, ST8888DPK, ST8888DBL

Hardware Version: A863K-68T5F

 Software Version:
 ST8888\_V01\_22061721

 Serial No.:
 ST8888202205000001

 Rating:
 Input: DC5V, 2A

Battery: DC3.7V, 3500mAh Li-ion battery

Power Supply: Model: TPA-46050200UU

Input: 100-240V~, 50/60Hz, 0.3A; Output: 5V, 2.0A

Type of Modulation IEEE 802.11b: DSSS (CCK, QPSK, DBPSK)

IEEE 802.11g/n (HT20, HT40): OFDM (64QAM, 16QAM, QPSK, BPSK)

Frequency range IEEE 802.11b/g/n (HT20): 2412-2462MHz;

The report refers only to the sample tested and does not apply to the bulk.

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IEEE 802.11n HT40: 2422-2452MHz

Channel Spacing 5MHz for IEEE 802.11b/g/n (HT20, HT40)

Air Data Rate IEEE 802.11b: 11, 5.5, 2, 1 Mbps

IEEE 802.11g: 54, 48,36, 24, 18, 12, 9, 6 Mbps

IEEE 802.11n HT20/HT40: mcs0-mcs7

Frequency Selection By software

Channel Number IEEE 802.11b/g/n (HT20): 11 Channels;

IEEE 802.11n (HT40): 7 Channels;

Antenna: FPC Antenna. The gain of the antennas is 1.42dBi (Get from the antenna

specification)

1.4 Submitted Sample: 2 Samples

1.5 Test Duration

2022-06-07 to 2022-06-20

1.6 Test Uncertainty

Conducted Emissions Uncertainty = 3.6dB

Radiated Emissions below 1GHz Uncertainty =4.7dB

Radiated Emissions above 1GHz Uncertainty =6.0dB

Conducted Power Uncertainty =6.0dB

Occupied Channel Bandwidth Uncertainty = 5%

Note: The measurement uncertainty is for coverage factor of k=2 and a level of confidence of 95%.

1.7 Test Engineer

The sample tested by

Print Name: Andy Xing

Andy -xing

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2.0 Test Equipment					
Instrument Type	Manufacturer	Model	Serial No.	Date of Cal.	Due Date
ESPI Test Receiver	R&S	ESPI 3	100379	2022-06-17	2023-06-16
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2022-06-17	2023-06-16
Loop Antenna	EMCO	6507	00078608	2021-06-18	2024-06-17
Spectrum	R&S	FSIQ26	100292	2022-06-17	2023-06-16
Horn Antenna	A-INFO	LB-180400-KF	ANT01060660	2021-07-02	2024-07-02
Horn Antenna	R&S	BBHA 9120D	9120D-631	2021-07-02	2024-07-02
Power meter	Anritsu	ML2487A	6K00003613	2022-06-17	2023-06-16
Power sensor	Anritsu	MA2491A	32263	2022-06-17	2023-06-16
Bilog Antenna	Schwarebeck	VULB9163	9163/340	2021-07-02	2024-07-01
9*6*6 Anechoic			N/A	2021-07-02	2022-07-01
EMI Test Receiver	RS	ESVB	826156/011	2022-06-17	2023-06-16
EMI Test Receiver	RS	ESH3	860904/006	2022-06-17	2023-06-16
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2022-06-17	2023-06-16
Spectrum	HP/Agilent	E4407B	MY50441392	2022-06-17	2023-06-16
Spectrum	RS	FSP	1164.4391.38	2022-01-14	2023-01-13
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA	-	2022-06-17	2023-06-16
RF Cable	Zhengdi	7m		2022-06-17	2023-06-16
RF Switch	EM	EMSW18	060391	2022-06-17	2023-06-16
Pre-Amplifier	Schwarebeck	BBV9743	#218	2022-06-17	2023-06-16
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2022-06-17	2023-06-16
LISN	SCHAFFNER	NNB42	00012	2022-01-05	2023-01-04

## 2.2 Automation Test Software

### For Conducted Emission Test

Name	Version
EZ-EMC	Ver.EMC-CON 3A1.1

# For Radiated Emissions

Name	Version
EMI Test Software BL410-EV18.91	V18.905
EMI Test Software BL410-EV18.806 High Frequency	V18.06

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#### 3. DESCRIPTION OF TEST MODES

## IEEE 802.11b, 802.11g, 802.11n (HT20) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2412
Middle	2437
High	2462

IEEE 802.11b mode: 1Mbps data rate (worst case) was chosen for full testing. IEEE 802.11g mode: 6Mbps data rate (worst case) was chosen for full testing. IEEE 802.11n (HT20) mode: mcs0 (worst case) were chosen for full testing;

### IEEE 802.11n (HT40) mode

The EUT had been tested under operating condition. There are three channels have been tested as following:

Channel	Frequency (MHz)
Low	2422
Middle	2437
High	2452

IEEE 802.11n (HT40) mode: mcs0 data rate (worst case) were chosen for full testing

Note: During the test, the duty cycle was set up to >98%

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#### 3.0 **Technical Details**

#### 3.1 **Summary of test results**

Standard	Test Type	Result	Notes		
FCC Part 15, Paragraph15.203	Antenna Requirement	Pass	Complies		
FCC Part 15, Paragraph15.207	<b>Conducted Emission Test</b>	Pass	Complies		
	Spectrum bandwidth of a	Pass	Complies		
FCC Part 15 Subpart C	Orthogonal Frequency				
Paragraph 15.247(a)(2) Limit	<b>Division Multiplex System</b>				
1 urugrupii 1012 i / (u)(2) 2iiiii	Limit: 6dB				
	bandwidth>500kHz				
FCC Part 15, Paragraph	Maximum peak output	Pass			
15.247(b)	power		Complies		
13.247(0)	Limit: max. 30dBm				
FCC Part 15, Paragraph	Transmitter Radiated	Pass	Complies		
15.109,15.205 & 15.209	Emission				
	Limit: Table 15.209				
FCC Part 15, Paragraph	<b>Power Spectral Density</b>	Pass	Complies		
15.247(e)	Limit: max. 8dBm/3kHz				
FCC Part 15, Paragraph	Out of Band Emission and	Pass	Complies		
15.247(d)	<b>Restricted Band</b>				
	Radiation				
	Limit: 20dB less than				
	peak value of fundamental				
	frequency				
	Restricted band limit:				
	<b>Table 15.209</b>				

#### 3.2 **Test Standards**

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

#### 4.0 **EUT Modification**

No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

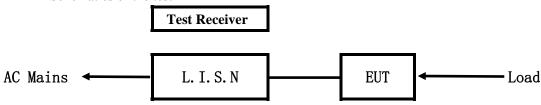
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#### **5.0** Power Line Conducted Emission Test

### 5.1 Schematics of the test

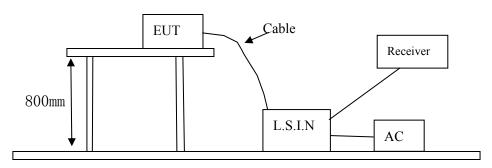


**EUT: Equipment Under Test** 

#### 5.2 Test Method and test Procedure

The EUT was tested according to ANSI C63.10-2013. The Frequency spectrum From 0.15MHz to 30MHz was investigated. The LISN used was 50ohm/50uH as specified by section 5.1 of ANSI C63.10-2013.

Test Voltage: 120V~, 60Hz Block diagram of Test setup



## 5.3 Configuration of The EUT

The EUT was configured according to ANSI C63.10-2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

### A. EUT

Device	Manufacturer Model		FCC ID
Tablet PC	Shenzhen Jingwah Information Technology Co., Ltd.	ST8888, ST8888D, ST8888 CA, ST8888DPK, ST8888DBL	RBD-W811W

#### B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

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## C. Peripherals

Device	Manufacturer	Model	FCC ID/DOC	Cable

## 5.4 EUT Operating Condition

Operating condition is according to ANSI C63.10-2013.

- A Setup the EUT and simulators as shown on follow
- B Enable AF signal and confirm EUT active to normal condition

## 5.5 Power line conducted Emission Limit according to Paragraph 15.207

Frequency	Limits (dB µ V)				
(MHz)	Quasi-peak Level	Average Level			
0.15 ~ 0.50	66.0~56.0*	56.0~46.0*			
$0.50 \sim 5.00$	56.0	46.0			
5.00 ~ 30.00	60.0	50.0			

Notes:

- 1. \*Decreasing linearly with logarithm of frequency.
- 2. The tighter limit shall apply at the transition frequencies

## 5.6 Test Results

The frequency spectrum from 0.15MHz to 30MHz was investigated. All reading are quasi-peak values with a resolution bandwidth of 9kHz.

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#### A: Conducted Emission on Live Terminal (150kHz to 30MHz)

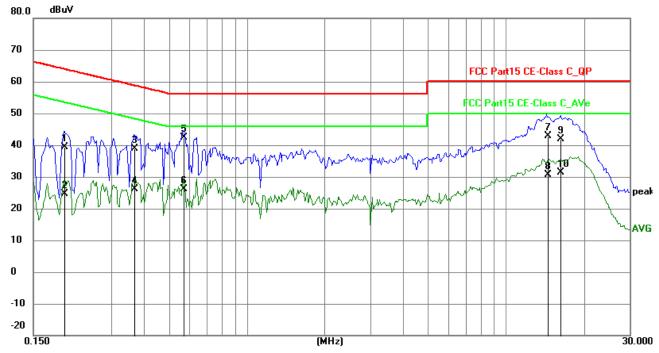
## **EUT Operating Environment**

Temperature: 26℃ Humidity: 65%RH Atmospheric Pressure: 101 kPa

**EUT set Condition: Keep WIFI Transmitting** 

**Results: Pass** 

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1986	29.69	9.75	39.44	63.67	-24.23	QP	Р
2	0.1986	14.92	9.75	24.67	53.67	-29.00	AVG	Р
3	0.3684	29.00	9.76	38.76	58.54	-19.78	QP	Р
4	0.3684	16.37	9.76	26.13	48.54	-22.41	AVG	Р
5	0.5701	32.69	9.77	42.46	56.00	-13.54	QP Q	Р
6	0.5701	16.45	9.77	26.22	46.00	-19.78	AVG	П
7	14.4816	32.44	10.36	42.80	60.00	-17.20	QP	П
8	14.4816	20.25	10.36	30.61	50.00	-19.39	AVG	Р
9	16.1399	31.36	10.45	41.81	60.00	-18.19	QP	Р
10	16.1399	20.86	10.45	31.31	50.00	-18.69	AVG	Р

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#### B: Conducted Emission on Neutral Terminal (150kHz to 30MHz)

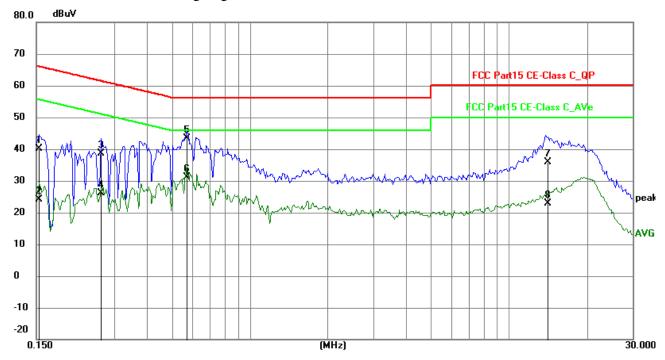
## **EUT Operating Environment**

Humidity: 65%RH Atmospheric Pressure: 101 kPa Temperature: 26°C

**EUT set Condition: Keep WIFI Transmitting** 

**Results: Pass** 

Please refer to following diagram for individual



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.1539	30.32	9.78	40.10	65.79	-25.69	QP	Р
2	0.1539	14.37	9.78	24.15	55.79	-31.64	AVG	Р
3	0.2672	28.98	9.75	38.73	61.20	-22.47	QP Q	Р
4	0.2672	16.37	9.75	26.12	51.20	-25.08	AVG	Р
5	0.5712	33.49	9.77	43.26	56.00	-12.74	QP	П
6	0.5712	21.36	9.77	31.13	46.00	-14.87	AVG	J
7	14.0629	25.54	10.34	35.88	60.00	-24.12	Q Q	Р
8	14.0629	12.65	10.34	22.99	50.00	-27.01	AVG	Р

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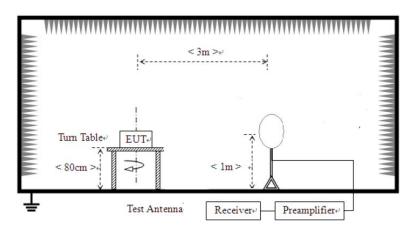


#### 6 Radiated Emission Test

- 6.1 Test Method and test Procedure:
- (1) The EUT was tested according to ANSI C63.10-2013. The radiated test was performed at Timeway EMC Laboratory. This site is on file with the FCC laboratory division, Registration No. 744189
- (2) The EUT, peripherals were put on the turntable which table size is 1m x 1.5 m, table high 0.8 m. All set up is according to ANSI C63.10-2013.
- (3) The frequency spectrum from 30 MHz to 25 GHz was investigated. All readings from 30 MHz to 1 GHz are Quasi-peak values with a resolution bandwidth of 120 kHz. F For measurement above 1GHz, peak values with RBW=1MHz VBW=3MHz and PK detector. AV value with RBW=1MHz, VBW=3MHz and RMS detector. Measurements were made at 3 meters.
- (4) The antenna high is varied from 1 m to 4 m high to find the maximum emission for each frequency.
- (5) Maximizing procedure was performed on the six (6) highest emissions to ensure EUT compliance is with all installation combinations. All data was recorded in the peak detection mode. Quasi-peak readings was performed only when an emission was found to be marginal (within -4 dB of specification limit), and are distinguished with a "**QP**" in the data table.
- (6) The antenna polarization: Vertical polarization and Horizontal polarization.

### **Block diagram of Test setup**

For radiated emissions from 9kHz to 30MHz

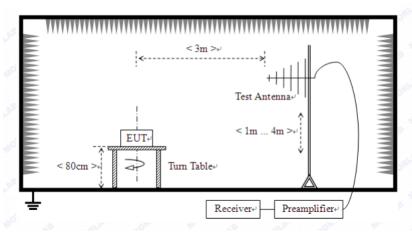


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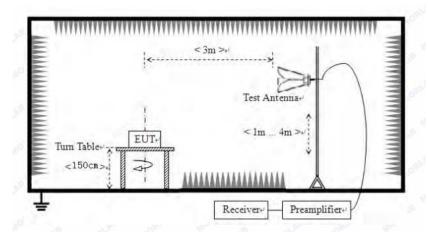
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For radiated emissions from 30MHz to1GHz



For radiated emissions above 1GHz



- 6.2 Configuration of The EUT

  Same as section 5.3 of this report
- 6.3 EUT Operating Condition
  Same as section 5.4 of this report.
- 6.4 Radiated Emission Limit

All emission from a digital device, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strength specified below:

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## Frequencies in restricted band are complied to limit on Paragraph 15.209

Frequency Range (MHz)	Distance (m)	Field strength (dB µ V/m)
0.009-0.049	3	20log(2400/F(kHz)) +40log (300/3)
0.490-1.705	3	20log(24000/F(kHz)) +40log (30/3)
1.705-30	3	69.5
30-88	3	40.0
88-216	3	43.5
216-960	3	46.0
Above 960	3	54.0

Note:

- 1. RF Voltage (dBuV) = 20 log RF Voltage (uV)
- 2. In the Above Table, the tighter limit applies at the band edges.
- 3. Distance refers to the distance in meters between the measuring instrument antenna and the EUT
- 4. This is a handhold device. The radiated emissions should be tested under 3-axes position (Lying, Side, and Stand), After pre-test. It was found that the worse radiated emission was get at the lying position.
- 5. All scanning using PK detector. And the final emission level was get using QP detector for frequency range from 30-1000MHz.As to 1G-25G, the final emission level got using PK. For fundamental measurement, PK detector used.
- 6. For radiated emissions from 9kHz to 30MHz, the emission level is much less than the limit for more than 20dB. No necessary to take down the record.
- 7. Battery fully charged was used during tests.
- 8. Worse case was recorded in the test report. 802.11g was the worst case.

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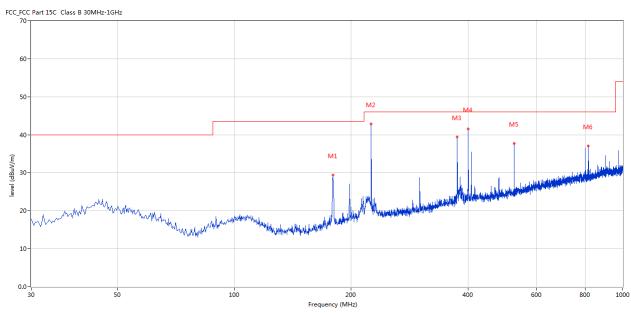


# Test result General Radiated Emission Data and Harmonics Radiated Emission Data

## Radiated Emission In Horizontal (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting** 

**Results: Pass** 



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	179.343	29.37	-15.38	43.5	-14.13	Peak	292.00	200	Horizontal	Pass
2	225.164	42.88	-12.91	46.0	-3.12	Peak	0.00	200	Horizontal	Pass
3	374.991	39.46	-9.44	46.0	-6.54	Peak	72.00	100	Horizontal	Pass
4	399.963	41.51	-8.57	46.0	-4.49	Peak	278.00	100	Horizontal	Pass
5	525.061	37.67	-6.55	46.0	-8.33	Peak	0.00	200	Horizontal	Pass
6	815.989	37.08	-2.96	46.0	-8.92	Peak	0.00	200	Horizontal	Pass

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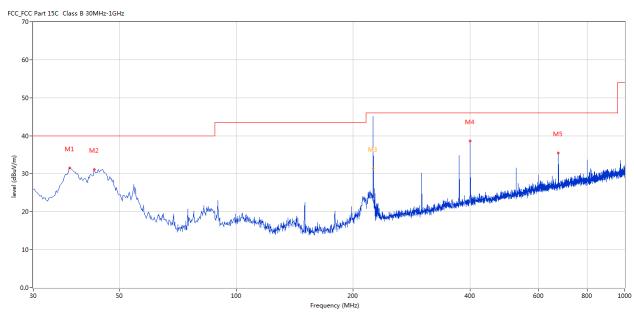


# Test result General Radiated Emission Data and Harmonics Radiated Emission Data

## Radiated Emission In Vertical (30MHz----1000MHz)

EUT set Condition: **Keep Transmitting** 

**Results: Pass** 



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	37.273	31.50	-13.06	40.0	-8.50	Peak	353.00	100	Vertical	Pass
2	43.092	31.18	-11.50	40.0	-8.82	Peak	28.00	100	Vertical	Pass
3	225.023	45.02	-12.91	46.0	-0.98	Peak	360.00	200	Vertical	Pass
3*	225.023	31.42	-12.91	46.0	-14.58	QP	360.00	200	Vertical	Pass
4	399.963	38.58	-8.57	46.0	-7.42	Peak	301.00	100	Vertical	Pass
5	674.889	35.44	-4.37	46.0	-10.56	Peak	360.00	200	Vertical	Pass

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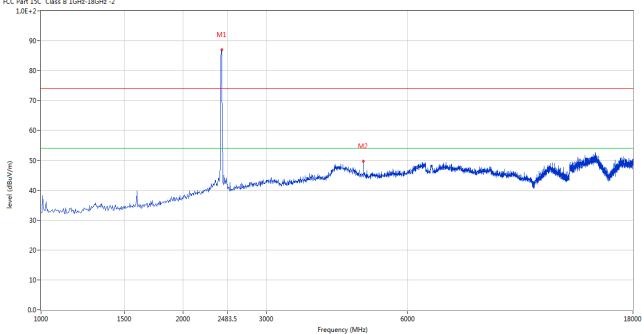
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Please refer to the following test plots for details:

# CH01 for 11g at 6Mbps: Horizontal





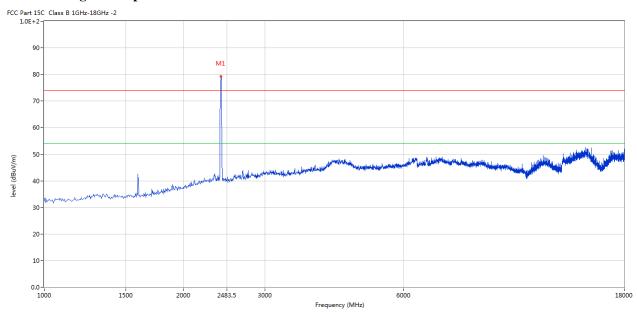
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	2412.896	87.05	-3.57	74.0	13.05	Peak	212.00	100	Horizontal	N/A
2	4824.044	49.70	3.14	74.0	-24.30	Peak	156.00	100	Horizontal	Pass

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## CH01 for 11g at 6Mbps: Vertical



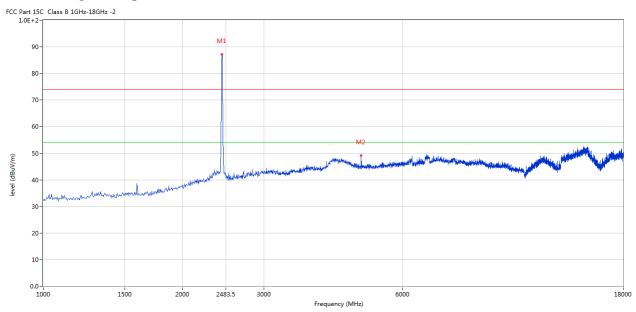
ſ	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
	1	2410.647	79.24	-3.57	74.0	5.24	Peak	229.00	100	Vertical	N/A

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## CH06 for 11g at 6Mbps: Horizontal



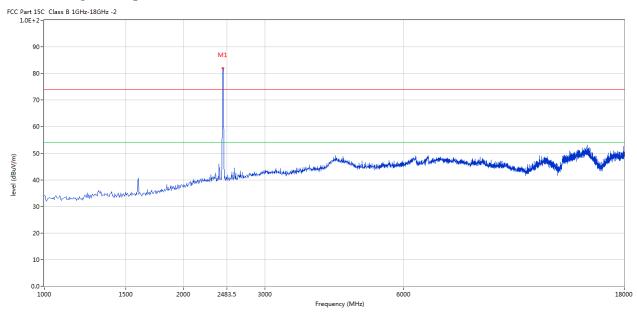
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2436.141	87.25	-3.57	74.0	13.25	Peak	206.00	100	Horizontal	N/A
2	4875.031	49.17	3.19	74.0	-24.83	Peak	216.00	100	Horizontal	Pass

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## CH06 for 11g at 6Mbps: Vertical



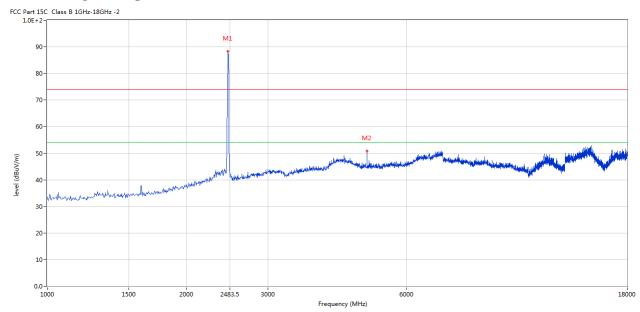
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2436.141	81.96	-3.57	74.0	7.96	Peak	182.00	100	Vertical	N/A

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## CH11 for 11g at 6Mbps: Horizontal



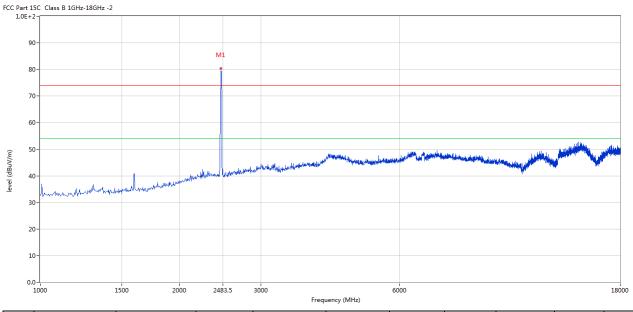
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2461.635	88.29	-3.57	74.0	14.29	Peak	214.00	100	Horizontal	N/A
2	4921.770	50.90	3.27	74.0	-23.10	Peak	214.00	100	Horizontal	Pass

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## CH11 for 11g at 6Mbps: Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2461.635	80.43	-3.57	74.0	6.43	Peak	180.00	100	Vertical	N/A

Note: 1. Result Level = Reading + Factor

- 2. Factor= AF + Cable Loss- Preamp
- 3. Margin = Result– Limit
- 4. For radiated Emissions from 18-25GHz and below 30MHz, it is only the floor noise and less than the limit for more than 20dB. No necessary to take down.
- 5. Note: the final peak measurement results less than the AV limit. No necessary to take down the final AV measurement result

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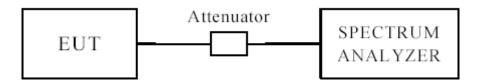
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## 7.0 6dB Bandwidth Measurement

## 7.1 Test Setup



### 7.2 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is >500 kHz

## 7.3 Test Procedure

- 1. Set resolution bandwidth (RBW) = 100 kHz
- 2. Set the video bandwidth (VBW)  $\geq$  3 x 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.

### 7.4 Test Result

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## 6dB Occupied Bandwidth

EUT			Tablet PC		Mode	:1	STS	3888
Mode			802.11b		Test V	/oltage	DC	3.7V
Temperat	ure		24 deg. C,		Humi	dity	56%	6 RH
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandv (MHz)			mum Limit MHz)	Pass/ Fail
1		2412	1	10.04			0.5	Pass
6		2437	1	10.05			0.5	Pass
11		2462	1	10.04		0.5		Pass
1		2412	11	9.08			0.5	Pass
6		2437	11	9.08			0.5	Pass
11		2462	11	9.08			0.5	Pass

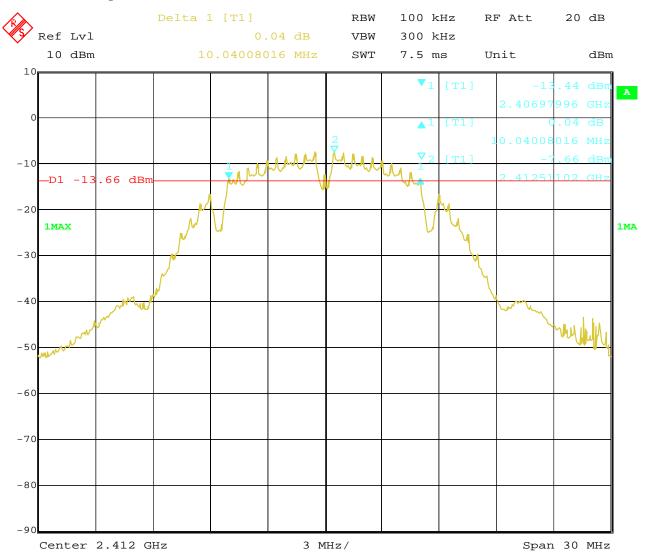
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## 1. 802.11b at 1Mbps of CH01

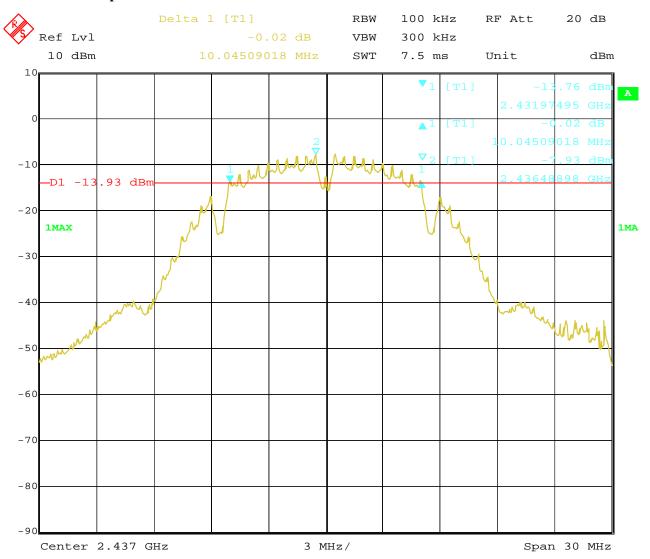


Date: 15.JUN.2022 12:02:36 Report No.: TW2206057-03E Page 27 of 86

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## 2. 802.11b at 1Mbps of CH06



Date: 15.JUN.2022 14:01:23

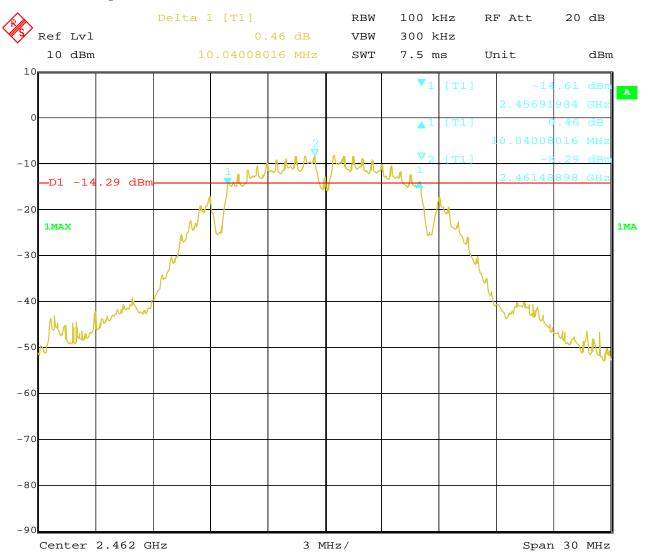
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## 3. 802.11b at 1Mbps of CH11

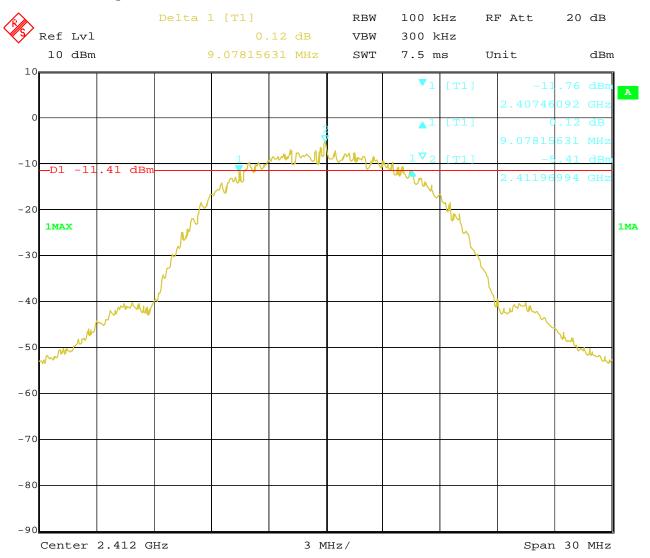


Date: 15.JUN.2022 14:04:36 Report No.: TW2206057-03E Page 29 of 86

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## 4. 802.11b at 11Mbps of CH01

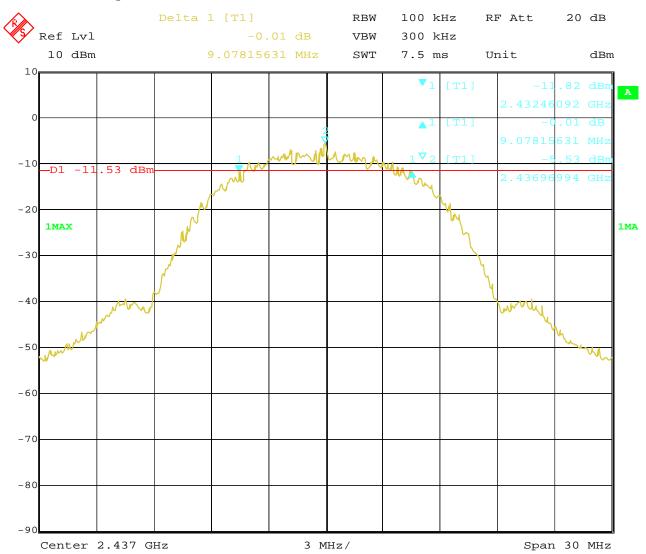


Date: 15.JUN.2022 14:58:22 Report No.: TW2206057-03E Page 30 of 86

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## 5. 802.11b at 11Mbps of CH06

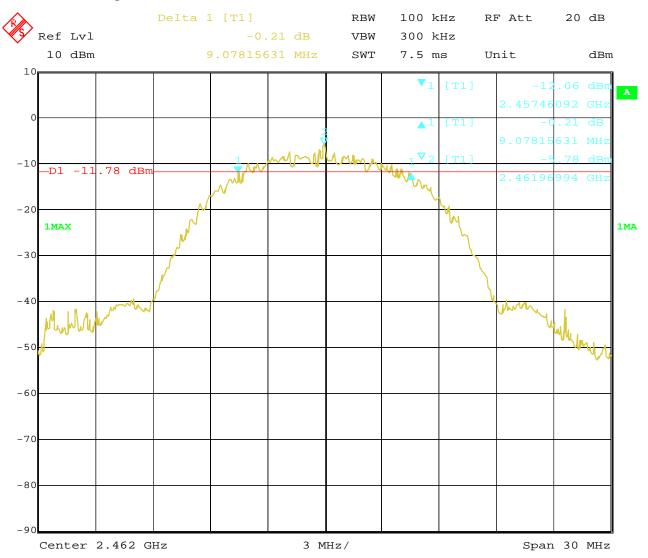


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## 6. 802.11b at 11Mbps of CH11



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## 6dB Occupied Bandwidth

EUT			Tablet PC		Mo	del		ST8888
Mode			802.11g		Tes	t Voltage		DC3.7V
Temperat	ure		24 deg. C,		Huı	midity		56% RH
Channel		el Frequency (MHz)	Data Transfer Rate (Mbps)	6 dB Bandwi (MHz)	dth	Minimum (MH		Pass/ Fail
1		2412	6	16.41		0.5		Pass
6		2437	6	16.41		0.5		Pass
11		2462	6 16.41 0.5		Pass			

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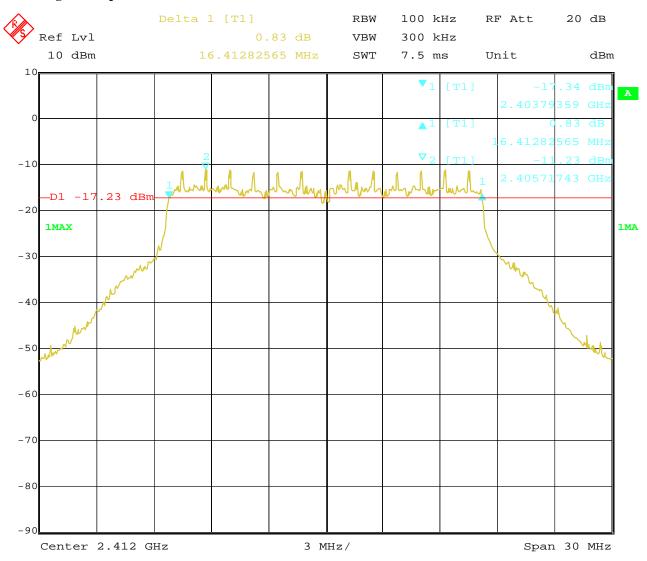
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#### **Test Plots:**

## 1. 802.11g at 6Mbps of CH01



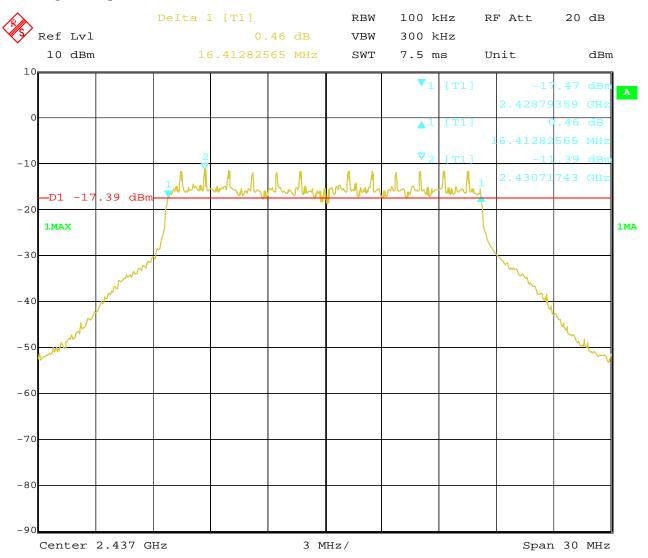
15.JUN.2022 12:09:08 Date:

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## 2. 802.11g at 6Mbps of CH06

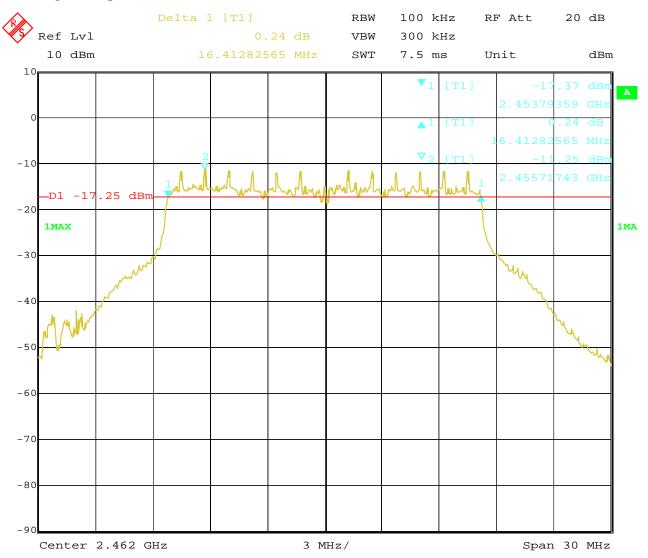


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## 3. 802.11g at 6Mbps of CH11



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## 6dB Occupied Bandwidth

EUT		Tablet PC			Model		ST8888	
Mode		802.11n HT20			Test Voltage		DC3.7V	
Temperature		24 deg. C,			Humidity		56% RH	
Channel	Channel Frequency (MHz)		Data Transfer Rate (Mbps)	6 dB Bandwidth (MHz)		Minimum Limit (MHz)		Pass/ Fail
1	2412		mcs0	17.56		0.5		Pass
6	2437		mcs0	17.56		0.5		Pass
11		2462	mcs0	17.5	66		0.5	Pass

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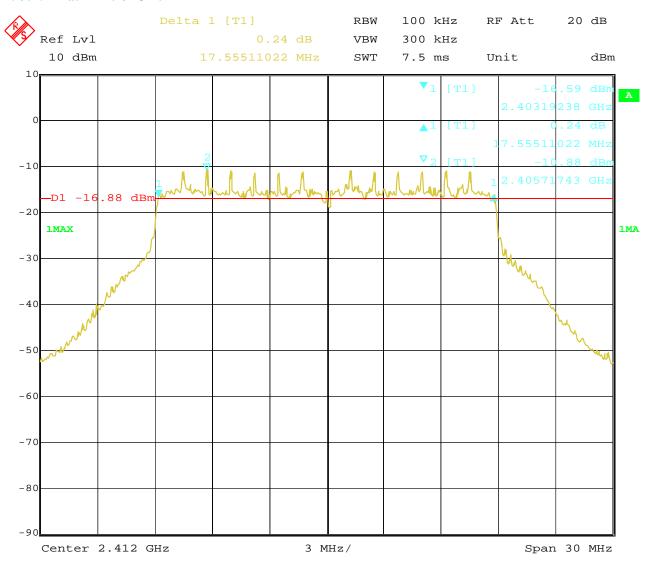
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### **Test Plots:**

# 1. 802.11n at HT20 of CH01



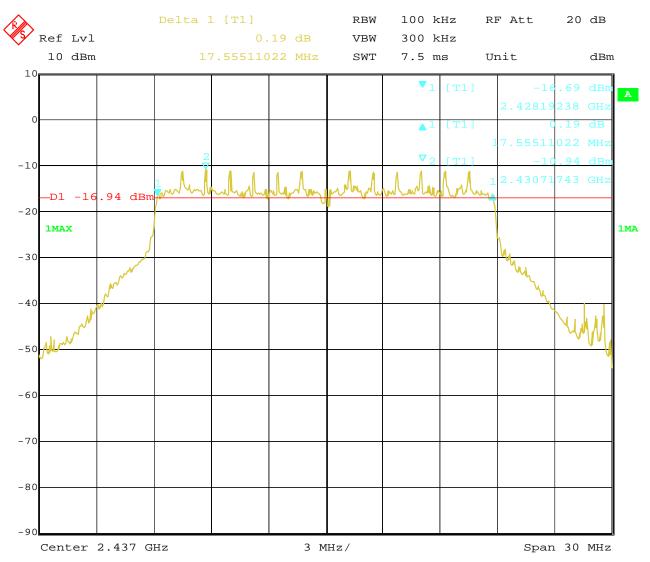
15.JUN.2022 14:30:17 Date:

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## 2. 802.11n at HT20 of CH06

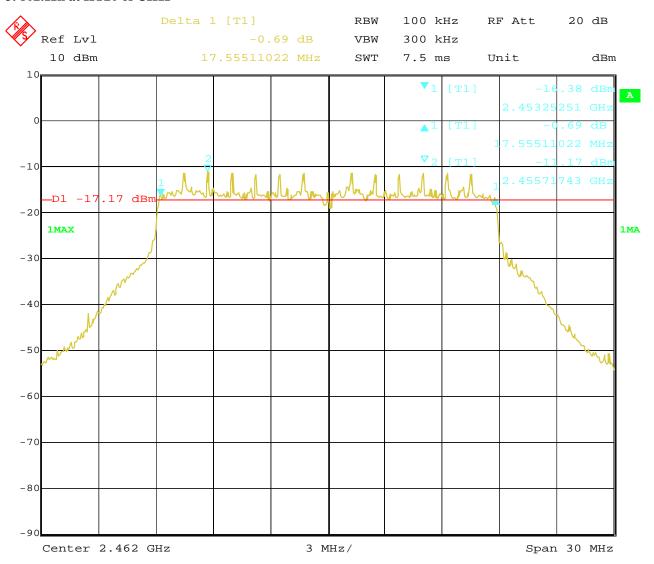


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## 3. 802.11n at HT20 of CH11



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# 6dB Occupied Bandwidth

EUT		7		Model		ST8888				
Mode		802.11n HT40 Test Voltage		Test Voltage		3.7V				
Temperat	ure	2		Humidity		56%	6 RH			
Channel		el Frequency (MHz)	Data Transfer 6 dB Ban Rate (MH (Mbps)					Pass/ Fail		
3		2422		2422 mcs0 3:		35.9	9		0.5	Pass
6		2437	mcs0	35.99			0.5	Pass		
9	2452		mcs0	35.9	9		0.5	Pass		

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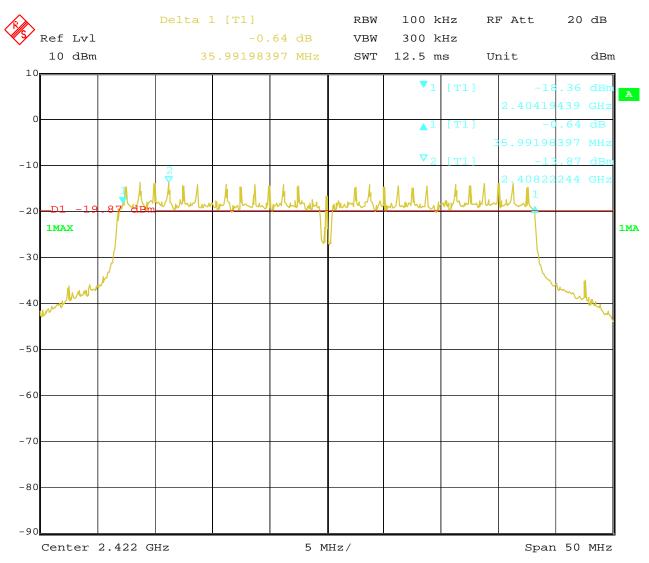
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### **Test Plots:**

# 1. 802.11n at HT40 of CH03



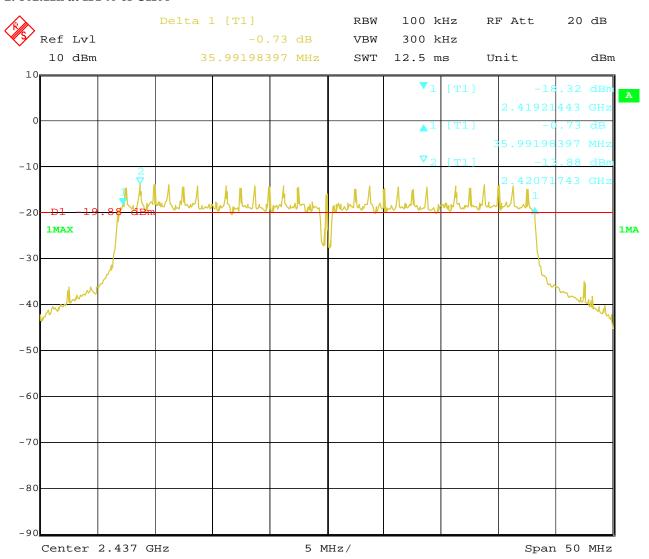
15.JUN.2022 14:36:28 Date:

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## 2. 802.11n at HT40 of CH06

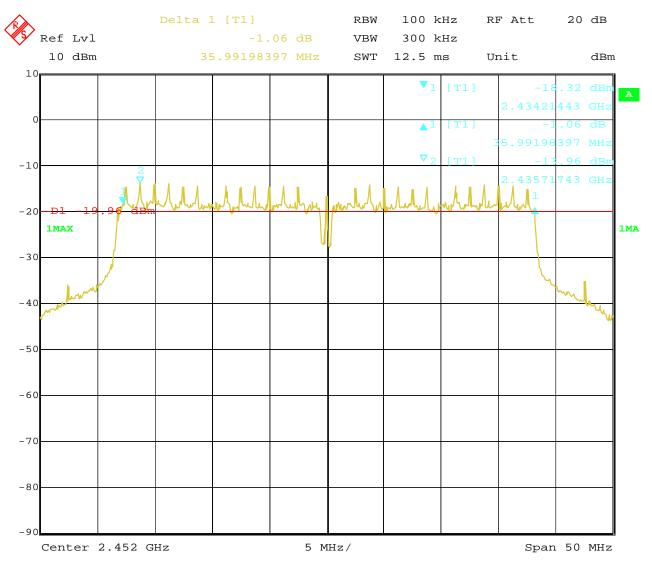


Date: 15.JUN.2022 14:42:26 Report No.: TW2206057-03E Page 43 of 86

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## 3. 802.11n at HT40 of CH09



Date: 15.JUN.2022 14:47:21 Report No.: TW2206057-03E

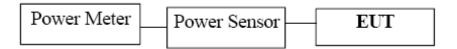
Date: 2022-06-21



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# 8. Maximum Output Power

# 8.1 Test Setup



## 8.2 Limits of Maximum Output Power

The Maximum Output Power Measurement is 30dBm.

### **8.3 Test Procedure**

The RF power output was measured with a Power meter connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: The Peak power was measured

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### **8.4Test Results**

EUT		Tablet PC		Model		ST8888	
Mode			802.11b	Test Voltage		DC3.7V	
Temperat	ure		24 deg. C,	Humidity		56% RH	
Channel	Channel Frequency (MHz)		PK Power (dBm)	Power Lin (dBm)	nit	Pass/ Fail	
1	2412		2.67	30		Pass	
6	2437		2.56	30		Pass	
11	2462		2.23	30		Pass	

Note: 1. At finial test to get the worst-case emission at 1Mbps for CH01, CH06 and CH11

2. The result basic equation calculation as follow: Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded

EUT		Tablet PC		Model	ST8888
Mode			802.11g	Test Voltage	DC3.7V
Temperat	Temperature		24 deg. C,	Humidity	56% RH
Channel	nannel Frequency (MHz)		PK Power (dBm)	Power Limit (dBm)	Pass/ Fail
1	2412		2.52		Pass
6	2437		2.53		Pass
11	11 2462		2.28	30	Pass

Note: 1. At finial test to get the worst-case emission at 6Mbps for CH01, CH06 and CH11

- 2. The result basic equation calculation as follow: Power Output = Power Reading + Cable loss + Attenuator
- 3. The worse case was recorded

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EUT		Tablet PC		Model	ST8888
Mode			802.11n (HT20)	Test Voltage	DC3.7V
Temperat	ure		24 deg. C,	Humidity	56% RH
Channel	Channel Frequency (MHz)		PK Power (dBm)	Power Limit (dBm)	Pass/ Fail
1	2412		2.47	30	Pass
6	2437		2.48		Pass
11	11 2462		2.21	30	Pass

Note: 1. At finial test to get the worst-case emission at mcs0 of 11n HT20 for CH01, CH06 and CH11

The result basic equation calculation as follow:
 Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded

EUT		Tablet PC		Model		ST8888
Mode		802.11n (HT40)		Test Voltage		DC3.7V
Temperat	Temperature		24 deg. C,	Humidity		56% RH
Channel	Channel Frequency (MHz)		PK Power (dBm)	Power Limit (dBm)		Pass/ Fail
3	2422		2.33	30		Pass
6	2437		2.30	30		Pass
9	2452		2.15	30		Pass

Note: 1. At finial test to get the worst-case emission at msc0 of 11n HT40 for CH03, CH06 and CH09

2. The result basic equation calculation as follow:Power Output = Power Reading + Cable loss + Attenuator

3. The worse case was recorded

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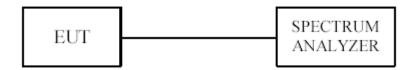
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# 9. Power Spectral Density Measurement

# 9.1 Test Setup



## 9.2 Limits of Power Spectral Density Measurement

The Maximum Power Spectral Density Measurement is 8dBm/3kHz.

### 9.3 Test Procedure

- 1. Use this procedure when the maximum peak conducted output power in the fundamental emission is used to demonstrate compliance.
- 2. Set the RBW = 10 kHz.
- 3. Set the VBW  $\geq$  30 kHz.
- 4. Set the span to 1.5 times the DTS channel bandwidth.
- 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.
- 11. The resulting peak PSD level must be  $\leq 8 \text{ dBm/3kHz}$ .

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## 9.4Test Result

EUT		Tablet PC		Model	ST8	8888
Mode		802.11b 11Mbps		802.11b 11Mbps Test Voltage		3.7V
Temperat	ure	24 deg. C, Hu		Humidity	56%	6 RH
Channel	Freq	uency	Power Spectral Density (dBm/10kHz)		Limit	Pass/ Fail
	(M	IHz)			(dBm/3kHz)	
1	24	-16.20			8	Pass
6	24	437	-16.26		8	Pass
11	24	162	-16.79		8	Pass

EUT		Tablet PC		Model	ST8	888
Mode	,		802.11b 1Mbps	Test Voltage	DC3	.7V
Temperat	ture		24 deg. C,		56%	RH
Channel	Freq	uency	Power Spectral Density (dB	Power Spectral Density (dBm/10kHz)		Pass/ Fail
	(M	(Hz)			(dBm/3kHz)	
1	24	412	-15.89		8	Pass
6	24	437	-16.07		8	Pass
11	24	162	-15.88		8	Pass

EUT			Tablet PC	Model	ST8	888
Mode		802.11g 6Mbps		Test Voltage	DC3.7V	
Temperat	ure	24 deg. C,		Humidity	56%	RH
Channel	Freq	uency	Power Spectral Density (dBm	Power Spectral Density (dBm/10kHz)		Pass/ Fail
	(M	Hz)			(dBm/3kHz)	
1	24	112	-18.46		8	Pass
6	24	137	-18.61		8	Pass
11	24	162	-19.04		8	Pass

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EUT		Tablet PC		Model	ST8	888
Mode	e		802.11n HT20 mcs0 Test Volta		DC3	.7V
Temperat	ure	24 deg. C,		Humidity	56%	RH
Channel	Freq	uency	Power Spectral Density (dBm	n/10kHz)	Limit	Pass/ Fail
	(M	IHz)			(dBm/3kHz)	
1	24	-19.19			8	Pass
6	24	437	-19.19		8	Pass
11	24	162	-18.89		8	Pass

EUT		Tablet PC		Model	ST8	888
Mode			802.11n HT40 mcs0	Test Voltage	DC3	.7V
Temperat	ure	24 deg. C,		Humidity	56%	RH
Channel	Freq	uency	Power Spectral Density (dBm/10kHz)		Limit	Pass/ Fail
	(M	Hz)			(dBm/3kHz)	
3	24	122	-18.63		8	Pass
6	24	137	-19.50		8	Pass
9	24	152	-19.04		8	Pass

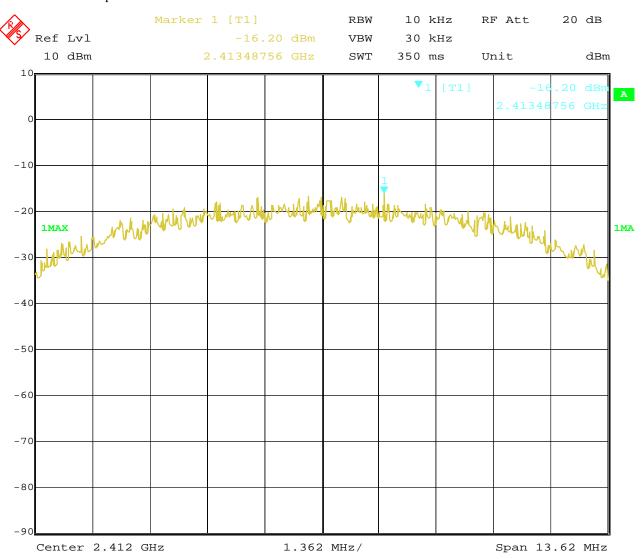
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# 9.5 Photo of Power Spectral Density Measurement

1.802.11b at 11Mbps of CH01



15.JUN.2022 15:51:32 Date:

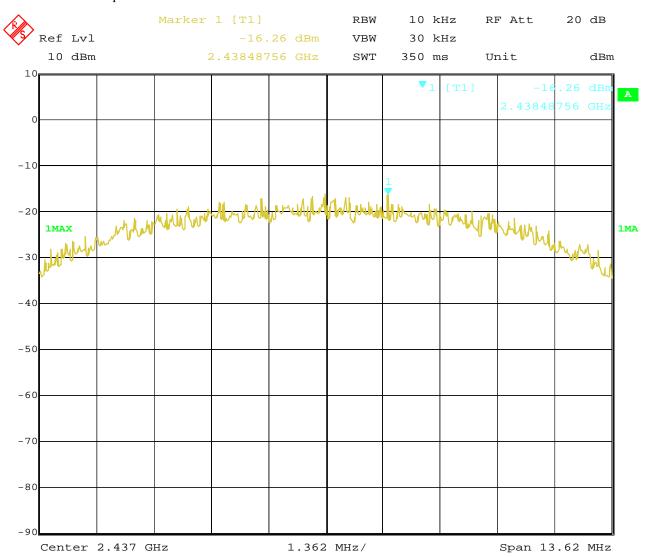
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## 2. 802.11b at 11Mbps at CH06



Date: 15.JUN.2022 15:50:19

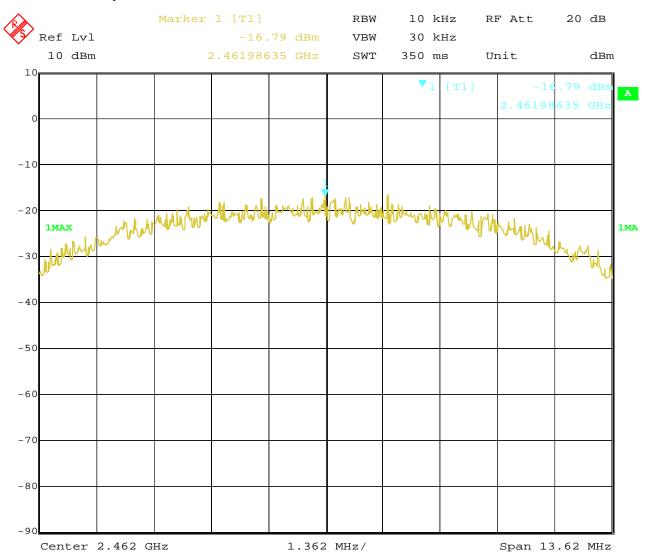
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## 3. 802.11b at 11Mbps of CH11



Date: 15.JUN.2022 15:48:56

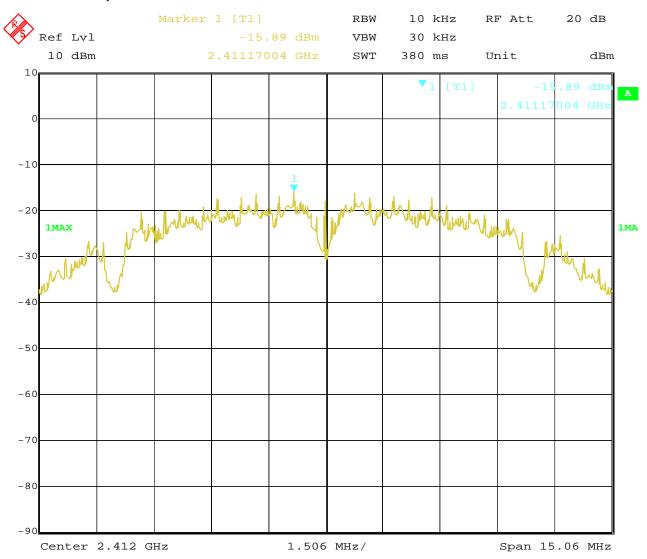
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# 4. 802.11b at 1Mbps of CH1



Date: 15.JUN.2022 15:57:17

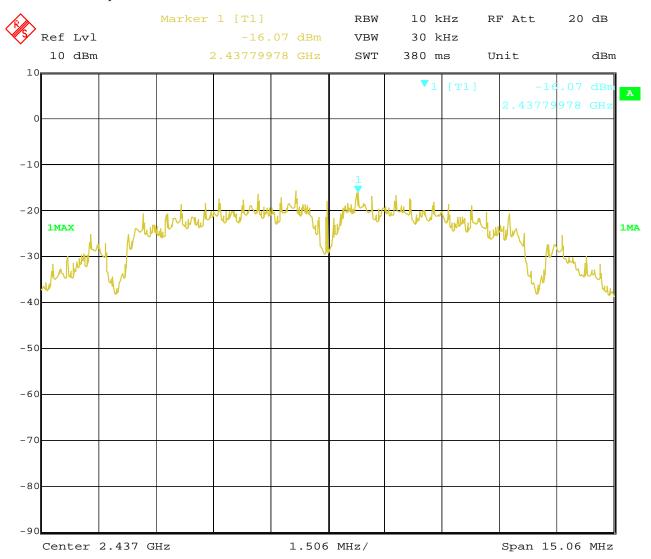
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# 5. 802.11b at 1Mbps of CH6



Date: 15.JUN.2022 15:56:52

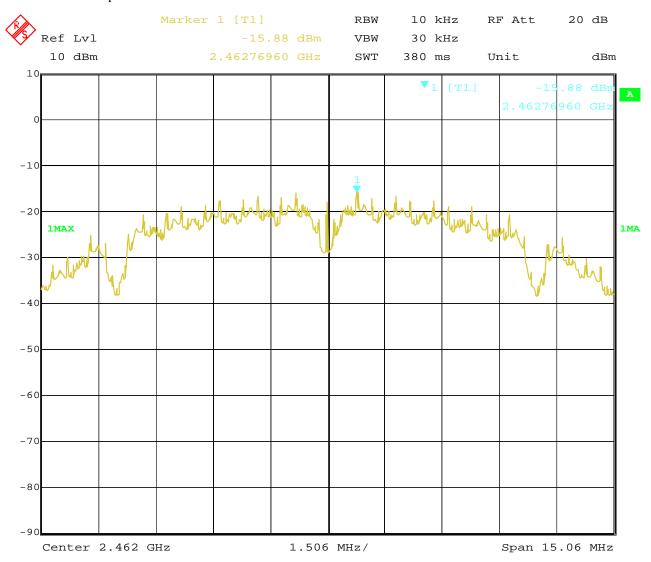
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# 6. 802.11b at 1Mbps of CH11



Date: 15.JUN.2022 15:56:28

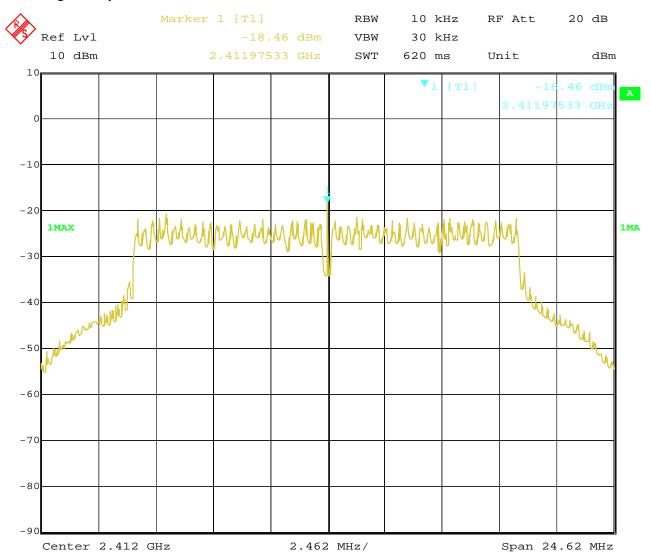
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# 7. 802.11g at 6Mbps of CH1



Date: 15.JUN.2022 15:53:32

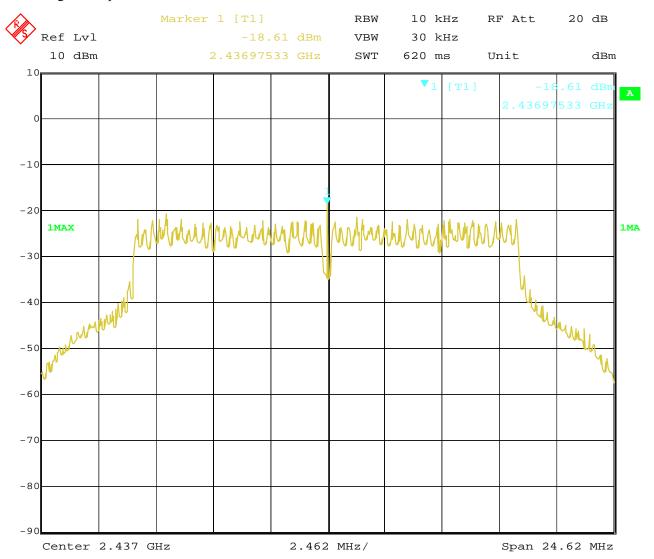
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# 8. 802.11g at 6Mbps of CH6



Date: 15.JUN.2022 15:54:19

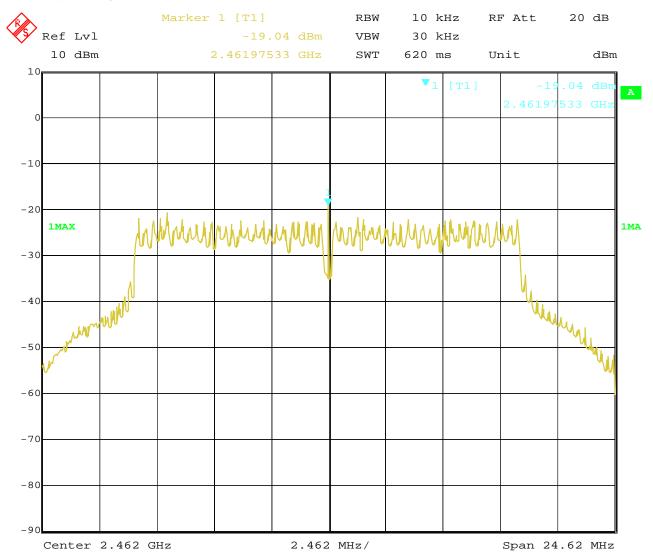
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# 9. 802.11g at 6Mbps of CH11



Date: 15.JUN.2022 15:55:11

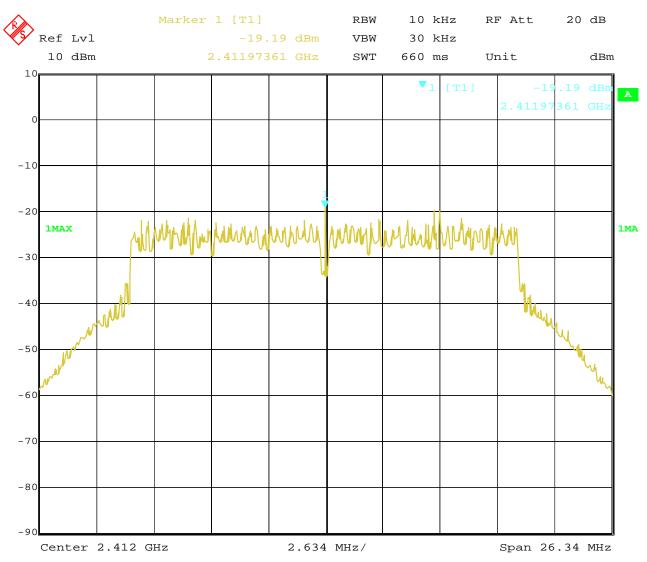
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### 10. 802.11n at HT20 of CH01



Date: 15.JUN.2022 15:41:40

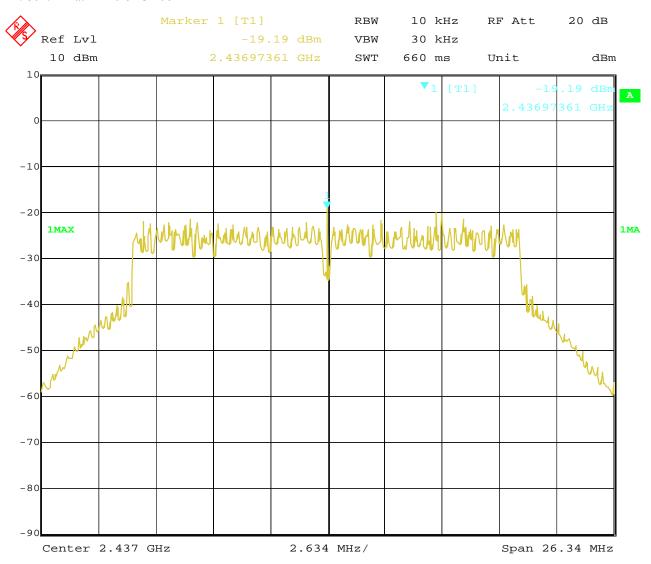
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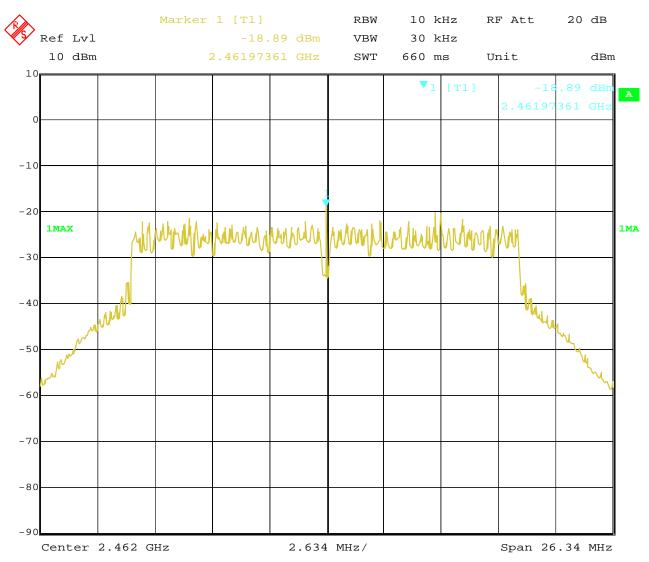
### 11. 802.11n at HT20 of CH06



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### 12. 802.11n at HT20 of CH11

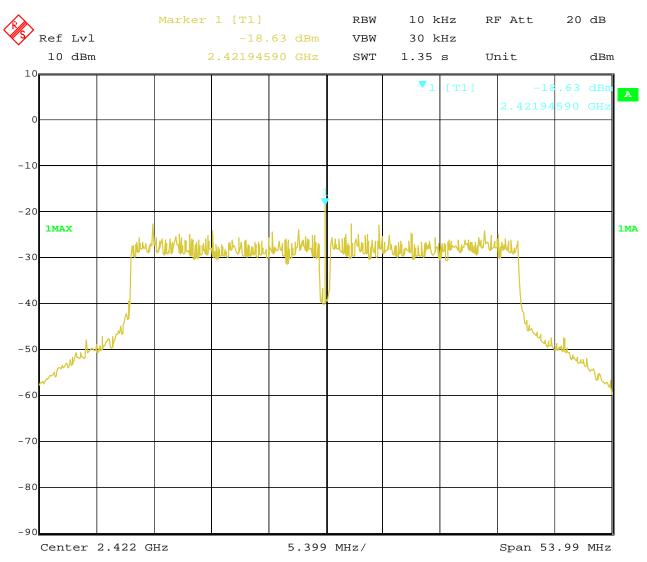


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### 13. 802.11n at HT40 of CH03



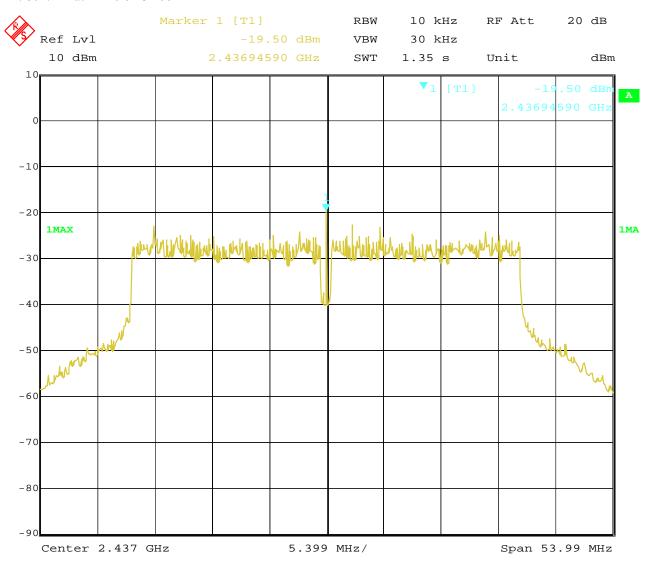
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### 14. 802.11n at HT40 of CH06

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Date: 15.JUN.2022 15:36:12

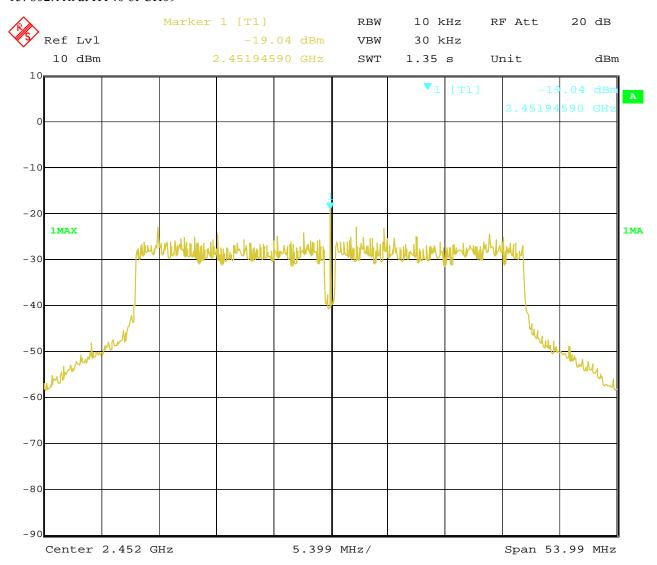
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## 15. 802.11n at HT40 of CH09



Date: 15.JUN.2022 15:35:01

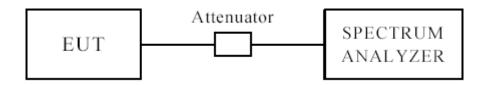
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# 10 Out of Band Measurement 10.1 Test Setup for band edge



The restricted band requirement based on radiated emission test; please see the clause 6 for the test setup

### 10.2 Limits of Out of Band Emissions Measurement

- 1. Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).
- 2. Fall in the restricted bands listed in section 15.205. The maximum permitted average field strength is listed in section 15.209.

## **10.3 Test Procedure**

For signals in the restricted bands above and below the 2.4-2.483GHz allocated band a measurement was made of radiated emission test. (Peak values with RBW=VBW=1MHz and PK detector. AV value with RBW=1MHz, VBW=10Hz and PK detector)

For bandage test, the spectrum set as follows: RBW=100, VBW=300 kHz. A conducted measurement used

### 10.4 Test Result

Please see next pages

Note: 1. for band-edge measurement, the frequency from 30MHz-25GHz was tested. And It met the FCC rule.

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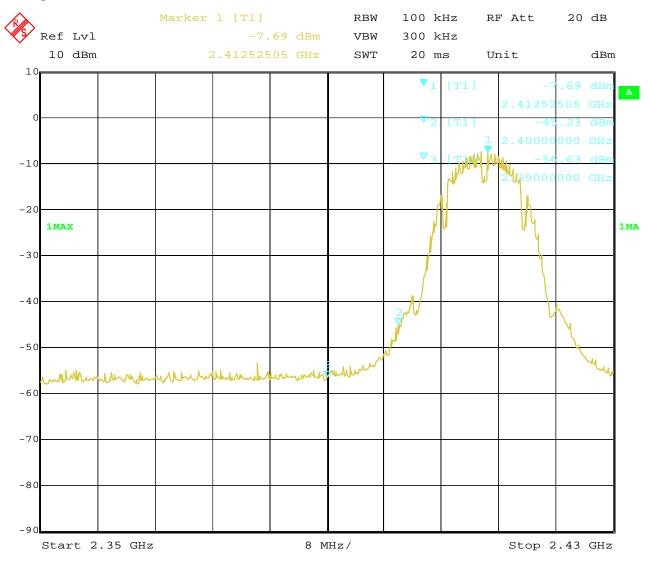
## For 802.11b mode

CH01 at 1Mbps

#### 10.4 Band-edge Measurement

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



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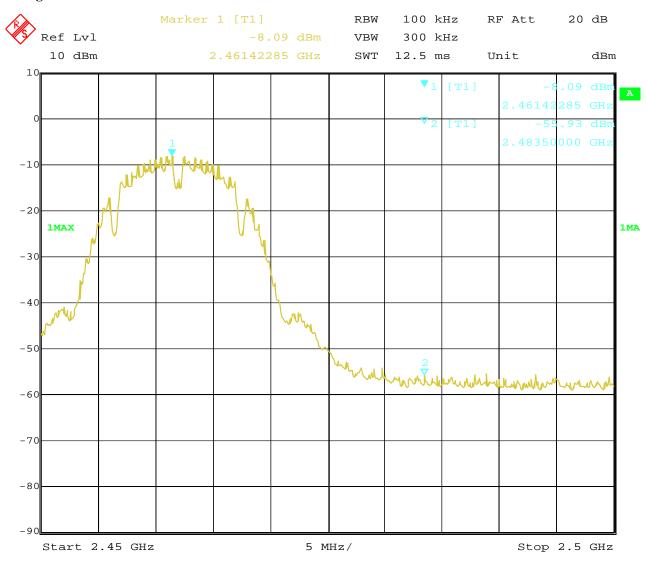


# CH11 at 1Mbps

#### 10.4 Band-edge Measurement

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



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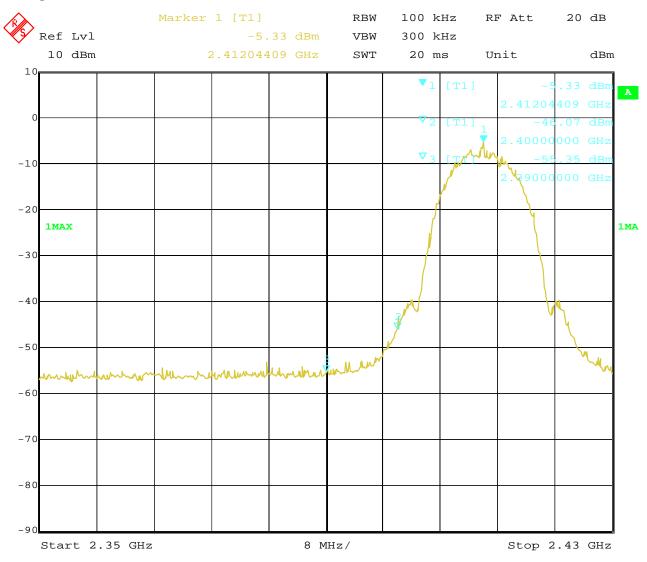
## For 802.11b mode

# CH01 at 11Mbps

#### Band-edge Measurement 10.4

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



Date: 15.JUN.2022 16:00:07

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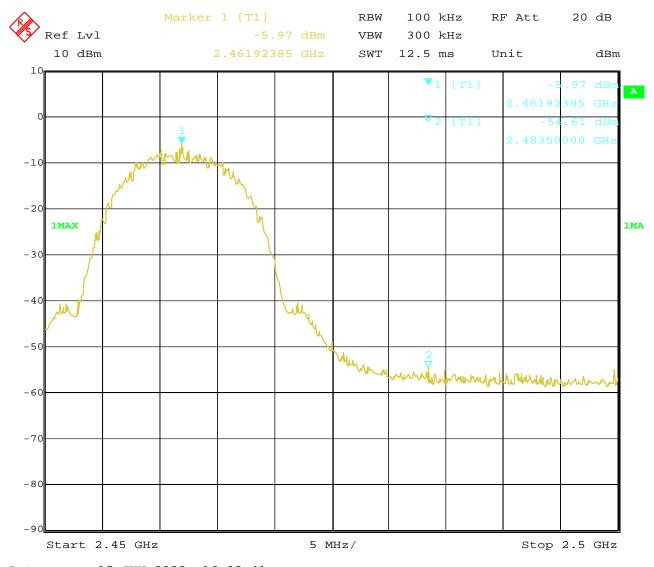


# CH11 at 11Mbps

#### 10.4 Band-edge Measurement

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



15.JUN.2022 Date: 16:02:41

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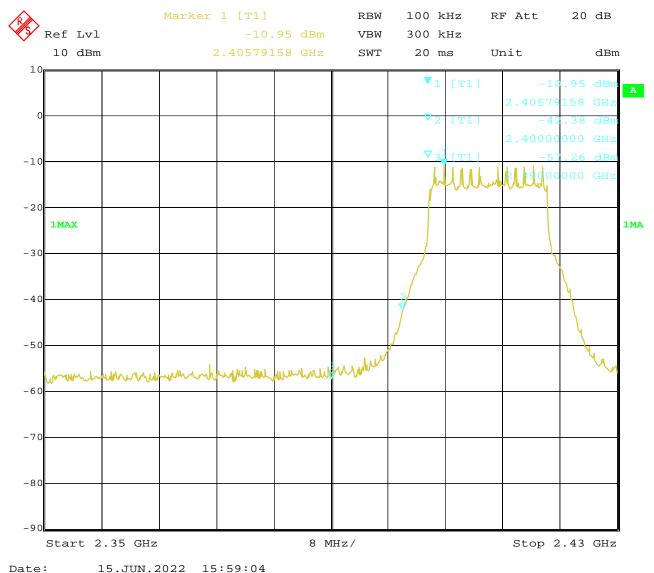
## For 802.11g mode

CH01 at 6Mbps

#### 10.4 Band-edge Measurement

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



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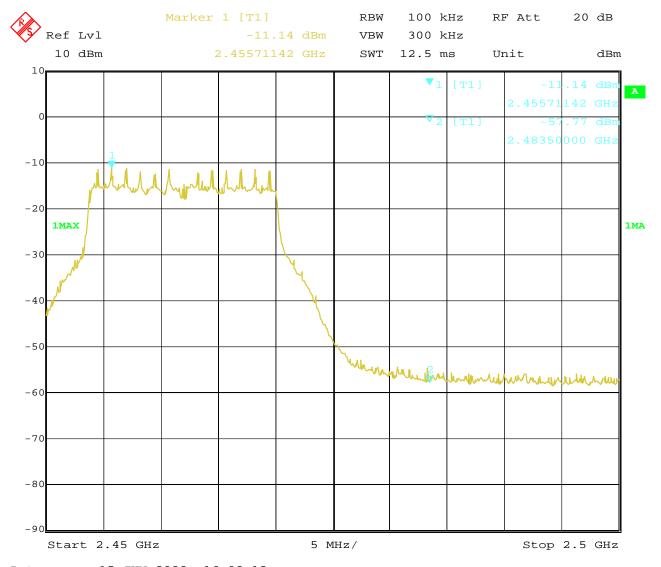


# CH11 at 6Mbps

#### 10.4 Band-edge Measurement

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



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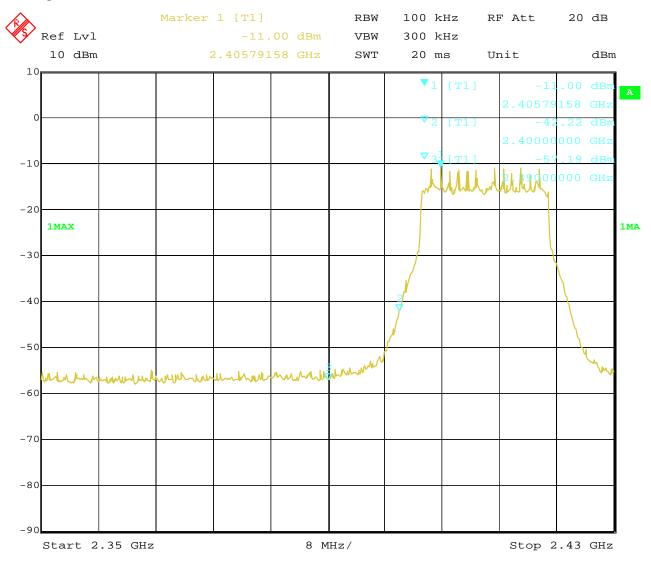
## For 802.11n (HT20) mode

CH01 at mcs0

# **10.4** Band-edge Measurement

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

# **Test Figure:**



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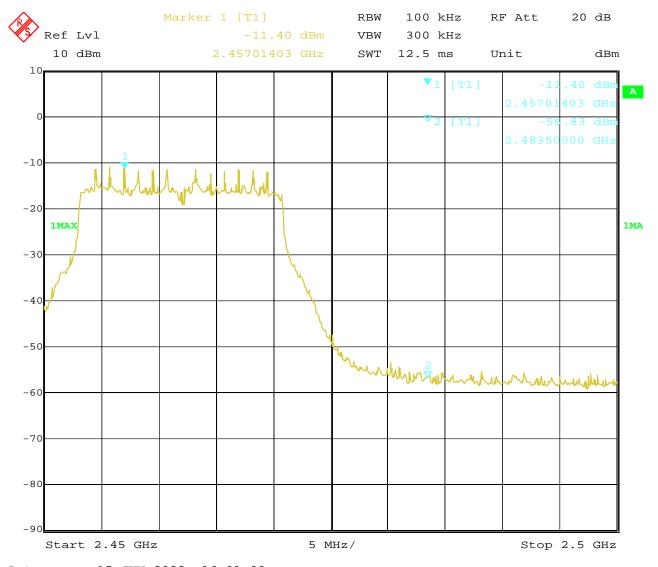


### CH11 at mcs0

### 10.4 Band-edge Measurement

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

## **Test Figure:**



15.JUN.2022 Date: 16:01:09

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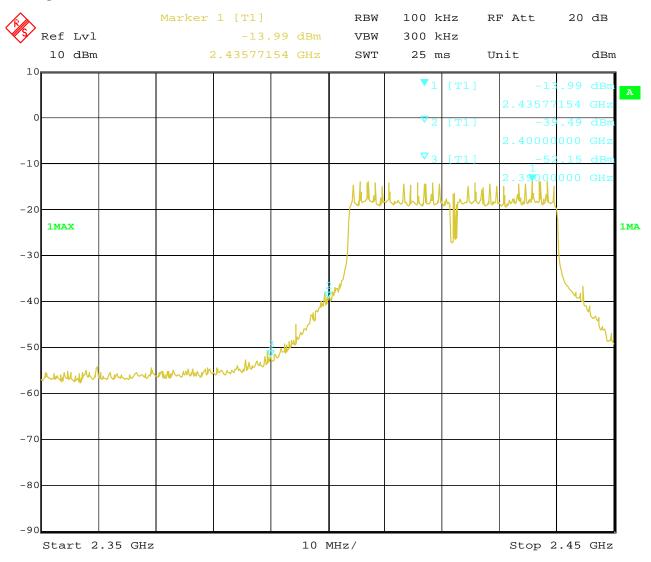
### For 802.11n (HT40) mode

CH03 at msc0

## **10.4** Band-edge and Restricted band Measurement

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

## **Test Figure:**



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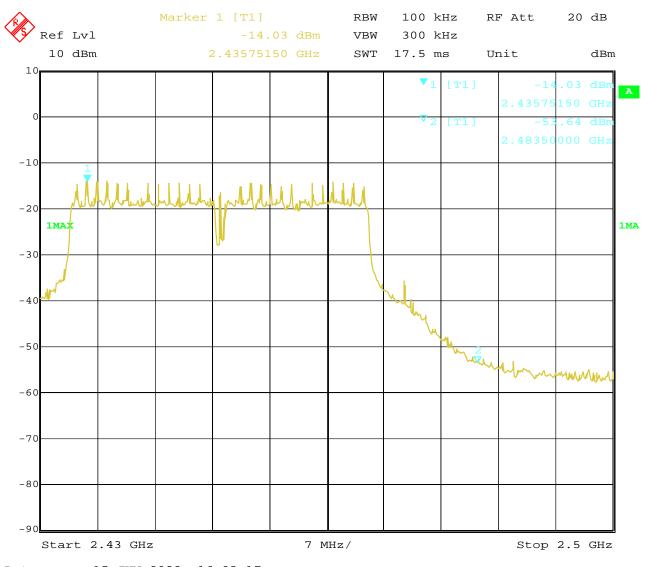


### CH09 at msc0

## **10.4** Band-edge and Restricted band Measurement

EUT	Tablet PC	Model	ST8888
Mode	Keeping Transmitting	Test Voltage	DC3.7V
Temperature	24 deg. C,	Humidity	56% RH
Test Result:	Pass	Detector	PK

## **Test Figure:**



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#### 10.5 Restricted band Measurement

EUT	Tablet PC				del	ST8888			
Mode	Kee	eping Transmitting	Test V	oltage/	DC3.7V				
Temperature		24 deg. C,				56% RH			
Test Result:		Pass				PK			
	802.11b mode, Low Channel, Horizontal								
2390	PK (dBµV/m)	43.27	т:.	:4		$74(dB\mu V/m)$			
	AV (dBμV/m)		Lli	nit		$54(dB\mu V/m)$			
		802.11b mode, Low	Channel,	Vertical					
2390	PK (dBµV/m)	41.06	т.:.	imit		$74(dB\mu V/m)$			
	AV (dBμV/m)		LII	mı		$54(dB\mu V/m)$			

#### 10.5 Restricted band Measurement

EUT		Tablet PC		Model		ST8888		
Mode	Keeping Transmitting				Voltage	DC3.7V		
Temperature	24 deg. C,				nidity	56% RH		
Test Result:		Pass				PK		
802.11b mode, High Channel, Horizontal								
2483.5	PK (dBμV/m)	43.69	т ::			$74(dB\mu V/m)$		
	AV (dBμV/m)		Limi	I		$54 (dB\mu V/m)$		
		802.11b mode, High	Channel, V	ertical				
2483.5	PK (dBµV/m)	40.16	Limi			74(dBµV/m)		
	AV (dBμV/m)		LIIIII	ıı		$54(dB\mu V/m)$		

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#### 10.5 Restricted band Measurement

EUT	Tablet PC				del	ST8888			
Mode	Kee	eping Transmitting	Test V	oltage/	DC3.7V				
Temperature		24 deg. C,				56% RH			
Test Result:		Pass				PK			
	802.11g mode, Low Channel, Horizontal								
2390	PK (dBµV/m)	45.58	т.	• 4		$74(dB\mu V/m)$			
	AV (dBμV/m)		L11	nit		54(dBµV/m)			
		802.11g mode, Low	Channel,	Vertical					
2390	PK (dBμV/m)	42.19	т:.	imit		$74(dB\mu V/m)$			
	AV (dBμV/m)		LII	mı		$54(dB\mu V/m)$			

#### 10.5 Restricted band Measurement

		T. 1.1 . D.C.		3.5		GEO.		
EUT		Tablet PC		Model		ST8888		
Mode	Keeping Transmitting				Voltage	DC3.7V		
Temperature		24 deg. C,			nidity	56% RH		
Test Result:		Pass		Det	ector	PK		
802.11g mode, High Channel, Horizontal								
2483.5	PK (dBμV/m)	43.25	т ::			$74(dB\mu V/m)$		
	AV (dBμV/m)		Limi	I		$54(dB\mu V/m)$		
		802.11g mode, High	Channel, V	ertical				
2483.5	PK (dBµV/m)	40.36	Tima	:4	74(dBµV/m)			
	AV (dBμV/m)		Limi	Limit		54(dBμV/m)		

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#### 10.5 Restricted band Measurement

EUT		Tablet PC				ST8888			
Mode	Kee	Test V	oltage/	DC3.7V					
Temperature		24 deg. C,				56% RH			
Test Result:			Dete	ector	PK				
	802.11n HT20 mode, Low Channel, Horizontal								
2390	PK (dBµV/m)	46.18	т:.	nit		$74(dB\mu V/m)$			
	AV (dBμV/m)		LII	IIIL	54(dBμV/m)				
	8	302.11n HT20 mode, Lo	ow Chanr	nel, Vertic	al				
2390	PK (dBµV/m)	42.37	Limit			74(dBµV/m)			
	AV (dBμV/m)			IIII		54(dBµV/m)			

### Restricted band Measurement 10.5

EUT		Tablet PC		Model		ST8888			
Mode	Keeping Transmitting				Voltage	DC3.7V			
Temperature	24 deg. C,				nidity	56% RH			
Test Result:			Det	tector	PK				
	802.11n HT20 mode, High Channel, Horizontal								
2483.5	PK (dBµV/m)	44.02	т ::	.,		$74(dB\mu V/m)$			
	AV (dBμV/m)		Limi	it		$54(dB\mu V/m)$			
	8	302.11n HT20 mode, Hi	igh Channe	l, Verti	cal				
2483.5	PK (dBμV/m)	40.69	Limi	74(dBµV		74(dBµV/m)			
	AV (dBμV/m)		LIIII	ll		$54(dB\mu V/m)$			

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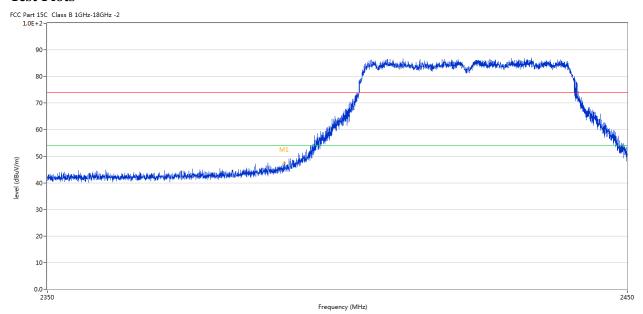
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#### 10.5 Restricted band Measurement

EUT		Tablet PC				ST8888			
Mode	Kee	Test	Voltage	DC3.7V					
Temperature		24 deg. C,				56% RH			
Test Result:		Pass				PK			
	802.11n HT40 mode, Low Channel, Horizontal								
2390	PK (dBμV/m)	47.57	т.			$74(dB\mu V/m)$			
	AV (dBμV/m)		Lli	nit	$54(dB\mu V/m)$				
		802.11n HT40 mode, L	ow Chan	nel Vertic	al				
2390	PK (dBμV/m)	43.25	т:.	.,		74(dBµV/m)			
	AV (dBμV/m)		Lll	nit		54(dBμV/m)			

## **Test Plots**

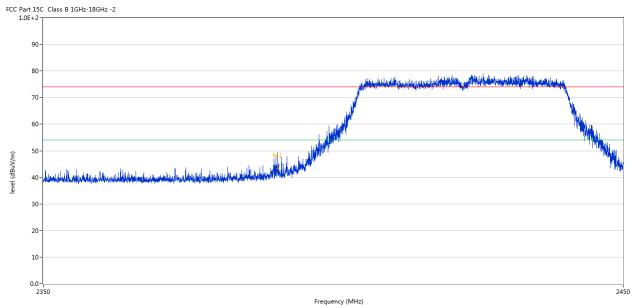


No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2390.415	47.57	-3.53	74.0	-26.43	Peak	159.00	100	Horizontal	Pass

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No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2389.990	43.25	-3.53	74.0	-30.75	Peak	24.00	100	Vertical	Pass

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#### 10.5 Restricted band Measurement

EUT		Tablet PC	Model		ST8888				
Mode	Keeping Transmitting				Voltage	DC3.7V			
Temperature	24 deg. C,				midity	56% RH			
Test Result:		Pass	De	etector	PK				
802.11n HT40 mode, High Channel, Horizontal									
2483.5	PK (dBµV/m)	44.36	т :	٠,		$74(dB\mu V/m)$			
	AV (dBμV/m)		Lim	ΙŢ	54(dBµV/m)				
802.11n HT40 mode, High Channel, Vertical									
2483.5	PK (dBμV/m)	40.86	T :	T		74(dBμV/m)			
	AV (dBμV/m)		Limit			$54(dB\mu V/m)$			

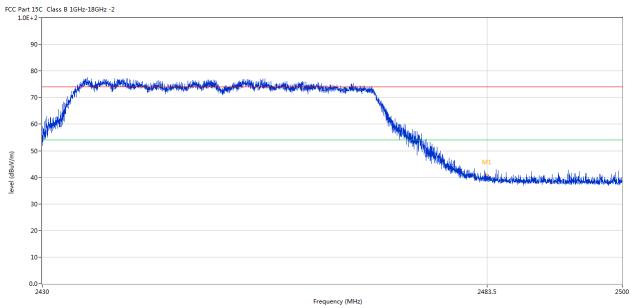


No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2483.457	44.36	-3.57	74.0	-29.64	Peak	205.00	100	Horizontal	Pass

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No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	2483.486	40.86	-3.57	74.0	-33.14	Peak	121.00	100	Vertical	Pass

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# 11.0 Antenna Requirement

## 11.1 Standard Applicable

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 transmitter antennas of directional gain greater than 6 dBi are used, the power shall be reduced by the mount in dB that the directional gain of the antenna exceeds 6 dBi.

### 11.2 Antenna Connected construction

FPC antenna with gain 1.42dBi Max (Get from the antenna specification)

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### 12.0 FCC ID Label

# FCC ID: RBD-W811W

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

The label must not be a stick-on paper label. The label on these products must be permanently affixed to the product and readily visible at the time of purchase and must last the expected lifetime of the equipment not be readily detachable.

## **Mark Location:**



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### 13.0 Photo of testing

Conducted Emission Test Setup:

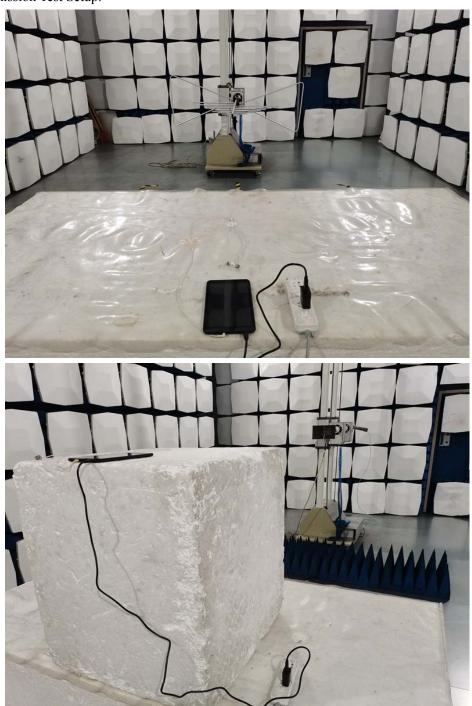


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# Radiated Emission Test Setup:



# Photographs - EUT

Please refer test report TW2206057-01E

# -End of the report-

The report refers only to the sample tested and does not apply to the bulk.

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