

Report No.: TW2203321-04E File reference No.: 2022-05-25

Applicant: Autel Robotics Co., Ltd.

Product: Live Deck 2

Model No.: Live Deck 2

Trademark: AUTEL

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 Tang

Terry Tang

Manager

Dated: May 25, 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 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: Autel Robotics Co., Ltd.

Address: 9 Floor, Building B1, Zhiyuan, No.1001, Xueyuan Road, Xili Street, Nanshan District,

Shenzhen, Guangdong, China

Telephone: -Fax: --

### 1.3 Description of EUT

Trademark:

Product: Live Deck 2

Manufacturer: Autel Robotics Co., Ltd.

Address: 9 Floor, Building B1, Zhiyuan, No.1001, Xueyuan Road, Xili Street, Nanshan

District, Shenzhen, Guangdong, China

ROBOTICS

Model Number: Live Deck 2

Additional Model Number: N/A

Hardware Version: LD2L-MAIN-V3

Software Version: Modem\_V7.2.1\_MS\_CP\_128MB\_20220428

Serial No.: SN202205250001

Rating: Input: DC5/9/12V, 18W Max; USB OUT: DC5V, 0.5A

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

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

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

Channel Spacing 5MHz for IEEE 802.11b/g/n (HT20) Air Data Rate IEEE 802.11b: 11, 5.5, 2, 1 Mbps

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

IEEE 802.11n HT20: mcs0-mcs7

Frequency Selection By software

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

Antenna: Integral antenna used. The gain of the antennas is 2.3dBi (Get from the antenna

specification)

1.4 Submitted Sample: 1 Samples

1.5 Test Duration

2022-03-23 to 2022-05-25

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

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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	2021-06-18	2022-06-17
Impuls-Begrenzer	R&S	ESH3-Z2	100281	2021-06-18	2022-06-17
Loop Antenna	EMCO	6507	00078608	2021-06-18	2024-06-17
Spectrum	R&S	FSIQ26	100292	2021-06-18	2022-06-17
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	2021-06-18	2022-06-17
Power sensor	Anritsu	MA2491A	32263	2021-06-18	2022-06-17
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	2021-06-18	2022-06-17
EMI Test Receiver	RS	ESH3	860904/006	2021-06-18	2022-06-17
Spectrum	HP/Agilent	ESA-L1500A	US37451154	2021-06-18	2022-06-17
Spectrum	HP/Agilent	E4407B	MY50441392	2021-06-18	2022-06-17
Spectrum	RS	FSP	1164.4391.38	2022-01-14	2023-01-13
RF Cable	Zhengdi	ZT26-NJ-NJ-8 M/FA		2021-06-18	2022-06-17
RF Cable	Zhengdi	7m		2021-06-18	2022-06-17
RF Switch	EM	EMSW18	060391	2021-06-18	2022-06-17
Pre-Amplifier	Schwarebeck	BBV9743	#218	2021-06-18	2022-06-17
Pre-Amplifier	HP/Agilent	8449B	3008A00160	2021-06-18	2022-06-17
LISN	SCHAFFNER	NNB42	00012	2022-01-05	2023-01-04
2.4G band-pass filter	Micro-Tronics	BRM50701	SN-041	2021-06-18	2022-06-17

#### 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;

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
FCC Part 15 Subpart C Paragraph 15.247(a)(2) Limit	Spectrum bandwidth of a Orthogonal Frequency Division Multiplex System Limit: 6dB bandwidth>500kHz	Pass	Complies
FCC Part 15, Paragraph 15.247(b)	Maximum peak output power Limit: max. 30dBm	Pass	Complies
FCC Part 15, Paragraph 15.109,15.205 & 15.209	Transmitter Radiated Emission Limit: Table 15.209	Pass	Complies
FCC Part 15, Paragraph 15.247(e)	Power Spectral Density Limit: max. 8dBm/3kHz	Pass	Complies
FCC Part 15, Paragraph 15.247(d)	Out of Band Emission and Restricted Band Radiation Limit: 20dB less than peak value of fundamental frequency Restricted band limit: Table 15.209	Pass	Complies

#### 3.2 **Test Standards**

FCC Part 15 Subpart & Subpart C, Paragraph 15.247

#### 4.0 **EUT Modification**

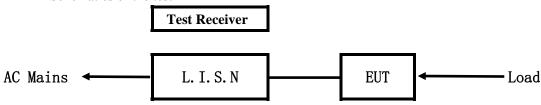
No modification by SHENZHEN TIMEWAY TESTING LABORATORIES.

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

### 5.1 Schematics of the test

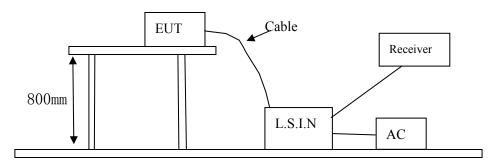


**EUT: Equipment Under Test** 

#### 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: DC3.85V, 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
Live Deck 2	Autel Robotics Co., Ltd.	Live Deck 2	2AGNTLDK240958A

### B. Internal Device

Device	Manufacturer	Model	FCC ID/DOC
N/A			

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## C. Peripherals

Device	Manufacturer	Model	Rating
Power	Autel	XY-PD030D32	Input: 100-240V~, 50/60Hz, 1A;
Supply			Output:
			USB-C: DC5V, 3A; DC9V, 3A; DC12V, 2.5A;
			USB-A: DC5V, 3A, DC9V, 2A; DC12V, 1.5A;
			USB-C + USB-A: DC5V, 3.1A

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 $\mu$ V)				
(MHz)	Quasi-peak Level	Average Level			
$0.15 \sim 0.50$	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.

Note: Only the worst case was recorded in the test report.

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

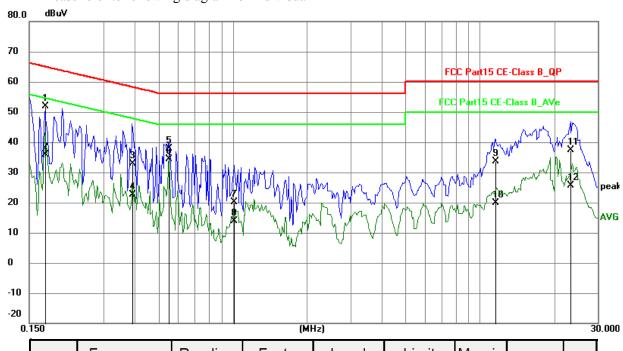
## **EUT Operating Environment**

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	0.1734	42.10	9.77	51.87	64.80	-12.93	QP	А
2	0.1734	26.02	9.77	35.79	54.80	-19.01	AVG	Р
3	0.3918	23.16	9.76	32.92	58.03	-25.11	QP	Р
4	0.3918	12.88	9.76	22.64	48.03	-25.39	AVG	Р
5	0.5517	28.08	9.77	37.85	56.00	-18.15	QP	Р
6	0.5517	24.63	9.77	34.40	46.00	-11.60	AVG	Р
7	1.0119	10.22	9.79	20.01	56.00	-35.99	QP	А
8	1.0119	4.14	9.79	13.93	46.00	-32.07	AVG	А
9	11.5293	23.42	10.23	33.65	60.00	-26.35	QP	Р
10	11.5293	9.65	10.23	19.88	50.00	-30.12	AVG	Р
11	23.3229	26.45	10.89	37.34	60.00	-22.66	QP	Р
12	23.3229	14.86	10.89	25.75	50.00	-24.25	AVG	Р

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

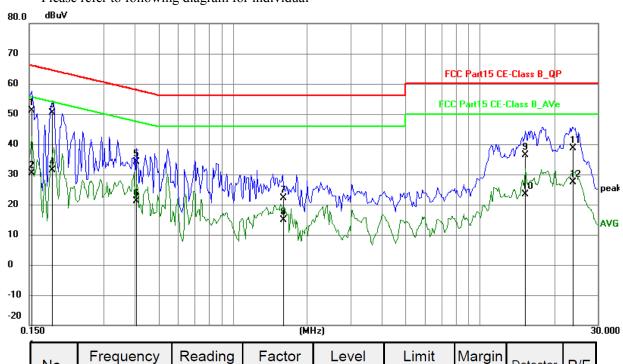
# **EUT Operating Environment**

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	41.46	9.78	51.24	65.79	-14.55	QP	Р
2	0.1539	20.53	9.78	30.31	55.79	-25.48	AVG	Р
3	0.1850	40.71	9.76	50.47	64.26	-13.79	QP	Р
4	0.1850	21.73	9.76	31.49	54.26	-22.77	AVG	Р
5	0.4074	24.35	9.76	34.11	57.70	-23.59	QP	Р
6	0.4074	11.35	9.76	21.11	47.70	-26.59	AVG	Р
7	1.5969	12.36	9.80	22.16	56.00	-33.84	QP	Р
8	1.5969	5.18	9.80	14.98	46.00	-31.02	AVG	Р
9	15.2928	26.07	10.40	36.47	60.00	-23.53	QP	Р
10	15.2928	13.01	10.40	23.41	50.00	-26.59	AVG	Р
11	23.7285	27.72	10.91	38.63	60.00	-21.37	QP	Р
12	23.7285	16.57	10.91	27.48	50.00	-22.52	AVG	Р

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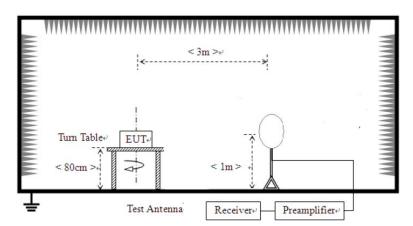


#### 6 Radiated Emission Test

- 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**

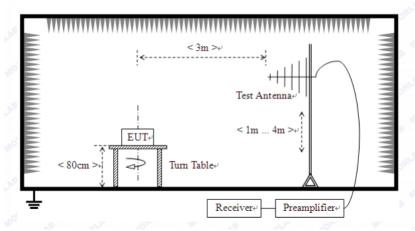
For radiated emissions from 9kHz to 30MHz



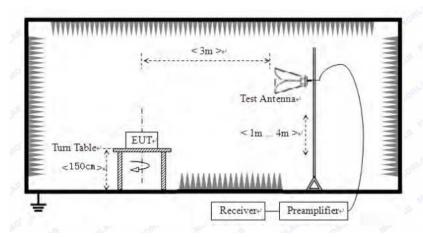
Date: 2022-05-25



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

		8 1
Frequency Range (MHz)	Distance (m)	Field strength (dB $\mu$ 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. 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.
- 5. 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.
- 6. Worse case were recorded in the test report. 802.11b was the worst case.

Note: Only the worst case was recorded in the test report.

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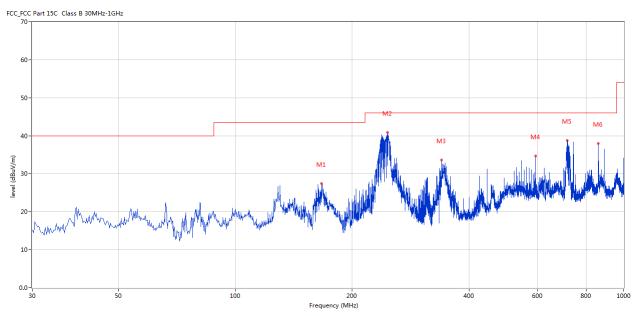


# Test result General Radiated Emission Data and Harmonics Radiated Emission Data

## 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	166.736	27.43	-16.06	43.5	-16.07	Peak	215.00	200	Horizontal	Pass
2	246.256	40.91	-12.17	46.0	-5.09	Peak	309.00	100	Horizontal	Pass
3	340.080	33.67	-9.80	46.0	-12.33	Peak	267.00	100	Horizontal	Pass
4	593.672	34.62	-5.23	46.0	-11.38	Peak	55.00	100	Horizontal	Pass
5	714.891	38.72	-3.96	46.0	-7.28	Peak	39.00	100	Horizontal	Pass
6	860.840	37.96	-2.34	46.0	-8.04	Peak	126.00	200	Horizontal	Pass

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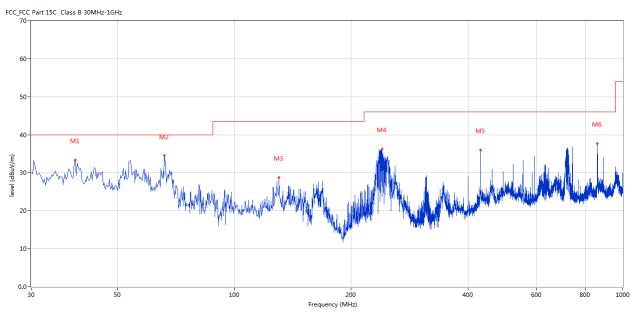


# Test result General Radiated Emission Data and Harmonics Radiated Emission Data

## 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	38.970	33.39	-12.59	40.0	-6.61	Peak	13.00	100	Vertical	Pass
2	66.123	34.48	-13.97	40.0	-5.52	Peak	282.00	100	Vertical	Pass
3	130.370	28.78	-16.75	43.5	-14.72	Peak	54.00	100	Vertical	Pass
4	239.953	36.27	-12.33	46.0	-9.73	Peak	190.00	100	Vertical	Pass
5	430.510	36.02	-7.98	46.0	-9.98	Peak	119.00	100	Vertical	Pass
6	860.840	37.72	-2.34	46.0	-8.28	Peak	165.00	100	Vertical	Pass

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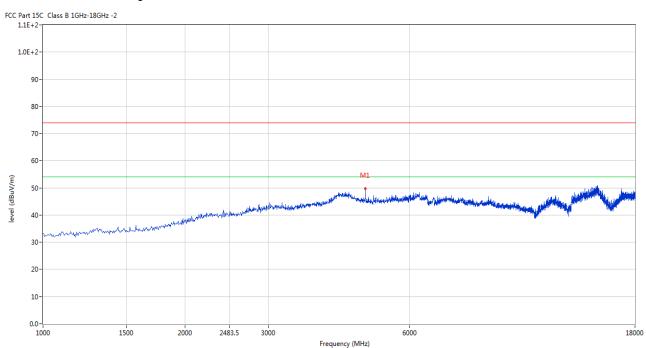
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Please refer to the following test plots for details:

# CH01 for 11b at 11Mbps: Horizontal



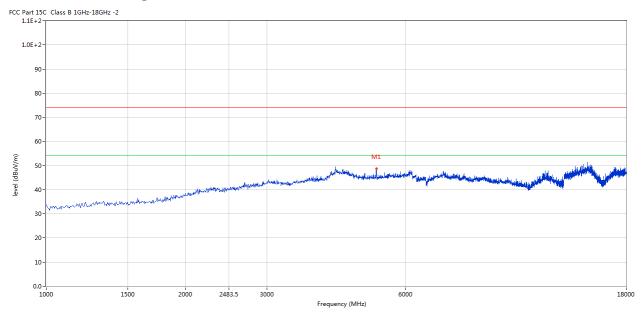
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table (o)	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)			(cm)		
1	4824.044	49.67	3.14	74.0	-24.33	Peak	84.00	100	Horizontal	Pass

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## CH01 for 11b at 11Mbps: Vertical



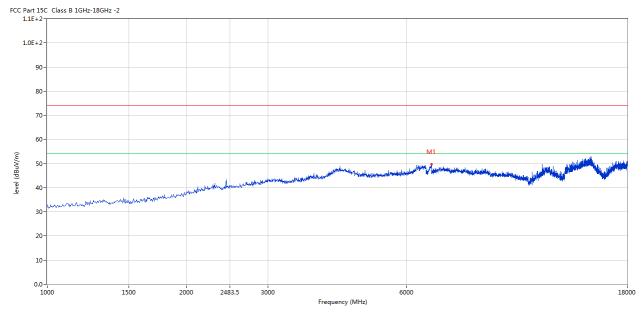
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	5185.204	48.72	3.67	74.0	-25.28	Peak	32.00	100	Vertical	Pass

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## CH06 for 11b at 11Mbps: Horizontal



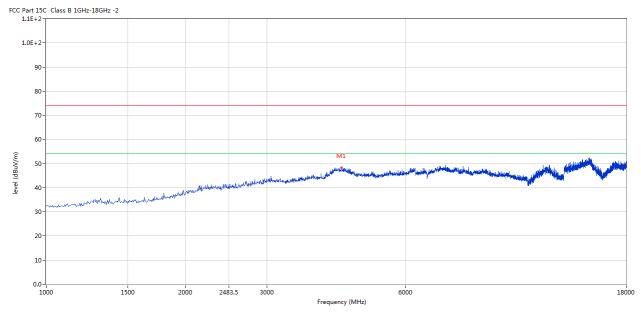
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	6761.560	50.84	6.94	74.0	-23.16	Peak	141.00	100	Horizontal	Pass

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## CH06 for 11b at 11Mbps: Vertical



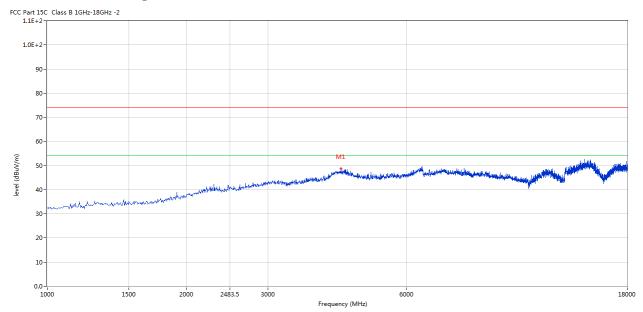
No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	4356.661	48.32	1.93	74.0	-25.68	Peak	124.00	100	Vertical	Pass

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## CH11 for 11b at 11Mbps: Horizontal



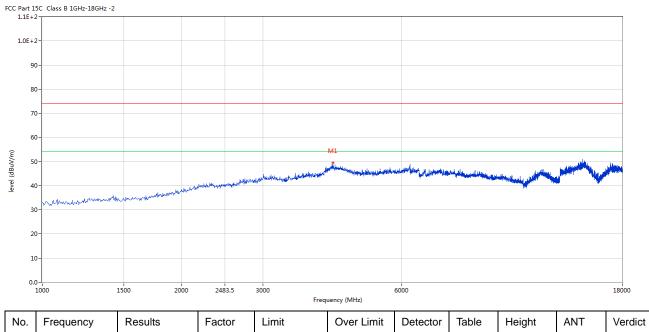
ſ	No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
		(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
	1	4322.669	48.67	1.88	74.0	-25.33	Peak	62.00	100	Horizontal	Pass

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## CH11 for 11b at 11Mbps: Vertical



No.	Frequency	Results	Factor	Limit	Over Limit	Detector	Table	Height	ANT	Verdict
	(MHz)	(dBuV/m)	(dB)	(dBuV/m)	(dB)		(o)	(cm)		
1	4254.686	49.58	1.73	74.0	-24.42	Peak	24.00	100	Vertical	Pass

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
- 6. A 2.4G band-pass filter was used the radiated emissions test.

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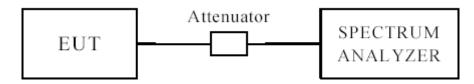
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# 7.0 6dB Bandwidth Measurement

## 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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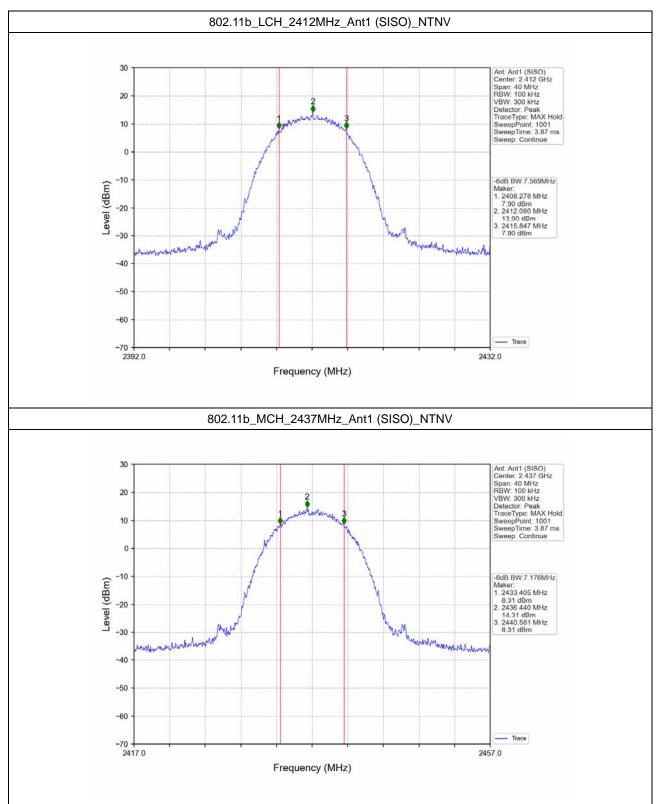
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# 6dB Occupied Bandwidth

Mode	TX	Frequency	ANT	6dB Bandv	vidth (MHz)	Verdict		
Mode	Туре	(MHz)	ANI	Result	Limit	verdict		
	SISO	2412	1	7.569	>=0.5	Pass		
802.11b		2437	1	7.176	>=0.5	Pass		
		2462	1	7.738	>=0.5	Pass		
	SISO	2412	1	15.210	>=0.5	Pass		
802.11g		SISO	SISO	SISO	2437	1	15.208	>=0.5
		2462	1	15.186	>=0.5	Pass		
000 115		2412	1	16.578	>=0.5	Pass		
802.11n (HT20)	SISO	2437	1	15.215	>=0.5	Pass		
		-	2462		1	15.205	>=0.5	Pass

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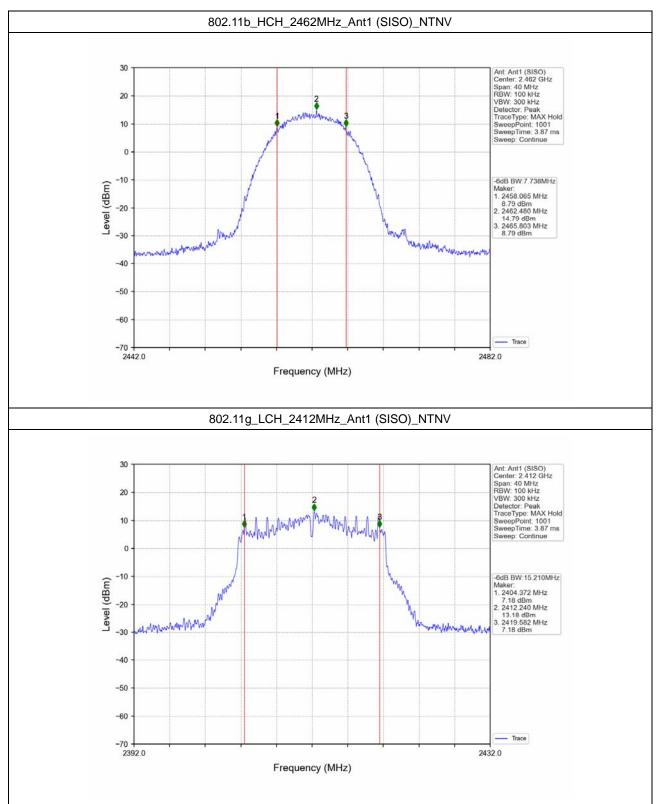
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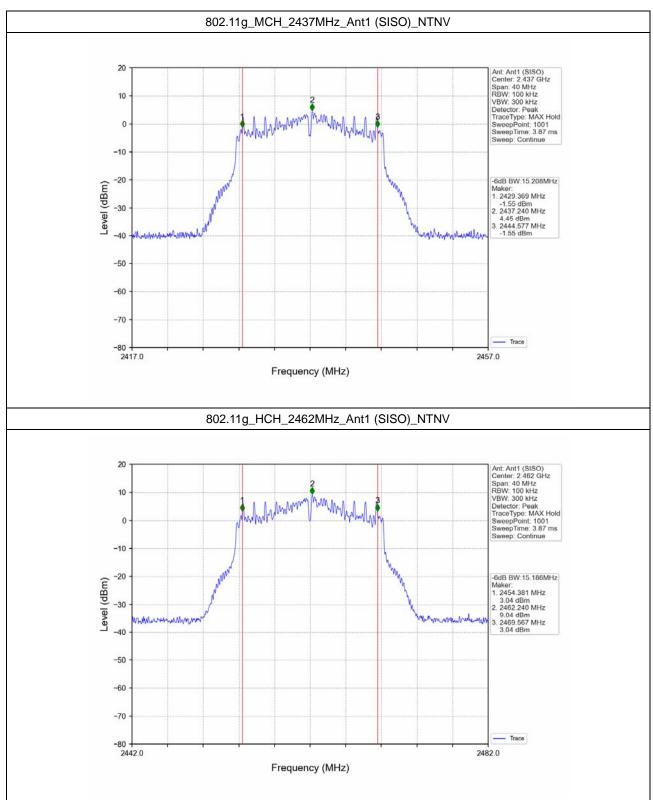
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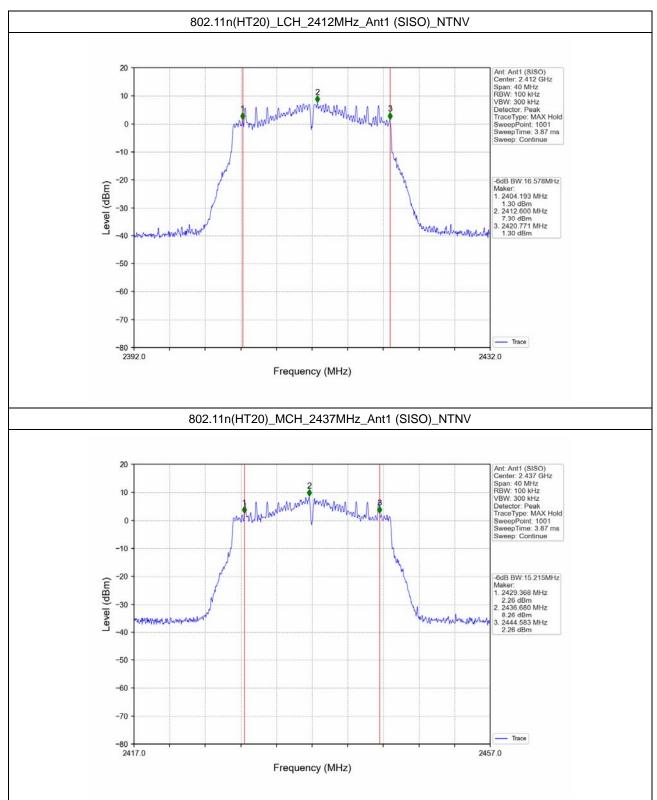
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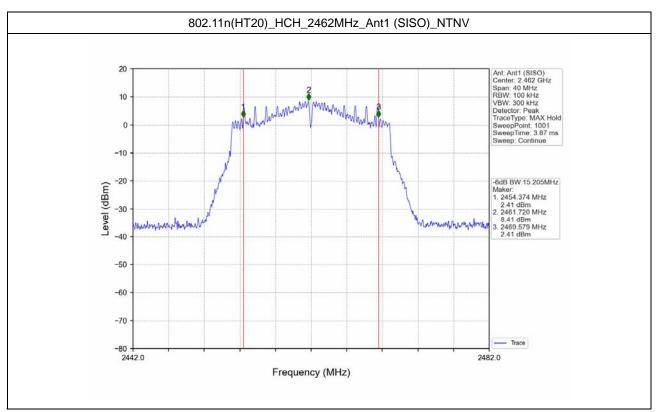
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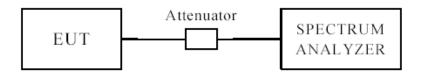
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## 8. Maximum Output Power

## 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 Spectrum connected to the RF Antenna connector (conducted measurement) while EUT was operating in transmit mode at the appropriate centre frequency.

Note: the AV power were measured.

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### **8.4Test Results**

Mode	TX	Frequency	Maximum Peak Conduc	ted Output Power (dBm)	Verdict					
iviode	Туре	(MHz)	ANT1	Limit	verdict					
		2412	25.97	<=30	Pass					
802.11b	SISO	2437	26.66	<=30	Pass					
		2462	26.75	<=30	Pass					
	SISO	2412	25.80	<=30	Pass					
802.11g		SISO	SISO	SISO	SISO	SISO	2437	26.16	<=30	Pass
		2462	26.48	<=30	Pass					
000 44 =		2412	25.72	<=30	Pass					
802.11n	SISO	2437	25.94	<=30	Pass					
(HT20)		2462	26.25	<=30	Pass					
Note1: Antenr	na Gain: Ant1	: 2.30dBi;								

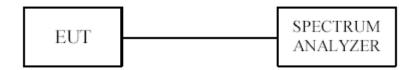
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## 9. Power Spectral Density Measurement

## 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 = 3 kHz.
- 3. Set the VBW  $\geq$  10 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

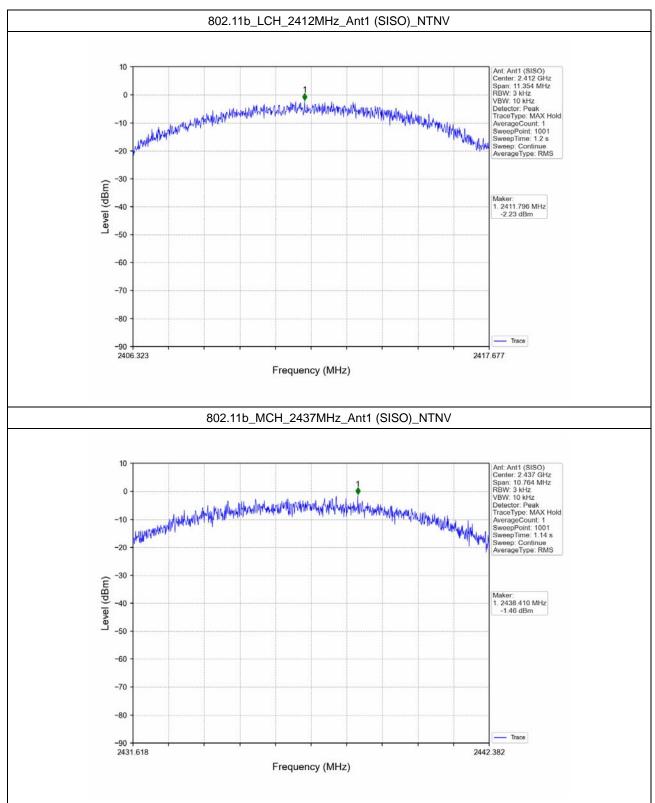
Mode	TX	Frequency	Maximum PS	D (dBm/3kHz)	Verdict					
Mode	Туре	(MHz)	ANT1	Limit	verdict					
		2412	-2.23	<=8	Pass					
802.11b	SISO	2437	-1.46	<=8	Pass					
		2462	-0.72	<=8	Pass					
	SISO	2412	-7.36	<=8	Pass					
802.11g		2437	-11.16	<=8	Pass					
		2462	-6.62	<=8	Pass					
902 44n		2412	-6.44	<=8	Pass					
802.11n (HT20)	SISO	2437	-5.81	<=8	Pass					
(11120)		2462	-6.57	<=8	Pass					
Note1: Antenna C	Note1: Antenna Gain: Ant1: 2.30dBi;									

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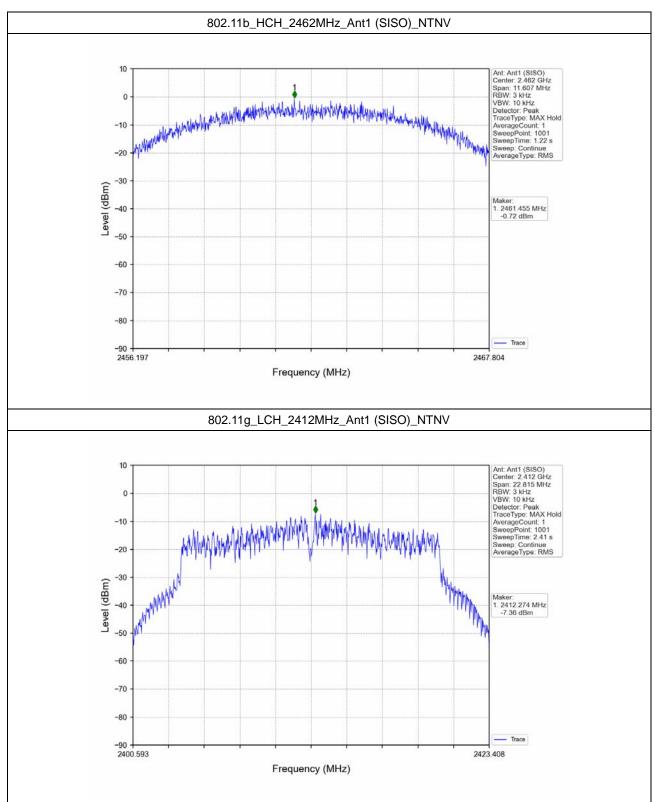
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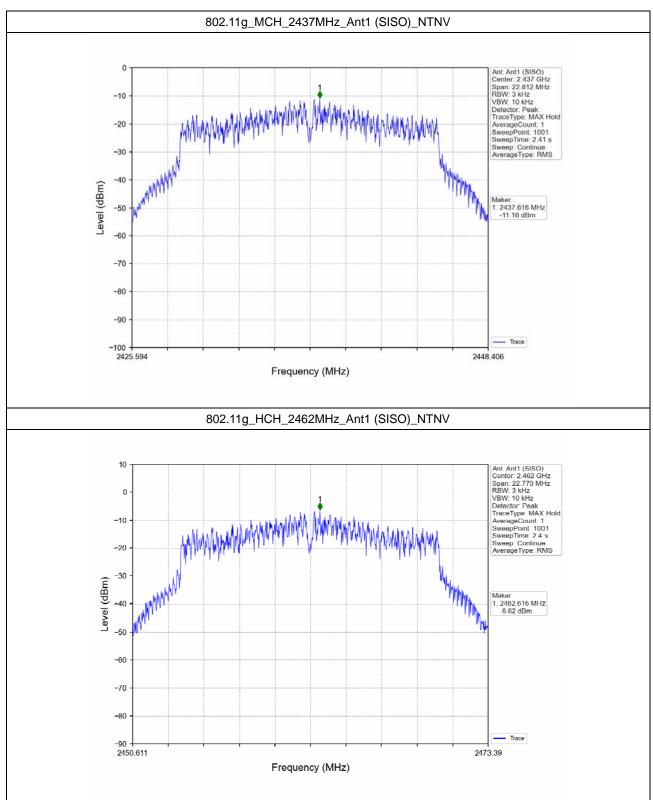
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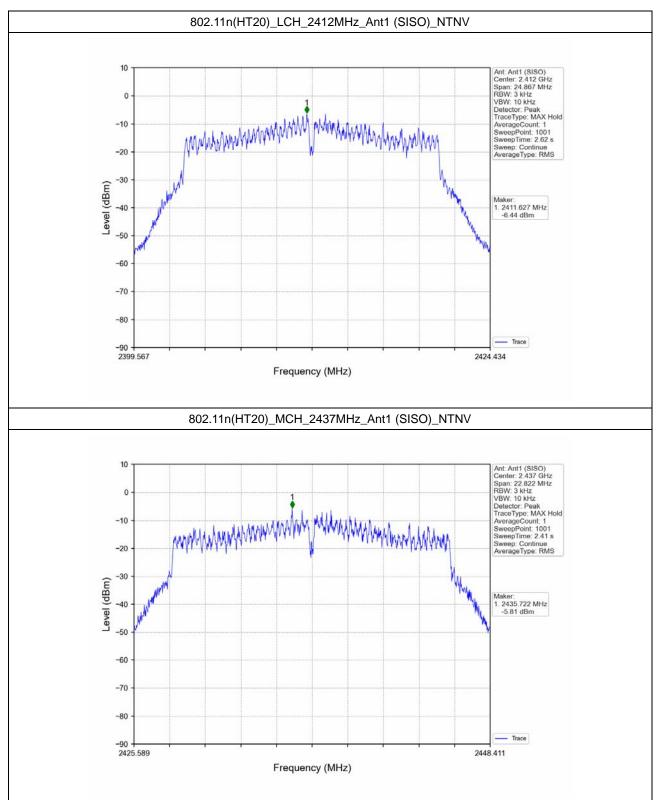
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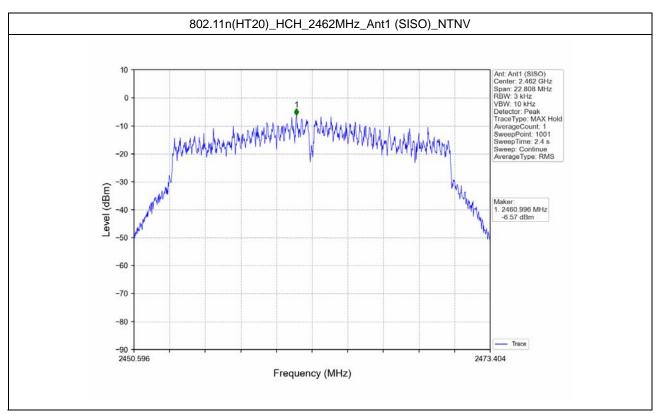
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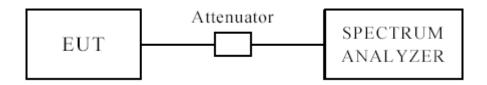


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# 10 Out of Band Measurement 10.1 Test Setup for band edge



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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### 10.5 Band-edge Measurement

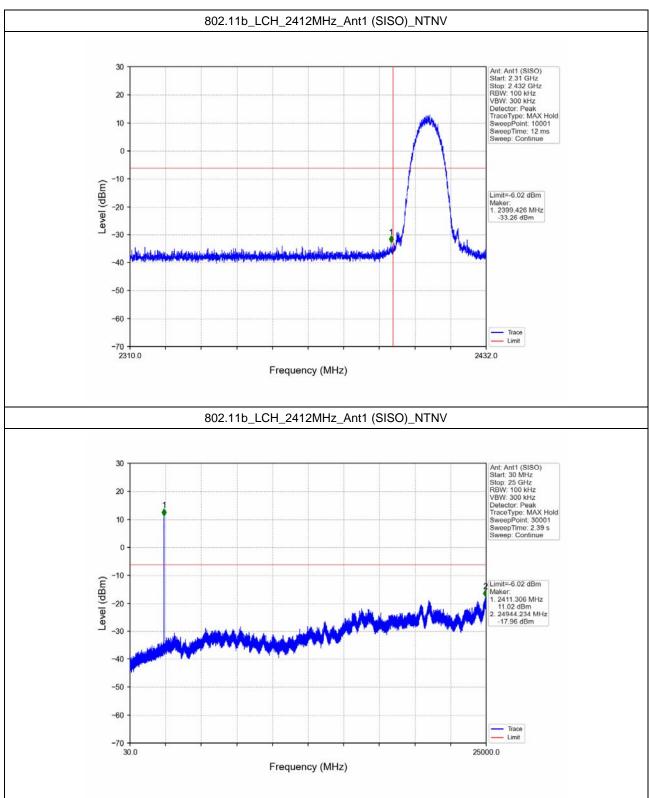
Mode	TX	Frequency	ANIT	Level of Reference	Limit	Verdict
	Туре	(MHz)	ANT	(dBm)	(dBm)	verdict
802.11b	SISO	2412	1	13.98	-6.02	Pass
		2437 1		13.98	-6.02	Pass
		2462	1	13.98	-6.02	Pass
	SISO	2412	1	8.92	-11.08	Pass
802.11g		2437	1	8.92	-11.08	Pass
		2462	1	8.92	-11.08	Pass
802.11n	SISO	2412	1	7.98	-12.02	Pass
		2437	1	7.98	-12.02	Pass
(HT20)		2462	1	7.98	-12.02	Pass

Note1: Refer to FCC Part 15.247 (d) and ANSI C63.10-2013, the channel contains the maximum PSD level was used to establish the reference level.

Note2: RBW = 1MHz was used during the pre-test. The final test will be performed at RBW=100kHz while the margin is less than 3dB.

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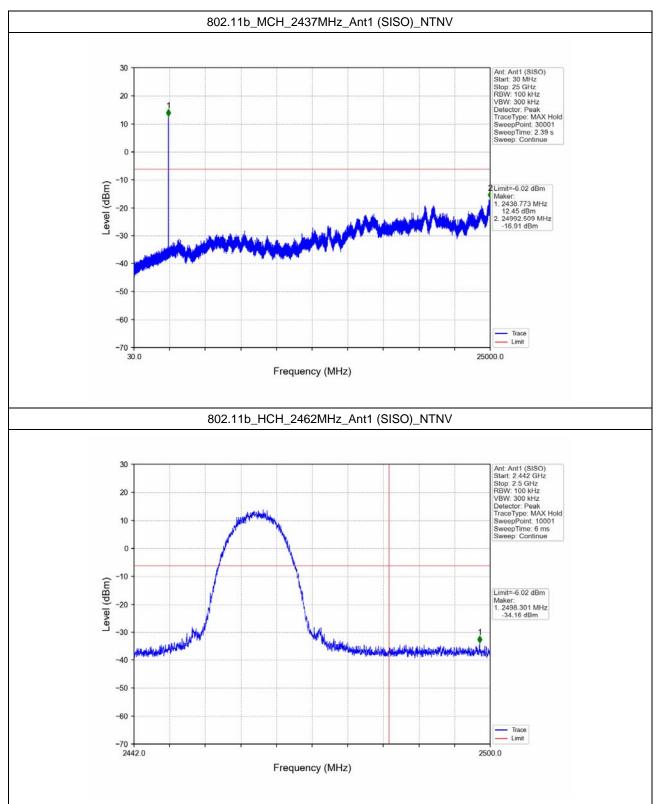
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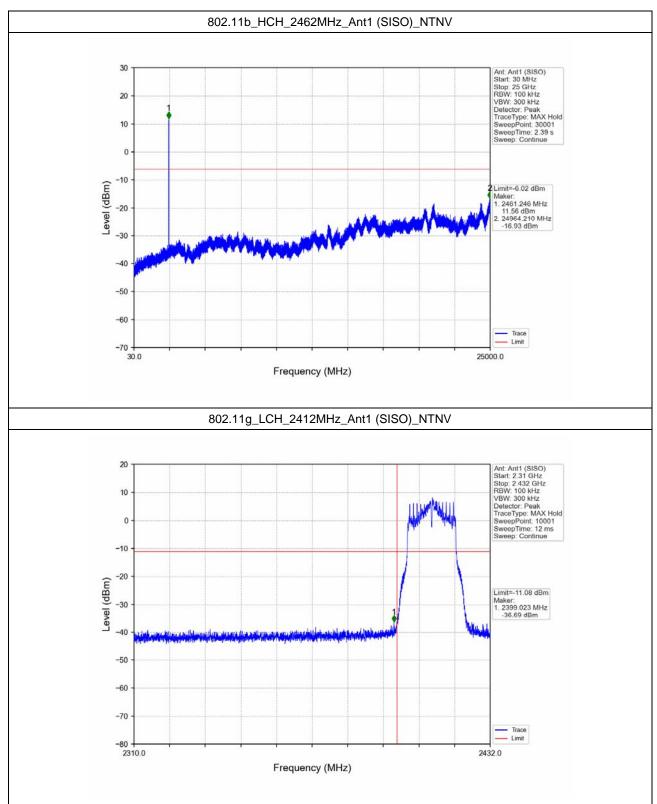
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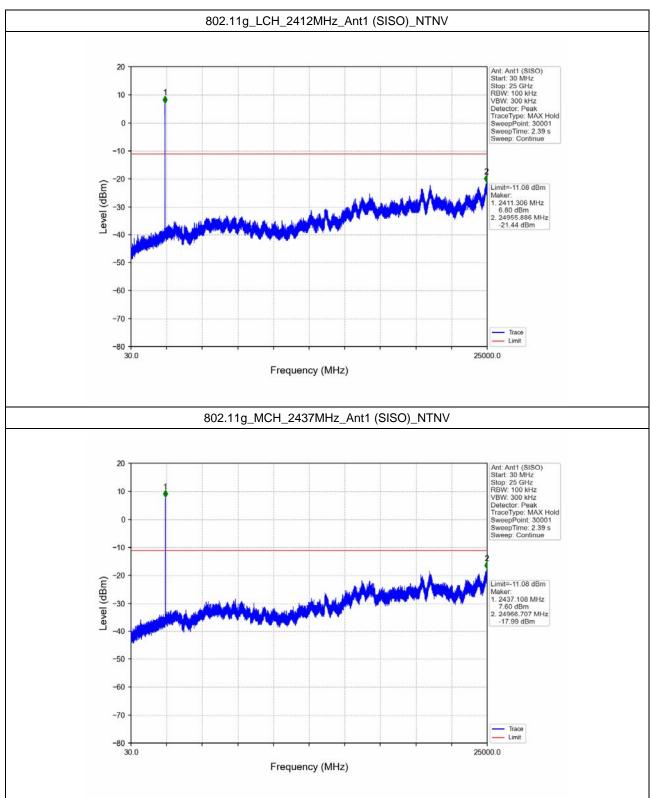
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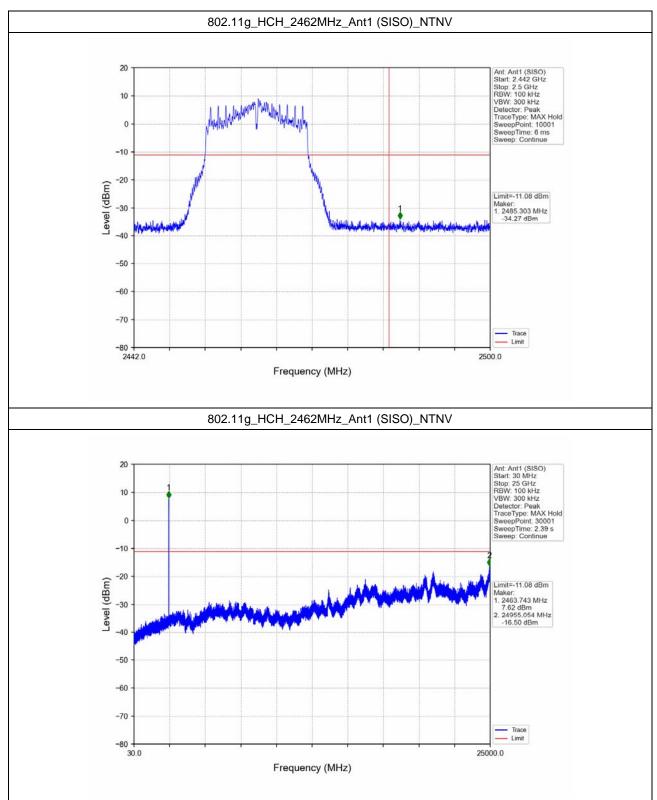
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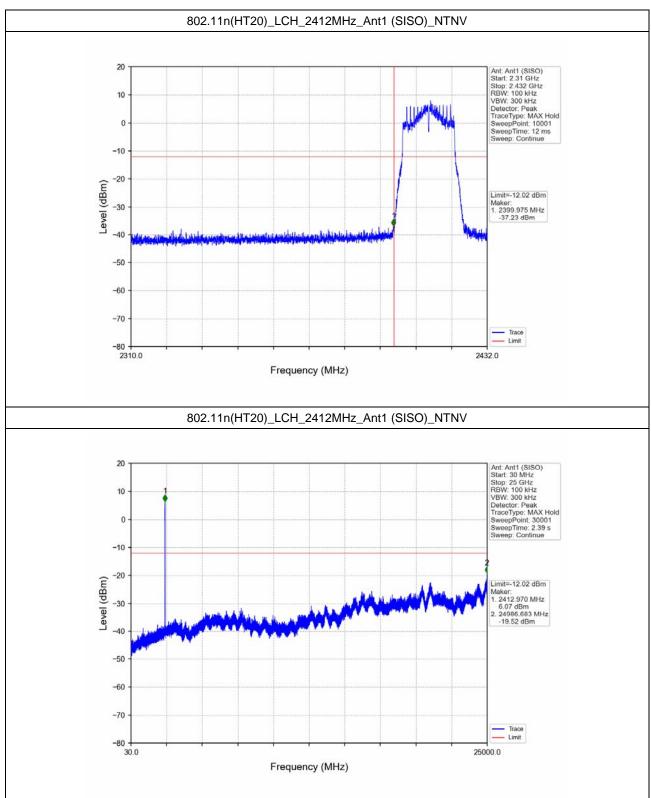
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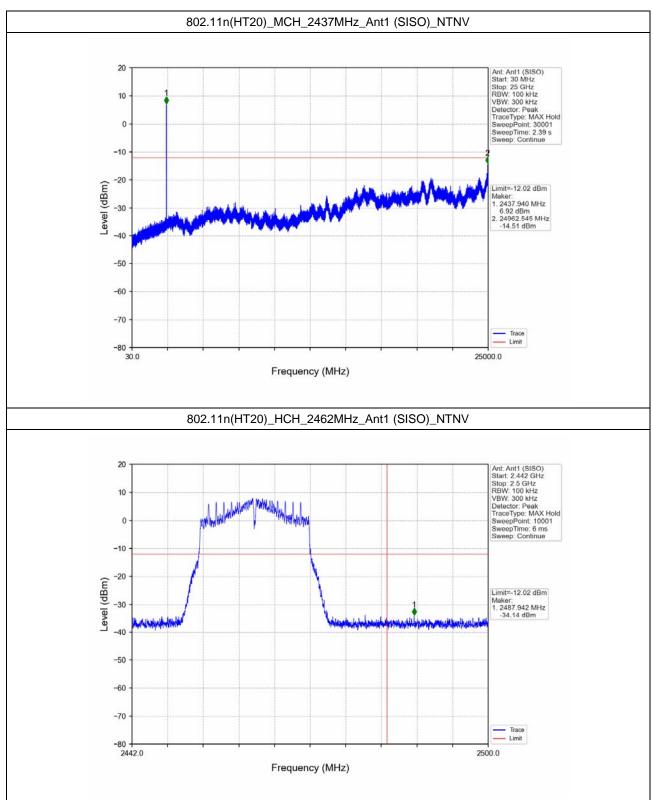
The report refers only to the sample tested and does not apply to the bulk.

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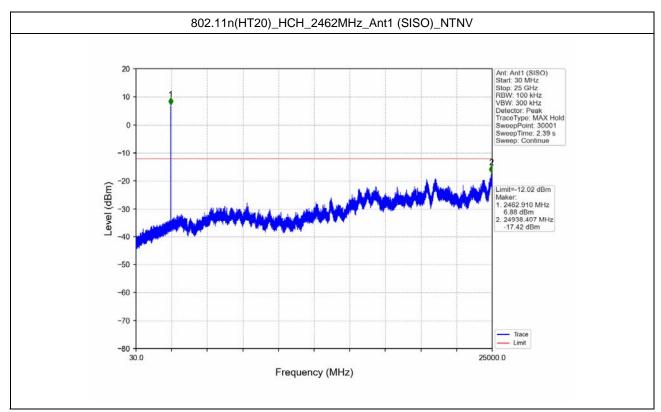
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#### 10.5 Restricted band Measurement

EUT	Live Deck 2			Mo	del	Live Deck 2	
Mode	Keeping Transmitting				/oltage	DC3.85V	
Temperature	24 deg. C,				nidity	56% RH	
Test Result:	Pass				ector	PK	
802.11b mode, Low Channel, Horizontal							
2390	PK (dBµV/m)	54.60	Limit			$74(dB\mu V/m)$	
	AV (dBμV/m) 38.51			nıı	$54(dB\mu V/m)$		
802.11b mode, Low Channel, Vertical							
2390	PK (dBµV/m)	56.53	Limit			74(dBµV/m)	
	AV (dBμV/m)	39.28	Lli	IIII		54(dBµV/m)	

#### 10.5 Restricted band Measurement

EUT	Live Deck 2			Model		Live Deck 2	
Mode	Kee	Keeping Transmitting				DC3.85V	
Temperature	24 deg. C,				nidity	56% RH	
Test Result:	Pass				ector	PK	
802.11b mode, High Channel, Horizontal							
2483.5	PK (dBμV/m)	55.31	T			$74(dB\mu V/m)$	
	AV (dBμV/m)	AV (dBμV/m) 38.76 Limit				$54(dB\mu V/m)$	
802.11b mode, High Channel, Vertical							
2483.5	PK (dBμV/m)	57.95	Limit		74(dBμV/m)		
	AV (dBμV/m)	39.46		ll	$54(dB\mu V/m)$		

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#### 10.5 Restricted band Measurement

EUT	Live Deck 2				del	Live Deck 2	
Mode	Keeping Transmitting				oltage/	DC3.85V	
Temperature	24 deg. C,				nidity	56% RH	
Test Result:	Pass				ector	PK	
802.11g mode, Low Channel, Horizontal							
2390	PK (dBµV/m)	56.73	Limit			$74(dB\mu V/m)$	
	AV (dBμV/m)	39.87	LII	mit		$54(dB\mu V/m)$	
802.11g mode, Low Channel, Vertical							
2390	PK (dBμV/m)	58.62	Limit			74(dBµV/m)	
	AV (dBμV/m)	40.19	LII	11111		$54(dB\mu V/m)$	

#### 10.5 Restricted band Measurement

EUT	Live Deck 2				odel	Live Deck 2	
Mode	Keeping Transmitting				Voltage	DC3.85V	
Temperature	24 deg. C,				nidity	56% RH	
Test Result:	Pass			Det	ector	PK	
802.11g mode, High Channel, Horizontal							
2483.5	PK (dBμV/m)	62.25	T : :		$74(dB\mu V/m)$		
	AV (dBμV/m)	44.83	Limi	Limit		$54(dB\mu V/m)$	
802.11g mode, High Channel, Vertical							
2483.5	PK (dBµV/m)	63.95	Limit		74(dBμV/m)		
	AV (dBμV/m)	47.61				$54(dB\mu V/m)$	

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#### 10.5 Restricted band Measurement

EUT	Live Deck 2				del	Live Deck 2	
Mode	Keeping Transmitting				oltage/	DC3.85V	
Temperature	24 deg. C,				nidity	56% RH	
Test Result:		Dete	ector	PK			
802.11n HT20 mode, Low Channel, Horizontal							
2390	PK (dBμV/m)	58.68	Limit			$74(dB\mu V/m)$	
	AV (dBμV/m)	40.33			$54(dB\mu V/m)$		
802.11n HT20 mode, Low Channel, Vertical							
2390	PK (dBμV/m)	60.35	Limit			74(dBµV/m)	
	AV (dBμV/m)	41.17				54(dBµV/m)	

#### 10.5 Restricted band Measurement

EUT	Live Deck 2			Model		Live Deck 2	
Mode	Keeping Transmitting				Voltage	DC3.85V	
Temperature	24 deg. C,				nidity	56% RH	
Test Result:	Pass			Det	tector	PK	
802.11n HT20 mode, High Channel, Horizontal							
2483.5	PK (dBμV/m)	63.38	T			$74(dB\mu V/m)$	
	AV (dBμV/m)	46.21	Limi	It	$54(dB\mu V/m)$		
802.11n HT20 mode, High Channel, Vertical							
2483.5	PK (dBµV/m)	65.58	Limit		74(dBμV/m)		
	AV (dBμV/m)	48.43				$54(dB\mu V/m)$	

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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

Integral antenna used. The gain of the antennas is 2.3dBi (Get from the antenna specification)