

# ELECTROMAGNETIC EMISSIONS COMPLIANCE REPORT

# INTENTIONAL RADIATOR CERTIFICATION TO FCC PART 15 SUBPART C REQUIREMENT

	0F
Applicant:	AMPEDWIRELESS
	13089 Peyton Dr. #C307, Chino Hills California, 91709, United
	States
Product Name:	High Power AC1200 Pro Wi-Fi Access Point
Brand Name:	AMPEDWIRELESS
Model No.:	AP1200EX
Model Difference:	N/A
Report Number:	E2/2018/60056
FCC ID:	ZTT-AP1200EX
FCC Rule Part:	§15.247, Cat: DTS
Issue Date:	Jul. 20, 2018
Date of Test:	Apr.19, 2018~ Jun. 20, 2018
Date of EUT Re-	Apr.19, 2018
ceived:	
We hereby eertify the	

#### We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. Electronics & Communication Laboratory The test data, data evaluation, test procedures, and equipment configurations shown in this report were made in accordance with the procedures given in ANSI C63.10:2013 and the energy emitted by the sample EUT tested as described in this report is in compliance with conducted and radiated emission limits.

The test results of this report relate only to the tested sample identified in this report.

Tested By:

Approved By:

Vito Pei / Engineer

Jim Chang / Manager





Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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# **Revision History**

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
E2/2018/60056	Rev.00	Initial creation of docu- ment	All	Jul. 20, 2018	Stefanie Yu / Clerk

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#### **GENERAL INFORMATION** 1

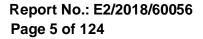
# **1.1 Product description**

#### General:

Product Name:	High Powe	High Power AC1200 Pro Wi-Fi Access Point			
Brand Name:	AMPED W	AMPED WIRELESS			
Model No.:	AP1200E2	AP1200EX			
Model Difference:	N/A	N/A			
Hardware Version:	N/A	N/A			
Software Version:	N/A	N/A			
	48V from F	48V from PoE Adapter			
Power Supply:	Adapter:	Model Name: PSE301G, Supplier: N/A			

# WLAN 2.4GHz:

VLAN 2.40	112.						
Wi-Fi 802.11	Frequency Range	Channels	Rated Power (dBm)	Modulation Technology			
b			19.63	DSSS,			
g	2412-2462	11	24.96				
n_HT20			25.06 (MIMO)	OFDM			
n_HT40	2422-2452	9	25.00 (MIMO)				
Modulati	on type:		PSK, DBPSK for DSSS 16QAM, QPSK, BPSK for OFDM				
Antenna	Designation:	Designation: Patch Antenna, 1. Partl No.: N/A, Supplier: Master WANSHIH Electronic Co., Ltd. 2.4GHz Gain: 7.52 dBi 2. Part No.: N/A, Supplier: Master WANSHIH Electronic Co., Ltd. 2.4GHz Gain: 7.72 dBi					
Modulation type: CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM							
Transitio	n Rate:	802.11 g 802.11 n	: 1/2/5.5/11 Mbps : 6/9/12/18/24/36/48/54 Mbps _20MHz: 6.5 – 144.4Mbps _40MHz: 13.5 – 300.0Mbps				





# **1.2 Test Methodology of Applied Standards**

FCC Part 15, Subpart C §15.247

FCC KDB 558074 D01 DTS Meas. Guidance v04

FCC KDB 662911 D01 Multiple Transmitter Output v02r01

ANSI C63.10:2013

Note: All test items have been performed and record as per the above standards.

# 1.3 Test Facility

SGS Taiwan Ltd. Electronics & Communication Laboratory No.2, Keji 1st Rd., Guishan District, Taoyuan City, Taiwan 333

(TAF code 0513)

FCC Registration Numbers are: 735305 / TW 0002

#### **1.4 Special Accessories**

There are no special accessories used while test was conducted.

#### **1.5 Equipment Modifications**

There was no modification incorporated into the EUT.

#### 1.6 Radiated Emission Test Sites For Measurements From 9 kHz To 30 MHz

Radiated emission below 30MHz is measured in a 9m\*9m\*6m semi-anechoic chamber. the measurements correspond to those obtained at an open-field test site. There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

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#### SYSTEM TEST CONFIGURATION 2

# 2.1 EUT Configuration

The EUT configuration for testing is installed on RF field strength measurement to meet the Commissions requirement and operating in a manner which intends to maximize its emission characteristics in a continuous normal application.

# 2.2 EUT Exercise

An engineering test mode (software/firmware) that applicant provided was utilized to manipulate the EUT into transmit, selection of the test channel, and modulation scheme.

## 2.3 Test Procedure

# 2.3.1 Conducted Emissions

The EUT is a placed on as turn table which is 0.8 m above ground plane. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz,. The CISPR Quasi-Peak and Average detector mode is employed according to §15.207. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.

# 2.3.2 Radiated Emissions

The EUT is a placed on as turn table. For emissions testing at or below 1 GHz, the table height shall be 0.8 m above the reference ground plane. For emission measurements above 1 GHz, the table height shall be 1.5 m. The turn table shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. In order to find out the max. emission, the relative positions of this transmitter (EUT) was rotated through three orthogonal axes and measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.

# 2.4 Measurement Results Explanation Example

# For all conducted test items:

The offset level is set in the spectrum analyzer to compensate the RF cable loss and attenuation factor between EUT conducted port and spectrum analyzer. With the offset compensation, the spectrum analyzer reading level is exactly EUT RF output level. Note:

The spectrum analyzer offset is derived from RF cable loss and attenuator factor.

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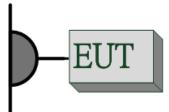
# 2.5 Configuration of Tested System Fig. 2-1 Radiated Emission Configuration



#### Fig. 2-2 Conducted (Antenna Port) Emission Configuration



# Fig. 2-3 Conducted (AC powerline) **Emission Configuration**



# Table 2-1 Equipment Used in Tested System

ltem	Equipment	Mfr/Brand	Model/Type No.	Series No.	Data Cable	Power Cord
1	WLAN Test Software	N/A	N/A	N/A	N/A	N/A
2	Notebook	Lenovo	T420	S0012599	N/A	N/A

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#### 3 SUMMARY OF TEST RESULTS

FCC Rules	Description Of Test	Result
§15.207(a)	AC Power Line Conducted Emission	Compliant
§15.247(b) (3)	Peak Output Power	Compliant
§15.247(a)(2)	6dB & 99% Emission Bandwidth	Compliant
§15.247(d)	Conducted Band Edge and Spurious Emission	Compliant
§15.247(d)	Radiated Band Edge and Spurious Emission	Compliant
§15.247(e)	Power Spectral Density	Compliant
§15.203 §15.247(b)	Antenna Requirement	Compliant



#### **DESCRIPTION OF TEST MODES** 4

#### 4.1 Operated in 2400 ~ 2483.5MHz Band

#### 11 channels are provided for 802.11b, 802.11g and 802.11n\_HT20

	,	0	_				
CHANNEL	FREQUENCY	CHANNEL	FREQUENCY				
1	2412 MHz	8	2447 MHz				
2	2417 MHz	9	2452 MHz				
3	2422 MHz	10	2457 MHz				
4	2427 MHz	11	2462 MHz				
5	2432 MHz						
6	2437 MHz						
7	2442 MHz						
the provided for 902 11p LIT10							

#### 7 channels are provided for 802.11n\_HT40

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422 MHz	8	2447 MHz
4	2427 MHz	9	2452 MHz
5	2432 MHz		
6	2437 MHz		
7	2442 MHz		

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# 4.2 The Worst Test Modes and Channel Details

- 1. The EUT has been tested under operating condition.
- 2. Test program used to control the EUT for staying in continuous transmitting and receiving mode is programmed.
- 3. Investigation has been done on all the possible configurations for searching the worst case.

# **RADIATED EMISSION TEST:**

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT			
	RADIATED EMISSION TEST (BELOW 1 GHz)							
802.11g	1 to 11	1,6,11	OFDM	6	2TX			
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 8	MIMO			
	RADIA	TED EMISS	ION TEST (ABO	VE 1 GHz)				
802.11b	1 to 11	1, 6, 11	DSSS	1	2TX			
802.11g	1 to 11	1, 6, 11	OFDM	6	2TX			
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS 8	MIMO			
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 8	MIMO			
Note:								

The field strength of radiation emission was measured as EUT stand-up position (H mode) and lie down position (E1, E2 mode) for 802.11b/g/n WLAN Transmitter for channel Low, Mid and High, the worst case H position was reported.

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#### ANTENNA PORT CONDUCTED MEASUREMENT:

CONDUCTED TEST							
MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)	ANTENNA PORT		
802.11b	1 to 11	1, 6, 11	DSSS	1	2TX		
802.11g	1 to 11	1, 6, 11	OFDM	6	2TX		
802.11n (HT20)	1 to 11	1, 6, 11	OFDM	MCS 8	MIMO		
802.11n (HT40)	3 to 9	3, 6, 9	OFDM	MCS 8	MIMO		



#### MEASUREMENT UNCERTAINTY 5

SG

Test Items	Uncertainty	
AC Power Line Conducted Emission	+/- 2.586 dB	
Peak Output Power	+/- 0.84 dB	
6dB Bandwidth	+/- 51.33 Hz	
100 KHz Bandwidth Of Frequency Band Edges	+/- 0.84 dB	
Peak Power Density	+/- 1.3 dB	
Temperature	+/- 0.65 °C	
Humidity	+/- 4.6 %	
DC / AC Power Source	DC= +/- 0.13%, AC= +/- 0.2%	

Radiated Spurious Emission:

	9kHz-30MHz: +/-2.87dB				
	30MHz - 180MHz: +/- 3.37dB				
Measurement uncertainty	180MHz -417MHz: +/- 3.19dB				
(Polarization : Vertical)	0.417GHz-1GHz: +/- 3.19dB				
	1GHz - 18GHz: +/- 4.04dB				
	18GHz - 40GHz: +/- 4.04dB				

	9kHz-30MHz: +/-2.87dB
	30MHz - 167MHz: +/- 4.22dB
Measurement uncertainty	167MHz -500MHz: +/- 3.44dB
(Polarization : Horizontal)	0.5GHz-1GHz: +/- 3.39dB
	1GHz - 18GHz: +/- 4.08dB
	18GHz - 40GHz: +/- 4.08dB

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

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#### CONDUCTED EMISSION TEST 6

# 6.1 Standard Applicable

Frequency range within 150kHz to 30MHz shall not exceed the Limit table as below.

Frequency range		nits (uV)
MHz	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note

1. The lower limit shall apply at the transition frequencies The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50 MHz.

## 6.2 Measurement Equipment Used

Conducted Emission Test Site									
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.				
TYPE		NUMBER	NUMBER	CAL.					
EMI Test Receiver	R&S	ESCI 7	100950	12/24/2017	12/23/2018				
Coaxial Cables	N/A	N30N30-1042-150cm	N/A	08/30/2017	08/29/2018				
LISN	Schwarzbeck	NSLK 8127	8127-648	06/18/2018	06/17/2019				
Test Software	Farad	EZ-EMC	Ver. SGS-03A2	N.C.R.	N.C.R.				

# 6.3 EUT Setup

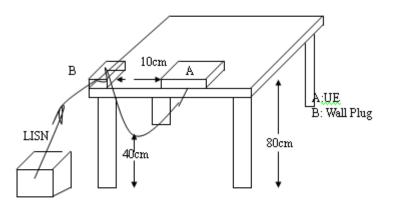
- 1. The conducted emission tests were performed in the test site, using the setup in accordance with the ANSI 63.10:2013.
- 2. The AC/DC Power adaptor of EUT was plug-in LISN. The EUT was placed flushed with the rear of the table.
- 3. The LISN was connected with 120Vac/60Hz power source.

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# 6.4 Test SET-UP (Block Diagram of Configuration)



#### 6.5 Measurement Procedure

- 1. The EUT was placed on a table which is 0.8m above ground plane.
- 2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 3. Repeat above procedures until all phases of power being supplied by given UE are completed

#### 6.6 Measurement Result

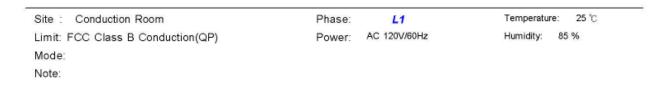
Note: Refer to next page for measurement data and plots. Note2: The \* reveals the worst-case results that closet to the limit

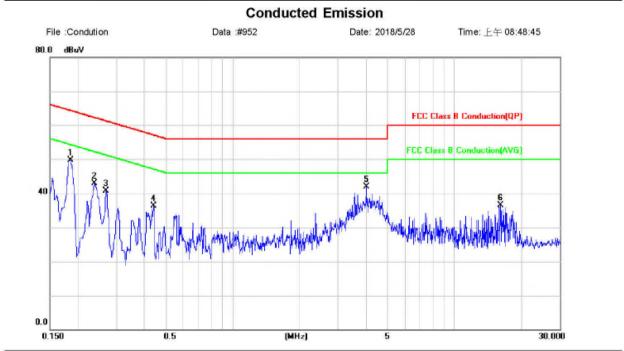
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# AC POWER LINE CONDUCTED EMISSION TEST DATA





Freq.	Reading Level	Correct Factor	Measure- ment	Limit	Over		
MHz	dBuV	dB	dBuV	dBuV	dB	Detector	Comment
0.1860	29.97	19.64	49.61	64.21	-14.60	peak	
0.2380	23.08	19.73	42.81	62.17	-19.36	peak	
0.2700	20.92	19.81	40.73	61.12	-20.39	peak	
0.4420	16.15	20.11	36.26	57.02	-20.76	peak	
4.0180	21.86	19.98	41.84	56.00	-14.16	peak	
16.1660	16.60	19.99	36.59	60.00	-23.41	peak	
	MHz 0.1860 0.2380 0.2700 0.4420 4.0180	Freq.         Level           MHz         dBuV           0.1860         29.97           0.2380         23.08           0.2700         20.92           0.4420         16.15           4.0180         21.86	Freq.         Level         Factor           MHz         dBuV         dB           0.1860         29.97         19.64           0.2380         23.08         19.73           0.2700         20.92         19.81           0.4420         16.15         20.11           4.0180         21.86         19.98	Freq.         Level         Factor         ment           MHz         dBuV         dB         dBuV           0.1860         29.97         19.64         49.61           0.2380         23.08         19.73         42.81           0.2700         20.92         19.81         40.73           0.4420         16.15         20.11         36.26           4.0180         21.86         19.98         41.84	Freq.         Level         Factor         ment         Limit           MHz         dBuV         dB         dBuV         dBuV           0.1860         29.97         19.64         49.61         64.21           0.2380         23.08         19.73         42.81         62.17           0.2700         20.92         19.81         40.73         61.12           0.4420         16.15         20.11         36.26         57.02           4.0180         21.86         19.98         41.84         56.00	Freq.         Level         Factor         ment         Limit         Over           MHz         dBuV         dB         dBuV         dBuV         dB         dBuV         dBuV         dB           0.1860         29.97         19.64         49.61         64.21         -14.60           0.2380         23.08         19.73         42.81         62.17         -19.36           0.2700         20.92         19.81         40.73         61.12         -20.39           0.4420         16.15         20.11         36.26         57.02         -20.76           4.0180         21.86         19.98         41.84         56.00         -14.16	Freq.         Level         Factor         ment         Limit         Over           MHz         dBuV         dB         dBuV         dBuV         dB         Detector           0.1860         29.97         19.64         49.61         64.21         -14.60         peak           0.2380         23.08         19.73         42.81         62.17         -19.36         peak           0.2700         20.92         19.81         40.73         61.12         -20.39         peak           0.4420         16.15         20.11         36.26         57.02         -20.76         peak           4.0180         21.86         19.98         41.84         56.00         -14.16         peak

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



4

5

6

0.3580

4.4260

18.0260

15.78

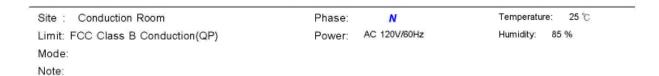
20.52

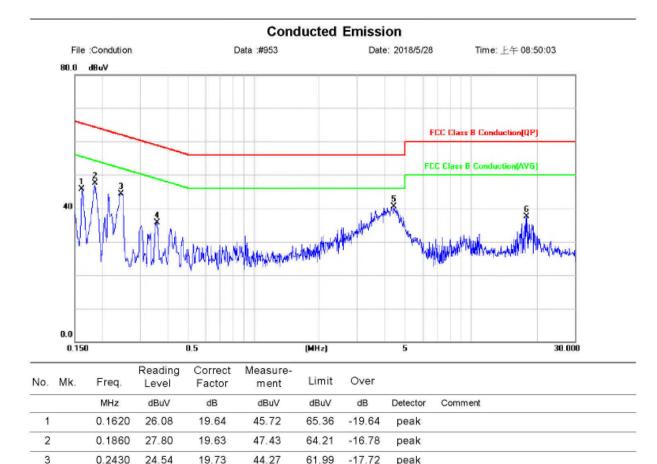
17.45

20.01

19.96

20.04





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35.79

40.48

37.49

58.77

56.00

60.00

-22.98

-15.52

-22.51

peak

peak

peak



#### DUTY CYCLE OF TEST SIGNAL 7

Pre-analysis Check: While conducting average power measurement, duty cycle of each mode shall be checked to ensure its duty cycle in order to compensate for the loss due to insufficient ratio of duty cycle.

All duty cycle is pre-scanned, and result as obtained below shows only the most representative ones where duty cycle is conducted as the given transmission with given virtual operation that expresses the percentage.

## Formula:

Duty Cycle = Ton / (Ton+Toff)

#### **Measurement Procedure:**

- 1. Set span = Zero
- 2. RBW = 8MHz
- 3. VBW = 8MHz,
- 4. Detector = Peak

#### **Duty Cycle:**

	Duty Cycle (%)	Duty Factor (dB)	1/T (kHz)	VBW setting (kHz)
802.11b	98.50	0.07	0.12	1.00
802.11g	91.37	0.39	0.72	1.00
802.11n_20	78.42	1.06	1.48	2.00
802.11n_40	69.81	1.56	2.88	3.00

*b* = 98.5%, *g* = 91.37%,*n*\_*ht*\_20 = 78.42% Duty Cycle Factor:  $10 * \log(1/0.985) = 0.07$ Duty Cycle Factor:  $10 * \log(1/0.9137) = 0.39$ Duty Cycle Factor:  $10 * \log(1/0.7842) = 1.06$ Duty Cycle Factor:  $10 * \log(1/0.6981) = 1.56$ 

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#### 7.1 DUTY CYCLE TEST SIGNAL Measurement Result 802.11 b

RL RL	em Analyzer - Swept S 10 <sup>2</sup> 50 G C					
	q 2.4370000		SENSE:	Avg Type: Voltage	05:54:07 PM May 09, 2018 TRACE 1 2 3 4 5 6	Frequency
	Ref Offset 14.5	PN0: Fast IFGain:Low			ΔMkr3 8.565 ms	Auto Tun
0 dB/div	Ref 30.00 dB				-1.03 dB	
20.0 10.0				~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~		Center Fre 2.437000000 GF
20.0						Start Fr 2.437000000 G
0.0						Stop Fr 2.437000000 G
enter 2.43 es BW 8 N		#V	BW 8.0 MHz		Span 0 Hz 21.47 ms (1001 pts)	CF St 8.000000 M Auto M
	t (Δ)	8.436 ms	Δ) -0.74 dB	FUNCTION FUNCTION WIDT	H FUNCTION VALUE	
2 F 1 3 Δ4 1 4 F 1 5	t t (Δ) t	7.406 ms 8.565 ms 7.406 ms	22.68 dBm (Δ) -1.03 dB 22.68 dBm			Freq Offs 0
6						Scale Ty
8						
8						Log L

# 802.11 g

			-					trum Analyze	rynight Spect
Frequency	05:54:37 PM May 09, 2018 TRACE 1 2 3 4 5 6	e: Voltage	Avg Type		Trig: Free Ru		50 D DC		
Auto Tu	DET P NNNNN	AM			#Atten: 30 dl	PNO: Fast ++++ IFGain:Low			
	0.34 dB						t 14.5 dB 00 dBm	Ref Offse Ref 30.	
Center Fr 2.437000000 G	two-advictors/arthophared	elaberah eller	3∆4 nikalijiha	muni	uninenthete	eventuritation	andretter	-Worthway	1 .
Start Fr 2.437000000 G									
Stop Fr				Map				-	
2.437000000 0						_			
CF St 8.000000 M	Span 0 Hz 567 ms (1001 pts)				8.0 MHz	#VBW	IO GHZ		BW 81
	FUNCTION VALUE	NCTION WOTH	TION		2.45 dB 14.18 dBm	1.397 ms (Δ) 700.3 μs		t (Δ) t	Δ2 1 F 1
					0.34 dB 14.18 dBm	1.529 ms (Δ) 700.3 μs	1	t (Δ) t	Δ4 F
0	*				0.34 dB		1		
Freq Offs 0 Scale Ty					0.34 dB		1		

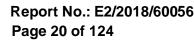


#### 802.11 n\_20 MHz

		Analyzer - S											
Center	Freq			GHz PNO: Fast		Trig: Free F		Avg Type	: Vol	tage	TRAC	May 09, 2018	Frequency
10 dB/div		f Offset 1 ef 30.00		PNO: Fast IFGain:Lov		#Atten: 30				۵	Mkr3 8	62.0 µs	Auto Turo
20.0 10.0	×4.	e-regelling	muiu	the states of th	<b>i</b> wir	wontristation of	happen	effered of the	4	142		3∆4 •//////	Center Fre 2.437000000 GH
0.00 -10.0 -20.0													Start Fre 2.437000000 GH
30.0 40.0 50.0 60.0	WY'									nand (1966)	n-yahabiyada	NF	Stop Fre 2.437000000 GH
enter 2 tes BW		000000 Iz	GHz	#\	/BW	8.0 MHz			Swe	ep 1.0		pan 0 Hz 1001 pts)	CF Ste 8.000000 MH Auto Mi
		(Δ)	×	676.0 µs	(0)	-2.38 di		TION FUN	ICTICN	WOTH	FUNCTIO	N VALUE	Casta III
1 Δ2 2 F 3 Δ4 4 F 5				61.00 µs 61.00 µs 61.00 µs		14.73 dBr -0.08 dI 14.73 dBr	n B					Ξ.	Freq Offse
4 F 5 7 8 9	-									-			Scale Typ
11							-		_	-			Log Li
50										STATUS			

# 802.11 n 40 MHz

	pectrum Analyzer -									
Center I	10	000000 GH		] =	E:INT Run	Avg Typ	e: Voltage	TRAC	M May 09, 2018 25 1 2 3 4 5 6 PE WWWWWW	Frequency
10 dB/div	Ref Offset Ref 30.0	14.5 dB	0: Fast ain:Low	#Atten: 30				AMkr3 4	98.1 µs	Auto Tune
20.0	anninger		×3 <sup>rd</sup>	(proto-random) w	rational families	warran da	142	€3 <u>04</u>	aran ana	Center Freq 2.437000000 GHz
-10.0 -20.0							lable			Start Free 2.437000000 GHz
-40.0 -50.0 -60.0		(Propulsion)	4044			r	ntrillater and	h-14		Stop Freq 2.437000000 GHz
Res BW		) GHz	#VBW	8.0 MHz	PLINET		Sweep 1	.067 ms (	pan 0 Hz 1001 pts)	CF Step 8.000000 MH: Auto Mar
1 Δ2 2 F 3 Δ4 4 F 5	$\begin{array}{c c} & t & (\Delta) \\ \hline & t \\ \hline & t \\ \hline & t \\ \hline & t \end{array}$	347 378 498	7.7 μs (Δ) 3.7 μs 3.1 μs (Δ) 3.7 μs	1.81 d 8.16 dBr -0.08 d 8.16 dBr	B B			FUNCTION	-	Freq Offset 0 Ha
5 6 7 8 9 10 11										Scale Type
+ MISG							STATUS	5		





#### PEAK OUTPUT POWER MEASUREMENT 8

# 8.1 Standard Applicable

For systems using digital modulation in the 2400-2483.5 MHz bands, the limit for peak output power is 1Watt.

If the transmitting antenna of directional gain greater than 6dBi are used the peak output power form the intentional radiator shall be reduced below the above stated value by the amount in dB that the directional gain of the Antenna exceeds 6dBi.

In case of point-to-point operation, the limit has to be reduced by 1dB for every 3dB that the directional gain of Antenna exceeds 6dBi.

#### Note:

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, ..., GN dBi.

(i) If transmit signals are correlated, then Directional gain

= 10 log[(10G1 /20 + 10G2 /20 + ... + 10GN /20) 2 /NANT] dBi

[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

Frequency (MHz)	Effective Legacy Gain (dBi)	Conducted Power Limit (dBm)
2412~2462	10.63	25.36854885

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## 8.2 Measurement Equipment Used

	Conducted Emission Test Site										
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.						
TYPE		NUMBER	NUMBER	CAL.							
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018						
Power Meter	Anritsu	ML2496A	1326001	06/23/2017	06/22/2018						
Power Sensor	Anritsu	MA2411B	1315048	06/23/2017	06/22/2018						
Power Sensor	Anritsu	MA2411B	1315049	06/23/2017	06/22/2018						
Coaxial Cable 30cm	WOKEN	00100A1F1A1 95C	RF01	12/24/2017	12/23/2018						
DC Block	PASTERNACK	PE8210	RF29	12/24/2017	12/23/2018						
Splitter	RF-LAMBAD	RFLT2W1G18 G	RF35	12/24/2017	12/23/2018						
Attenuator	WOKEN	218FS-10	RF23	12/24/2017	12/23/2018						

# 8.3 Test Set-up

**Power Meter:** 

EUT	Attenuator	Power Sensor		Power Meter
-----	------------	--------------	--	-------------

#### 8.4 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the power meter.

#### **Power Meter:**

It is used as the auxiliary test equipment to conduct the output power measurement.

4. Record the max. Reading as observed from Spectrum or Power Meter.

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#### 8.5 Measurement Result

802.1	1b Main				
СН	Freq. (MHz)	Data Rate	Peak Output Power (dBm)	Limit	RESULT
1	2412	1	19.15	28.28 dBm	PASS
6	2437	1	18.78	28.28 dBm	PASS
11	2462	1	18.61	28.28 dBm	PASS
802.1	1b Main				
СН	Freq. (MHz)	Data Rate	Max. Avg. Output include tune up tolerance Power (dBm)	Limit	RESULT
1	2412	1	16.95	28.28 dBm	PASS
6	2437	1	16.91	28.28 dBm	PASS
11	2462	1	16.95	28.28 dBm	PASS
802.1	1b Aux1				
СН	Freq. (MHz)	Data Rate	Peak Output Power (dBm)	Limit	RESULT
1	2412	1	19.01	28.28 dBm	PASS
6	2437	1	18.64	28.28 dBm	PASS
11	2462	1	18.34	28.28 dBm	PASS
802.1	1b Aux1				_
СН	Freq. (MHz)	Data Rate	Max. Avg. Output include tune up tolerance Power (dBm)	Limit	RESULT
1	2412	1	16.90	28.28 dBm	PASS
6	2437	1	16.87	28.28 dBm	PASS
11	2462	1	16.92	28.28 dBm	PASS



802.1	1b_2	2TX									
СН		eq. Hz)	Data Rate	Ро	Wer Ren CH 1	Total Peak Output Power (dBm)	Total Peak Output Power (mW)		Lii	mit	RESULT
1	24	12	1	17.37	15.39	19.50	89.17		2	25.37 dBm	PASS
6		37	1	17.47	15.55	19.63	91.74		25.37 dE		PASS
11		62	1	17.25	15.46	19.46	88.24		25.37 dBn		PASS
802.1	1b_2	2TX									•
СН		eq. Hz)	Data Rate	Po	Output wer Bm) CH 1	Max. Avg. Output include tune up tolerance Power (dBm)	Max. Avg. Output include tune up tolerance Power (mW)		Lii	mit	RESULT
1	24	12	1	14.83	12.70	16.97	49.72		2	25.37 dBm	PASS
6		37	1	14.78	12.81	16.98	49.85			25.37 dBm	PASS
11		62	1	14.71	12.93	16.98	49.91			25.37 dBm	PASS
		CH	.11g M Fro (MI	eq.	Data Rate	Peak Output Power (dBm)	Limit			RESULT	
		1	24	12	6	22.19	28.	28	dBm	PASS	
		6	24	37	6	22.21	28.	28	dBm	PASS	
		11	24	62	6	22.25	28.	28	dBm	PASS	
		802	.11g M	lain					ļ		
		СН	Fro (MI		Data Rate	Max. Avg. Output include tune up tolerance Power (dBm)	Limit			RESULT	
		1	24	12	6	17.92	28.	28	dBm	PASS	1
		6	24	37	6	17.93	28.	28	dBm	PASS	1
		11	24	62	6	17.90	28.	28	dBm	PASS	



8

8

	[	802.1	1g	Aux1									
		СН		<sup>-</sup> req. MHz)	Data Rate	Peak Output Power (dBm)		Limi	t		RES	ULT	
		1	2	2412	6	22.10		28.	28	dBm	PA	SS	
		6	2	2437	6	22.03		28.	28	dBm	PA	SS	
		11		2462	6	22.12		28.	28	dBm	PA	SS	
		802.1	1g	Aux1							1		
		СН		<sup>-</sup> req. MHz)	Data Rate	Max. Avg. Outpu include tune up tolerance Powe (dBm)	5	Limi	t		RES	ULT	
		1	2	2412	6	17.84		28.	28	dBm	PA	SS	
		6	2	2437	6	17.88		28.	28	dBm	PA	SS	
		11	2	2462	6	17.86		28.	28	dBm	PA	SS	
302.1 CH	1g_2T) Freq (MHz	. Da		Po	Output ower Rm) CH 1	Total Peak Output Power (dBm)		Total Peak Dutput Power (mW)		Li	mit		RESULT
1	2412			22.01	21.89	24.96		313.38			25.37	dBm	PASS
6	2437	_		21.87	20.91	24.43		277.13			25.37	dBm	PASS
11	2462 1g 2T)		6	21.84	20.96	24.43		277.49		2	25.37	dBm	PASS
CH	Freq. (MHz	. Da		Po	Output ower Bm) CH 1	Max. Avg. Output include tune up tolerance Power (dBm)	ine	x. Avg. Output clude tune up lerance Power (mW)		Li	mit		RESULT
1	2412	. 6	6	15.52	13.38	17.98		62.85			25.37	dBm	PASS
6	2437			15.43	13.51	17.98		62.77			25.37	dBm	PASS
11	2462	6	ò	15.35	13.56	17.95		62.36			25.37	dBm	PASS



CH         Freq. (MHz)         Data Rate         Peak Output Power (dBm)         Limit         RESULT           1         2412         MCS0         22.22         28.28         dBm         PASS           6         2437         MCS0         22.18         28.28         dBm         PASS           11         2462         MCS0         19.70         28.28         dBm         PASS           10         2457         MCS0         22.21         28.28         dBm         PASS           802.11n_HT20M Main           Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT           1         2412         MCS0         19.92         28.28         dBm         PASS           6         2437         MCS0         19.94         28.28         dBm         PASS           11         2462         MCS0         13.34         28.28         dBm         PASS           6         2437         MCS0         22.00         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           11         2462         MCS0         19.53	802.1	1n_HT20	M Main				
6         2437         MCS0         22.18         28.28         dBm         PASS           11         2462         MCS0         19.70         28.28         dBm         PASS           10         2457         MCS0         22.21         28.28         dBm         PASS           802.11n_HT20M Main         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT         RESULT           1         2412         MCS0         19.92         28.28         dBm         PASS           6         2437         MCS0         19.92         28.28         dBm         PASS           1         2462         MCS0         19.94         28.28         dBm         PASS           11         2462         MCS0         13.34         28.28         dBm         PASS           802.11n_HT20M Aux1         Limit         RESULT           CH         Freq. (MHz)         Data Rate         Power (dBm)         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           6         2437         MCS0         21.97         28.28         dBm         PASS <t< th=""><th>СН</th><th></th><th></th><th>Power</th><th>Limit</th><th></th><th>RESULT</th></t<>	СН			Power	Limit		RESULT
11         2462         MCS0         19.70         28.28         dBm         PASS           10         2457         MCS0         22.21         28.28         dBm         PASS           802.11n_HT20M Main         Max         Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT           1         2412         MCS0         19.92         28.28         dBm         PASS           6         2437         MCS0         19.92         28.28         dBm         PASS           11         2462         MCS0         19.94         28.28         dBm         PASS           6         2437         MCS0         13.34         28.28         dBm         PASS           802.11n_HT20M Aux1         Peak Output (MHz)         Power (dBm)         Limit         RESULT         RESULT           CH         Freq. (MHz)         Data Rate         Peak Output Power (dBm)         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           10         2457         MCS0         21.97         2	1	2412	MCS0	22.22	28.28	dBm	PASS
10         2457         MCS0         22.21         28.28         dBm         PASS           802.11n_HT20M Main         Max         Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT           CH         Freq. (MHz)         Data Rate         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT           1         2412         MCS0         19.92         28.28         dBm         PASS           6         2437         MCS0         19.94         28.28         dBm         PASS           802.11n_HT20M Aux1         MCS0         13.34         28.28         dBm         PASS           802.11n_HT20M Aux1         Peak Output Rate         Power (dBm)         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           1         2412         MCS0         22.07         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Include tune up tolerance Power (dBm)         <	6	2437	MCS0	22.18	28.28	dBm	PASS
B02.11n_HT20M Main         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT           1         2412         MCS0         19.92         28.28         dBm         PASS           6         2437         MCS0         19.92         28.28         dBm         PASS           1         2462         MCS0         19.94         28.28         dBm         PASS           11         2462         MCS0         13.34         28.28         dBm         PASS           802.11n_HT20M Aux1         Peak Output (dBm)         Power         Limit         RESULT         RESULT           CH         Freq. (MHz)         Data Rate         Peak Output Power         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           6         2437         MCS0         22.07         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Include tune up tolerance Power (dBm)         Limit         RES	11	2462	MCS0	19.70	28.28	dBm	PASS
CH         Freq. (MHz)         Data Rate         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT           1         2412         MCS0         19.92         28.28         dBm         PASS           6         2437         MCS0         19.92         28.28         dBm         PASS           11         2462         MCS0         19.94         28.28         dBm         PASS           11         2462         MCS0         13.34         28.28         dBm         PASS           802.11n_HT20M Aux1         Peak Output (dBm)         Power (dBm)         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           6         2437         MCS0         22.00         28.28         dBm         PASS           1         2462         MCS0         19.53         28.28         dBm         PASS           11         2462         MCS0         21.97         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Include tune up tolerance Power (dBm)         Limit <td></td> <td></td> <td></td> <td>22.21</td> <td>28.28</td> <td>dBm</td> <td>PASS</td>				22.21	28.28	dBm	PASS
CH         Freq. (MHz)         Data Rate         include tune up tolerance Power (dBm)         Limit         RESULT           1         2412         MCS0         19.92         28.28         dBm         PASS           6         2437         MCS0         19.92         28.28         dBm         PASS           11         2462         MCS0         13.34         28.28         dBm         PASS           802.11n_HT20M Aux1         Peak Output Rate         Peak Output Power (dBm)         Limit         RESULT           CH         Freq. (MHz)         Data Rate         Peak Output Power (dBm)         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           1         2412         MCS0         22.07         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Include tune up tolerance Power (dBm)         Limit         RESULT         RESULT           1         2412         MCS0         19.82 <td< th=""><th>802.1</th><th>1n_HT20</th><th>M Main</th><th></th><th></th><th></th><th></th></td<>	802.1	1n_HT20	M Main				
6         2437         MCS0         19.94         28.28         dBm         PASS           11         2462         MCS0         13.34         28.28         dBm         PASS           802.11n_HT20M Aux1         Peak Output Power (dBm)         Limit         RESULT           CH         Freq. (MHz)         Data Rate         Peak Output Power (dBm)         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           6         2437         MCS0         22.07         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Limit         RESULT           CH         Freq. (MHz)         Data Rate         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT           1         2412         MCS0         19.82         28.28         dBm         PASS           6         2437         MCS0         19.85         28.28         dBm	СН			include tune up tolerance Power	Limit		RESULT
11         2462         MCS0         13.34         28.28         dBm         PASS           802.11n_HT20M Aux1         Peak Output Power (dBm)         Limit         RESULT           CH         Freq. (MHz)         Data Rate         Peak Output Power (dBm)         Limit         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           6         2437         MCS0         22.07         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT         RESULT           1         2412         MCS0         19.82         28.28         dBm         PASS           6         2437         MCS0         19.85         28.28         dBm         PASS           1         2462         MCS0         13.11         28.28         dBm         PASS	1	2412	MCS0	19.92	28.28	dBm	PASS
B02.11n_HT20M Aux1         Peak Output Rate         Peak Output Power (dBm)         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           6         2437         MCS0         22.07         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT         RESULT           1         2412         MCS0         19.82         28.28         dBm         PASS           1         2412         MCS0         19.82         28.28         dBm         PASS           11         2412         MCS0         19.82         28.28         dBm         PASS           1         2412         MCS0         19.85         28.28         dBm         PASS           1         2462         MCS0         19.85         28.28         dBm         PASS           11         2462         MCS0         13.11         28.28	6	2437	MCS0	19.94	28.28	dBm	PASS
CH         Freq. (MHz)         Data Rate         Peak Output Power (dBm)         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           6         2437         MCS0         22.07         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT         RESULT           1         2412         MCS0         19.82         28.28         dBm         PASS           1         2412         MCS0         19.85         28.28         dBm         PASS           1         2412         MCS0         19.85         28.28         dBm         PASS           6         2437         MCS0         19.85         28.28         dBm         PASS           11         2462         MCS0         13.11         28.28         dBm         PASS	11	2462	MCS0	13.34	28.28	dBm	PASS
CH         Preq. (MHz)         Data Rate         Power (dBm)         Limit         RESULT           1         2412         MCS0         22.00         28.28         dBm         PASS           6         2437         MCS0         22.07         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT         RESULT           1         2412         MCS0         19.82         28.28         dBm         PASS           1         2412         MCS0         19.82         28.28         dBm         PASS           1         2412         MCS0         19.82         28.28         dBm         PASS           6         2437         MCS0         19.85         28.28         dBm         PASS           11         2462         MCS0         13.11         28.28         dBm         PASS	802.1	1n_HT20	M Aux1				
6         2437         MCS0         22.07         28.28         dBm         PASS           11         2462         MCS0         19.53         28.28         dBm         PASS           10         2457         MCS0         21.97         28.28         dBm         PASS           802.11n_HT20M Aux1         Limit         Preq.           CH         Freq. (MHz)         Data Rate         Max. Avg. Output include tune up tolerance Power (dBm)         Limit         RESULT           1         2412         MCS0         19.82         28.28         dBm         PASS           6         2437         MCS0         19.85         28.28         dBm         PASS           11         2462         MCS0         13.11         28.28         dBm         PASS	СН	-		Power	Limit		RESULT
11       2462       MCS0       19.53       28.28       dBm       PASS         10       2457       MCS0       21.97       28.28       dBm       PASS         802.11n_HT20M Aux1       Limit       PASS         Max. Avg. Output include tune up tolerance Power (dBm)         1       2412       MCS0       19.82       28.28       dBm       PASS         1       2412       MCS0       19.82       28.28       dBm       PASS         6       2437       MCS0       19.85       28.28       dBm       PASS         11       2462       MCS0       13.11       28.28       dBm       PASS	1	2412	MCS0	22.00	28.28	dBm	PASS
11       2462       MCS0       19.53       28.28       dBm       PASS         10       2457       MCS0       21.97       28.28       dBm       PASS         802.11n_HT20M Aux1       Limit       PASS         CH       Freq. (MHz)       Data Rate       Max. Avg. Output include tune up tolerance Power (dBm)       Limit       RESULT         1       2412       MCS0       19.82       28.28       dBm       PASS         6       2437       MCS0       19.85       28.28       dBm       PASS         11       2462       MCS0       13.11       28.28       dBm       PASS	6	2437	MCS0	22.07	28.28	dBm	PASS
802.11n_HT20M Aux1CHFreq. (MHz)Data RateMax. Avg. Output include tune up tolerance Power (dBm)LimitRESULT12412MCS019.8228.28dBmPASS62437MCS019.8528.28dBmPASS112462MCS013.1128.28dBmPASS	11	2462					
802.11n_HT20M Aux1CHFreq. (MHz)Data RateMax. Avg. Output include tune up tolerance Power (dBm)LimitRESULT12412MCS019.8228.28dBmPASS62437MCS019.8528.28dBmPASS112462MCS013.1128.28dBmPASS	10	2457	MCS0	21.97	28.28	dBm	PASS
CHFreq. (MHz)Data Rateinclude tune up tolerance Power (dBm)LimitRESULT12412MCS019.8228.28dBmPASS62437MCS019.8528.28dBmPASS112462MCS013.1128.28dBmPASS	802.1	1n_HT20	M Aux1				
6         2437         MCS0         19.85         28.28         dBm         PASS           11         2462         MCS0         13.11         28.28         dBm         PASS	СН			include tune up tolerance Power	Limit		RESULT
11 2462 MCS0 13.11 28.28 dBm PASS	1	2412	MCS0	19.82	28.28	dBm	PASS
11 2462 MCS0 13.11 28.28 dBm PASS	6	2437	MCS0	19.85	28.28	dBm	PASS
	10	2457	MCS0	19.63	28.28	dBm	PASS



802.1	1n_HT2									
СН	Freq. (MHz)	Data Rate	Реак Ро	Output wer Rm) CH 1	Total Peak Output Power (dBm)	Total Peak Output Power (mW)		Limit		RESULT
1	2412	MCS8	22.84	20.43	24.81	302.72	1 Watt =	25.37	dBm	PASS
6	2437	MCS8	22.61	21.41	25.06	320.75	1 Watt =	25.37	dBm	PASS
11	2462	MCS8		20.31	22.66	184.50	1 Watt =	25.37	dBm	PASS
10	2457	MCS8		17.46	18.83	76.38	1 Watt =	25.37	dBm	PASS
	1n_HT2									
СН	Freq. (MHz)	Data Rate	Po	Output wer Bm) CH 1	Max. Avg. Output include tune up tolerance Power (dBm)	Max. Avg. Output include tune up tolerance Power (mW)		Limit		RESULT
1	2412	MCS8	16.84	14.77	19.99	99.84		25.37	dBm	PASS
6	2437	MCS8	16.67	15.01	19.98	99.65		25.37	dBm	PASS
11	2462	MCS8	7.21	10.74	13.39	21.83		25.37	dBm	PASS
	[	802.11	1_HT40	M Main						
		CHI	Freq. (MHz)	Data Rate	Peak Output Power (dBm)	Limit		RESU	LT	
	Ī	3	2422	MCS0	18.84	28.2	8 dBm	PAS	S	
		6	2437	MCS0	22.25	28.2	8 dBm	PAS	S	
		9	2452	MCS0	17.76	28.2	8 dBm	PAS	S	
		4	2427	MCS0	22.11	28.2	8 dBm	PAS	S	
		8	2447	MCS0	22.19	28.2	8 dBm	PAS	S	
		802.11	1_HT40	M Main				1		
		CHI	Freq. (MHz)	Data Rate	Max. Avg. Output include tune up tolerance Power (dBm)	Limit		RESU	LT	
		3	2422	MCS0	12.93	28.2	8 dBm	PAS	S	
		6	2437	MCS0	19.88	28.2	8 dBm	PAS	S	
		9	2452	MCS0	10.63	28.2	8 dBm	PAS	S	



		802.11	n_HT40	M Aux1						
		СН	Freq. (MHz)	Data Rate	Peak Output Power (dBm)	Limit		RESUL	т	
		3	2422	MCS0	18.70	28.2	8 dBm	PASS	;	
		6	2437	MCS0	22.14	28.2	8 dBm	PASS	;	
		9	2452	MCS0	17.72	28.2	8 dBm	PASS	;	
		4	2427	MCS0	21.93	28.2	8 dBm	PASS	;	
		8	2447	MCS0	21.99	28.2	8 dBm	PASS	;	
		802.11	n_HT40	M Aux1						
		сн	Freq. (MHz)	Data Rate	Max. Avg. Outpu include tune up tolerance Powe (dBm)	) Limit		RESUL	T	
		3	2422	MCS0	12.91	28.2	8 dBm	PASS	;	
		6	2437	MCS0	19.77	28.2	8 dBm	PASS	;	
		9	2452	MCS0	10.52	28.2	8 dBm	PASS	;	
802.1	1n_HT40	M MIM			-					
СН	Freq. (MHz)	Data Rate	Po	Wer CH 1	Total Peak Output Power (dBm)	Total Peak Output Power (mW)		Limit		RESULT
3	2422	MCS8		18.25	19.99	99.80		25.37	dBm	PASS
6	2437	MCS8		21.58	25.00	316.23		25.37	dBm	PASS
9	2452	MCS8	12.01	16.71	17.98	62.77		25.37	dBm	PASS
4	2427	MCS8	20.09	21.73	24.00	251.03		25.37	dBm	PASS
8	2447	MCS8		22.01	24.41	275.80		25.37	dBm	PASS
802.1	1n_HT40		r							
СН	Freq. (MHz)	Data Rate	Po	Dutput wer Bm) CH 1	Max. Avg. Output include tune up tolerance Power (dBm)	Max. Avg. Output include tune up tolerance Power (mW)		Limit		RESULT
3	2422	MCS8		9.65	13.31	21.44		25.37	dBm	PASS
6	2437	MCS8		14.37	<b>19.99</b>	99.87		25.37	dBm	PASS
9	2452	MCS8		7.57	10.70	11.75		25.37	dBm	PASS

offset offset

11.10

dB for SISO mode

11.10 dB for MIMO mode

\* Note: The duty cycle factor is compensated to obtain the maximum value of measurement in average.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



#### 6DB & 99% BANDWIDTH MEASUREMENT 9

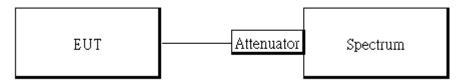
# 9.1 Standard Applicable

The minimum 6 dB bandwidth shall be at least 500 kHz.

## 9.2 Measurement Equipment Used

	Conducted Emission Test Site										
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.						
Spectrum Analyzer	Agilent	N9010A	MY51440113	2018/06/19	2019/06/18						
Attenuator	Marvelous	MVE2213-10	RF30	2017/12/26	2018/12/25						
DC Block	PASTERNACK	PE8210	RF29	2017/12/26	2018/12/25						
Notebook	Lenovo	L412	S0011357	N/A	N/A						

## 9.3 Test Set-up



#### 9.4 Measurement Procedure

- 1. Place the EUT on the table and set it in transmitting mode.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. For 6dB Bandwidth:

Set the spectrum analyzer as RBW = 100 kHz, VBW = 3\*RBW, Span = 30M/50MHz, Detector=peak, Sweep=auto.

- 5. Mark the peak frequency and -6dB (upper and lower) frequency.
- 6. For 99% Bandwidth:

Set the spectrum analyzer as RBW=1%, VBW = 3\*RBW, Span = 30M/50MHz, Detector=Sample, Sweep=auto.

- 7. Turn on the 99% bandwidth function, max reading.
- 8. Repeat above procedures until all frequency of interest measured was complete.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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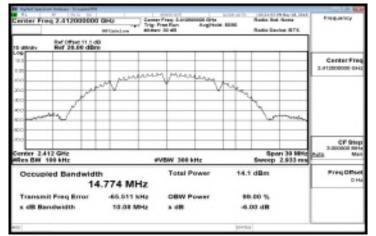
#### 9.5 Measurement Result

802.11b	802.11b Main 802.11b Aux1									
Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result	Freq. (MHz)	6dB BW (kHz)	Limit (kHz)	Result			
2412	10084	> 500	PASS	2412	10087	> 500	PASS			
2437	10085	> 500	PASS	2437	10090	> 500	PASS			
2462	10082	> 500	PASS	2462	10093	> 500	PASS			
802.11g	Main			802.11g	Aux1					
Freq.	6dB BW	Limit	Result	Freq.	6dB BW	Limit	Result			
(MHz)	(kHz)	(kHz)	Result	(MHz)	(kHz)	(kHz)	Result			
2412	16474	> 500	PASS	2412	16500	> 500	PASS			
2437	16445	> 500	PASS	2437	16500	> 500	PASS			
2462	16429	> 500	PASS	2462	16506	> 500	PASS			
802.11_n_HT20 Main 802.11_n_HT20 Aux1										
Freq.	6dB BW	Limit	Result	Freq.	6dB BW	Limit	Result			
(MHz)	(kHz)	(kHz)	Result	(MHz)	(kHz)	(kHz)	literation			
2412	17579	> 500	PASS	2412	17604	> 500	PASS			
2437	17576	> 500	PASS	2437	17609	> 500	PASS			
2462	17331	> 500	PASS	2462	17607	> 500	PASS			
2457	17600	> 500	PASS	2457	17610	> 500	PASS			
802.11_	<u>n_HT40 Ma</u>	ain		802.11_	<u>n_HT40 Au</u>	ıx1				
Freq.	6dB BW	Limit	Result	Freq.	6dB BW	Limit	Result			
(MHz)	(kHz)	(kHz)	Roount	(MHz)	(kHz)	(kHz)	Roount			
2422	35756	> 500	PASS	2422	36334	> 500	PASS			
2437	35750	> 500	PASS	2437	36329	> 500	PASS			
2452	35746	> 500	PASS	2452	36337	> 500	PASS			
2427	35760	> 500	PASS	2427	36330	> 500	PASS			
2447	36330	> 500	PASS	2447	35750	> 500	PASS			

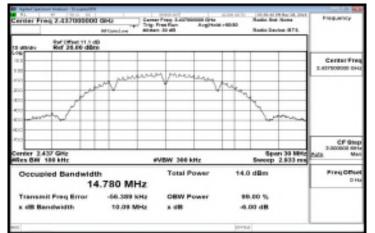
\*Refer to next page for plots

#### 802.11b (Main) 6dB Band Width Test Data CH-Low

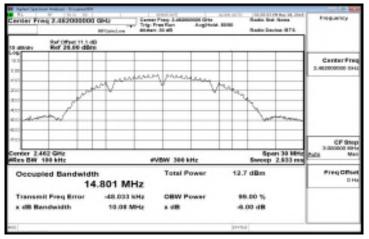
SG:



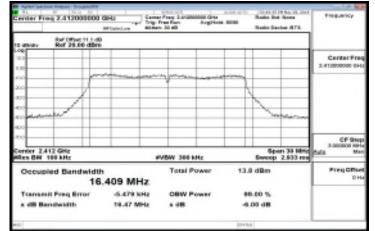
#### 6dB Band Width Test Data CH-Mid



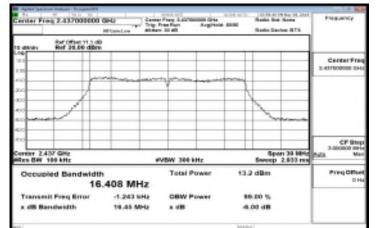
# 6dB Band Width Test Data CH-High



# 802.11g (Main) 6dB Band Width Test Data CH-Low



## 6dB Band Width Test Data CH-Mid



# 6dB Band Width Test Data CH-High

	Frequency	Radio Dal Nono Radio Sevice 875		80.00	Augitald	Run Fan	Stig Pe	POsisLos 7		a 2.4620	enter Fre
				_					11.1 dB 6 dBm	for othe Ref 28.0	D-Million
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		Same	1			_					800
1.00	CF 9										
M-	561	Spon 33 Mile Sweep 2,933 ms			Hz	W 306 k	**			62 GHz 100 kHz	Genter 2.4 Res Bar
DH	FreqOff	dBm	.0 0	+2	ower	Total P	Hz	374 M		ed Band	Occupi
		10 %	10.0		ower	CBW P	kiHz	5.422	ror	Freq Br	Transm
		86.0	8.00			A 18	AD-Lz	18.43 8		ndwidth	x dB Ba
	-	6weep 2.933 mg dBm 00 %.	.0 c		ower	Total P	Hz.	5.422	16.	ied Banc it Freq Er	Occupi Transm

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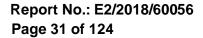
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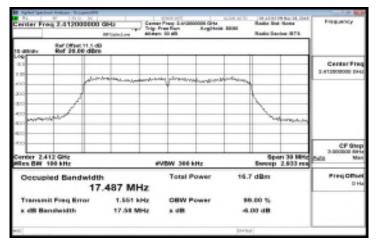
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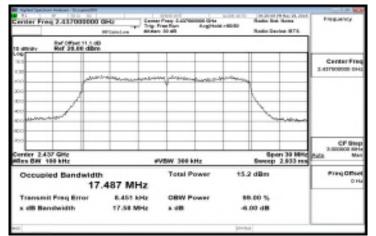




#### 802.11n\_20M (Main) 6dB Band Width Test Data CH-Low



## 6dB Band Width Test Data CH-Mid



# 6dB Band Width Test Data CH-High (2457MHz)

Certier Prey 2,457000	ODD GH2	Garder Pray 5 Trig Free Run Bitter: 50 80	487400088 (211)	-	Euria Sa	re biore nice: DTS	Prequency
Ref 20.00							
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42.2							
40.0							
Demler 2.457 GHz Res BW 100 kHz	-	evow :	300 kHz	_		an 38 Miliz 2.900 ma	CF Step
Occupied Bandw	idth 17.501 M		ol Power	20.6	dikm		dada Mer
Transmit Freq Erro x dB Bandwidth		kHz %	of OOW Power		00 % 0 dB		Preq Offset OH:
-				1000.00			

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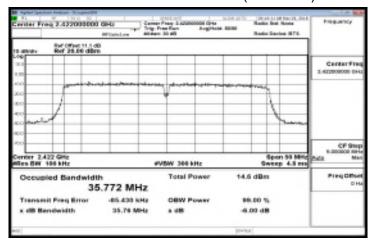
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#### 6dB Band Width Test Data CH-High (2462MHz)

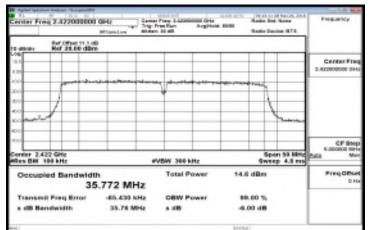
Center Freq 2.462030000	terrer Trie	r Pray Little00000 GHs Fran Euro Augittale n 30 dB	4.80000	Latio Del Nena Latio Sevice 876	Proguency
Bar Offset 11 1 dl Barran Ref 35.00 dBrs					
93 11					Center Freq 1.40200000 044
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				Jours	
					CF 9top
Res Bay 100 kHz		VBW 300 kHz		Span 33 Mile Sweep 2.933 mil	Auto Mar
Occupied Bandwidtl 17	480 MHz	Total Power	12.0 0	iBm	Preq Citise D Ho
Transmit Freq Error	4.148 kHz	OBW Power	80.0		
x dB Barabeidth	17.33 MHz	A 128	-6.00	1.48	



#### 802.11n\_40M (Main) 6dB Band Width Test Data CH-Low (2422MHz)



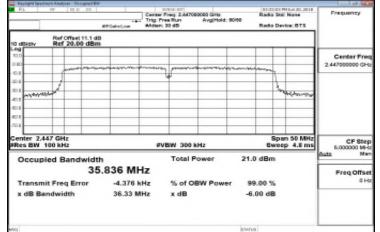
#### 6dB Band Width Test Data CH-Low (2427MHz)



# 6dB Band Width Test Data CH-Mid

aphat (person in	ator bogaster			NAME OF TAXABLE PARTY.	1
Center Freq	2.437000000	Trip Irig	Pres 2.407000000 GHz	Radio Sol None	Proguency
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200	mar		e persona and		
10	4				1
0.0					-
Center 2,437	GHz			Sport 59 H	CF Stop 8.000000 MP4
Mics Bar 100	kHz		VBW 300 kHz	Gweep 4.8 s	15
Occupied Bandwidth 35.793 MHz		Total Power	15.4 dBm	Preg Offset	
Transmit P	reg Error	-81.845 NHz	OBW Power	88.00 %	
x dB Band	width	35.75 MHz	A 18	-6.00 48	
*12				27476.0	

#### 6dB Band Width Test Data CH-High (2447MHz)



# 6dB Band Width Test Data CH-High (2452MHz)

aphi (pe)	us ballar - Tragert				
Center Fre	ag 2.452000000	terr Trip	er Pray 2 allabootool Gris Fran Earn Argittale an 30 40	A STATE OF THE STA	Finguency
TO HEADY	Ref 28.00 dBr	0			
11					Center Fred 2.452000000 EH4
200 200 200	printer	and the second sec	ees parameters and	mmuma	-
400 600 magnifies	/			1	~~
100					CF 9to
Center 2.4 Miles Bill	62 GHz 100 kHz		WBW 360 kHz	Spon 50 Sweep 4.	Billio Auto Ma
Occup	ied Bandwidi 35	h 5.803 MHz	Total Power	9.53 dBm	Preg Offse D H
Transm	it Freq Error	-78.451 kHz	<b>CBW Power</b>	88.00 %	
x dB Be	ndwidth	35.75 MHz	A 48	-6.00 48	
				anena .	

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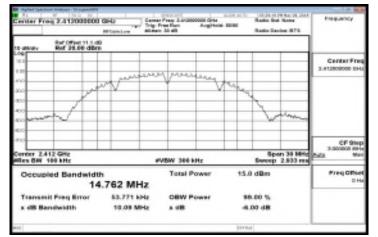
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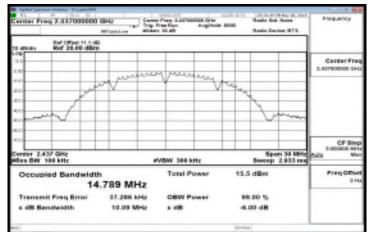
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# 802.11b (Aux) 6dB Band Width Test Data CH-Low

SG



#### 6dB Band Width Test Data CH-Mid



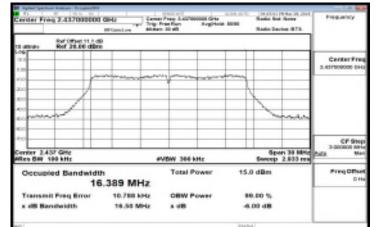
# 6dB Band Width Test Data CH-High

Center Freq 2.482000	Trip Inter	Press D antibiococcil Cirks	Radio Sol Anno Radio Sol Anno Radio Sol Anno Radio Solice 875	Proguency
to allow Ref 30.00	1.00			
10	ALEARAN	Manny		Center Freq
××	www			
and V			Junior	
Conter 2,462 Gife			Sport 30 MP	CF Step
illes Bill 100 kHz		IVBW 300 kHz	Sweep 2.933 m	
Occupied Bandw	14.833 MHz	Total Power	15.7 dBm	Preq Offset 0 Ha
Transmit Freq Erro x dB Bandwidth	24.337 kHz 10.08 MHz	CBW Power	88.00 % -6.00 dB	
			27+9-4	

# 802.11g (Aux) 6dB Band Width Test Data CH-Low

a stated (particular	Berger - Trageritte		stand and	NAME OF TAXABLE PARTY.	
Center Fred	2.412008600	torial line	Pres 5 Avianopoon Center	Radio Ind Name	Frequency
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10					Center Fre 1.412000000 BH
200	r	and the second		-m	-
000					
and readons	mor				-
100					CF 9to
Center 2.41 Miles Bar 10	2 GHz 10 kHz		VBW 300 kHz	Spen 33 Sweep 2.933	Mand Auto Ma
Occupie	d Bandwidt	.390 MHz	Total Power	14.4 dBm	Pres Offse DH
Transmit	Fing Error	12.011 kHz	OBW Power	88.00 %	
x dB Ben		18.50 MHz	A UB	-6.00 48	
				10+04	

## 6dB Band Width Test Data CH-Mid



# 6dB Band Width Test Data CH-High

Center Freq	2.462000000	the second second second	ner Prany 3. attancesses Grea Fran Earn Augitest are 30 ath	1000	Radio Series 875	Prequency
D allows	for other 11.1 di Ref 35.00 dBm					
10			~			CenterFree 2.462508000 DH
xo xo xo	1					
					Jours	
×						CF Stor
Genter 2.463 Res Bar 10			WBW 300 kHz		Span 33 Mm Sweep 2.933 m	Auto Ma
Occupie	d Bandwidt 16	394 MHz	Total Power	15.3	dBm	Preg Offse D H
Transmit	Freq Error	8.646 kHz	CBW Power	**	.00 %	
x dB Ban	dwidth	18.51 MHz	A 18	-4.	85 00	
				12+2-		

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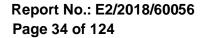
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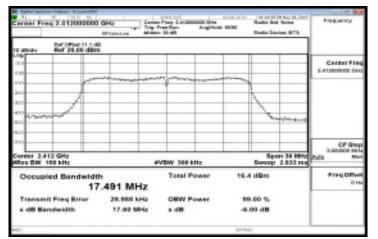
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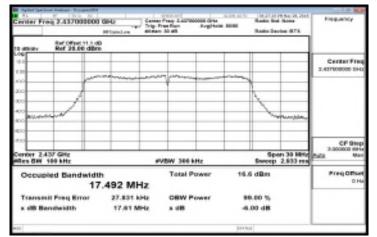




#### 802.11n\_20M (Aux) 6dB Band Width Test Data CH-Low



## 6dB Band Width Test Data CH-Mid



# 6dB Band Width Test Data CH-High (2457MHz)

RL Nº IND				AvgiHold.+6	6/60	Radio Sta	None None None	Frequency
10 dBrdiv Ref 20.00								
100 000					-			Center Fred 2.457000000 GH
101 301 301						have	Spinger	
40.8								
70.8					_			
Center 2,457 GHz #Res BW 100 kHz		#VE	SW 300 M	dHz			an 30 MHz 2.933 ms	CF Step
Occupied Bandy			Total P	ower	21.4	dBm		Auto Nar
Transmit Freq Erro x dB Bandwidth	17.519 MI r 16.378 i 17.61 M	kHz	% of OI x dB	BW Power		00 dB		Freq Offset 0Hb
was l					874766			

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台灣檢驗科技股份有限公司	

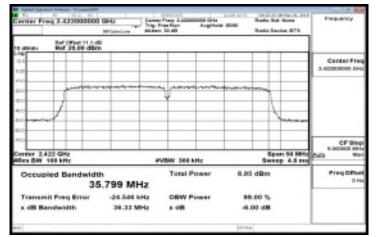
#### 6dB Band Width Test Data CH-High (262MHz)

enter Freq 2.482000000	GHU Care	Pres 2 American Criss	Ranks Street	Dat Name Invice IITS	Proguency
But Offset 11.1 dl Bef 28.00 dBry					
					CenterFreq 2.462508000 DH
				- 1	
10 1			A		
and the second				mentionelle	
00					CF 9Nc
Res BW 100 kHz	· · · ·	VBW 300 kHz	Savee	pen 33 Miles p. 2.933 mil	3-doodoo xe-i hida Mar
Occupied Bandwidt	.489 MHz	Total Power	14.7 dBm		Preg Offset D Ha
Transmit Freq Error	23.732 MHz	<b>OBW Power</b>	88.00 %		
x dB Bandwidth	17.01 MHz	A 10B	-6.00 dB		



#### 802.11n\_40M (Aux)

#### 6dB Band Width Test Data CH-Low (2422MHz)



#### 6dB Band Width Test Data CH-Low (2427MHz)

ŘL	NP 111 D DC-	- Trig	r Freq: 2.457089089 GH Pres Run Avgitt n: 30 dB	2 old: 50/50	Radio Stat	None	Frequency
0 dBrdiv	Ref Offset 11.1 dB Ref 20.00 dBm						
60 10.0 0.00			~ ~~~~~~				Center Freq 2.427000000 GHu
101	1		4				
1.0 1.0 1.0 1.0 1.0	-			-	1	where	
0.0							
102							
Res BW 1			VBW 300 kHz			50 MHz 4.8 ms	CF Step 5.000000 MHz
Occupi	Occupied Bandwidth		Total Power	.7 dBm		Auto Man	
-		5.805 MHz					Freq Offset
x dB Bar	it Freq Error ndwidth	-17.569 kHz 36.33 MHz	% of OBW Po x dB		9.00 % 3.00 dB		

#### 6dB Band Width Test Data CH-Mid

FL. 10	2.437035600	GH2 Came	r Pray 2.407000000 Girls Fran Run AugPlaid o 30.48	Andre an fair - Des de laite fran Randes Bard Room Randes Davies B	<ul> <li>Finguency</li> </ul>
to appear	for other 11.1 d Ref 38.00 dBr	0 10			
33 13					CenterFreq 2.43700000 EH4
00 X0 X0	from		- Varianti annora	mananan	-
				~	-
co	00			Strate St	CF Stop
iften BAT 100			VBW 344 kHz	Gweep 4	d ma
Occupies	d Bandwidt 35	h 5.790 MHz	Total Power	11.0 dBm	Freq Offset D Ha
Transmit P	Fireq Error	-28.587 NHz	OBW Power	88.00 %	
x dB Band	heidth	38.33 MHz	A 48	-6.00 48	
-				27+7-4	

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#### 6dB Band Width Test Data CH-High (2447MHz)

		Tris	rter Freq: 2.447080080 GHb g: Pree Run Avgitto ten: 30 d5	98108 ; bild	tadio Stat Ladio Dev		Frequency
dBidiv	Ref 20.00 dB	48 411					
10 10			mile, planation prophered				Center Freq 2.447000000 GHu
	1		¥.		1		
1 201/10/20				+ +	1	-	
1							
es BW 1			#VBW 300 kHz			n 50 MHz p 4.8 ms	CF Ster 5.000000 MH
Occupi	led Bandwid	th 5.832 MHz	Total Power	20.2 d	Bm		Auto Mar Freq Offset
	it Freq Error	-67.733 kHz	% of OBW Por	wer 99.0	0 %		0H
x dB Bar	ndwidth	35.75 MHz	x dB	-6.00	dB		

## 6dB Band Width Test Data CH-High (2452MHz)

Reality of the second sectors - Designation					
Center Freq 2.452030000	terre line	Pres Pres 2 ARRESONNE Gris Free Earn RugPland are 30 48	80100	Dat Name Dat Name	Frequency
Bar Offset 71 1 dD to anvay Ref 35.00 dBm					
101 100					CenterFreq 2.452508000 0H0
		n jacon and	*********		
and and				1	
80 70					CF 9Ns
Center 2.462 Gite Mices BW 100 kHz		WBW 300 kHz	9	Span 50 Mills weep 4.8 ms	# GOODOD HIP-
Occupied Bandwidth 35	.807 MHz	Total Power	6.22 dBr		PregOffse DH
Transmit Freq Error	-30.704 NHz	OBW Power	88.00 5		
x dB Bendwidth	38.34 MHz	A 18	-6.00 48	•	
			12410.0		



# 10 CONDUCTED BAND EDGES AND SPURIOUS EMISSION MEASUREMENT

## **10.1 Standard Applicable**

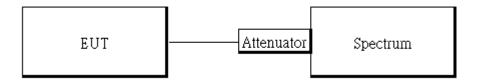
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a).

Conducted Emission Test Site					
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018
Power Meter	Anritsu	ML2496A	1326001	06/23/2017	06/22/2018
Power Sensor	Anritsu	MA2411B	1315048	06/23/2017	06/22/2018
Power Sensor	Anritsu	MA2411B	1315049	06/23/2017	06/22/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A1 95C	RF01	12/24/2017	12/23/2018
DC Block	PASTERNACK	PE8210	RF29	12/24/2017	12/23/2018
Splitter	RF-LAMBAD	RFLT2W1G18 G	RF35	12/24/2017	12/23/2018
Attenuator	WOKEN	218FS-10	RF23	12/24/2017	12/23/2018
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2018	05/01/2019

#### **10.2 Measurement Equipment Used**

#### 10.3 Test SET-UP



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#### **10.4 Measurement Procedure Reference Level of Emission Calculation:**

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- **3.** Set the span to 1.5 times the DTS channel bandwidth.
- **4.** Set the RBW = 100kHz & VBW = 300 kHz.
- **5.** Detector = peak.
- **6.** Sweep time = auto couple.
- 7. Trace mode = max hold.
- 8. Allow trace to fully stabilize.

Use the peak marker function to determine the maximum amplitude level.

# **Conducted Band Edge:**

- 1. To connect Antenna Port of EUT to Spectrum.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
- 4. Set start to edge frequency, and stop frequency of spectrum analyzer so as to encompass the spectrum to be examined.
- 5. Set the spectrum analyzer as RBW=100 kHz, VBW=300 kHz, Detector = Peak, Sweep = auto
- 6. Mark the highest reading of the emission as the reference level measurement.
- Set DL as the limit = reading on marker 1 20dBm
- 8. Marker on frequency, 2.3999GHz and 2.4836GHz, and examine shall 100 kHz immediately outside the authorized (2400~2483.5) be attenuated by 20dB at least relative to the maximum emission of power.
- 9. Repeat above procedures until all default test channel (low, middle, and high) was complete.

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# **Conducted Spurious Emission:**

- To connect Antenna Port of EUT to Spectrum
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 3. Set RBW = 100 kHz & VBW = 300 kHz, Detector = Peak, Sweep = Auto.
- 4. Allow trace to fully stabilize.
- 5. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.
- 6. Repeat above procedures until all default test channel measured were complete.

## **10.5 Measurement Result**

[	Referer	nce Leve	of Limit 802.11b mode
	Freq.	PSD	Reference Level of Limit
	(MHz)	(dBm)	(dBm)
	2412	-1.28	-21.28
	2462	-0.74	-20.74
	Referer	nce Leve	of Limit 802.11g mode
	Freq.	PSD	Reference Level of Limit
	(MHz)	(dBm)	(dBm)
	2412	-5.18	-25.18
	2462	-4.38	-24.38
I	Reference	ce Level (	of Limit 802.11n20 mode
	Freq.	PSD	Reference Level of Limit
	(MHz)	(dBm)	(dBm)
	2412	-3.06	-23.06
	2462	-4.91	-24.91
	2457	0.85	-19.16
F	Referenc	e Level o	of Limit 802.11n40 MODE
	Freq.	PSD	Reference Level of Limit
	(MHz)	(dBm)	(dBm)
	2422	-7.8	-27.80
	2452	-12.63	-32.63
	2427	-3.706	-23.71
	2447	-1.699	-21.70
11.10	) dE	B for SI	SO mode

offset offset

dB for SISO mode

11.10

dB for MIMO mode

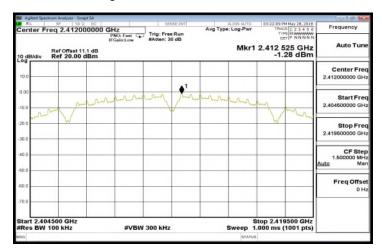
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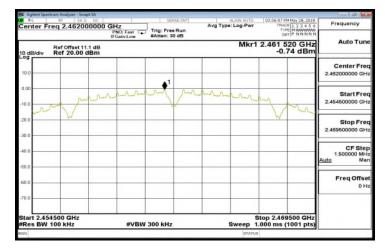
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#### 802.11b Band Edge Limit Test Data CH-Low

SG



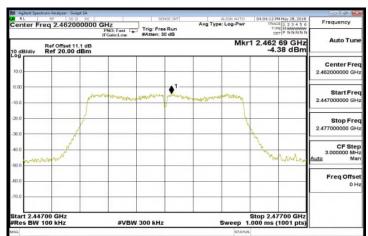
#### 802.11b Band Edge Limit Test Data CH-High



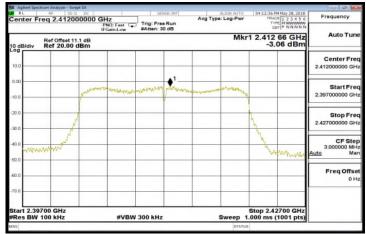




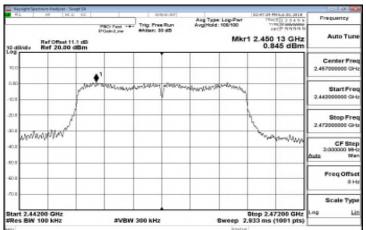
#### 802.11g Band Edge Limit Test Data CH-High



#### 802.11n\_HT20 Band Edge Limit Test Data CH-Low



#### 802.11n\_HT20 Band Edge Limit Test Data CH-High (2457HMz)



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f (886-2) 2298-0488

ALI6 Avg Type: Lo

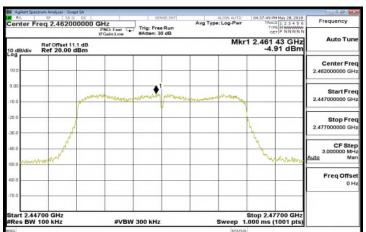
Mkr1 2.438 32 GHz

-12.63 dBr

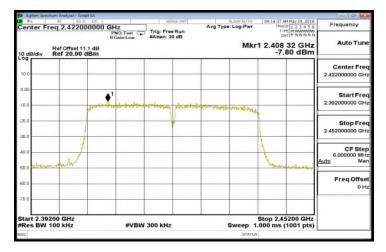
Auto Tr



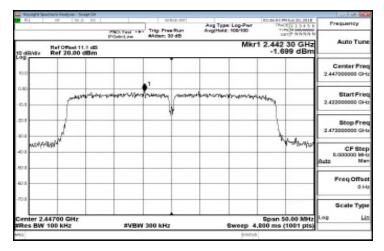
#### 802.11n\_HT20 Band Edge Limit Test Data CH-High (2462MHz)



#### 802.11n\_HT40 Band Edge Limit Test Data CH-Low (2422MHz)



### 802.11n\_HT40 Band Edge Limit Test Data CH-High (2447MHz)



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Agrieutigation and a second and

Ref Offset 11.1 dE Ref 20.00 dBm

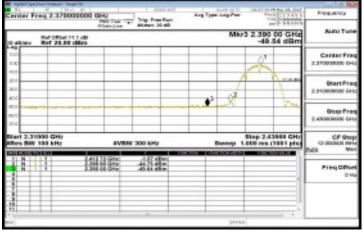
Center Freq 2.452000000 GHz											10.0
Start Freq 2.422000000 GHz								•1			0.00
Stop Freq 2.482000000 GHz			- and infrared	getyl-elasteryd	plouverter th	maninutudu	telentrest444	Weenswhee			-20.0
CF Step 6.000000 MHz Auto Man		have							weet	و ساید و او ا	-40.0
Freq Offset 0 Hz											-60.0
											-70.0
	48200 GHz	Stop 2.4	Sween 1			300 kHz	#VBM			t 2.42200	

# 802.11n\_HT40 Band Edge Limit Test Data CH-High (2452MHz)

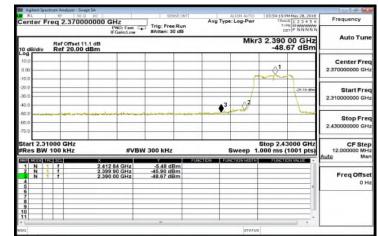
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#### 802.11b **Band Edge Test Data CH-Low**



#### 802.11g **Band Edge Test Data CH-Low**



### **Band Edge Test Data CH-High**

Be started Spectrum Institute - See	d la				1.00
Certer Freq 2.5000	DODOD CIHA	The free flags	Aug Type Log Per	Parallel 12414	Proqueticy
Ref Office 1 D allowy Ref 20.00	Plantae	Trig. Frei Ban Bilmen: 30 40	M	13 2.483 6 GHz -48.68 diam	ALEO TURE
100					CenterFred 2.50000000 DH
20 / 1 W					StartFree 2.450808006 640
000 H					Giop Free 2.65060608-044
Blart 2.89999 GHz albes BW 199 bHz	ave.	W 300 KH2		Blog 2.55000 GH2 660 ms (1981 pts)	CF Stop
		超數			Preg Offset D He
8 9 12 11		_	jarena		

### **Band Edge Test Data CH-High**



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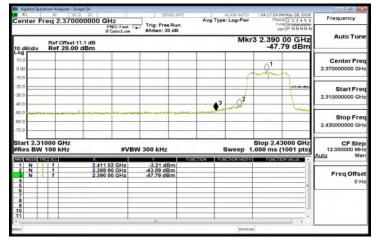
Direst One wee stated the south structure to the point feel of by the test interposed and south statistics and people are tealed in the south structure states in the south structure structure prosecuted to the fullest extent of the law.

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### 802.11n HT20 **Band Edge Test Data CH-Low**



### Band Edge Test Data CH-High (2457HMz)

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Promitive         Autor 12         Story Promotion         Autor Turner           Bet Offset111.eB         Mkr1 2.45012 GHz         0.876 dBm         Center Fin           Control         0.876 dBm         Center Fin         Center Fin </th <th>Prequency</th> <th>TRACE 1 2 5 4 5 8</th> <th></th> <th></th> <th></th> <th>49 J.M.C.</th> <th>KL I</th>	Prequency	TRACE 1 2 5 4 5 8				49 J.M.C.	KL I
Bef Offset 11.1 eB         MKR1 2.450 12 GHz           01         0.876 dBm           02.455000 GHz         81antFin           2.4500000 GHz         8500 Protocol           868 BW 100 KHz         #VBW 300 KHz         Sweep 10.53 ms (1001 pts)           11         0.878 dBm         0.878 dBm           12         0.878 dBm         0.878 dBm           13         0.878 dBm         0.878 dBm           14         0.878 dBm	Auto Tur				PGeint,rw		
Start Fin         Camber Fin           2         2         3           3         3         3           4         4         4			Mkr1				
Image: State of the s	Center Fre					-	7
BitartFri         StartFri           2         2           2         2           2         2           2         3           2         3           2         4           2         4           2         4           2         4           2         4           2         4           2         4           2         4           2         4           2         4           2         4           3         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4         4           4	2.495000000 G				~	Ann	-
Image: State of the s		011-10-10 404					1
Image: State in the s	Start Fre 2.445000000 GH				1	4	
Image: State 12         Adds 12         State 12				2	-		a
Stop 2,55000 GHz         Stop 2,55000 GHz           art 2,44000 GHz         st/BW 300 kHz         Stop 2,55000 GHz           art 2,44000 GHz         st/BW 300 kHz         Stop 2,55000 GHz           art 2,44000 GHz         st/BW 300 kHz         Stop 2,55000 GHz           art 2,44000 GHz         st/BW 300 kHz         Stop 2,55000 GHz           art 300 GHz         st/BW 300 kHz         Stratistic st/BWZ           art 4,4000 GHz         st/BW 300 GHz         st/BWZ           art 4,4000 GHz         st/BWZ         st/BWZ           art 2,440 GHZ         st/BWZ         st/BWZ	Stop Fre	and all and the former	Sector Statement and	an and a set			
Less BW 100 kHz         #VBW 300 kHz         Sweep 10.53 ms (1001 pts)         H100000 M           Less BW 100 kHz         2.456 (12 GHz)         3.875 dBm         Constant of the second	2.55000000 GP						
N         7         2.488 12 GHz         3.276 dBm         Function         Puncton         Adda         M           N         7         2.488 12 GHz         3.276 dBm         Function         Puncton         Fireq Offs         Fireq Offs         0         Fireq Offs         0	CF Ste			+			
Internet         2418         12 (State         2 (State         2 (State         Direction         Direction         Freq Offs           N         I         2 (State	11.000000 MP				#VBV		
Scale Typ		PURCHARGE -	TERM FOR TERMINER	0.876 dBm			N
Scale Typ	Freq Offs			46.393 dBm 45.474 dBm	2.483.60 GHz 2.483.60 GHz	1	
	Scale Typ						
	Log Li						
		×					

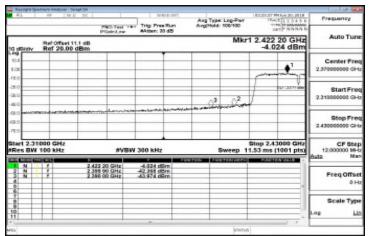
## Band Edge Test Data CH-High (2462HMz)

10 P							rm Analyzes : Su	Agilen Treste
Frequency	14:42:33 PM May 28, 2038 TRACE 1 2 3 4 5 6 TIPE H WWWWW DET P N N N N N	Type: Log-Pwr	1	Trig: Free Run	tz ND: Fant 🕞	00000 G	q 2.5000	
Auto Tun	r3 2.483 6 GHz -48.51 dBm	Mki			and to w	1.1 dB	Ref Offset 1 Ref 20.00	dB/div
Center Fre 2.50000000 GH							01	
Start Fre 2.45000000 GH	. २०१४ जन्म				•3	1		
Stop Fre 2.55000000 GH		****			£	-		
CF Ste 10.000000 MH Auto Ma	Stop 2.55000 GHz 000 ms (1001 pts)	Sweep 1.		300 kHz	#VBW		00 kHz	art 2,450 tes BW 1
Freq Offse 0 H	6		PORCIES	-5,20 dBm -49,09 dBm -48,61 dBm	B GHZ 5 GHZ 6 GHZ	2,483	1 1 1	N 1 N 1 N 1
	·							
		STATUS						

#### 802.11n HT40 Band Edge Test Data CH-Low (2422HMz)

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Frequency	BACENDARK	10	Log-Pwr	Avg Ty	Free Run		łz	0000 GH		Freq		
Auto Tur	DET P NNNN N				n: 30 dB	#Atten:	ND: Fast C Gain:Low	IF				
Auto Tur	0 00 GHz 7.82 dBm		Mkr						Offset 11.		B/div	
Center Fre												.og
2.370000000 GH		1										0.00
		10.			_							10,0
Start Fre	1		- 6	-	_	-	-			-	-	0.0
2.310000000 GH	-27 M (En	-	- 1	-	-	-	-			-		90 D
			02		-		-				-	0.0
Stop Fre				al allow the local designed	aline and	- to the second second		b-street-o	-dat the		-	50 D
2.43000000 GH					-	-	-		_	-		0.0
		-			-	-	-			-		70.0
CF Ste 12,000000 MH	.43000 GHz s (1001 pts)				Hz	W 300 KH	#VB			01000 V 100		
Auto Mi			C TRUN WIDTH	NOTION P		Ý		x		THE BEL		125
		-			4 dBm	-8.84	0 GHz	2,408 4		1 1	NN	1 2
Freq Offs 01					2 dBm	-47.82	0 GHz	2.390.0		1 1	N	4
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					-		-		-			8
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	· ·	-	-		-	m					-	11

## Band Edge Test Data CH-Low (2427HMz)



# Band Edge Test Data CH-High (2447HMz)

							Analyzet - Se			
Frequency	TRACE 123431	Are Tepe Lop-Pwr	NEI	1 10 10 10		30 1	_ MF #	12	۲L.	R
	241P NRNS S	Avg[Hold: 106/100		Trig: Pres Ro AAtten: 30 d	PSC: Fest +*	1				
Auto Tun	1 2.442 23 GHz -2.040 dBm	Mkr					Offset 11		Rich	10.0
							20.00		-	log
Center Fre					-	1		-		10.1
2.485000000 GH				-		a restance		-		1.01
					1	4		- 1 1	-	-12.0
StartFre	01-121-00			-	++	-		++	-	28.0
2.420000000 GH				0	~	-		/		-28.0
			Ser.	the states		-		-	-	-
Stop Fre	Man personal purchase					-		-	-	-58.0
2.550000000 GH						-		-	-	-08.0
								-	-	11.0
CF Ste	Stop 7.55000 GHz		-		-	-	GHz	2000	124	Star
13.000000 MB-	2.47 ms (1001 pts)			300 kHz	#VBV			¥ 100		
Auta Ma	PROPERTY -	THE REPORTS	a second	1		×	_	12 C 2	(INC.)	
			_	-2.540 rffim	2 23 GHz	2.442		1	N	
Freq Offse				37,795 (Birn 37,178 (Birn	3 60 GHz 3 60 GHz	2483	-	1	N	- 5
0H							-	-	-	-
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Scale Typ										8
Log Li										9
	+		_						_	11
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#### Band Edge Test Data CH-High (2452HMz)

- Internet a la c		-					e SA		nurri Are	ipete	
CE 123456	TFLAC		Avg			Hz	0000 GI		eq 2	r Fre	nter
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		Mk									B/div
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-12/13 dBm										Yma	Y
					- <b>-</b> -	<b>◆</b> <sup>2</sup>	Lours		_		
(1001 pts)					V 300 kHz	#VB					
IGITI VALUE E	PUNCT	UN-TON MOTH	HCTION	3m 3m	-50.06 di	5 GHz	2,483		1 1 1		NNN
						-					
	122451 1930	-50.93 dBm	ype:Log-Pwr The Cl 1 2 3 4 3 0 The Cl 1 3 4 0 0 The Cl 1	Avg Type: Log-Per Mkr3 2.483 6 GH2 -50.93 dBm -50.93 dBm -50.9	Avg Type: Log-Par eRun 0 dB Mkr3 2483 6 GHz -50.93 dBm -50.93	Trig: Free Run #Avg Type: Log-Per         Trig: [1,2,3,4,5] Trig: Free Run #Avg Type: Log-Per         Trig: [1,2,3,4,5] Trig: Free Run #Avg Type: Log-Per           Mkr3 2.483 6 GHz -50.93 dBm         Mkr3 2.483 6 GHz -50.93 dBm	Hz         Trig: Free Run Baltien: 30 db         Avg Type: Log-Per         The CE [12:34:56         The CE [12:34:56           Micro 21:42:42:42         The CE [12:34:56         The CE [12:34:56         The CE [12:34:56         The CE [12:34:56           Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         The CE [12:34:56           Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         The CE [12:34:56           Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         The CE [12:34:56           Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         Micro 21:42           Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         Micro 21:42         Micro 21:42           Micro 21:42:42         Micro 21:42:42         Micro 21:42:42         Micro 21:42         Micro 21:42           Micro 21:42:42         Micro 21:42:42         Micro 21:42         Micro 21:42         Micro 21:42           Micro 21:42:42         Micro 21:42:42         Micro 21:42         Micro 21:42         Micro 21:42           Micro 21:42:42         Micro 21:42:42         Micro 21:42         Micro 21:42         Micro 21:42           Micro 21:42:42:42         Micro 21:42:42         Mi	Image: State and State	IND         ALIGNATIO         IPPALED         IPPALED <thippaled< th="">         IPPALED         <thip< td=""><td>By 30 B (C)         By 30 B (C)</td><td>Freq 2.50000000 GHz IPGDI Fast Lew         Trig: Free Run Ref. Offset 11.1 dB         Avg Type: Log-Per         That El: 23.4.3.0 That El: 23.4.3.0           Ref. Offset 11.1 dB         Mkr3 2.483.6 GHz         50.93 dBm           1         -50.93 dBm         -50.93 dBm           1         -50.93 dBm         -50.93 dBm           45000 GHz         #VBW 300 kHz         Stop 2.55000 GHz           45000 GHz         #VBW 300 kHz         Stop 2.55000 GHz</td></thip<></thippaled<>	By 30 B (C)         By 30 B (C)	Freq 2.50000000 GHz IPGDI Fast Lew         Trig: Free Run Ref. Offset 11.1 dB         Avg Type: Log-Per         That El: 23.4.3.0 That El: 23.4.3.0           Ref. Offset 11.1 dB         Mkr3 2.483.6 GHz         50.93 dBm           1         -50.93 dBm         -50.93 dBm           1         -50.93 dBm         -50.93 dBm           45000 GHz         #VBW 300 kHz         Stop 2.55000 GHz           45000 GHz         #VBW 300 kHz         Stop 2.55000 GHz

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# 802.11b 30M-3GHz Spurious Emission Test Data CH-Low

	M May 28, 2018	102-20-20 0	ALISN AUTO						alyzer - Swi 50.5	trum An	ent Spes	Age RL
Frequency	F 123456 EMWWWWW	TRAC	pe: Log-Pwr	Avg	e Run	Trig: Free	Hz NO: Fast C	00000 G		eq 1	er Fi	
Auto Tuni	9 GHz 33 dBm	r1 2.411	Mk		0 dB	#Atten: 30	Gain:Low	If dB	Offset 1 20.00	Ref	Jdiv	10 dE
Center Fre 1.515000000 GH		1-	-									10.0 0.00
Start Fre 30.000000 MH	-21.30 dBm			_				-		_	_	10,0 20,0 30,0
Stop Fre 3.00000000 GH		Louise	- L				0	ممصير				40.0 50.0 60.0 70.0
CF Ste 297.000000 MH Auto Ma	.000 GHz 1001 pts)	667 ms (	Sweep 9.			300 kHz	#VB		kHz	100	30 N BW	Star #Re:
Freq Offse 0 H					Bm	-1,33 dE	9 GHz				N 1	
												7 8 9 10 11
			STATUS			m				-		esc.

## 3G-26.5GHz Spurious Emission Test Data CH-Low

10 A P					_		alyzes - Swep	Pestinami An		
Frequency	13:28:42 PM May 28, 2018 TRACE 1 2 3 4 5 6	ALIGN AUTO Type: Log-Pwr		Trig: Free F	GHz	00000 0	4.7500	Freq 1		Cer
Auto Tun	TIPE MWWWWW DET PNNNNN		dB	#Atten: 30	PND: Fant L FGain:Low	IF				_
	23.962 0 GHz -40.65 dBm	MKF1					Offset 11. 20.00 c		Bidiv	
Center Free		_			-				-	10.0
14.75000000 011										-10.0
Start Free 3.000000000 GH	-21.20.00m						_			-20.0
5.000000000	manan		-	and marian		-		ninter	-1	40.0
Stop Fre 26.50000000 GH					-				-	-50.0 -50.0
CF Ste 2.35000000 GH Auto Ma	Stop 26.50 GHz 40 ms (1001 pts)	Sweep 76	2160	300 kHz	#VB			00 GHz V 100	rt 3,0 Is BV	Re
Freq Offse				-40.65 dBr	0 GHz	23,962	_	1 1	N	23
0 H			-							4 5 6
								_		7 8
										10
		STATUS								esc

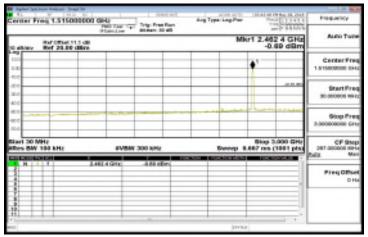
## 30M-3GHz Spurious Emission Test Data CH-Mid

🛤 Agilent Spestnam Analyzer - Sw					10 4 E
Center Freq 1.5150	00000 GHz	sense INT	Aug Type: Log-Pwr	03:34:07 PM May 28, 2018 TRACE 1 2 3 4 5 6 TYPE MWWWWW DET P NNNNN	Frequency
Ref Offset 1	IFGaint.cw	Atten: 30 dB	Mk	1 2.435 7 GHz -0.90 dBm	Auto Tune
10.0 0.00				1	Center Freq 1.515000000 GHz
-10,0 -20,0 -30,0 -40,0				-20.20 100	Start Freq 30.000000 MHz
-50.0 -70.0	agend Al-1990 - med & Logo -	and the second second second		handerstand	Stop Freq 3.000000000 GHz
Start 30 MHz #Res BW 100 kHz	#VBW 30		Sweep 9.	Stop 3.000 GHz 367 ms (1001 pts)	CF Step 297.000000 MHz Auto Man
1 N 1 f 2 3 4 5 6 7 8 9	2,435.7 GHz	-0,90 dBm			Freq Offset 0 Hz
10 11 • 1					

## 3G-26.5GHz Spurious Emission Test Data CH-Mid

Raffed (particus instant - Deal)			1.1.1.0 M
erster Freig 14.75000	CODE GHJ	Ang Type Log Par Tool 1 1 1 1 1 1 1	Proqueticy
Raf Offset 11.1 D all-lay Ref 20.00 dll	official and an and an and an and an and an	Mkr1 25.171 0 GHz -40.66 dBm	Auto Ture
100			CenterFre
20 20 20			Start Fra 5-200000000 GH
80	and the second s		Giop Fre 26.500508080 CH
Start 3.99 GHz IDes BW 199 kHz	EVBN 300 kHz	Ship 28.50 GHz Sweep 78.40 rms (1991 pts)	CF 9to 2 monoscor pri-
	28.1213 Gen: 40.85 aller		Preg Offse D H
2 12 11	_		

## 30M-3GHz Spurious Emission Test Data CH-High



# 3G-26.5GHz Spurious Emission Test Data CH-High

Frequency	18 PM May 28, 2018 TRACE 1 2 3 4 5 6 TYPE H WWWWW DET P N N N N N	r 11	ALIGN AUTO Type: Log-Pwr	Avg	rig: Free Run Atten: 30 dB	Z Fast C+	000000 G		Freq		er
Auto Tun	Ref Offset 11.1 dB Mkr1 26.429 5 GHz 10 dB/div Ref 20.00 dBm -40.44 dBm										
Center Fre 14.750000000 GH						_				-	0.00
Start Fre	-20.60 (0)									-	10,0 20,0 30,0
Stop Fre 26.50000000 GH	an a	nin strink	1944 مىلىنى بىلىلى 1946 مىلىكى بىلىكى بى	<del>م</del> ستر درمنه			a per ter ter ter ter ter ter ter ter ter t	Autor	- with	~	40 0 60 0 60 0
CF Ste 2.35000000 GH Auto Ma	p 26.50 GHz s (1001 pts)		Sweep 7		00 kHz	#VBW			00 GH N 10	rt 3.	
FreqOffse	erronvalue -	H FUN	FUNCTION WOTH	PUNCTION	40.44 dBm	GHz	26,429		1 1		1 2 3
0 H											4 5 6 7
						-				_	8 9 10
		-			181	_		-	_	_	11

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# 802.11g 30M-3GHz Spurious Emission Test Data CH-Low

Center Freq 1.51	50.0 DC	SENSE INT	Aug Type: Log	PWr 7	RACE 1 2 3 4 5 6 TIPE STWWWWWW DET PINNNN	Frequency
Ref Offse 10 dB/div Ref 20.	PND; Fast 0 IFGain:Low	#Atten: 30 dB		Mkr1 2.4	11 9 GHz 5.29 dBm	Auto Tune
10.0 0.00				<b>♦</b> <sup>1</sup>		Center Free 1.515000000 GH
10,0 -20,0 -30,0 -40,0					-29.29 (Bro	Start Free 30.000000 MH
FD 0		<u></u>			-	Stop Fre 3.000000000 GH
Start 30 MHz #Res BW 100 kHz	#VB	W 300 kHz	Swee	ep 9.667 m		CF Ste 297.000000 MH Auto Ma
1 N 1 F 2 3 4 5 6 7 8	2.411 9 GHz	-5.29 dBm				Freq Offse 0 H
8 9 10						

## 3G-26.5GHz Spurious Emission Test Data CH-Low

Auto Tune	13:54:58 PM May 28, 2018	ALIGN AUTO	SENSE:INT		50 12 DC			RI		
	TRACE 1 2 3 4 5 6 TIPE HWWWWW DET P NNNNN	Avg Type: Log-Pwr	ig: Free Run	GHZ PNO: Fast	750000000 (	reg 14.7	ter Fi	en		
	25.842 0 GHz -40.35 dBm	Ref offset 11.1 dB Mkr1 25.842 0 GHz 10 dB/div Ref 20.00 dBm - 40.35 dBm - 40.35 dBm								
Center Fre 14.750000000 GH								10.0 0.00		
Start Fre 3.000000000 GH	-25 25 rbm				_			20.0 30.0		
Stop Fre 26.50000000 GH	and the second sec		Land The provide the same		- Alter and the second	Manhan	m	40 0 50 0 60 0 70 0		
CF Ste 2.350000000 GH Auto Ma	Stop 26.50 GHz .40 ms (1001 pts)	Sweep 76		#VBW	2	100 kHz	t 3,00 s BW	Re		
Freq Offse 0 H			0.35 dBm	2 0 GHz	25,842		N 1	123456		
							-	7 8 9		

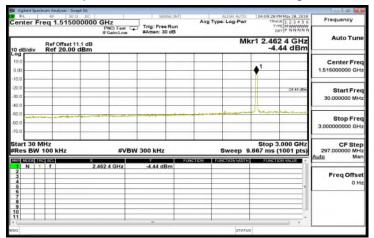
# 30M-3GHz Spurious Emission Test Data CH-Mid

RI. 45 501 Center Freq 1.5150	2 00	SENSE INT	ALIGN AUTO	04:02:14 PM Ma	28,2018 Frequency
enter Fred 1.5150	PMO: East La Tri	g: Free Run ten: 30 dB	king Type: Log-Par	TYPE M	NNNNN
Ref Offset 1 10 dB/div Ref 20.00	GHz Auto Tune dBm				
10 0 0 00				<b>♦</b> <sup>1</sup>	Center Freq 1.515000000 GHz
20.0 30.0 40.0					30.000000 MHz
50.0 50.0 50.0	a and the second designed and			Normon	Stop Freq 3.00000000 GHz
Start 30 MHz #Res BW 100 kHz	#VBW 300		Sweep 9	Stop 3.00 .667 ms (100	297.000000 MHz
1 N 1 F 2 3 4 5 6	2.438 7 GHz -4	.79 dBm			Freq Offset 0 Hz
0 7 8 9 10 11					_

## 3G-26.5GHz Spurious Emission Test Data CH-Mid

1 - C - C - C - C - C - C - C - C - C -	14-02-31 PM May 28, 2018	ALIGN AUTO	SENSE:INT	Analyzer - Swept 5A	Agrent Spectrum
Frequency	TRACE 1 2 3 4 5 6 TIPE H WWWWW DET P NNNNN	Avg Type: Log-Pwr	Trig: Free Run	14.750000000 GHz	
Auto Tun	26.312 0 GHz -39.86 dBm	Mkr	#Atten: 30 dB	IFGain:Low of Offset 11.1 dB	
	-53.86 UBIN			ef 20.00 dBm	odB/div I
Center Free 14.750000000 GH					0.00
					10,0
Start Fre	-24.79 stBev				20,0
3.0000000000	-below of one of the second			والإيجادية المراجعة والمراجعة والمراجعة والمراجعة	10.0
Stop Fre			Hart and a start of the start	an a	50.0
26.50000000 GH					70,0
CF Ste 2.35000000 GH	Stop 26.50 GHz	Sweep 76	300 kHz		tart 3,00 G Res BW 10
Auto Ma	PUNCTION/ADD	TION FUNCTION WIDTH	Ý FO	EL X	NOTE THE
Freq Offs			-39.86 dBm	26,312.0 GHz	1 N 1 2 3
0 H				-	4 5
					6 7 8 9
				-	9
	· ·		m	1	ų II
		STATUS			NG.

## 30M-3GHz Spurious Emission Test Data CH-High



# 3G-26.5GHz Spurious Emission Test Data CH-High

Frequency	14-09:46 PM May 28, 2018 TRACE 1 2 3 4 5 6 THE MWWWW DET P NNNNN	Type: Log-Pwr	Avg	SENSE IN	00000 GHz PNO: Fast	14.7500	req 1	ter F	en	
Auto Tuni	If Gaind Low Atten: 30 dB ccr(* NNNH) Ref Orset 11.1 dB Mkr1 25.630 5 GHz 10 dbddy Ref 20.00 dBm -40.42 dBm -40.42 dBm									
Center Fre						20.00 0	Rei	sidiv	<b>9g</b>	
14.75000000 GH								-	00	
Start Fre 3.000000000 GH	Scirates						-	-	0.0	
Stop Fre	and a start a s	مەينىنىيە مەيتىرىنى مەينىنىيە مەيتىرىنى		- Contragono - Star of Contra	and the second second	my	in the second	4.00	0.0	
26.50000000 68	Stop 26.50 GHz						0 GHz	t 3.0	o.o	
CF Ste		Cusan 76		3W 300 kHz	#VE	kHz	100		Re	
2.350000000 GH	5.40 ms (1001 pts)		FUNCTION		*	-				
CF Ste 2.35000000 GH <u>Auto</u> Ma Freq Offse 0 H	5.40 ms (1001 pts) ponetrinviewe	International In	PLANET KINI	-40,42 dBm	25,630 5 GHz		1 7		12345	
2.35000000 GH Auto Ma			PORCTION	-40,42 dBm					1234	

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## 802.11n HT20 30M-3GHz Spurious Emission Test Data CH-Low

Agilent Spectrum Analyzer - Swe									
Center Freq 1.5150	00000 GHz	Trig: Free Run	ALIGN AUTO Avg Type: Log-Pwr	104:18:13 PM May 28, 2018 TRACE 1 2 3 4 5 6 THE ST WARNEN	Frequency				
Ref Offset 11:1 dB         Mkr1 2:411 9 GH           10 dBJdiv         Ref 20.00 dBm         -3.45 dBm									
0.00				1	Center Free 1.515000000 GH				
-20.0				-23 15 164	Start Free 30.000000 MH				
	an and the second s		and the second second second	and agric and a star of the st	Stop Free 3.00000000 GH				
Start 30 MHz #Res BW 100 kHz	#VBW	300 kHz	Sweep 9	Stop 3.000 GHz .667 ms (1001 pts)	CF Step 297.000000 MH Auto Ma				
4 5 7	2,411 9 GHz	-3,45 dBm			Freq Offse 0 H				
8 9 9 10 10 11 1 1 1 1 1 1 1 1 1 1 1 1 1		m	STATUS						

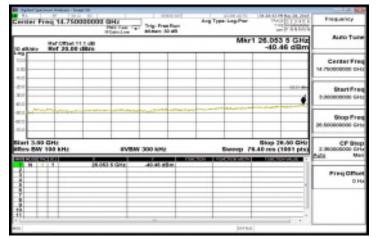
## 3G-26.5GHz Spurious Emission Test Data CH-Low

100 m 🖉			 			Analyzer : Sm	Spectrum	
Frequency	14:18:29 PM May 28, 2018 TRACE 1 2 3 4 5 6 THE MWWWWW DET P NNNNN	Type: Log-Pwr	SENSE IN	GHz PND: Fast	000000	14.750	Freq	nter
Auto Tun	26.053 5 GHz -40.01 dBm	Mkr1	 #Atten: 30 dB	IFGain:Low	1.1 dB	ef Offset 1 ef 20.00		dB/di
Center Fre 14.750000000 GH		_						9 10 00
Start Fre 3.000000000 GH	-2115160							0
Stop Fre 26.50000000 GH	and and a second se		 an an a			and a second	and an and a	
CF Ste 2.350000000 GH Auto Ma	Stop 26.50 GHz 40 ms (1001 pts)	Sweep 76	300 kHz	#VB		) kHz	.00 Gł W 10	tes B
Freq Offse 0 H			-40.01 dBm	53 5 GHz	26,053		1	N
								7 8 9 9
		STATUS						

# 30M-3GHz Spurious Emission Test Data CH-Mid

R.L.		25	satyper - Sw 50	9 DC		SENS	EINT		ALIGN AUTO	14:26:3	9 PM May 28, 2018	Frequency
Cente	er Fi	req '	1.5150	00000	GHZ PND: Fast C	Trig: Free F	tun	Avg Type	e: Log-Pwr	1	THE NUMBER	Frequency
					IFGain:Low	#Atten: 30			_			Auto Tune
Ref Offset 11.1 dB Mkr1 2.435 7 GHz 10 dB/div Ref 20.00 dBm -3.21 dBm -3.21 dBm												Auto Tune
10.0										<b>●</b> <sup>1</sup>		Center Freq 1.515000000 GHz
-10,0				-	_					1	-2521 sBer	Start Freq
-30.0		-		-					lat mo	l	-	30.000000 MHz
50.0 50.0 70.0			- main		and the second second	*****						Stop Freq 3.000000000 GHz
start : Res	BW	100		1	#VB	W 300 kHz		CTION FUT		0.667 m	3.000 GHz s (1001 pts)	CF Step 297.000000 MH; Auto Mar
1 N 2 3 4 5		ſ		2.4	35 7 GHz	-3.21 dBr						Freq Offset 0 Ha
6 7 8 9 10												
11	-	-	-		-	TH	-	-			· ·	
56									STATU	5		

## 3G-26.5GHz Spurious Emission Test Data CH-Mid



## 30M-3GHz Spurious Emission Test Data CH-High (2457MHz)

0.00									Anajost - Se		
Frequency	TRACE 123458		ype: Log-Pwr old: 106/100	Aug	- Dec		_		1.112	1.40	RL
Auto Tun	2417 BRANK			- mail		AAtten: 3	St Flest +++ sint_ow	PG.			
Auto Tur	0.787 dBm		MR					1 dB	1 Offset 11	Ref	dDict
Center Fre		.1					-				۴Ľ
1.515000000 GH	_		-	-	-	_					+
	111-12-10 (00)		-	-						-	-
Start Fre											0
30.000000 94-		n.	-		-					_	-
Stop Fre		the house	man man						-	and	-
3.000000000 Gł		+		-	-					-	-
											°E
CF Ste 297.000000 MI-	op 3.000 GHz ms (1001 pts)		Sweep 2			300 kHz	#VBW			930 Gł W 100	
huta Mi	- THE WEATHER		LAND STREET	1000		0.787 di		2,450.6		-	N N
Freq Offs		-			an	9.787 di	SHE	2.450.0			
01					-		_			_	
Scale Typ		-			+						
		-									
.og Li											

### 3G-26.5GHz Spurious Emission Test Data CH-High (2457MHz)

Repairs Sectors Analyse - Sect 54					0.00
RL ( #P [MEE DE ]	PAC Feed + b+	Trig: Pres Run	Avg Type: Log-Pwr Avg/Hold: 1018	TRACE 125455	Prequency
	PGoint, aw	AAtten: 30 dB		2017 0000 1	Auto Tun
Ref Offset 11.1 dB Ref 20.00 dBm			Mkr	-40.023 dBm	
					Center Fre
08	-				14.75000000 GH
10				11/-11/10 (004	
10					Start Fre
monument		1000		-	
		Series and a series of the ser	-		Stop Fre
10					25.50000000 Gł
tart 3.90 GHz	_			Stop 26.50 GHz	CF Ste
Res BW 100 kHz	#VBW :	300 kHz		2.246 s (1001 pts)	2.350000000 GH
	536 5 GHz	40.023 citien	ALTER PROTECTION (CONT	Distance of the	
2					Freq Offse
87					Scale Typ
0					Log Li
1					

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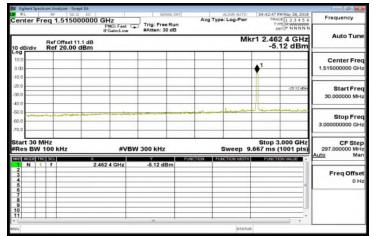
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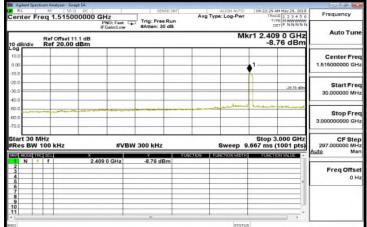
## 30M-3GHz Spurious Emission Test Data CH-High (2462MHz)



## 3G-26.5GHz Spurious Emission Test Data CH-High (2462MHz)

								alyzer : Swa	trum An	ient Spec	
Auto Tune	104:43:05 PM May 28, 2018 TRACE 1 2 3 4 5 6		Avg Type: Log-P		1	SHz	000000	4.750	req 1	er Fr	Cent
	DET P NNNN			0 dB	Trig: Free #Atten: 3	NO: Fast Low					
	359 0 GHz 10.57 dBm	Ref Offset 11.1 dB Mkr1 26.359 0 GHz 10 dB/div Ref 20.00 dBm -40.57 dBm									
Center Free											10.0
											-10,0
Start Free 3.000000000 GH	-35 12 (56						-		-	_	30.0
Stop Free	and a second	hinter and		لوي و من المالي ال	*******	and the second s		rit-settin	vinc	- March	50.0
26.50000000 GH											0.0
2.35000000 GH Auto Mar	p 26.50 GHz ns (1001 pts)		Swe		300 kHz	#VBV	· · · · ·		GHz 100 I		
Surg ma	NCTION VALUE	MDTH	ION FUNCTIO		-40.57 dE	0 GHz	26,35		1	N 1	
Freq Offse	_			-		_				-	2345
				-						-	6 7 8 9
					789					+	10
		STATUS									50

## 802.11n HT40 30M-3GHz Spurious Emission Test Data CH-Low (2422MHz)



## 3G-26.5GHz Spurious Emission Test Data CH-Low (2422MHz)

	19:22:48 AM May 29, 2018	ALIGN AUTO	rl	SENSE IN	1	DC 1	alyzer - Swept	25		RL
Frequency	TRACE 1 2 3 4 5 6 TYPE HWWWWW DET P NNNNN	Type: Log-Pwr	1	Trig: Free Run	Z Fast 😱	00000 GH		Freq 1	ter I	ent
Auto Tun	24.361 5 GHz -40.19 dBm	Mkr1			ILLUM.	Ref Offset 11.1 dB 0 dB/div Ref 20.00 dBm				
Center Fre 14.750000000 GH										0.00
Start Fre 3.000000000 GH	1 <sup>-20.76</sup> dim	و مربع مر م				_				20,0 30,0
Stop Fre 26.50000000 GH			*****	- An James and a second			~~~~		~	50.0 50.0 70.0
CF Ste 2.350000000 GH Auto Ma	Stop 26.50 GHz 40 ms (1001 pts)			000 kHz	#VBW (		KHz	0 GHz / 100 I	s BW	Res
	FUNCTION VALUE -	FUNCTION WDTH	FUNCTION	-40.19 dBm	2Hy	24,361 5			N	
Freq Offse 0 H										23456
					-					7 8 9
	· · ·	L .		m	-				-	11
		STATUS								50

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## 30M-3GHz Spurious Emission Test Data CH-Low (2427MHz)

Reysigne Spectrum Analyzer - Swept SA				0.04
RL (#P 1ME DE	Trig Pres Run	Avg Type: Log-Pwr AvgiHold: 1018	TRACE 123435	Frequency
Bef Offset 11.1 eB	PSD: Fest +++ Trig: Pres Run PGeint.rw Akten: 30 d5		ur1 2.417 9 GHz	Auto Tun
dilidiv Ref 20.00 dBm			-4.037 dBm	
10			1	Center Fre
10			h	
80			00 3171abe	Start Fre
0.0				20000000
20			Anaparana ana	Stop Fre
10				3.00000000 GH
Res BW 100 kHz	#VBW 300 kHz	Sweep 2	Stop 3,000 GHz 83.9 ms (1001 pts)	CF Ste 297.000000 Mi-
	417.9 GHz -4.637 dBm	Personal Personal Property in the local division of the local divi	CONSIGNATION -	Auta Ma
40				Freq Offse
5 7 8 8				Scale Typ
0			-	Log Li
1. · · · ·		haine		

### 3G-26.5GHz Spurious Emission Test Data CH-Low (2427MHz)

Repairs Sectors Analyse - See					0.4.4
RL (# 182	PRO Fast +1	Trig: Pres Run	Avg Type: Log-Pwr AvgiHold: 1018	TRACE 123455	Frequency
Ref Offset 11.	Auto Tun				
o diliciv Ref 20.00 d	Bm			-40.468 dBm	
101					Center Fre
21.0				Mariette UK	Start Fre
a0 a0					3 50000000 Ge
	Contraction of the second				Stop Fre 25.50000000 Gi
Res BW 100 kHz	#VB	W 300 kHz	Sweep	Stop 26.50 GHz 2.246 s (1001 pts)	CF 8te 2.35000000 Gi Auta M
	26 212 0 GHz	-40.453 ctErn	ALC: NO. 1	CONTRACTOR -	Cals in
20					Freq Offs 01
6 7 8 9					Scale Typ
10				-	Log L
00			inne		

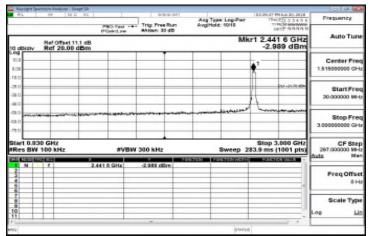
## 30M-3GHz Spurious Emission Test Data CH-Mid

100 a 🖉								北锅	alyzes = Sive	num An	ent Spect	
Frequency	AM May 29, 2018 ACE 1 2 3 4 5 6 YPE M WWWWW Det P NNNNN	TRA	e: Log-Pwr	Avg	Run		Hz NO: Fast C	00000 G	.51500	eq 1	er Fr	ent
Auto Tun					0 dB	#Atten: 3	Gain:Low	I			_	_
, all the second	.88 dBm	Ref Offiset 11.1 dB Mkr1 2.423 8 GHz Idiv Ref 20.00 dBm -6.88 dBm							0 dE			
Center Fre				-	-		-			-	_	10.0
1.515000000 GH		• <sup>1</sup>		-			-			-	-	0.00
Start Fre		n					-					10,0 20,0
30.000000 MH	-26.00 dDm		-	-	-		-			+		90.D
	-	1 mars	a low									10.0
Stop Fre 3.00000000 GH								an other	Marrie Marrie	- man	-	50,0
3.00000000 GP				-	-		-	-		+		70.0
CF Ste 297.000000 MF	3.000 GHz (1001 pts)	Stop : .667 ms	Sweep 9			/ 300 kHz	#VB		kHz	Hz 100 I	30 M BW	Res
Auto Ma	IONVALUE -	FUNCT	NCTION MDTH	NCTION		-6.88 di	8 GHz	2.423			N 1	
Freq Offse												2345
				_	-		-		_		-	67
		-										8
				_		m	_					10
		s	STATUS									100

## 3G-26.5GHz Spurious Emission Test Data CH-Mid

10 a 1							alyzer = Siver	strum An		
Frequency	199:29:17 AM May 29, 2018 TRACE 1 2 3 4 5 6	Type: Log-Pwr	Av	SENSE IN	GHz	000000	4.7500	req 1		Cen
Auto Tun	Ref Offset 11.1 dB Mkr1 25.372 0 GHz									
	-39.31 dBm					Bm	20.00	Ref	3/div	ID de
Center Fre					-			_		10.0
14.75000000 GH						-		-	-	0.00
		_			-			-	-	10,0
Start Fre	-26.60 dDm				-					20.0 30.0
3.000000000 G	♦1-									40.0
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20,0000000000					-	-		-	-	70.0
CF Ste 2.35000000 GH	Stop 26.50 GHz	C		100 111		-		0 GHz		
Auto Ma			No. of Concession, Name	#VBW 300 kHz		Hz				_
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		1 1							_	11
		STATUS							-	50

### 30M-3GHz Spurious Emission Test Data CH-High (2447MHz)



# 3G-26.5GHz Spurious Emission Test Data CH-High (2447MHz)

Reysigne Spectrum Analyzer - Swept SA					0.00	
RL   40   ME 2 30		Trig: Pres Run	Avg Type: Log-Pwr AvgiHold: 1018	TRACE 12 5 4 5 5	Frequency	
	PBC: Fest +#+ If Geint, pw	AAtten: 30 dB		26.241 5 GHz	Auto Ture	
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08					14.75000000 GH	
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ia					Start Fre 3 50000000 GH	
manne		- chainmanna		man		
					Stop Fre	
0					25.50000000 Gł	
art 3.00 GHz tes BW 100 kHz	#VBW	300 kHz	Sweep	Stop 26.50 GHz 2.246 s (1001 pts)		
	25 241 5 GHz	-39,595 tillim	AND DESCRIPTION OF	DURING WHEN -	Auta Mi	
					Freq Offs	
					Scale Typ	
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		-				

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t (886-2) 2299-3279

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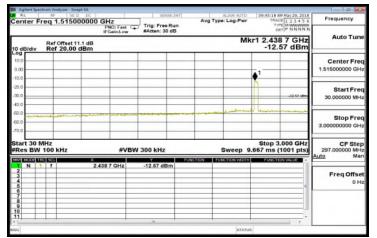
. SGS Taiwan Ltd. 【No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司

f (886-2) 2298-0488



## 30M-3GHz Spurious Emission Test Data CH-High (2452MHz)



# 3G-26.5GHz Spurious Emission Test Data CH-High (2452MHz)

10 a a						t SA	natyzes = Sweet	ipestrum A		
Frequency	199:45137 AM May 29, 2018 TRACE 1 2 3 4 5 6	ALIEN AUTO		Trig: Free F	Hz	00000 G	14.7500	Freq	nter	
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14.750000000 GH										0.00
Start Fre										20.0
3.000000000 GH	-32-57-1							_		30 D 40 0
	and the second	der the second state	******	where the second second	يندر بوم اللاسب		Jun	m	1	4U U 60.0
Stop Fre 26.50000000 GH										60,0
CF Ste	Stop 26.50 GHz	Swaan 76		300 kHz	#\/B\A			00 GH	L	star
Auto Ma	page and the second sec	sweep 70	FUNCT	JOU KHZ	#4944	X		THE SET	MOTOR	1071
Freq Offse			1	-40.50 dBr	0 GHz	26,500		1 1	N	1 2 3
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							-			67
			-		-		-		-	8 9 10
				TH .						11
		STATUS								56

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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prosecuted to the fullest extent of the law. SGS Taiwan Ltd. No.134,WuKungRoad,NewTaipeiIndustrialPark,WukuDistrict,NewTaipeiCity,Taiwan24803/新北市五股區新北產業園區五工路 134 號

台灣檢驗科技股份有限公司	t (886-2) 2299-3279	f (886-2) 2298-0488	www.tw.sgs.com	
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# 11 RADIATED BANDEDGE AND SPURIOUS EMISSION MEASUREMENT

### **11.1 Standard Applicable**

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. In addition, radiated emissions which fall in the restricted bands must also comply with the §15.209 limit as below.

And according to §15.33(a) (1), for an intentional radiator operates below 10GHz, the frequency range of measurements: to the tenth harmonic of the highest fundamental frequency or to 40GHz, whichever is lower.

Frequency (MHz)	Field strength (microvolts/meter)	Distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.

2. Emission level  $(dB\mu V/m) = 20 \log Emission level (dB\mu V/m)$ 

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## **11.2 Measurement Equipment Used:**

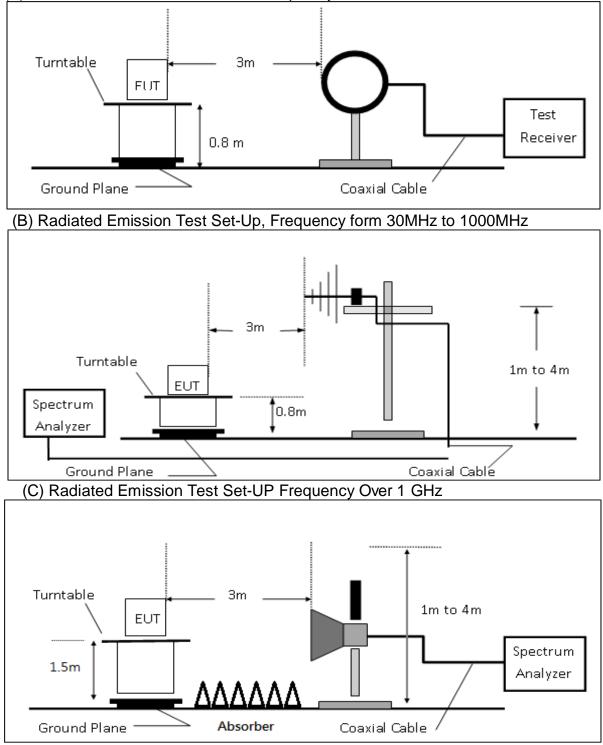
	966 Chamber								
EQUIPMENT TYPE	MFR	MODEL NUMBER	SERIAL NUMBER	LAST CAL.	CAL DUE.				
Broadband Antenna	SCHWAZBECK	VULB 9168	9168-617	10/27/2017	10/26/2018				
Horn Antenna	Schwarzbeck	BBHA9120D	1341	05/31/2017	05/30/2018				
Loop Antenna	ETS.LINDGREN	6502	148045	09/26/2017	09/25/2018				
3m Site NSA	SGS	966 chamber D	N/A	07/06/2018	07/05/2019				
EMI Test Receiver	R&S	ESU 40	100363	04/11/2018	04/10/2019				
Pre-Amplifier	EMC Instruments	EMC184045B	980135	10/27/2017	10/26/2018				
Pre-Amplifier	EMC Instruments	EMC9135	980234	12/26/2017	12/25/2018				
Pre-Amplifier	EMC Instruments	EMC12630SE	980271	12/26/2017	12/25/2018				
Attenuator	Marvelous	WATT-218FS-10	RF246	12/26/2017	12/25/2018				
Highpass Filter	Micro Tronics	BRM50701-01	G008	12/26/2017	12/25/2018				
Coaxial Cable	Huber+Suhner	RG 214/U	W21.01	12/26/2017	12/25/2018				
Coaxial Cable	Huber Suhner	EMC106-SM-SM -7200	150703	12/26/2017	12/25/2018				
Notebook	Lenovo	L420	S0012467	N/A	N/A				

NOTE: N.C.R refers to Not Calibrated Required.



## 11.3 Test SET-UP





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## **11.4 Measurement Procedure**

- 1. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance.
- 2. The EUT was placed on a turn table with 0.8m for frequency< 1GHz and 1.5m for frequency> 1GHz above ground plane.
- 3. The turn table shall rotate 360 degrees to determine the position of maximum emission level.
- 4. EUT is set 3m away from the receiving antenna which varied from 1m to 4m to find out the highest emissions.
- 5. When measurement procedures for electric field radiated emissions above 1 GHz the EUT measurement is to be made "while keeping the antenna in the 'cone of radiation' from that area and pointed at the area both in azimuth and elevation, with polarization oriented for maximum response." is still within the 3dB illumination BW of the measurement antenna.
- 6. Set the spectrum analyzer as RBW=120 kHz and VBW=300 kHz for Peak Detector (PK) and Quasi-peak (QP) at frequency below 1 GHz.
- 7. Set the spectrum analyzer as RBW=1 MHz, VBW=3 MHz for Peak Detector at frequency above 1 GHz.
- 8. Set the spectrum analyzer as RBW=1 MHz, VBW=10 Hz (Duty cycle > 98%) or VBW ≥ 1/T (Duty cycle < 98%) for Average Detector at frequency above 1 GHz.
- 9. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- 10. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
- 11. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical. On spectrum, change spectrum mode in linear display mode, and reduce VBW = 10Hz if average reading is measured.
- 12. Repeat above procedures until all default test channel measured were complete.

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## **11.5 Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

# FS = RA + AF + CL - AG

Where	•	CL = Cable Attenuation Factor (Cable Loss)					
	RA = Reading Amplitude	AG = Amplifier Gain					
	AF = Antenna Factor						
Actual	Actual FS(dB $\mu$ V/m) = SPA. Reading level(dB $\mu$ V) + Factor(dB)						

Factor(dB) = Antenna Factor(dB $\mu$ V/m) + Cable Loss(dB) – Pre\_Amplifier Gain(dB)

### 11.6 Test Results of Radiated Spurious Emissions form 9 kHz to 30 MHz

The low frequency, which started from 9 kHz to 30MHz, was pre-scanned and the result which was 20dB lower than the limit per 15.31(o) was not reported.

### **11.7 Measurement Result**

Note: Refer to next page spectrum analyzer data chart and tabular data sheets.

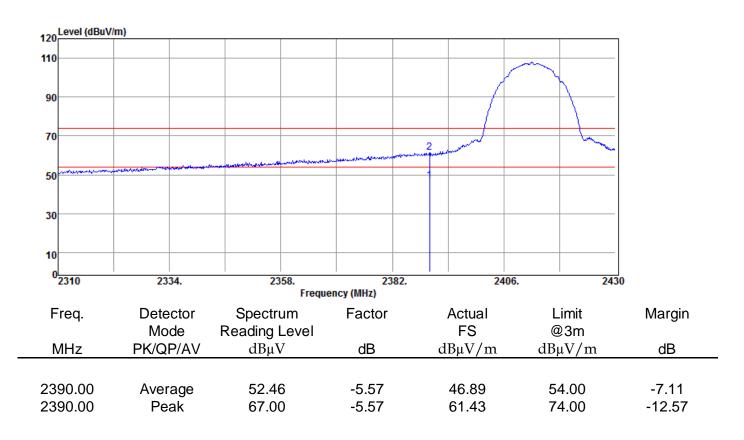
Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

Unless the wee stated the solids from in this test report leading only to the statistic and such sample(s) test and such sample(s) are retained to so days only. First SA days only LARE share and the solid structure in the statistic and such sample(s) are retained to so days only. First SA days only LARE share and solid structure in the statistic and solid such sample(s) are retained to so days only. First SA days only the statistic and solid structure in the statistic and solid such sample(s) are retained to so days only. First SA days only the statistic and solid structure in the statistic and solid soli pearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law.



### Radiated Band Edge Measurement Result (802.11b)

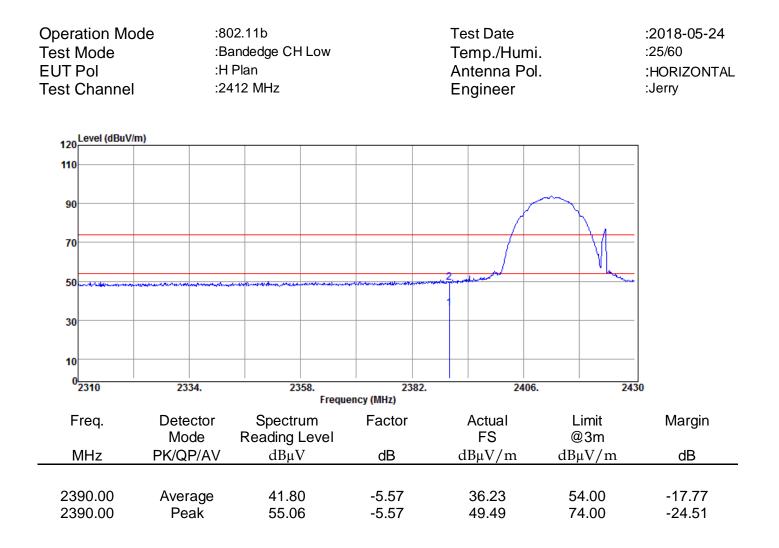
Operation Mode	:802.11b	Test Date	:2018-05-24
Test Mode	:Bandedge CH Low	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



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Operation Mo Test Mode EUT Pol Test Channel		:802.11b :Bandedge CH High :H Plan :2462 MHz			Test Date Temp./Hun Antenna Po Engineer	:2018-05-24 :25/60 :VERTICAL :Jerry	
120 Level (dBuV/r	n)						_
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				ency (MHz)			
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MHz	PK/QP/A	V dBµ	ιV	dB	dBµV/m	dBµV/m	dB
2483.50	Average			-4.90	47.36	54.00	-6.64
2483.50	Peak	65.9		-4.90	61.08	74.00	-12.92
2487.30	Average			-4.87	48.07	54.00	-5.93
2487.30	Peak	66.2	27	-4.87	61.40	74.00	-12.60



Operation M Test Mode EUT Pol Test Channe	:B :H	02.11b andedge CH High I Plan 462 MHz	:2018-05-24 :25/60 :HORIZONTAL :Jerry			
120 Level (dBu	V/m)					_
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30						-
10						
0 <mark></mark>	2470.	2490.	2510.	2530.	25	50
2450	2410.		ency (MHz)	2000.	25	
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	42.00	-4.90	37.10	54.00	-16.90
2483.50	Peak	55.86	-4.90	50.96	74.00	-23.04



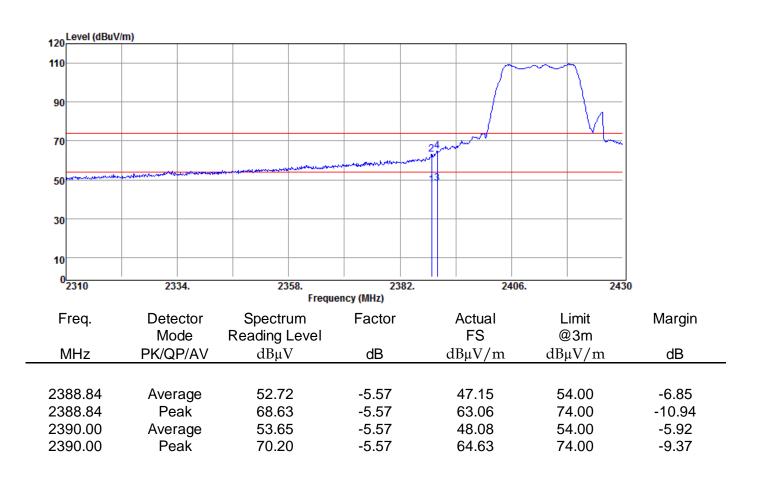
### Radiated Band Edge Measurement Result (802.11g)

Operation Mode	
Test Mode	
EUT Pol	
Test Channel	

:802.11g :Bandedge CH Low :H Plan :2412 MHz

Test Date Temp./Humi. Antenna Pol. Engineer

:2018-05-24 :25/60 :VERTICAL :Jerry



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Test I EUT	ation Mo Mode Pol Channel	de	:Ba :H F	2.11g ndedge CH Plan 12 MHz	l Low	Test Date Temp./Humi. Antenna Pol. Engineer			:2018-05-24 :25/60 :HORIZONTAL :Jerry		
400	Level (dBuV/r	n)									
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Ν	ИНz	Moo PK/QF		Reading dBµV		dB		FS dBµV/m		@3m 3μV/m	dB
N		FrvQF	AV	ubμ	v	ųD		ασμν/Π	<u>ı u</u>	γμν/Πι	UD
	90.00 90.00	Avera Pea		42.4 57.0		-5.57 -5.57		36.85 51.49		54.00 74.00	-17.15 -22.51



Operation Mo Test Mode EUT Pol Test Channel	:B :H	02.11g andedge CH High Plan 462 MHz		Test Date Temp./Humi. Antenna Pol. Engineer		
120 Level (dBuV	/m)					7
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0 2450	2470.	2490.	2510.	2530.	25	
2450	2470.		ency (MHz)	2550.	23	50
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB
	PN/QP/AV	ασμν	UD	αδμν/Π	αδμν/Π	UD
2483.50	Average	56.96	-4.90	52.06	54.00	-1.94
2483.50	Peak	73.02	-4.90	68.12	74.00	-5.88
2483.90	Average	56.38	-4.90	51.48	54.00	-2.52
2483.90	Peak	73.40	-4.90	68.50	74.00	-5.50
2494.60	Average	51.76	-4.81	46.95	54.00	-7.05
2494.60	Peak	68.12	-4.81	63.31	74.00	-10.69



Operation Mo Test Mode EUT Pol Test Channe	:B :H	02.11g andedge CH High Plan 462 MHz	Test Date Temp./Humi. Antenna Pol. Engineer			:2018-05-24 :25/60 :HORIZONTAL :Jerry
120 Level (dBuV	//m)					_
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2430	2470.		ency (MHz)	2550.	23	50
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level	10	FS	@3m	
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
2483.50	Average	42.93	-4.90	38.03	54.00	-15.97
2483.50	Peak	42.93 58.08	-4.90 -4.90	53.18	74.00	-20.82
2486.40	Average	42.16	-4.87	37.29	54.00	-16.71
2486.40	Peak	57.82	-4.87	52.95	74.00	-21.05

### Radiated Band Edge Measurement Result (802.11 HT20)

Operation Mo Test Mode EUT Pol Test Channe	ode :80 :Ba :H	D2.11n20 andedge CH Low Plan 412 MHz		:2018-05-24 :25/60 :VERTICAL :Jerry		
120 Level (dBuV	/m)					
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50	and and a second production of the second production of the second product of the second product of the second	and a second and a s		-35		
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10						
0 2310	2334.	2358.	2382.	2406.	24	30
_			ency (MHz)			N 4 ·
Freq.	Detector	Spectrum	Factor	Actual FS	Limit	Margin
MHz		Reading Level	dB	-	@3m dBuV/m	dB
	PK/QP/AV	dBµV	uБ	dBµV/m	dBµV/m	uр
2220.22		50.86	E	45.29	54.00	0.74
2380.32 2380.32	Average Peak	66.95	-5.57 -5.57	45.29 61.38	54.00 74.00	-8.71 -12.62
2388.72	Average	55.28	-5.57	49.71	54.00	-4.29
2388.72	Peak	73.68	-5.57	68.11	74.00	-5.89
2390.00	Average	56.76	-5.57	51.19	54.00	-2.81
2390.00	Peak	74.42	-5.57	68.85	74.00	-5.15



Operation Test Mode EUT Pol Test Char	9	:Ba :H	)2.11n20 andedge CH Lov Plan 112 MHz	v	Test Date Temp./Humi. Antenna Pol. Engineer			:2018-05-24 :25/60 :HORIZONTAL :Jerry	
120 Level (	dBuV/m)								
120									
90									
70					2	an and and a second		hurre	
50	malina marina di secondo da	un en en an	a.a	and a substance of the second se					
30									
10									
0 <sup>L</sup> 2310	2	334.	2358. F	23 requency (MHz)	82.	24	406.	243	0
Freq.		ector ode	Spectrum Reading Leve	Factor el		Actual FS		.imit ⊉3m	Margin
MHz	PK/C	QP/AV	dBµV	dB	dl	BµV/m	dB	uV/m	dB
2389.56 2389.56 2390.00	6 P	erage eak erage	45.50 58.85 43.75	-5.57 -5.57 -5.57	:	39.93 53.28 38.18	7	4.00 4.00 4.00	-14.07 -20.72 -15.82
2390.00		eak	58.90	-5.57		53.33		4.00	-20.67



Operation Mo Test Mode EUT Pol Test Channe		:802.11n20 :Bandedge :H Plan :2457 MHz	CH High	Test Date Temp./Humi. Antenna Pol. Engineer			:2018-06-12 :25/60 :VERTICAL :Enzo
120 Level (dBuV	/m)						
							]
110	5						
90							
50							
70	· · · ·						
		24					
50			man a water and a second second	Mandand Marine Brown al was	Marguanier alan mary and	Magnetin and the second second second	
30							
10							
0 2450	2470.		2490.	2510.	2	530. 25	50
			Frequ	ency (MHz)			
Freq.	Detecto		ectrum	Factor	Actual	Limit	Margin
	Mode		ng Level		FS	@3m	
MHz	PK/QP/A	V d	BμV	dB	dBµV/m	dBµV/m	dB
0400 50	A		0.00	4.00	40.70	54.00	40.04
2483.50	Average		8.66	-4.90	43.76	54.00	-10.24
2483.50	Peak		1.18	-4.90	56.28	74.00	-17.72
2485.30	Average		7.96	-4.89	43.07	54.00	-10.93
2485.30	Peak	6	3.67	-4.89	58.78	74.00	-15.22



Operation Mo Test Mode EUT Pol Test Channel	:В :Н	02.11n20 andedge CH High I Plan 457 MHz		Test Date Temp./Humi. Antenna Pol. Engineer	:2018-06-12 :25/60 :HORIZONTAL :Enzo	
120 Level (dBuV	/m)					_
110						_
90						-
70		man the 2			water the descent of the second	
50			The state of the s	the feature of the second s	Contraction of the second s	-
30						-
10						-
0 2450	2470.	2490. Frequ	2510. ency (MHz)	2530.	25	50
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB
2483.50 2483.50	Average Peak	50.45 68.25	-4.90 -4.90	45.55 63.35	54.00 74.00	-8.45 -10.65



Operation Mo Test Mode EUT Pol Test Channel	:B :H	02.11n20 andedge CH High I Plan 462 MHz		Test Date Temp./Humi. Antenna Pol. Engineer	:2018-05-24 :25/60 :VERTICAL :Jerry	
120 Level (dBuV/r	n)					-
110	~					
90						
70		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~				
		1 minutes	and the second	honest have been and the second	where the second states and share	
50						
30						
10						
0 2450	2470.	2490. Freque	2510. ency (MHz)	2530.	25	50
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB
		αυμν	<u>ub</u>	ασμνγπ	ασμνγιιι	
2483.50	Average	57.70	-4.90	52.80	54.00	-1.20
2483.50	Peak	72.19	-4.90	67.29	74.00	-6.71
2484.90	Average	55.59	-4.90	50.69	54.00	-3.31
2484.90	Peak	73.97	-4.90	69.07	74.00	-4.93
2494.00	Average	51.81	-4.82	46.99	54.00	-7.01
2494.00	Peak	67.50	-4.82	62.68	74.00	-11.32



Operation Mo Test Mode EUT Pol Test Channel	:B :H	02.11n20 andedge CH High Plan 462 MHz	igh Test Date Temp./Humi. Antenna Pol. Engineer			:2018-05-24 :25/60 :HORIZONTAL :Jerry
120 Level (dBuV/	/m)					
110						
90	~					
70		24				
50		1 3	*******	and an and a second	and the second state of th	·
30						
10						
0 <sup>L</sup> 2450	2470.	2490. Freque	2510. ency (MHz)	2530.	25	50
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
2483.50 2483.50	Average Peak	43.04 57.16	-4.90 -4.90	38.14 52.26	54.00 74.00	-15.86 -21.74
2484.90 2484.90	Average Peak	42.51 57.37	-4.90 -4.90	37.61 52.47	54.00 74.00	-16.39 -21.53



### Radiated Band Edge Measurement Result (802 11 HT40)

Radiated Band Edge Measurement Result (802.11_HT40)													
Operation Mo	ode :80	02.11n40		Test Date	:2018-05-24								
Test Mode		andedge CH Low		Temp./Humi		:25/60							
EUT Pol		Plan		Antenna Pol Engineer		:VERTICAL							
Test Channe	:24	422 MHz	:Jerry										
120 Level (dBuV/m)													
						7							
110				~		-							
90						-							
				46									
70			2			-							
and a star base the date of section	Marine Contraction of the State	maker which we have the	a wanter	35									
50						-							
30						-							
10						-							
0 2310	2334.	2358.	2382.	2406.	24	30							
	_		ency (MHz)										
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin							
N 41 1	Mode	Reading Level		FS	@3m								
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB							
0004.04	•	50.00		54.05	54.00	0.75							
2384.64	Average	56.82	-5.57	51.25	54.00	-2.75							
2384.64 2388.48	Peak	72.29 57.43	-5.57 -5.57	66.72 51.86	74.00 54.00	-7.28 -2.14							
2388.48	Average Peak	57.43 73.58	-5.57 -5.57	51.86 68.01	54.00 74.00	-2.14 -5.99							
2390.00	Average	58.37	-5.57	52.80	54.00	-1.20							
2390.00	Peak	73.93	-5.57	68.36	74.00	-5.64							



Test N EUT F		:Bandedge CH Low :H Plan					:2018-05-24 :25/60 :HORIZONTAL :Jerry					
420	Level (dBuV/m	1)										
120												-
90												-
70		ومصادين الإرادة أيداو للجزو			2 marsharen			4	mand			
50								3				
30												-
10												
0	2310	2334. 2358. 2382. 2406. 2430 Frequency (MHz)							30			
F	req.	Detector Mode					Factor		Actual FS		.imit ⊉3m	Margin
N	/Hz	PK/Q	P/AV	dBµV		T	dB	(	dBµV/m		µV/m	dB
23	51.04 51.04 90.00	Average Peak Average		54.82 70.04 55.24		-5.55 -5.55 -5.57		64.49 74.		4.00 4.00 4.00	-4.73 -9.51 -4.33	
239	90.00	Peak		69.07		,	-5.57		63.50		4.00	-10.50



Test N EUT F		le	e :802.11n40 :Bandedge CH Low :H Plan :2427 MHz				Test Date Temp./Humi. Antenna Pol. Engineer					
120 <sup>L</sup>	_evel (dBuV/m	)									_	
110												
									m	have		
90									1			
70							24.	, mar	/			
					المعلودين فيتسيد	a summer man	montante	And and a second se				
50	and the second			about the second			13					
30												
10												
2	2310	23	34.	2.	58. Freque	23 ency (MHz)	82.	24	406.	243	50	
Fi	req.	Detector		Spectr	um	Factor		Actual		_imit	Margin	
					g Level		FS		@3m		-	
N	1Hz	PK/Q	P/AV	dBµ	V	dB	Ċ	lBμV/m	dB	μV/m	dB	
000		۸		50.0	0	<b>F F O</b>		47 4 4	-	4.00	C 00	
	37.64	Aver	•	52.69		-5.58		47.11		4.00	-6.89	
	37.64		ak	66.68		-5.58		61.10		4.00	-12.90	
	90.00	Aver Pe		53.34		-5.57				4.00	-6.23	
235	90.00	Pe	aĸ	65.7	5	-5.57		60.18	(	4.00	-13.82	

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Operati Test Mo EUT Po Test Ch	ol	:Bandedge CH Low :H Plan					- - E	:2018-06-12 :25/60 :HORIZONTAL :Enzo				
120 Lev	vel (dBuV/m)	)										
120												
									1	~~+	~~~~	
90												
70							2	en martin	min			
	mannam	-		and a second second	and the second second	and we are a second and the second a						
50												
30												
10												
0 231	10	233	4.	2	358.	23	382.		2406.		243	0
						ency (MHz)						
Fre	eq.	Detector		1		Factor		Actual		Limit		Margin
		Mode		Reading Level				FS		@3m		
MH	lz	PK/QF	P/AV	dBµV		dB		dBµV/m		dBµV/m		dB
										_		. = 0
2390		Avera		58.04		-5.57		52.47		54.00		-1.53
2390	2390.00 Peak		ak	72.92		-5.57		67.35		74.00		-6.65



Operation Mo Test Mode EUT Pol Test Channel		:802.11n40 :Bandedge CH H :H Plan :2447 MHz	ligh	Test Date Temp./Hu Antenna F Engineer	:2018-06-12 :25/60 :VERTICAL :Enzo	
120 Level (dBuV	/m)					
120						7
110						-
90						-
70		industry of the second second				-
50		<b></b>		www.trans.ordunghtowy.out.	Marranterson and the strate have	Z
30						-
10						-
0 2450	2470.	2490.		510. 2	530. 25	
			Frequency (MHz)			
Freq.	Detector Mode			Actual FS	Limit @3m	Margin
MHz	PK/QP/A	Reading Le	dB	dBµV/m	-	dB
		<i>p</i> , ,	<b>.</b>	r·· /	r·· /	
2483.50	Average	56.14	-4.90	51.24	54.00	-2.76
2483.50	Peak	72.47	-4.90	67.57	74.00	-6.43
2484.10	Average		-4.90	50.80	54.00	-3.20
2484.10	Peak	72.82	-4.90	67.92	74.00	-6.08



Operation Mo Test Mode EUT Pol Test Channe	:  :	302.11n40 3andedge CH High H Plan 2447 MHz		Test Date Temp./Humi. Antenna Pol. Engineer				
120 Level (dBuV	/m)							
110						_		
90						_		
70		and the second	m. Menter water	where and a second second second		_		
50				and the second se				
30						_		
10						_		
0 <mark></mark> 2450	2470.	2490. Fre	251 quency (MHz)	0. 25	30. 2	550		
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin		
MHz	Mode PK/QP/AV	Reading Level dBµV	dB	FS dBµV/m	@3m dBµV/m	dB		
2483.50 2483.50	Average Peak	57.26 75.95	-4.90 -4.90	52.36 71.05	54.00 74.00	-1.64 -2.95		



Operation Mo Test Mode EUT Pol Test Channel	:E :H	802.11n40 Bandedge CH High H Plan 2452 MHz		Test Date Temp./Humi. Antenna Pol. Engineer			
120 Level (dBuV/	m)					_	
110							
90							
70		24 6 	and more and a second				
50		135					
30							
10							
0 2450	2470.	2490. Frequ	2510. Jency (MHz)	2530.	25	50	
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin	
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB	
2483.50	Average	57.35	-4.90	52.45	54.00	-1.55	
2483.50	Peak	72.48	-4.90	67.58	74.00	-6.42	
2484.40 2484.40	Average Peak	57.80 72.64	-4.90 -4.90	52.90 67.74	54.00 74.00	-1.10 -6.26	
2484.40 2489.50	Average	72.64 56.35	-4.90 -4.85	51.50	74.00 54.00	-6.26 -2.50	
2489.50	Peak	72.41	-4.85	67.56	74.00	-6.44	



Operation Me Test Mode EUT Pol Test Channe	:	802.11n40 Bandedge CH High H Plan 2452 MHz		:2018-05-24 :25/60 :HORIZONTAL :Jerry		
120 Level (dBu\	//m)					
110						
~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~						
90						
70						
	<u> </u>	man Municipalitation and an april	4 			
50		1	3			•
30						
10						
0 <mark></mark> 2450	2470.	2490.	2510.	2530.	25	50
-		-	ency (MHz)			N4 ·
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	-	dB	dBµV/m	dBµV/m	dB
2483.50 2483.50	Average Peak	46.71 60.68	-4.90 -4.90	41.81 55.78	54.00 74.00	-12.19 -18.22
2500.40	Average	50.38	-4.90 -4.77	45.61	54.00	-10.22 -8.39
2500.40	Peak	62.14	-4.77	57.37	74.00	-16.63



# **Below 1GHz Worst-Case Data:**

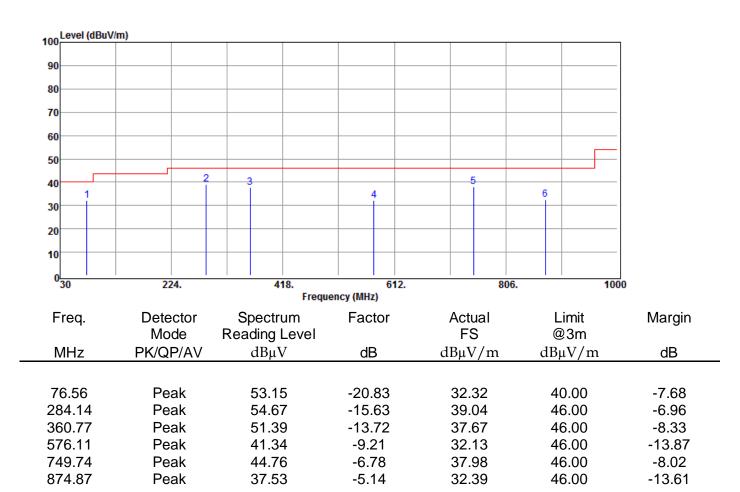
#### Radiated Spurious Emission Measurement Result (802.11 g)

**Operation Mode** Test Mode EUT Pol **Test Channel** 

:802.11g :Tx CH Low :H Plan :2412 MHz

Test Date Temp./Humi. Antenna Pol. Engineer

:2018-05-25 :25/60 :VERTICAL :Jerry



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Operation Mo Test Mode EUT Pol Test Channel	:T: :H	02.11g x CH Low Plan 412 MHz		Test Date Temp./Humi Antenna Pol Engineer		:2018-05-25 :25/60 :HORIZONTAL :Jerry
100 Level (dBuV/	m)					_
90						
80						
70						
60						
50						
40 1	2 3		4	5	6	
30						
20						
10						
0 <mark></mark> 30	224.	418. Frequ	612. ency (MHz)	806.	100	Ĵ0
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
•	Mode	Reading Level		FS	@3m	5
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
95.96	Peak	55.48	-22.08	33.40	43.50	-10.10
156.10	Peak	51.46	-16.18	35.28	43.50	-8.22
290.93	Peak	53.71	-15.99	37.72	46.00	-8.28
552.83 749.74	Peak Peak	46.74 44.78	-10.34 -6.78	36.40 38.00	46.00 46.00	-9.60 -8.00
874.87	Peak	38.93	-0.78 -5.14	33.79	46.00	-12.21
074.07	T Cak	00.00	0.14	00.10	40.00	12.21

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Operation Mo Test Mode EUT Pol Test Channel	:T :H	02.11g x CH Mid I Plan 437 MHz		Test Date Temp./Humi. Antenna Pol. Engineer		:2018-05-25 :25/60 :VERTICAL :Jerry
100 Level (dBuV/	m)					_
90						
80						
70						
60						
50						
40	2 3	4		5		
30					C	
20						
10						
030	224.	418.	612.	806.	10	 DO
		-	ency (MHz)			
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
N 41 1	Mode	Reading Level		FS	@3m	٩D
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
67.83	Peak	52.30	-19.07	33.23	40.00	-6.77
67.83 167.74	Peak	52.30 53.44	-19.07 -16.42	33.23 37.02	43.50	-6.48
226.91	Peak	54.52	-18.20	36.32	46.00	-9.68
360.77	Peak	51.63	-13.72	37.91	46.00	-8.09
749.74	Peak	44.78	-6.78	38.00	46.00	-8.00
998.06	Peak	38.88	-3.79	35.09	54.00	-18.91

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Operation M Test Mode EUT Pol Test Channe	:Tx :H	02.11g c CH Mid Plan 437 MHz		:2018-05-25 :25/60 :HORIZONTAL :Jerry		
100 Level (dBu)	//m)				1	7
90						
80						
70						
60						
50						
40 1	2 3	4	5	6		
30						
20						
10						
0 30						
30	224.	418. Frequ	612. ency (MHz)	806.	10	UU
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
	<b>_</b> .	10 - 50			10.00	
60.07	Peak	49.56	-17.68	31.88	40.00	-8.12
120.21 218.18	Peak Peak	54.32 56.25	-19.05 -19.68	35.27 36.57	43.50 46.00	-8.23 -9.43
408.30	Peak	46.00	-19.00	33.55	46.00	-9.43 -12.45
576.11	Peak	46.19	-9.21	36.98	46.00	-9.02
792.42	Peak	41.41	-6.81	34.60	46.00	-11.40

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Test N EUT F		de	:Tx :H F	2.11g CH High Plan 62 MHz			T A		./Hui nna F			:2018-05-25 :25/60 :VERTICAL :Jerry
100	_evel (dBuV/m	1)										
90												-
80								_				-
70												-
60												-
50								_				-
40		_2		3					5			_
30	1				4 				6			_
20												_
10												-
o	30	22	4.	41			12.	1	8	06.	10	000
					-	ncy (MHz)						
F	req.	Dete		Spectru		Factor		Act			Limit	Margin
	411_	Mo		Reading I				FS	-		@3m	
IV	1Hz	PK/QI	-/AV	dBµ∖	/	dB		dBµ∖	//m	ab	βμV/m	dB
F	).37	Pe	alı	48.85	-	-16.91		31.	04		0.00	-8.06
	5.37 7.74	Pe		40.00 53.41		-16.91		31. 36.			10.00 13.50	-6.51
	2.27	Pe		52.57		-14.91		37.			6.00	-8.34
	0.91	Pe		45.74		-12.22		33.			6.00	-12.48
	0.71	Pea	ak	44.82		-6.78		38.			6.00	-7.96
80	0.18	Pea	ak	40.61	1	-6.44		34.	17	4	6.00	-11.83

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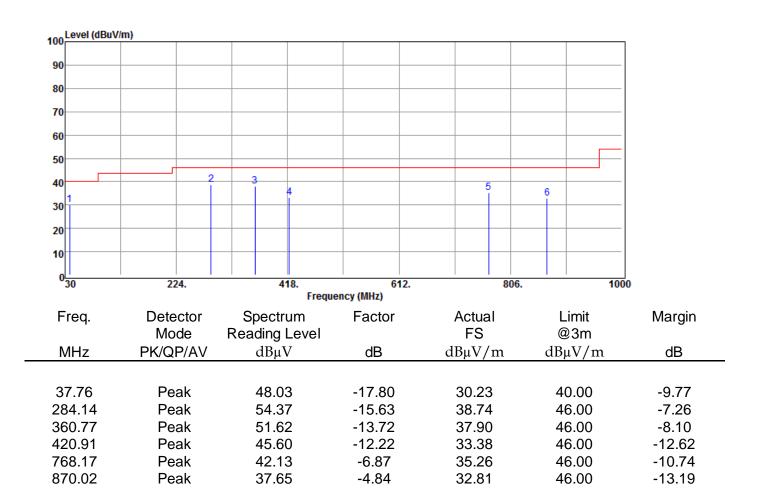
Operation Mo Test Mode EUT Pol Test Channel	:	802.11g Tx CH High H Plan 2462 MHz		:2018-05-25 :25/60 :HORIZONTAL :Jerry			
100	m)						
90							
80							
70							_
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40	2	3	4	5	6		
30 1							
20							
10							
0 <mark></mark> 30	224.	418. Fi	6 requency (MHz)	12.	80	6. 1	000
Freq.	Detector	Spectrum	Factor	A	Actual	Limit	Margin
	Mode	Reading Leve	el		FS	@3m	C C
MHz	PK/QP/AV	dBµV	dB	dł	3μV/m	dBµV/m	dB
04.00	Deels	50.70	00.00			40.00	40.00
84.32 131.85	Peak Peak	50.76 50.59	-23.69 -18.84		27.07 31.75	40.00 43.50	-12.93 -11.75
300.63	Peak	49.68	-15.43		34.25	46.00	-11.75
500.45	Peak	42.54	-11.13		31.41	46.00	-14.59
666.32	Peak	44.02	-8.72		35.30	46.00	-10.70
800.18	Peak	40.89	-6.44		34.45	46.00	-11.55

## Radiated Spurious Emission Measurement Result (802.11n 40)

:802.11n40
:Tx CH Low
:H Plan
:2422 MHz

Test Date Temp./Humi. Antenna Pol. Engineer

:2018-05-25 :25/60 :VERTICAL :Jerry



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.

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Test Mode EUT Pol	802.11n40 Tx CH Low H Plan 2422 MHz		Test Date Temp./Humi. Antenna Pol. Engineer		:2018-05-25 :25/60 :HORIZONTAL :Jerry
100 Level (dBuV/m)					
90					
80					
70					
60					
50					
40 1 2	3	4	5	6	
30					
20					
10					
0 30 224.	418. Frequ	612. ency (MHz)	806.	100	0
Freq. Detector	Spectrum	Factor	Actual	Limit	Margin
Mode	Reading Level		FS	@3m	C C
MHz PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
95.96 Peak	55.54	-22.08	33.46	43.50	-10.04
159.98 Peak	50.74	-16.19	34.55	43.50	-8.95
356.89 Peak 552.83 Peak	48.72 47.19	-13.81 -10.34	34.91 36.85	46.00 46.00	-11.09 -9.15
749.74 Peak	44.78	-6.78	38.00	46.00	-8.00
864.20 Peak	38.30	-5.18	33.12	46.00	-12.88



Image: constrained of the second of the s	Operation Mod Test Mode EUT Pol Test Channel	:T) :H :24	02.11n40 x CH Mid Plan 437 MHz		Test Date Temp./Humi. Antenna Pol. Engineer		:2018-05-25 :25/60 :VERTICAL :Jerry
Requere view of the second sec	100 Level (dBuV/m	n)					1
Requere view of the second sec	90						
requency (MHz) Freq. Detector Spectrum Factor Actual Limit Margin							
60 60 60 60 60 60 60 60 60 60							
50 40 40 40 5 61 5 61 7 7 7 7 7 7 7 7 7 7 7 7 7	70						
40 40 4 4 5 6 6 6 6 6 6 6 6 7 6 7 7 7 7 7 7 7 7 7 7 7 7 7	60						
30     1     4     0     0     0       20     0     0     0     0     0       10     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0     0     0     0       0     0	50						
20 10 0 30 224. 418. Frequency (MHz) Frequency (MHz) Frequency (MHz)	40	2	-3		5 6		
20 10 0 30 224. 418. Frequency (MHz) Frequency (MHz) Frequency (MHz)	30		4		ĭ		
10     10     10     10       0     30     224.     418.       Frequency (MHz)       Frequency (MHz)							
0 30 224. 418. 612. 806. 1000 Frequency (MHz) Freq. Detector Spectrum Factor Actual Limit Margin							
Frequency (MHz) Freq. Detector Spectrum Factor Actual Limit Margin	10						
Frequency (MHz) Freq. Detector Spectrum Factor Actual Limit Margin	030	224.	418.	612.	806.	10	_ DO
			Freque	ency (MHz)			
Mode Reading Level FS @3m	Freq.			Factor			Margin
			•		-	-	
	MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
		_					
51.34 Peak 48.03 -16.98 31.05 40.00 -8.95							
167.74 Peak 53.59 -16.42 37.17 43.50 -6.33							
312.27Peak52.40-14.9137.4946.00-8.51421.88Peak45.94-12.1933.7546.00-12.25							
749.74 Peak 44.23 -6.78 37.45 46.00 -12.25							
800.18 Peak 41.46 -6.44 35.02 46.00 -10.98							



Operation Mode Test Mode EUT Pol Test Channel		:Tx :H F	2.11n40 CH Mid Plan 37 MHz				Te A		./Hur na F				:2018-05-25 :25/60 :HORIZONTAL :Jerry
100 Level (dBuV/n	n)									1			I
90													
80													
70													
60													
50	r												
40		2	-	3	4			- 5	5	6	3		
30													
20													
10													
0 <mark></mark> 30	22	4.		418. Frequ	uency (N	61 IHz)	2.		8	06.		100	0
Freq.	Dete	ctor	Spe	ctrum		actor		Actu	Jal		Lin	nit	Margin
	Mo			ng Level				FS			@3		insi giri
MHz	PK/QF	P/AV	dE	βμV		dB	C	łBμV	//m	Ċ	lBμ∖	//m	dB
131.85	Pea			.57		8.84		31.			43.		-11.77
301.60	Pea			.56		5.48		33.0			46.		-12.92
388.90	Pea			5.10		3.07		33.0			46.		-12.97
552.83 749.74	Pea Pea			5.25 5.40		0.34		35.9			46. 46.		-10.09
749.74 874.87	Pea			5.40 5.65		6.78 5.14		38.0 33.9			46.		-7.38 -12.49
01 +.01	1.00	21	50		-,	J. 14		00.			-U.	00	12.43



Operation Mo Test Mode EUT Pol Test Channel	ст: :Н	02.11n40 c CH High Plan i52 MHz		Test Date Temp./Humi. Antenna Pol. Engineer		:2018-05-25 :25/60 :VERTICAL :Jerry
Level (dBuV/	m)					
100						]
90						
80						
70						
60						
50						
40						
		3	4			
30						
20						
10						
0	224.	418.	612.	806.	100	
30	224.		ency (MHz)	800.	100	0
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
	Mode	Reading Level		FS	@3m	-
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
167.74	Peak	53.53	-16.42	37.11	43.50	-6.39
216.24	Peak	55.14	-18.68	36.46	46.00	-9.54
421.88	Peak	45.48	-12.19	33.29	46.00	-12.71
576.11	Peak	40.59	-9.21	31.38	46.00	-14.62
749.74	Peak	43.44	-6.78	36.66	46.00	-9.34
800.18	Peak	41.65	-6.44	35.21	46.00	-10.79



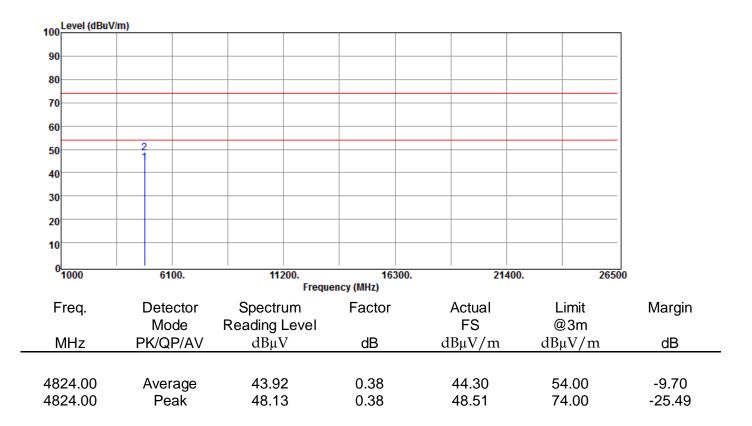
Test Mode EUT Pol	:802.11n40 :Tx CH High :H Plan :2452 MHz		Test Date Temp./Humi. Antenna Pol. Engineer		:2018-05-25 :25/60 :HORIZONTAL :Jerry
100 Level (dBuV/m)					
90					
80					
70					
60					
50					
40 2	3	4	5	6	
30 1					
20					
10					
0 <mark></mark> 30 224.	418. Freque	612. ency (MHz)	806.	100	0
Freq. Detector		Factor	Actual	Limit	Margin
Mode	Reading Level		FS	@3m	0
MHz PK/QP/A	√ dBµV	dB	dBµV/m	dBµV/m	dB
84.32 Peak	50.21	-23.69	26.52	40.00	-13.48
218.18 Peak	56.65	-19.68 -15.43	36.97	46.00 46.00	-9.03
300.63 Peak 552.83 Peak	48.53 46.13	-15.43 -10.34	33.10 35.79	46.00 46.00	-12.90 -10.21
749.74 Peak	44.59	-6.78	37.81	46.00	-8.19
874.87 Peak	39.32	-5.14	34.18	46.00	-11.82



# Above 1GHz Data:

# Radiated Spurious Emission Measurement Result (802.11 b)

5	Operation Mode	:802.11b	Test Date	:2018-05-25
	Test Mode	:Tx CH Low	Temp./Humi.	:25/60
	EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
	Test Channel	:2412 MHz	Engineer	:Jerry



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Operati Test Mo EUT Po Test Ch	ol	e	:Tx :H F	2.11b CH Low Plan I2 MHz			-	Test Date Temp./Hu Antenna F Engineer			:2018-05-25 :25/60 :HORIZONTAL :Jerry
100	evel (dBuV/m)	)			1	1			1		_
90—											_
80											_
70											_
60											_
50		1									_
40											-
30											_
20											_
10											-
0 <mark></mark>	000	610	)0.	112	200. Freque	163 ency (MHz)	300.	21	400.	265	500
Fre	əq.	Dete Moo		Spectr Reading		Factor		Actual FS		Limit @3m	Margin
MF	Ηz	PK/QF		dBµV		dB		dBµV/m		βµV/m	dB
100				10.0	_	0.00		10.00			4.07
4824 4824		Avera Pea		48.9 51.6		0.38 0.38		49.33 52.04		54.00 74.00	-4.67 -21.96

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Operation Mo Test Mode EUT Pol Test Channel	ר: ו:	:802.11bTest Date:Tx CH MidTemp./Humi.:H PlanAntenna Pol.:2437 MHzEngineer				:2018-05-25 :25/60 :VERTICAL :Jerry
100 Level (dBuV/	m)					7
90						_
80						_
70						-
60						_
50	2					-
40						-
30						-
20						-
10						-
0 <mark></mark> 1000	<mark>6100.</mark>	11200. Frequ	16300. ency (MHz)	2140	00. 265	500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00 4874.00	Average Peak	45.32 50.12	0.66 0.66	45.98 50.78	54.00 74.00	-8.02 -23.22

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Operatio Test Moc EUT Pol Test Cha	de	e	:Tx :H	2.11b CH Mid Plan 37 MHz			۲ م	Test Date Temp./Hu Antenna F Engineer			:2018-05-25 :25/60 :HORIZONTAL :Jerry
100 Level	l (dBuV/m)				1	1	1				7
90											_
80											-
70											-
60		2									_
50		1									-
40											-
30											-
20											-
10											-
0 <mark></mark>	)	61	<b>00.</b>	11:	200. Freque	163 ncy (MHz)	300.	21	400.	265	 00
Freq		Dete Mo		Spectr Reading		Factor		Actual FS		Limit @3m	Margin
MHz	2	PK/Q	P/AV	dBµV		dB		dBµV/m		βµV/m	dB
4874.( 4874.(		Aver Pe		50.2 53.7		0.66 0.66		50.88 54.45		54.00 74.00	-3.12 -19.55

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Operation Mode Test Mode EUT Pol Test Channel	:802.11b :Tx CH High :H Plan :2462 MHz		Test Date Temp./Humi. Antenna Pol. Engineer		:2018-05-25 :25/60 :VERTICAL :Jerry
100 Level (dBuV/m)	· · · ·				
90					
80					
70					
60					
50 2					
40					
30					
20					
10					
0 <mark>. 1000 61</mark>	 100. 11200. Freque	16300. ency (MHz)	21400.	2650	0
1	ector Spectrum ode Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz PK/Q	P/AV dBµV	dB	dBµV/m	dBµV/m	dB
				- /	
	rage 44.85 eak 49.23	1.00 1.00	45.85 50.23	54.00 74.00	-8.15 -23.77

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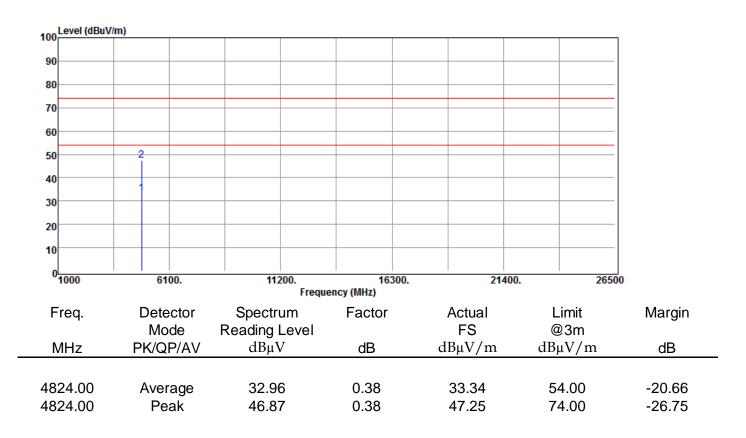


Operation N Test Mode EUT Pol Test Channe	: :H	802.11b Fx CH High H Plan 2462 MHz		Test Date Temp./Hur Antenna P Engineer		:2018-05-25 :25/60 :HORIZONTAL :Jerry
100 Level (dBi	ıV/m)					
90						
80						
70						_
60	2					
50						
40						
30						
20						
10						
0 <mark></mark>	6100.	11200. Freque	1630 ency (MHz)	0. 214	400. 20	6500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4004.00	<b>A</b>	10.00	0.07	50.00	54.00	0.14
4924.00 4924.00	Average Peak	49.89 52.39	0.97 0.97	50.86 53.36	54.00 74.00	-3.14 -20.64



### Radiated Spurious Emission Measurement Result (802.11 g)

Operation Mode	:802.11g	Test Date	:2018-05-25
Test Mode	:Tx CH Low	Temp./Humi.	:25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



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Operation Ma Test Mode EUT Pol Test Channe	:T: :H	02.11g x CH Low Plan 412 MHz		Test Date Temp./Hu Antenna F Engineer		:2018-05-25 :25/60 :HORIZONTAL :Jerry
100 Level (dBu\	//m)				1	_
90						_
80						_
70						_
60						_
50	2					—
40						_
30						-
20						-
10						—
0 <mark>1000</mark>	6100.	11200. Freque	1630 ency (MHz)	00. 21	1400. 26	5500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4004.00	•	07.00	0.00	07.04	54.00	10.00
4824.00 4824.00	Average Peak	37.23 49.70	0.38 0.38	37.61 50.08	54.00 74.00	-16.39 -23.92

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Operation Mo Test Mode EUT Pol Test Channe		:802.11g :Tx CH Mid :H Plan :2437 MHz		Test Date Temp./Hu Antenna Engineer	Pol.	:2018-05-25 :25/60 :VERTICAL :Jerry
100 Level (dBu\	//m)			1		
90						
80						
70						
60						
50	2					
40						—
30						
20						
10						—
0 1000	6100.	11200.	163 Frequency (MHz)	300. 2 <sup>°</sup>	1400. 2	6500
Freq.	Detecto Mode	r Spectrum Reading Lev		Actual FS	Limit @3m	Margin
MHz	PK/QP/A	•	dB	dBµV/m		dB
	_					
4874.00 4874.00	Average Peak	e 33.68 47.69	0.66 0.66	34.34 48.35	54.00 74.00	-19.66 -25.65
4074.00	I Cak	47.05	0.00	+0.00	74.00	-20.00

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Test M EUT P		le	:Tx ( :H P	802.11g Tx CH Mid H Plan 2437 MHz				Test Date Temp./Hui Antenna F Engineer	:2018-05-25 :25/60 :HORIZONTAL :Jerry		
100	evel (dBuV/m	)									7
90-											_
80-											_
70											-
60											_
50		2									-
40		-									-
30											-
20											-
10											-
0 <mark>_</mark> 1	1000	6100	0.	11:	200. Freque	163 ncy (MHz)	300.	21	<b>400.</b>	265	500
Fr	req.	Detec		Spectr		Factor		Actual		Limit	Margin
М	1Hz	Mode PK/QP/AV		Reading Level dBµV		dB		FS dBµV/m		@3m 3μV/m	dB
			,,	αυμ	•	40			<u>u</u>	- po 1 / 111	40
	74.00	Avera		38.4		0.66		39.06		54.00	-14.94
4874.00		Pea	k	50.5	3	0.66		51.19	-	74.00	-22.81

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Operation Mode Test Mode EUT Pol Test Channel	:802.11g :Tx CH High :H Plan :2462 MHz		:2018-05-25 :25/60 :VERTICAL :Jerry		
100 Level (dBuV/m)					٦
90					
80					
70					
60					
50 2					
40					
30					
20					
10					
0		16300. ency (MHz)	21400.	265	 00
Freq. Detec Mod	1	Factor	Actual FS	Limit @3m	Margin
MHz PK/QP	_	dB	dBµV/m	dBµV/m	dB
4924.00 Avera 4924.00 Pea		0.97 0.97	34.88 49.35	54.00 74.00	-19.12 -24.65

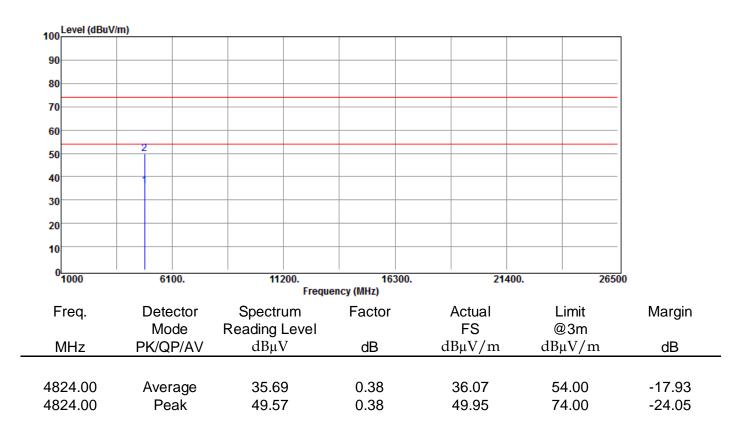


Operation Mode:802.11gTest Mode:Tx CH HighEUT Pol:H PlanTest Channel:2462 MHz							:2018-05-25 :25/60 :HORIZONTAL :Jerry				
100	evel (dBuV/m)	)			1						1
90—											
80											
70											
60											
50		2									
40											
30											
20											
10											
0 <mark></mark> 10	000	610	00.	11:	200. Freque	163 ncy (MHz)	300.	21	<b>400.</b>	2650	_ 00
Fre	eq.	Dete Mo		Spectr Reading		Factor		Actual FS		₋imit ⊉3m	Margin
M	Hz	PK/QF	P/AV	dBµV		dB		dBµV/m		μV/m	dB
400	4.00	<b>A</b>		00 7	-	0.07		00.70	-	4.00	44.00
4924 4924		Aver: Pea		38.7 50.2		0.97 0.97		39.72 51.21		4.00 4.00	-14.28 -22.79



# Radiated Spurious Emission Measurement Result (802.11 HT20)

Operation Mode Test Mode	:802.11n20 :Tx CH Low	Test Date Temp./Humi.	:2018-05-25 :25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:2412 MHz	Engineer	:Jerry



Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.



Operation Mode Test Mode EUT Pol Test Channel	:802.11n20 :Tx CH Low :H Plan :2412 MHz		Test Date Temp./Humi. Antenna Pol. Engineer						
100 Level (dBuV/m)									
90									
80									
70									
60 2									
50									
40									
30									
20									
10									
0 <mark></mark> 1000	6100.	11200. 16: Frequency (MHz)	<b>300. 21400.</b>	26500					
I	Detector Spec Mode Reading		Actual FS	Limit @3m	Margin				
	K/QP/AV dB	•	dBµV/m	dBµV/m	dB				
			10.00	- /	40.00				
4824.00 A 4824.00	Average 40. Peak 52.		40.92 53.10	54.00 74.00	-13.08 -20.90				



Operation M Test Mode EUT Pol Test Channe	۲: ۲:	02.11n20 x CH Mid I Plan 437 MHz		:2018-05-25 :25/60 :VERTICAL :Jerry		
100 Level (dBu)	//m)	1		1		7
90						_
80						_
70						-
60						_
50	2					-
40						-
30						-
20						-
10						-
0 1000	6100.	11200. Freque	16300. ency (MHz)	21400	. 265	500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4871.00	Average	36.83	0.64	37.47	54.00	-16.53
4871.00	Peak	50.33	0.64	50.97	74.00	-23.03



Operation Mod Test Mode EUT Pol Test Channel	:T› :H	02.11n20 c CH Mid Plan t37 MHz		:2018-05-25 :25/60 :HORIZONTAL :Jerry		
100 Level (dBuV/m)	)					
90						_
80						_
70						_
60	2					_
50						_
40						_
30						_
20						_
10						_
0 <mark></mark> 1000	6100.	11200. Freque	16300 ency (MHz)	). 214	00. 26	500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBμV	dB	dBµV/m	dBµV/m	dB
	_					
4874.00 4874.00	Average Peak	41.38 53.93	0.66 0.66	42.04 54.59	54.00 74.00	-11.96 -19.41



Operation Mo Test Mode EUT Pol Test Channel	T: H:	02.11n20 īx CH High I Plan 457 MHz		:2018-06-12 :25/60 :VERTICAL :Enzo		
100 Level (dBuV/i	m)					_
90						_
80						_
70						_
60						-
50	2					_
40						-
30						-
20						—
10						—
0L 1000	6100.	11200. Freque	1630 ency (MHz)	0. 2140	0. 26	500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4044.00	A	20.00	0.04	20.04	54.00	00.40
4914.00 4914.00	Average Peak	29.90 45.22	0.91 0.91	30.81 46.13	54.00 74.00	-23.19 -27.87



Operation Mode Test Mode EUT Pol Test Channel	:Tx :H F	2.11n20 CH High Plan 57 MHz		:2018-06-12 :25/60 :HORIZONTAL :Enzo		
100 Level (dBuV/m)			1			7
90						
80						
70						
60	2					
50						
40						
30						
20						
10						
0 <sup>L</sup> 1000	6100.	11200. Freque	16300 ncy (MHz)	). <b>21400</b> .	2650	0
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
101100	•	00.40	0.04	10.04	54.00	10.00
4914.00 4914.00	Average Peak	39.40 54.40	0.91 0.91	40.31 55.31	54.00 74.00	-13.69 -18.69



Operation Mode:802.11n20Test Mode:Tx CH HighEUT Pol:H PlanTest Channel:2462 MHz							:2018-05-25 :25/60 :VERTICAL :Jerry				
100	Level (dBuV/m	)			1				1		7
90											
80											
70											
60											
50		2									
40		1									
30											
20											
10											
0 <mark>_</mark> 1	1000	61	<b>00.</b>	11:	200. Freque	163 ency (MHz)	300.	21	<b>400.</b>	265	0
Fr	req.	Dete Mo		Spectr Reading		Factor		Actual FS		Limit @3m	Margin
M	1Hz	PK/Q	P/AV	•		dB	(	dBµV/m	dB	μV/m	dB
	24.00 24.00	Aver Pe	•	33.2 46.6		0.97 0.97		34.26 47.60	-	64.00 74.00	-19.74 -26.40

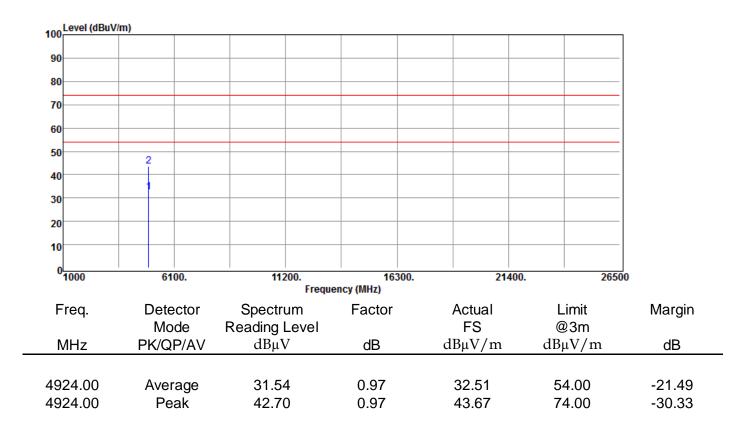


Operation Mode:802.11n20Test Mode:Tx CH HighEUT Pol:H PlanTest Channel:2462 MHz						Te Te Aı Eı	:2018-05-25 :25/60 :HORIZONTAL :Jerry				
100	Level (dBuV/m	1)		I	1			1		I	1
90											
80											
70											
60											
50		2									
40											
30											
20											
10											
ol	1000	610	0.	11:	200. Frequei	163 ncy (MHz)	300.	21	400.	2650	0
F	req.	Deteo Mod		Spectr Reading		Factor		Actual FS		.imit ⊉3m	Margin
N	/Hz	PK/QP		dBµV		dB	ċ	lBµV/m		μV/m	dB
492	24.00	Avera	ade	37.5	6	0.97		38.53	5	4.00	-15.47
	24.00	Pea		49.64		0.97		50.61		4.00	-23.39



#### Radiated Spurious Emission Measurement Result (802.11 HT40)

Operation Mode Test Mode	:802.11n40 :Tx CH Low	Test Date Temp./Humi.	:2018-05-25 :25/60
EUT Pol	:H Plan	Antenna Pol.	:VERTICAL
Test Channel	:2422 MHz	Engineer	:Jerry



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Operation Mode Test Mode EUT Pol Test Channel	:802.11n40 :Tx CH Low :H Plan :2422 MHz		Test Date Temp./Humi. Antenna Pol. Engineer		:2018-05-25 :25/60 :HORIZONTAL :Jerry
100 Level (dBuV/m)					
90					
80					
70					
60					
50 2					
40					
30					
20					
10					
0 <mark>1000 61</mark>	100. 11200. Freque	16300. ency (MHz)	21400.	26500	0
1	ector Spectrum ode Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz PK/Q	P/AV dBµV	dB	dBµV/m	dBµV/m	dB
4044.00	05.00	0.40	05 50	- 4 0 0	10.00
	rage 35.29 eak 46.88	0.49 0.49	35.78 47.37	54.00 74.00	-18.22 -26.63



Operation M Test Mode EUT Pol Test Channe	:T :H	02.11n40 x CH Low I Plan 427 MHz		Test Date Temp./Humi Antenna Pol Engineer		:2018-06-12 :25/60 :VERTICAL :Enzo
100 Level (dBu)	V/m)					7
90						-
80						_
70						-
60						_
50						-
40	2					_
30	1					-
20						-
10						-
01000	6100.	11200. Freque	16300. ency (MHz)	21400	. 265	 00
Freq.	Detector	Spectrum	Factor	Actual	Limit	Margin
MHz	Mode PK/QP/AV	Reading Level dBμV	dB	FS dBµV/m	@3m dBµV/m	dB
4854.00 4854.00	Average Peak	29.55 42.00	0.55 0.55	30.10 42.55	54.00 74.00	-23.90 -31.45
4004.00	FEAK	42.00	0.55	42.00	74.00	-31.45

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Operation Test Mode EUT Pol Test Chan	)	:T) :H	)2.11n40 CH Low Plan I27 MHz		۲ A	ēst Date ēmp./Hu Antenna F Engineer			:2018-06-12 :25/60 :HORIZONTAL :Enzo
100 Level (d	dBuV/m)							1	7
90									_
80									-
70									-
60									-
50	2								-
40									-
30									-
20									-
10									-
0 <mark></mark>	(	<b>5100.</b>	1120	163 cy (MHz)	300.	21	400.	265	00
Freq.		tector ode	Spectrur Reading Le	Factor		Actual FS		Limit @3m	Margin
MHz	PK/0	QP/AV	dBµV	dB		dBµV/m		μV/m	dB
4854.00 4854.00		erage eak	35.15 51.09	0.55 0.55		35.70 51.64		54.00 74.00	-18.30 -22.36



Operation Mo Test Mode EUT Pol Test Channel	:T :H	02.11n40 x CH Mid Plan 437 MHz		Test Date Temp./Humi Antenna Pol Engineer		:2018-05-25 :25/60 :VERTICAL :Jerry
100 Level (dBuV	/m)					7
90						_
80						_
70						-
60						-
50	2					-
40						-
30						-
20						-
10						-
0 <mark></mark> 1000	6100.	11200. Freque	16300 ency (MHz)	. 21400	. 265	500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
4874.00	Average	31.70	0.66	32.36	54.00	-21.64
4874.00	Peak	42.83	0.66	43.49	74.00	-30.51



Test M EUT P		le	:802.11n40 :Tx CH Mid :H Plan :2437 MHz			T A	est Date emp./Hui intenna F ingineer			:2018-05-25 :25/60 :HORIZONTAL :Jerry
100	.evel (dBuV/m	)		1 1						-
90										
80										
70										
60										
50		2								
40										
30										
20										
10										
0 <mark>_</mark> 1	000	6100.	11	200. Frequenc	163 cy (MHz)	00.	21	<b>400.</b>	265	00
Fr	req.	Detecto Mode	or Spectr Reading		Factor		Actual FS		_imit ⊉3m	Margin
M	lHz	PK/QP/A	-		dB		dBµV/m	dB	μV/m	dB
407	4 00	<b>A</b>		0	0.04		00.47	-	4.00	17.00
	71.00 71.00	Averag Peak	e 35.5 47.6		0.64 0.64		36.17 48.29		4.00 4.00	-17.83 -25.71



Operation Test Mode EUT Pol Test Chan		:Tx :H	2.11n40 CH High Plan 47 MHz			•	Test Date Temp./Hui Antenna F Engineer			:2018-06-12 :25/60 :VERTICAL :Enzo
100 Level (d	BuV/m)							1		7
90										_
80										_
70										-
60										-
50	2									-
40										-
30	1									-
20										-
10										-
0 <mark></mark> 1000	61	00.	112		163 ency (MHz)	300.	21	<b>400.</b>	265	500
Freq.		ector	Spectru		Factor		Actual		Limit	Margin
MHz	Mc PK/Q	ode P/AV	Reading I dBµV		dB		FS dBµV/m	ď	@3m BµV/m	dB
4894.00		-	29.40		0.78		30.18		54.00	-23.82
4894.00	) Pe	ak	43.82	2	0.78		44.60		74.00	-29.40



Test N EUT F		de	:Tx :H F	2.11n40 CH High Plan 47 MHz			Te Ai	est Date emp./Hui ntenna F ngineer			:2018-06-12 :25/60 :HORIZONTAL :Enzo
100 <sup>1</sup>	Level (dBuV/m	1)						1	1	I	1
90											
80											
70											
60		2									
50											
40											
30											
20											
10											
O	1000	61	00.	11:	200. Freque	163 ncy (MHz)	300.	21	400.	2650	0
F	req.	Dete Mo		Spectr Reading		Factor		Actual FS		.imit ⊉3m	Margin
N	/Hz	PK/Q		dBµV		dB	Ċ	lBµV/m		μV/m	dB
	94.00	Aver		36.5		0.78		37.33		4.00	-16.67
489	94.00	Pe	ак	51.3	1	0.78		52.15	1	4.00	-21.85



Operation Mode Test Mode EUT Pol Test Channel	:Tx :H F	2.11n40 CH High Plan 52 MHz		Test Date Temp./Hum Antenna Po Engineer		:2018-05-25 :25/60 :VERTICAL :Jerry
100 Level (dBuV/m)						_
90						_
80						_
70						_
60						_
50	<u></u>					_
40	2					_
30						_
20						—
10						—
0 <mark>1000</mark>	6100.	11200. Freque	16300 ncy (MHz)	0. 2140	00. 26	500
Freq.	Detector Mode	Spectrum Reading Level	Factor	Actual FS	Limit @3m	Margin
MHz	PK/QP/AV	dBµV	dB	dBµV/m	dBµV/m	dB
100100		04.00	0.04	04.00	= 4 0 0	~~~~
4904.00 4904.00	Average Peak	31.08 40.03	0.84 0.84	31.92 40.87	54.00 74.00	-22.08 -33.13



Test M EUT F		de	:Tx :H F	2.11n40 CH High Plan 52 MHz			Te Ai	est Date emp./Hui ntenna F ngineer			:2018-05-25 :25/60 :HORIZONTAL :Jerry
100	_evel (dBuV/m	1)			1				1		1
90											
80											
70											
60											
50		2									
40		1									
30											
20											
10											
0 <mark>1</mark>	1000	610	)0.	11:	200. Freque	163 ncy (MHz)	300.	21	400.	2650	0
Fr	req.	Dete Mod		Spectr Reading		Factor		Actual FS		.imit @3m	Margin
M	1Hz	PK/QF	P/AV	dBµV		dB	Ċ	lBµV/m		uV/m	dB
400	24.00	<b>A</b>		00.0	0	0.04		00.07	-	4.00	00.00
	04.00 04.00	Avera Pea		32.8 44.3		0.84 0.84		33.67 45.15		4.00 4.00	-20.33 -28.85



# 12 PEAK POWER SPECTRAL DENSITY

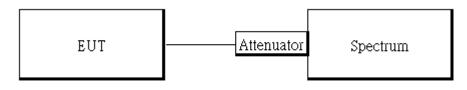
## 12.1 Standard Applicable

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

## **12.2 Measurement Equipment Used**

	Conducte	ed Emission	Test Site		
EQUIPMENT	MFR	MODEL	SERIAL	LAST	CAL DUE.
TYPE		NUMBER	NUMBER	CAL.	
Spectrum Analyzer	KEYSIGHT	N9010A	MY51440113	06/20/2017	06/19/2018
Power Meter	Anritsu	ML2496A	1326001	06/23/2017	06/22/2018
Power Sensor	Anritsu	MA2411B	1315048	06/23/2017	06/22/2018
Power Sensor	Anritsu	MA2411B	1315049	06/23/2017	06/22/2018
Coaxial Cable 30cm	WOKEN	00100A1F1A 195C	RF01	12/24/2017	12/23/2018
DC Block	PASTERNACK	PE8210	RF29	12/24/2017	12/23/2018
Splitter	RF-LAMBAD	RFLT2W1G1 8G	RF35	12/24/2017	12/23/2018
Attenuator	WOKEN	218FS-10	RF23	12/24/2017	12/23/2018
DC Power Supply	Agilent	E3640A	MY53140006	05/02/2018	05/01/2019

## 12.3 Test Set-up



## **12.4 Measurement Procedure**

- 1. Set analyzer center frequency to DTS channel center frequency.
- 2. The testing follows the Measurement Procedure of FCC KDB 558074 D01 DTS Meas. Guidance .
- 3. Set the span to 1.5 times the DTS channel bandwidth.
- 4. Set the RBW = 3 kHz & VBW = 10 kHz.
- For defining Restricted Band Edge Limit: Set the RBW = 100kHz & VBW = 300 kHz
- 6. Detector = peak.
- 7. Sweep time = auto couple.
- 8. Trace mode = max hold.
- 9. Allow trace to fully stabilize.

#### **10.** Use the peak marker function to determine the maximum amplitude level.

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11.802.11n MIMO mode: offset is set following "measure and add 10 Log (N)" on spectrum to measure the PSD for MIMO mode. Offset = cable loss + 10 log (N), where N is number of transmitting antenna. N=2 for this given application.

As per FCC KDB 662911 D01

Unequal antenna gains, with equal transmit powers. For antenna gains given by G1, G2, ..., GN dBi.

(i) If transmit signals are correlated, then Directional gain

= 10 log[(10G1 /20 + 10G2 /20 + ... + 10GN /20) 2 /NANT] dBi

[Note the "20"s in the denominator of each exponent and the square of the sum of terms; the object is to combine the signal levels coherently.]

	POWER DENSITY 80	2.11b			POWER DENSITY 8	02.11g	
Freq.	PPSD	Limit	Result	Freq.	PPSD	Limit	Result
(MHz)	(dBm)	(dBm)	Result	(MHz)	(dBm)	(dBm)	Result
2412	-21.28	3.37	PASS	2412	-19.40	3.37	PASS
2437	-21.01	3.37	PASS	2437	-18.88	3.37	PASS
2462	-20.70	3.37	PASS	2462	-18.36	3.37	PASS
	POWER DENSITY 802.	11n HT2	0		POWER DENSITY 802.1	1n HT4	)
Freq.	PPSD	Limit	Result	Freq.	PPSD	Limit	Result
(MHz)	(dBm)	(dBm)	Result	(MHz)	(dBm)	(dBm)	Result
2412	-16.13	3.37	PASS	2422	-22.75	3.37	PASS
2437	-16.10	3.37	PASS	2437	-21.5	3.37	PASS
2462	-18.07	3.37	PASS	2452	-27.4	3.37	PASS

#### 12.5 Measurement Result

offset 11.10 dB for SISO mode

offset 11.10 dB for MIMO mode

\*Refer to next page for plots

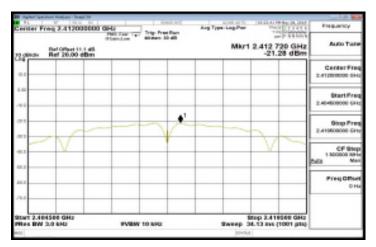
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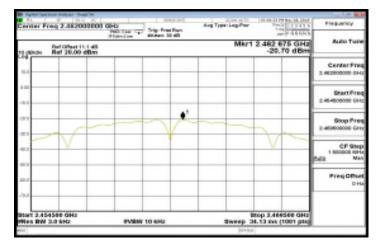
## 802.11b PSD(CH-Low)



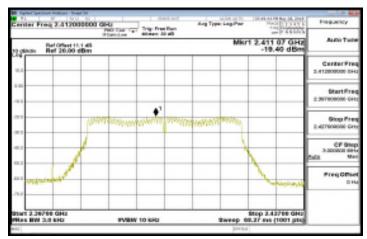
#### 802.11b PSD (CH-Mid)



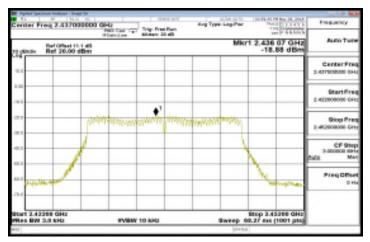
# 802.11b PSD (CH-High)



#### 802.11g PSD(CH-Low)



## 802.11g PSD (CH-Mid)



# P802.11g PSD (CH-High)



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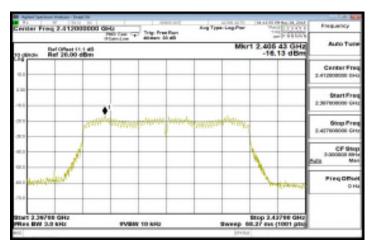
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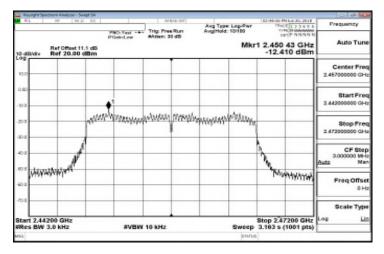
#### 802.11n\_HT20 PSD (CH-Low)



802.11n\_HT20 PSD (CH-Mid)



# 802.11n\_HT20 PSD (CH-High) (2457MHz)



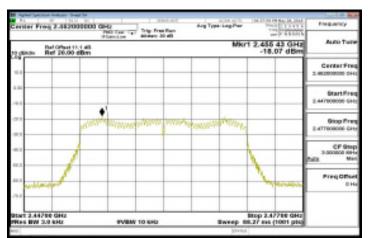
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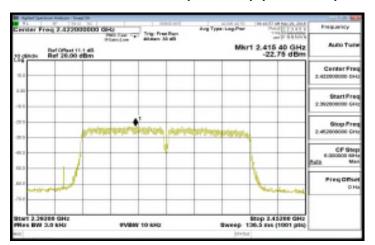
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#### 802.11n\_HT20 PSD (CH-High) (2462MHz)

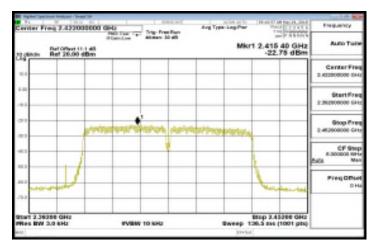




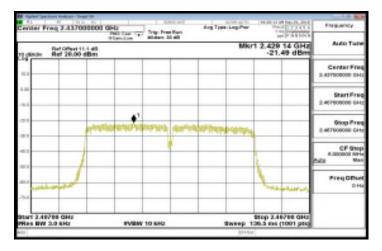
## 802.11n\_HT40 PSD (CH-Low) (2422MHz)



## 802.11n\_HT40 PSD (CH-Low) (2427MHz)



## 802.11n\_HT40 PSD (CH-Mid)



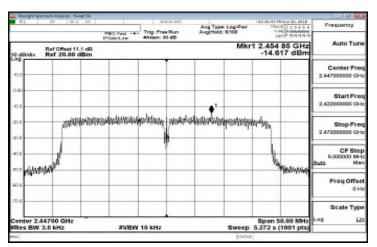
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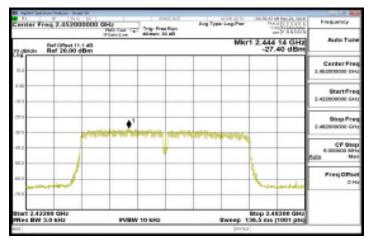
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#### Member of SGS Group

#### 802.11n\_HT40 PSD (CH-High) (2447MHz)



#### 802.11n\_HT40 PSD (CH-High) (2452MHz)





# **13 ANTENNA REQUIREMENT**

#### **13.1 Standard Applicable**

For intentional device, according to §15.203, an intentional radiator shall be designed to ensure that no antenna other than furnished by the responsible party shall be used with the device. If the transmitting antenna is greater than 6dBi, the power shall be reduced by the same level in dB comparing to gain minus 6dBi.

#### **13.2 Antenna Connected Construction**

The antenna is designed as permanently attached and no consideration of replacement. Please see EUT photo for details..

~ End of Report ~

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