

# MEASUREMENT REPORT

## EN 300 328 V2.1.1 WLAN 802.11b/g/n

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**Applicant:** Compex Systems Pte Ltd

**Address:** No:9 Harrison Road, Harrison Industrial Building, #05-01,  
Singapore 369651

**Product:** 4x4 Wave-2 802.11BGN Mini PCIe WiFi Module

**Model No.:** WLE1216V2-20, WLE1216V2-20, WLE1216V2-20-I

**Brand Name:** COMPEX

**Standards:** ETSI EN 300 328 V2.1.1 (2016-11)

**Result:** Complies

**Test Date:** April 06 ~ 14, 2018

Reviewed By : \_\_\_\_\_  
( Jame Yuan )

Approved By : \_\_\_\_\_  
( Marlin Chen )



The test results relate only to the samples tested.

The test results shown in the test report are traceable to the national/international standards through the calibration of the equipment and evaluated measurement uncertainty herein.

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## Revision History

Report No.	Version	Description	Issue Date	Note
1801RSU037-E1	Rev. 01	Draft Report	04-18-2018	

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## 1. General Information

### 1.1. Applicant

Compex Systems Pte Ltd

No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore 369651

### 1.2. Manufacturer

Compex Systems Pte Ltd

No:9 Harrison Road, Harrison Industrial Building, #05-01, Singapore 369651

### 1.3. Testing Facility

#### Test Site

MRT Technology (Suzhou) Co., Ltd

#### Test Site Location

D8 Building, Youxin Industrial Park, No.2 Tian'edang Rd., Wuzhong Economic Development Zone, Suzhou, China

### Test Facility / Accreditations

Measurements were performed at MRT Laboratory located in Tian'edang Rd., Suzhou, China.

- MRT facility is a FCC registered (MRT Reg. No. 893164) test facility with the site description report on file and has met all the requirements specified in Section 2.948 of the FCC Rules.
- MRT facility is an IC registered (MRT Reg. No. 11384A-1) test laboratory with the site description on file at Industry Canada.
- MRT facility is a VCCI registered (R-20025, G-20034, C-20020, T-20020) test laboratory with the site description on file at VCCI Council.
- MRT Lab is accredited to ISO 17025 by the American Association for Laboratory Accreditation (A2LA) under the American Association for Laboratory Accreditation Program (A2LA Cert. No. 3628.01) in EMC, Telecommunications and Radio testing for FCC, Industry Canada, EU and TELEC Rules.



#### 1.4. Feature of Equipment under Test

Product Name:	4x4 Wave-2 802.11BGN Mini PCIe WiFi Module
Model No.:	WLE1216V2-20, WLE1216V2-20-I
Wi-Fi Specification:	802.11b/g/n

Note: The difference between two models is for different market requirement.

#### 1.5. Product Specification Subjective to this Standard

Wi-Fi Specification	
Frequency Range	802.11b/g/n-HT20: 2412 ~ 2472MHz 802.11n-HT40: 2422 ~ 2462MHz
Channel Number	802.11b/g/n-HT20: 13 802.11n-HT40: 9
Type of Modulation	802.11b: DSSS 802.11g/n: OFDM
Data Rate	802.11b: 1/2/5.5/11Mbps 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n: up to 600Mbps

Note: For other features of this EUT, test report will be issued separately.

## 1.6. Working Frequencies for this report

802.11b/g/n-HT20

Channel	Frequency	Channel	Frequency	Channel	Frequency
01	2412 MHz	02	2417 MHz	03	2422 MHz
04	2427 MHz	05	2432 MHz	06	2437 MHz
07	2442 MHz	08	2447 MHz	09	2452 MHz
10	2457 MHz	11	2462 MHz	12	2467 MHz
13	2472 MHz	--	--	--	--

802.11n-HT40

Channel	Frequency	Channel	Frequency	Channel	Frequency
03	2422 MHz	04	2427 MHz	05	2432 MHz
06	2437 MHz	07	2442 MHz	08	2447 MHz
09	2452 MHz	10	2457 MHz	11	2462 MHz

## 1.7. Description of Available Antennas

Antenna Type	Frequency Band (GHz)	TX Paths	Max Peak Gain (dBi)
Dipole Antenna	2.4	4	5
Panel Antenna	2.4	4	11

Note 1: The device didn't support beam-forming technology and Cyclic Delay Diversity (CDD) technology, and the transmit signals are uncorrected.


Note 2: We selected the max peak gain antenna to perform all RF conducted test and both of them for radiated test.

## 1.8. Description of Support Units

The EUT has been tested with associated equipment below:

Description	Manufacturer	Model No.
PCB Board	Compex Systems Pte Ltd	WPQ864HV

### 1.9. Description of Antenna RF Port

Antenna RF Port				
--	2.4GHz RF Port			
Software Control Port	Ant 0	Ant 1	Ant 2	Ant 3
				



### 1.10. Application Form for Testing

Modulation Type	
<input type="checkbox"/>	FHSS
<input checked="" type="checkbox"/>	other forms of modulation
Adaptivity Equipment	
<input type="checkbox"/>	Non-Adaptive Equipment:
	The maximum RF Output Power (e.i.r.p.): ... dBm
	The maximum (corresponding) Duty Cycle: ... %
<input checked="" type="checkbox"/>	Adaptive Equipment without the possibility to switch to a non-adaptive mode:
<input checked="" type="checkbox"/>	The equipment has implemented an LBT based DAA mechanism:
	<input type="checkbox"/> The equipment is Frame Based equipment
	<input checked="" type="checkbox"/> The equipment is Load Based equipment
	The CCA time implemented by the equipment: ..... $\mu$ s
	The value q as referred to in clause 4.3.2.5.2.2.2 .....
	<input type="checkbox"/> The equipment can switch dynamically between Frame Based and Load Based equipment
<input type="checkbox"/>	The equipment has implemented an non-LBT based DAA mechanism
<input type="checkbox"/>	The equipment can operate in more than one adaptive mode
<input type="checkbox"/>	Adaptive Equipment which can also operate in a non-adaptive mode
The Worst Case Operational Mode for Each of The Following Tests	
<input checked="" type="checkbox"/>	RF Output Power: 19.68dBm
<input checked="" type="checkbox"/>	Power Spectral Density: 9.35dBm/MHz
<input type="checkbox"/>	Duty cycle, Tx-Sequence, Tx-gap
<input type="checkbox"/>	Accumulated Transmit time, Frequency Occupation & Hopping Sequence
<input type="checkbox"/>	Medium Utilisation:
<input checked="" type="checkbox"/>	Adaptivity: 1.926ms, 124.0us
<input checked="" type="checkbox"/>	Occupied Channel Bandwidth: 36.14MHz
<input checked="" type="checkbox"/>	Transmitter Unwanted Emissions in the OOB Domain: -32.97dBm/MHz
<input checked="" type="checkbox"/>	Transmitter Unwanted Emissions in the Spurious Domain: -62.1dBm
<input checked="" type="checkbox"/>	Receiver Spurious Emissions: -63.0dBm
<input checked="" type="checkbox"/>	Receiver Blocking: 0.2% (PER)
Antenna Category	
<input checked="" type="checkbox"/>	Integral antenna (antenna permanently attached)
<input type="checkbox"/>	Temporary RF connector provided
<input checked="" type="checkbox"/>	No temporary RF connector provided

Device Type			
<input checked="" type="checkbox"/>	Stand-alone		
<input type="checkbox"/>	Combined (EUT where the radio part is fully integrated within another device) Combined Equipment - Brand Name / Model No.:		
<input type="checkbox"/>	Plug-in radio (EUT intended for a variety of host systems) Host System - Brand Name / Model No.:		
Operating Conditions			
<input type="checkbox"/>	AC Mains AC Voltage Range:100 - 240 V	<input checked="" type="checkbox"/>	DC State DC Voltage: POE (DC 56V)
Type of DC Source <input type="checkbox"/> Internal Power supply			
<input checked="" type="checkbox"/> External power supply or AC/DC adapter			
<input type="checkbox"/> Battery			
<input checked="" type="checkbox"/>	Temperature Range: -20 ~ 70°C		
Geo-Location Capability Supported by The Equipment			
<input type="checkbox"/>	Yes <input type="checkbox"/> The geographical location determined by the equipment is not accessible to the user.		
<input checked="" type="checkbox"/>	No		

### 1.11. Standards Applicable for Testing

The EUT complies with the requirements of ETSI EN 300 328 V2.1.1.

## 2. Test Configuration of Equipment under Test

### 2.1. Description of Test Mode

Test Mode
Mode 1: Transmit by 802.11b (1Mbps)
Mode 2: Transmit by 802.11g (6Mbps)
Mode 3: Transmit by 802.11n-HT20 (MCS24)
Mode 4: Transmit by 802.11n-HT40 (MCS24)
Mode 5: Receive by 802.11b
Mode 6: Receive by 802.11g
Mode 7: Receive by 802.11n-HT20
Mode 8: Receive by 802.11n-HT40

### 2.2. Description of Test Software

The test utility software used during testing was “QRCT”, and the version was “3.0.268.0”.

Final Power Parameter Value

Test Mode	Test Channel (MHz)	Power Parameter Value				
		SISO Mode				MIMO Mode
		Ant 0	Ant 1	Ant 2	Ant 3	Ant 0+1+2+3
802.11b	2412	5.5	6.0	6.0	6.0	Not Support
	2442	6.0	6.0	6.0	6.0	
	2472	5.0	6.0	6.0	6.0	
802.11g	2412	7.5	8.0	7.5	7.5	
	2442	7.5	8.0	7.5	7.5	
	2472	7.5	8.0	7.5	7.5	
802.11n-HT20	2412	Not Support				2.0
	244					2.0
	2472					2.0
802.11n-HT40	2412					2.0
	2442					2.0
	2462					2.0

### 3. Test Summary

Clause (EN 300328)	Test Parameter	Result (Pass/Fail)	Remark
Transmitter Parameter			
4.3.2.2	RF Output Power	Pass	---
4.3.2.3	Power Spectral Density	Pass	---
4.3.2.7	Occupied Channel Bandwidth	Pass	---
4.3.2.8	Transmitter Unwanted Emissions in the out-of-band Domain	Pass	---
4.3.2.9	Transmitter Spurious Emissions	Pass	---
Receiver Parameters			
4.3.2.10	Receiver Spurious Emissions	Pass	---
4.3.2.11	Receiver Blocking	Pass	
Adaptive Test Item			
4.3.2.6	Adaptivity	Pass	---
Non-Adaptive Test Item			
4.3.2.4	Duty cycle, Tx-Sequence, Tx-gap	N/A	Only applicable for non-adaptive equipment with output power >10dBm
4.3.2.5	Medium Utilisation (MU) factor	N/A	
Geo-location Mechanism			
4.3.2.12	Geo-location Capability	N/A	This device doesn't have Geo-location Capability.
Note: This device belongs to adaptive equipment.			

## 4. RF Output Power

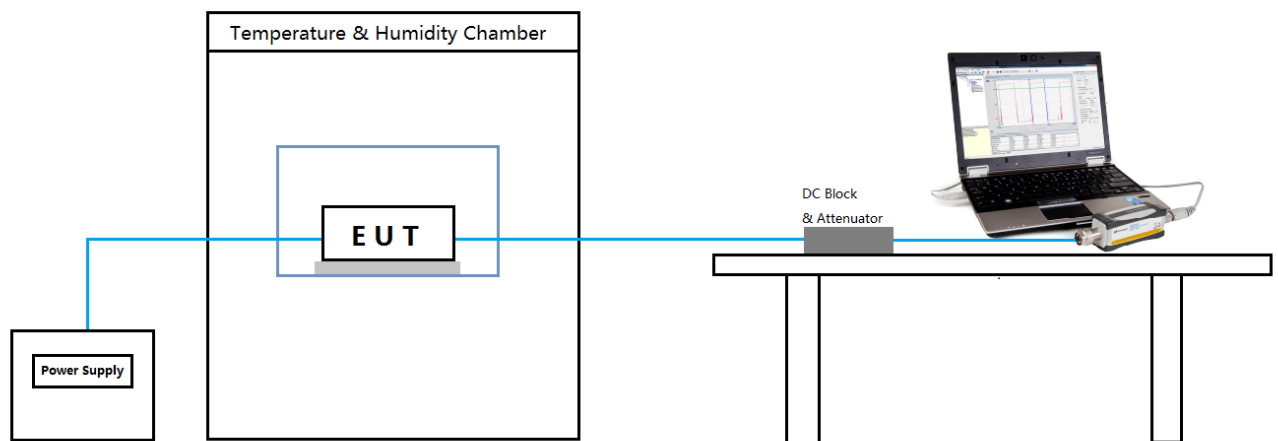
### 4.1. Limit

The maximum RF output power for adaptive equipment using wide band modulations other than FHSS shall be equal to or less than 20dBm.

Test Conditions	Limit
Normal and Extreme Temperature Conditions	20dBm (E.I.R.P)

### 4.2. Test Setup

#### For Conducted Measurement



### 4.3. Test Procedure

Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.2.2.1.

#### 4.4. Test Result

Product	4x4 Wave-2 802.11BGN Mini PCIe WiFi Module	Temperature	-20 ~ 70°C
Test Engineer	Hunk Li	Relative Humidity	50 ~ 54%
Test Site	TR3	Test Date	2018/04/06 ~ 2018/04/08

##### Normal Conditions (Temperature 25°C)

Mode	Channel	Freq. (MHz)	RF Output Power (dBm)				Max EIRP Power (dBm)	Limit (dBm)	Result
			Ant 0	Ant 1	Ant 2	Ant 3			
1TX									
11b	1	2412	5.90	5.96	6.29	6.16	17.29	20	Pass
11b	7	2442	6.13	6.11	6.23	6.17	17.23	20	Pass
11b	13	2472	5.23	6.14	6.18	6.13	17.18	20	Pass
11g	1	2412	8.48	8.65	8.44	8.39	19.65	20	Pass
11g	7	2442	8.38	8.56	8.35	8.35	19.56	20	Pass
11g	13	2472	8.39	8.65	8.57	8.36	19.65	20	Pass
4TX									
11n-HT20	1	2412	2.14	2.07	2.81	2.71	19.47	20	Pass
11n-HT20	7	2442	2.20	2.27	2.76	2.32	19.41	20	Pass
11n-HT20	13	2472	1.76	2.59	2.44	2.80	19.44	20	Pass
11n-HT40	3	2422	2.02	2.02	2.68	2.70	19.39	20	Pass
11n-HT40	7	2442	2.10	1.73	2.35	2.61	19.23	20	Pass
11n-HT40	11	2462	2.31	2.14	2.29	2.30	19.28	20	Pass

Note:

1. For 802.11b/g

Max EIRP Power (dBm) = Max Each RF Output Power (dBm) + Antenna Gain (dBi).

2. For 802.11n

Max EIRP Power (dBm) =  $10 \cdot \log\{10^{(\text{Ant 0 RF Output Power})/10} + 10^{(\text{Ant 1 RF Output Power})/10} + 10^{(\text{Ant 2 RF Output Power})/10} + 10^{(\text{Ant 3 RF Output Power})/10}\}$  (dBm) + Antenna Gain (dBi).

3. The measurement duration shall be long enough to ensure a minimum number of 10 bursts are captured.  
And during the test, 15 bursts were captured.

**Extreme Conditions (Temperature -20°C)**

Mode	Channel	Freq. (MHz)	RF Output Power (dBm)				Max EIRP Power (dBm)	Limit (dBm)	Result
			Ant 0	Ant 1	Ant 2	Ant 3			
1TX									
11b	1	2412	6.00	6.19	6.37	6.32	17.37	20	Pass
11b	7	2442	6.24	6.18	6.33	6.40	17.40	20	Pass
11b	13	2472	5.46	6.19	6.21	6.51	17.51	20	Pass
11g	1	2412	8.45	8.63	8.42	8.59	19.63	20	Pass
11g	7	2442	8.43	8.54	8.60	8.48	19.60	20	Pass
11g	13	2472	8.54	8.57	8.61	8.54	19.61	20	Pass
4TX									
11n-HT20	1	2412	2.51	1.84	2.59	2.95	19.51	20	Pass
11n-HT20	7	2442	2.21	2.24	2.78	2.92	19.57	20	Pass
11n-HT20	13	2472	2.03	2.64	2.79	3.12	19.68	20	Pass
11n-HT40	3	2422	2.18	2.10	2.62	2.95	19.50	20	Pass
11n-HT40	7	2442	2.10	2.22	2.61	3.00	19.52	20	Pass
11n-HT40	11	2462	2.10	2.35	2.64	3.05	19.57	20	Pass

Note:

- For 802.11b/g

Max EIRP Power (dBm) = Max Each RF Output Power (dBm) + Antenna Gain (dBi).

- For 802.11n

Max EIRP Power (dBm) =  $10 \cdot \log\{10^{(\text{Ant 0 RF Output Power})/10} + 10^{(\text{Ant 1 RF Output Power})/10} + 10^{(\text{Ant 2 RF Output Power})/10} + 10^{(\text{Ant 3 RF Output Power})/10}\}$  (dBm) + Antenna Gain (dBi).

- The measurement duration shall be long enough to ensure a minimum number of 10 bursts are captured. And during the test, 15 bursts were captured.

### Extreme Conditions (Temperature 70°C)

Mode	Channel	Freq. (MHz)	RF Output Power (dBm)				Max EIRP Power (dBm)	Limit (dBm)	Result
			Ant 0	Ant 1	Ant 2	Ant 3			
1TX									
11b	1	2412	5.79	5.77	5.97	6.04	17.04	20	Pass
11b	7	2442	6.22	6.02	6.12	6.21	17.22	20	Pass
11b	13	2472	5.32	6.12	6.03	6.11	17.12	20	Pass
11g	1	2412	8.31	7.90	8.17	8.22	19.31	20	Pass
11g	7	2442	8.46	7.80	8.07	8.08	19.46	20	Pass
11g	13	2472	8.19	8.10	8.09	8.10	19.19	20	Pass
4TX									
11n-HT20	1	2412	2.07	1.53	2.79	2.66	19.31	20	Pass
11n-HT20	7	2442	2.23	2.03	2.51	2.45	19.33	20	Pass
11n-HT20	13	2472	2.22	2.43	2.05	2.60	19.35	20	Pass
11n-HT40	3	2422	2.36	1.92	2.65	2.43	19.37	20	Pass
11n-HT40	7	2442	2.10	2.39	1.97	2.13	19.17	20	Pass
11n-HT40	11	2462	2.15	2.15	2.05	2.16	19.15	20	Pass

Note:

- For 802.11b/g

Max EIRP Power (dBm) = Max Each RF Output Power (dBm) + Antenna Gain (dBi).

- For 802.11n

Max EIRP Power (dBm) =  $10 \cdot \log\{10^{(\text{Ant 0 RF Output Power})/10} + 10^{(\text{Ant 1 RF Output Power})/10} + 10^{(\text{Ant 2 RF Output Power})/10} + 10^{(\text{Ant 3 RF Output Power})/10}\}$  (dBm) + Antenna Gain (dBi).

- The measurement duration shall be long enough to ensure a minimum number of 10 bursts are captured. And during the test, 15 bursts were captured.

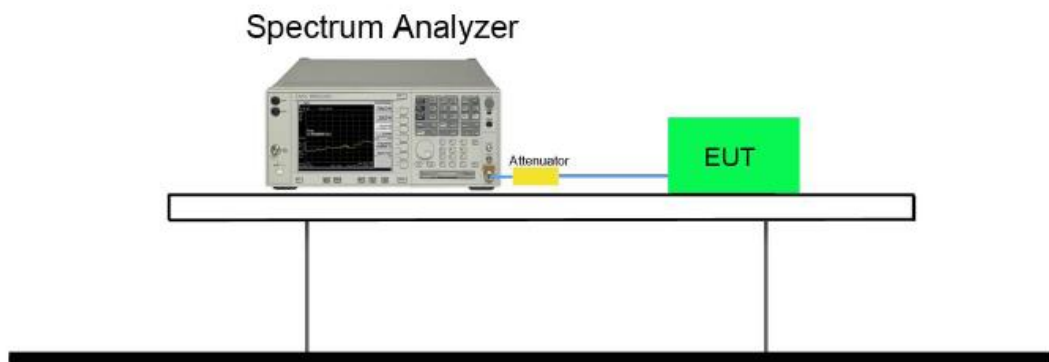


## 5. Power Spectral Density

### 5.1. Limit

The maximum Power Spectral Density is limited to 10dBm per MHz for equipment using wide band modulations other than FHSS.

### 5.2. Test Setup



### 5.3. Test Procedure

Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.3.2.1 (Option 1).

## 5.4. Test Result

Product	4x4 Wave-2 802.11BGN Mini PCIe WiFi Module	Temperature	25°C
Test Engineer	Hunk Li	Relative Humidity	54%
Test Site	TR3	Test Date	2018/04/08

Mode	Channel	Freq. (MHz)	Power Spectral Density (dBm/MHz)				Max PSD (dBm/MHz)	Limit (dBm/MHz)	Result
			Ant 0	Ant 1	Ant 2	Ant 3			
1TX									
11b	1	2412	9.04	9.10	9.33	9.16	9.33	10	Pass
11b	7	2442	9.21	9.23	9.35	9.24	9.35	10	Pass
11b	13	2472	8.22	9.12	9.19	9.18	9.19	10	Pass
11g	1	2412	8.07	8.23	7.97	7.96	8.23	10	Pass
11g	7	2442	7.92	8.09	7.88	7.76	8.09	10	Pass
11g	13	2472	7.79	8.06	7.98	7.81	8.06	10	Pass

Note: Max PSD (dBm/MHz) = Max Each Power Spectral Density (dBm/MHz).

Mode	Channel	Freq. (MHz)	Power Spectral Density (dBm/MHz)	Limit (dBm/MHz)	Result
4TX					
11n-HT20	1	2412	7.74	10	Pass
11n-HT20	7	2442	7.56	10	Pass
11n-HT20	13	2472	7.61	10	Pass
11n-HT40	3	2422	4.92	10	Pass
11n-HT40	7	2442	4.66	10	Pass
11n-HT40	11	2462	4.86	10	Pass

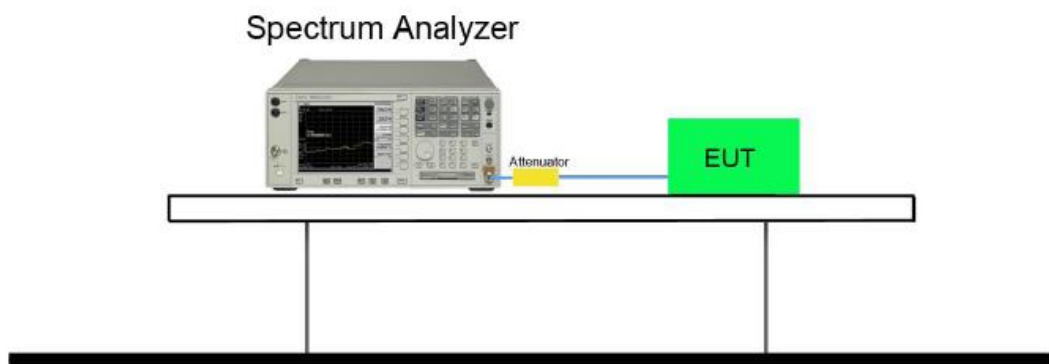
## 6. Duty Cycle, Tx-sequence, Tx-gap

### 6.1. Limit

The Duty Cycle shall be equal to or less than the maximum value declared by the supplier.

The Tx-sequence time shall be equal to or less than 10 ms. The minimum Tx-gap time following a Tx-sequence shall be equal to the duration of that proceeding Tx-sequence with a minimum of 3.5 ms.

### 6.2. Test Setup



### 6.3. Test Procedure

Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.2.2.1.3.

### 6.4. Test Result

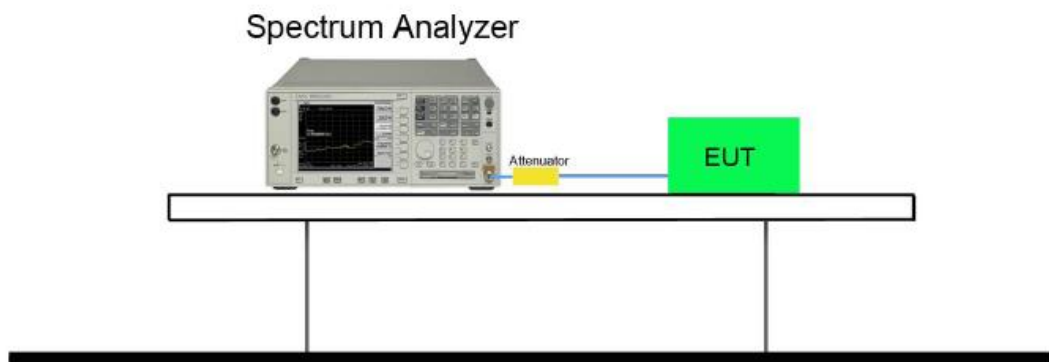
These requirements apply to non-adaptive equipment or to adaptive equipment when operating in a non-adaptive mode. So the item is not applicable.

## 7. Medium Utilisation (MU) factor

### 7.1. Limit

The maximum Medium Utilisation factor shall be 10 % for non-adaptive equipment using wide band modulations other than FHSS.

### 7.2. Test Setup



### 7.3. Test Procedure

Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.2.2.1.4.

### 7.4. Test Result

This requirement does not apply to adaptive equipment unless operating in a non-adaptive mode.  
So the item is not applicable.

## 8. Adaptivity

### 8.1. Limit

LBT based Detect and Avoid (Load Based Equipment may implement an LBT based spectrum sharing mechanism as described in IEEE 802.11-2012 clauses 9, 10, 16, 17, 19 and 20 or in IEEE 802.15.4-2011, clauses 4, 5 and 8.)

#### **Adaptivity Limit**

The CCA observation time shall be not less than 18 us.

The Channel Occupancy Time shall be less than 13 ms.

The minimum idle period shall be not less than 18 us.

When adding the interference signal, the EUT shall stop transmissions on the current operating channel.

#### **Short Control Signalling Transmissions Limit**

Short Control Signalling Transmissions shall have a maximum ratio of 10% within an observation period of 50ms.

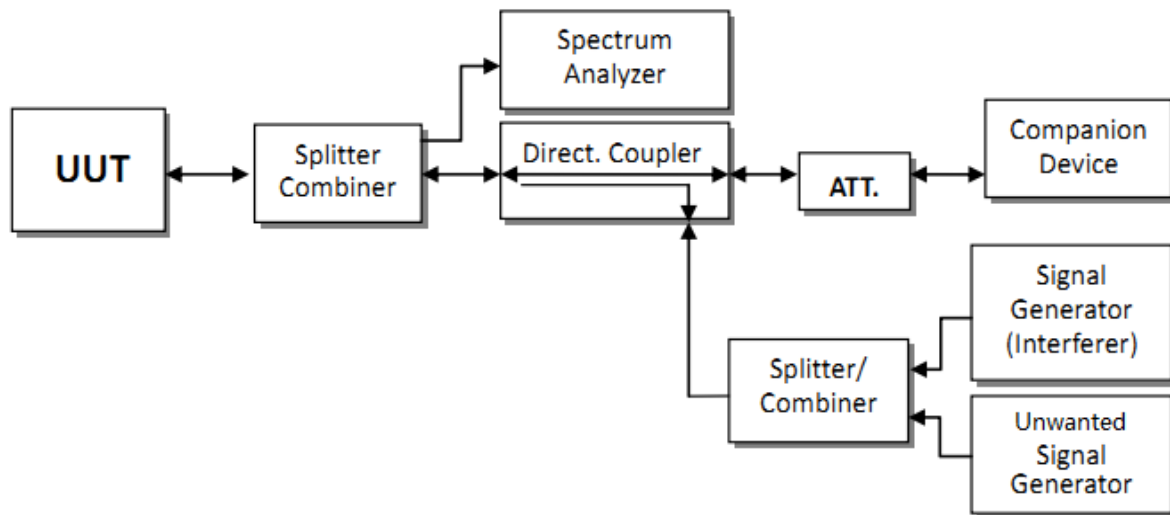
Adaptive equipment shall comply with the requirements in the presence of a unwanted Signal with characteristics as below.

Unwanted Signal parameters			
Wanted signal mean power from companion device	unwanted signal frequency [MHz]	Unwanted Signal power [dBm]	Type of interfering signal
-30dBm	2395 or 2488.5 (see note 1)	-35	CW
NOTE 1: The highest frequency shall be used for testing operating channels within the range 2400 MHz to 2442 MHz, while the lowest blocking frequency shall be used for testing operating channels within the range 2442 MHz to 2483.5 MHz.			
NOTE 2: The level specified is the level in front of the UUT antenna. In case of conducted measurements, this level has to be corrected by the actual antenna assembly gain.			

With the interfering signal present, adding the unwanted Signal, the EUT didn't resume any normal transmissions. When removal the interference and unwanted signal, the EUT was allowed to start transmissions again on this channel.

## 8.2. Test Setup

### For conducted measurements



## 8.3. Test Procedure

Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.6.2.1.

## 8.4. Test Result

Product	4x4 Wave-2 802.11BGN Mini PCIe WiFi Module	Temperature	23°C
Test Engineer	Dandy Li	Relative Humidity	54%
Test Time	2018/04/14	Test Site	TR3



Transmission stopped after interference added and the short control signaling less than 5ms.

The UUT did not resume any normal transmissions when adding the blocking signal.



Note: Detection Level =  $-70 + 10 \times \log_{10} (100 \text{ mW} / P_{\text{out}})$  ( $P_{\text{out}}$  in mW e.i.r.p) dBm/MHz  $\geq -70$  dBm/MHz We used the detection level (-70dBm/MHz) to perform adaptivity testing.

Test Result:

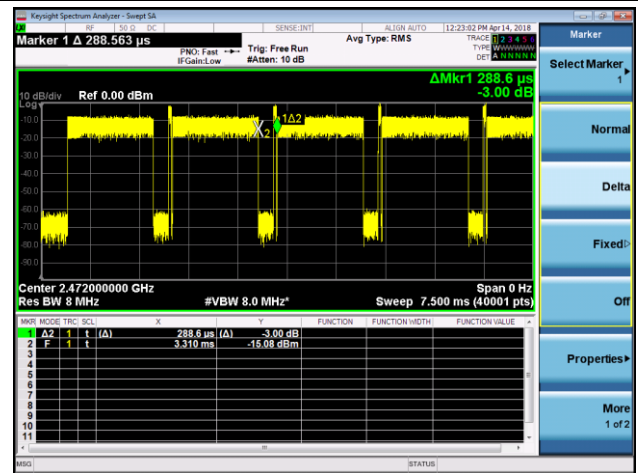
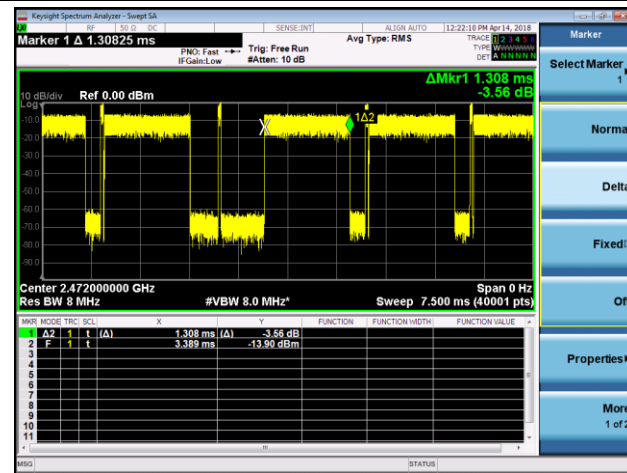
Pass



## 802.11b - 2472MHz

Maximum Channel Occupancy Time = 1.308ms

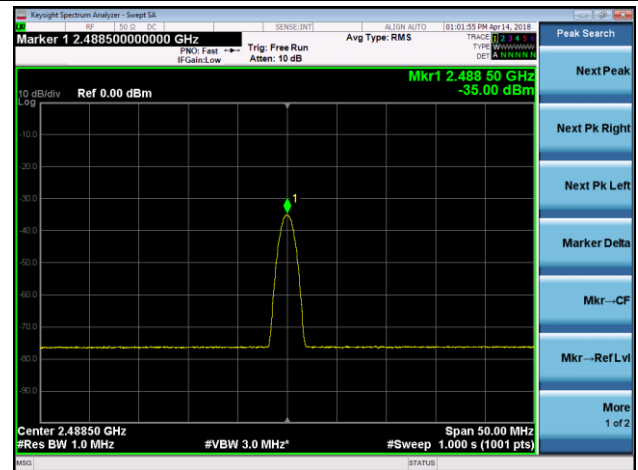
Minimum Idle Period = 288.6us



## Interference Signal Calibration

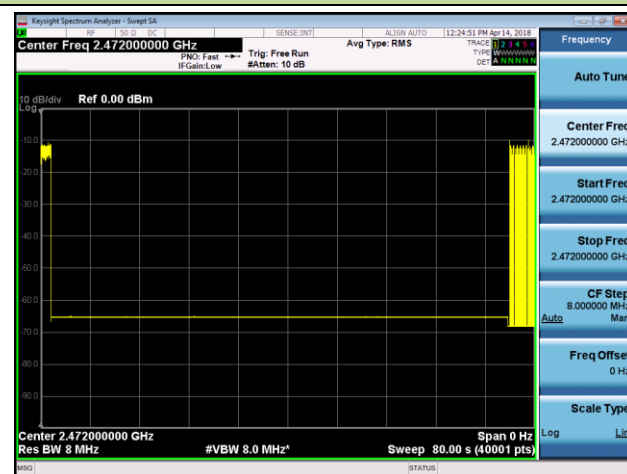


## Unwanted Signal Calibration



Transmission stopped after interference added and the short control signaling less than 5ms.

The UUT did not resume any normal transmissions when adding the blocking signal



Note: Detection Level =  $-70 + 10 \times \log_{10} (100 \text{ mW} / P_{\text{out}})$  ( $P_{\text{out}}$  in mW e.i.r.p) dBm/MHz  $\geq -70$  dBm/MHz We used the detection level (-70dBm/MHz) to perform adaptivity testing.

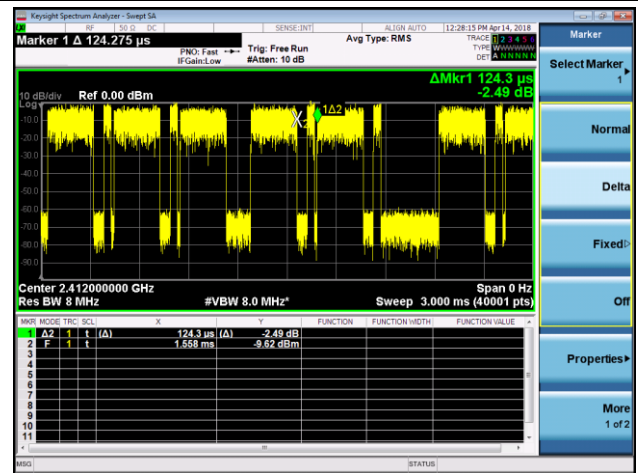
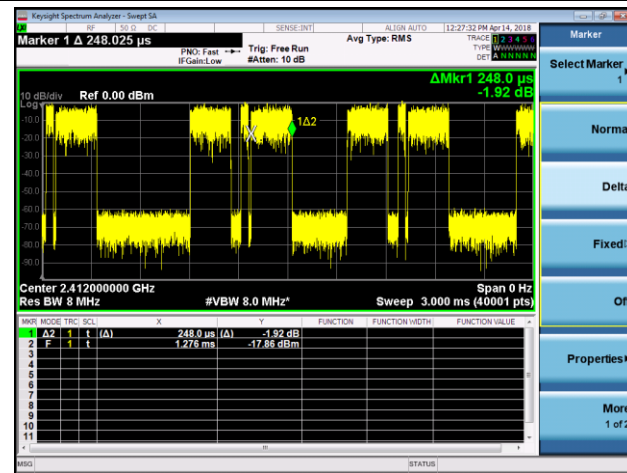
Test Result:

Pass

## 802.11g - 2412MHz

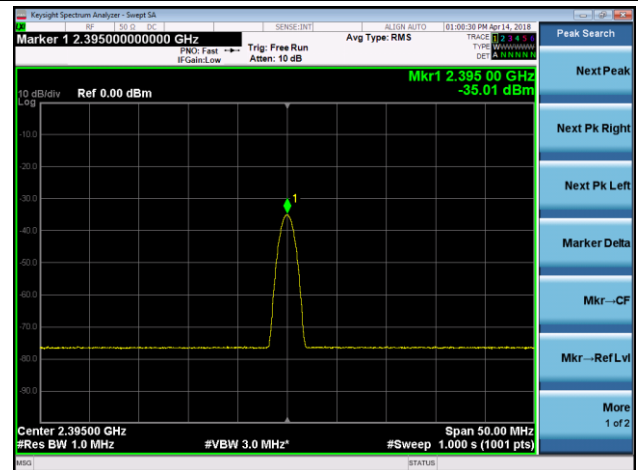
Maximum Channel Occupancy Time = 248.0us

Minimum Idle Period = 124.3us



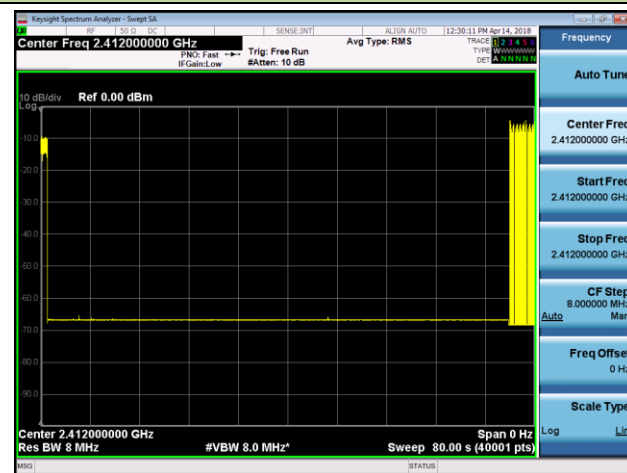
## Interference Signal Calibration

## Unwanted Signal Calibration



Transmission stopped after interference added and the short control signaling less than 5ms.

The UUT did not resume any normal transmissions when adding the blocking signal.



Note: Detection Level =  $-70 + 10 \times \log_{10} (100 \text{ mW} / P_{\text{out}})$  ( $P_{\text{out}}$  in mW e.i.r.p) dBm/MHz  $\geq -70$  dBm/MHz We used the detection level (-70dBm/MHz) to perform adaptivity testing.

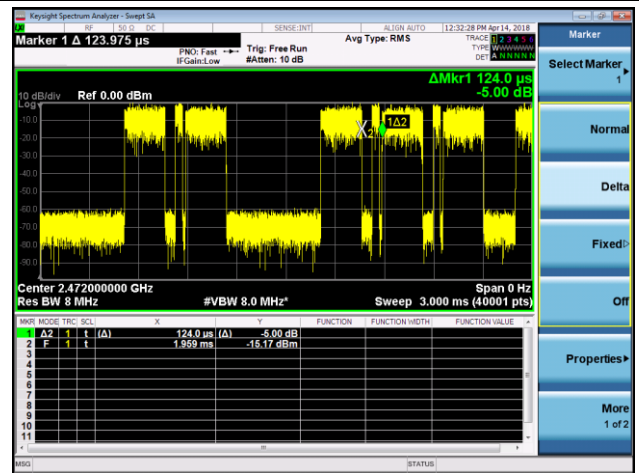
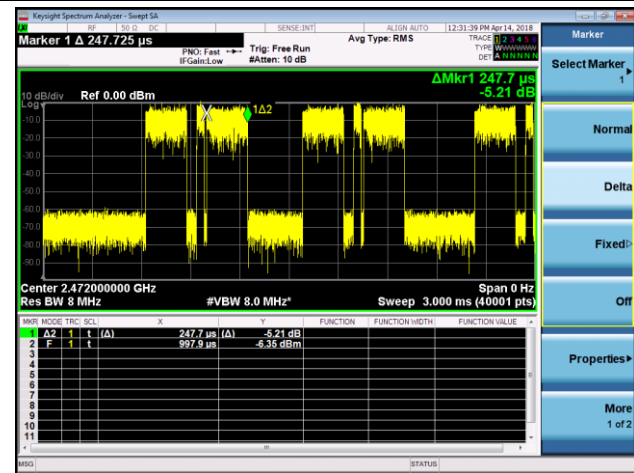
Test Result:

Pass

## 802.11g - 2472MHz

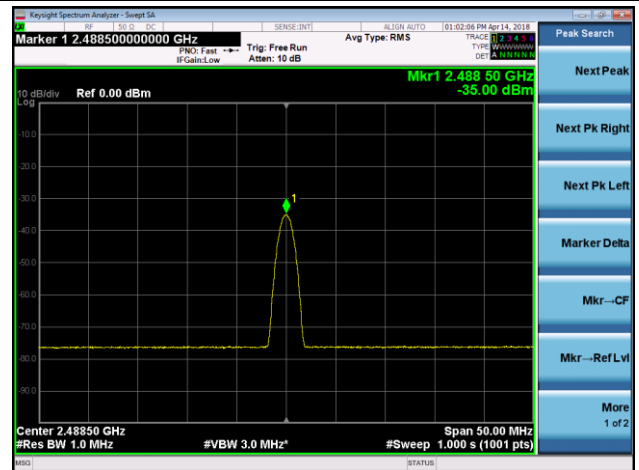
Maximum Channel Occupancy Time = 247.7us

Minimum Idle Period = 124.0us



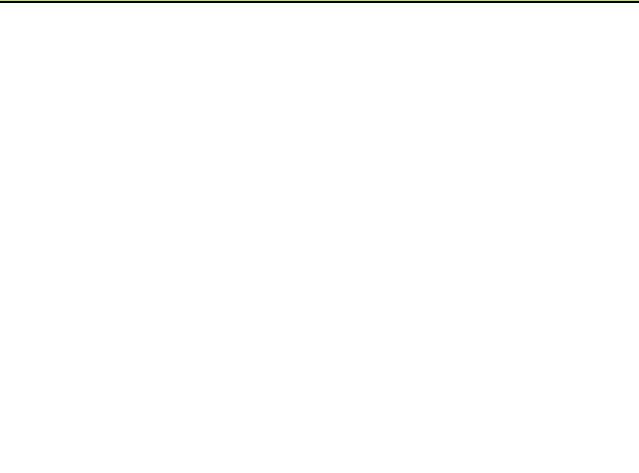
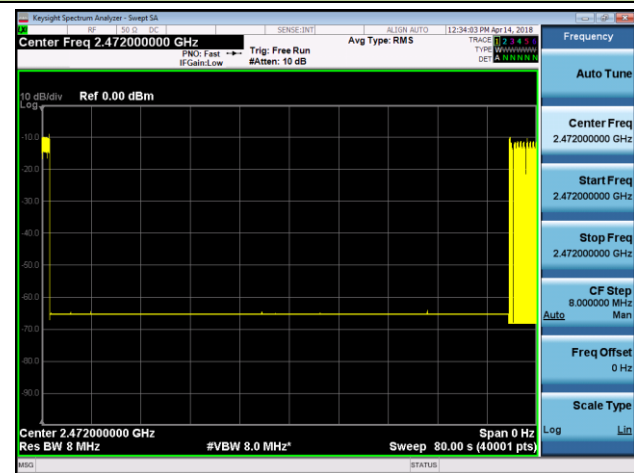
## Interference Signal Calibration

## Unwanted Signal Calibration



Transmission stopped after interference added and the short control signaling less than 5ms.

The UUT did not resume any normal transmissions when adding the blocking signal



Note: Detection Level =  $-70 + 10 \times \log_{10} (100 \text{ mW} / P_{\text{out}})$  ( $P_{\text{out}}$  in mW e.i.r.p)  $\text{dBm/MHz} \geq -70 \text{ dBm/MHz}$  We used the detection level (-70dBm/MHz) to perform adaptivity testing.

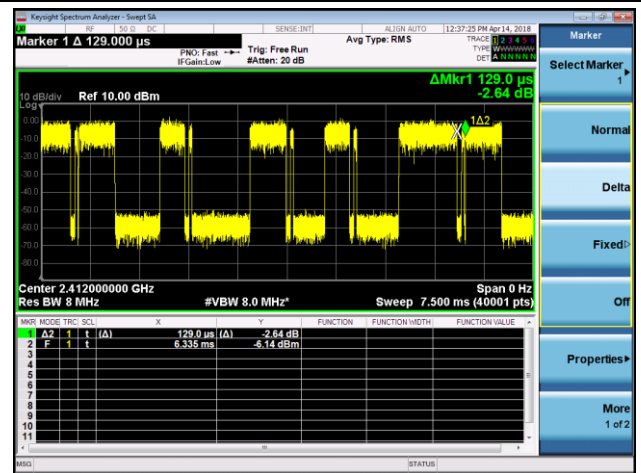
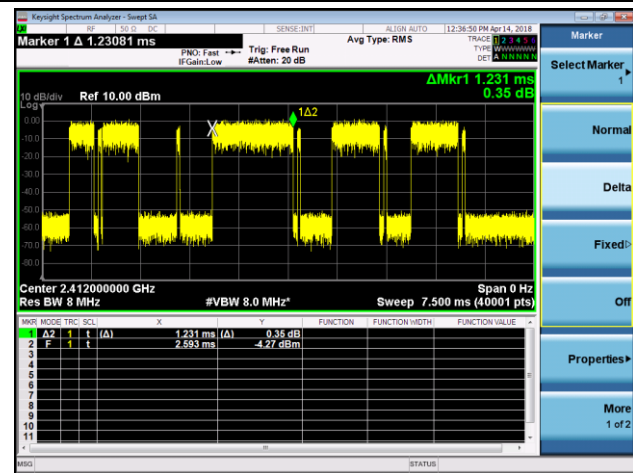
Test Result:

Pass

### 802.11n-HT20 - 2412MHz

Maximum Channel Occupancy Time = 1.231ms

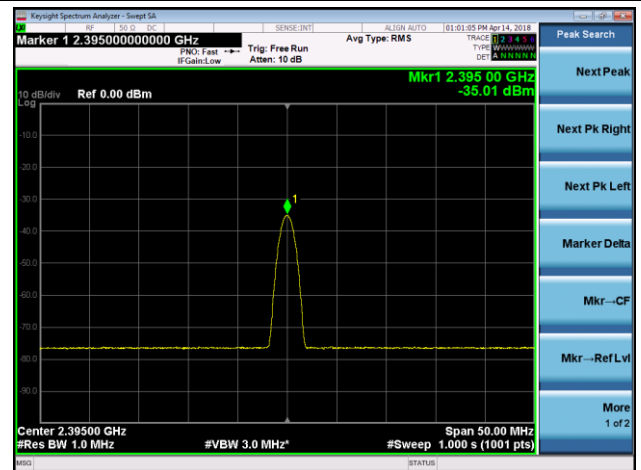
Minimum Idle Period = 129.0us



### Interference Signal Calibration

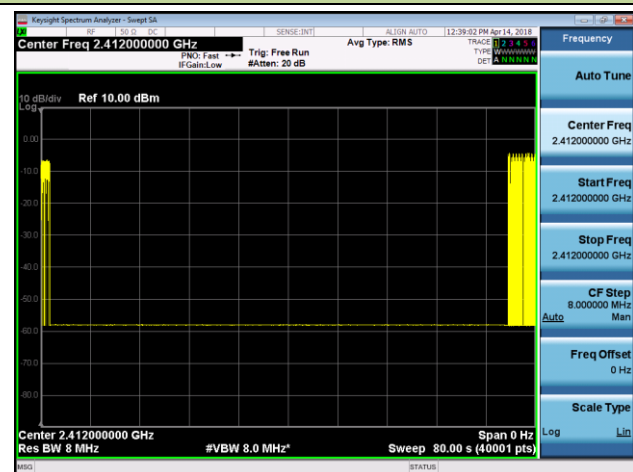


### Unwanted Signal Calibration



Transmission stopped after interference added and the short control signaling less than 5ms.

The UUT did not resume any normal transmissions when adding the blocking signal.



Note: Detection Level =  $-70 + 10 \times \log_{10} (100 \text{ mW} / P_{\text{out}})$  ( $P_{\text{out}}$  in mW e.i.r.p) dBm/MHz  $\geq -70$  dBm/MHz We used the detection level (-70dBm/MHz) to perform adaptivity testing.

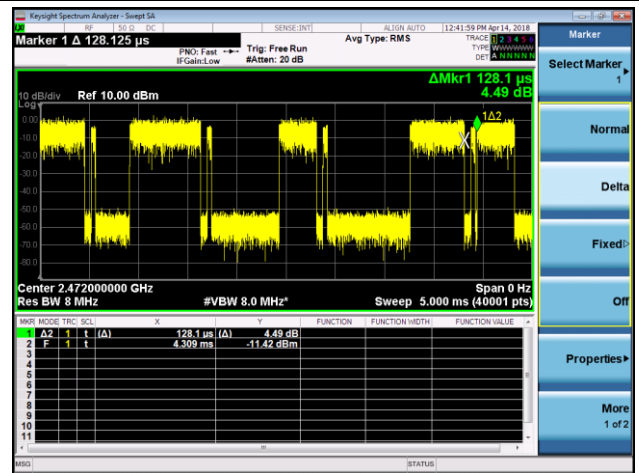
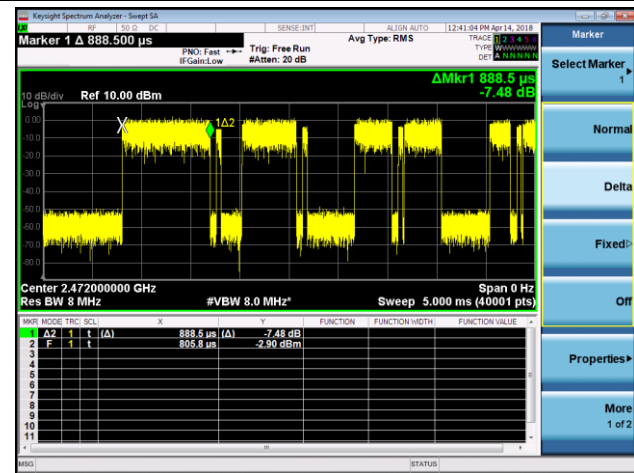
Test Result:

Pass

## 802.11n-HT20 - 2472MHz

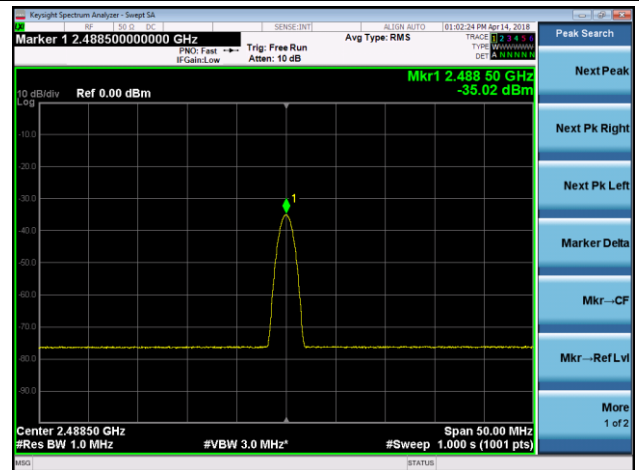
Maximum Channel Occupancy Time = 888.5us

Minimum Idle Period = 128.1us



## Interference Signal Calibration

## Unwanted Signal Calibration



Transmission stopped after interference added and the short control signaling less than 5ms.

The UUT did not resume any normal transmissions when adding the blocking signal



Note: Detection Level =  $-70 + 10 \times \log_{10} (100 \text{ mW} / P_{\text{out}})$  ( $P_{\text{out}}$  in mW e.i.r.p) dBm/MHz  $\geq -70$  dBm/MHz We used the detection level (-70dBm/MHz) to perform adaptivity testing.

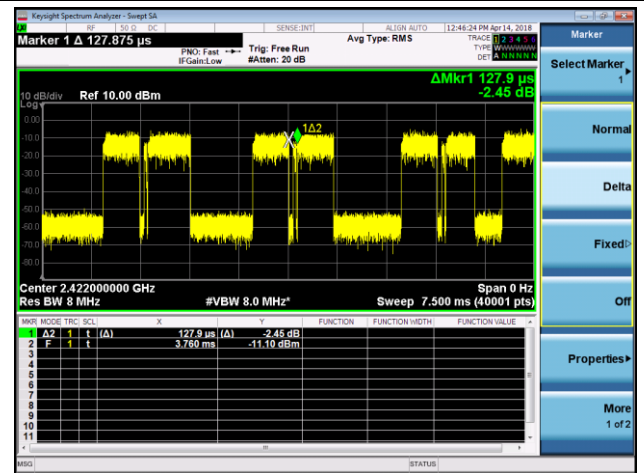
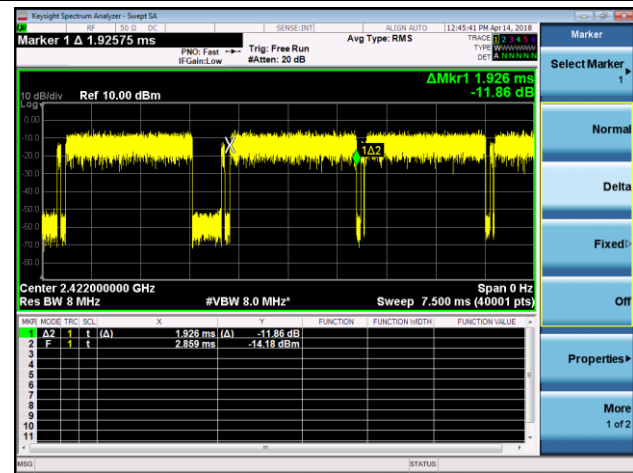
Test Result:

Pass

## 802.11n-HT40 - 2422MHz

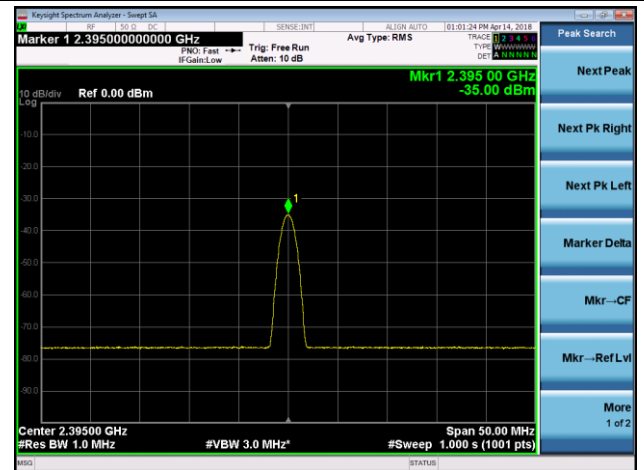
Maximum Channel Occupancy Time = 1.926ms

Minimum Idle Period = 127.9us



## Interference Signal Calibration

## Unwanted Signal Calibration



Transmission stopped after interference added and the short control signaling less than 5ms.

The UUT did not resume any normal transmissions when adding the blocking signal



Note: Detection Level =  $-70 + 10 \times \log_{10} (100 \text{ mW} / P_{\text{out}})$  ( $P_{\text{out}}$  in mW e.i.r.p) dBm/MHz  $\geq -70$  dBm/MHz We used the detection level (-70dBm/MHz) to perform adaptivity testing.

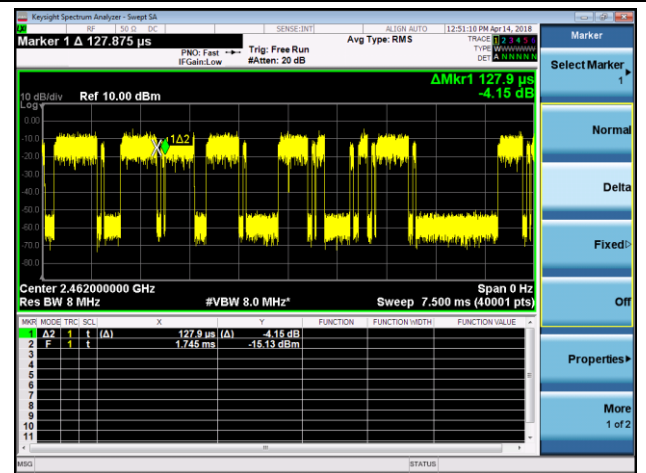
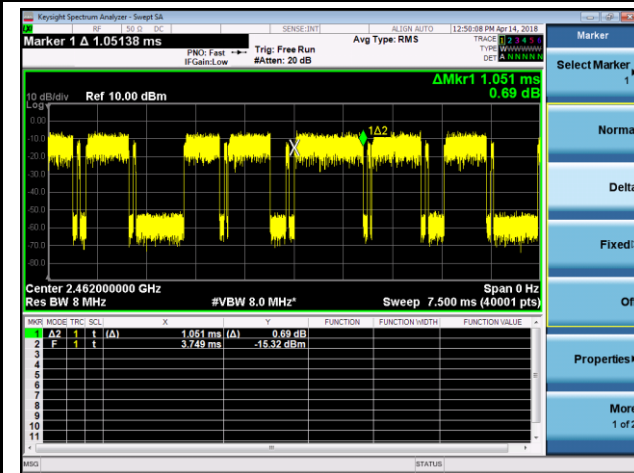
Test Result:

Pass

## 802.11n-HT40 - 2462MHz

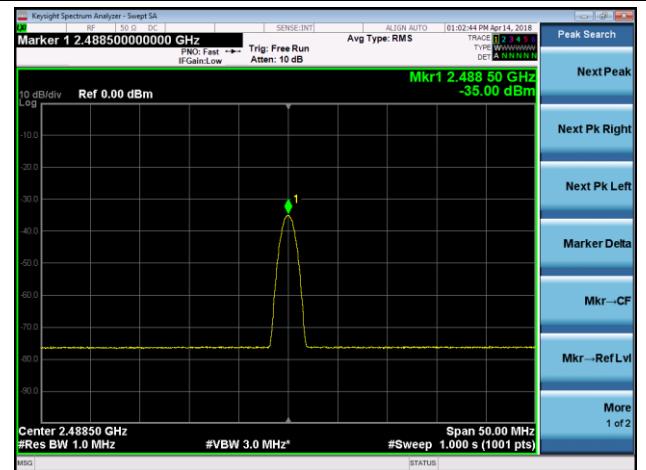
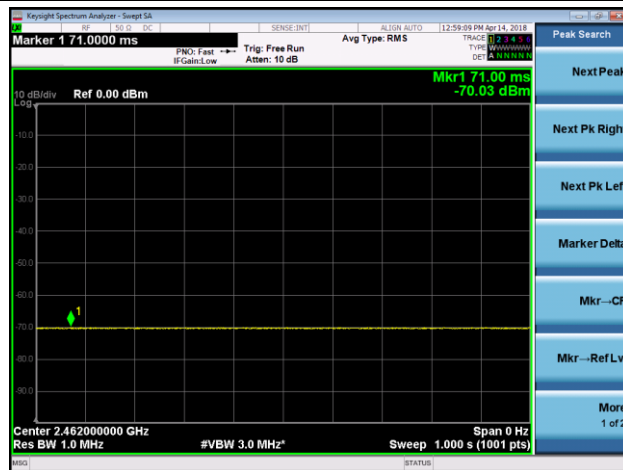
Maximum Channel Occupancy Time = 1.051ms

Minimum Idle Period = 127.9us



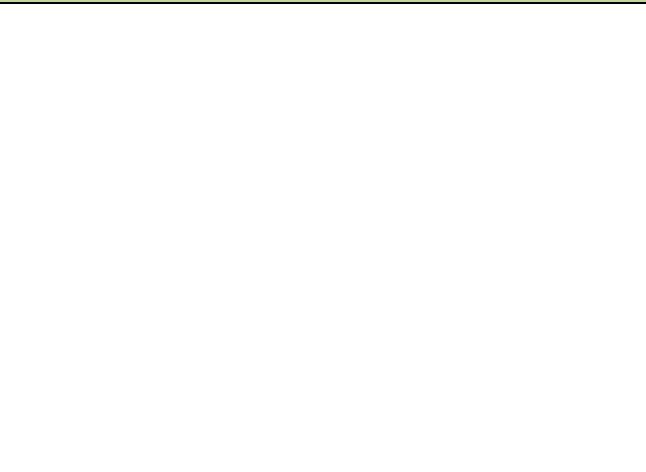
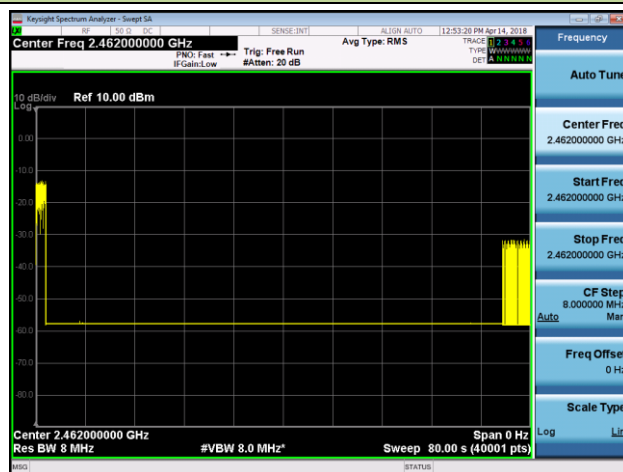
## Interference Signal Calibration

## Unwanted Signal Calibration



Transmission stopped after interference added and the short control signaling less than 5ms.

The UUT did not resume any normal transmissions when adding the blocking signal



Note: Detection Level =  $-70 + 10 \times \log_{10} (100 \text{ mW} / P_{\text{out}})$  ( $P_{\text{out}}$  in mW e.i.r.p) dBm/MHz  $\geq -70$  dBm/MHz We used the detection level (-70dBm/MHz) to perform adaptivity testing.

Test Result:

Pass

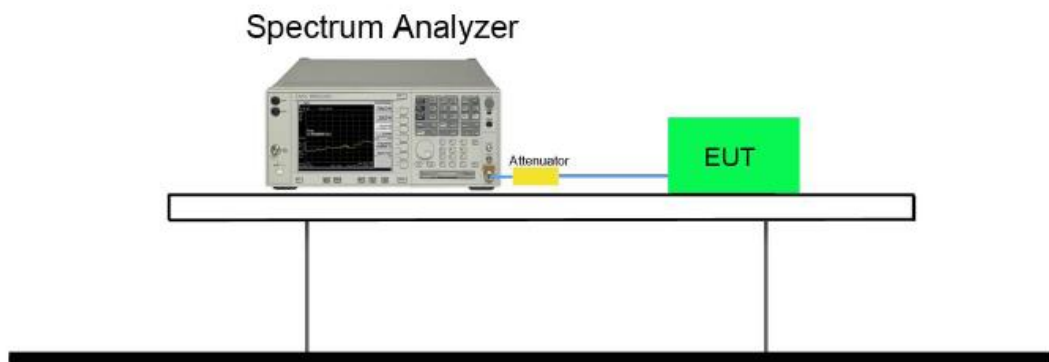


## 9. Occupied Channel Bandwidth

### 9.1. Limit

The Occupied Channel Bandwidth for each hopping frequency shall fall completely within the band given in 2.4GHz to 2.4835GHz.

### 9.2. Test Setup



### 9.3. Test Procedure

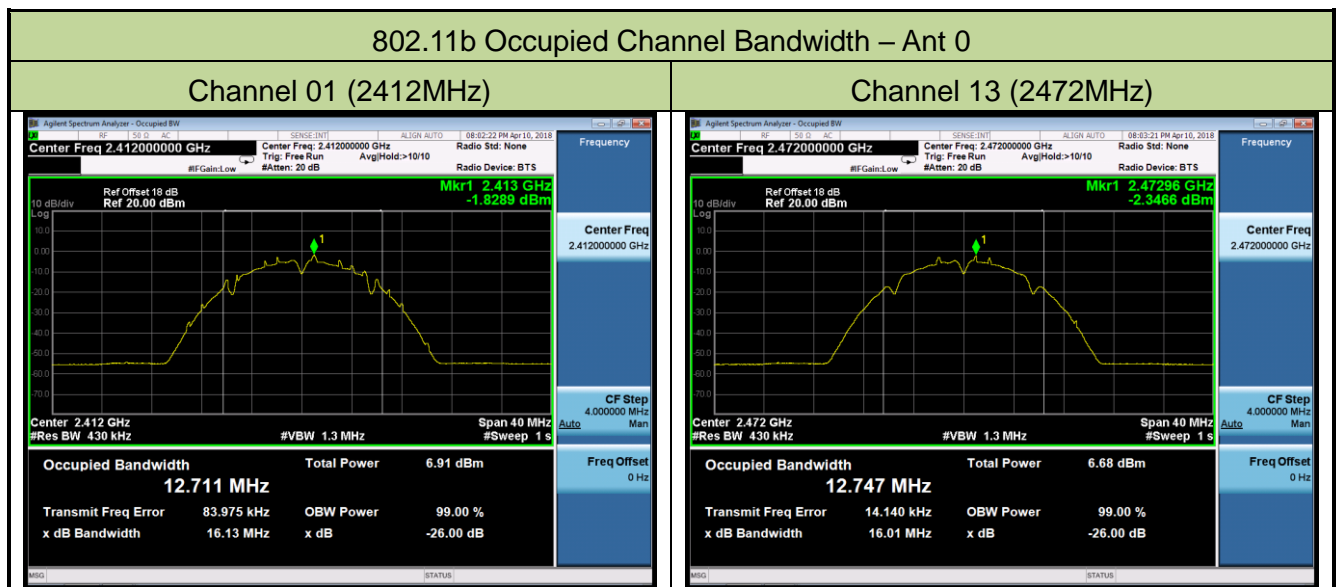
Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.7.2.1.



#### 9.4. Test Result

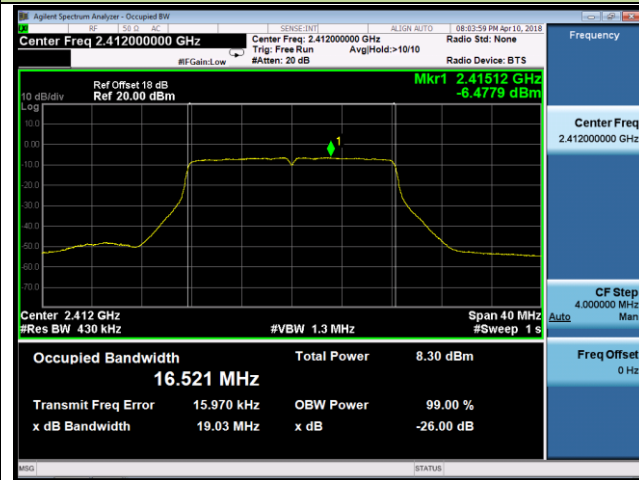
Product	4x4 Wave-2 802.11BGN Mini PCIe WiFi Module	Temperature	25°C
Test Engineer	Hunk Li	Relative Humidity	54%
Test Site	TR3	Test Date	2018/04/10

Test Mode	Channel No.	Frequency (MHz)	99% Bandwidth (MHz)	Frequency Range (MHz)	Result
Ant 3					
11b	01	2412	12.71	2405.65	Pass
11b	13	2472	12.75	2478.38	Pass
11g	01	2412	16.52	2403.74	Pass
11g	13	2472	16.54	2480.27	Pass
Ant 3 / Ant 0 + 1 + 2 + 3					
11n-HT20	01	2412	17.69	2403.16	Pass
11n-HT20	13	2472	17.71	2480.86	Pass
11n-HT40	03	2422	36.14	2403.93	Pass
11n-HT40	11	2462	36.11	2480.06	Pass

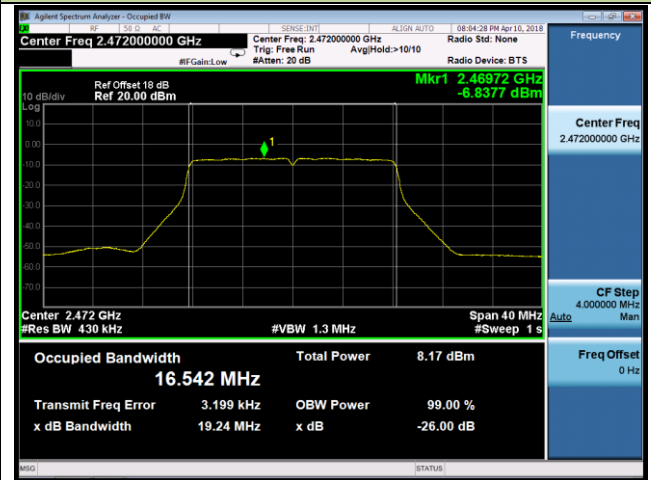


## 802.11g Occupied Channel Bandwidth – Ant 0

### Channel 01 (2412MHz)

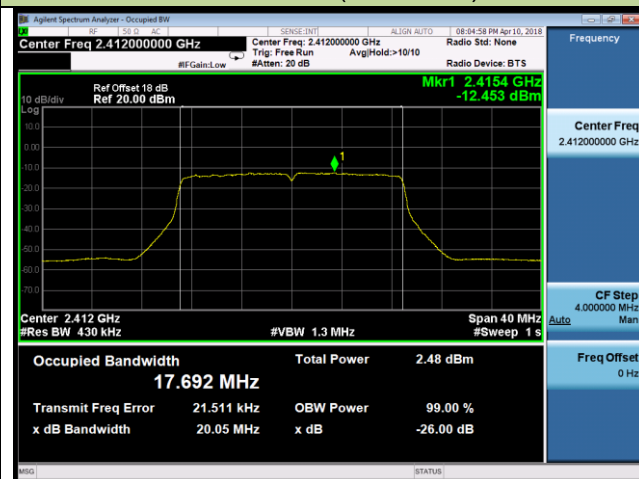


### Channel 13 (2472MHz)

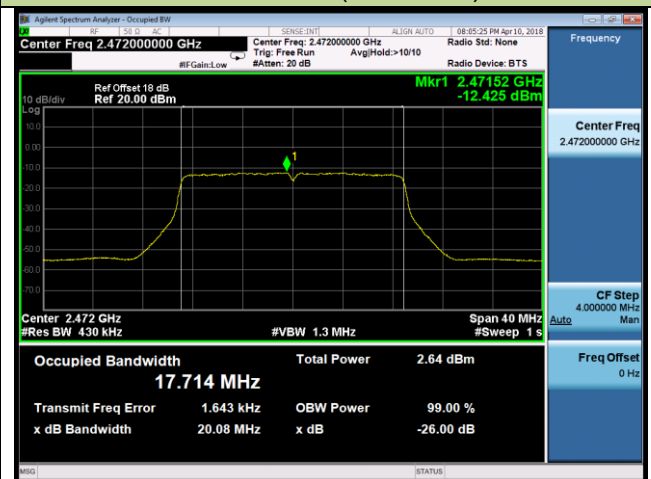


## 802.11n-HT20 Occupied Channel Bandwidth – Ant 0 / Ant 0 + 1 + 2 + 3

### Channel 01 (2412MHz)

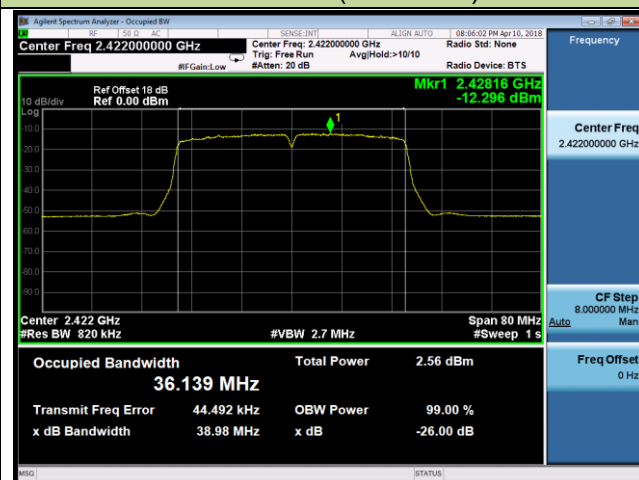


### Channel 13 (2472MHz)

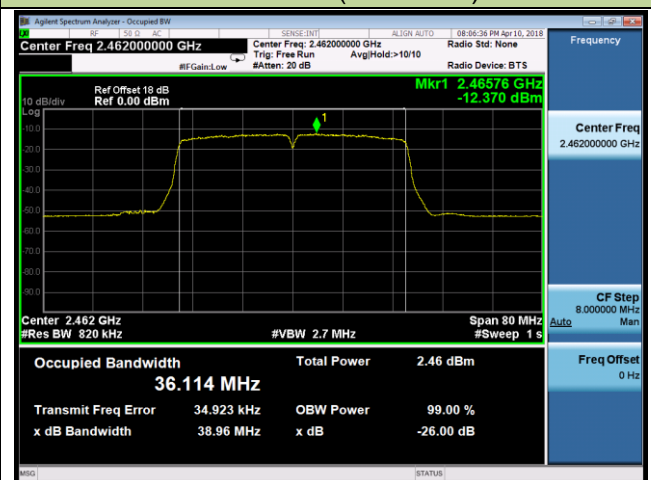


## 802.11n-HT40 Occupied Channel Bandwidth – Ant 0 / Ant 0 + 1 + 2 + 3

### Channel 03 (2422MHz)



### Channel 11 (2462MHz)



## 10. Transmitter unwanted emissions in the out-of-band domain

### 10.1. Limit

The transmitter unwanted emissions in the out-of-band domain but outside the allocated band, shall not exceed the values provided by the mask in figure.

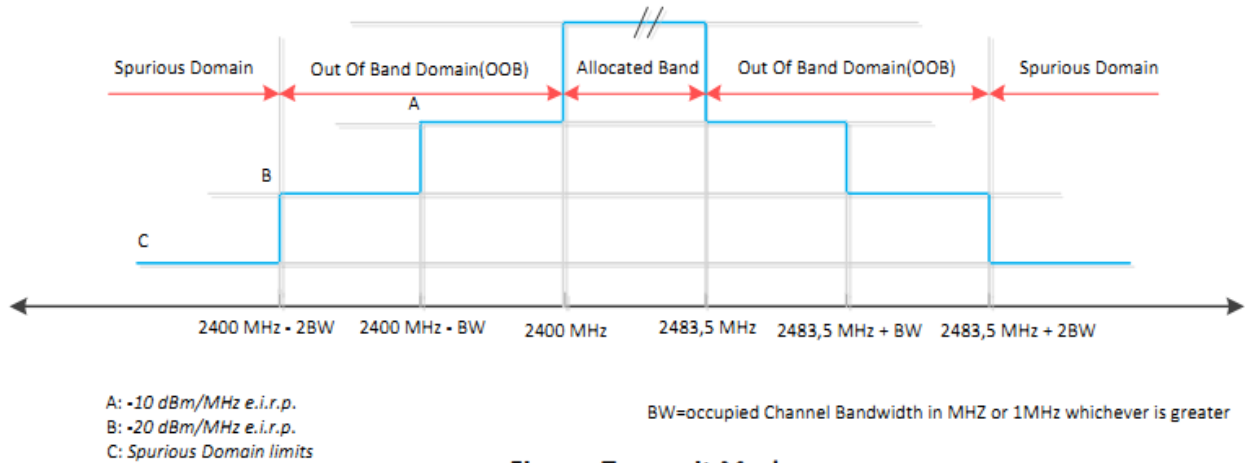
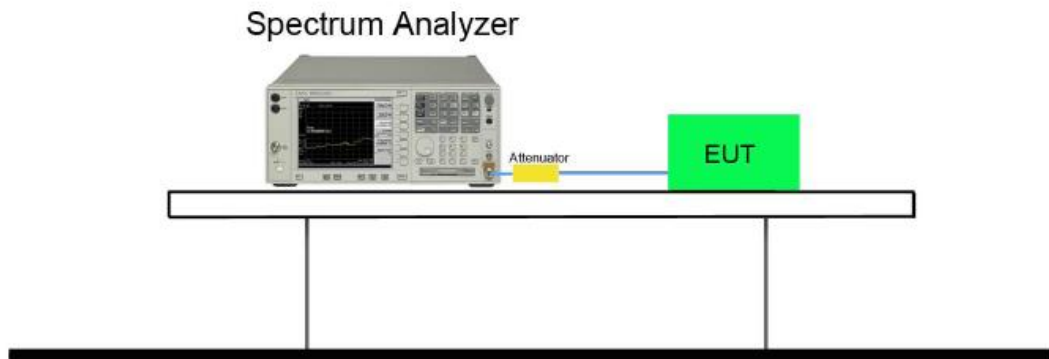


Figure :Transmit Mask

### 10.2. Test Setup

For Conducted Measurement



### 10.3. Test Procedure

Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.8.2.1.

## 10.4. Test Result

Product	4x4 Wave-2 802.11BGN Mini PCIe WiFi Module	Temperature	25°C
Test Engineer	Hunk Li	Relative Humidity	54%
Test Site	TR3	Test Date	2018/04/09

Test Mode	Ch. No.	Freq. Range (MHz)	Ant 0 Worst Level (dBm/ MHz)	Ant 1 Worst Level (dBm/ MHz)	Ant 2 Worst Level (dBm/ MHz)	Ant 3 Worst Level (dBm/ MHz)	Total Worst Level (dBm/ MHz)	Limit (dBm/ MHz)	Result
1TX									
11b	01	2400-2BW ~ 2400-BW	-51.96	-51.84	-51.85	-51.98	-40.84	-20	Pass
		2400-BW ~ 2400	-50.42	-50.65	-50.25	-51.70	-39.25	-10	Pass
	13	2483.5 ~ 2483.5+BW	-50.23	-50.52	-50.62	-51.64	-39.23	-10	Pass
		2483.5+BW ~ 2483.5+2BW	-51.52	-51.85	-51.72	-51.80	-40.52	-20	Pass
11g	01	2400-2BW ~ 2400-BW	-53.20	-53.20	-52.62	-52.16	-41.16	-20	Pass
		2400-BW ~ 2400	-46.32	-46.12	-45.12	-46.32	-34.12	-10	Pass
	13	2483.5 ~ 2483.5+BW	-42.32	-42.65	-44.12	-43.89	-31.32	-10	Pass
		2483.5+BW ~ 2483.5+2BW	-51.20	-51.02	-50.21	-51.62	-39.21	-20	Pass
4TX									
11n-HT20	01	2400-2BW ~ 2400-BW	-50.62	-50.32	-51.23	-52.17	-34.01	-20	Pass
		2400-BW ~ 2400	-49.65	-48.96	-49.65	-50.52	-32.64	-10	Pass
	13	2483.5 ~ 2483.5+BW	-48.62	-48.50	-48.02	-47.59	-31.14	-10	Pass
		2483.5+BW ~ 2483.5+2BW	-48.25	-50.21	-50.51	-51.75	-32.97	-20	Pass
11n-HT40	03	2400-2BW ~ 2400-BW	-52.32	-53.21	-52.35	-52.25	-35.49	-20	Pass
		2400-BW ~ 2400	-51.36	-51.25	-50.21	-51.45	-34.02	-10	Pass
	11	2483.5 ~ 2483.5+BW	-48.65	-48.65	-49.25	-50.70	-32.22	-10	Pass
		2483.5+BW ~ 2483.5+2BW	-50.96	-51.36	-50.36	-51.60	-34.02	-20	Pass

Note:

- For 802.11b/g

Total Worst Level (dBm/MHz) = Max Each Worst Level (dBm/MHz) + Antenna Gain (dBi).

- For 802.11n

Total Worst Level (dBm/MHz) =  $10 \cdot \log\{10^{(\text{Ant 0 Worst Level})/10} + 10^{(\text{Ant 1 Worst Level})/10} + 10^{(\text{Ant 2 Worst Level})/10} + 10^{(\text{Ant 3 Worst Level})/10}\}$  (dBm/MHz) + Antenna Gain (dBi).

## 11. Transmitter unwanted emissions in the spurious domain

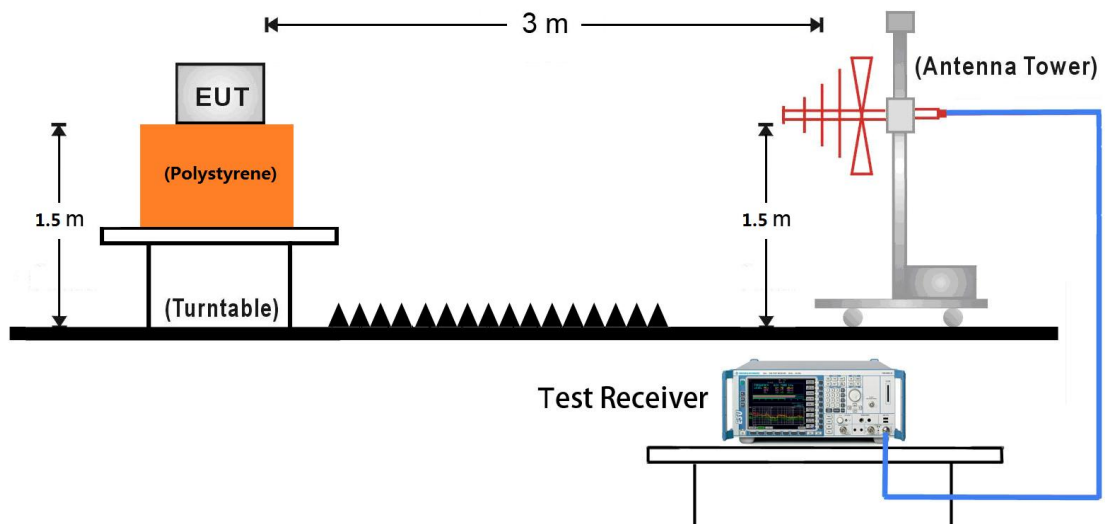
### 11.1. Limit

Transmitter Limits for Spurious Emissions		
Frequency Range	Maximum power	Bandwidth
30 MHz to 47 MHz	-36dBm	100 kHz
47 MHz to 74 MHz	-54dBm	100 kHz
74 MHz to 87,5 MHz	-36dBm	100 kHz
87,5 MHz to 118 MHz	-54dBm	100 kHz
118 MHz to 174 MHz	-36dBm	100 kHz
174 MHz to 230 MHz	-54dBm	100 kHz
230 MHz to 470 MHz	-36dBm	100 kHz
470 MHz to 862 MHz	-54dBm	100 kHz
862 MHz to 1 GHz	-36dBm	100 kHz
1 GHz to 12,75 GHz	-30dBm	1 MHz

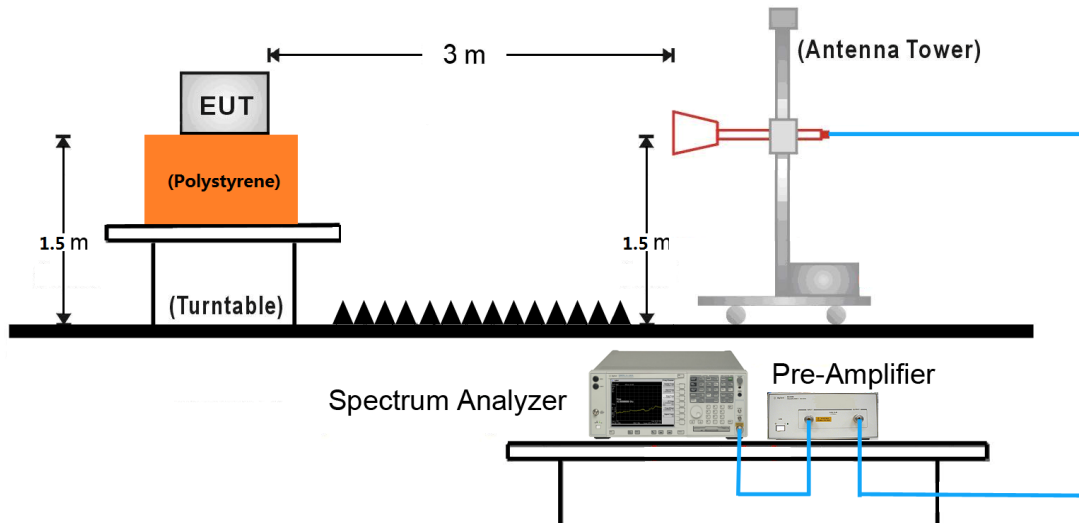
Note: These limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

### 11.2. Test Setup

30MHz ~ 1GHz Test Setup:



### 1GHz ~ 12.75GHz Test Setup:



### 11.3. Test Procedure

Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.9.2.2.

#### 11.4. Test Result

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 0	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	177.4	-88.5	24.3	-64.2	-54.0	-10.2	Peak	Horizontal
	714.8	-100.3	33.5	-66.8	-54.0	-12.8	Peak	Horizontal
	177.4	-93.4	23.7	-69.7	-54.0	-15.7	Peak	Vertical
	625.1	-96.8	31.6	-65.2	-54.0	-11.2	Peak	Vertical
	5083.1	-70.0	19.1	-50.9	-30.0	-20.9	Peak	Horizontal
	6663.5	-70.1	21.5	-48.6	-30.0	-18.6	Peak	Horizontal
	4824.6	-69.3	18.0	-51.3	-30.0	-21.3	Peak	Vertical
	7503.6	-68.0	23.6	-44.4	-30.0	-14.4	Peak	Vertical
13	177.4	-88.1	24.3	-63.8	-54.0	-9.8	Peak	Horizontal
	713.4	-98.3	33.4	-64.9	-54.0	-10.9	Peak	Horizontal
	177.9	-93.2	23.7	-69.5	-54.0	-15.5	Peak	Vertical
	850.1	-97.9	34.8	-63.1	-54.0	-9.1	Peak	Vertical
	3297.1	-61.8	13.6	-48.2	-30.0	-18.2	Peak	Horizontal
	5136.0	-69.4	18.9	-50.5	-30.0	-20.5	Peak	Horizontal
	3667.3	-63.5	14.9	-48.6	-30.0	-18.6	Peak	Vertical
	5136.0	-69.4	19.1	-50.3	-30.0	-20.3	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 0	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	177.4	-88.5	24.3	-64.2	-54.0	-10.2	Peak	Horizontal
	717.2	-100.5	33.6	-66.9	-54.0	-12.9	Peak	Horizontal
	177.9	-93.4	23.7	-69.7	-54.0	-15.7	Peak	Vertical
	625.1	-96.4	31.6	-64.8	-54.0	-10.8	Peak	Vertical
	3214.9	-62.6	14.1	-48.5	-30.0	-18.5	Peak	Horizontal
	5112.5	-69.4	19.1	-50.3	-30.0	-20.3	Peak	Horizontal
	3214.9	-59.8	14.1	-45.7	-30.0	-15.7	Peak	Vertical
	3667.3	-61.3	14.9	-46.4	-30.0	-16.4	Peak	Vertical
13	177.4	-88.4	24.3	-64.1	-54.0	-10.1	Peak	Horizontal
	697.4	-100.2	32.6	-67.6	-54.0	-13.6	Peak	Horizontal
	177.9	-93.5	23.7	-69.8	-54.0	-15.8	Peak	Vertical
	625.1	-95.8	31.6	-64.2	-54.0	-10.2	Peak	Vertical
	3667.3	-63.6	14.8	-48.8	-30.0	-18.8	Peak	Horizontal
	7509.5	-68.9	23.5	-45.4	-30.0	-15.4	Peak	Horizontal
	3297.1	-57.6	13.6	-44.0	-30.0	-14.0	Peak	Vertical
	3667.3	-64.1	14.9	-49.2	-30.0	-19.2	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)



Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 1	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	177.9	-88.9	24.4	-64.5	-54.0	-10.5	Peak	Horizontal
	625.1	-98.9	31.3	-67.6	-54.0	-13.6	Peak	Horizontal
	178.4	-94.0	23.7	-70.3	-54.0	-16.3	Peak	Vertical
	625.1	-96.6	31.6	-65.0	-54.0	-11.0	Peak	Vertical
	3214.9	-64.3	14.1	-50.2	-30.0	-20.2	Peak	Horizontal
	3667.3	-64.7	14.8	-49.9	-30.0	-19.9	Peak	Horizontal
	3214.9	-59.6	14.1	-45.5	-30.0	-15.5	Peak	Vertical
	3667.3	-64.1	14.9	-49.2	-30.0	-19.2	Peak	Vertical
13	177.4	-88.4	24.3	-64.1	-54.0	-10.1	Peak	Horizontal
	676.0	-99.4	32.0	-67.4	-54.0	-13.4	Peak	Horizontal
	177.9	-93.7	23.7	-70.0	-54.0	-16.0	Peak	Vertical
	625.1	-96.6	31.6	-65.0	-54.0	-11.0	Peak	Vertical
	3297.1	-61.5	13.6	-47.9	-30.0	-17.9	Peak	Horizontal
	3667.3	-64.6	14.8	-49.8	-30.0	-19.8	Peak	Horizontal
	3297.1	-57.3	13.6	-43.7	-30.0	-13.7	Peak	Vertical
	3667.3	-61.4	14.9	-46.5	-30.0	-16.5	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 1	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	177.9	-89.0	24.4	-64.6	-54.0	-10.6	Peak	Horizontal
	705.1	-99.9	32.8	-67.1	-54.0	-13.1	Peak	Horizontal
	177.4	-93.8	23.7	-70.1	-54.0	-16.1	Peak	Vertical
	625.1	-96.0	31.6	-64.4	-54.0	-10.4	Peak	Vertical
	3214.9	-62.7	14.1	-48.6	-30.0	-18.6	Peak	Horizontal
	3667.3	-63.3	14.8	-48.5	-30.0	-18.5	Peak	Horizontal
	3214.9	-64.3	14.1	-50.2	-30.0	-20.2	Peak	Vertical
	3667.3	-64.2	14.9	-49.3	-30.0	-19.3	Peak	Vertical
13	176.5	-89.4	24.3	-65.1	-54.0	-11.1	Peak	Horizontal
	724.5	-101.6	34.0	-67.6	-54.0	-13.6	Peak	Horizontal
	177.9	-98.7	23.7	-75.0	-54.0	-21.0	Peak	Vertical
	625.1	-96.4	31.6	-64.8	-54.0	-10.8	Peak	Vertical
	3297.1	-64.5	13.6	-50.9	-30.0	-20.9	Peak	Horizontal
	3667.3	-67.5	14.8	-52.7	-30.0	-22.7	Peak	Horizontal
	3297.1	-58.4	13.6	-44.8	-30.0	-14.8	Peak	Vertical
	3667.3	-64.0	14.9	-49.1	-30.0	-19.1	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 2	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	177.9	-88.1	24.4	-63.7	-54.0	-9.7	Peak	Horizontal
	714.8	-100.9	33.5	-67.4	-54.0	-13.4	Peak	Horizontal
	177.4	-93.7	23.7	-70.0	-54.0	-16.0	Peak	Vertical
	625.1	-96.4	31.6	-64.8	-54.0	-10.8	Peak	Vertical
	3214.9	-62.3	14.1	-48.2	-30.0	-18.2	Peak	Horizontal
	3667.3	-65.1	14.8	-50.3	-30.0	-20.3	Peak	Horizontal
	3667.3	-61.4	14.9	-46.5	-30.0	-16.5	Peak	Vertical
	7503.6	-67.1	23.6	-43.5	-30.0	-13.5	Peak	Vertical
13	177.4	-87.9	24.3	-63.6	-54.0	-9.6	Peak	Horizontal
	708.0	-100.0	33.1	-66.9	-54.0	-12.9	Peak	Horizontal
	177.4	-92.7	23.7	-69.0	-54.0	-15.0	Peak	Vertical
	625.1	-98.4	31.6	-66.8	-54.0	-12.8	Peak	Vertical
	3297.1	-62.8	13.6	-49.2	-30.0	-19.2	Peak	Horizontal
	3831.8	-67.0	15.4	-51.6	-30.0	-21.6	Peak	Horizontal
	3297.1	-58.2	13.6	-44.6	-30.0	-14.6	Peak	Vertical
	3667.3	-62.0	14.9	-47.1	-30.0	-17.1	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 2	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	177.4	-88.7	24.3	-64.4	-54.0	-10.4	Peak	Horizontal
	724.0	-100.1	34.0	-66.1	-54.0	-12.1	Peak	Horizontal
	178.4	-93.7	23.7	-70.0	-54.0	-16.0	Peak	Vertical
	625.1	-96.0	31.6	-64.4	-54.0	-10.4	Peak	Vertical
	3214.9	-63.8	14.1	-49.7	-30.0	-19.7	Peak	Horizontal
	3667.3	-65.0	14.8	-50.2	-30.0	-20.2	Peak	Horizontal
	3214.9	-64.5	14.1	-50.4	-30.0	-20.4	Peak	Vertical
	3667.3	-63.6	14.9	-48.7	-30.0	-18.7	Peak	Vertical
13	177.9	-88.4	24.4	-64.0	-54.0	-10.0	Peak	Horizontal
	711.4	-100.5	33.3	-67.2	-54.0	-13.2	Peak	Horizontal
	178.4	-93.2	23.7	-69.5	-54.0	-15.5	Peak	Vertical
	625.1	-96.3	31.6	-64.7	-54.0	-10.7	Peak	Vertical
	3297.1	-65.9	13.6	-52.3	-30.0	-22.3	Peak	Horizontal
	3667.3	-64.9	14.8	-50.1	-30.0	-20.1	Peak	Horizontal
	3297.1	-58.6	13.6	-45.0	-30.0	-15.0	Peak	Vertical
	3667.3	-62.3	14.9	-47.4	-30.0	-17.4	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 3	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	229.8	-96.4	24.9	-71.5	-54.0	-17.5	Peak	Horizontal
	719.7	-101.4	33.7	-67.7	-54.0	-13.7	Peak	Horizontal
	94.5	-101.3	26.7	-74.6	-54.0	-20.6	Peak	Vertical
	625.1	-99.4	31.6	-67.8	-54.0	-13.8	Peak	Vertical
	3214.9	-63.5	14.1	-49.4	-30.0	-19.4	Peak	Horizontal
	3667.3	-65.7	14.8	-50.9	-30.0	-20.9	Peak	Horizontal
	3214.9	-63.5	14.1	-49.4	-30.0	-19.4	Peak	Vertical
	3667.3	-65.8	14.9	-50.9	-30.0	-20.9	Peak	Vertical
13	201.7	-101.7	24.1	-77.6	-54.0	-23.6	Peak	Horizontal
	713.4	-99.2	33.4	-65.8	-54.0	-11.8	Peak	Horizontal
	95.0	-101.5	26.5	-75.0	-54.0	-21.0	Peak	Vertical
	625.1	-96.7	31.6	-65.1	-54.0	-11.1	Peak	Vertical
	3297.1	-64.7	13.6	-51.1	-30.0	-21.1	Peak	Horizontal
	3667.3	-64.8	14.8	-50.0	-30.0	-20.0	Peak	Horizontal
	3297.1	-65.2	13.6	-51.6	-30.0	-21.6	Peak	Vertical
	3667.3	-66.6	14.9	-51.7	-30.0	-21.7	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)  
- Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 3	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	204.1	-103.7	24.1	-79.6	-54.0	-25.6	Peak	Horizontal
	702.2	-99.3	32.6	-66.7	-54.0	-12.7	Peak	Horizontal
	194.9	-102.7	22.9	-79.8	-54.0	-25.8	Peak	Vertical
	625.1	-98.9	31.6	-67.3	-54.0	-13.3	Peak	Vertical
	3214.9	-64.0	14.1	-49.9	-30.0	-19.9	Peak	Horizontal
	3667.3	-64.9	14.8	-50.1	-30.0	-20.1	Peak	Horizontal
	3214.9	-61.0	14.1	-46.9	-30.0	-16.9	Peak	Vertical
	3667.3	-64.3	14.9	-49.4	-30.0	-19.4	Peak	Vertical
13	176.5	-100.9	24.3	-76.6	-54.0	-22.6	Peak	Horizontal
	717.2	-99.9	33.6	-66.3	-54.0	-12.3	Peak	Horizontal
	73.2	-96.4	23.9	-72.5	-54.0	-18.5	Peak	Vertical
	625.1	-95.9	31.6	-64.3	-54.0	-10.3	Peak	Vertical
	3297.1	-61.9	13.6	-48.3	-30.0	-18.3	Peak	Horizontal
	3667.3	-65.2	14.8	-50.4	-30.0	-20.4	Peak	Horizontal
	3297.1	-57.4	13.6	-43.8	-30.0	-13.8	Peak	Vertical
	3667.3	-61.6	14.9	-46.7	-30.0	-16.7	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11n-HT20 - Ant 0+1+2+3	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	112.9	-100.0	16.9	-83.1	-54.0	-29.1	Peak	Horizontal
	711.9	-99.9	33.4	-66.5	-54.0	-12.5	Peak	Horizontal
	108.6	-100.4	27.9	-72.5	-54.0	-18.5	Peak	Vertical
	625.1	-97.9	31.6	-66.3	-54.0	-12.3	Peak	Vertical
	3214.9	-64.1	14.1	-50.0	-30.0	-20.0	Peak	Horizontal
	3667.3	-65.1	14.8	-50.3	-30.0	-20.3	Peak	Horizontal
	3214.9	-61.2	14.1	-47.1	-30.0	-17.1	Peak	Vertical
	3667.3	-64.1	14.9	-49.2	-30.0	-19.2	Peak	Vertical
13	66.4	-103.6	22.9	-80.7	-54.0	-26.7	Peak	Horizontal
	716.3	-101.1	33.5	-67.6	-54.0	-13.6	Peak	Horizontal
	66.4	-97.2	23.0	-74.2	-54.0	-20.2	Peak	Vertical
	625.1	-97.9	31.6	-66.3	-54.0	-12.3	Peak	Vertical
	3297.1	-63.4	13.6	-49.8	-30.0	-19.8	Peak	Horizontal
	3667.3	-65.9	14.8	-51.1	-30.0	-21.1	Peak	Horizontal
	3297.1	-58.8	13.6	-45.2	-30.0	-15.2	Peak	Vertical
	3667.3	-63.6	14.9	-48.7	-30.0	-18.7	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11n-HT40 - Ant 0+1+2+3	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
03	66.4	-104.2	22.9	-81.3	-54.0	-27.3	Peak	Horizontal
	721.6	-100.9	33.8	-67.1	-54.0	-13.1	Peak	Horizontal
	108.6	-99.7	27.9	-71.8	-54.0	-17.8	Peak	Vertical
	625.1	-96.6	31.6	-65.0	-54.0	-11.0	Peak	Vertical
	3226.6	-64.6	14.1	-50.5	-30.0	-20.5	Peak	Horizontal
	3667.3	-65.2	14.8	-50.4	-30.0	-20.4	Peak	Horizontal
	3226.6	-61.4	14.1	-47.3	-30.0	-17.3	Peak	Vertical
	3667.3	-64.6	14.9	-49.7	-30.0	-19.7	Peak	Vertical
11	58.6	-102.8	21.9	-80.9	-54.0	-26.9	Peak	Horizontal
	720.2	-100.0	33.7	-66.3	-54.0	-12.3	Peak	Horizontal
	109.1	-100.8	27.9	-72.9	-54.0	-18.9	Peak	Vertical
	625.1	-98.1	31.6	-66.5	-54.0	-12.5	Peak	Vertical
	3285.4	-63.3	13.6	-49.7	-30.0	-19.7	Peak	Horizontal
	3667.3	-65.2	14.8	-50.4	-30.0	-20.4	Peak	Horizontal
	3285.4	-59.1	13.5	-45.6	-30.0	-15.6	Peak	Vertical
	3667.3	-62.7	14.9	-47.8	-30.0	-17.8	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)



Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 0	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	190.5	-99.6	24.1	-75.5	-54.0	-21.5	Peak	Horizontal
	559.6	-96.5	31.1	-65.4	-54.0	-11.4	Peak	Horizontal
	88.2	-102.3	29.6	-72.7	-54.0	-18.7	Peak	Vertical
	625.1	-96.1	31.6	-64.5	-54.0	-10.5	Peak	Vertical
	3214.9	-64.1	14.1	-50.0	-30.0	-20.0	Peak	Horizontal
	3667.3	-64.1	14.8	-49.3	-30.0	-19.3	Peak	Horizontal
	3214.9	-59.1	14.1	-45.0	-30.0	-15.0	Peak	Vertical
	3667.3	-60.0	14.9	-45.1	-30.0	-15.1	Peak	Vertical
13	183.3	-100.5	24.7	-75.8	-54.0	-21.8	Peak	Horizontal
	625.1	-95.8	31.3	-64.5	-54.0	-10.5	Peak	Horizontal
	196.8	-96.5	22.7	-73.8	-54.0	-19.8	Peak	Vertical
	625.1	-95.5	31.6	-63.9	-54.0	-9.9	Peak	Vertical
	3297.1	-63.2	13.6	-49.6	-30.0	-19.6	Peak	Horizontal
	3667.3	-64.4	14.8	-49.6	-30.0	-19.6	Peak	Horizontal
	3297.1	-58.0	13.6	-44.4	-30.0	-14.4	Peak	Vertical
	3667.3	-60.3	14.9	-45.4	-30.0	-15.4	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 0	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	190.5	-100.3	24.1	-76.2	-54.0	-22.2	Peak	Horizontal
	625.1	-96.1	31.3	-64.8	-54.0	-10.8	Peak	Horizontal
	199.3	-96.4	22.2	-74.2	-54.0	-20.2	Peak	Vertical
	625.1	-96.0	31.6	-64.4	-54.0	-10.4	Peak	Vertical
	3214.9	-65.2	14.1	-51.1	-30.0	-21.1	Peak	Horizontal
	3667.3	-65.3	14.8	-50.5	-30.0	-20.5	Peak	Horizontal
	3214.9	-60.4	14.1	-46.3	-30.0	-16.3	Peak	Vertical
	3667.3	-60.5	14.9	-45.6	-30.0	-15.6	Peak	Vertical
13	200.2	-99.2	24.0	-75.2	-54.0	-21.2	Peak	Horizontal
	625.1	-96.2	31.3	-64.9	-54.0	-10.9	Peak	Horizontal
	200.2	-95.2	22.1	-73.1	-54.0	-19.1	Peak	Vertical
	850.1	-97.1	34.8	-62.3	-54.0	-8.3	Peak	Vertical
	3297.1	-63.6	13.6	-50.0	-30.0	-20.0	Peak	Horizontal
	3667.3	-65.7	14.8	-50.9	-30.0	-20.9	Peak	Horizontal
	3297.1	-58.8	13.6	-45.2	-30.0	-15.2	Peak	Vertical
	3667.3	-60.2	14.9	-45.3	-30.0	-15.3	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 1	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	200.2	-99.5	24.0	-75.5	-54.0	-21.5	Peak	Horizontal
	625.1	-96.2	31.3	-64.9	-54.0	-10.9	Peak	Horizontal
	200.2	-95.7	22.1	-73.6	-54.0	-19.6	Peak	Vertical
	850.1	-98.4	34.8	-63.6	-54.0	-9.6	Peak	Vertical
	3214.9	-64.9	14.1	-50.8	-30.0	-20.8	Peak	Horizontal
	3667.3	-64.5	14.8	-49.7	-30.0	-19.7	Peak	Horizontal
	3214.9	-61.3	14.1	-47.2	-30.0	-17.2	Peak	Vertical
	3667.3	-60.3	14.9	-45.4	-30.0	-15.4	Peak	Vertical
13	206.5	-99.9	24.0	-75.9	-54.0	-21.9	Peak	Horizontal
	625.1	-96.2	31.3	-64.9	-54.0	-10.9	Peak	Horizontal
	200.2	-95.7	22.1	-73.6	-54.0	-19.6	Peak	Vertical
	625.1	-96.3	31.6	-64.7	-54.0	-10.7	Peak	Vertical
	3297.1	-64.3	13.6	-50.7	-30.0	-20.7	Peak	Horizontal
	3667.3	-65.3	14.8	-50.5	-30.0	-20.5	Peak	Horizontal
	3297.1	-59.1	13.6	-45.5	-30.0	-15.5	Peak	Vertical
	3667.3	-60.3	14.9	-45.4	-30.0	-15.4	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 1	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	200.2	-100.2	24.0	-76.2	-54.0	-22.2	Peak	Horizontal
	559.6	-95.6	31.1	-64.5	-54.0	-10.5	Peak	Horizontal
	200.2	-95.2	22.1	-73.1	-54.0	-19.1	Peak	Vertical
	850.1	-97.7	34.8	-62.9	-54.0	-8.9	Peak	Vertical
	3214.9	-66.1	14.1	-52.0	-30.0	-22.0	Peak	Horizontal
	3667.3	-63.9	14.8	-49.1	-30.0	-19.1	Peak	Horizontal
	3214.9	-61.5	14.1	-47.4	-30.0	-17.4	Peak	Vertical
	3667.3	-60.6	14.9	-45.7	-30.0	-15.7	Peak	Vertical
13	200.2	-99.6	24.0	-75.6	-54.0	-21.6	Peak	Horizontal
	625.1	-95.9	31.3	-64.6	-54.0	-10.6	Peak	Horizontal
	200.2	-96.3	22.1	-74.2	-54.0	-20.2	Peak	Vertical
	850.1	-98.0	34.8	-63.2	-54.0	-9.2	Peak	Vertical
	3297.1	-63.9	13.6	-50.3	-30.0	-20.3	Peak	Horizontal
	3667.3	-65.7	14.8	-50.9	-30.0	-20.9	Peak	Horizontal
	3297.1	-59.2	13.6	-45.6	-30.0	-15.6	Peak	Vertical
	3667.3	-60.8	14.9	-45.9	-30.0	-15.9	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 2	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	200.2	-100.4	24.0	-76.4	-54.0	-22.4	Peak	Horizontal
	625.1	-96.4	31.3	-65.1	-54.0	-11.1	Peak	Horizontal
	200.2	-95.7	22.1	-73.6	-54.0	-19.6	Peak	Vertical
	850.1	-97.9	34.8	-63.1	-54.0	-9.1	Peak	Vertical
	3214.9	-66.0	14.1	-51.9	-30.0	-21.9	Peak	Horizontal
	3667.3	-64.9	14.8	-50.1	-30.0	-20.1	Peak	Horizontal
	3214.9	-62.6	14.1	-48.5	-30.0	-18.5	Peak	Vertical
	3667.3	-61.4	14.9	-46.5	-30.0	-16.5	Peak	Vertical
13	200.2	-99.1	24.0	-75.1	-54.0	-21.1	Peak	Horizontal
	850.1	-97.7	34.1	-63.6	-54.0	-9.6	Peak	Horizontal
	200.2	-93.9	22.1	-71.8	-54.0	-17.8	Peak	Vertical
	850.1	-96.9	34.8	-62.1	-54.0	-8.1	Peak	Vertical
	3297.1	-63.3	13.6	-49.7	-30.0	-19.7	Peak	Horizontal
	3667.3	-64.7	14.8	-49.9	-30.0	-19.9	Peak	Horizontal
	3297.1	-59.4	13.6	-45.8	-30.0	-15.8	Peak	Vertical
	3667.3	-61.1	14.9	-46.2	-30.0	-16.2	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 2	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	192.5	-100.0	23.9	-76.1	-54.0	-22.1	Peak	Horizontal
	625.1	-95.8	31.3	-64.5	-54.0	-10.5	Peak	Horizontal
	200.2	-95.0	22.1	-72.9	-54.0	-18.9	Peak	Vertical
	625.1	-95.5	31.6	-63.9	-54.0	-9.9	Peak	Vertical
	3214.9	-65.5	14.1	-51.4	-30.0	-21.4	Peak	Horizontal
	3667.3	-66.0	14.8	-51.2	-30.0	-21.2	Peak	Horizontal
	3214.9	-62.4	14.1	-48.3	-30.0	-18.3	Peak	Vertical
	3667.3	-61.1	14.9	-46.2	-30.0	-16.2	Peak	Vertical
13	200.2	-99.6	24.0	-75.6	-54.0	-21.6	Peak	Horizontal
	625.1	-96.2	31.3	-64.9	-54.0	-10.9	Peak	Horizontal
	200.2	-95.1	22.1	-73.0	-54.0	-19.0	Peak	Vertical
	850.1	-98.0	34.8	-63.2	-54.0	-9.2	Peak	Vertical
	3297.1	-63.3	13.6	-49.7	-30.0	-19.7	Peak	Horizontal
	3667.3	-65.9	14.8	-51.1	-30.0	-21.1	Peak	Horizontal
	3297.1	-60.0	13.6	-46.4	-30.0	-16.4	Peak	Vertical
	3667.3	-61.5	14.9	-46.6	-30.0	-16.6	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 3	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	200.2	-99.5	24.0	-75.5	-54.0	-21.5	Peak	Horizontal
	625.1	-96.3	31.3	-65.0	-54.0	-11.0	Peak	Horizontal
	200.2	-96.0	22.1	-73.9	-54.0	-19.9	Peak	Vertical
	625.1	-95.3	31.6	-63.7	-54.0	-9.7	Peak	Vertical
	3214.9	-66.1	14.1	-52.0	-30.0	-22.0	Peak	Horizontal
	3667.3	-65.4	14.8	-50.6	-30.0	-20.6	Peak	Horizontal
	3214.9	-61.8	14.1	-47.7	-30.0	-17.7	Peak	Vertical
	3667.3	-61.3	14.9	-46.4	-30.0	-16.4	Peak	Vertical
13	200.2	-98.1	24.0	-74.1	-54.0	-20.1	Peak	Horizontal
	625.1	-94.4	31.3	-63.1	-54.0	-9.1	Peak	Horizontal
	109.1	-101.4	27.9	-73.5	-54.0	-19.5	Peak	Vertical
	850.1	-97.8	34.8	-63.0	-54.0	-9.0	Peak	Vertical
	3297.1	-64.4	13.6	-50.8	-30.0	-20.8	Peak	Horizontal
	3667.3	-66.1	14.8	-51.3	-30.0	-21.3	Peak	Horizontal
	3297.1	-59.2	13.6	-45.6	-30.0	-15.6	Peak	Vertical
	3667.3	-60.8	14.9	-45.9	-30.0	-15.9	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 3	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	188.1	-100.9	24.4	-76.5	-54.0	-22.5	Peak	Horizontal
	625.1	-96.6	31.3	-65.3	-54.0	-11.3	Peak	Horizontal
	200.2	-95.0	22.1	-72.9	-54.0	-18.9	Peak	Vertical
	625.1	-95.9	31.6	-64.3	-54.0	-10.3	Peak	Vertical
	3214.9	-65.5	14.1	-51.4	-30.0	-21.4	Peak	Horizontal
	3667.3	-65.7	14.8	-50.9	-30.0	-20.9	Peak	Horizontal
	3214.9	-62.9	14.1	-48.8	-30.0	-18.8	Peak	Vertical
	3667.3	-61.0	14.9	-46.1	-30.0	-16.1	Peak	Vertical
13	185.7	-101.6	24.7	-76.9	-54.0	-22.9	Peak	Horizontal
	625.1	-96.1	31.3	-64.8	-54.0	-10.8	Peak	Horizontal
	200.2	-95.7	22.1	-73.6	-54.0	-19.6	Peak	Vertical
	625.1	-96.5	31.6	-64.9	-54.0	-10.9	Peak	Vertical
	3297.1	-64.1	13.6	-50.5	-30.0	-20.5	Peak	Horizontal
	3667.3	-65.2	14.8	-50.4	-30.0	-20.4	Peak	Horizontal
	3297.1	-59.0	13.6	-45.4	-30.0	-15.4	Peak	Vertical
	3667.3	-60.6	14.9	-45.7	-30.0	-15.7	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)



Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11n-HT20 - Ant 0+1+2+3	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	200.2	-99.1	24.0	-75.1	-54.0	-21.1	Peak	Horizontal
	625.1	-96.0	31.3	-64.7	-54.0	-10.7	Peak	Horizontal
	200.2	-96.1	22.1	-74.0	-54.0	-20.0	Peak	Vertical
	850.1	-97.7	34.8	-62.9	-54.0	-8.9	Peak	Vertical
	3214.9	-65.7	14.1	-51.6	-30.0	-21.6	Peak	Horizontal
	3667.3	-65.7	14.8	-50.9	-30.0	-20.9	Peak	Horizontal
	3214.9	-60.7	14.1	-46.6	-30.0	-16.6	Peak	Vertical
	3667.3	-64.7	14.9	-49.8	-30.0	-19.8	Peak	Vertical
13	200.2	-100.0	24.0	-76.0	-54.0	-22.0	Peak	Horizontal
	625.1	-96.6	31.3	-65.3	-54.0	-11.3	Peak	Horizontal
	200.2	-95.5	22.1	-73.4	-54.0	-19.4	Peak	Vertical
	850.1	-97.8	34.8	-63.0	-54.0	-9.0	Peak	Vertical
	3297.1	-64.1	13.6	-50.5	-30.0	-20.5	Peak	Horizontal
	3667.3	-65.4	14.8	-50.6	-30.0	-20.6	Peak	Horizontal
	3297.1	-61.2	13.6	-47.6	-30.0	-17.6	Peak	Vertical
	3667.3	-63.7	14.9	-48.8	-30.0	-18.8	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11n-HT40 - Ant 0+1+2+3	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
03	200.2	-99.5	24.0	-75.5	-54.0	-21.5	Peak	Horizontal
	625.1	-96.7	31.3	-65.4	-54.0	-11.4	Peak	Horizontal
	200.2	-95.6	22.1	-73.5	-54.0	-19.5	Peak	Vertical
	625.1	-95.8	31.6	-64.2	-54.0	-10.2	Peak	Vertical
	3226.6	-64.9	14.1	-50.8	-30.0	-20.8	Peak	Horizontal
	3667.3	-65.5	14.8	-50.7	-30.0	-20.7	Peak	Horizontal
	3226.6	-59.6	14.1	-45.5	-30.0	-15.5	Peak	Vertical
	3667.3	-61.6	14.9	-46.7	-30.0	-16.7	Peak	Vertical
11	181.8	-100.2	24.6	-75.6	-54.0	-21.6	Peak	Horizontal
	625.1	-97.0	31.3	-65.7	-54.0	-11.7	Peak	Horizontal
	200.2	-94.7	22.1	-72.6	-54.0	-18.6	Peak	Vertical
	850.1	-98.6	34.8	-63.8	-54.0	-9.8	Peak	Vertical
	3279.5	-65.1	13.6	-51.5	-30.0	-21.5	Peak	Horizontal
	3667.3	-65.9	14.8	-51.1	-30.0	-21.1	Peak	Horizontal
	3279.5	-60.8	13.5	-47.3	-30.0	-17.3	Peak	Vertical
	3667.3	-61.0	14.9	-46.1	-30.0	-16.1	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

## 12. Receiver Spurious Emissions

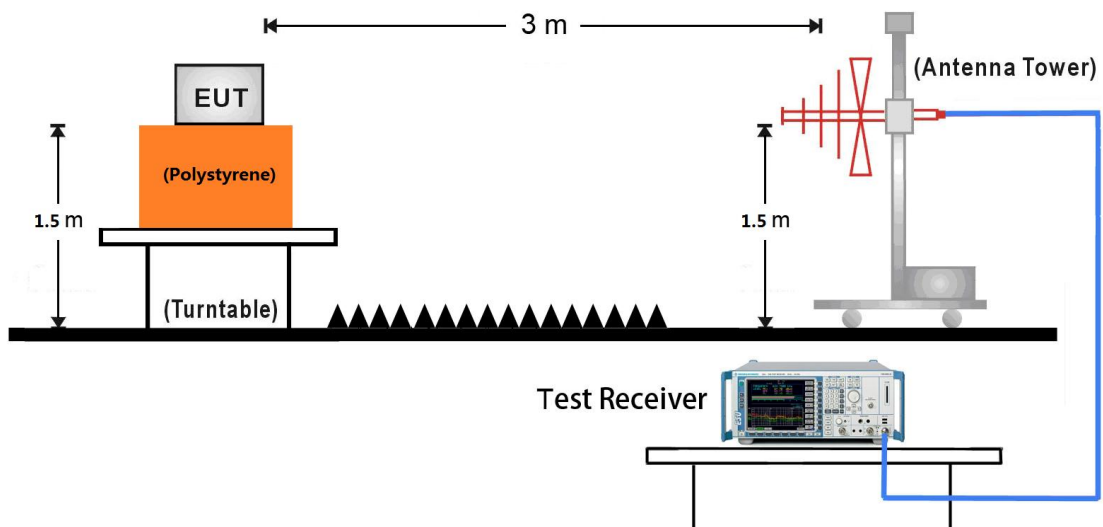
### 12.1. Limit

Spurious emissions limits for receivers		
Frequency Range	Maximum power	Measurement bandwidth
30 MHz to 1 GHz	-57dBm	100 kHz
1 GHz to 12.75 GHz	-47dBm	1 MHz

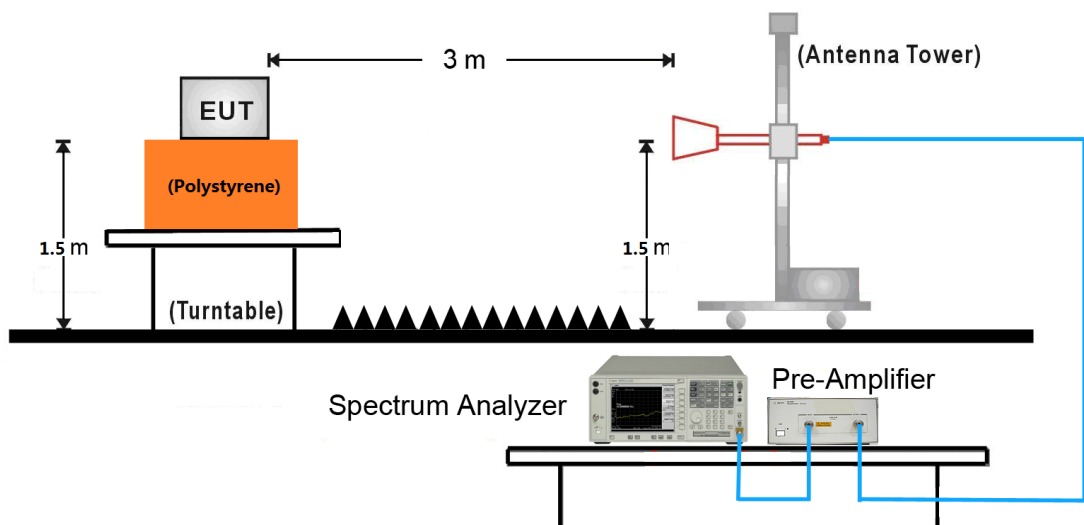
Note: These limits are e.r.p. for emissions up to 1 GHz and as e.i.r.p. for emissions above 1 GHz.

### 12.2. Test Setup

30MHz ~ 1GHz Test Setup:



1GHz ~ 12.75GHz Test Setup:



### 12.3. Test Procedure

Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.10.2.2.

## 12.4. Test Result

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11b - Ant 0	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	159.0	-94.8	23.7	-71.1	-57.0	-14.1	Peak	Horizontal
	714.3	-99.7	33.5	-66.2	-57.0	-9.2	Peak	Horizontal
	82.9	-100.2	27.9	-72.3	-57.0	-15.3	Peak	Vertical
	625.1	-97.4	31.6	-65.8	-57.0	-8.8	Peak	Vertical
	2245.5	-68.2	11.6	-56.6	-47.0	-9.6	Peak	Horizontal
	3191.4	-68.9	14.1	-54.8	-47.0	-7.8	Peak	Horizontal
	1376.0	-61.7	8.2	-53.5	-47.0	-6.5	Peak	Vertical
	2803.6	-67.9	12.9	-55.0	-47.0	-8.0	Peak	Vertical
13	159.0	-92.8	23.7	-69.1	-57.0	-12.1	Peak	Horizontal
	875.4	-97.5	34.3	-63.2	-57.0	-6.2	Peak	Horizontal
	108.6	-100.0	27.9	-72.1	-57.0	-15.1	Peak	Vertical
	625.1	-99.1	31.6	-67.5	-57.0	-10.5	Peak	Vertical
	1252.6	-61.7	6.8	-54.9	-47.0	-7.9	Peak	Horizontal
	1622.8	-62.1	6.9	-55.2	-47.0	-8.2	Peak	Horizontal
	1376.0	-61.7	8.2	-53.5	-47.0	-6.5	Peak	Vertical
	1875.4	-63.4	8.3	-55.1	-47.0	-8.1	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11g - Ant 0	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	160.0	-94.9	23.9	-71.0	-57.0	-14.0	Peak	Horizontal
	706.6	-97.8	33.0	-64.8	-57.0	-7.8	Peak	Horizontal
	83.4	-100.3	28.2	-72.1	-57.0	-15.1	Peak	Vertical
	625.1	-97.8	31.6	-66.2	-57.0	-9.2	Peak	Vertical
	1622.8	-62.4	6.9	-55.5	-47.0	-8.5	Peak	Horizontal
	1875.4	-64.1	8.3	-55.8	-47.0	-8.8	Peak	Horizontal
	1376.0	-61.8	8.2	-53.6	-47.0	-6.6	Peak	Vertical
	2098.6	-63.5	9.6	-53.9	-47.0	-6.9	Peak	Vertical
13	159.5	-94.7	23.8	-70.9	-57.0	-13.9	Peak	Horizontal
	703.2	-99.0	32.7	-66.3	-57.0	-9.3	Peak	Horizontal
	250.2	-89.9	22.5	-67.4	-57.0	-10.4	Peak	Vertical
	625.1	-96.8	31.6	-65.2	-57.0	-8.2	Peak	Vertical
	1622.8	-61.8	6.9	-54.9	-47.0	-7.9	Peak	Horizontal
	2498.1	-64.0	10.7	-53.3	-47.0	-6.3	Peak	Horizontal
	1622.8	-61.6	7.0	-54.6	-47.0	-7.6	Peak	Vertical
	2051.6	-63.7	9.2	-54.5	-47.0	-7.5	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11b - Ant 1	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	159.5	-92.2	23.8	-68.4	-57.0	-11.4	Peak	Horizontal
	713.9	-98.8	33.5	-65.3	-57.0	-8.3	Peak	Horizontal
	36.8	-90.1	22.2	-67.9	-57.0	-10.9	Peak	Vertical
	625.1	-97.0	31.6	-65.4	-57.0	-8.4	Peak	Vertical
	1376.0	-62.3	7.9	-54.4	-47.0	-7.4	Peak	Horizontal
	1622.8	-62.2	6.9	-55.3	-47.0	-8.3	Peak	Horizontal
	1376.0	-62.0	8.2	-53.8	-47.0	-6.8	Peak	Vertical
	1928.3	-63.6	8.3	-55.3	-47.0	-8.3	Peak	Vertical
13	159.0	-93.3	23.7	-69.6	-57.0	-12.6	Peak	Horizontal
	719.7	-100.3	33.7	-66.6	-57.0	-9.6	Peak	Horizontal
	82.9	-100.4	27.9	-72.5	-57.0	-15.5	Peak	Vertical
	625.1	-97.9	31.6	-66.3	-57.0	-9.3	Peak	Vertical
	1381.9	-65.2	8.0	-57.2	-47.0	-10.2	Peak	Horizontal
	2163.3	-66.4	11.0	-55.4	-47.0	-8.4	Peak	Horizontal
	1622.8	-62.2	7.0	-55.2	-47.0	-8.2	Peak	Vertical
	2128.0	-64.8	10.1	-54.7	-47.0	-7.7	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11g - Ant 1	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	159.0	-94.1	23.7	-70.4	-57.0	-13.4	Peak	Horizontal
	564.0	-98.7	31.5	-67.2	-57.0	-10.2	Peak	Horizontal
	108.6	-100.0	27.9	-72.1	-57.0	-15.1	Peak	Vertical
	625.1	-97.0	31.6	-65.4	-57.0	-8.4	Peak	Vertical
	1622.8	-62.0	6.9	-55.1	-47.0	-8.1	Peak	Horizontal
	1887.1	-62.3	8.2	-54.1	-47.0	-7.1	Peak	Horizontal
	1376.0	-61.7	8.2	-53.5	-47.0	-6.5	Peak	Vertical
	2098.6	-63.5	9.6	-53.9	-47.0	-6.9	Peak	Vertical
13	160.0	-93.8	23.9	-69.9	-57.0	-12.9	Peak	Horizontal
	724.5	-101.0	34.0	-67.0	-57.0	-10.0	Peak	Horizontal
	108.6	-100.6	27.9	-72.7	-57.0	-15.7	Peak	Vertical
	625.1	-97.9	31.6	-66.3	-57.0	-9.3	Peak	Vertical
	1622.8	-63.3	6.9	-56.4	-47.0	-9.4	Peak	Horizontal
	2269.0	-67.5	11.4	-56.1	-47.0	-9.1	Peak	Horizontal
	1376.0	-61.6	8.2	-53.4	-47.0	-6.4	Peak	Vertical
	2498.1	-64.3	10.8	-53.5	-47.0	-6.5	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11b - Ant 2	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	160.0	-94.7	23.9	-70.8	-57.0	-13.8	Peak	Horizontal
	719.7	-100.1	33.7	-66.4	-57.0	-9.4	Peak	Horizontal
	109.1	-100.0	27.9	-72.1	-57.0	-15.1	Peak	Vertical
	625.1	-97.2	31.6	-65.6	-57.0	-8.6	Peak	Vertical
	2216.1	-67.1	11.6	-55.5	-47.0	-8.5	Peak	Horizontal
	2868.3	-68.9	12.9	-56.0	-47.0	-9.0	Peak	Horizontal
	1975.3	-64.3	8.8	-55.5	-47.0	-8.5	Peak	Vertical
	2833.0	-67.7	12.9	-54.8	-47.0	-7.8	Peak	Vertical
13	160.0	-92.7	23.9	-68.8	-57.0	-11.8	Peak	Horizontal
	710.9	-100.2	33.3	-66.9	-57.0	-9.9	Peak	Horizontal
	108.6	-100.0	27.9	-72.1	-57.0	-15.1	Peak	Vertical
	625.1	-97.2	31.6	-65.6	-57.0	-8.6	Peak	Vertical
	1622.8	-61.9	6.9	-55.0	-47.0	-8.0	Peak	Horizontal
	2498.1	-64.7	10.7	-54.0	-47.0	-7.0	Peak	Horizontal
	1622.8	-61.9	7.0	-54.9	-47.0	-7.9	Peak	Vertical
	2498.1	-64.7	10.8	-53.9	-47.0	-6.9	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)



Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11g - Ant 2	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	160.0	-93.4	23.9	-69.5	-57.0	-12.5	Peak	Horizontal
	875.4	-97.3	34.3	-63.0	-57.0	-6.0	Peak	Horizontal
	111.0	-99.9	27.9	-72.0	-57.0	-15.0	Peak	Vertical
	625.1	-97.6	31.6	-66.0	-57.0	-9.0	Peak	Vertical
	1376.0	-62.8	7.9	-54.9	-47.0	-7.9	Peak	Horizontal
	2498.1	-65.6	10.7	-54.9	-47.0	-7.9	Peak	Horizontal
	1229.1	-61.7	6.9	-54.8	-47.0	-7.8	Peak	Vertical
	1922.4	-65.2	8.2	-57.0	-47.0	-10.0	Peak	Vertical
13	159.0	-93.6	23.7	-69.9	-57.0	-12.9	Peak	Horizontal
	567.9	-98.4	31.6	-66.8	-57.0	-9.8	Peak	Horizontal
	108.6	-101.3	27.9	-73.4	-57.0	-16.4	Peak	Vertical
	625.1	-99.3	31.6	-67.7	-57.0	-10.7	Peak	Vertical
	1381.9	-63.9	8.0	-55.9	-47.0	-8.9	Peak	Horizontal
	2257.3	-67.0	11.9	-55.1	-47.0	-8.1	Peak	Horizontal
	1376.0	-61.9	8.2	-53.7	-47.0	-6.7	Peak	Vertical
	2098.6	-62.8	9.6	-53.2	-47.0	-6.2	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11b - Ant 3	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	159.0	-93.3	23.7	-69.6	-57.0	-12.6	Peak	Horizontal
	875.4	-97.4	34.3	-63.1	-57.0	-6.1	Peak	Horizontal
	36.8	-90.9	22.2	-68.7	-57.0	-11.7	Peak	Vertical
	625.1	-100.0	31.6	-68.4	-57.0	-11.4	Peak	Vertical
	1376.0	-63.0	7.9	-55.1	-47.0	-8.1	Peak	Horizontal
	1622.8	-61.9	6.9	-55.0	-47.0	-8.0	Peak	Horizontal
	1376.0	-61.5	8.2	-53.3	-47.0	-6.3	Peak	Vertical
	2098.6	-63.8	9.6	-54.2	-47.0	-7.2	Peak	Vertical
13	160.0	-92.6	23.9	-68.7	-57.0	-11.7	Peak	Horizontal
	875.4	-98.8	34.3	-64.5	-57.0	-7.5	Peak	Horizontal
	111.5	-101.5	27.8	-73.7	-57.0	-16.7	Peak	Vertical
	875.4	-98.5	34.8	-63.7	-57.0	-6.7	Peak	Vertical
	1376.0	-62.7	7.9	-54.8	-47.0	-7.8	Peak	Horizontal
	2498.1	-65.0	10.7	-54.3	-47.0	-7.3	Peak	Horizontal
	1376.0	-62.2	8.2	-54.0	-47.0	-7.0	Peak	Vertical
	1922.4	-63.7	8.2	-55.5	-47.0	-8.5	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11g - Ant 3	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	159.0	-94.9	23.7	-71.2	-57.0	-14.2	Peak	Horizontal
	716.3	-99.1	33.5	-65.6	-57.0	-8.6	Peak	Horizontal
	36.3	-87.5	21.7	-65.8	-57.0	-8.8	Peak	Vertical
	625.1	-98.0	31.6	-66.4	-57.0	-9.4	Peak	Vertical
	1376.0	-61.5	7.9	-53.6	-47.0	-6.6	Peak	Horizontal
	2498.1	-64.9	10.7	-54.2	-47.0	-7.2	Peak	Horizontal
	1376.0	-62.0	8.2	-53.8	-47.0	-6.8	Peak	Vertical
	1975.3	-63.2	8.8	-54.4	-47.0	-7.4	Peak	Vertical
13	159.0	-94.8	23.7	-71.1	-57.0	-14.1	Peak	Horizontal
	875.4	-98.0	34.3	-63.7	-57.0	-6.7	Peak	Horizontal
	108.6	-101.2	27.9	-73.3	-57.0	-16.3	Peak	Vertical
	625.1	-97.0	31.6	-65.4	-57.0	-8.4	Peak	Vertical
	1622.8	-62.2	6.9	-55.3	-47.0	-8.3	Peak	Horizontal
	2245.5	-65.4	11.6	-53.8	-47.0	-6.8	Peak	Horizontal
	1376.0	-61.6	8.2	-53.4	-47.0	-6.4	Peak	Vertical
	1875.4	-62.5	8.3	-54.2	-47.0	-7.2	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11n-HT20 - Ant 0+1+2+3	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	160.0	-94.0	23.9	-70.1	-57.0	-13.1	Peak	Horizontal
	677.5	-99.2	32.0	-67.2	-57.0	-10.2	Peak	Horizontal
	36.8	-90.6	22.2	-68.4	-57.0	-11.4	Peak	Vertical
	625.1	-98.4	31.6	-66.8	-57.0	-9.8	Peak	Vertical
	1358.4	-64.3	7.7	-56.6	-47.0	-9.6	Peak	Horizontal
	2498.1	-65.4	10.7	-54.7	-47.0	-7.7	Peak	Horizontal
	1376.0	-62.0	8.2	-53.8	-47.0	-6.8	Peak	Vertical
	2251.4	-67.5	11.7	-55.8	-47.0	-8.8	Peak	Vertical
13	160.0	-92.5	23.9	-68.6	-57.0	-11.6	Peak	Horizontal
	625.1	-97.5	31.3	-66.2	-57.0	-9.2	Peak	Horizontal
	74.1	-96.8	24.1	-72.7	-57.0	-15.7	Peak	Vertical
	625.1	-98.3	31.6	-66.7	-57.0	-9.7	Peak	Vertical
	1376.0	-62.7	7.9	-54.8	-47.0	-7.8	Peak	Horizontal
	2498.1	-64.8	10.7	-54.1	-47.0	-7.1	Peak	Horizontal
	1599.3	-61.9	7.0	-54.9	-47.0	-7.9	Peak	Vertical
	2263.1	-66.4	11.6	-54.8	-47.0	-7.8	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/11	Relative Humidity	54%
Test Mode	802.11n-HT40 - Ant 0+1+2+3	Test Site	AC1
Antenna Type	Panel Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
03	159.0	-95.8	23.7	-72.1	-57.0	-15.1	Peak	Horizontal
	687.2	-99.7	32.3	-67.4	-57.0	-10.4	Peak	Horizontal
	74.1	-97.0	24.1	-72.9	-57.0	-15.9	Peak	Vertical
	625.1	-97.3	31.6	-65.7	-57.0	-8.7	Peak	Vertical
	1229.1	-62.0	6.4	-55.6	-47.0	-8.6	Peak	Horizontal
	2392.4	-66.7	10.6	-56.1	-47.0	-9.1	Peak	Horizontal
	1229.1	-61.1	6.9	-54.2	-47.0	-7.2	Peak	Vertical
	2263.1	-66.3	11.6	-54.7	-47.0	-7.7	Peak	Vertical
11	160.0	-94.2	23.9	-70.3	-57.0	-13.3	Peak	Horizontal
	721.6	-100.6	33.8	-66.8	-57.0	-9.8	Peak	Horizontal
	83.4	-100.3	28.2	-72.1	-57.0	-15.1	Peak	Vertical
	625.1	-98.4	31.6	-66.8	-57.0	-9.8	Peak	Vertical
	1376.0	-62.6	7.9	-54.7	-47.0	-7.7	Peak	Horizontal
	2498.1	-64.7	10.7	-54.0	-47.0	-7.0	Peak	Horizontal
	1376.0	-61.6	8.2	-53.4	-47.0	-6.4	Peak	Vertical
	1975.3	-62.7	8.8	-53.9	-47.0	-6.9	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 0	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	154.6	-92.4	22.7	-69.7	-57.0	-12.7	Peak	Horizontal
	625.1	-94.8	31.3	-63.5	-57.0	-6.5	Peak	Horizontal
	153.7	-96.0	25.4	-70.6	-57.0	-13.6	Peak	Vertical
	625.1	-96.6	31.6	-65.0	-57.0	-8.0	Peak	Vertical
	1376.0	-62.6	7.9	-54.7	-47.0	-7.7	Peak	Horizontal
	1622.8	-61.8	6.9	-54.9	-47.0	-7.9	Peak	Horizontal
	1376.0	-61.3	8.2	-53.1	-47.0	-6.1	Peak	Vertical
	1975.3	-64.0	8.8	-55.2	-47.0	-8.2	Peak	Vertical
13	154.2	-91.8	22.7	-69.1	-57.0	-12.1	Peak	Horizontal
	625.1	-96.7	31.3	-65.4	-57.0	-8.4	Peak	Horizontal
	153.7	-96.1	25.4	-70.7	-57.0	-13.7	Peak	Vertical
	625.1	-96.0	31.6	-64.4	-57.0	-7.4	Peak	Vertical
	1376.0	-63.2	7.9	-55.3	-47.0	-8.3	Peak	Horizontal
	1875.4	-64.1	8.3	-55.8	-47.0	-8.8	Peak	Horizontal
	1376.0	-61.5	8.2	-53.3	-47.0	-6.3	Peak	Vertical
	2498.1	-65.3	10.8	-54.5	-47.0	-7.5	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 0	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	153.7	-91.9	22.6	-69.3	-57.0	-12.3	Peak	Horizontal
	625.1	-96.7	31.3	-65.4	-57.0	-8.4	Peak	Horizontal
	154.6	-95.0	25.4	-69.6	-57.0	-12.6	Peak	Vertical
	625.1	-94.8	31.6	-63.2	-57.0	-6.2	Peak	Vertical
	1376.0	-61.1	7.9	-53.2	-47.0	-6.2	Peak	Horizontal
	2263.1	-67.4	11.6	-55.8	-47.0	-8.8	Peak	Horizontal
	1828.4	-63.5	8.0	-55.5	-47.0	-8.5	Peak	Vertical
	2251.4	-65.8	11.7	-54.1	-47.0	-7.1	Peak	Vertical
13	154.2	-91.5	22.7	-68.8	-57.0	-11.8	Peak	Horizontal
	625.1	-95.7	31.3	-64.4	-57.0	-7.4	Peak	Horizontal
	153.7	-96.2	25.4	-70.8	-57.0	-13.8	Peak	Vertical
	850.1	-98.1	34.8	-63.3	-57.0	-6.3	Peak	Vertical
	1252.6	-63.1	6.8	-56.3	-47.0	-9.3	Peak	Horizontal
	2821.3	-67.3	12.9	-54.4	-47.0	-7.4	Peak	Horizontal
	1722.6	-62.5	7.4	-55.1	-47.0	-8.1	Peak	Vertical
	2333.6	-66.3	11.3	-55.0	-47.0	-8.0	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)  
- Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 1	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	146.4	-91.6	22.3	-69.3	-57.0	-12.3	Peak	Horizontal
	374.8	-89.9	26.8	-63.1	-57.0	-6.1	Peak	Horizontal
	154.6	-96.0	25.4	-70.6	-57.0	-13.6	Peak	Vertical
	875.4	-98.0	34.8	-63.2	-57.0	-6.2	Peak	Vertical
	1376.0	-62.6	7.9	-54.7	-47.0	-7.7	Peak	Horizontal
	2286.6	-65.9	11.3	-54.6	-47.0	-7.6	Peak	Horizontal
	1699.1	-62.4	7.3	-55.1	-47.0	-8.1	Peak	Vertical
	2098.6	-64.6	9.6	-55.0	-47.0	-8.0	Peak	Vertical
13	154.6	-92.4	22.7	-69.7	-57.0	-12.7	Peak	Horizontal
	900.1	-98.5	35.0	-63.5	-57.0	-6.5	Peak	Horizontal
	153.7	-96.0	25.4	-70.6	-57.0	-13.6	Peak	Vertical
	625.1	-95.7	31.6	-64.1	-57.0	-7.1	Peak	Vertical
	1875.4	-63.0	8.3	-54.7	-47.0	-7.7	Peak	Horizontal
	2498.1	-65.7	10.7	-55.0	-47.0	-8.0	Peak	Horizontal
	1828.4	-62.4	8.0	-54.4	-47.0	-7.4	Peak	Vertical
	2233.8	-66.4	11.5	-54.9	-47.0	-7.9	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)  
- Pre\_Amplifier Gain (dB)



Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 1	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	153.7	-92.7	22.6	-70.1	-57.0	-13.1	Peak	Horizontal
	369.0	-90.6	26.2	-64.4	-57.0	-7.4	Peak	Horizontal
	153.7	-96.0	25.4	-70.6	-57.0	-13.6	Peak	Vertical
	625.1	-96.1	31.6	-64.5	-57.0	-7.5	Peak	Vertical
	1376.0	-62.9	7.9	-55.0	-47.0	-8.0	Peak	Horizontal
	1875.4	-62.5	8.3	-54.2	-47.0	-7.2	Peak	Horizontal
	1828.4	-63.5	8.0	-55.5	-47.0	-8.5	Peak	Vertical
	1975.3	-64.9	8.8	-56.1	-47.0	-9.1	Peak	Vertical
13	154.6	-92.7	22.7	-70.0	-57.0	-13.0	Peak	Horizontal
	625.1	-96.9	31.3	-65.6	-57.0	-8.6	Peak	Horizontal
	153.7	-96.5	25.4	-71.1	-57.0	-14.1	Peak	Vertical
	625.1	-95.8	31.6	-64.2	-57.0	-7.2	Peak	Vertical
	1875.4	-62.8	8.3	-54.5	-47.0	-7.5	Peak	Horizontal
	2815.4	-68.1	12.9	-55.2	-47.0	-8.2	Peak	Horizontal
	1828.4	-63.4	8.0	-55.4	-47.0	-8.4	Peak	Vertical
	2498.1	-65.8	10.8	-55.0	-47.0	-8.0	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 2	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	153.7	-91.9	22.6	-69.3	-57.0	-12.3	Peak	Horizontal
	374.8	-90.0	26.8	-63.2	-57.0	-6.2	Peak	Horizontal
	36.8	-87.4	22.2	-65.2	-57.0	-8.2	Peak	Vertical
	850.1	-98.2	34.8	-63.4	-57.0	-6.4	Peak	Vertical
	1376.0	-63.2	7.9	-55.3	-47.0	-8.3	Peak	Horizontal
	2498.1	-66.1	10.7	-55.4	-47.0	-8.4	Peak	Horizontal
	2239.6	-66.7	11.6	-55.1	-47.0	-8.1	Peak	Vertical
	2850.6	-68.2	12.7	-55.5	-47.0	-8.5	Peak	Vertical
13	154.6	-92.0	22.7	-69.3	-57.0	-12.3	Peak	Horizontal
	375.3	-90.5	26.9	-63.6	-57.0	-6.6	Peak	Horizontal
	153.7	-96.5	25.4	-71.1	-57.0	-14.1	Peak	Vertical
	625.1	-95.8	31.6	-64.2	-57.0	-7.2	Peak	Vertical
	1622.8	-61.8	6.9	-54.9	-47.0	-7.9	Peak	Horizontal
	2498.1	-65.8	10.7	-55.1	-47.0	-8.1	Peak	Horizontal
	2251.4	-66.8	11.7	-55.1	-47.0	-8.1	Peak	Vertical
	2498.1	-65.8	10.8	-55.0	-47.0	-8.0	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 2	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	153.7	-92.6	22.6	-70.0	-57.0	-13.0	Peak	Horizontal
	850.1	-98.2	34.1	-64.1	-57.0	-7.1	Peak	Horizontal
	154.2	-95.5	25.4	-70.1	-57.0	-13.1	Peak	Vertical
	625.1	-95.2	31.6	-63.6	-57.0	-6.6	Peak	Vertical
	1376.0	-62.1	7.9	-54.2	-47.0	-7.2	Peak	Horizontal
	2844.8	-67.6	12.7	-54.9	-47.0	-7.9	Peak	Horizontal
	1822.5	-62.3	7.9	-54.4	-47.0	-7.4	Peak	Vertical
	2233.8	-66.1	11.5	-54.6	-47.0	-7.6	Peak	Vertical
13	154.6	-92.0	22.7	-69.3	-57.0	-12.3	Peak	Horizontal
	559.1	-97.0	31.0	-66.0	-57.0	-9.0	Peak	Horizontal
	153.7	-96.6	25.4	-71.2	-57.0	-14.2	Peak	Vertical
	625.1	-96.2	31.6	-64.6	-57.0	-7.6	Peak	Vertical
	1875.4	-63.4	8.3	-55.1	-47.0	-8.1	Peak	Horizontal
	2997.5	-68.3	13.0	-55.3	-47.0	-8.3	Peak	Horizontal
	1828.4	-62.5	8.0	-54.5	-47.0	-7.5	Peak	Vertical
	2263.1	-66.4	11.6	-54.8	-47.0	-7.8	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m)  
- Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11b - Ant 3	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	154.6	-92.2	22.7	-69.5	-57.0	-12.5	Peak	Horizontal
	850.1	-98.5	34.1	-64.4	-57.0	-7.4	Peak	Horizontal
	153.7	-96.4	25.4	-71.0	-57.0	-14.0	Peak	Vertical
	625.1	-96.1	31.6	-64.5	-57.0	-7.5	Peak	Vertical
	1622.8	-61.3	6.9	-54.4	-47.0	-7.4	Peak	Horizontal
	2498.1	-65.9	10.7	-55.2	-47.0	-8.2	Peak	Horizontal
	1376.0	-61.5	8.2	-53.3	-47.0	-6.3	Peak	Vertical
	1622.8	-60.7	7.0	-53.7	-47.0	-6.7	Peak	Vertical
13	153.7	-91.8	22.6	-69.2	-57.0	-12.2	Peak	Horizontal
	625.1	-95.4	31.3	-64.1	-57.0	-7.1	Peak	Horizontal
	154.2	-96.1	25.4	-70.7	-57.0	-13.7	Peak	Vertical
	625.1	-95.1	31.6	-63.5	-57.0	-6.5	Peak	Vertical
	1376.0	-62.6	7.9	-54.7	-47.0	-7.7	Peak	Horizontal
	2498.1	-67.1	10.7	-56.4	-47.0	-9.4	Peak	Horizontal
	1376.0	-62.1	8.2	-53.9	-47.0	-6.9	Peak	Vertical
	2251.4	-66.8	11.7	-55.1	-47.0	-8.1	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11g - Ant 3	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	154.6	-92.3	22.7	-69.6	-57.0	-12.6	Peak	Horizontal
	625.1	-97.0	31.3	-65.7	-57.0	-8.7	Peak	Horizontal
	153.7	-97.3	25.4	-71.9	-57.0	-14.9	Peak	Vertical
	875.4	-99.9	34.8	-65.1	-57.0	-8.1	Peak	Vertical
	1622.8	-61.7	6.9	-54.8	-47.0	-7.8	Peak	Horizontal
	3050.4	-67.5	13.5	-54.0	-47.0	-7.0	Peak	Horizontal
	1722.6	-63.7	7.4	-56.3	-47.0	-9.3	Peak	Vertical
	2128.0	-65.5	10.1	-55.4	-47.0	-8.4	Peak	Vertical
13	154.6	-91.4	22.7	-68.7	-57.0	-11.7	Peak	Horizontal
	625.1	-96.2	31.3	-64.9	-57.0	-7.9	Peak	Horizontal
	154.6	-97.3	25.4	-71.9	-57.0	-14.9	Peak	Vertical
	625.1	-96.1	31.6	-64.5	-57.0	-7.5	Peak	Vertical
	1622.8	-62.6	6.9	-55.7	-47.0	-8.7	Peak	Horizontal
	2292.5	-65.8	11.4	-54.4	-47.0	-7.4	Peak	Horizontal
	1229.1	-61.2	6.9	-54.3	-47.0	-7.3	Peak	Vertical
	2292.5	-65.8	11.6	-54.2	-47.0	-7.2	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11n-HT20 - Ant 0+1+2+3	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
01	154.6	-91.8	22.7	-69.1	-57.0	-12.1	Peak	Horizontal
	557.2	-96.2	30.9	-65.3	-57.0	-8.3	Peak	Horizontal
	154.6	-95.6	25.4	-70.2	-57.0	-13.2	Peak	Vertical
	625.1	-96.1	31.6	-64.5	-57.0	-7.5	Peak	Vertical
	1622.8	-61.9	6.9	-55.0	-47.0	-8.0	Peak	Horizontal
	1875.4	-62.5	8.3	-54.2	-47.0	-7.2	Peak	Horizontal
	1622.8	-61.2	7.0	-54.2	-47.0	-7.2	Peak	Vertical
	1875.4	-62.5	8.3	-54.2	-47.0	-7.2	Peak	Vertical
13	154.6	-92.9	22.7	-70.2	-57.0	-13.2	Peak	Horizontal
	775.0	-100.7	34.6	-66.1	-57.0	-9.1	Peak	Horizontal
	154.2	-95.5	25.4	-70.1	-57.0	-13.1	Peak	Vertical
	850.1	-97.9	34.8	-63.1	-57.0	-6.1	Peak	Vertical
	2245.5	-66.5	11.6	-54.9	-47.0	-7.9	Peak	Horizontal
	2821.3	-67.2	12.9	-54.3	-47.0	-7.3	Peak	Horizontal
	1822.5	-63.0	7.9	-55.1	-47.0	-8.1	Peak	Vertical
	2310.1	-65.6	11.4	-54.2	-47.0	-7.2	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

Test Engineer	Alex Ma	Temperature	26°C
Test Data	2018/04/10	Relative Humidity	54%
Test Mode	802.11n-HT40 - Ant 0+1+2+3	Test Site	AC1
Antenna Type	Dipole Antenna		

Channel	Frequency (MHz)	Reading Level (dBm)	Substitution Factor (dB)	Measure Level (dBm)	Limit (dBm)	Margin (dB)	Detector	Polarization
03	153.7	-92.3	22.6	-69.7	-57.0	-12.7	Peak	Horizontal
	625.1	-96.5	31.3	-65.2	-57.0	-8.2	Peak	Horizontal
	154.2	-95.4	25.4	-70.0	-57.0	-13.0	Peak	Vertical
	850.1	-97.9	34.8	-63.1	-57.0	-6.1	Peak	Vertical
	1376.0	-62.9	7.9	-55.0	-47.0	-8.0	Peak	Horizontal
	2498.1	-66.4	10.7	-55.7	-47.0	-8.7	Peak	Horizontal
	1376.0	-61.9	8.2	-53.7	-47.0	-6.7	Peak	Vertical
	1975.3	-64.0	8.8	-55.2	-47.0	-8.2	Peak	Vertical
11	154.2	-92.1	22.7	-69.4	-57.0	-12.4	Peak	Horizontal
	625.1	-97.5	31.3	-66.2	-57.0	-9.2	Peak	Horizontal
	153.7	-95.7	25.4	-70.3	-57.0	-13.3	Peak	Vertical
	625.1	-95.6	31.6	-64.0	-57.0	-7.0	Peak	Vertical
	1376.0	-62.5	7.9	-54.6	-47.0	-7.6	Peak	Horizontal
	1875.4	-63.3	8.3	-55.0	-47.0	-8.0	Peak	Horizontal
	2251.4	-66.6	11.7	-54.9	-47.0	-7.9	Peak	Vertical
	2856.5	-67.4	12.8	-54.6	-47.0	-7.6	Peak	Vertical

Note 1: Measure Level (dBm) = Reading Level (dBm) + Substitution Factor (dB)

Note 2: Substitution Factor (dB) = Cable Loss (dB) + Space Attenuation (dB) + Antenna Factor (dB/m) - Pre\_Amplifier Gain (dB)

## 13. Receiver Blocking

### 13.1. Limit

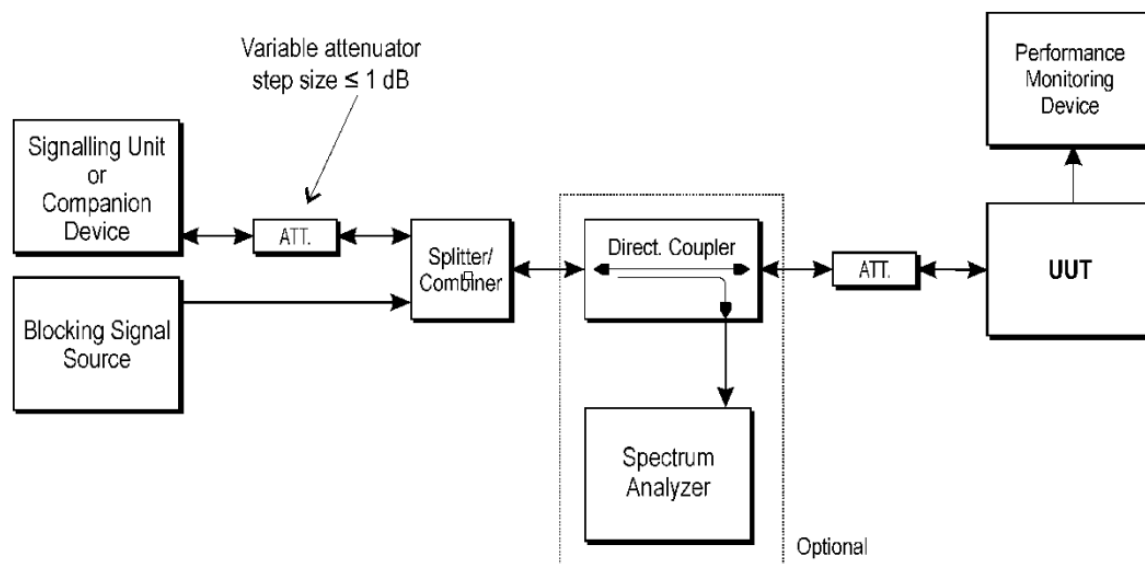
The minimum performance criterion shall be a PER less than or equal to 10 %. The manufacturer may declare alternative performance criteria as long as that is appropriate for the intended use of the equipment.

Wanted signal mean power from companion device (dBm)	Blocking signal frequency (MHz)	Blocking signal power (dBm) (see note 2)	Type of blocking signal
$P_{\min} + 6$ dB	2380, 2503.5	-53	CW
$P_{\min} + 6$ dB	2300, 2330, 2360	-47	CW
$P_{\min} + 6$ dB	2523.5, 2553.5 2583.5, 2613.5 2643.5, 2673.5	-47	CW

Note 1:  $P_{\min}$  is the minimum level of the wanted signal (in dBm) required to meet the minimum performance criteria as defined in clause 4.3.2.11.3 in the absence of any blocking signal.

Note 2: The levels specified are levels in front of the UUT antenna. In case of conducted measurements, the levels have to be corrected by the actual antenna assembly gain.

### 13.2. Test Setup



Test Set-up for receiver blocking

### 13.3. Test Procedure

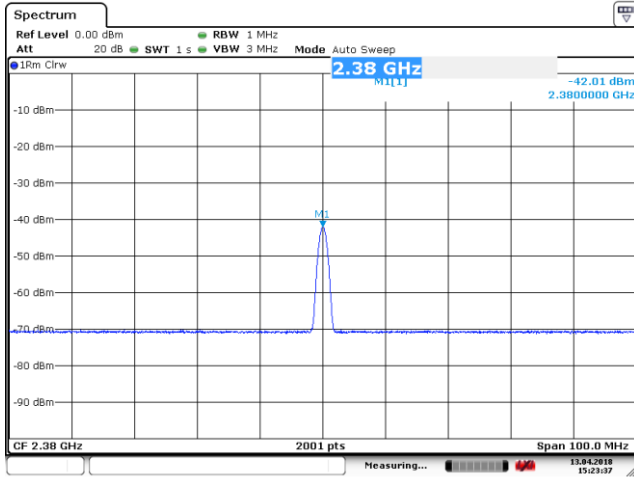
Refer to ETSI EN 300 328 V2.1.1 (2016-11) Clause 5.4.11.2.1.



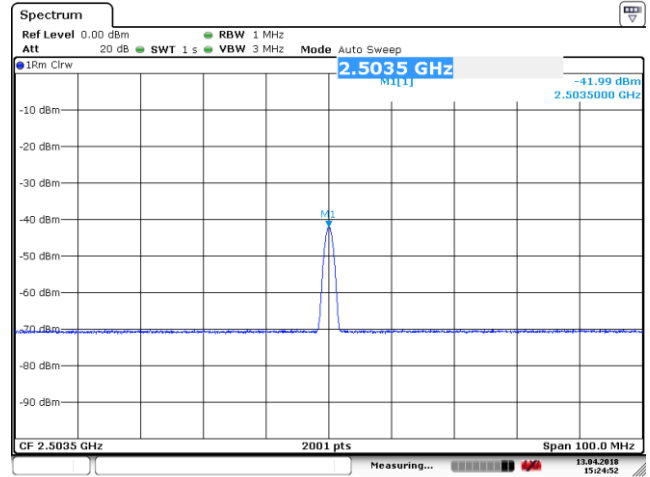
## 13.4. Test Result

### Blocking Signal Calibration Plots

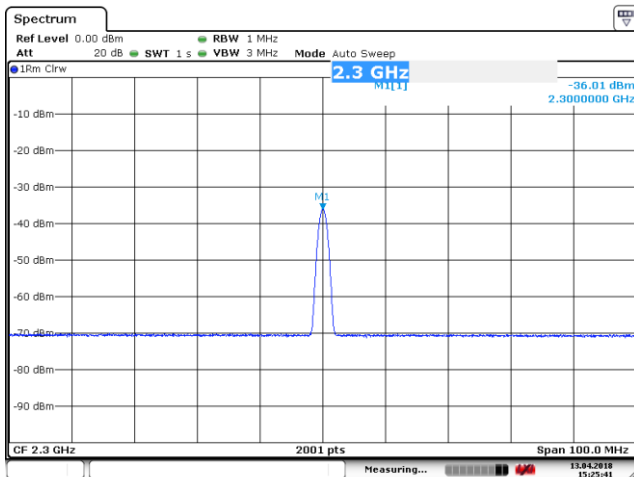
2380MHz



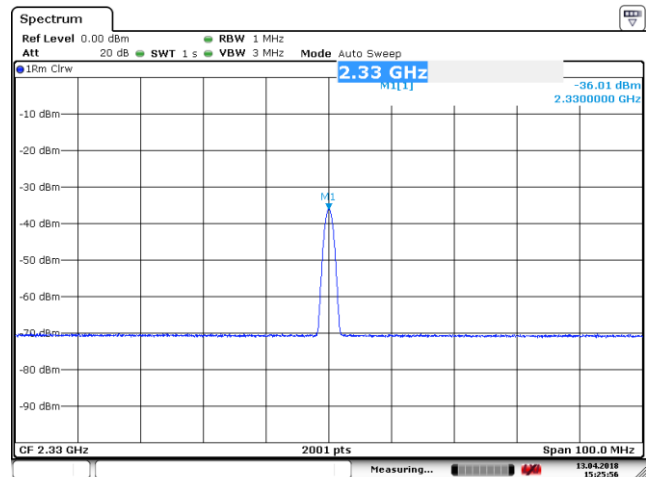
2503.5MHz



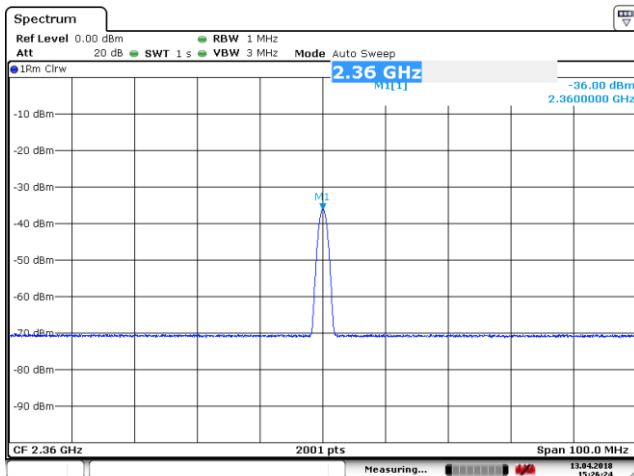
2300MHz



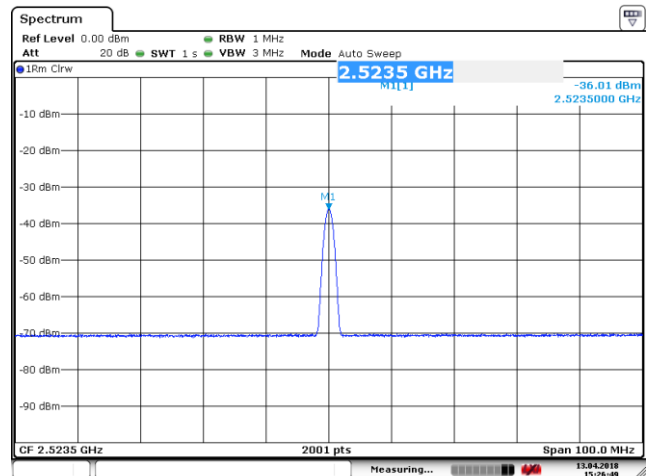
2330MHz

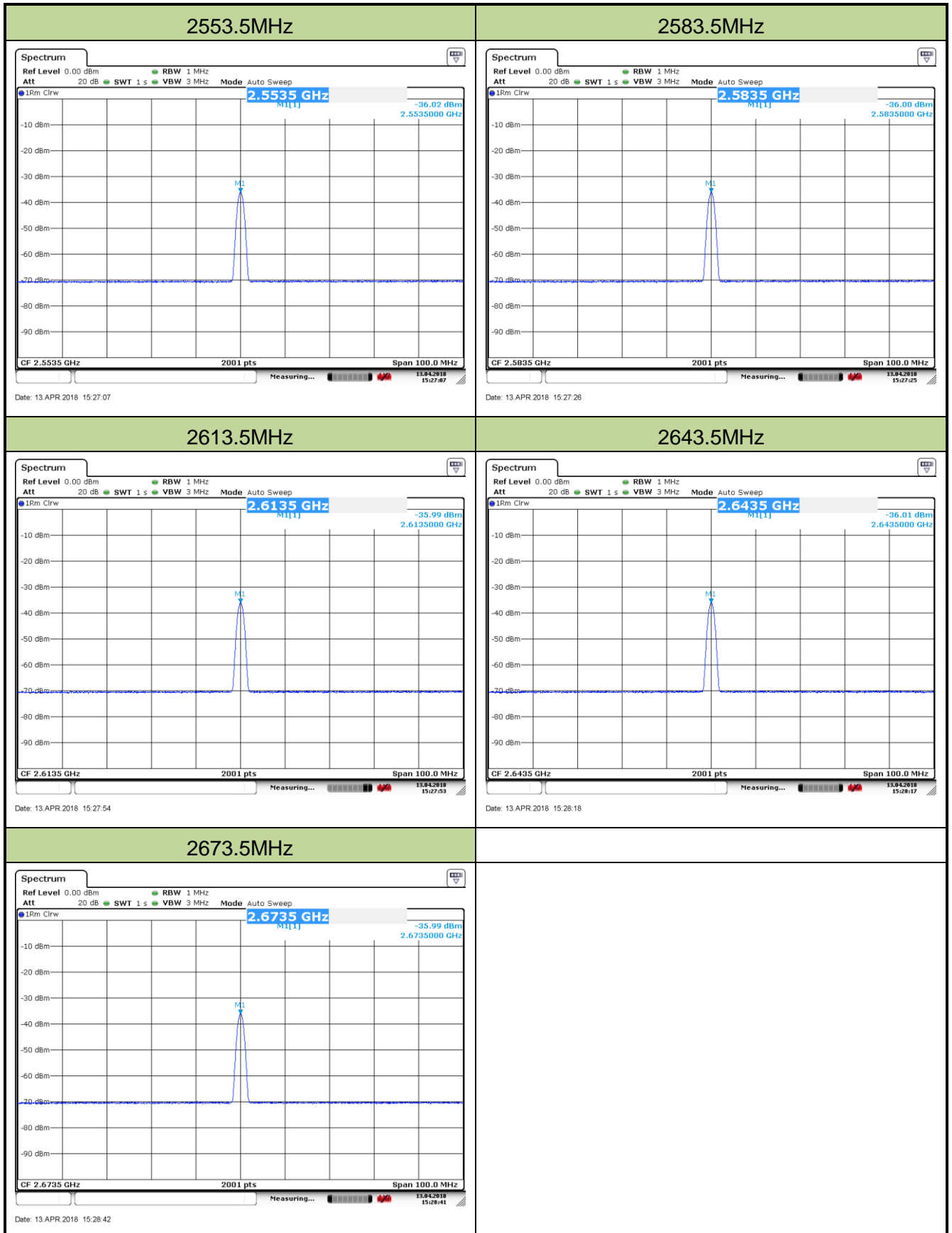


2360MHz



2523.5MHz





Note: This interference level has been included the antenna gain.

Test Engineer	Dandy Li	Temperature	26°C
Test Data	2018/04/13	Relative Humidity	54%
Test Mode	802.11b	Test Site	TR4

Channel	Wanted Signal Mean Power from Companion Device (dBm)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm)	Type of Blocking Signal	PER Test Result (%)	Limit (PER)	Test Result
01	$P_{\text{MIN}} + 6 \text{ dB}$	2300.0	-36.0	CW	0.0	< 10%	Pass
		2330.0	-36.0		0.1		Pass
		2360.0	-36.0		0.1		Pass
		2380.0	-42.0		0.1		Pass
		2503.5	-42.0		0.0		Pass
		2523.5	-36.0		0.1		Pass
		2553.5	-36.0		0.0		Pass
		2583.5	-36.0		0.0		Pass
		2613.5	-36.0		0.0		Pass
		2643.5	-36.0		0.0		Pass
		2673.5	-36.0		0.2		Pass

Note 1: The  $P_{\text{min}}$  of channel 01 is -95dBm.

13	$P_{\text{MIN}} + 6 \text{ dB}$	2300.0	-36.0	CW	0.0	< 10%	Pass
		2330.0	-36.0		0.1		Pass
		2360.0	-36.0		0.0		Pass
		2380.0	-42.0		0.0		Pass
		2503.5	-42.0		0.1		Pass
		2523.5	-36.0		0.1		Pass
		2553.5	-36.0		0.1		Pass
		2583.5	-36.0		0.0		Pass
		2613.5	-36.0		0.1		Pass
		2643.5	-36.0		0.0		Pass
		2673.5	-36.0		0.0		Pass

Note 2: The  $P_{\text{min}}$  of channel 13 is -95dBm.

Test Engineer	Dandy Li	Temperature	26°C
Test Data	2018/04/13	Relative Humidity	54%
Test Mode	802.11g	Test Site	TR4

Channel	Wanted Signal Mean Power from Companion Device (dBm)	Blocking Signal Frequency (MHz)	Blocking Signal Power (dBm)	Type of Blocking Signal	PER Test Result (%)	Limit (PER)	Test Result
01	$P_{\text{MIN}} + 6 \text{ dB}$	2300.0	-36.0	CW	0.0	< 10%	Pass
		2330.0	-36.0		0.0		Pass
		2360.0	-36.0		0.1		Pass
		2380.0	-42.0		0.0		Pass
		2503.5	-42.0		0.0		Pass
		2523.5	-36.0		0.0		Pass
		2553.5	-36.0		0.0		Pass
		2583.5	-36.0		0.0		Pass
		2613.5	-36.0		0.0		Pass
		2643.5	-36.0		0.0		Pass
		2673.5	-36.0		0.0		Pass

Note 1: The  $P_{\text{min}}$  of channel 01 is -89dBm.

13	$P_{\text{MIN}} + 6 \text{ dB}$	2300.0	-36.0	CW	0.1	< 10%	Pass
		2330.0	-36.0		0.0		Pass
		2360.0	-36.0		0.1		Pass
		2380.0	-42.0		0.0		Pass
		2503.5	-42.0		0.0		Pass
		2523.5	-36.0		0.0		Pass
		2553.5	-36.0		0.1		Pass
		2583.5	-36.0		0.0		Pass
		2613.5	-36.0		0.0		Pass
		2643.5	-36.0		0.0		Pass
		2673.5	-36.0		0.0		Pass

Note 2: The  $P_{\text{min}}$  of channel 13 is -89dBm.

## 14. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Parameter	Uncertainty
Occupied Channel Bandwidth	$\pm 5 \%$
RF output power, conducted	$\pm 1,5 \text{ dB}$
Power Spectral Density, conducted	$\pm 3 \text{ dB}$
Unwanted Emissions, conducted	$\pm 3 \text{ dB}$
All emissions, radiated	$\pm 6 \text{ dB}$
Temperature	$\pm 3 \text{ }^{\circ}\text{C}$
Supply voltages	$\pm 3 \%$
Time	$\pm 5 \%$

## 15. List of Measuring Instrument

### Equivalent Isotropic Radiated Power - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2018/12/06
Programmable Temperature & Humidity Chamber	BAOYT	BYH-1500L	MRTSUE06051	1 year	2018/12/06
Temperature/Humidity Meter	testo	608-H1	MRTSUE06401	1 year	2018/08/14

### Power Spectral Density - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2018/04/25
Temperature/Humidity Meter	testo	608-H1	MRTSUE06401	1 year	2018/08/14

### Duty Cycle, Tx-sequence, Tx-gap - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2018/04/25
Temperature/Humidity Meter	testo	608-H1	MRTSUE06401	1 year	2018/08/14

### Medium Utilisation (MU) Factor - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2018/04/25
Power Meter	Agilent	U2021XA	MRTSUE06030	1 year	2018/12/06
Temperature/Humidity Meter	testo	608-H1	MRTSUE06401	1 year	2018/08/14

### Adaptivity and Blocking - TR4

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2018/04/25
Vector Signal Generator	Agilent	E4438C	MRTSUE06026	1 year	2018/12/06
Vector Signal Generator	Agilent	E4438C	MRTSUE06081	1 year	2018/12/06
Directional Coupler	Narda	4216-20	MRTSUE06065	1 year	2019/03/28
Power Splitter	Mini-Circuits	ZFRSC-123-S+	MRTSUE06122	N/A	N/A
Temperature/Humidity Meter	testo	608-H1	MRTSUE06401	1 year	2018/11/21

## Occupied Channel Bandwidth - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2018/04/25
Temperature/Humidity Meter	testo	608-H1	MRTSUE06401	1 year	2018/08/14

## Transmitter Unwanted Emissions in the out-of-band Domain - TR3

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2018/12/06
Programmable Temperature & Humidity Chamber	BAOYT	BYH-1500L	MRTSUE06243	1 year	2018/12/06
Temperature/Humidity Meter	testo	608-H1	MRTSUE06401	1 year	2018/08/14

## Transmitter Spurious Emissions and Receiver Spurious Emissions - AC1

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cal. Due Date
MXE EMI Receiver	Agilent	N9038A	MRTSUE06125	1 year	2018/08/18
Microwave System Amplifier	Agilent	83017A	MRTSUE06076	1 year	2019/04/12
Bilog Period Antenna	Schwarzbeck	VULB 9168	MRTSUE06172	1 year	2019/04/12
Horn Antenna	Schwarzbeck	BBHA 9120D	MRTSUE06023	1 year	2018/11/19
Temperature/Humidity Meter	Yuhuaze	HTC-2	MRTSUE06183	1 year	2018/10/21
Anechoic Chamber	TDK	Chamber-AC1	MRTSUE06212	1 year	2018/05/10

## Receiver Blocking - TR4

Instrument	Manufacturer	Type No.	Asset No.	Cali. Interval	Cali. Due Date
Spectrum Analyzer	Agilent	N9020A	MRTSUE06106	1 year	2018/04/25
Vector Signal Generator	Agilent	E4438C	MRTSUE06026	1 year	2018/12/06
Vector Signal Generator	Agilent	E4438C	MRTSUE06081	1 year	2018/12/06
Directional Coupler	Narda	4216-20	MRTSUE06065	1 year	2018/03/28
Power divider	Marvelous Microwave Inc.	ZFRSC-123-S+	MVE8577	1 year	2018/03/20
Thermohygrometer	Testo	608-H1	MRTSUE06222	1 year	2018/11/21

Software	Version	Function
e3	V8.3.5	EMI Test Software

The End