

# **FCC Test Report**

FCC ID : 188WAC6303D-S

Equipment : 802.11ac Wave 2 Dual-Radio Unified Pro

**Access Point** 

Model No. : WAC6303D-S

Multiple Listing : Refer to item 1.1.1 for more details

Brand Name : ZYXEL

Applicant : Zyxel Communications Corporation

Address : No.2 Industry East RD. IX, Hsinchu Science

Park, Hsinchu 30075, Taiwan, R.O.C.

Standard : 47 CFR FCC Part 15.247

Received Date : Jun. 22, 2017

Tested Date : Sep. 13 ~ Oct. 12, 2017

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Reviewed by: Approved by:

Along Chery Assistant Manager Gary Chang / Manager

Testing Laboratory 2732

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# **Release Record**

I	Report No.	Version	Description	Issued Date
	FR762203AC	Rev. 01	Initial issue	Nov. 13, 2017

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# **Summary of Test Results**

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.561MHz 38.71 (Margin -7.29dB) - AV	Pass
15.247(d)	Radiated Emissions	[dBuV/m at 3m]: 2483.50MHz	Pass
15.209	INdulated Emissions	53.85 (Margin -0.15dB) - AV	rass
15.247(b)(3)	Maximum Output Power	Refer to FR762202AC	Pass
15.247(a)(2)	6dB Bandwidth	Refer to FR762202AC	Pass
15.247(e)	Power Spectral Density	Refer to FR762202AC	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

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### 1 General Description

### 1.1 Information

#### 1.1.1 Product Details

The following models are provided to this EUT.

Brand Name	Model Name	Product Name
ZYXEL	WAC6303D-S	802.11ac Wave 2 Dual-Radio Unified Pro Access Point
	I ΝΙΜΔ1123-ΔΓ SHD	802.11ac Wave 2 Dual-Radio Nebula Cloud Managed Access Point

<sup>+</sup> All models are electrically identical, different model names are for marketing purpose.

### 1.1.2 Specification of the Equipment under Test (EUT)

RF General Information								
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N <sub>TX</sub> )	Data Rate / MCS			
2400-2483.5	b	2412-2462	1-11 [11]	2	1-11 Mbps			
2400-2483.5	g	2412-2462	1-11 [11]	2	6-54 Mbps			
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	2	MCS 0-15			
2400-2483.5	n (HT40)	2422-2452	3-9 [7]	2	MCS 0-15			

SW Version: V5.10(ABGL.0)b4

Note 1: RF output power specifies that Maximum Peak Conducted Output Power.

Note 2: 802.11b uses a combination of DSSS-DBPSK, DQPSK, CCK modulation.

Note 3: 802.11g/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM, 256QAM modulation...

Note 4: 802.11n supports beamforming function.

### 1.1.3 Antenna Details

Model	Tuno	Connector	Operating Freq	enna Gain (dBi)	
Wiodei	Туре	Connector	2400~2483.5	5150~5250	5725~5850
AD32	Direction	UFL	1.12		
AD32	Direction	UFL		1.29	1.07

### 1.1.4 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	From AC adapter: 12Vdc From PoE: 54Vdc
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### 1.1.5 Accessories

N/A

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<sup>★</sup> The above models, model WAC6303D-S was selected as a representative one for the final test and only its data was recorded in this report.



### 1.1.6 Channel List

Frequency	band (MHz)	2400~	2483.5	
802.11 b /	g / n HT20	802.11n HT40		
Channel	Channel Frequency(MHz)		Frequency(MHz)	
1	2412	3	2422	
2	2417	4	2427	
3	2422	5	2432	
4	2427	6	2437	
5	2432	7	2442	
6	2437	8	2447	
7	2442	9	2452	
8	2447			
9	2452			
10	2457			
11	2462			

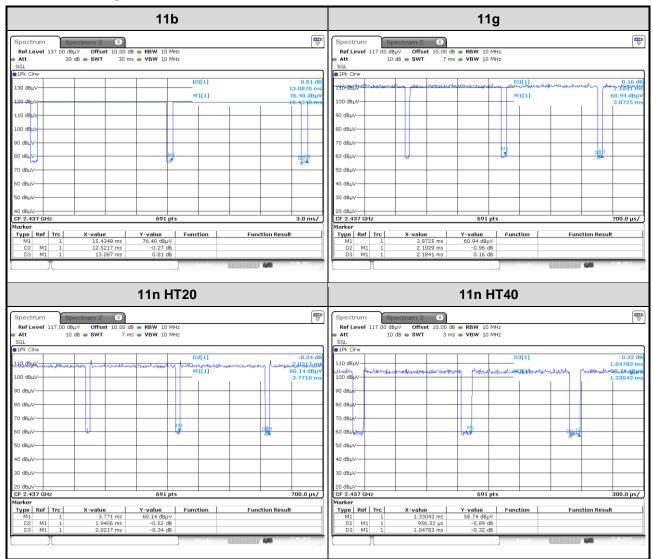
### 1.1.7 Test Tool and Duty Cycle

Test Tool	putty, V0.6					
	Mada	Non-bear	mforming	Beamf	Beamforming	
	Mode	Duty cycle (%)	Duty factor (dB)	Duty cycle (%)	Duty factor (dB)	
Duty Cyale and Duty Factor	11b	95.68%	0.19			
Duty Cycle and Duty Factor	11g	96.28%	0.16			
	HT20	95.99%	0.18	98.72%	0.06	
	HT40	91.29%	0.40	98.93%	0.05	

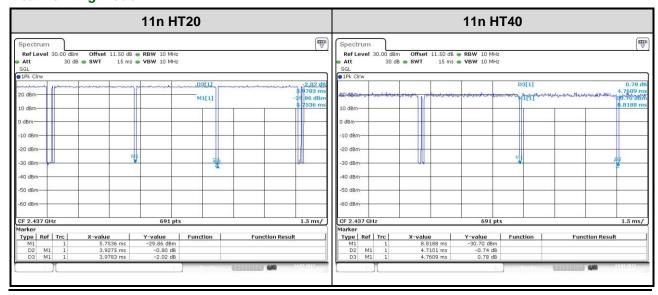
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#### Non-beamforming mode



#### Beamforming mode



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# 1.2 Local Support Equipment List

### Non-beamforming mode

	Support Equipment List									
No. Equipment Brand Model S/N Signal cable / L										
1	Notebook	DELL	Latitude E6430	9ZFB4X1	RJ45, 10m non-shielded.					
2	POE	ZYXEL	GS1900-8HP							
3	Adapter	APD	WA-24Q12R							

### Beamforming mode

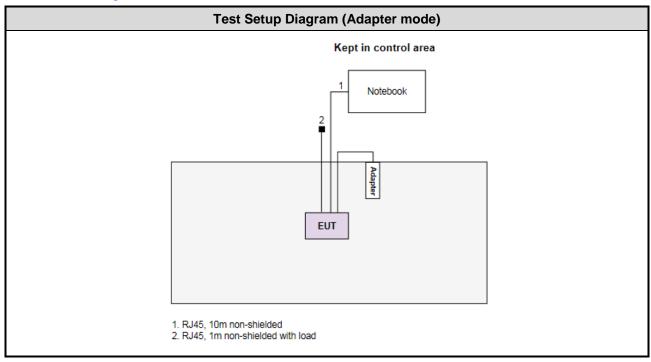
	Support Equipment List								
No. Equipment Brand Model S/N Signal cable / Length									
1	Notebook	DELL	Latitude E6430	9ZFB4X1	RJ45, 10m non-shielded.				
2	Client	ASUS	PCE-AC68						
3	POE	ZYXEL	GS1900-8HP						
4	Adapter	APD	WA-24Q12R						

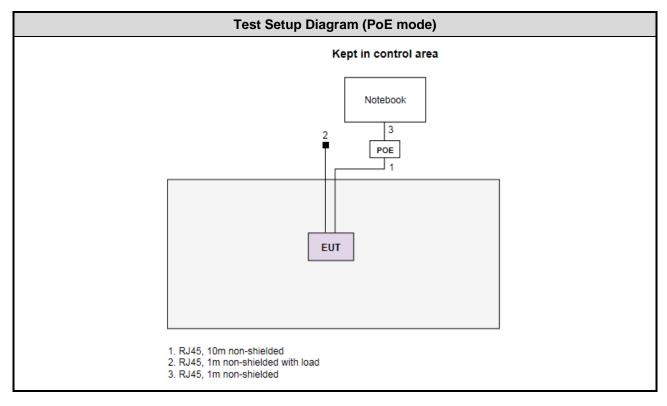
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### 1.3 Test Setup Chart

### Non-beamforming mode

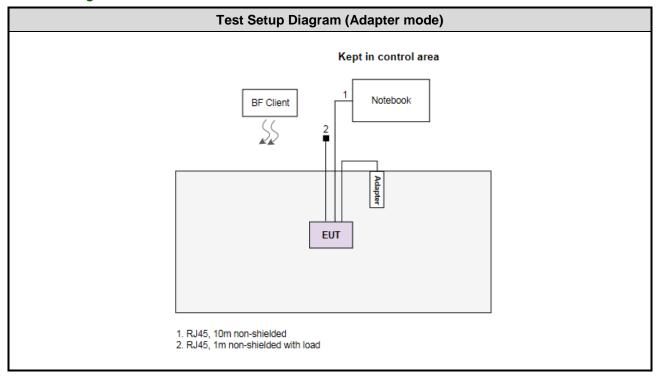


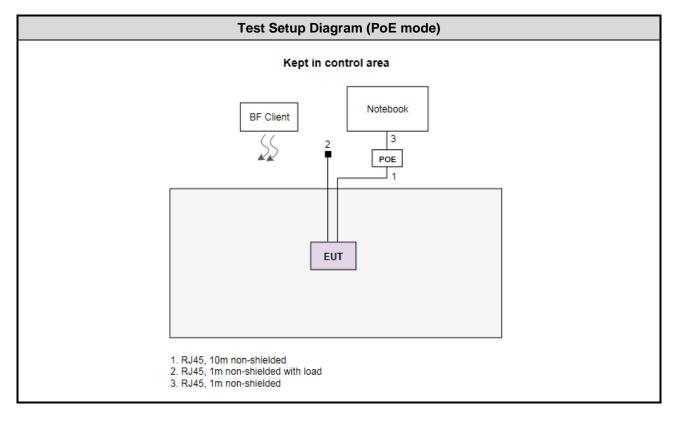


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### Beamforming mode





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# 1.4 The Equipment List

Test Item	Conducted Emission	Conducted Emission							
Test Site	Conduction room 1 /	Conduction room 1 / (CO01-WS)							
Tested Date	Oct. 06, 2017	Oct. 06, 2017							
Instrument	Manufacturer Model No. Serial No. Calibration Date Calibration Until								
Receiver	R&S	ESR3	Dec. 21, 2016	Dec. 20, 2017					
LISN	R&S	ENV216	101579	Jan. 19, 2017	Jan. 18, 2018				
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 20, 2016	Dec. 19, 2017				
Measurement Software									
Software									

Test Item	Radiated Emission							
Test Site	966 chamber 3 / (03C	H03-WS)						
Tested Date	Sep. 13, 2017							
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until			
Spectrum Analyzer	ROHDE&SCHWARZ	FSV40	101486	Nov. 15, 2016	Nov. 14, 2017			
Receiver	Agilent	N9038A	MY53290044	Oct. 06, 2016	Oct. 05, 2017			
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 28, 2017	Apr. 27, 2018			
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 09, 2017	Feb. 08, 2018			
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 25, 2016	Oct. 24, 2017			
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 10, 2016	Nov. 09, 2017			
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 09, 2016	Dec. 08, 2017			
Preamplifier	EMC	EMC02325	980187	Sep. 04, 2017	Sep. 03, 2018			
Preamplifier	Agilent	83017A	MY53270014	Aug. 21, 2017	Aug. 20, 2018			
Preamplifier	EMC	EMC184045B	980192	Aug. 22, 2017	Aug. 21, 2018			
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 04, 2017	Feb. 03, 2018			
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22600/4	Feb. 04, 2017	Feb. 03, 2018			
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 04, 2017	Feb. 03, 2018			
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800 -001	Feb. 04, 2017	Feb. 03, 2018			
LF cable-3M	EMC	EMC8D-NM-NM-300 0	131103	Feb. 04, 2017	Feb. 03, 2018			
LF cable-13M	EMC	EMC8D-NM-NM-130 00	131104	Feb. 04, 2017	Feb. 03, 2018			
Measurement Software	AUDIX	e3	6.120210g	NA	NA			
Note: Calibration Inter	val of instruments liste	d above is one year.						

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Test Item	Radiated Emission					
Test Site	966 chamber 3 / (03C	H03-WS)				
Tested Date	Oct. 12, 2017					
Instrument	Manufacturer	Manufacturer Model No. Serial No. Calibration Date Cali				
Spectrum Analyzer	ROHDE&SCHWARZ	FSV40	101486	Nov. 15, 2016	Nov. 14, 2017	
Receiver	Agilent	N9038A	MY53290044	Sep. 26, 2017	Sep. 25, 2018	
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 28, 2017	Apr. 27, 2018	
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 09, 2017	Feb. 08, 2018	
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Oct. 25, 2016	Oct. 24, 2017	
Loop Antenna	R&S	HFH2-Z2	100330	Nov. 10, 2016	Nov. 09, 2017	
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 09, 2016	Dec. 08, 2017	
Preamplifier	EMC	EMC02325	980187	Sep. 04, 2017	Sep. 03, 2018	
Preamplifier	Agilent	83017A	MY53270014	Aug. 21, 2017	Aug. 20, 2018	
Preamplifier	EMC	EMC184045B	980192	Aug. 22, 2017	Aug. 21, 2018	
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 04, 2017	Feb. 03, 2018	
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22600/4	Feb. 04, 2017	Feb. 03, 2018	
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 04, 2017	Feb. 03, 2018	
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800 -001	Feb. 04, 2017	Feb. 03, 2018	
LF cable-3M	EMC	EMC8D-NM-NM-300 0	131103	Feb. 04, 2017	Feb. 03, 2018	
LF cable-13M	EMC	EMC8D-NM-NM-130 00	131104	Feb. 04, 2017	Feb. 03, 2018	
Measurement Software	AUDIX	e3	6.120210g	NA	NA	

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### 1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247
ANSI C63.10-2013
FCC KDB 558074 D01 DTS Meas Guidance v04
FCC KDB 662911 D01 Multiple Transmitter Output v02r01

### 1.6 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

Measurement Uncertainty					
Parameters	Uncertainty				
Bandwidth	±34.134 Hz				
Conducted power	±0.808 dB				
Power density	±0.463 dB				
Conducted emission	±2.670 dB				
AC conducted emission	±2.90 dB				
Radiated emission ≤ 1GHz	±3.66 dB				
Radiated emission > 1GHz	±5.37 dB				

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# 2 Test Configuration

### 2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	23°C / 59%	Alex Tsai
Radiated Emissions	03CH03-WS	24-25°C / 64-66%	Aska Huang Brad Wu

FCC Designation No.: TW0009
 FCC site registration No.: 207696
 IC site registration No.: 10807C-1

### 2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate	Test Configuration
Non-beamforming mode				
Conducted Emissions	11g	2437	6 Mbps	1, 2
Radiated Emissions ≤1GHz	11g	2437	6 Mbps	1, 2
Radiated Emissions >1GHz	11b 11g HT20 HT40	11g 2412 / 2437 / 2462 HT20 2412 / 2437 / 2462		1
Beamforming mode				
Conducted Emissions	HT20	2437	MCS 0	1, 2
Radiated Emissions ≤1GHz	HT20	2437	MCS 0	1, 2
Radiated Emissions >1GHz	HT20 HT40	2412 / 2437 / 2462 2422 / 2437 / 2452	MCS 0 MCS 0	1

#### NOTE:

- The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement X, Y, and Z-plane. The X-plane results were found as the worst case and were shown in this report.
- 2. This device can be powered by AC adapter or POE. Each power supply was selected for final testing as below configuration.

Test configuration 1: POE mode
 Test configuration 2: Adapter mode

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### 3 Transmitter Test Results

### 3.1 Conducted Emissions

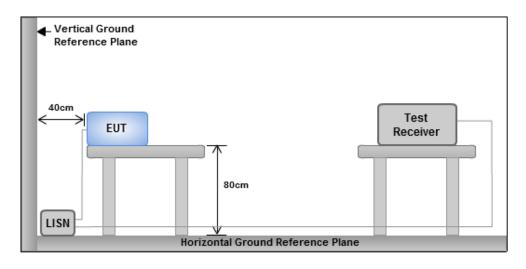
#### 3.1.1 Limit of Conducted Emissions

Conducted Emissions Limit						
Frequency Emission (MHz) Quasi-Peak Average						
0.15-0.5	66 - 56 *	56 - 46 *				
0.5-5	56	46				
5-30	60	50				
Note 1: * Decreases with the logarithm of the frequency.						

#### 3.1.2 Test Procedures

- 1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
- 2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50  $\Omega$  LISN port.
- 3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
- 4. This measurement was performed with AC 120V / 60Hz.

#### 3.1.3 Test Setup



Note: 1. Support units were connected to second LISN.

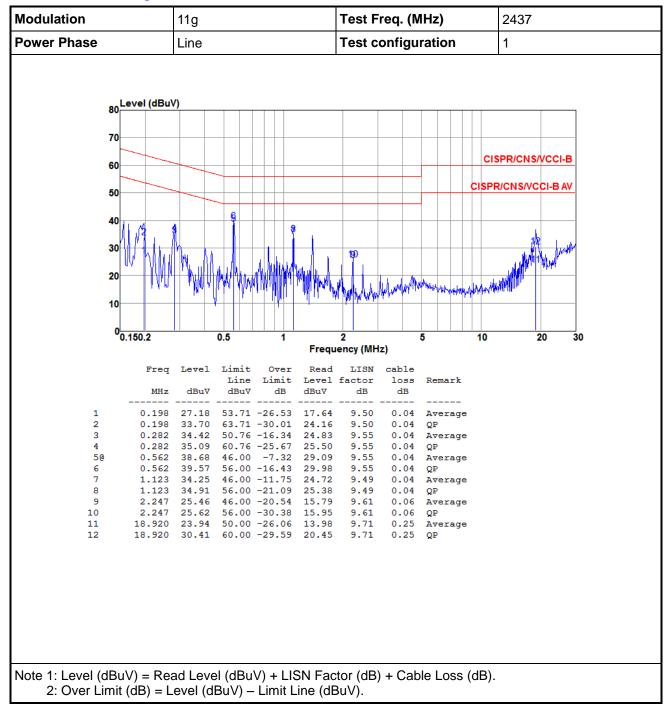
Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

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#### 3.1.4 Test Result of Conducted Emissions

### Non-beamforming mode



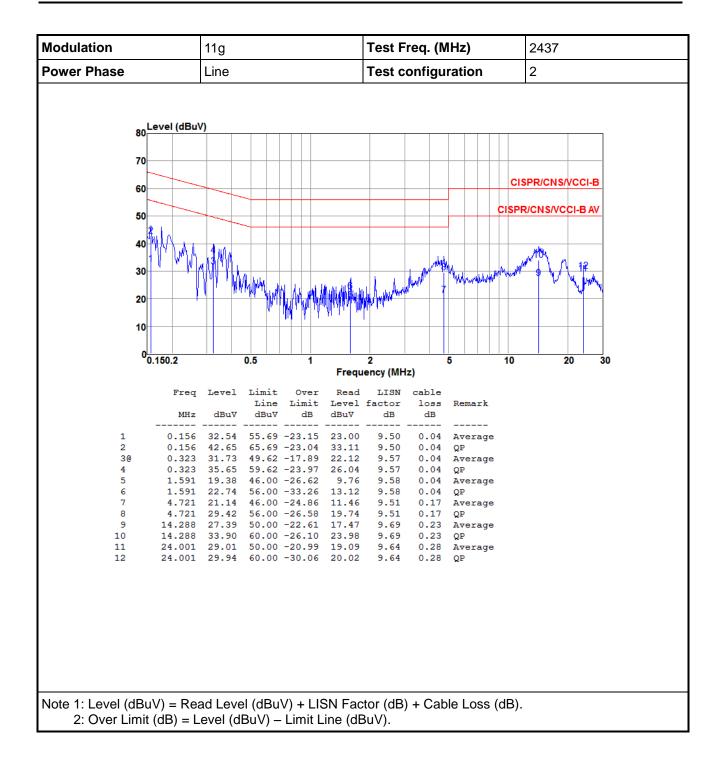
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Modulation	11g	Test Freq. (MHz)	2437	
Power Phase	Neutral	Test configuration		
l aval (dP				
80 Level (dB	uvj			
70				
			CDD/ONE//OOLD	
60		CI	SPR/CNS/VCCI-B	
50		CISPI	R/CNS/VCCI-B AV	
50				
40	4			
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0.150.2	0.5 1	2 5 10	20 30	
	Fred	juency (MHz)		
Free	-			
MH		l factor loss Remark dB dB		
1 0.27 2 0.27				
3@ 0.56	1 38.68 46.00 -7.32 29.0	5 9.59 0.04 Average		
4 0.565 5 1.12				
6 1.12	4 34.98 56.00 -21.02 25.29	9 9.65 0.04 QP		
7 2.24 8 2.24	6 25.11 46.00 -20.89 15.50 6 26.09 56.00 -29.91 16.40			
9 4.52				
10 4.52 11 18.92	5 18.63 56.00 -37.37 8.75 0 24.34 50.00 -25.66 14.36			
	0 30.46 60.00 -29.54 20.50	_		

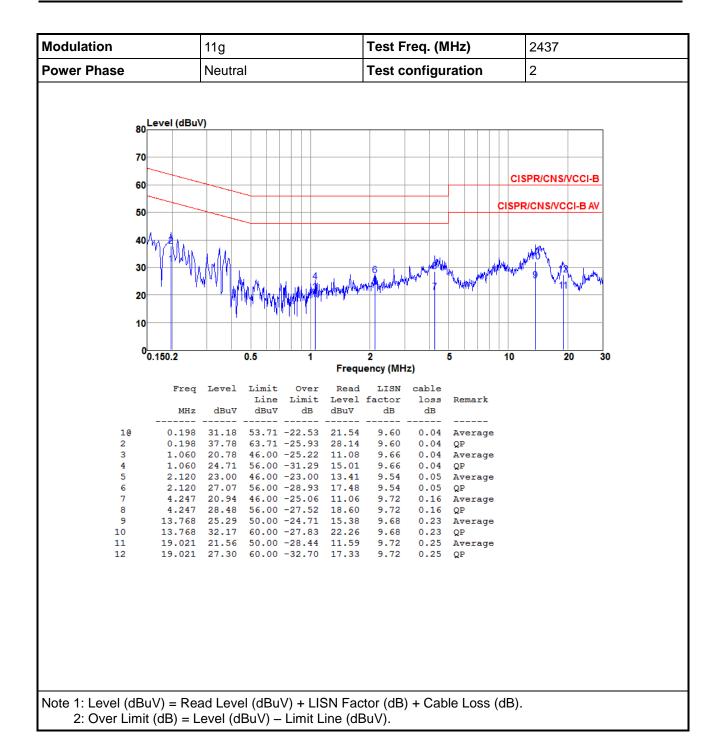
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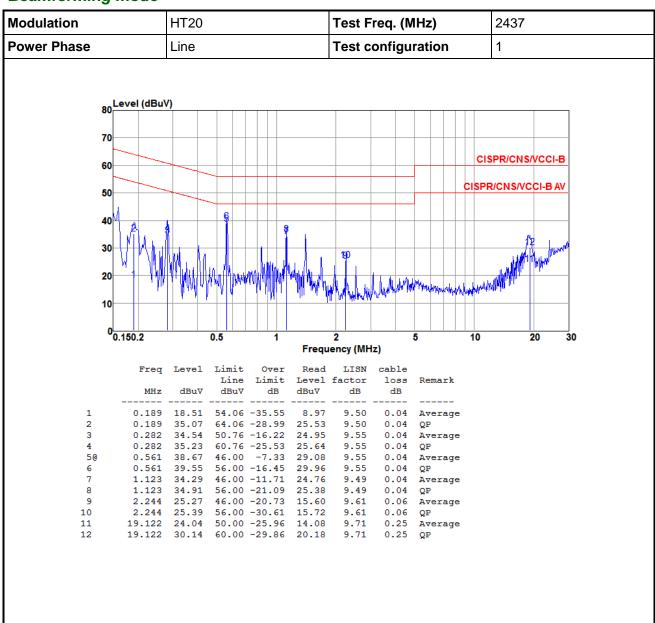




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### Beamforming mode

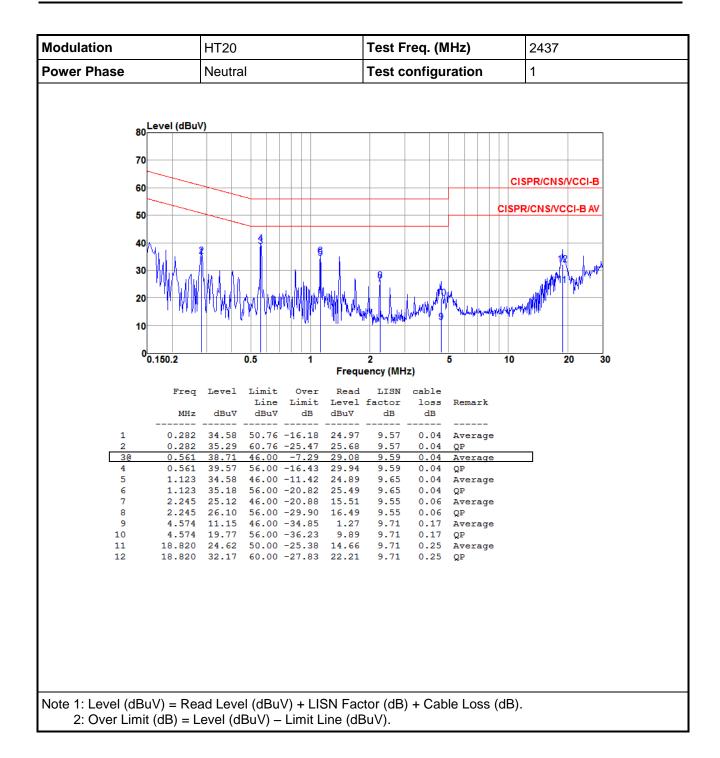


Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).

2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

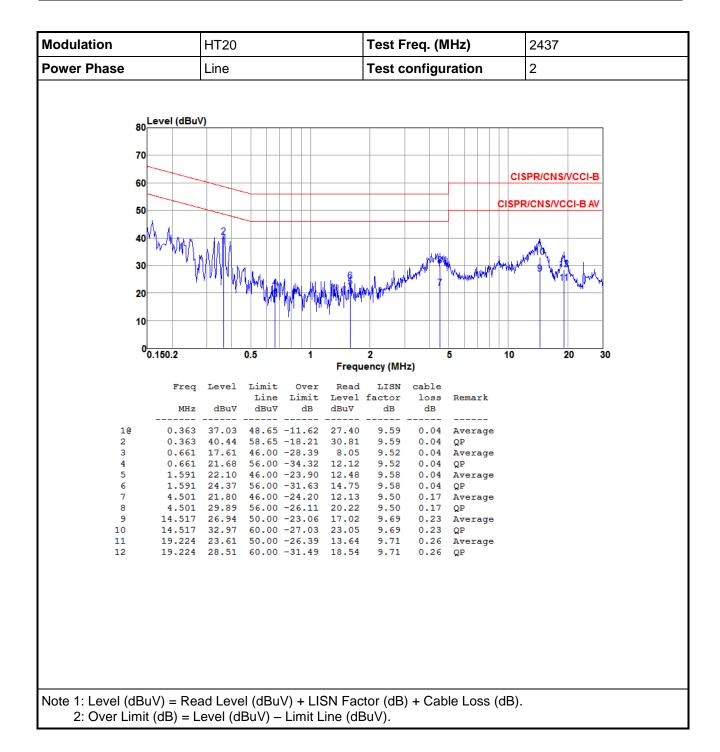
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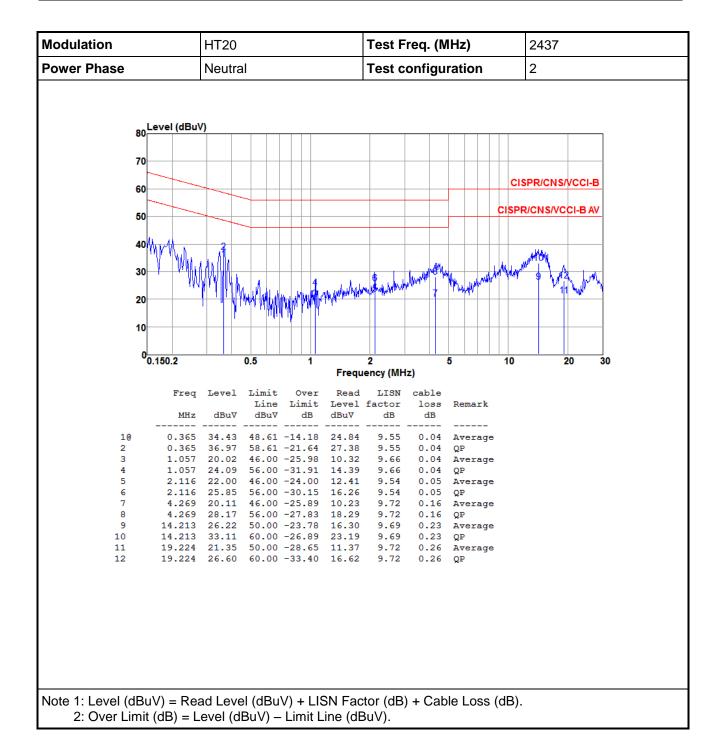
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### 3.2 Unwanted Emissions into Restricted Frequency Bands

### 3.2.1 Limit of Unwanted Emissions into Restricted Frequency Bands

Restricted Band Emissions Limit								
Frequency Range (MHz)	Field Strength (uV/m)	Field Strength (dBuV/m)	Measure Distance (m)					
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300					
0.490~1.705	24000/F(kHz)	33.8 - 23	30					
1.705~30.0	30	29	30					
30~88	100	40	3					
88~216	150	43.5	3					
216~960	200	46	3					
Above 960	500	54	3					

#### Note 1:

Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit **Note 2:** 

Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

#### 3.2.2 Test Procedures

- 1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
- 2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
- 3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

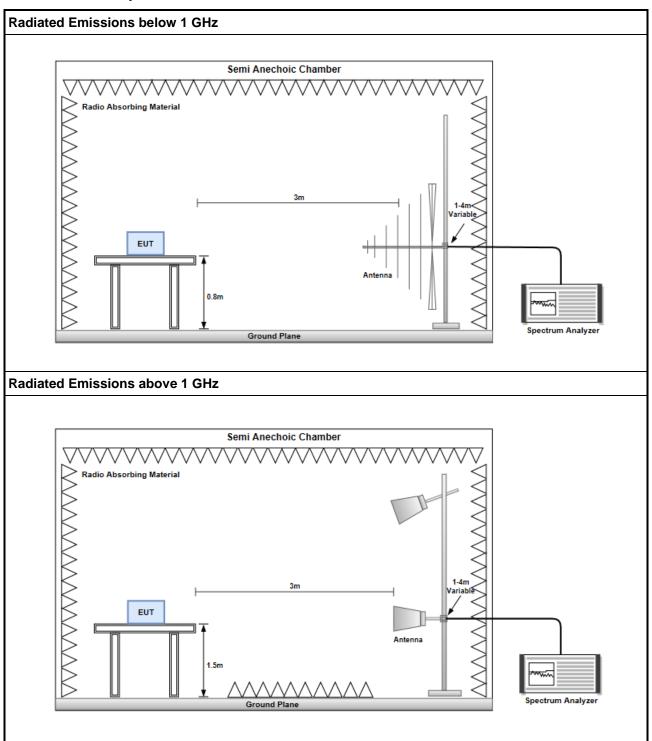
#### Note:

- 1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
- 2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
- RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

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### 3.2.3 Test Setup

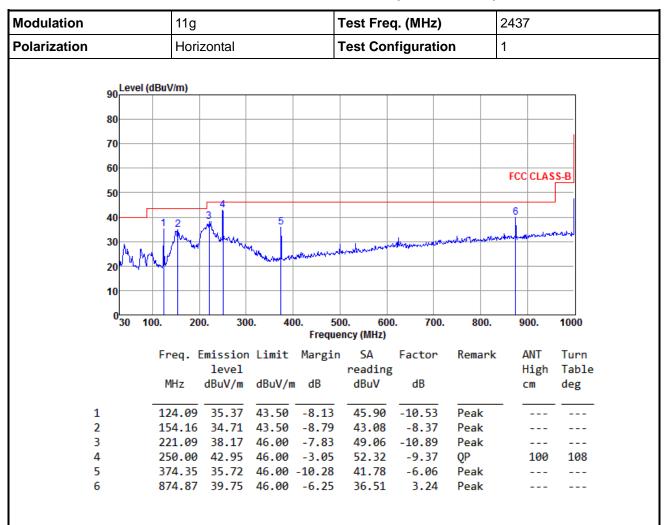


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### Non-beamforming mode

### 3.2.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor , cable loss and amplifier gain

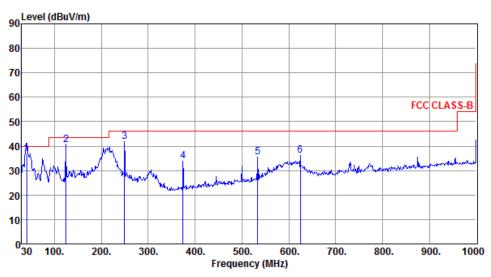
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	1



	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	ı dB	dBuV	dB		cm	deg
1	40.56	36.98	40.00	-3.02	45.69	-8.71	OP	100	12
2	125.00			-3.01		-10.45	QP	100	86
3	249.22	41.71	46.00	-4.29	51.10	-9.39	Peak		
4	374.35	33.86	46.00	-12.14	39.92	-6.06	Peak		
5	533.43	35.64	46.00	-10.36	38.30	-2.66	Peak		
6	624.61	36.35	46.00	-9.65	37.06	-0.71	Peak		

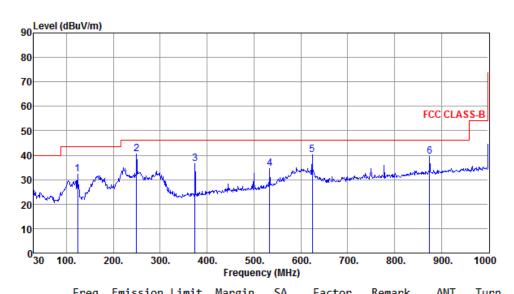
\*Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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Modulation	11g	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	2



	Freq.	level	Limit	margin	reading		Kemark		Table
	MHz	dBuV/m	dBuV/m	ı dB	dBuV	dB		cm	deg
1	124.09	32.24	43.50	-11.26	42.77	-10.53	Peak		
2	249.22	40.64	46.00	-5.36	50.03	-9.39	Peak		
3	374.35	36.66	46.00	-9.34	42.72	-6.06	Peak		
4	533.43	34.52	46.00	-11.48	37.18	-2.66	Peak		
5	624.61	40.35	46.00	-5.65	41.06	-0.71	Peak		
6	874.87	39.67	46.00	-6.33	36.43	3.24	Peak		

\*Factor includes antenna factor, cable loss and amplifier gain

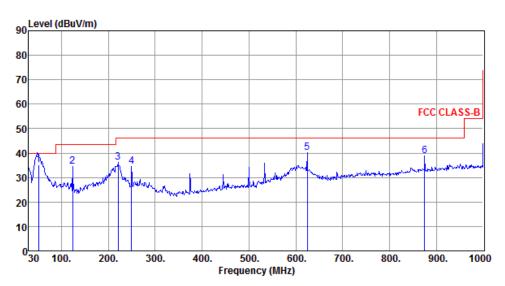
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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Modulation	11g	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	2



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	51.20	35.09	40.00	-4.91	43.34	-8.25	QP	100	81
2	124.09	34.47	43.50	-9.03	45.00	-10.53	Peak		
3	221.09	36.11	46.00	-9.89	47.00	-10.89	Peak		
4	249.22	34.52	46.00	-11.48	43.91	-9.39	Peak		
5	624.61	40.21	46.00	-5.79	40.92	-0.71	Peak		
6	874.87	38.83	46.00	-7.17	35.59	3.24	Peak		

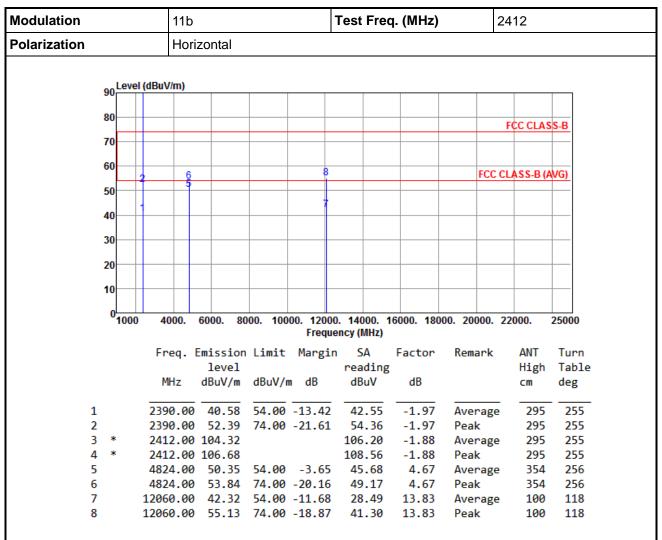
\*Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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### 3.2.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11b



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

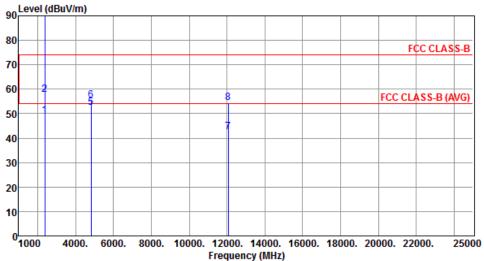
Note 2: Margin (dB) = Emission level (dBuV/m) - Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation	11b	Test Freq. (MHz)	2412
Polarization	Vertical		
Level	(dBuV/m)		

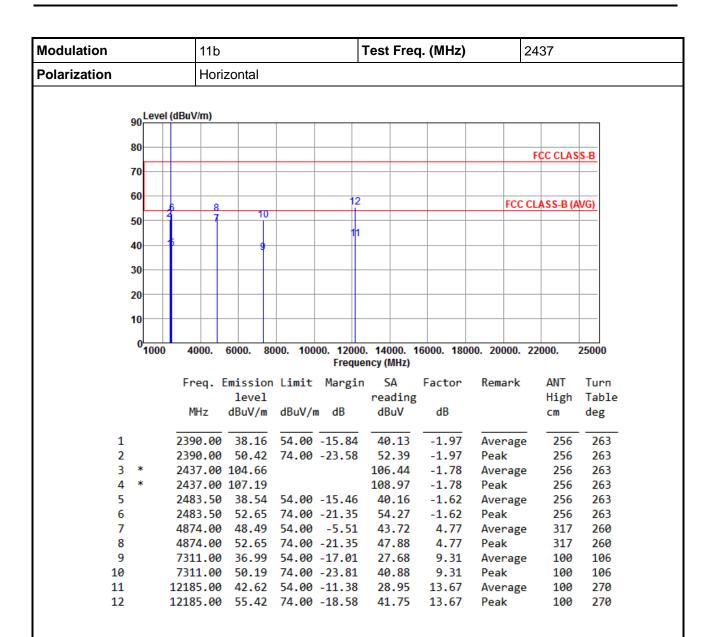


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ü	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1		2390.00	49.16	54.00	-4.84	51.13	-1.97	Average	345	163
2		2390.00	57.93	74.00	-16.07	59.90	-1.97	Peak	345	163
3	*	2412.00	112.58			114.46	-1.88	Average	345	163
4	*	2412.00	115.16			117.04	-1.88	Peak	345	163
5		4824.00	52.58	54.00	-1.42	47.91	4.67	Average	306	335
6		4824.00	55.50	74.00	-18.50	50.83	4.67	Peak	306	335
7		12060.00	42.60	54.00	-11.40	28.77	13.83	Average	100	235
8		12060.00	54.61	74.00	-19.39	40.78	13.83	Peak	100	235

\*Factor includes antenna factor, cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3:"\*" is Peak / Average value of fundamental frequency

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\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation	odulation 11b					Test Fre	eq. (Mł	2437					
Polarization			Vertical										
		Lovel	(dDu\//m\										
	90	Level	(dBuV/m)										
	80												
	ot											FCC CLAS	SS-B
	70												-
	60	<b>'</b>	6 7				12	2			FCC	CLASS-B (A	AVG)
	50	) 2		1	10								
							1	I					
	40				9								
	30	)——											
	20												+-
	10												
		1											
	(	1000	4000.	6000.	800	00. 100	00. 1200	0. 14000.	16000.	18000	). 20000.	22000.	25000
							Frequ	ency (MHz	)				
			Freq. 1	Emissi	on	Limit	Margi	n SA	Fact	or	Remark	ANT	Turn
				leve	1			readin	ng			High	Table
			MHz	dBuV/	m	dBuV/ı	n dB	dBuV	dB			cm	deg
					_								
	1		2390.00								Average		
	2	k	2390.00			/4.00	-23./4				Peak	371	169
	_	* *	2437.00					113.47			Average		169
	4	-	2437.00 2483.50			5/ 00	15 02	116.05 40.60			Peak Average	371 317	169 169
	6		2483.50								Peak	317	169
	7		4874.00								Average		328
	8		4874.00								Peak	288	328
	^		7744 00									400	

9.31

9.31

13.67

13.67

Average

Average

Peak

Peak

100

100

100

100

64

64

215

215

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

7311.00 36.55 54.00 -17.45 27.24

7311.00 49.37 74.00 -24.63 40.06

12185.00 42.58 54.00 -11.42 28.91

12185.00 55.31 74.00 -18.69 41.64

\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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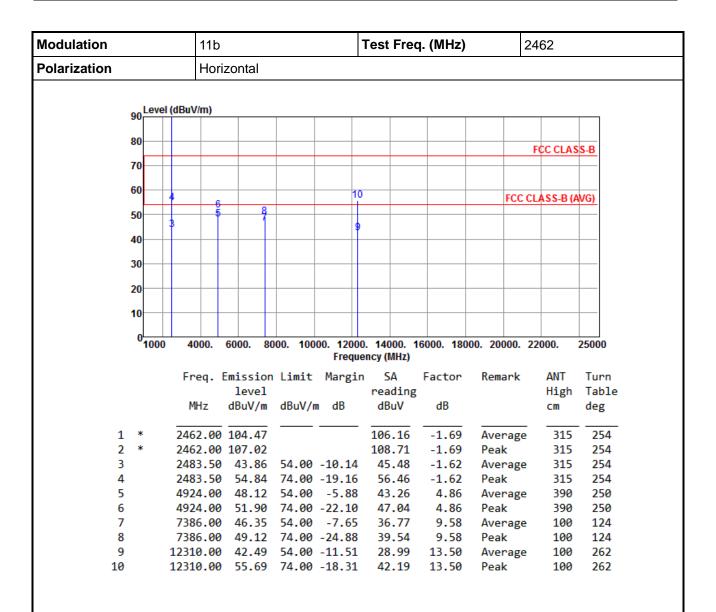
9

10

11

12





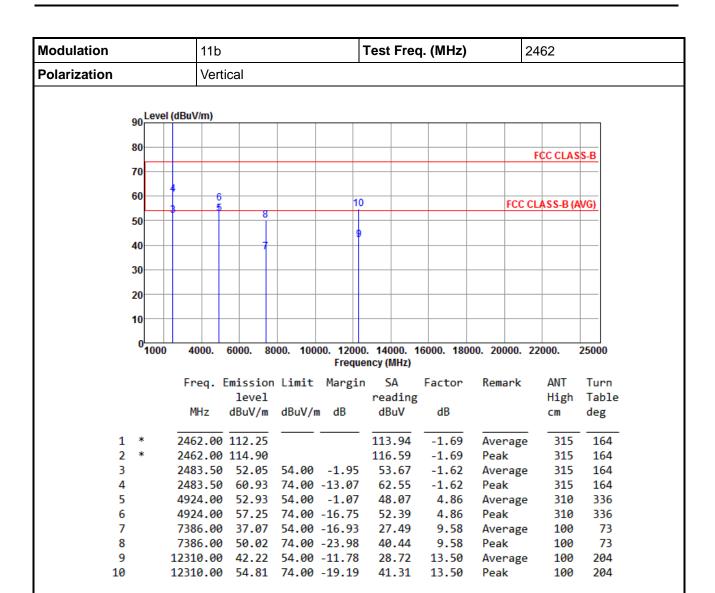
\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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\*Factor includes antenna factor, cable loss and amplifier gain

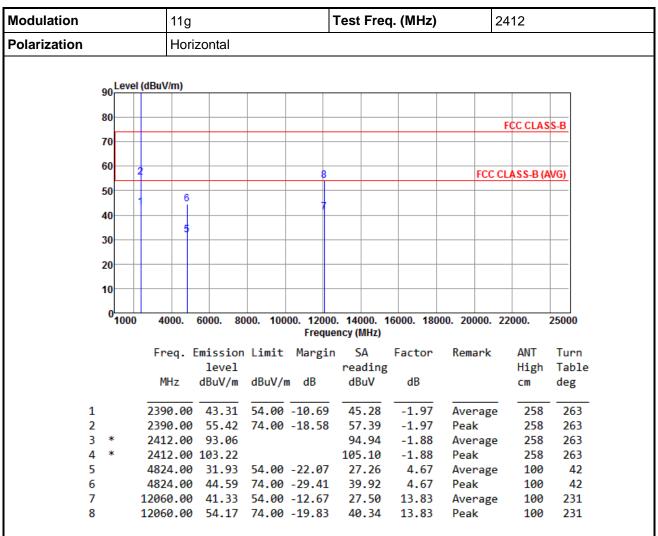
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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### 3.2.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11g



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

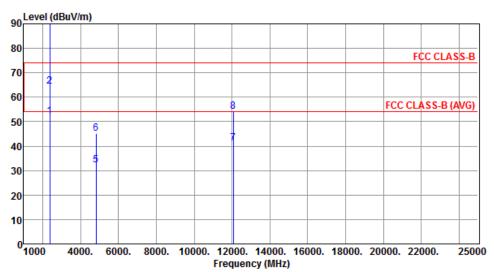
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation	11g	Test Freq. (MHz)	2412
Polarization	Vertical		

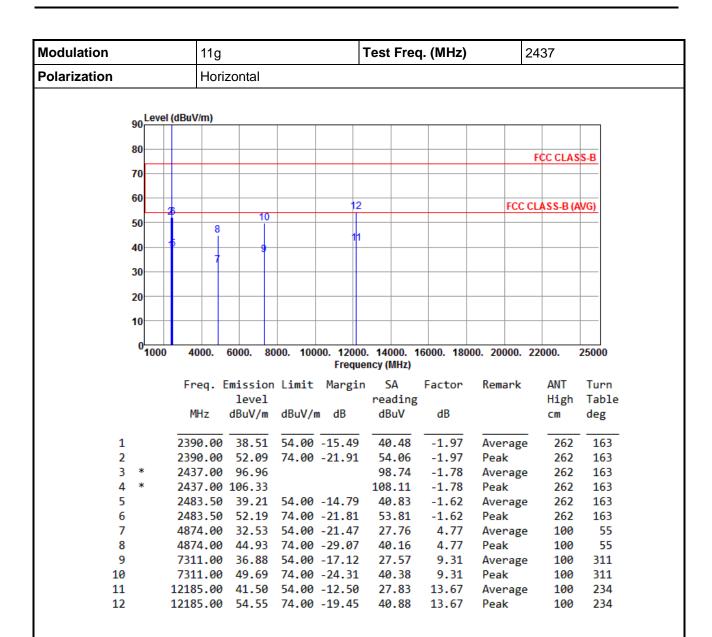


		Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
			asar,	azar,			4.5			8
1		2390.00	52.26	54.00	-1.74	54.23	-1.97	Average	293	138
2		2390.00	64.38	74.00	-9.62	66.35	-1.97	Peak	293	138
3	*	2412.00	100.64			102.52	-1.88	Average	293	138
4	*	2412.00	111.54			113.42	-1.88	Peak	293	138
5		4824.00	32.35	54.00	-21.65	27.68	4.67	Average	100	174
6		4824.00	45.31	74.00	-28.69	40.64	4.67	Peak	100	174
7		12060.00	41.21	54.00	-12.79	27.38	13.83	Average	100	294
8		12060.00	54.26	74.00	-19.74	40.43	13.83	Peak	100	294

\*Factor includes antenna factor, cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3:"\*" is Peak / Average value of fundamental frequency

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\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation			11g				Test Fre	eq. (MHz)		2437	
Polarization			Vert	ical							
		aval /dF	Dest (from )								
	90 <sup>L</sup>	evel (dE	suv/m)								
	80										
	-									FCC CLAS	S-B
	70										
	60	6_									
	"L	4		10		12	!		FCC	CLASS-B (A	WG)
	50		8	<del>- 1</del>							
	40					117					
			1								
	30										
	20										
	10										
	0	000	4000.	6000. 80	000. 100	00 4200	0 44000	16000 100	000. 20000.	22000	25000
		000	4000.	0000. 00	,00. 100		ency (MHz)		JUU. 20000.	22000.	23000
			Frea.	Emission	Limit	Margi	n SA	Factor	Remark	ANT	Turn
				level			reading			High	Table
			MHz	dBuV/m	dBuV/ı	n dB	dBuV	dB		cm	deg
		_									
	l			41.83		-12.17			Average		153
	<u>2</u> 3 *		390.00	56.23 106.71	74.00	-17.77	58.20 108.49		Peak	378 378	153 153
	1 *			116.92			108.49		Average Peak	378	153
	5			43.19	54.00	-10.81			Average		153
	5			58.59					Peak	378	153
	7			33.44					Average		177
1	3	4	874.00	46.23				4.77	Peak	276	177
	9	7	311.00			-16.45			Average		253
10			311.00			-23.81			Peak	100	253
1:	L	12	185.00	41.80	54.00	-12.20	28.13	13.67	Average	100	294

13.67

Peak

100

294

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

12185.00 54.39 74.00 -19.61 40.72

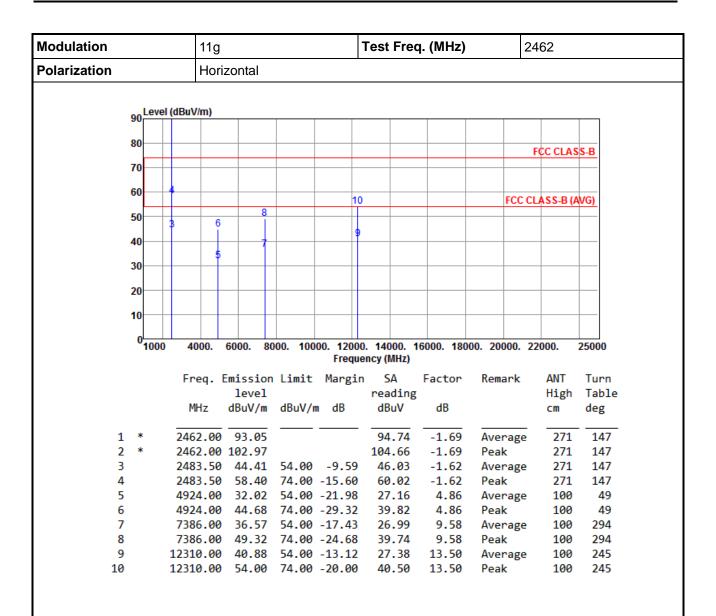
\*Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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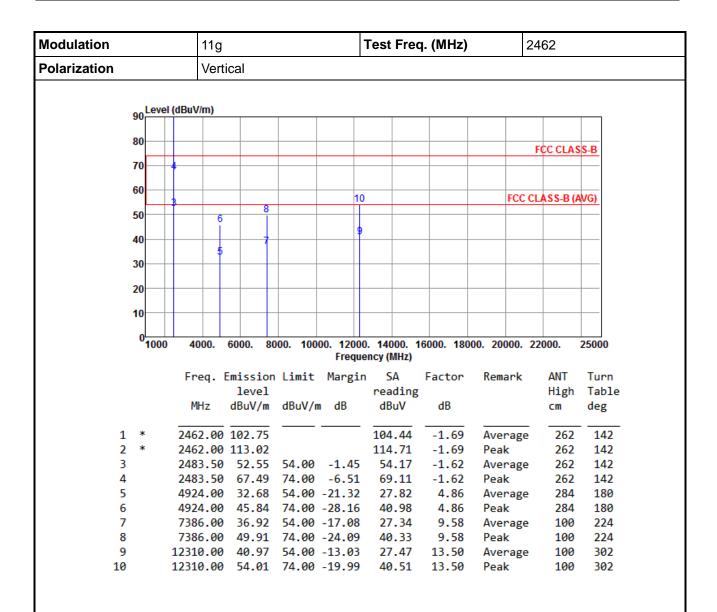
\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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\*Factor includes antenna factor, cable loss and amplifier gain

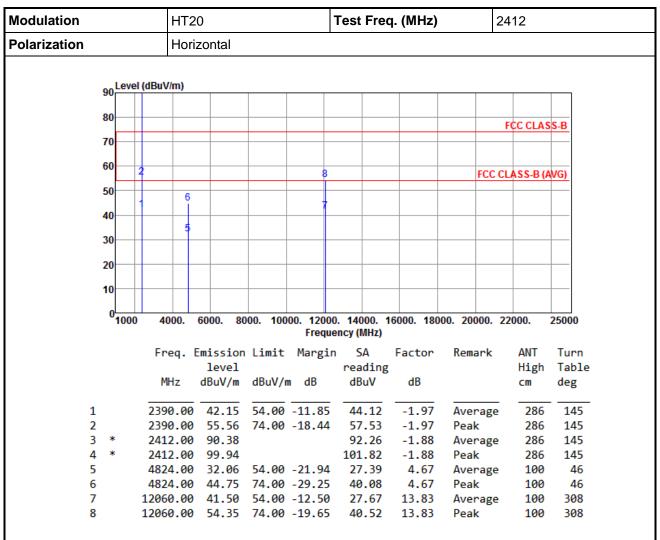
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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# 3.2.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

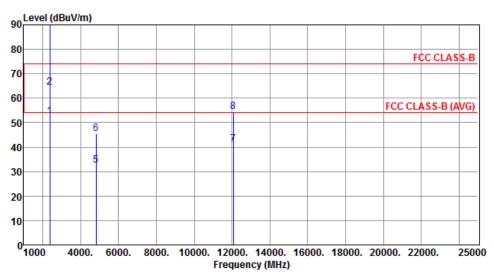
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		

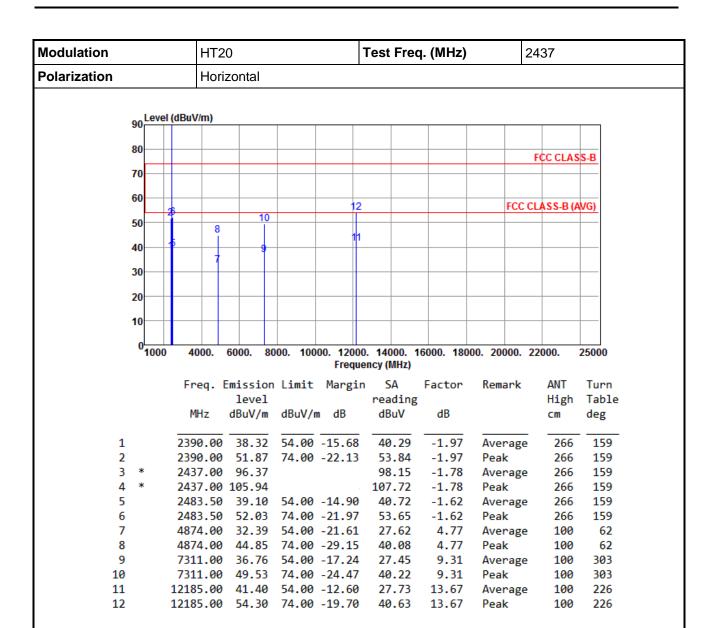


		Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1		2390.00	52.46	54.00	-1.54	54.43	-1.97	Average	313	146
2		2390.00	64.35	74.00	-9.65	66.32	-1.97	Peak	313	146
3	*	2412.00	100.00			101.88	-1.88	Average	313	146
4	*	2412.00	110.10			111.98	-1.88	Peak	313	146
5		4824.00	32.61	54.00	-21.39	27.94	4.67	Average	100	165
6		4824.00	45.52	74.00	-28.48	40.85	4.67	Peak	100	165
7		12060.00	41.28	54.00	-12.72	27.45	13.83	Average	100	286
8		12060.00	54.50	74.00	-19.50	40.67	13.83	Peak	100	286

\*Factor includes antenna factor, cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3:"\*" is Peak / Average value of fundamental frequency

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\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation			HT2	0		,	Test Fre	q. (MHz)		2437	
Polarization			Vert	ical		•			•		
	90	Level	(dBuV/m)								
	80										
	00	1								FCC CLAS	S-B
	70										
	60		5								
				10		12			FCC	CLASS-B (A	WG)
	50	)	8	T i		44					
	40	) 				"					-
			7								
	30	,									
	20	)——									
	10										
	- 10	1									
	(	1000	4000.	6000. 8	000. 100			16000. 180	00. 20000.	22000.	25000
						Freque	ency (MHz)				
			Freq. I			Margir		Factor	Remark	ANT	Turn
			MII	level		-ID	reading	•		High	Table
			MHz	aBuV/m	dBuV/ı	n ab	dBuV	dB		cm	deg
	1		2390.00	41.70	54.00	-12.30	43.67	-1.97	Average	373	155
	2		2390.00			-17.88	58.09	-1.97	Peak	373	155
		*	2437.00				107.85	-1.78	Average	373	155
	-	*	2437.00				117.83	-1.78	Peak	373	155
	5		2483.50				44.75	-1.62	Average		155
	6		2483.50			-15.49	60.13	-1.62	Peak	373	155
	7		4874.00			-20.62		4.77	Average		173
	8		4874.00	46.09	74.00	-27.91	41.32	4.77	Peak	267	173

28.16

Peak

Peak

Average

Average

9.31

9.31

13.67

13.67

250

250

285

285

100

100

100

100

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

7311.00 37.47 54.00 -16.53

7311.00 49.95 74.00 -24.05 40.64

12185.00 41.91 54.00 -12.09 28.24

12185.00 54.35 74.00 -19.65 40.68

\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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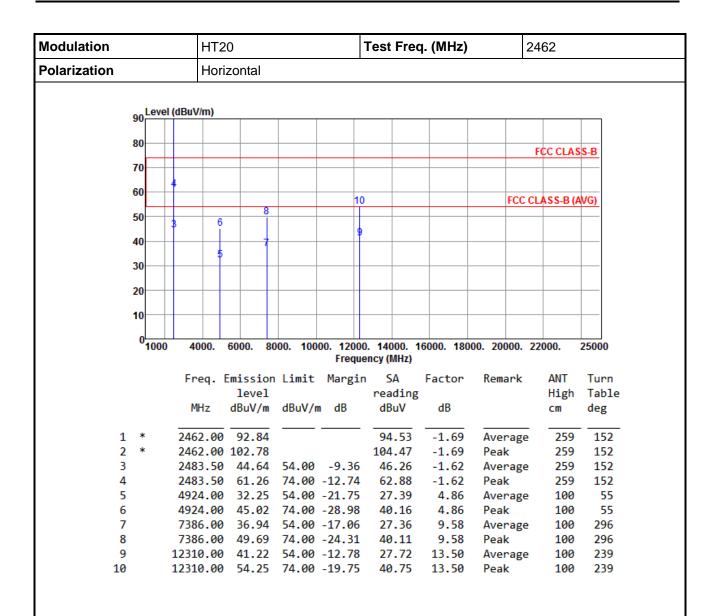
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9

10

11





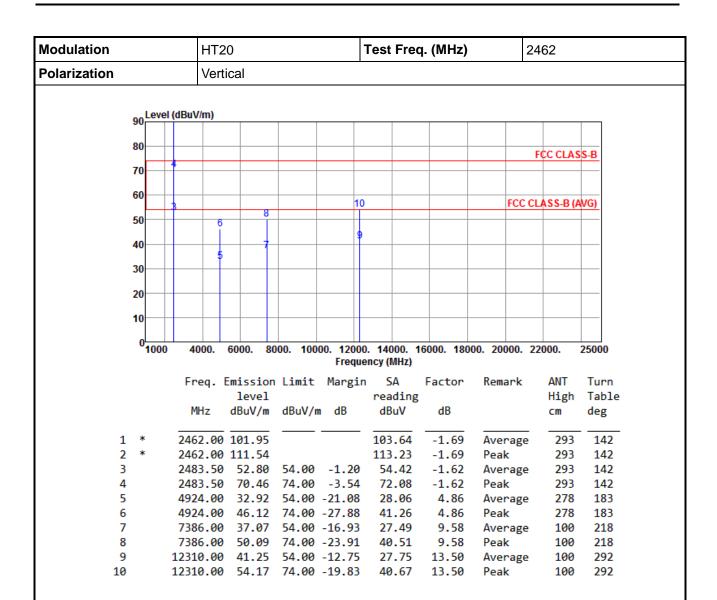
\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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\*Factor includes antenna factor, cable loss and amplifier gain

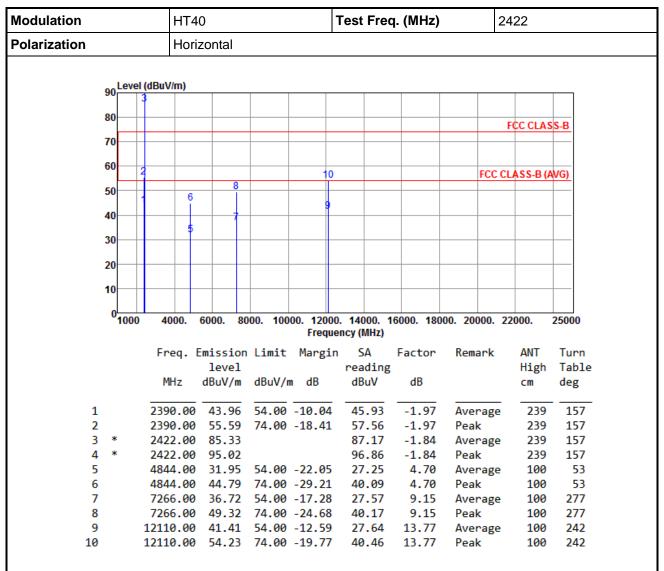
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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# 3.2.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) - Limit (dBuV/m).

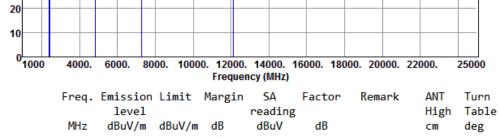
Note 3:"\*" is Peak / Average value of fundamental frequency

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50 40 30

Modulation	HT40	HT40			eq. (MHz)		2422		
Polarization	Vertical				•				
96	Level (dE	BuV/m)							
7(								FCC CL	ASS-B
60				1(	)		FC	C CLASS-E	L (AVG)



		MHz	dBuV/m	dBuV/m dB	dBuV	dB		cm	deg
1		2390.00	52.36	54.00 -1.64	54.33	-1.97	Average	278	148
2		2390.00	63.25	74.00 -10.75	65.22	-1.97	Peak	278	148
3	*	2422.00	94.33		96.17	-1.84	Average	278	148
4	*	2422.00	104.33		106.17	-1.84	Peak	278	148
5		4844.00	32.95	54.00 -21.05	28.25	4.70	Average	274	175
6		4844.00	45.57	74.00 -28.43	40.87	4.70	Peak	274	175
7		7266.00	37.07	54.00 -16.93	27.92	9.15	Average	100	244
8		7266.00	49.41	74.00 -24.59	40.26	9.15	Peak	100	244
9		12110.00	41.94	54.00 -12.06	28.17	13.77	Average	100	285
10		12110.00	54.26	74.00 -19.74	40.49	13.77	Peak	100	285

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation			HT4	40				Tes	Fred	q. (MHz)		2437	
Polarization			Hor	rizontal									
	90 <sup>L</sup>	evel (dE	JuV/m)		_								
	80												
	-	$-\!\!+\!\!\!+\!\!\!-$	$-\!\!\!\!+\!\!\!\!-$		_							FCC CLA	SS-B
	70												+-
	60	15			+			2			FC	C CLASS-B (	A)/C)
	50			1	0			_			FC	C CLASS-B (	AVG)
	30	1	8					1					
	40			.   9	+								_
	30	-	1		_								
	20												
	10				+								+-
	0	1000	4000	2000	0000	400	100 400	00 44	000 4	10000 400	20000	22000	25000
	1	1000	4000.	6000.	8000	. 100		uency (		10000. 180	20000	. 22000.	25000
			Freq.	Emissi	on L	imit	Marg	in s	SΑ	Factor	Remark	ANT	Turn
				leve					ading			High	
			MHz	dBuV/r	n d	BuV/	m dB	dl	BuV	dB		CM	deg
1		2	390.00	42.57	7 5	4.00	-11.4	3 4	1.54	-1.97	Averag	e 237	156
2			390.00				-19.27		5.70	-1.97	Peak	237	156
3			437.00						L.74	-1.78	Averag	•	
4			437.00						88.6	-1.78	Peak	237	
5			483.50				-12.16		3.46	-1.62	Averag	•	
6				56.0					7.65	-1.62	Peak	237	
	•		874.00				-21.7		7.52	4.77	Averag	•	
7			074 00	1/1/93	3 7	4.00	-29.07	7 40	0.16	4.77	Peak	100	58
8			874.00										
8	)	7.	311.00	36.79	5	4.00	-17.2		7.48	9.31	Averag	•	311
8 9 10	)	7. 7.	311.00 311.00	36.79 36.79	5 5 7	4.00 4.00	-17.21 -24.35	5 40	3.34	9.31	Peak	100	311 311
8	)	7. 7.	311.00 311.00	36.79	5 5 7	4.00 4.00	-17.21 -24.35	5 40			_	100	311 311

13.67

Peak

100

219

40.53

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor , cable loss and amplifier gain

12185.00 54.20 74.00 -19.80

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation			HT4	0		,	Test Free	q. (MHz)		2437	
Polarization			Vert	ical		•			1		
	90	Leve	(dBuV/m)								
	80										
	00									FCC CLAS	S-B
	70		4								
	60		ľ								
	00					12			FCC	CLASS-B (A	WG)
	50		8	10							
	40					111					
	40		7								
	30										
	20										
	10										
	0	1000	4000.	6000. 80	00. 100		). 14000. 1	16000. 180	00. 20000.	22000.	25000
							ency (MHz)				
			Freq. I		Limit	Margir	ı SA	Factor	Remark		Turn
			MHz	level	4D. 1//-	. 40	reading dBuV	dB		_	Table
			MUZ	dBuV/m	ubuv/ii	ı ub	abuv	uБ		CM	deg
	1		2390.00	52.23	54.00	-1.77	54.20	-1.97	Average	287	143
	2		2390.00			-8.27	67.70	-1.97	Peak	287	143
	3 *	:	2437.00	99.10			100.88	-1.78	Average	e 287	143
	4 *	:	2437.00	109.37			111.15	-1.78	Peak	287	143
	5			48.64			50.26	-1.62	Average		143
	6			64.40			66.02	-1.62	Peak	287	143
	7		4874.00			-20.87	28.36	4.77	Average		176
	8			45.83			41.06	4.77	Peak	270	176
	9 0			37.33			28.02	9.31	Average		243 243
1	Ø		7311.00	49.69	74.00	-24.31	40.38	9.31	Peak	100	243

\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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12185.00 41.86 54.00 -12.14 28.19 13.67

12185.00 54.16 74.00 -19.84 40.49

294

294

100

100

Average

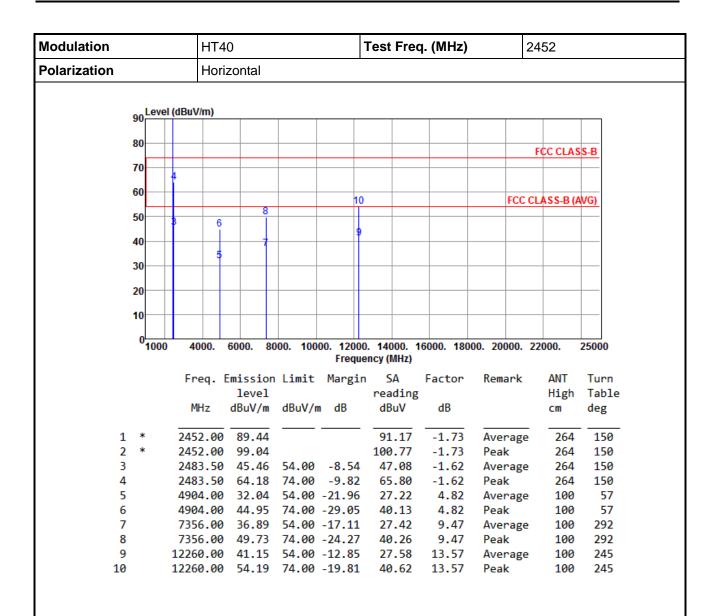
Peak

13.67

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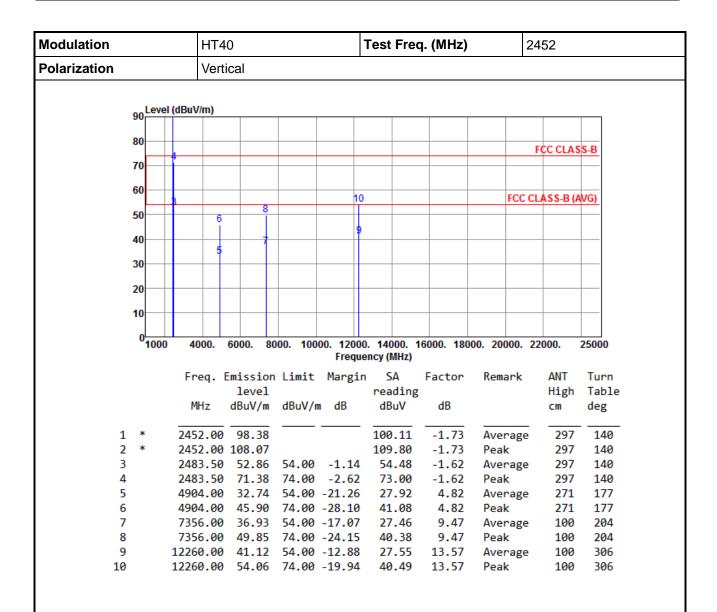
\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

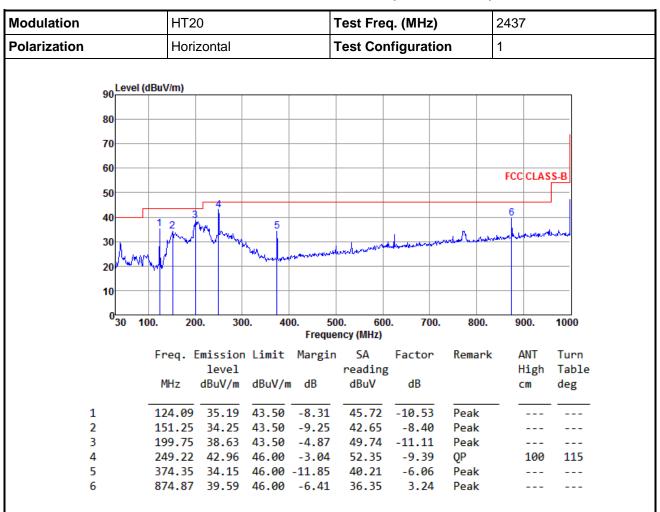
Note 3:"\*" is Peak / Average value of fundamental frequency

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### Beamforming mode

# 3.2.9 Transmitter Radiated Unwanted Emissions (Below 1GHz)



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

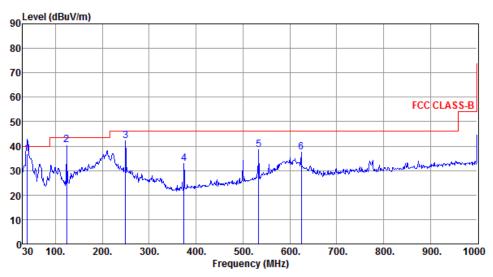
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	1



	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	ı dB	dBuV	dB		cm	deg
1	39.70	36.74	40.00	-3.26	45.52	-8.78	QP	100	13
2	124.09	40.42	43.50	-3.08	50.95	-10.53	QР	100	92
3	249.22	42.34	46.00	-3.66	51.73	-9.39	Peak		
4	374.35	32.82	46.00	-13.18	38.88	-6.06	Peak		
5	533.43	38.40	46.00	-7.60	41.06	-2.66	Peak		
6	624.61	37.42	46.00	-8.58	38.13	-0.71	Peak		

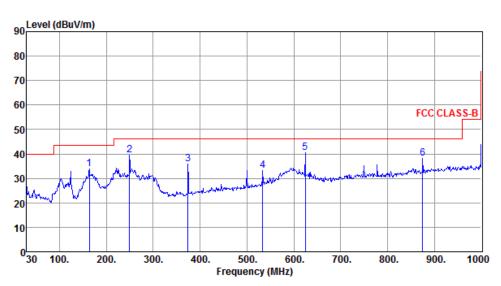
\*Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Horizontal	Test Configuration	2



	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	ı dB	dBuV	dB		cm	deg
1	163.86	33.87	43.50	-9.63	42.26	-8.39	Peak		
2	249.22	39.48	46.00	-6.52	48.87	-9.39	Peak		
3	374.35	35.87	46.00	-10.13	41.93	-6.06	Peak		
4	533.43	33.36	46.00	-12.64	36.02	-2.66	Peak		
5	624.61	40.48	46.00	-5.52	41.19	-0.71	Peak		
6	874.87	38.29	46.00	-7.71	35.05	3.24	Peak		

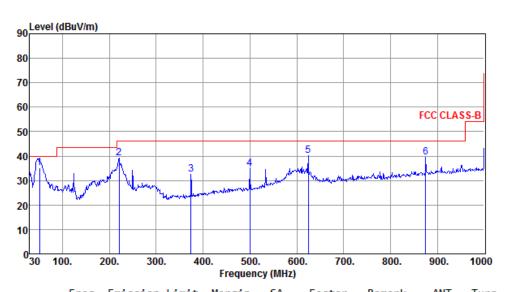
\*Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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Modulation	HT20	Test Freq. (MHz)	2437
Polarization	Vertical	Test Configuration	2



	Freq.	level	Limit	Margin	SA reading		Kemark	ANI High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	51.36	35.11	40.00	-4.89	43.36	-8.25	QP	100	79
2	221.09	39.07	46.00	-6.93	49.96	-10.89	Peak		
3	374.35	32.63	46.00	-13.37	38.69	-6.06	Peak		
4	499.48	34.74	46.00	-11.26	38.10	-3.36	Peak		
5	624.61	40.18	46.00	-5.82	40.89	-0.71	Peak		
6	874.87	39.65	46.00	-6.35	36.41	3.24	Peak		

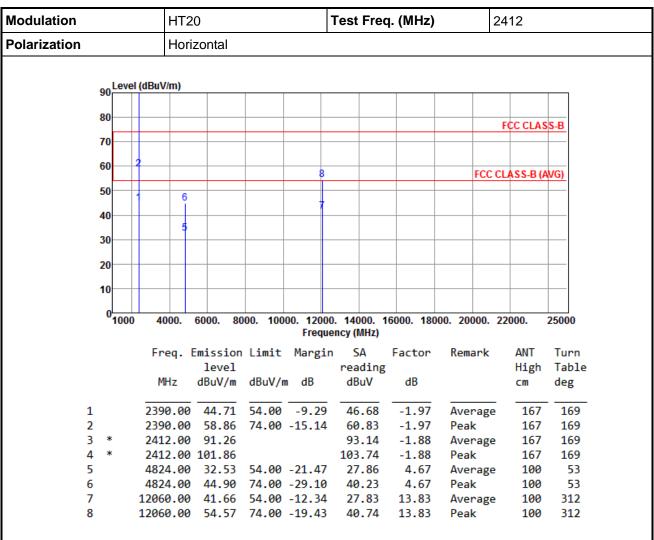
\*Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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# 3.2.10 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

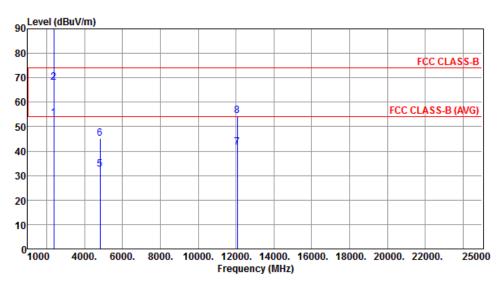
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation	HT20	Test Freq. (MHz)	2412
Polarization	Vertical		



		Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1		2390.00	53.55	54.00	-0.45	55.52	-1.97	Average	365	125
2		2390.00	68.06	74.00	-5.94	70.03	-1.97	Peak	365	125
3	*	2412.00	101.61			103.49	-1.88	Average	365	125
4	*	2412.00	113.34			115.22	-1.88	Peak	365	125
5		4824.00	32.43	54.00	-21.57	27.76	4.67	Average	100	175
6		4824.00	45.30	74.00	-28.70	40.63	4.67	Peak	100	175
7		12060.00	41.50	54.00	-12.50	27.67	13.83	Average	100	271
8		12060.00	54.31	74.00	-19.69	40.48	13.83	Peak	100	271

\*Factor includes antenna factor, cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation			HT2	20			Test Fre	q. (MHz)		2437	
Polarization			Hori	izontal							
	90 Le	vel (dBu	//m)								
	80										
										FCC CLAS	S-B
	70										
	60	$\bot$									
		25		10	)	12			FCC	CLASS-B (A	WG)
	50	15	8			111					
	40	+	+								
	30		1								
	30										
	20										
	10										
	010	00 4	000.	6000.	3000. 100		0. 14000. ency (MHz)	16000. 180	20000.	22000.	25000
		Fr	eq.	Emissio	n Limit	Margi	n SA	Factor	Remark	ANT	Turn
				level		_	reading			High	
		M	MHz	dBuV/m	dBuV/	m dB	dBuV	dB		cm	deg
1		239	00.00	41.85	54.00	-12.15	43.82	-1.97	Average	e 179	209
2			0.00			-20.26			Peak	179	209
3	*	243	37.00	95.75			97.53	-1.78	Average	e 179	209
4	*			106.17			107.95		Peak	179	209
5						-11.85			Average		209
6						-20.00			Peak	179	209
7						-21.67			_		53
8						-28.88			Peak	100	53
9			1.00			-17.07			Average		312
10 11			1.00			-24.27			Peak	100 e 100	312
		1719	טש.כנ	41.32	24.00	-12.68	27.65	13.67	Average	e 100	243

13.67 Peak

100

243

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

12185.00 54.22 74.00 -19.78 40.55

\*Factor includes antenna factor, cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation			HT2	0		,	Test Free	q. (MHz)		2437	
Polarization			Vert	ical		•			•		
			•								
	90	Level	(dBuV/m)								
	80									FCC CLAS	S-B
	70										
		2	i l								
	60					12			FCC	CLASS-B (A	(VG)
	50		8	10							
			llĭ			111					
	40		7	1							
	30										
	20										
	10										
	U	1000	4000.	6000. 80	00. 100			16000. 180	00. 20000.	22000.	25000
			_				ency (MHz)				_
			Freq.	Emission level	Limit	Margir		Factor	Remark	ANT	Turn
			MHz	dBuV/m	dBu\//r	n dB	reading dBuV	dB		High cm	Table deg
			MITZ	ubuv/III	ubuv/i	ıı ub	ubuv	ub		CIII	ueg
	1		2390.00	46.71	54.00	-7.29	48.68	-1.97	Average	353	127
	2		2390.00	61.96	74.00	-12.04	63.93	-1.97	Peak	353	127
	3 *	c	2437.00	106.44			108.22	-1.78	Average	353	127
	4 *	t	2437.00				117.92	-1.78	Peak	353	127
	5			47.10			48.72	-1.62	Average		127
	6			63.87			65.49	-1.62	Peak	353	127
	7			33.04			28.27	4.77	Average		196
	8			45.73			40.96	4.77	Peak	100	196
	9		7311.00			-16.83	27.86	9.31	Average		241
1	0		7311.00	50.06	/4.00	-23.94	40.75	9.31	Peak	100	241

13.67

13.67

Average

Peak

241

241

162

162

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

12185.00 42.01 54.00 -11.99 28.34

12185.00 54.40 74.00 -19.60 40.73

\*Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

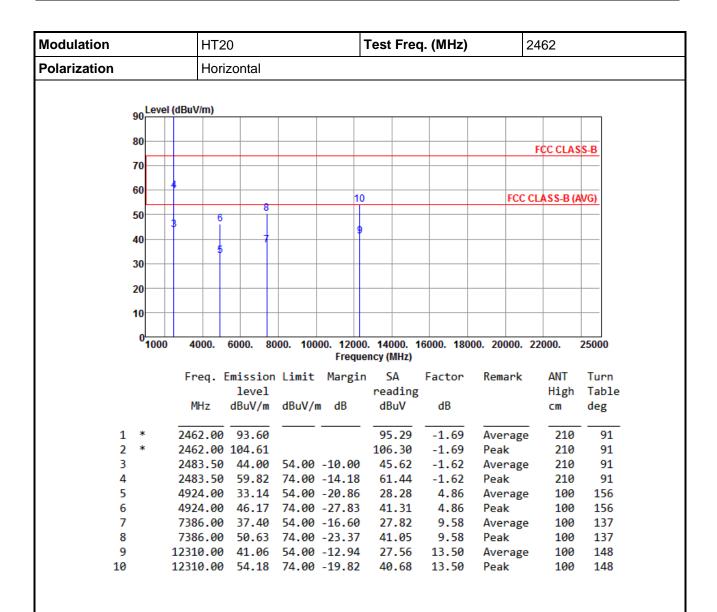
Note 3:"\*" is Peak / Average value of fundamental frequency

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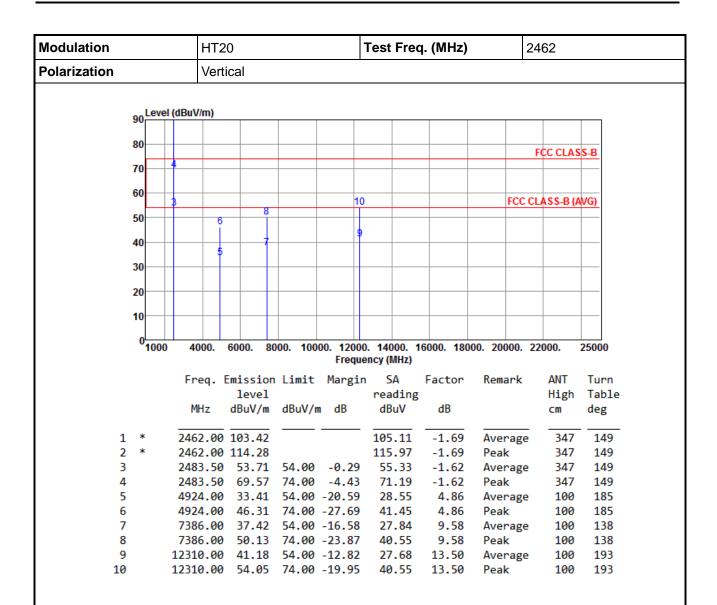
\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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\*Factor includes antenna factor, cable loss and amplifier gain

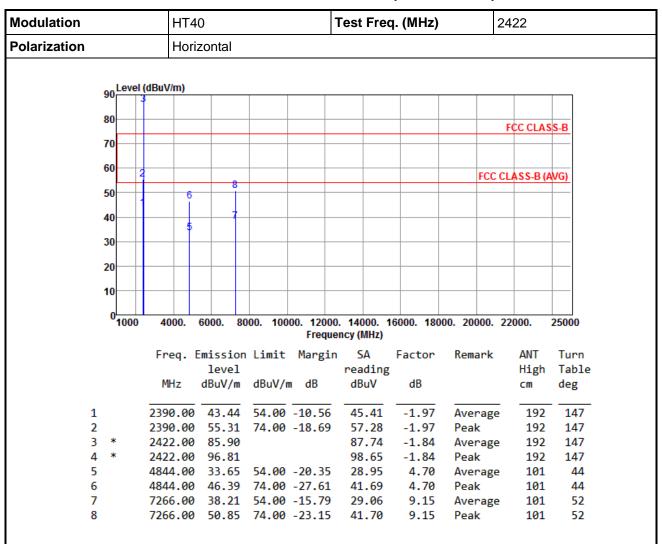
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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#### 3.2.11 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40



Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor, cable loss and amplifier gain

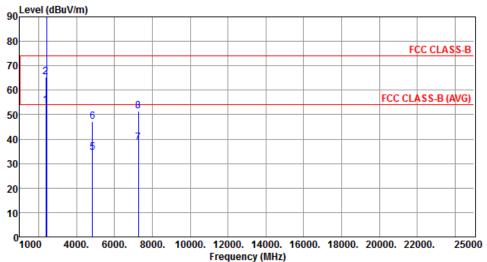
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation	HT40	Test Freq. (MHz)	2422
Polarization	Vertical		
90 Level (dBu	IV/m)		



		Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
		MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1		2390.00	53.74	54.00	-0.26	55.71	-1.97	Average	328	142
2		2390.00	65.48	74.00	-8.52	67.45	-1.97	Peak	328	142
3	*	2422.00	97.74			99.58	-1.84	Average	328	142
4	*	2422.00	108.57			110.41	-1.84	Peak	328	142
5		4844.00	34.65	54.00	-19.35	29.95	4.70	Average	101	56
6		4844.00	47.14	74.00	-26.86	42.44	4.70	Peak	101	56
7		7266.00	38.45	54.00	-15.55	29.30	9.15	Average	101	41
8		7266.00	51.62	74.00	-22.38	42.47	9.15	Peak	101	41

\*Factor includes antenna factor, cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m). Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation			HT4	0		,	Test Fred	q. (MHz)	2	437	
Polarization			Hori	zontal		*					
	90	Level	(dBuV/m)								
	80										
		$\vdash$								FCC CLAS	S-B
	70										
	60								500.0		
		<del>     </del>	,	10					FCCC	LASS-B (A	WG)
	50		5 8								
	40		-								
	30		1								
	20										
	10	<u> </u>									
	(										
	•	1000	4000.	6000. 80	000. 100		). 14000. 1 ency (MHz)	16000. 180	00. 20000. 2	2000.	25000
			Enog F	mission	limi+			Factor	Remark	ANT	Turn
			rreq. i	level	LIMITC	nar.gri	reading		Kelliark	High	Table
			MHz	dBuV/m	dBuV/r	n dB	dBuV	dB		cm	deg
	4		2200 00	44.36	<u></u>	-0.64	46. 22	4.07	A	103	445
	1 2		2390.00			-9.64 -18.08	46.33 57.89	-1.97 -1.97	Average Peak	192 192	145 145
	3 *	k	2437.00		74.00	-10.00	91.02	-1.78	Average	192	145
		k	2437.00				101.73	-1.78	Peak	192	145
	5		2483.50	43.25	54.00	-10.75	44.87	-1.62	Average	192	145
	6		2483.50	55.08	74.00	-18.92	56.70	-1.62	Peak	192	145
	7		4874.00			-20.08		4.77	Average	101	58
	8		4874.00	46.55	74.00	-27.45	41.78	4.77	Peak	101	58

9.31

9.31

Average

Peak

101

101

61

61

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

\*Factor includes antenna factor , cable loss and amplifier gain

7311.00 38.42 54.00 -15.58 29.11

7311.00 50.98 74.00 -23.02 41.67

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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Modulation	HT40		Test Freq. (MHz)	24	137
Polarization	Vertical			•	
90 Level	(dBuV/m)				
80					
					FCC CLASS-B
70	26				
60				500.00	100 0 (110)
	10			FCC CI	ASS-B (AVG)
50	ı				
40	1 9				
30					
30					
20					
10					
01000	4000. 6000. 8		). 14000. 16000. 180	000. 20000. 2	2000. 25000
			ency (MHz)		
		n Limit Margir		Remark	ANT Tur
	level MHz dBuV/m	dBuV/m dB	reading dBuV dB		High Tab cm deg
	PillZ GBGV/III	abav/iii ab	abav ab		ciii deg
1	2390.00 52.96	54.00 -1.04	54.93 -1.97	Average	328 14
2	2390.00 66.18	74.00 -7.82	68.15 -1.97	Peak	328 14
3 *	2437.00 100.86		102.64 -1.78	Average	328 14
4 * 5	2437.00 112.49	F4 00 3 04	114.27 -1.78	Peak	328 14
	2483.50 50.06		51.68 -1.62	Average	328 14
	2402 FC C3 77	74 00 40 03	CE 30 4 CO		
6 7	2483.50 63.77 4874.00 35.68		65.39 -1.62 30.91 4.77	Peak Average	328 14 101 5

101

101

9.31

9.31

Average

Peak

45

45

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor\* (dB)

7311.00 38.96 54.00 -15.04 29.65

7311.00 51.84 74.00 -22.16 42.53

\*Factor includes antenna factor , cable loss and amplifier gain Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

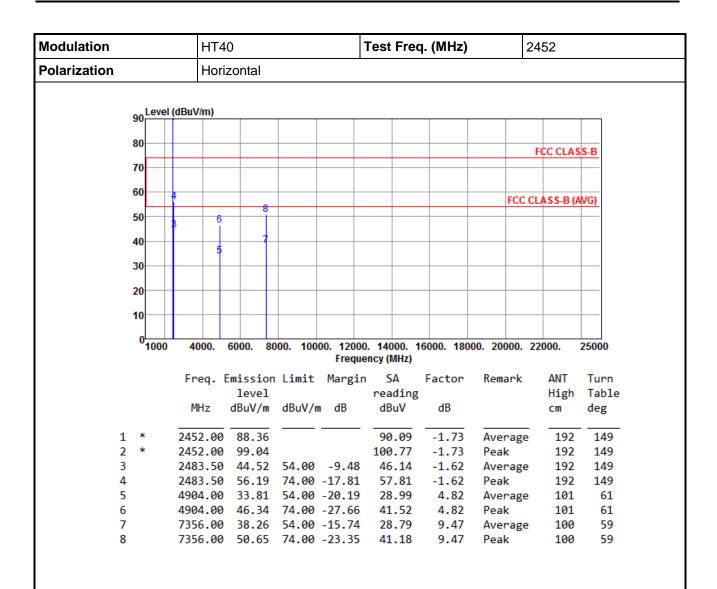
Note 3:"\*" is Peak / Average value of fundamental frequency

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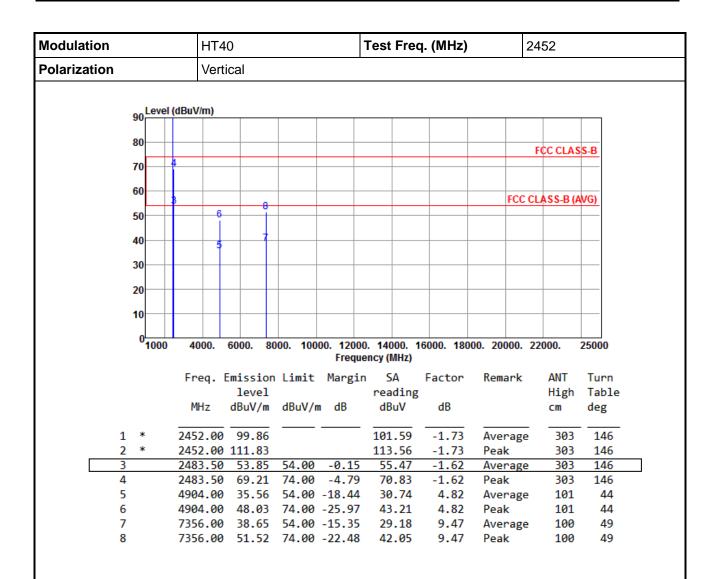
\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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\*Factor includes antenna factor, cable loss and amplifier gain

Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Note 3:"\*" is Peak / Average value of fundamental frequency

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# 4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp (EMC and Wireless Communication Laboratory), it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan District. Location map can be found on our website <a href="http://www.icertifi.com.tw">http://www.icertifi.com.tw</a>.

Linkou

Tel: 886-2-2601-1640

No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City,

Taiwan, R.O.C.

Kwei Shan

Tel: 886-3-271-8666

No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C. Kwei Shan Site II

Tel: 886-3-271-8640

No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan District, Tao Yuan City 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information.

Tel: 886-3-271-8666 Fax: 886-3-318-0155

Email: ICC\_Service@icertifi.com.tw

==END==

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