

FCC Test Report

FCC ID : YUW-301F

Equipment: Mobile Phone

Model No. : 301F

Brand Name : FUJITSU

Applicant : Fujitsu Mobile Communications Ltd.

Address : 1-1, Kamikodanaka 4-chome, Nakahara-ku,

Kawasaki 211-8588, Japan

Standard : 47 CFR FCC Part 15.407

Received Date : Sep. 13, 2013

Tested Date : Oct. 01 ~ Oct. 22, 2013

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.

Approved & Reviewed by:

Gary Chang / Manager

Iac-MRA



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Release Record

Report No.	Version	Description	Issued Date
FR391306AN	Rev. 01	Initial issue	Nov. 01, 2013

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Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 2.409MHz 31.52 (Margin -14.48dB) - AV	Pass
15.407(b)(1)(2)(3) 15.209	Radiated Emissions	[dBuV/m at 3m]: 11060.00MHz 53.00 (Margin -1.00dB) - AV	Pass
15.407(a)(1)(2)(3)	Emission Bandwidth	Meet the requirement of limit	Pass
15.407(a)(1)(2)(3)	RF Output Power	Power [dBm]: 5150~5250 MHz:14.55 5250~5350 MHz:14.56 5470~5725 MHz:14.32	Pass
15.407(a)(1)(2)(3)	Peak Power Spectral Density	Meet the requirement of limit	Pass
15.407(a)(6)	Peak Excursion	Meet the requirement of limit	Pass
15.407(g)	Frequency Stability	Meet the requirement of limit	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

Product Name	Mobile Phone
Brand Name	FUJITSU
Model Name	301F
IMEI Code	357613050018539, 357613050017572
H/W Version	V2.1.0
S/W Version	R25.1e

1.1.2 Specification of the Equipment under Test (EUT)

	RF General Information						
IEEE Std. 802.11	Frequency Range (MHz)	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS		
а	5150-5250 5250-5350 5470-5725	5180-5240 5260-5320 5500-5700	36-48 [4] 52-64 [4] 100-140 [8]	1	6-54 Mbps		
n (HT20)	5150-5250 5250-5350 5470-5725	5180-5240 5260-5320 5500-5700	36-48 [4] 52-64 [4] 100-140 [8]	1	MCS 0-7		
n (HT40)	5150-5250 5250-5350 5470-5725	5190-5230 5270-5310 5510-5670	38-46 [2] 54-62 [2] 102-134 [3]	1	MCS 0-7		
ac (VHT20)	5150-5250 5250-5350 5470-5725	5180-5240 5260-5320 5500-5700	36-48 [4] 52-64 [4] 100-140 [8]	1	MCS 0-8		
ac (VHT40)	5150-5250 5250-5350 5470-5725	5190-5230 5270-5310 5510-5670	38-46 [2] 54-62 [2] 102-134 [3]	1	MCS 0-8		
ac (VHT80)	5150-5250 5250-5350 5470-5725	5210 5290 5530	42 [1] 58 [1] 106 [1]	1	MCS 0-9		

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

Note 2: 802.11a/n uses a combination of OFDM-BPSK, QPSK, 16QAM, 64QAM modulation.

Note 3: IEEE 802.11ac is draft version.

1.1.3 Antenna Details

Ant. No.	Туре	Gain (dBi)	Connector	Remark
1	λ/4 Monopole	-3		

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1.1.4 EUT Operational Condition

Supply Voltage		□ DC	
Type of DC Source	☐ Internal DC supply		

1.1.5 Accessories

	Accessories				
No.	Equipment	Description			
		Brand Name: Fujitsu limited			
1	Battery	Model Name: CA54310-0053			
		Power Rating: O/P: 3.75Vdc, 2600mA			
	Cradle	Brand Name: SOFTBANK MOBILE Corp.			
2		Model Name: CA50601-1881			
		Power Rating: O/P: 12.0Vdc, 1.5A			
		Brand Name: SOFTBANK MOBILE Corp.			
	Adapter for cradle	Model Name: TA08017-B330			
3		I/P: 100-240Vac, 1000mA			
		O/P: 12.0Vdc, 3000mA DC 1.1m non-shielded cable with one core			
		AC 0.9m non-shielded cable without core			

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1.1.6 Channel List

802.11 a / H	IT20 / VHT20	HT40 /	VHT40
Channel	Frequency(MHz)	Channel	Frequency(MHz)
36	5180	38	5190
40	5200	46	5230
44	5220	54	5270
48	5240	62	5310
52	5260	102	5510
56	5280	110	5550
60	5300	134	5670
64	5320	VHT 80	
100	5500	42	5210
104	5520	58	5290
108	5540	106	5530
112	5560		
116	5580		
132	5660		
136	5680		
140	5700		

1.1.7 Test Tool and Duty Cycle

Test Tool	QRCT, Ver 3.0.6.0				
	Mode	Duty cycle (%)	Duty factor (dB)		
	11a	88.79%	0.52		
	HT20	88.24%	0.54		
Duty Cycle and Duty Factor	HT40	76.90%	1.14		
	VHT20	84.44%	0.73		
	VHT40	72.92%	1.37		
	VHT80	57.07%	2.44		

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1.1.8 Power Setting

Channel	Frequency(MHz)	11a	HT20	VHT20
CH 36	5180	13	12	12
CH 40	5200	13	12	12
CH 48	5240	13	12	12
CH 52	5260	13	12	12
CH 60	5300	13	12	12
CH 64	5320	13	12	12
CH 100	5500	13	12	12
CH 116	5580	13	12	12
CH 140	5700	13	12	12

Channel	Frequency(MHz)	HT40	VHT40	VHT80
CH 38	5190	11.5	10	-
CH 46	5230	11.5	10	-
CH 54	5270	11.5	10	-
CH 62	5310	11.5	10	-
CH 102	5510	11	10	-
CH 110	5550	11	10	-
CH 134	5670	11	10	-
CH 42	5210	-	-	10
CH 58	5290	-	-	10
CH 106	5530	-	-	9

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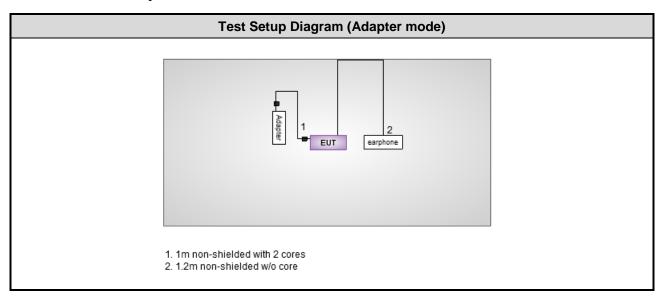


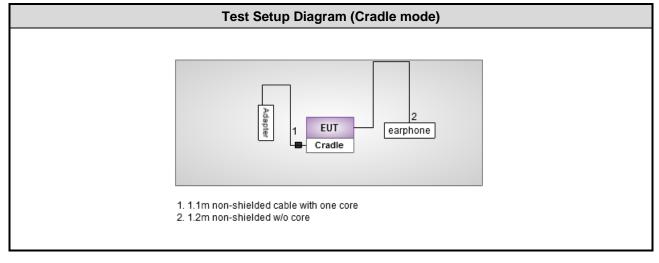
1.2 Local Support Equipment List

	Support Equipment List									
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)				
1	Adapter	NTT docomo	AC Adaptor 04			1m non-shielded with 2 cores				
2	Earphone	Apple	MD827FE/A			1.2m non-shielded w/o core				

Note: Item 1 was provided by client.

1.3 Test Setup Chart





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1.4 The Equipment List

Serial No. 100169 8127-667 8127-666 34406 30494	Calibration Date Oct. 15, 2013 Dec. 04, 2012 Dec. 04, 2012 Apr. 08, 2013 Apr. 09, 2013	Calibration Until Oct. 14, 2014 Dec. 03, 2013 Dec. 03, 2013 Apr. 07, 2014 Apr. 08, 2014
100169 8127-667 8127-666 34406	Oct. 15, 2013 Dec. 04, 2012 Dec. 04, 2012 Apr. 08, 2013	Oct. 14, 2014 Dec. 03, 2013 Dec. 03, 2013 Apr. 07, 2014
8127-667 8127-666 34406	Dec. 04, 2012 Dec. 04, 2012 Apr. 08, 2013	Dec. 03, 2013 Dec. 03, 2013 Apr. 07, 2014
8127-666 34406	Dec. 04, 2012 Apr. 08, 2013	Dec. 03, 2013 Apr. 07, 2014
34406	Apr. 08, 2013	Apr. 07, 2014
	,,	' '
30404	Apr. 09, 2013	Apr 09 2014
30434	7 April 00, 2010	Api. 00, 2014
22589	Jan. 24, 2013	Jan. 23, 2014
121630	Dec. 04, 2012	Dec. 03, 2013
CFD200-NL-001	Dec. 25, 2012	Dec. 24, 2013
100920	Nov. 21, 2012	Nov. 20, 2013
100951	Jan. 30, 2013	Jan. 29, 2014
101579	Jan. 07, 2013	Jan. 06, 2014
	Apr. 22, 2013	Apr. 21, 2014
03	Apr. 22, 2012	Apr. 21, 2014
	03	

Test Item	RF Conducted	F Conducted									
Test Site	TH01-WS)										
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until						
Spectrum Analyzer	R&S	FSV 40	101063	Feb. 18, 2013	Feb. 17, 2014						
TEMP&HUMIDITY CHAMBER	GIANT FORCE	GCT-225-40-SP-SD	MAF1212-002	Nov. 29, 2012	Nov. 28, 2013						
Power Meter	Anritsu	ML2495A	1241001	Oct. 08, 2013	Oct. 07, 2014						
Power Sensor	Anritsu	MA2411B	1207362	Oct. 08, 2013	Oct. 07, 2014						
Signal Generator	R&S	SMB100A	175727	Jan. 14, 2013	Jan. 13, 2014						
Note: Calibration Inter	val of instruments listed	d above is one year.									

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Test Item	Radiated Emission above 1GHz 966 chamber1 / (03CH01-WS)								
Test Site									
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until				
3m semi-anechoic chamber	CHAMPRO	SAC-03	03CH01-WS	Jan. 04, 2013	Jan. 03, 2014				
Spectrum Analyzer	R&S	FSV40	101498	Jan. 24, 2013	Jan. 23, 2014				
Receiver	R&S	ESR3	101658	Jan. 28, 2013	Jan. 27, 2014				
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-522	Jan. 11, 2013	Jan. 10, 2014				
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1096	Feb. 18, 2013	Feb. 17, 2014				
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Jan. 14, 2013	Jan. 13, 2014				
Amplifier	Burgeon	BPA-530	100219	Nov. 28, 2012	Nov. 27, 2013				
Amplifier	Agilent	83017A	MY39501308	Dec. 18, 2012	Dec. 17, 2013				
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16014/4	Dec. 25, 2012	Dec. 24, 2013				
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16019/4	Dec. 25, 2012	Dec. 24, 2013				
RF Cable	HUBER+SUHNER	SUCOFLEX104	MY16139/4	Dec. 25, 2012	Dec. 24, 2013				
RF Cable-R03m	Woken	CFD400NL-LW	CFD400NL-001	Dec. 25, 2012	Dec. 24, 2013				
RF Cable-R10m	Woken	CFD400NL-LW	CFD400NL-002	Dec. 25, 2012	Dec. 24, 2013				
control	EM Electronics	EM1000	60612	N/A	N/A				

Loop Antenna	R&S	HFH2-Z2	100330	Nov. 15, 2012	Nov. 14, 2014			
Amplifier MITEQ		AMF-6F-260400 9121372		Apr. 19, 2013	Apr. 18, 2015			
Note: Calibration Interval of instruments listed above is two year.								

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1.5 Testing Applied Standards

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

47 CFR FCC Part 15.407

ANSI C63.10-2009

FCC KDB 412172

FCC KDB 789033 D01 General UNII Test procedures v01r03

Note: The EUT has been tested and complied with FCC part 15B requirement. FCC Part 15B test results are issued to another report.

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	±74.147 Hz				
Conducted power	±0.717 dB				
Power density	±2.687 dB				
Frequency error	±74.147 Hz				
Temperature	±0.3 °C				
AC conducted emission	±2.43 dB				
Radiated emission	±2.49 dB				

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2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By	Tested Date
AC Conduction	CO01-WS	21°C / 55%	Skys Huang	Oct. 22, 2013
Radiated Emissions	03CH01-WS	23°C / 64%	Aska Huang Haru Yang	Oct. 04~ Oct. 11, 2013
RF Conducted	TH01-WS	24°C / 61%	Brad Wu	Oct. 09, 2013

FCC site registration No.: 657002IC site registration No.: 10807A-1

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2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data Rate (Mbps) / MCS	Test Configuration
Conducted Emissions	11a	5320	6 Mbps	1, 2
Radiated Emissions <1GHz	11a	5320	6 Mbps	1, 2
	11a	5180 / 5200 / 5240 / 5260 / 5300 5320 / 5500 / 5580 / 5700	6 Mbps	
	HT20	5180 / 5200 / 5240 / 5260 / 5300 5320 / 5500 / 5580 / 5700	MCS 0	
RF Output Power	HT40	5190 / 5230/ 5270 / 5310 / 5510 5550 / 5670	MCS 0	1
	VHT20	5180 / 5200 / 5240 / 5260 / 5300 5320 / 5500 / 5580 / 5700	MCS 0	
	VHT40	5190 / 5230/ 5270 / 5310 / 5510 5550 / 5670	MCS 0	
	VHT80	5210 / 5290 / 5530	MCS 0	
	11a	5180 / 5200 / 5240 / 5260 / 5300 5320 / 5500 / 5580 / 5700	6 Mbps	
Radiated Emissions >1GHz Emission Bandwidth	HT20	5180 / 5200 / 5240 / 5260 / 5300 5320 / 5500 / 5580 / 5700	MCS 0	1
Peak Power Spectral Density	HT40	5190 / 5230/ 5270 / 5310 / 5510 5550 / 5670	MCS 0	
	VHT80	5210 / 5290 / 5530	MCS 0	
	11a	5180 / 5320 / 5580	6 Mbps	
	HT40	5230 / 5270 / 5670	MCS 0	
Peak Excursion	VHT20	5180 / 5260 / 5700	MCS 0	1
	VHT40	5230 / 5310 / 5510	MCS 0	
	VHT80	5210 / 5290 / 5530	MCS 0	
Frequency Stability	Un-modulation	5320		1

NOTE:

- 1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement X, Y, and Z-plane. The Y-plane results were found as the worst case and were shown in this report.
- 2. The EUT had been tested by following test configurations for radiated emission below 1GHz.
 - 1) Configuration 1: Adapter mode
 - 2) Configuration 2: Cradle mode
- 3. Adapter and cradle mode had been pretested for radiated emission above 1GHz and found that the adapter mode was the worst case and was selected for final test.

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3 Transmitter Test Results

3.1 Conducted Emissions

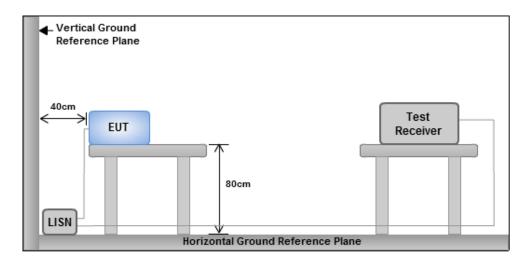
3.1.1 Limit of Conducted Emissions

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 Ω 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



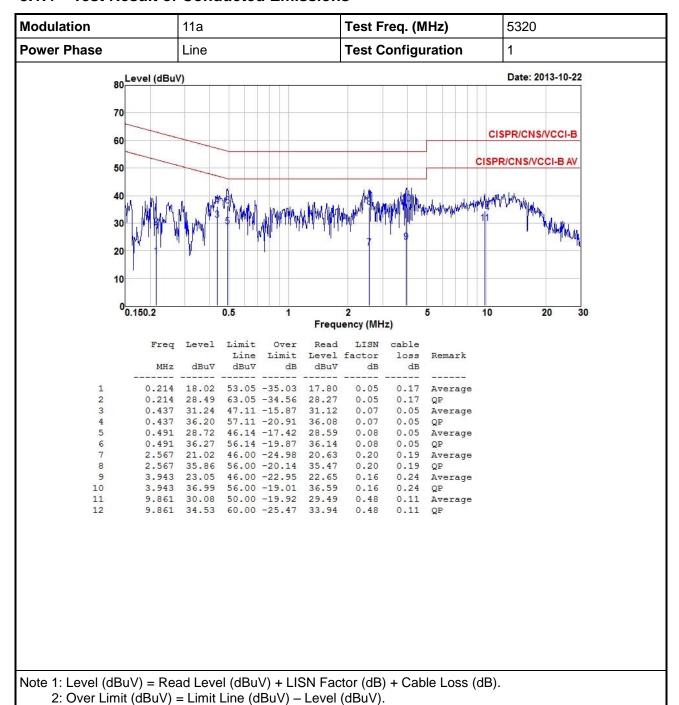
Note: 1. Support units were connected to second LISN.

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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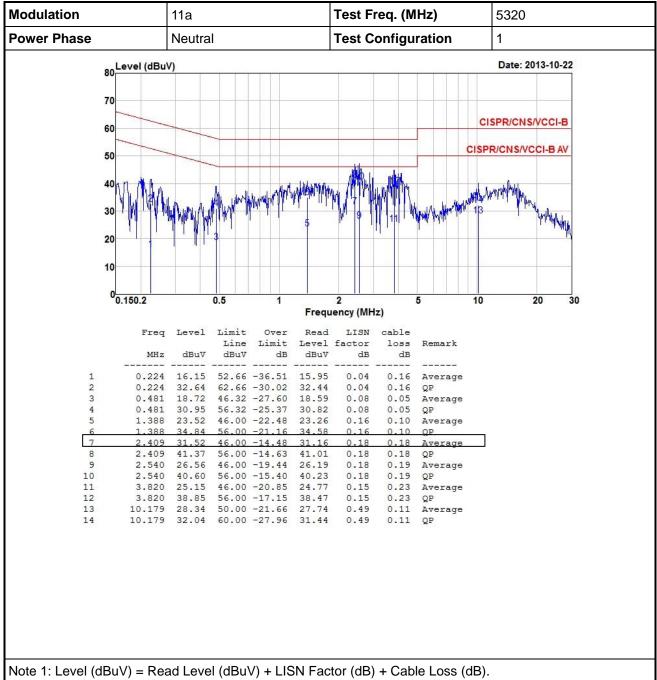


3.1.4 Test Result of Conducted Emissions



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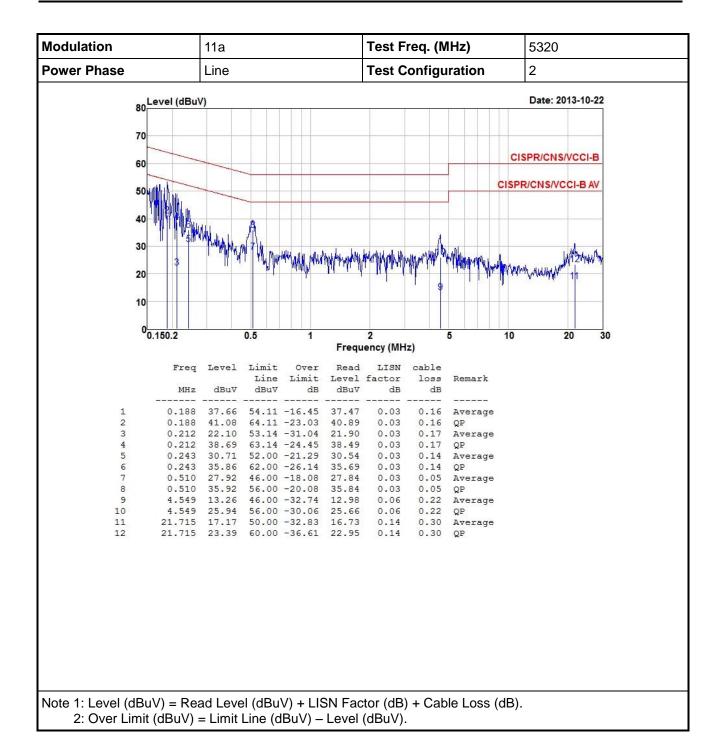




Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB). 2: Over Limit (dBuV) = Limit Line (dBuV) – Level (dBuV).

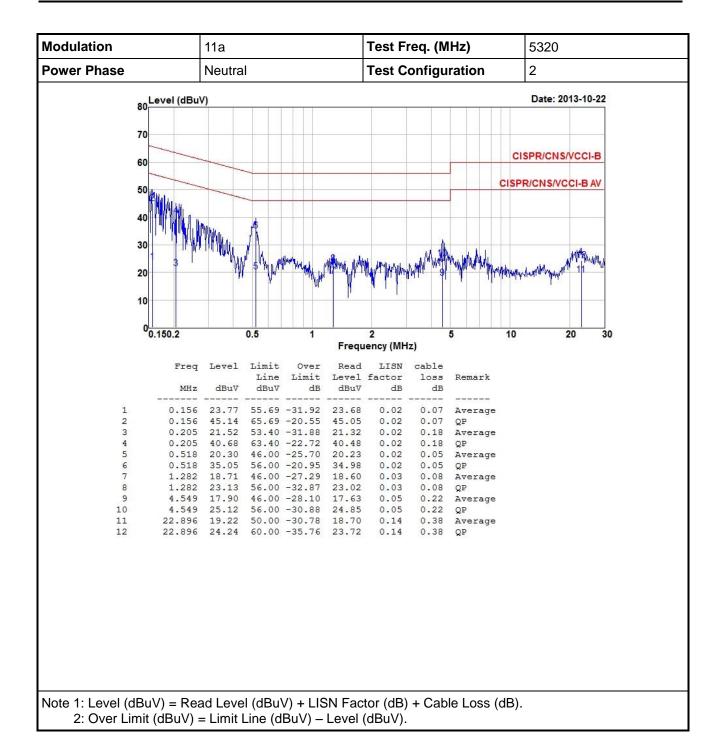
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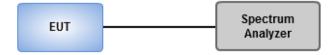


3.2 Emission Bandwidth

3.2.1 Test Procedures

- 1. Set RBW = approximately 1% of the emission bandwidth.
- 2. Set the VBW > RBW, Detector = Peak.
- 3. Trace mode = max hold.
- 4. Measure the maximum width of the emission that is 26 dB down from the peak of the emission.

3.2.2 Test Setup



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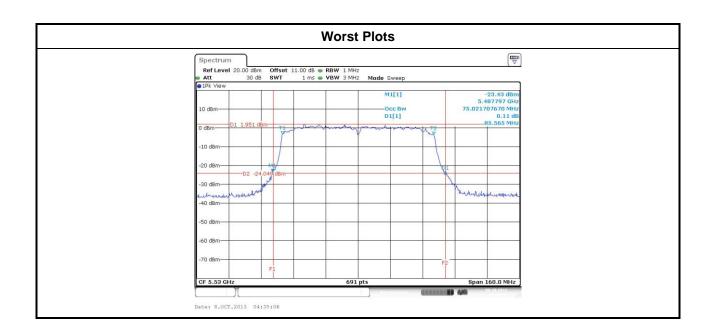


3.2.3 Test Result of Emission Bandwidth

	Emission Bandwidth									
Mode	N	Freq.	26dB	Bandwidth	(MHz)	99% E	Bandwidth	(MHz)	26dB	99%
wode	N _{TX}	(MHz)	Chain 0	Chain 1	Chain 2	Chain 0	Chain 1	Chain 2	Limit	Limit
11a	1	5180	22.84			17.25			17.00	16.37
11a	1	5200	22.55			17.19			17.00	16.35
11a	1	5240	22.32			17.19			17.00	16.35
11a	1	5260	22.55			17.25			24.00	23.37
11a	1	5300	22.61			17.19			24.00	23.35
11a	1	5320	22.61			17.25			24.00	23.37
11a	1	5500	22.49			17.25			24.00	23.37
11a	1	5580	22.43			17.19			24.00	23.35
11a	1	5700	22.78			17.25			24.00	23.37
HT40	1	5190	45.68			36.82			17.00	17.00
HT40	1	5230	45.33			36.93			17.00	17.00
HT40	1	5270	46.15			36.93			24.00	17.00
HT40	1	5310	45.57			36.93			24.00	24.00
HT40	1	5510	45.68			37.05			24.00	24.00
HT40	1	5550	46.15			37.05			24.00	24.00
HT40	1	5670	45.91			37.05			24.00	24.00
VHT20	1	5180	22.32			18.12			17.00	23.58
VHT20	1	5200	22.38			18.12			17.00	23.58
VHT20	1	5240	22.38			18.12			17.00	16.58
VHT20	1	5260	22.38			18.12			24.00	16.58
VHT20	1	5300	22.38			18.12			24.00	23.58
VHT20	1	5320	22.43			18.12			24.00	23.58
VHT20	1	5500	22.38			18.12			24.00	23.58
VHT20	1	5580	22.49			18.12			24.00	23.58
VHT20	1	5700	22.43			18.12			24.00	23.58
VHT80	1	5210	84.87			75.02			17.00	17.00
VHT80	1	5290	85.10			75.02			24.00	24.00
VHT80	1	5530	85.57			75.02			24.00	24.00

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3.3 RF Output Power

3.3.1 Limit of RF Output Power

	Frequency Band (GHz)	Limit
	5.15~5.25	50mW or 4dBm+10 log B
	5.25~5.35	250mW or 11dBm+10 log B
	5.47~5.725	250mW or 11dBm+10 log B
Note	e: "B" is the 26dB emission bandwidth in MHz.	

3.3.2 Test Procedures

Now Power meter

Measurements is performed using a wideband gated RF power meter provided that the gate parameters are adjusted such that the power is measured only when the EUT is transmitting at its maximum power control level. Since the measurement is made only during the ON time of the transmitter, no duty cycle correction factor is required

3.3.3 Test Setup



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3.3.4 Test Result of Maximum Conducted Output Power

	RF Output Power (dBm)										
Mode	N _{TX}	Freq. (MHz)	Chain 0	Chain 1	Chain 2	Total Power (mW)	Total Power (dBm)	Limit			
11a	1	5180	14.55			28.510	14.55	17.00			
11a	1	5200	14.39			27.479	14.39	17.00			
11a	1	5240	14.43			27.733	14.43	17.00			
11a	1	5260	14.39			27.479	14.39	24.00			
11a	1	5300	14.42			27.669	14.42	24.00			
11a	1	5320	14.56			28.576	14.56	24.00			
11a	1	5500	14.01			25.177	14.01	24.00			
11a	1	5580	14.32			27.040	14.32	24.00			
11a	1	5700	14.21			26.363	14.21	24.00			
HT20	1	5180	13.83			24.155	13.83	17.00			
HT20	1	5200	13.65			23.174	13.65	17.00			
HT20	1	5240	13.72			23.550	13.72	17.00			
HT20	1	5260	13.66			23.227	13.66	24.00			
HT20	1	5300	13.41			21.928	13.41	24.00			
HT20	1	5320	13.49			22.336	13.49	24.00			
HT20	1	5500	13.31			21.429	13.31	24.00			
HT20	1	5580	13.38			21.777	13.38	24.00			
HT20	1	5700	13.46			22.182	13.46	24.00			
HT40	1	5190	13.21			20.941	13.21	17.00			
HT40	1	5230	13.42			21.979	13.42	17.00			
HT40	1	5270	13.05			20.184	13.05	24.00			
HT40	1	5310	12.96			19.770	12.96	24.00			
HT40	1	5510	12.02			15.922	12.02	24.00			
HT40	1	5550	12.23			16.711	12.23	24.00			
HT40	1	5670	12.43			17.498	12.43	24.00			

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	RF Output Power (dBm)								
Mode	N _{TX}	Freq. (MHz)	Chain 0	Chain 1	Chain 2	Total Power (mW)	Total Power (dBm)	Limit	
VHT20	1	5180	13.89			24.491	13.89	17.00	
VHT20	1	5200	13.67			23.281	13.67	17.00	
VHT20	1	5240	13.86			24.322	13.86	17.00	
VHT20	1	5260	13.69			23.388	13.69	24.00	
VHT20	1	5300	13.43			22.029	13.43	24.00	
VHT20	1	5320	13.52			22.491	13.52	24.00	
VHT20	1	5500	13.36			21.677	13.36	24.00	
VHT20	1	5580	13.43			22.029	13.43	24.00	
VHT20	1	5700	13.53			22.542	13.53	24.00	
VHT40	1	5190	11.60			14.454	11.60	17.00	
VHT40	1	5230	11.72			14.859	11.72	17.00	
VHT40	1	5270	11.55			14.289	11.55	24.00	
VHT40	1	5310	11.73			14.894	11.73	24.00	
VHT40	1	5510	11.03			12.677	11.03	24.00	
VHT40	1	5550	10.93			12.388	10.93	24.00	
VHT40	1	5670	10.86			12.19	10.86	24.00	
VHT80	1	5210	11.86			15.346	11.86	17.00	
VHT80	1	5290	11.73			14.894	11.73	24.00	
VHT80	1	5530	10.43			11.041	10.43	24.00	

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3.4 Peak Power Spectral Density

3.4.1 Limit of Peak Power Spectral Density

	Frequency Band (GHz)	Limit (dBm)
\boxtimes	5.15~5.25	4
\boxtimes	5.25~5.35	11
\boxtimes	5.47~5.725	11

3.4.2 Test Procedures

	SA-1
--	------

- 1. Set RBW = 1 MHz, VBW = 3 MHz, Sweep time = auto, Detector = RMS.
- 2. Trace average 100 traces.
- 3. Use the peak marker function to determine the maximum amplitude level.

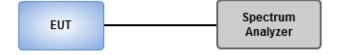
☐ Method SA-2

- 1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS.
- 2. Set sweep time ≥ 10 * (number of points in sweep) * (symbol period of the transmitted signal).
- 3. Perform a single sweep.
- 4. Use the peak marker function to determine the maximum amplitude level.

Method SA-2 Alternative

- 1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = RMS.
- 2. Set sweep time ≥ 10 * (number of points in sweep) * (total on/off period of the transmitted signal).
- 3. Perform a single sweep.
- 4. Use the peak marker function to determine the maximum amplitude level.
- 5. Add $10 \log(1/x)$, where x is the duty cycle.

3.4.3 Test Setup



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3.4.4 Test Result of Peak Power Spectral Density

Condition			Peak Power Spectral Density (dBm)						
Modulation Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm)	Duty factor (dB)	PPSD with D.F (dBm)	PPSD Limit (dBm)			
11a	1	5180	0.89	0.52	1.41	4			
11a	1	5200	0.66	0.52	1.18	4			
11a	1	5240	0.69	0.52	1.21	4			
11a	1	5260	0.80	0.52	1.32	11			
11a	1	5300	0.84	0.52	1.36	11			
11a	1	5320	0.73	0.52	1.25	11			
11a	1	5500	0.23	0.52	0.75	11			
11a	1	5580	0.20	0.52	0.72	11			
11a	1	5700	0.00	0.52	0.52	11			

Note: D.F is duty factor

Condition			Peak Power Spectral Density (dBm)					
Modulation Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm)	Duty factor (dB)	PPSD with D.F (dBm)	PPSD Limit (dBm)		
HT40	1	5190	-3.82	1.14	-2.68	4		
HT40	1	5230	-3.88	1.14	-2.74	4		
HT40	1	5270	-4.17	1.14	-3.03	11		
HT40	1	5310	-4.40	1.14	-3.26	11		
HT40	1	5510	-5.45	1.14	-4.31	11		
HT40	1	5550	-5.31	1.14	-4.17	11		
HT40	1	5670	-5.28	1.14	-4.14	11		

Note: D.F is duty factor

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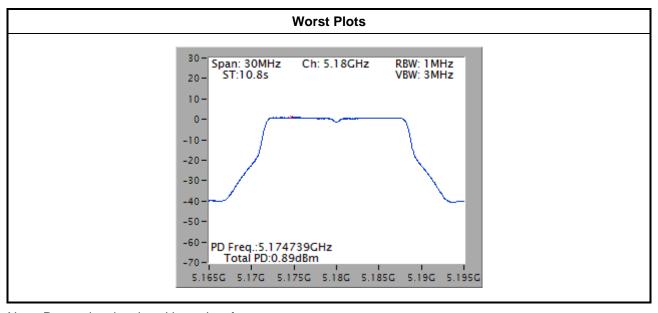


Condition			Peak Power Spectral Density (dBm)					
Modulation Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm)	Duty factor (dB)	PPSD with D.F (dBm)	PPSD Limit (dBm)		
VHT20	1	5180	-0.29	0.73	0.44	4		
VHT20	1	5200	-0.48	0.73	0.25	4		
VHT20	1	5240	-0.39	0.73	0.34	4		
VHT20	1	5260	-0.71	0.73	0.02	11		
VHT20	1	5300	-0.86	0.73	-0.13	11		
VHT20	1	5320	-0.93	0.73	-0.20	11		
VHT20	1	5500	-1.12	0.73	-0.39	11		
VHT20	1	5580	-1.15	0.73	-0.42	11		
VHT20	1	5700	-1.20	0.73	-0.47	11		

Note: D.F is duty factor

Co	ondition		Peak Power Spectral Density (dBm)				
Modulation Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm)	Duty factor (dB)	PPSD with D.F (dBm)	PPSD Limit (dBm)	
VHT80	1	5210	-9.37	2.44	-6.93	4	
VHT80	1	5290	-9.61	2.44	-7.17	11	
VHT80	1	5530	-11.17	2.44	-8.73	11	

Note: D.F is duty factor



Note: Power density plot without duty factor

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3.5 Peak Excursion

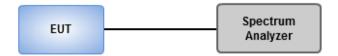
3.5.1 Peak Excursion Limit

Peak excursion of the modulation envelope shall not exceed 13 dB across any 1 MHz bandwidth.

3.5.2 Test Procedures

- 1. Set RBW = 1 MHz, VBW = 3 MHz, Detector = peak.
- 2. Trace mode = max-hold. Allow the sweeps to continue until the trace stabilizes.
- 3. Use the peak search function to find the peak of the spectrum.
- 4. Use the procedure of section 3.4.2 to measure the PPSD.
- 5. Compute the ratio of the maximum of the peak-max-hold spectrum to the PPSD

3.5.3 Test Setup



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3.5.4 Test Result of Peak Excursion

Frequency	band(MHz)	5150~5250						
Mode	Modulation Mode	N _{TX}	Freq. (MHz)	Measured value(dB)	Duty factor (dB)	Peak Excursion (dB)	Limit	
11a	BPSK	1	5180	8.87	0.52	8.35	13	
11a	QPSK	1	5180	10.14	1.00	9.14	13	
11a	16QAM	1	5180	11.09	1.79	9.30	13	
11a	64QAM	1	5180	12.62	2.98	9.64	13	
HT40	BPSK	1	5230	9.99	1.14	8.85	13	
HT40	QPSK	1	5230	11.08	1.95	9.13	13	
HT40	16QAM	1	5230	12.39	3.01	9.38	13	
HT40	64QAM	1	5230	12.65	4.23	8.42	13	
VHT20	BPSK	1	5180	8.82	0.73	8.09	13	
VHT20	QPSK	1	5180	10.79	1.37	9.42	13	
VHT20	16QAM	1	5180	10.98	2.25	8.73	13	
VHT20	64QAM	1	5180	12.18	3.38	8.80	13	
VHT20	256QAM	1	5180	11.84	4.03	7.81	13	
VHT40	BPSK	1	5230	9.85	1.37	8.48	13	
VHT40	QPSK	1	5230	12.71	2.28	10.43	13	
VHT40	16QAM	1	5230	12.02	3.34	8.68	13	
VHT40	64QAM	1	5230	12.34	4.46	7.88	13	
VHT40	256QAM	1	5230	13.76	5.07	8.69	13	
VHT80	BPSK	1	5210	11.72	2.44	9.28	13	
VHT80	QPSK	1	5210	11.72	3.53	8.19	13	
VHT80	16QAM	1	5210	12.07	4.76	7.31	13	
VHT80	64QAM	1	5210	13.05	5.58	7.47	13	
VHT80	256QAM	1	5210	14.16	6.02	8.14	13	

Note: Measured value = Peak-max-hold spectrum to the maximum of the average spectrum for continuous transmission. Since the duty cycle is < 98 %, duty factor is required to average spectrum Peak exclusion = Measured value – duty factor

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Frequency	band(MHz)	5250~5350						
Mode	Modulation Mode	N _{TX}	Freq. (MHz)	Measured value(dB)	Duty factor (dB)	Peak Excursion (dB)	Limit	
11a	BPSK	1	5320	9.74	0.52	9.22	13	
11a	QPSK	1	5320	10.31	1.00	9.31	13	
11a	16QAM	1	5320	11.14	1.79	9.35	13	
11a	64QAM	1	5320	12.24	2.98	9.26	13	
HT40	BPSK	1	5270	9.66	1.14	8.52	13	
HT40	QPSK	1	5270	10.38	1.95	8.43	13	
HT40	16QAM	1	5270	11.3	3.01	8.29	13	
HT40	64QAM	1	5270	13.2	4.23	8.97	13	
VHT20	BPSK	1	5260	8.81	0.73	8.08	13	
VHT20	QPSK	1	5260	9.69	1.37	8.32	13	
VHT20	16QAM	1	5260	10.06	2.25	7.81	13	
VHT20	64QAM	1	5260	11.83	3.38	8.45	13	
VHT20	256QAM	1	5260	11.33	4.03	7.30	13	
VHT40	BPSK	1	5310	9.89	1.37	8.52	13	
VHT40	QPSK	1	5310	12.82	2.28	10.54	13	
VHT40	16QAM	1	5310	12.11	3.34	8.77	13	
VHT40	64QAM	1	5310	12.48	4.46	8.02	13	
VHT40	256QAM	1	5310	13.87	5.07	8.80	13	
VHT80	BPSK	1	5290	11.82	2.44	9.38	13	
VHT80	QPSK	1	5290	11.56	3.53	8.03	13	
VHT80	16QAM	1	5290	12.11	4.76	7.35	13	
VHT80	64QAM	1	5290	12.72	5.58	7.14	13	
VHT80	256QAM	1	5290	14.28	6.02	8.26	13	

Note: Measured value = Peak-max-hold spectrum to the maximum of the average spectrum for continuous transmission. Since the duty cycle is < 98 %, duty factor is required to average spectrum Peak exclusion = Measured value – duty factor

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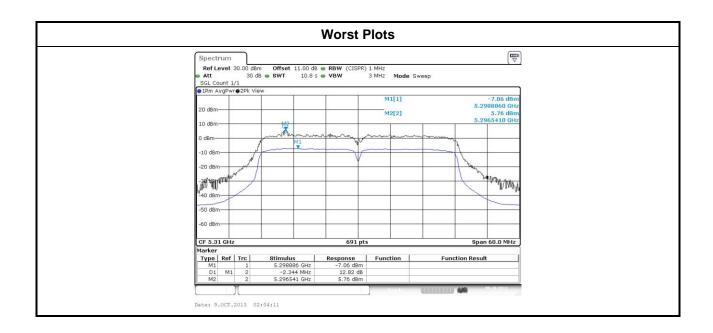


Frequency	band(MHz)	5470~5725						
Mode	Modulation Mode	N _{TX}	Freq. (MHz)	Measured value(dB)	Duty factor (dB)	Peak Excursion (dB)	Limit	
11a	BPSK	1	5580	9.31	0.52	8.79	13	
11a	QPSK	1	5580	10.46	1.00	9.46	13	
11a	16QAM	1	5580	10.85	1.79	9.06	13	
11a	64QAM	1	5580	12.1	2.98	9.12	13	
HT40	BPSK	1	5670	10.24	1.14	9.10	13	
HT40	QPSK	1	5670	11.02	1.95	9.07	13	
HT40	16QAM	1	5670	11.95	3.01	8.94	13	
HT40	64QAM	1	5670	12.62	4.23	8.39	13	
VHT20	BPSK	1	5700	8.72	0.73	7.99	13	
VHT20	QPSK	1	5700	9.68	1.37	8.31	13	
VHT20	16QAM	1	5700	10.16	2.25	7.91	13	
VHT20	64QAM	1	5700	11.92	3.38	8.54	13	
VHT20	256QAM	1	5700	11.54	4.03	7.51	13	
VHT40	BPSK	1	5510	10.08	1.37	8.71	13	
VHT40	QPSK	1	5510	12.76	2.28	10.48	13	
VHT40	16QAM	1	5510	12.21	3.34	8.87	13	
VHT40	64QAM	1	5510	12.11	4.46	7.65	13	
VHT40	256QAM	1	5510	13.65	5.07	8.58	13	
VHT80	BPSK	1	5530	11.84	2.44	9.40	13	
VHT80	QPSK	1	5530	11.56	3.53	8.03	13	
VHT80	16QAM	1	5530	12.3	4.76	7.54	13	
VHT80	64QAM	1	5530	13.19	5.58	7.61	13	
VHT80	256QAM	1	5530	14.27	6.02	8.25	13	

Note: Measured value = Peak-max-hold spectrum to the maximum of the average spectrum for continuous transmission. Since the duty cycle is < 98 %, duty factor is required to average spectrum Peak exclusion = Measured value – duty factor

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3.6 Transmitter Radiated and Band Edge Emissions

3.6.1 Limit of Transmitter Radiated and Band Edge Emissions

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

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.

Un-restricted band emissions above 1GHz Limit					
Operating Band	Limit				
5.15 - 5.25 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]				
5.25 - 5.35 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]				
5.47 - 5.725 GHz	e.i.r.p27 dBm [68.2 dBuV/m@3m]				
5.725 - 5.825 GHz	5.715 5.725 GHz: e.i.r.p17 dBm [78.2 dBuV/m@3m] 5.825 5.835 GHz: e.i.r.p17 dBm [78.2 dBuV/m@3m] Other un-restricted band: e.i.r.p27 dBm [68.2 dBuV/m@3m]				

Note 1: Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

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3.6.2 Test Procedures

- 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 a height of 0.8 m test table above the ground plane.
- 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.

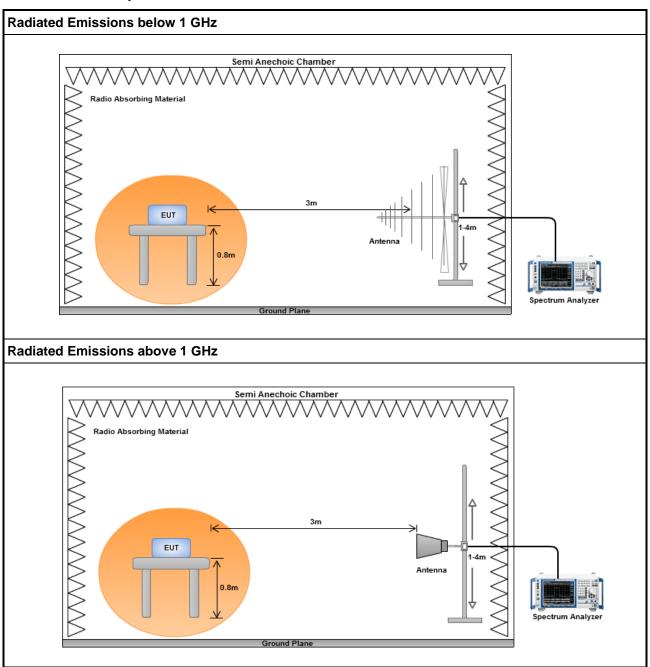
Note:

- 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.
- 3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

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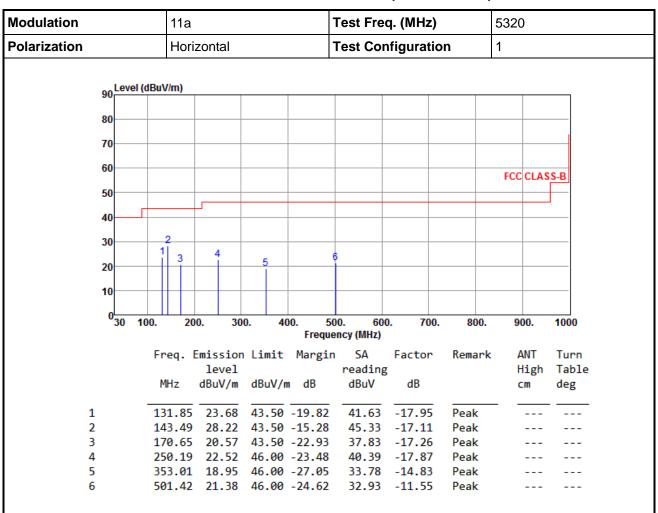
3.6.3 Test Setup



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3.6.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)



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

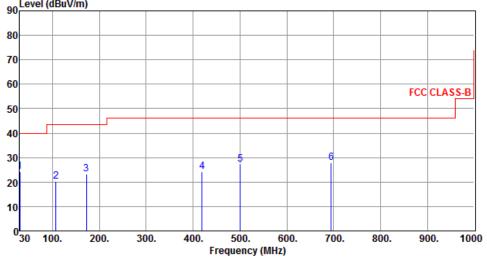
*Factor includes antenna factor, cable loss and amplifier gain

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

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Modulation			11a				Test Freq. (MHz)				
Polarization		Vert	ical			Test Co	nfigura	tion	1		
00	Level (di	BuV/m)									
80											



		Emission level		Ū	reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		CM	deg
1	30.00	24.25	40.00	-15.75	41.98	-17.73	Peak		
2	107.60	20.15	43.50	-23.35	40.52	-20.37	Peak		
3	172.59	23.15	43.50	-20.35	40.62	-17.47	Peak		
4	418.97	24.15	46.00	-21.85	37.34	-13.19	Peak		
5	500.45	27.21	46.00	-18.79	38.77	-11.56	Peak		
6	694.45	27.85	46.00	-18.15	36.19	-8.34	Peak		

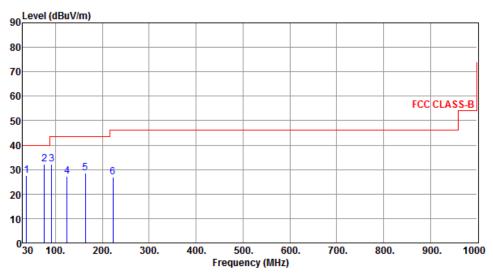
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor , cable loss and amplifier gain

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

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Modulation	11a	Test Freq. (MHz)	5320
Polarization	Horizontal	Test Configuration	2



	•	Emission level		J	reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	37.76	27.55	40.00	-12.45	44.72	-17.17	Peak		
2	76.56	32.12	40.00	-7.88	53.05	-20.93	Peak		
3	92.08	32.36	43.50	-11.14	55.02	-22.66	Peak		
4	125.06	27.21	43.50	-16.29	45.83	-18.62	Peak		
5	163.86	28.56	43.50	-14.94	45.51	-16.95	Peak		
6	223.03	26.80	46.00	-19.20	46.02	-19.22	Peak		

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).

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Modulation				11a			-	Test Fre	q. (MHz))	5320)	
Polarization				Verti	ical		•	Test Cor	nfigurati	on	2		
	90	Leve	el (dBi	uV/m)									
	80												
	70												
	60												
	00										FCC	CLAS	S-B
	50												
	40		3										
		1 4	14		5								
	30				j								
	20	\vdash	++-										_
	10	Ш	Ш										
	0	30	100.	20	0. 3	300. 4		00. 60	0. 700	. 800.	. 9	00.	1000
							Freque	ency (MHz)					
			F	req. [n Limit	Margin		Factor	Remar		ANT	Turn
				MU-	level		dD	reading dBuV	g dB			ligh	Table
				MHz	abuv/n	ı dBuV/ı	т ав	авич	ав		(m	deg
1	1		_	30.00	30.72	40.00	-9.28	48.45	-17.73	Peak			
2	2			52.31	33.42	40.00	-6.58	50.14	-16.72	Peak			
	3			75.59				56.23		Peak			
	4			91.11	31.72		-11.78	54.50		Peak			
	5		2	274.44	28.02	46.00	-17.98	44.91	-16.89	Peak			

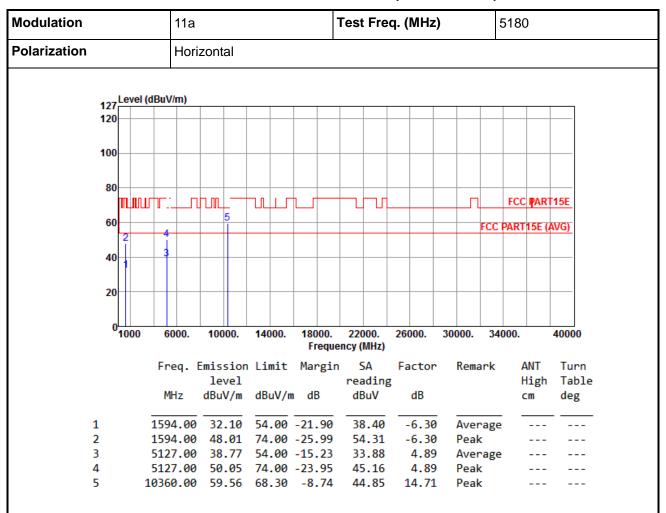
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor, cable loss and amplifier gain

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

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3.6.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11a



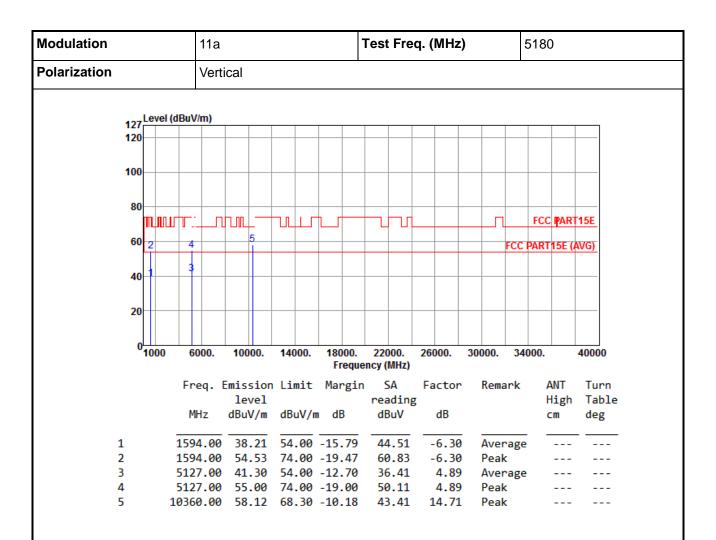
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

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^{*}Factor includes antenna factor, cable loss and amplifier gain

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



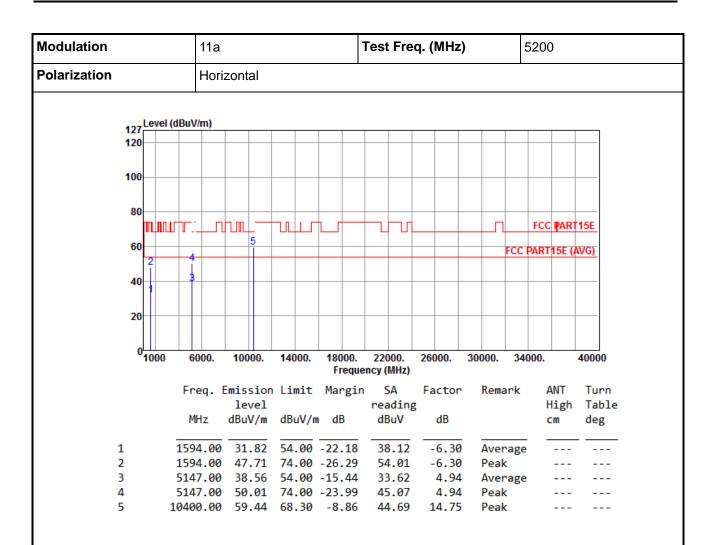


*Factor includes antenna factor, cable loss and amplifier gain

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

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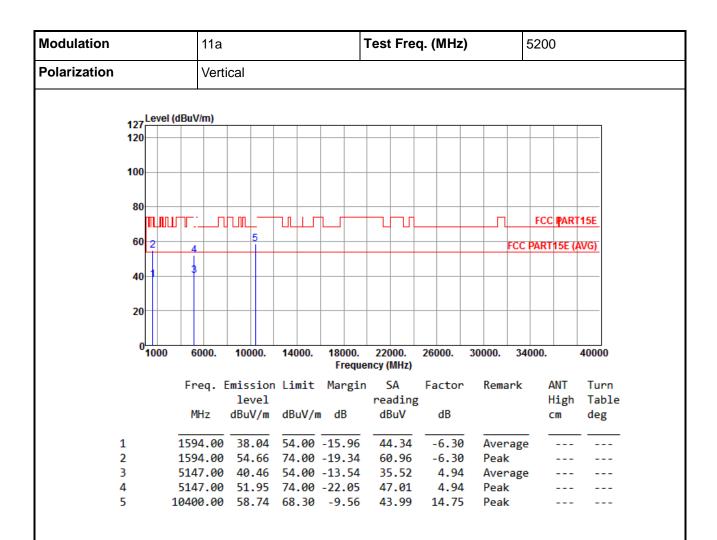


*Factor includes antenna factor, cable loss and amplifier gain

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

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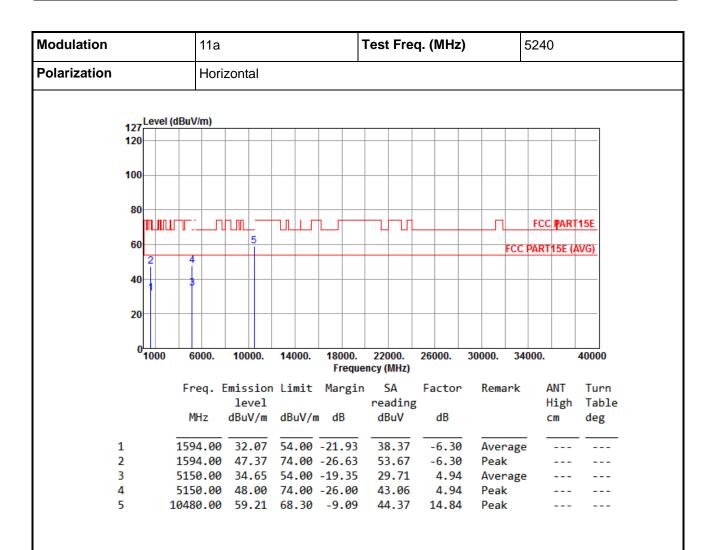


*Factor includes antenna factor, cable loss and amplifier gain

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

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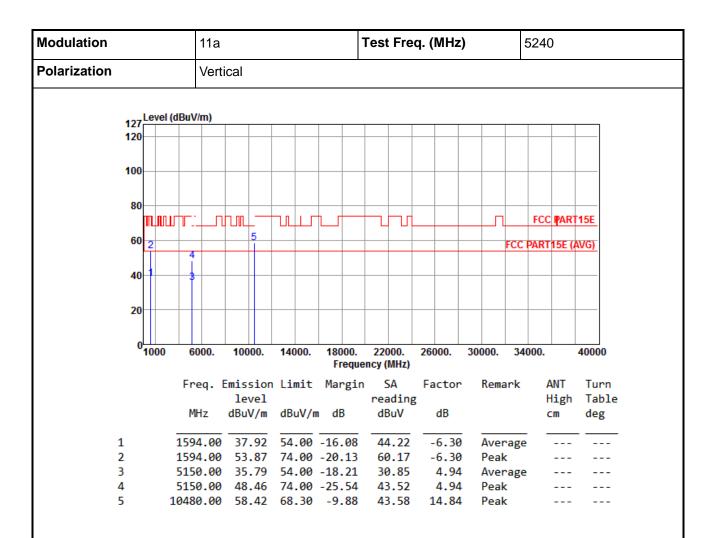


*Factor includes antenna factor, cable loss and amplifier gain

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

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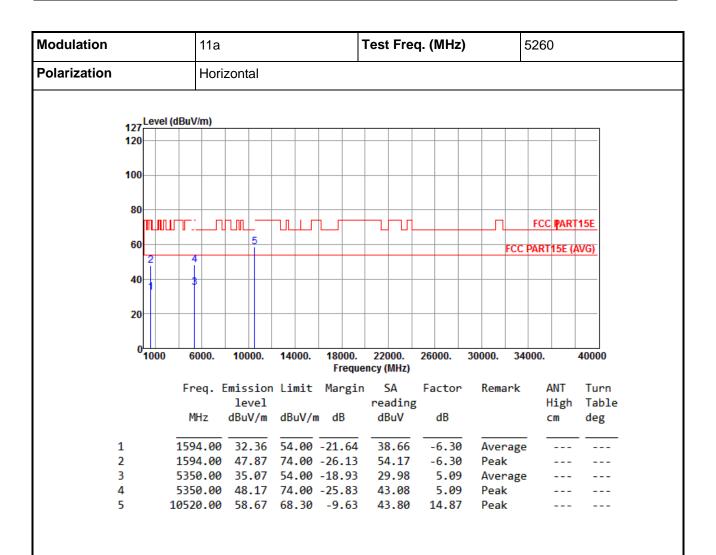


*Factor includes antenna factor, cable loss and amplifier gain

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

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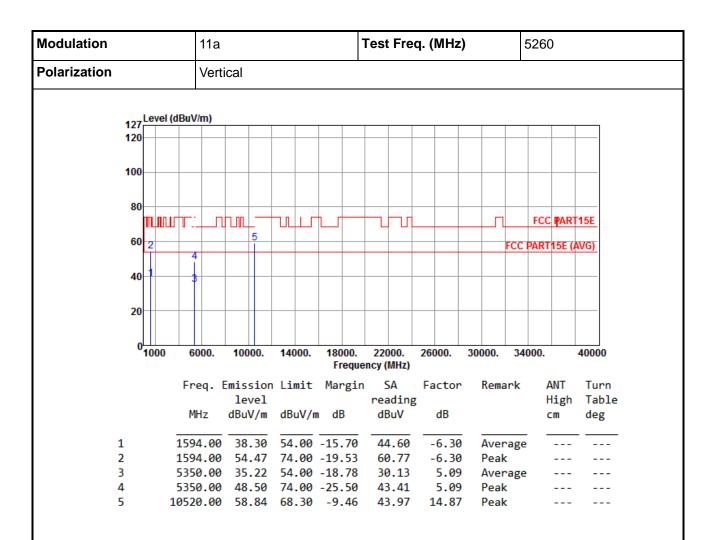


*Factor includes antenna factor, cable loss and amplifier gain

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

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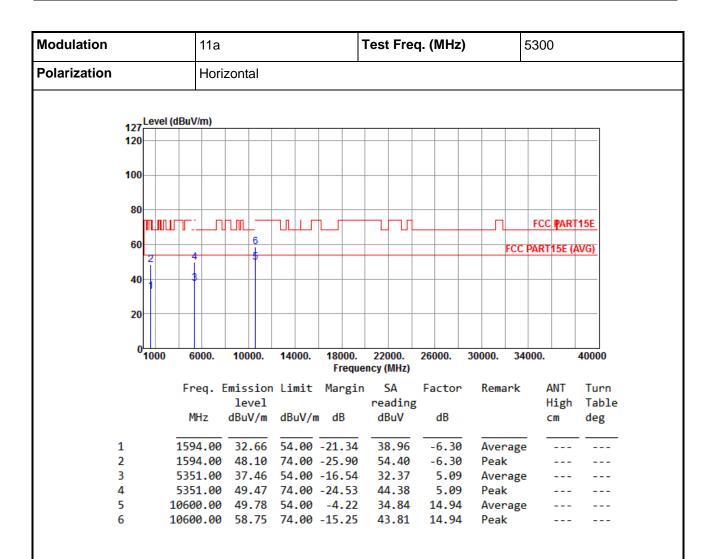


*Factor includes antenna factor, cable loss and amplifier gain

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

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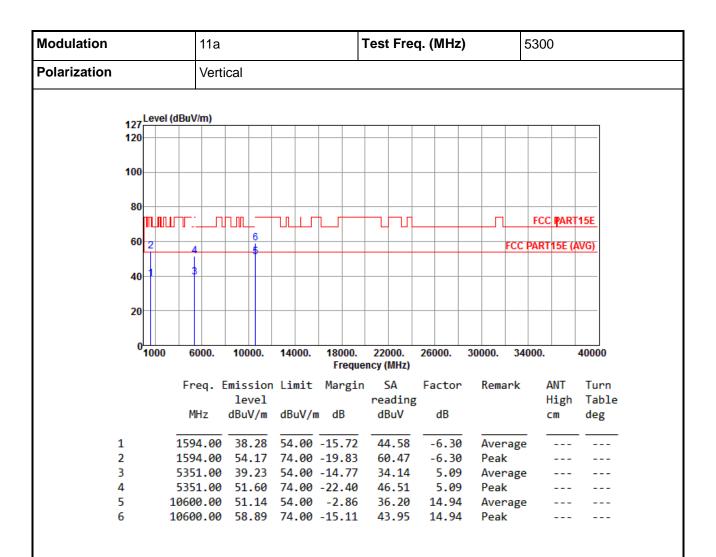


*Factor includes antenna factor, cable loss and amplifier gain

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

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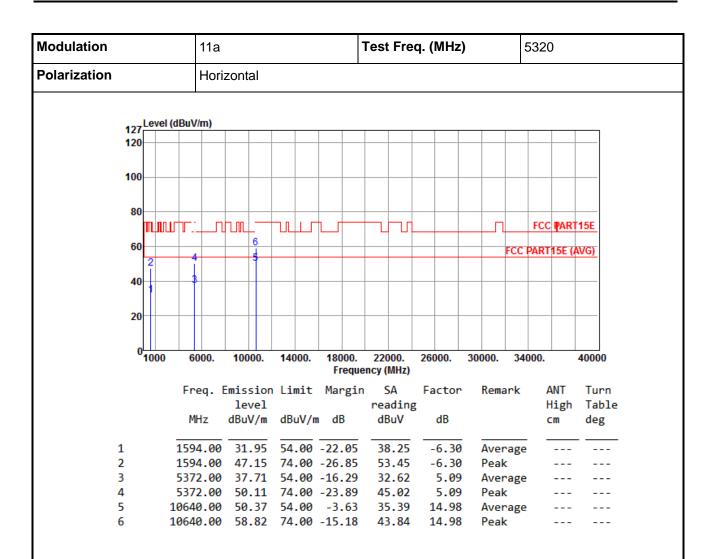


*Factor includes antenna factor, cable loss and amplifier gain

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

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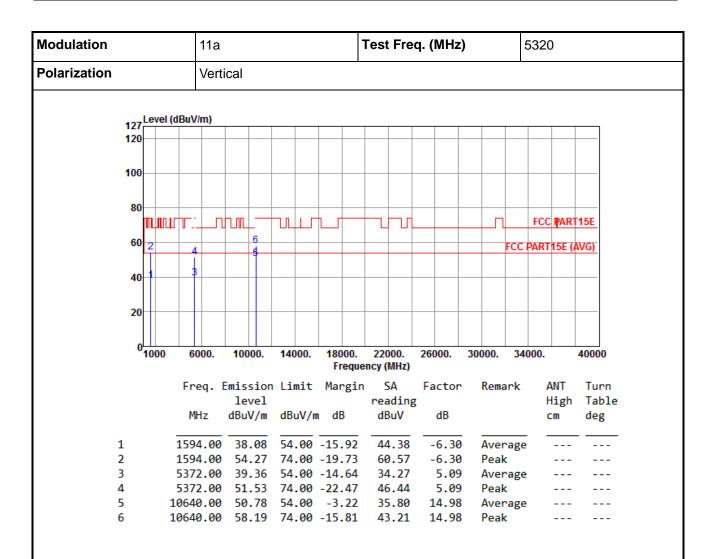


*Factor includes antenna factor, cable loss and amplifier gain

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

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*Factor includes antenna factor, cable loss and amplifier gain

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

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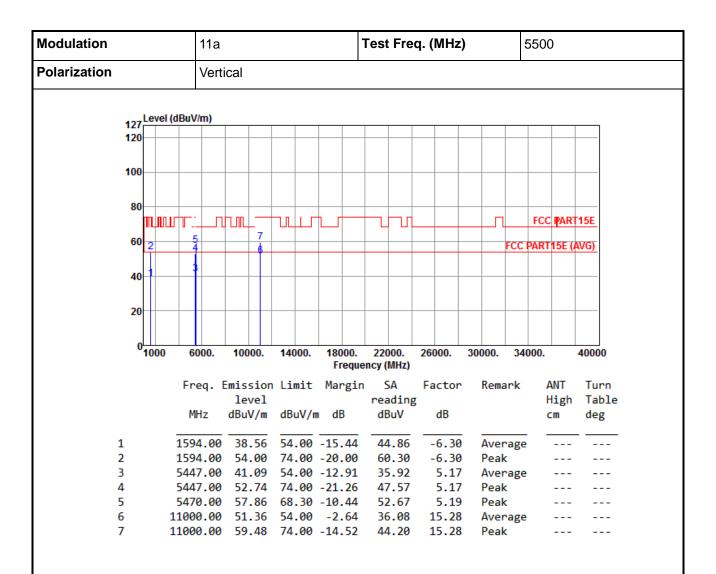
Modulation	11a	Test F	req. (MHz)	5500
Polarization	Horizontal	1		
127 Level (dBu	V/m)			
120				
100				
80				
				FCC PART15E
60	5 4			CC PART15E (AVG)
2	1 1			CC (ART ISE (AVO)
40	1			
20				
01000	6000. 10000. 14000	. 18000. 22000 Frequency (MH		34000. 40000
Fi	req. Emission Limit		-, Factor Remar	rk ANT Turn
	level	readi	.ng	High Table
1	MHz dBuV/m dBuV/	/m dB dBu\	dB	cm deg
1 159	94.00 32.21 54.00	0 -21.79 38.5	1 -6.30 Avera	nge
		0 -26.19 54.1	.1 -6.30 Peak	
		0 -16.59 32.2		ige
		0 -24.48 44.3 0 -14.07 49.0		
		0 -1.45 37.2		ige
7 1100	00.00 60.99 74.00	0 -13.01 45.7		

*Factor includes antenna factor , cable loss and amplifier gain

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

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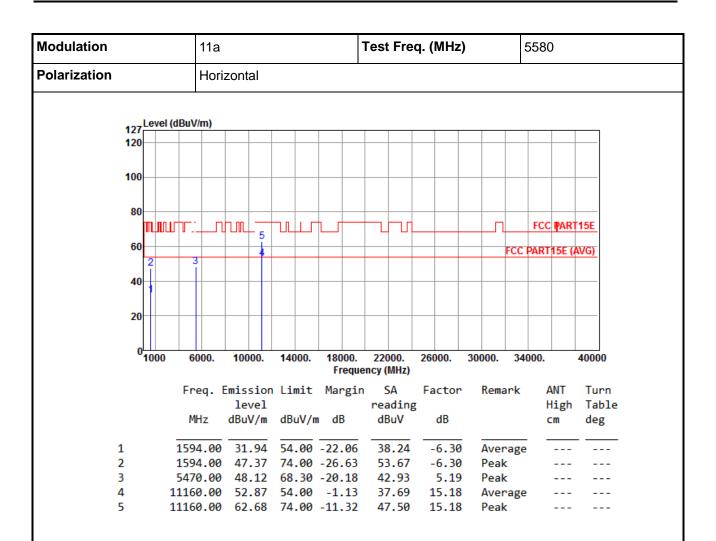


*Factor includes antenna factor, cable loss and amplifier gain

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

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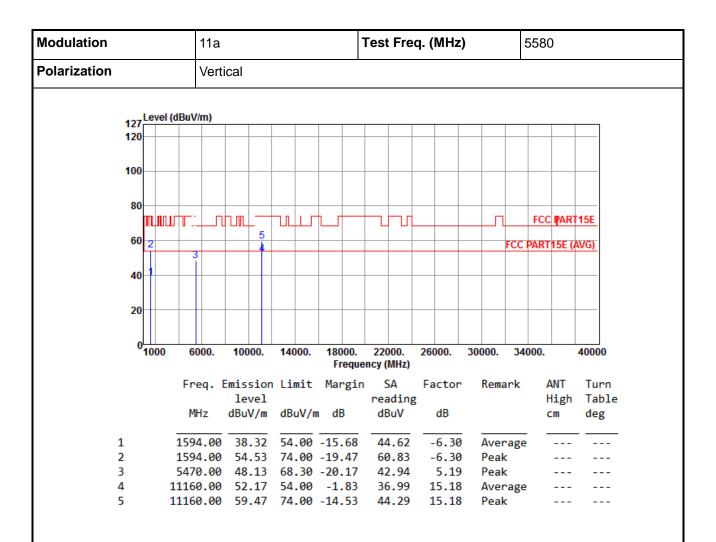


*Factor includes antenna factor, cable loss and amplifier gain

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

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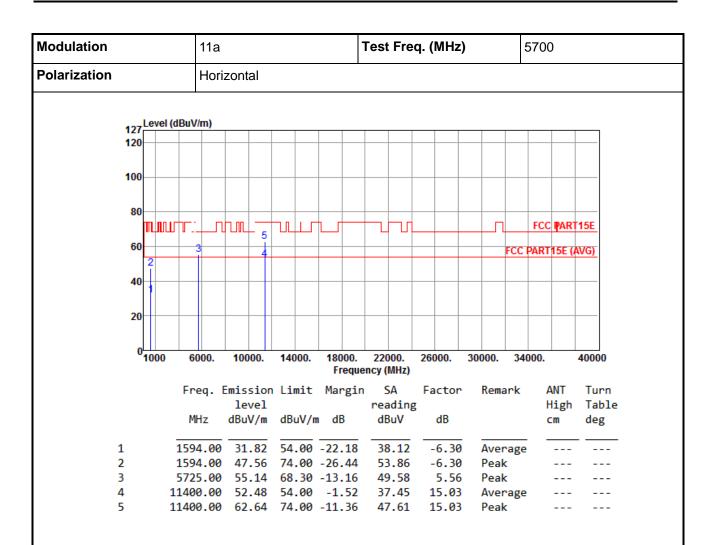


*Factor includes antenna factor, cable loss and amplifier gain

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

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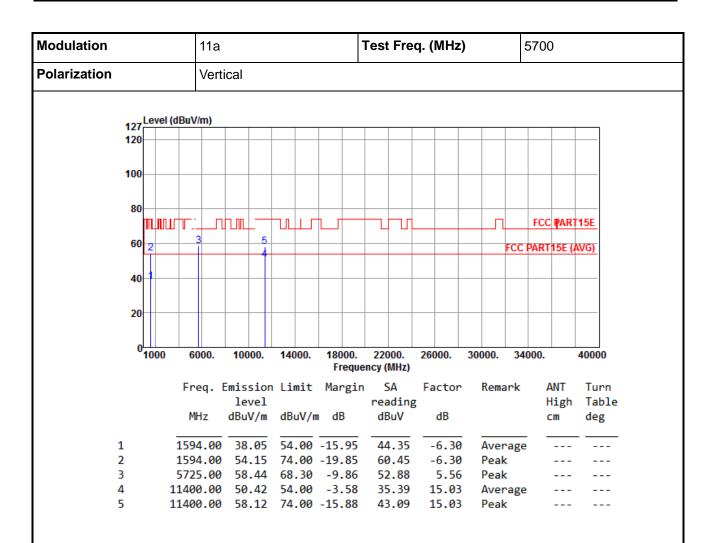


*Factor includes antenna factor, cable loss and amplifier gain

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

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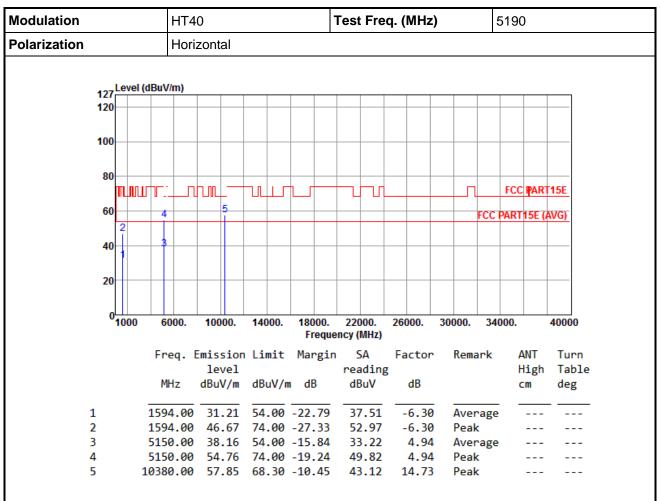
*Factor includes antenna factor, cable loss and amplifier gain

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

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3.6.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT40



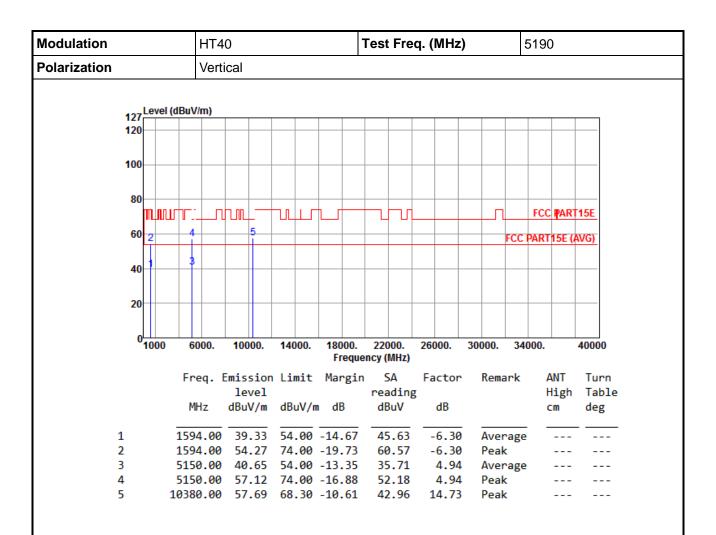
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

*Factor includes antenna factor, cable loss and amplifier gain

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

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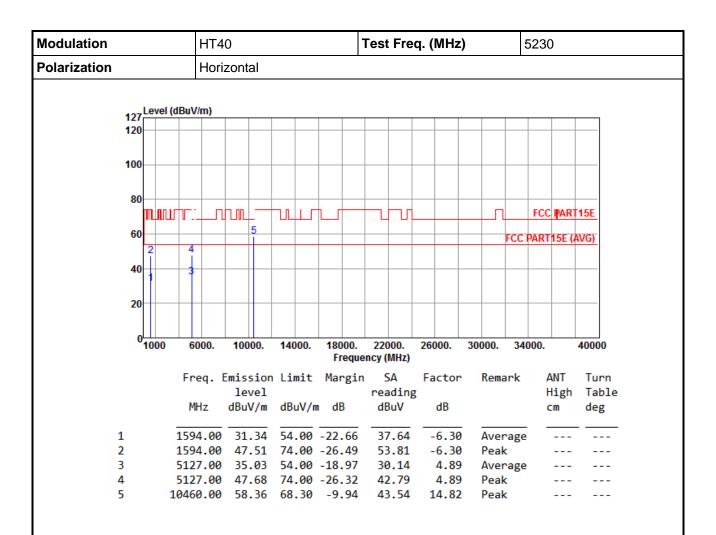


*Factor includes antenna factor, cable loss and amplifier gain

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

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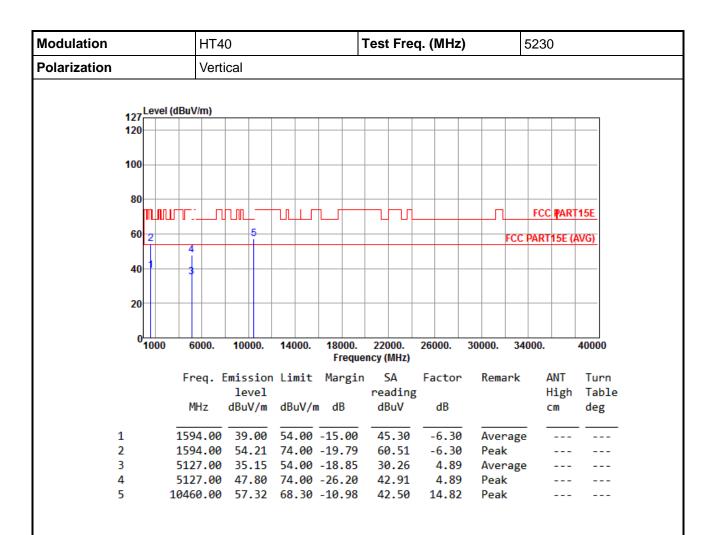


*Factor includes antenna factor, cable loss and amplifier gain

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

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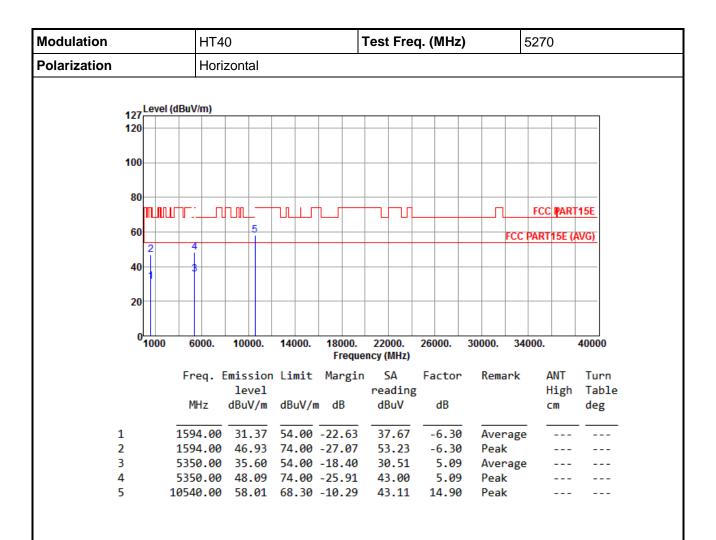


*Factor includes antenna factor, cable loss and amplifier gain

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

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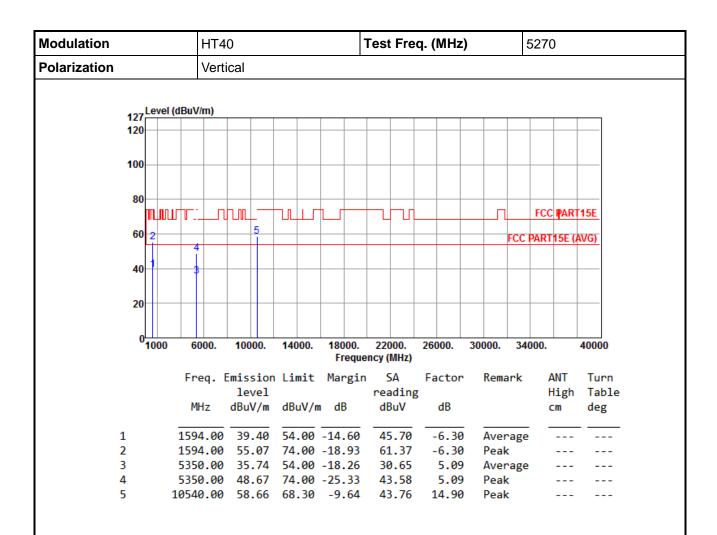


*Factor includes antenna factor, cable loss and amplifier gain

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

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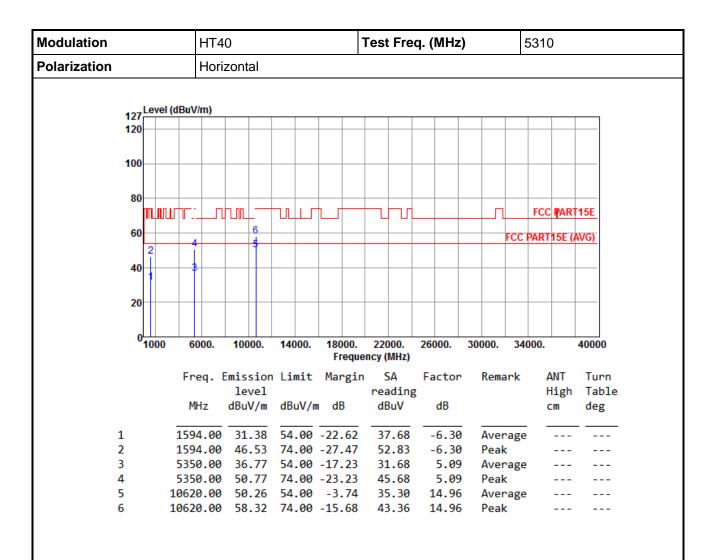


*Factor includes antenna factor, cable loss and amplifier gain

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

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*Factor includes antenna factor, cable loss and amplifier gain

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

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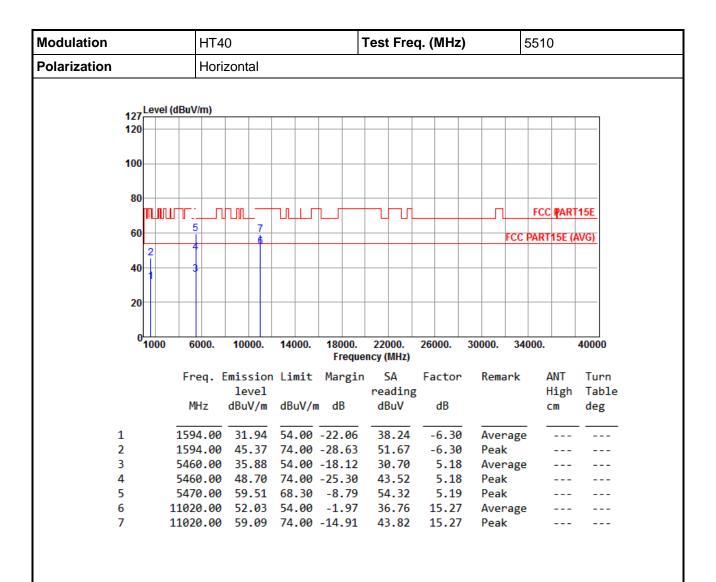


Modulation	HT40	Test Freq. (MHz	5310
Polarization	Vertical		
127 Level (dBu\	V/m)		
120			
100			
100			
80			CC BARTASE
רבור הרוויות וויים ו - הרווים וויים			FCC PART15E
60 2	4 4		FCC PART15E (AVG)
40	3		
20			
0 <mark></mark>	5000. 10000. 14000. 1	8000. 22000. 26000.	30000. 34000. 40000
1000 6		8000. 22000. 26000. Frequency (MHz)	30000. 34000. 40000
Fr	req. Emission Limit M	argin SA Factor	Remark ANT Turi
	level	reading	High Tab
M	MHz dBuV/m dBuV/m	dB dBuV dB	cm deg
<u></u>	 		
	94.00 38.96 54.00 -1		•
	94.00 54.22 74.00 -1 50.00 39.12 54.00 -1		
	50.00		•
	20.00 54.65 74.00 -1 20.00 50.72 54.00 -		
5 1002			/ AVELUEC

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

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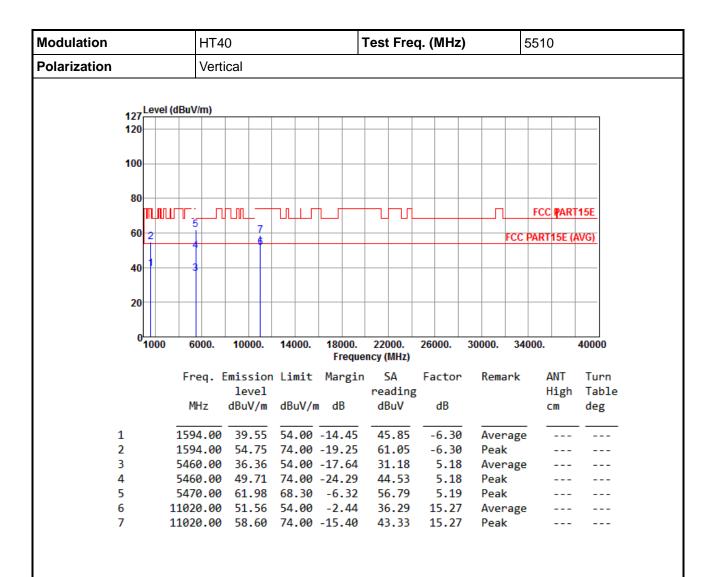


*Factor includes antenna factor, cable loss and amplifier gain

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

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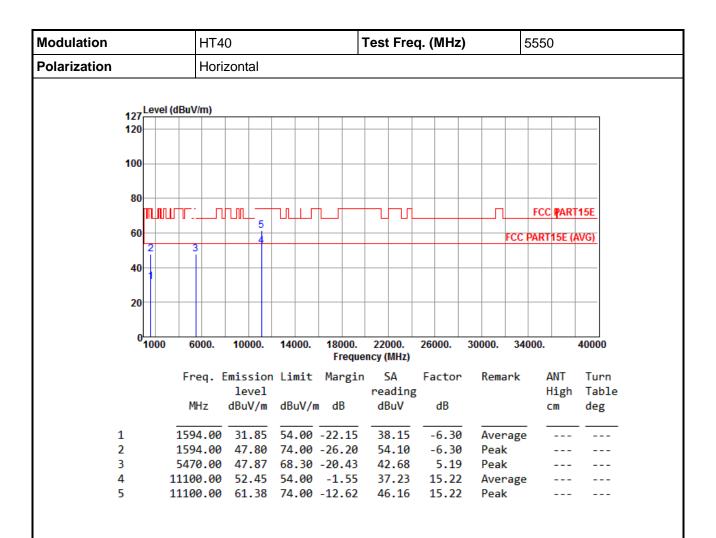


*Factor includes antenna factor, cable loss and amplifier gain

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

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*Factor includes antenna factor, cable loss and amplifier gain

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

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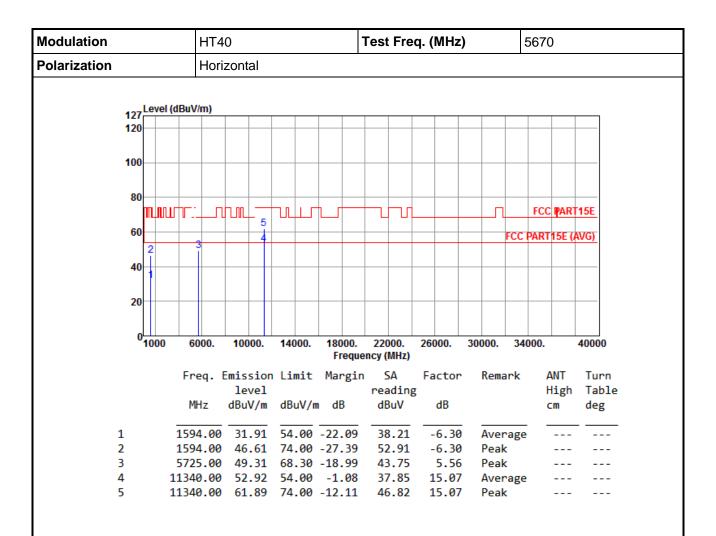


Modulation		HT4	0				Test Fr	ec	դ. (MHz))	5	550	
Polarization		Vert	ical			1							
127 Leve	el (dBu\	//m)						_					
120		+		-				+					
100				\dashv				+					
80				_			\vdash	л Л				FCC PAR	T15F
		+'		5				_					
60 2		3		4				_			FCC P	ART15E (AVG)
40													
40													
20													
20													
0													
100	0 6	000.	1000	0.	14000.		22000. ency (MHz		26000.	30000.	3400	00.	40000
	Fr	eq. I	miss	ion	Limit	Margin	n SA		Factor	Rema	ark	ANT	Turn
			leve				readi					High	Table
	М	Hz	dBuV,	/m	dBuV/	m dB	dBuV		dB			cm	deg
1	159	4.00	39.3	16	54.00	-14.84	45.4	6	-6.30	Ave	rage		
2		4.00				-19.03	61.2		-6.30		_		
3	547	0.00	48.	71	68.30	-19.59	43.5	2	5.19				
4			52.			-1.42			15.22		rage		
5	1110	0.00	60.	79	74.00	-13.21	45.5	7	15.22	Peal	C		

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

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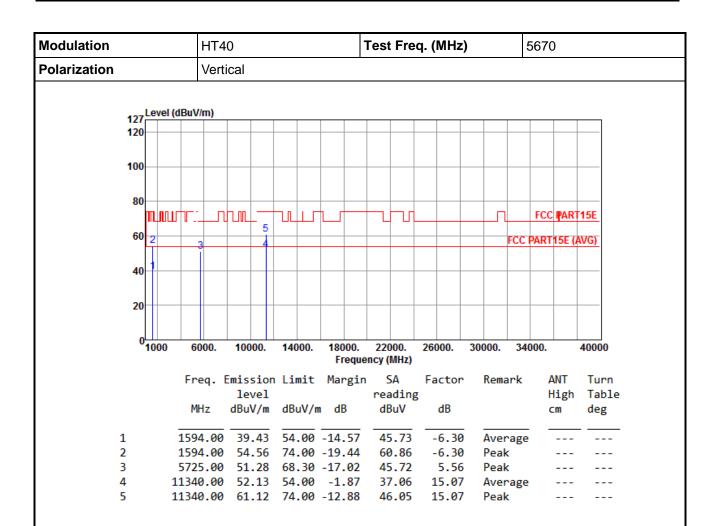


*Factor includes antenna factor, cable loss and amplifier gain

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

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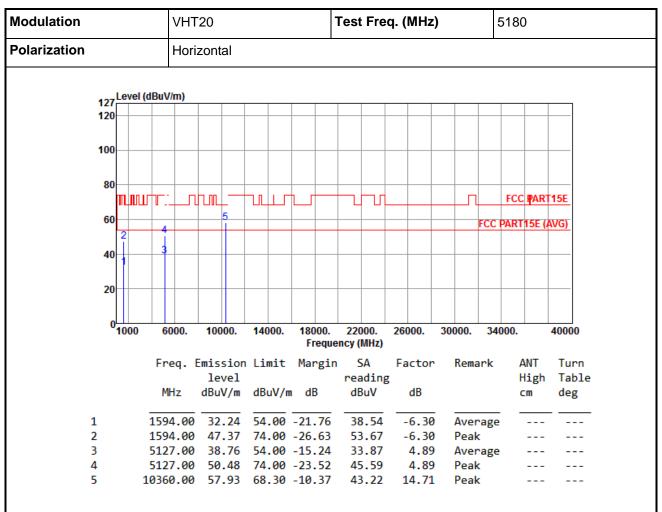
*Factor includes antenna factor, cable loss and amplifier gain

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

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3.6.7 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT20



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).

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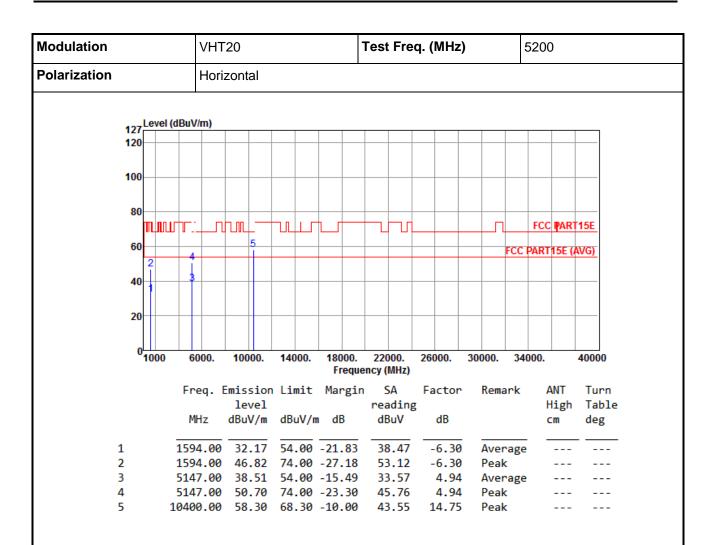


Modulation			VHT	20					1	Test	Fre	q. (M	Hz)		;	5180)	
Polarization			Verti	cal					I									
127 <mark>.</mark>	Level	(dBuV	//m)															
120-																		
100													_					
80-																FCC	ma Di	7455
60-		T			5		Ш			Ц	Ш				rcc		IPART	
	ĺ	1											+		FCC	PAKI	15E (/	AVG)
40	1	3											+					
20													+					
0	1000	61	000.	100	00	140	00	1800	0	2200		26000	Ш.	30000.	3.4	000.		40000
'	1000	U	000.	100	00.	140	υυ.			ncy (M		20000		30000.	34	000.		40000
		Fr	eq. I		sion vel	Lim	it	Marg	gin	S/ read		Fact	or	Rema	ark	_	ANT High	Tur Tab
		М	Hz	dBu\	//m	dBu	V/m	dB		dBu	١V	dB				0	m	deg
1			4.00	37				-16.6		44.		-6.		Avei		-		
2 3			4.00 7.00		.16 .88			-19.8 -13.1		60. 35.		-6.	30 89	Peal Ave				
4			7.00		.72			-22.2		46.			89	Peal	_			
5		1036	0.00	58	.18	68.	30	-10.1	12	43.	47	14.	71	Peal	k			

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).

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*Factor includes antenna factor, cable loss and amplifier gain

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

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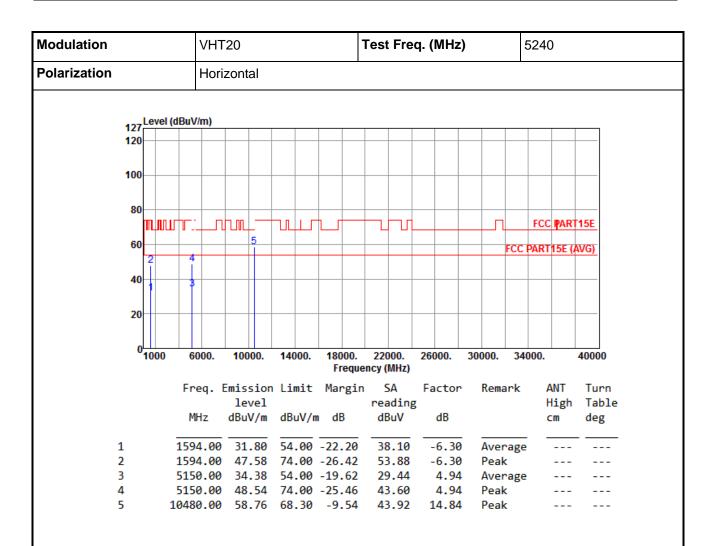


Modulation			,	VHT	Γ20			-	Test Fr	eq.	(MHz))		5200)	
Polarization			,	Vert	ical											
	127	Level	(dBuV/	m)	T 1											
	120															
	100															
	80															
			TLL:-	\prod		\top	ЛШ			η		-	<u> </u>	FCC	PART	T15E
	60	2	4		5								FCC	PART	15E (<i>i</i>	AVG)
		Ш	1													
	40		ΤŤ													
	20															
	0	1000	60	000.	10000.	14000		000. reque	22000. ency (MHz		6000.	30000.	34	000.		40000
			Fre	eq.	Emissio	n Limi	t Ma	rgin	SA	F	Factor	Rem	ark	A	ANT	Turn
					level		, ,		readi	ng	ID.				ligh	
			MH	1Z	dBuV/m	dBuV	/m d	В	dBuV		dB			C	m	deg
	1		1594	1.00	37.97	54.0	0 -16	.03	44.27	, -	-6.30	Ave	rage	_		
	2		1594						60.52		-6.30					
	3				39.91				34.97		4.94		rage			
	4				51.25						4.94					
	5		10400	0.00	57.66	68.3	0 -10	.64	42.93	L	14.75	Pea	K			

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).

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*Factor includes antenna factor, cable loss and amplifier gain

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

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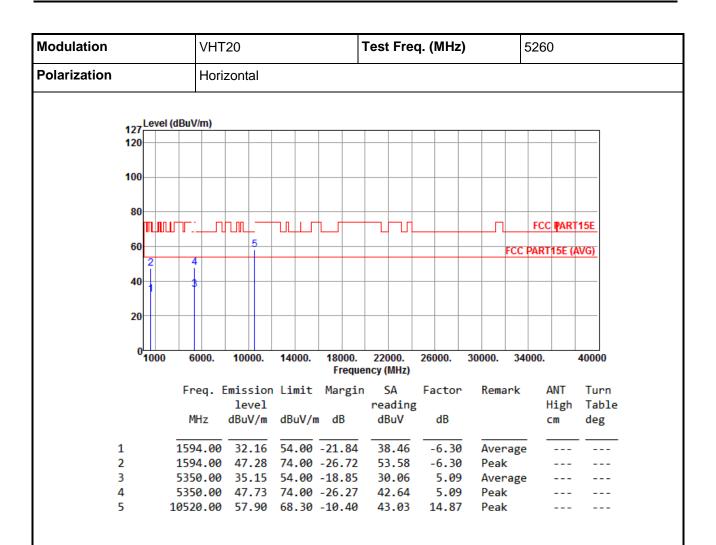


Modulation	VHT20	Т	est Freq. (MHz)	524	Ю
Polarization	Vertical	<u>'</u>			
127 Level (dBu	V/m)				
120					
100					
80					C MADT455
60 2	5				T15E (AVG)
40	4 				
20					
0 1000 6	6000. 10000.	14000. 18000. Frequer	22000. 26000. ncy (MHz)	30000. 34000.	40000
Fr	req. Emission	Limit Margin	SA Factor		ANT Turn
1	level MHz dBuV/m	dBuV/m dB	reading dBuV dB		High Table cm deg
1 159	94.00 37.71	54.00 -16.29	44.01 -6.30	Average	
2 159		74.00 -19.95	60.35 -6.30	Peak	
	50.00 34.65		29.71 4.94	Average	
4 519	50 00 48 32 1	74.00 -25.68	43.38 4.94	Peak	

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

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*Factor includes antenna factor, cable loss and amplifier gain

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

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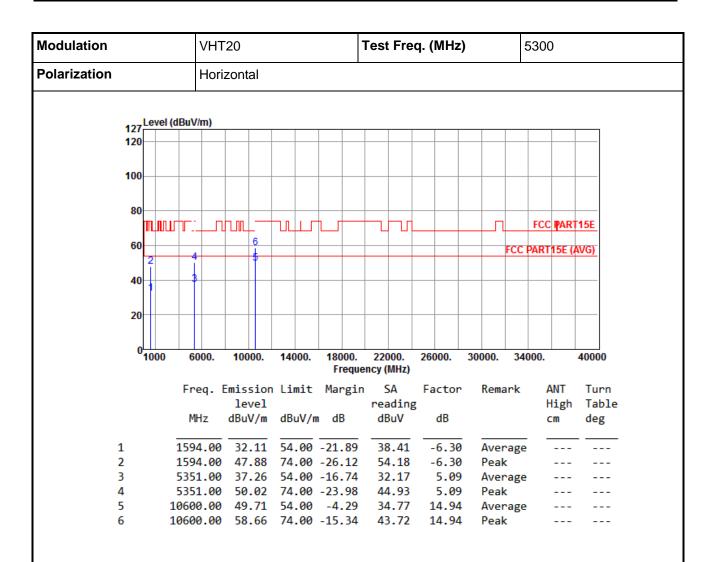


Modulation		VHT	20		-	Test Free	q. (MHz)		5260)	
Polarization		Verti	cal		L						
127 <mark>L</mark>	evel (dBu	ıV/m)									
120											
100											
80		П			1			П	FCC	IPART1	15E
60 -2			5					EC	C PART		
		4						FC	CPART	ISE (A	/G)
40		3									
20											
0											
-10	000	6000.	10000.	14000.	18000. Freque	22000. ency (MHz)	26000.	30000. 3	4000.	4	10000
	F	req. [mission level	Limit	Margin		Factor	Remark		NT	Turn
		MHz	dBuV/m	dBuV/m	ı dB	reading dBuV	dB			ligh :m	Table deg
1	15	94.00	37.98	54.00	-16.02	44.28	-6.30	Averag	 e		
2		94.00			-19.83	60.47	-6.30	Peak			
3		50.00	35.07		-18.93	29.98	5.09	Averag	ge		
4 5		50.00	48.24 58.24		-25.76	43.15 43.37	5.09 14.87	Peak Peak			

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).

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*Factor includes antenna factor, cable loss and amplifier gain

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

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Modulation			VHT	20		-	Test Fre	q. (MHz))	530	0	
Polarization			Verti	cal		l .						
	127 Lev	el (dBu	V/m)									
	120											
	100											
	80											
					ТЩГ					FCC	PART	15E
	60 ₂		4	6 					F	CC PART	15E (A	WG)
	40		3									
	20											
	0 <mark>100</mark>	0 (6000.	10000.	14000.	18000. Freque	22000. ency (MHz)	26000.	30000.	34000.		40000
		Fi	req. E			Margin		Factor	Remai		ANT	Turn
		ı	MHz	level dBuV/m	dBuV/r	m dB	reading dBuV	dB			High cm	Table deg
:	1	159	94.00	38.66	54.00	-15.34	44.96	-6.30	Avera	age .		
	2		94.00			-19.08	61.22	-6.30	Peak			
	3	53	51.00	39.10	54.00	-14.90	34.01	5.09	Avera	age		
	4		51.00	50.78		-23.22	45.69	5.09				
	5		00.00	50.72		-3.28	35.78	14.94	Avera	age		
•	5	106	00.00	58.35	74.00	-15.65	43.41	14.94	Peak			

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

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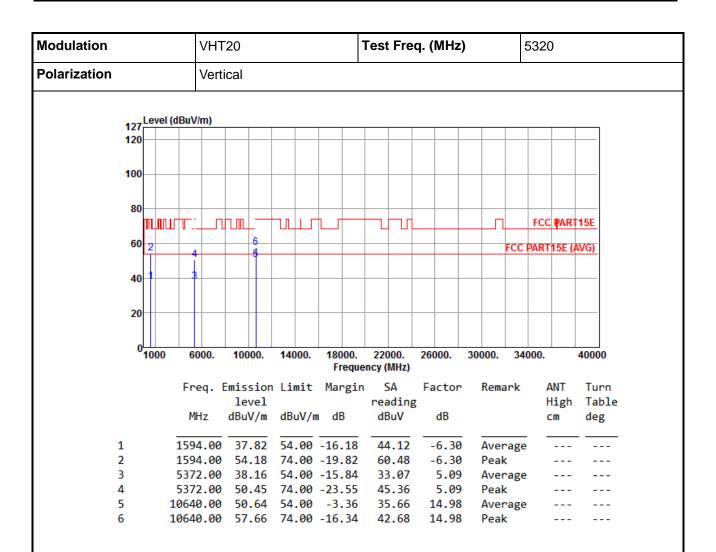


Modulation				VHT	20				,	Test	Fre	q. (N	1Hz)			5320)	
Polarization				Hori	zont	al												
	127 Le	evel (d	dBuV/	/m)														
	120							_					+					
	100											_						
	80																	
	- 1	υш	I	╨╹			$\neg \mu$	ורב		L	\Box \Box	_	+		<u> </u>	FCC	PART	15E
	60					6 d									FCC	PART	15E (<i>i</i>	AVG)
	2	2	ΙĪ			3												
	40		3					\dashv					+					
	20																	
	010	000	60	000.	100	00.	1400	0.	18000. Freque		00. MHz)	2600	00.	30000.	34	000.		40000
			Fre	eq. E	mis	sion	Limi	t	Margir		A	Fac	tor	Rem	ark	Δ	NT	Tur
						vel					ding	3				Н	ligh	Tab
			MH	łz	dBu\	V/m	dBu\	//m	dB	dE	₿uV	d	IB			C	m	deg
1			1594	1.00	31	.37	54.6	00 -	-22.63	37	.67	-6	.30	Ave	rage	-		
2	2			1.00					-27.05		.25		.30	Pea				
3									-16.56		.35		.09		rage			
4				2.00					-23.99		.92		.09	Pea				
5				00.0					-4.17		.85		.98		rage			
6	•	1	19646	0.00	58	.10	/4.6	- שו	-15.90	4:	.12	14	.98	Pea	K			

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

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*Factor includes antenna factor, cable loss and amplifier gain

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

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80

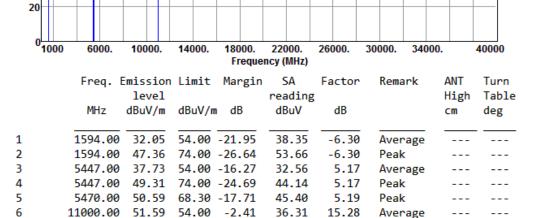
60

40

7

ТШТ

Modulation		VHT2	0			Гest	Fre	q. (MHz	2)	5	5500)		
Polarization		Horizo	ontal								•				
127	Level (dBu	V/m)													
120															
100															



44.04

15.28

Peak

FCC PART15E

FCC PART15E (AVG)

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

*Factor includes antenna factor, cable loss and amplifier gain

11000.00 59.32 74.00 -14.68

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

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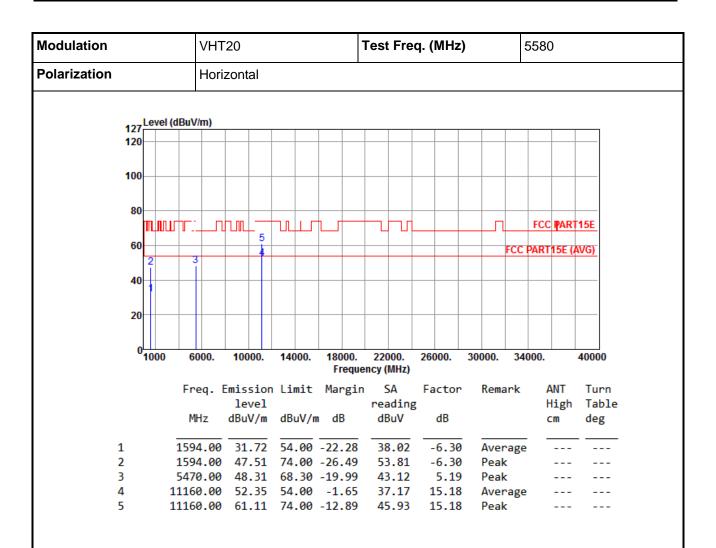


Modulation	VHT20		Test Freq.	(MHz)	5500
Polarization	Vertical		-1		ı
127 Level (dBu\	V/m)				
120					
100					
100					
80					
- יריעיעיוון					FCC PART15E
60 2	5 4			FC	C PART15E (AVG)
	7				
40 1	3				
20					
20					
0 <mark>1000 6</mark>	5000. 10000.	14000. 1800		6000. 30000.	34000. 40000
		Fre	quency (MHz)		
Fr	req. Emissio	n Limit Marg	in SA F	actor Remark	k ANT Tur
	level		reading		High Tab
M	MHz dBuV/m	dBuV/m dB	dBuV	dB	cm deg
1 159	94.00 38.21	54.00 -15.7	<u>44.51</u>	-6.30 Avera	
	94.00 54.26	74.00 -19.7		-6.30 Peak	Re
	47.00 39.64			5.17 Avera	ge
		74.00 -22.9		5.17 Peak	
		68.30 -15.7		5.19 Peak	
	00.00 51.51				70
0 1100	00.00 31.31	34.00 -Z.4	5 30.23	15.28 Averag	ge

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

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*Factor includes antenna factor, cable loss and amplifier gain

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

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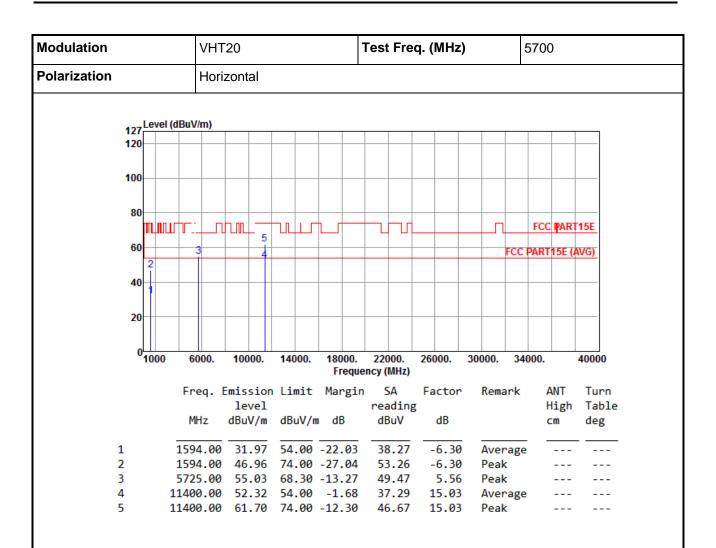


Modulation	VHT20		Test Freq. (MHz	2) 55	580
Polarization	Vertical	l			
127 Level (dE	BuV/m)				
120					
100					
80					FOO PARTAEE
	T:\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				FCC PART15E
60 2	3			FCC PA	ART15E (AVG)
40					
20					
0					
⁰ 1000	6000. 10000.	14000. 18000. Frequ	22000. 26000. ency (MHz)	30000. 3400	00. 40000
		n Limit Margir		Remark	ANT Turn
	level MHz dBuV/m	dBuV/m dB	reading dBuV dB		High Table cm deg
	rinz abav/iii	abav/iii ab	abav ab		Ciii deg
	1594.00 37.97		44.27 -6.36	_	
	1594.00 53.83		60.13 -6.36		
	470.00 48.19		43.00 5.19		
4 11	1160.00 51.76	54.00 -2.24 74.00 -14.39	36.58 15.18 44.43 15.18	3 Average 3 Peak	

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).

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*Factor includes antenna factor, cable loss and amplifier gain

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

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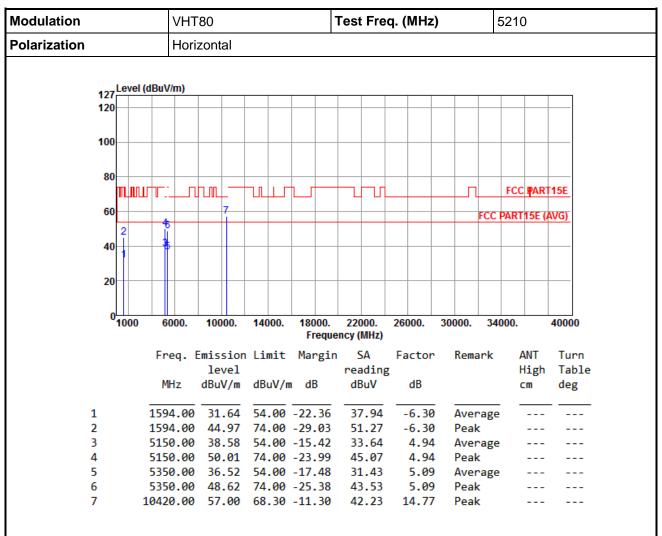
Modulation			VHT	20					Γest	Fre	q. (MHz	<u>z</u>)		570	0	
Polarization			Vert	ical				1								
12	Leve	l (dBu\	//m)													
12																
10	0	_														
8	0															
			<u>-</u>		- 5	υμ_	\sqcap			ᄱ			几	FCC	PAR1	T15E
6	0 2		Ĭ		4								FC(PART	15E (/	AVG)
4	0															
29	0															
	01000) 6	000.	100	00.	14000.		000. reque	2200 ncy (N		26000.	3000	0. 3	4000.		40000
		Fr	eq.			Limit					Factor	n Re	emark		ANT	Turn
		М	1Hz	le dBu	vel V/m	dBuV/	m d	В	rea dB	_	dB				High cm	Table deg
1		159	4.00	37	.87	54.00	-16	.13	44	.17	-6.36	A A	verag	e -		
2			4.00			74.00				.01	-6.36		eak			
3 4			15.00 10.00			68.30 54.00				.90 .42	5.56 15.03		eak			
4 5			0.00		. 45 . 78	74.00				. 42 . 75	15.03		verag eak	e		

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).

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3.6.8 Transmitter Radiated Unwanted Emissions (Above 1GHz) for VHT80



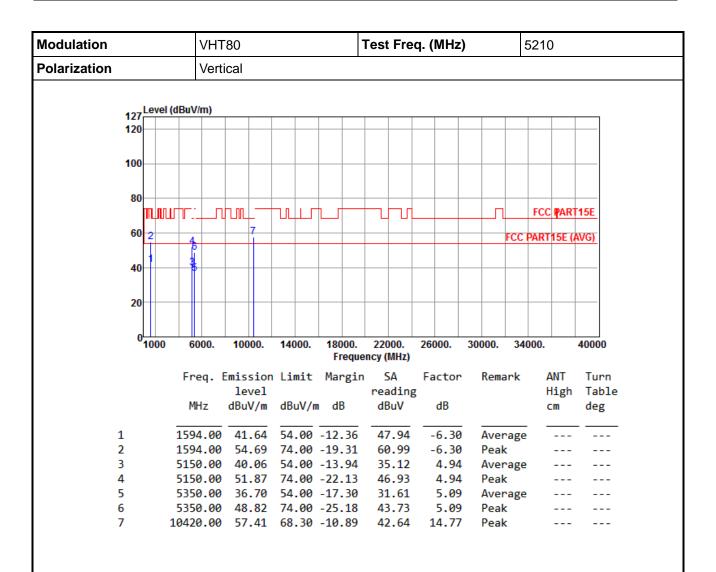
Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)

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

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^{*}Factor includes antenna factor, cable loss and amplifier gain



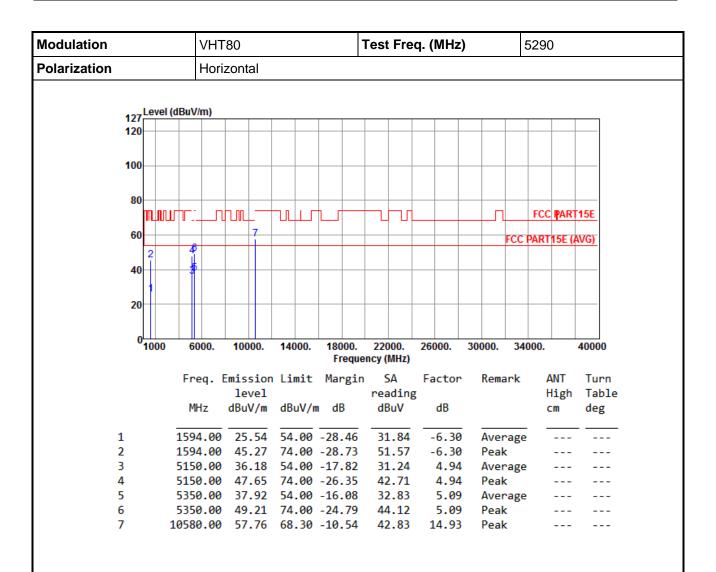


Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor , cable loss and amplifier gain

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

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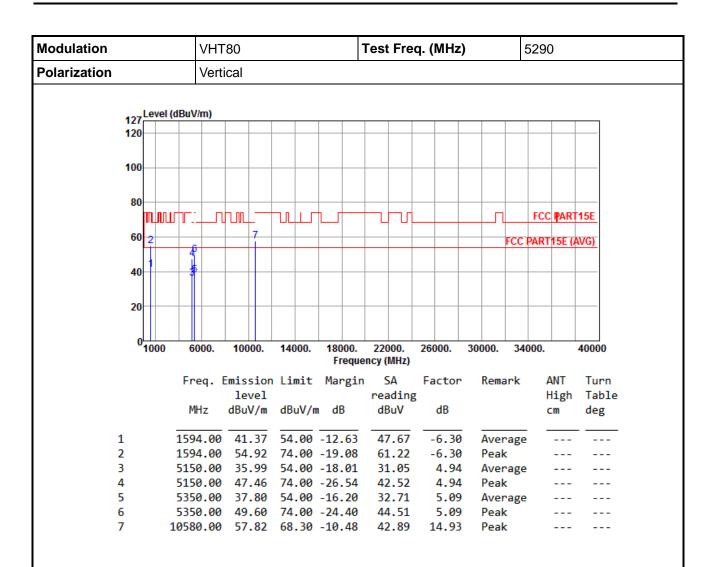


*Factor includes antenna factor, cable loss and amplifier gain

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

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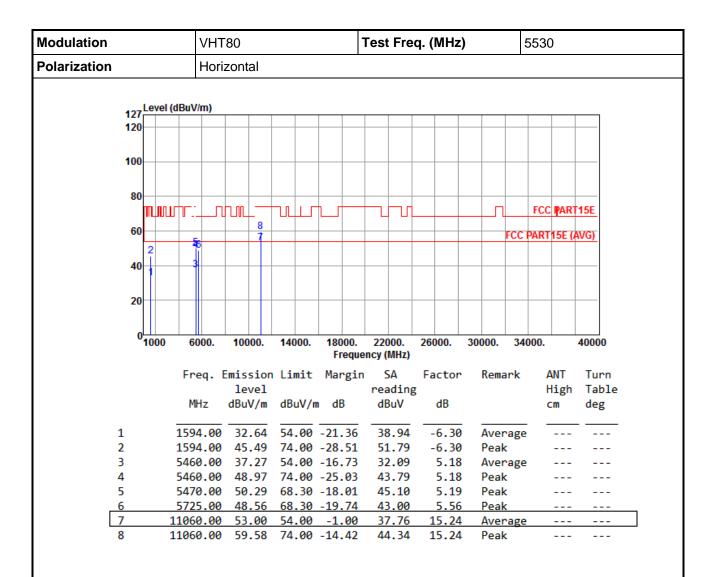


Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB) *Factor includes antenna factor, cable loss and amplifier gain

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

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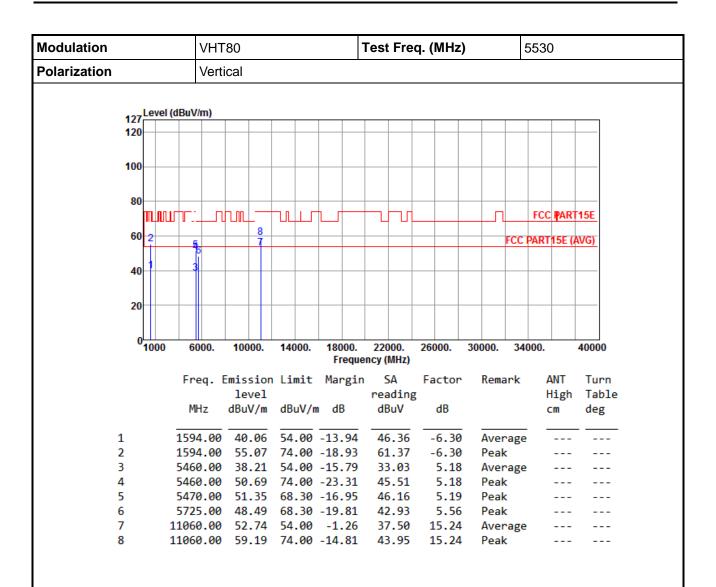


*Factor includes antenna factor, cable loss and amplifier gain

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

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*Factor includes antenna factor, cable loss and amplifier gain

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

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3.7 Frequency Stability

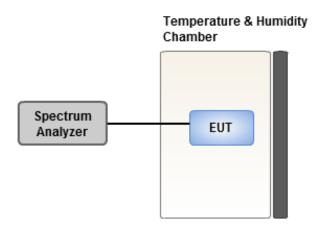
3.7.1 Limit of Frequency Stability

Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

3.7.2 Test Procedures

- 1. The EUT is installed in an environment test chamber with external power source.
- 2. Set the chamber to operate at 50 centigrade and external power source to output at nominal voltage of EUT.
- 3. A sufficient stabilization period at each temperature is used prior to each frequency measurement.
- 4. When temperature is stabled, measure the frequency stability.
- 5. The test shall be performed under -30 to 50 centigrade and 85 to 115 percent of the nominal voltage. Change setting of chamber and external power source to complete all conditions.

3.7.3 Test Setup



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3.7.4 Test Result of Frequency Stability

Frequency: 5320 MHz		Frequency	Drift (ppm)	
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes
T20°CVmax	0.79	0.35	0.61	0.25
T20°CVmin	3.87	4.11	4.03	3.76
T55°CVnom	3.87	4.34	4.73	5.02
T50°CVnom	4.47	4.73	5.36	4.90
T40°CVnom	-1.55	-1.90	-1.60	-1.99
T30°CVnom	0.11	0.24	0.23	0.07
T20°CVnom	1.06	1.38	1.05	1.19
T10°CVnom	0.84	0.67	1.03	0.11
T0°CVnom	0.54	0.30	-0.41	0.28
T-10°CVnom	-0.55	-0.75	0.06	-0.31
T-20°CVnom	-0.40	0.13	-0.43	0.15
T-30°CVnom	0.72	-0.07	0.44	0.11
Vnom [Vdc]: 3.9		Vmax [Vdc]: 4.29	•	Vmin [Vdc]: 3.51
Tnom [°C]: 20		Tmax [°C]: 55		Tmin [°C]: -30

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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, 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 Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou Kwei Shan

Tel: 886-2-2601-1640 Tel: 886-3-271-8666

No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei
City, Taiwan, R.O.C.

No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan
Hsiang, Tao Yuan Hsien 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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