FCC Test Report

FCC ID : VQK-F07E

Equipment: Mobile Phone

Model No. : F-07E

Brand Name : Xi

Applicant : FUJITSU LIMITED

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

Kawasaki 211-8588, Japan

Standard : 47 CFR FCC Part 15.407

Received Date : Apr. 09, 2013

Tested Date : May 06 ~ May 17, 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

Testing Laboratory

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

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Release Record

Report No.	Version	Description	Issued Date
FR331905AN	Rev. 01	Initial issue	May 30, 2013

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Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.159MHz 52.36 (Margin 13.16dB) - QP	Pass
15.407(b)(1)(2)(3) 15.209	Radiated Emissions	[dBuV/m at 3m]: 10600MHz 52.95 (Margin 1.05dB) - 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:10.68 5250~5350 MHz:10.53 5470~5725 MHz:10.06	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	Xi
Model Name	F-07E
IMEI Code	355277050011449 & 355277050017248
H/W Version	V2.1.0
S/W Version	R13.1e

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		
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		
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 (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: IEEE802.11ac is draft version.

1.1.3 Antenna Details

Ant. No.	Туре	Gain (dBi)	Connector	Remark
1	λ/4 Monopole	-7.3	-	-

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1.1.4 EUT Operational Condition

Supply Voltage		⊠ DC	
Type of DC Source	☐ Internal DC supply		Battery
Operational Voltage			∨min (3.51 V)
Operational Climatic	☐ Tnom (20°C)		☐ Tmin (-30°C)

1.1.5 Accessories

	Accessories				
No.	Equipment	Description			
		Brand Name: Fujitsu limited			
1	Cradle	Model Name: CA50601-1801			
		Power Rating: O/P: 5Vdc, 1.5A			
		Brand Name: Fujitsu limited			
2	Battery	Model Name: CA54310-0045			
		Power Rating: O/P: 3.8Vdc, 2600mA			

1.1.6 Channel List

802.11 a / H	T20 / 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	VH	T 80
100	5500	42	5210
104	5520	58	5290
108	5540	106	5530
112	5560	-	-
116	5580	-	-
132	5660	-	-
136	5680	-	-
140	5700	-	-

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1.1.7 Test Tool and Duty Cycle

Test Tool	QRCT, Ver 3.0.7.0				
	Mode	Duty cycle (%)	Duty factor (dB)		
	11a	87.97%	0.56		
	HT20	88.78%	0.52		
Duty Cycle and Duty Factor	HT40	87.77%	0.57		
	VHT20	84.03%	0.76		
	VHT40	84.85%	0.71		
	VHT80	85.00%	0.71		

1.1.8 Power Setting

Channel	Frequency(MHz)	11a	HT20	VHT20
CH 36	5180	13 / -1	12/5	14 / -1
CH 40	5200	13 / -1	12 / 6	14 / -1
CH 48	5240	13 / -1	13 / -2	14 / -4
CH 52	5260	13 / -1	13 / -1	14 / -3
CH 60	5300	13 / 0	13 / 0	14 / 0
CH 64	5320	13 / 0	13 / 1	14 / -1
CH 100	5500	12/3	12/2	14 / 5
CH 116	5580	13 / -5	12/2	14 / -4
CH 140	5700	13 / 0	13 / 0	14 / 1

Channel	Frequency(MHz)	HT40	VHT40	VHT80
CH 38	5190	14 / 0	14 / 1	-
CH 46	5230	14 / 1	14/2	-
CH 54	5270	14 / 1	14 / 1	-
CH 62	5310	14/ 3	14/3	-
CH 102	5510	13 / 6	14 / -1	-
CH 110	5550	13 / 6	14 / -1	-
CH 134	5670	14/ 1	14 / 1	-
CH 42	5210	-	-	14 / 4
CH 58	5290	-	-	14 / 4
CH 106	5530	-	-	14/2

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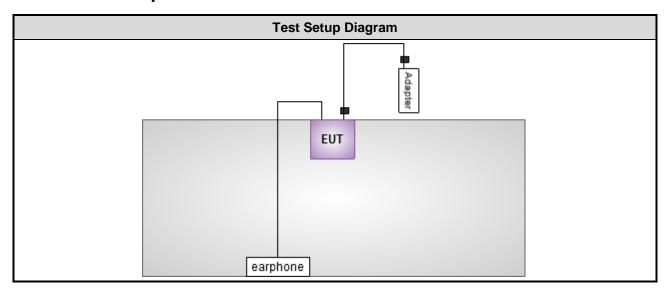
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1.2 Local Support Equipment List

	Support Equipment List					
No.	Equipment	Brand	Model	S/N	FCC ID	Signal cable / Length (m)
1	Adapter	NTT docomo	AC Adaptor 04			
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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The Equipment List 1.4

ЕМІ	Conducted Emission						
Test Site	Conduction room 1 / (CO01-WS)						
Instrument	Manufacturer Model No. Serial No. Calibration Date Calib						
EMC Receiver	R&S	ESCS 30	100169	Dec. 12, 2012	Dec. 11, 2013		
LISN	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-667	Dec. 04, 2012	Dec. 03, 2013		
LISN (Support Unit)	SCHWARZBECK MESS-ELEKTRONIK	Schwarzbeck 8127	8127-666	Dec. 04, 2012	Dec. 03, 2013		
ISN	TESEQ	ISN T800	23342	Feb. 17, 2013	Feb. 16, 2014		
ISN	TESEQ	ISN T400	21653	Jun. 22, 2012	Jun. 21, 2013		
ISN	TESEQ	ISN T8-Cat6	27262	Sep. 17, 2012	Sep. 16, 2013		
ISN	TESEQ	ISN ST08	22589	Jan. 24, 2013	Jan. 23, 2014		
RF Current Probe	FCC	F-33-4	121630	Dec. 04, 2012	Dec. 03, 2013		
RF Cable-CON	Woken	CFD200-NL	CFD200-NL-001	Dec. 25, 2012	Dec. 24, 2013		
ESH3-Z6 V-Network	R&S	ESH3-Z6	100920	Nov. 21, 2012	Nov. 20, 2013		
	val of instruments listed a		1333-3				

EMI	Radiated Emission	Radiated Emission						
Test Site	966 chamber1 / (03Ch	966 chamber1 / (03CH01-WS)						
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until			
3m semi-anechoic chamber	RIKEN	SAC-03	03CH01-WS	Jan. 04, 2013	Jan. 03, 2014			
Amplifier	Burgeon	BPA-530	100219	Nov. 28, 2012	Nov. 27, 2013			
Amplifier	Agilent	83017A	MY39501308	Dec. 18, 2012	Dec. 17, 2013			
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			
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			
Spectrum Analyzer	R&S	FSV40	101498	Jan. 24, 2013	Jan. 23, 2014			
Receiver	ROHDE&SCHWARZ	ESR3	101658	Jan. 30, 2013	Jan. 29, 2014			
control	EM Electronics	EM1000	60612	N/A	N/A			

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RF	RF Conducted							
Test Site	RF Conducted (TH01-\	RF Conducted (TH01-WS)						
Instrument	Manufacturer	Model No.	Serial No.	Calibration Date	Calibration Until			
Spectrum Analyzer	R&S	FSV 40	101486	Nov. 14, 2012	Nov. 13, 2013			
Spectrum Analyzer	R&S	FSP 40	100593	Aug. 14, 2012	Aug. 13, 2013			
DC Power Source	G.W.	GPC-6030D	C671845	Jun. 19, 2012	Jun. 18, 2013			
AC Power Source	G.W	APS-9102	EL920581	Jul. 02, 2012	Jul. 01, 2013			
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	Nov. 21, 2012	Nov. 20, 2013			
Signal Generator	R&S	SMR40	100116	Jun. 26, 2012	Jun. 25, 2013			
Power Sensor	Anritsu	MA2411B	1027452	Sep. 08, 2012	Sep. 07, 2013			
Power Meter	Anritsu	ML2495A	1124009	Sep. 08, 2012	Sep. 07, 2013			
RF Cable-2m	HUBER+SUHNER	SUCOFLEX_104	SN 345675/4	NA	NA			
RF Cable-3m	HUBER+SUHNER	SUCOFLEX_104	SN 345669/4	NA	NA			

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

FCC KDB 662911 D01 Multiple Transmitter Output v01r02

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
AC Conduction	CO01-WS	20°C / 53%	Skys Huang
Radiated Emissions	03CH01-WS	25°C / 65%	Aska Huang
RF Conducted	TH01-WS	25°C / 64%	Brad Wu

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

2.2 The Worst Test Modes and Channel Details

Test item	Mode	Test channel
Conducted Emissions Radiated Emissions <1GHz	11a	5240
RF Output Power	11a HT20 HT40 VHT20 VHT40 VHT80	5180 / 5200 / 5240 / 5260 / 5300 / 5320 / 5500 / 5580 / 5700 5180 / 5200 / 5240 / 5260 / 5300 / 5320 / 5500 / 5580 / 5700 5190 / 5230/ 5270 / 5310 / 5510 / 5550 / 5670 5180 / 5200 / 5240 / 5260 / 5300 / 5320 / 5500 / 5580 / 5700 5190 / 5230/ 5270 / 5310 / 5510 / 5550 / 5670 5210 / 5290 / 5530
Radiated Emissions >1GHz Emission Bandwidth Peak Power Spectral Density	11a HT20 HT 40 VHT 80	5180 / 5200 / 5240 / 5260 / 5300 / 5320 / 5500 / 5580 / 5700 5180 / 5200 / 5240 / 5260 / 5300 / 5320 / 5500 / 5580 / 5700 5190 / 5230/ 5270 / 5310 / 5510 / 5550 / 5670 5210 / 5290 / 5530
Peak Excursion	11a HT20 HT40 VHT20 VHT40 VHT80	5240 / 5260 / 5700 5240 / 5320 / 5700 5230 / 5310 / 5670 5180 / 5320 / 5700 5230 / 5310 / 5670 5210 / 5290 / 5530
Frequency Stability	Un-modulation	5320

NOTE:

- 1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement X, Y, and Z-plane. The **Z-plane** results were found as the worst case and were shown in this report.
- 2. Adapter and cradle had been pretested and found adapter was the worst case and was selected for final test

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Transmitter Test Results 3

3.1 **Conducted Emissions**

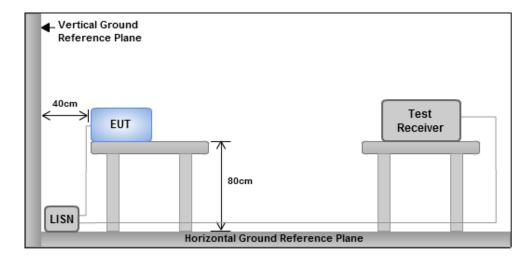
3.1.1 **Limit of Conducted Emissions**

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

- 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.
- 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.
- AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.

3.1.3 Test Setup



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

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

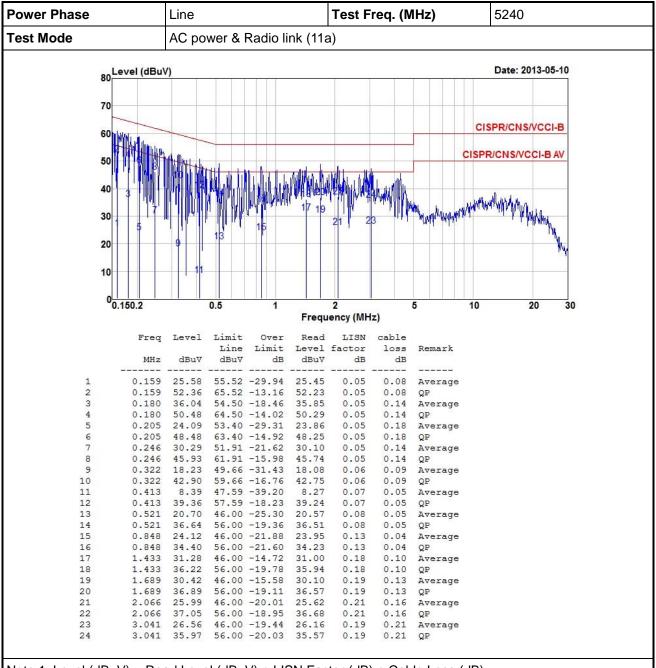
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3.1.4 Test Result of Conducted Emissions



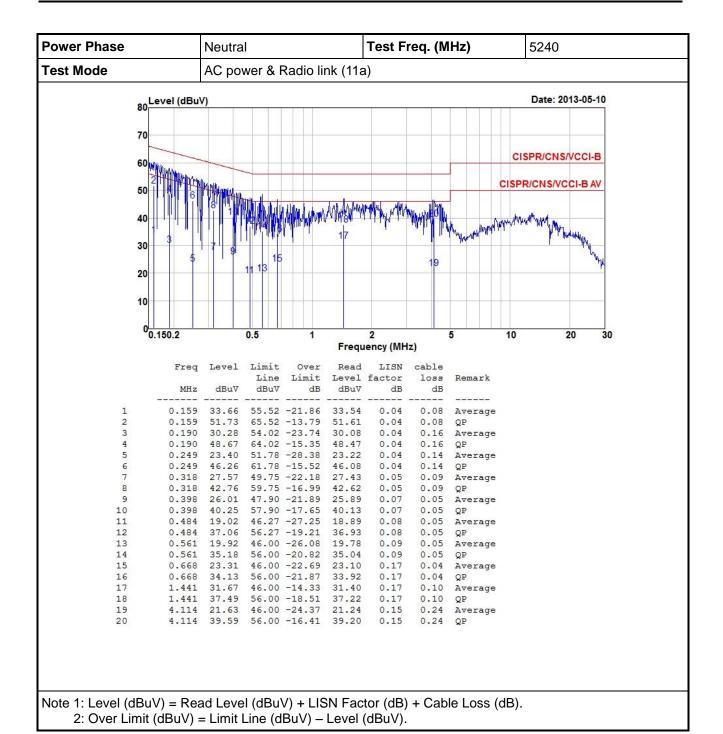
Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).

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

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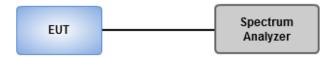
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Emission Bandwidth 3.2

3.2.1 **Test Procedures**

- 1. Set RBW = approximately 1% of the emission bandwidth.
- Set the VBW > RBW, Detector = Peak.
- 3. Trace mode = max hold.
- 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

Condition Emission Bandwidth (I					ndwidth (MHz)			
N _{TX}	Freq.	26dB Ba	26dB Bandwidth		99% Bandwidth		Power Limit	
INTX	(MHz)	11a	HT20	11a	HT20	26dB BW	99% BW	
1	5180	22.14	22.72	17.13	18.12	17	16.34	
1	5200	22.38	22.84	17.19	18.12	17	16.35	
1	5240	22.49	22.78	17.13	18.12	17	16.34	
1	5260	22.14	22.49	17.19	18.12	24	23.35	
1	5300	22.38	22.61	17.13	18.12	24	23.34	
1	5320	22.20	22.67	17.19	18.12	24	23.35	
1	5500	22.20	22.84	17.19	18.12	24	23.35	
1	5580	22.14	22.55	17.13	18.12	24	23.34	
1	5700	22.32	22.84	17.19	18.12	24	23.35	

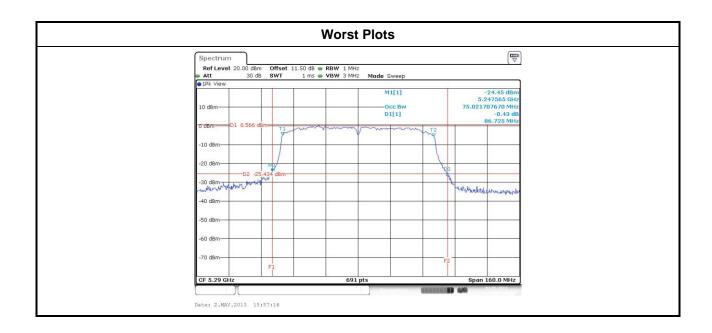
C	ondition	Emission Bandwidth (MHz)				
N _{TX}	Freq.	26dB Bandwidth	99% Bandwidth	Powe	r Limit	
INTX	(MHz)	HT40	HT40	26dB BW	99% BW	
1	5190	48.58	37.16	17	17	
1	5230	45.57	37.05	17	17	
1	5270	45.68	37.05	24	24	
1	5310	47.30	37.16	24	24	
1	5510	48.81	37.28	24	24	
1	5550	47.65	37.05	24	24	
1	5670	49.51	37.28	24	24	

C	ondition	Emission Bandwidth (MHz)				
N _{TX}	Freq. 26dB Bandwidth 99%		99% Bandwidth	Power	r Limit	
INTX	(MHz)	VHT80	VHT80	26dB BW	99% BW	
1	5210	85.80	75.02	17	17	
1	5290	86.73	75.02	24	24	
1	5530	86.49	75.25	24	24	

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RF Output Power 3.3

3.3.1 **Limit of RF Output Power**

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

3.3.2 Test Procedures

Nower 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

C	Condition	RF Output Power (dBm)							
N _{TX}	Freq. (MHz)	11a	HT20	VHT20	PowerLimit				
1	5180	10.32	10.15	8.74	17				
1	5200	10.35	10.28	8.64	17				
1	5240	10.68	10.39	8.36	17				
1	5260	10.53	10.46	8.46	24				
1	5300	10.51	10.35	8.98	24				
1	5320	10.31	10.49	9.14	24				
1	5500	9.55	9.36	8.11	24				
1	5580	9.52	9.86	8.23	24				
1	5700	9.94	10.06	8.33	24				

Condition		RF Output Power (dBm)						
N _{TX}	Freq. (MHz)	HT40	VHT40	PowerLimit				
1	5190	8.81	8.91	17				
1	5230	9.54	9.34	17				
1	5270	9.23	9.21	24				
1	5310	9.46	9.41	24				
1	5510	8.08	8.45	24				
1	5550	7.52	7.65	24				
1	5670	8.51	8.51	24				

C	Condition	RF Output Power (dBm)						
N _{TX}	X Freq. (MHz) VHT80		-	PowerLimit				
1	5190	9.31	-	17				
1	5230	10.02	-	24				
1	5270	9.13	-	24				

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3.4 **Peak Power Spectral Density**

3.4.1 **Limit of Peak Power Spectral Density**

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

3.4.2 Test Procedures

	Method	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.

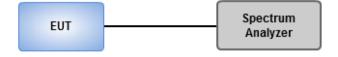
☐ Method SA-2

- 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.
- 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 \geq 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

Co	ondition		Peak Power Spectral Density (dBm)					
Modulation Mode	N _{TV}		PPSD w/o D.F (dBm) Duty factor (dB)		PPSD with D.F (dBm)	PPSD Limit (dBm)		
11a	1	5180	-4.00	0.56	-3.44	4		
11a	1	5200	-4.13	0.56	-3.57	4		
11a	1	5240	-3.42	0.56	-2.86	4		
11a	1	5260	-3.45	0.56	-2.89	11		
11a	1	5300	-3.34	0.56	-2.78	11		
11a	1	5320	-3.41	0.56	-2.85	11		
11a	1	5500	-3.89	0.56	-3.33	11		
11a	1	5580	-4.09	0.56	-3.53	11		
11a	1	5700	-3.90	0.56	-3.34	11		

Co	ondition		Peak Power Spectral Density (dBm)					
Modulation N _{TX} Freq. (MHz)		PPSD w/o D.F (dBm) Duty factor (dB)		PPSD with D.F (dBm)	PPSD Limit (dBm)			
HT20	1	5180	-4.32	0.52	-3.80	4		
HT20	1	5200	-4.15	0.52	-3.63	4		
HT20	1	5240	-3.79	0.52	-3.27	4		
HT20	1	5260	-3.67	0.52	-3.15	11		
HT20	1	5300	-3.55	0.52	-3.03	11		
HT20	1	5320	-3.36	0.52	-2.84	11		
HT20	1	5500	-4.33	0.52	-3.81	11		
HT20	1	5580	-4.13	0.52	-3.61	11		
HT20	1	5700	-4.09	0.52	-3.57	11		

Note: D.F is duty factor

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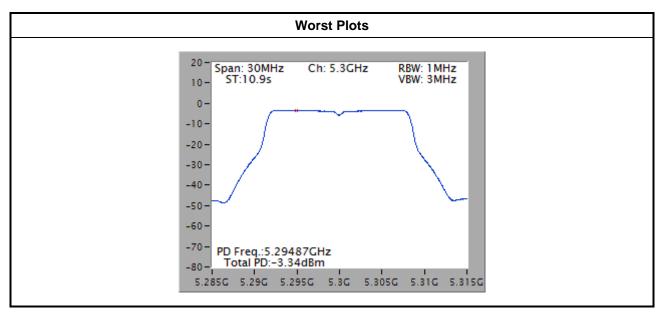


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Co	ondition		Peak Power Spectral Density (dBm)					
Modulation Mode	N _{TX}	Freq. (MHz)	PPSD w/o D.F (dBm)	Duty factor (dB)	PPSD with D.F (dBm)	PPSD Limit (dBm)		
HT40	1	5190	-8.73	0.57	-8.16	4		
HT40	1	5230	-7.76	0.57	-7.19	4		
HT40	1	5270	-7.72	0.57	-7.15	11		
HT40	1	5310	-7.28	0.57	-6.71	11		
HT40	1	5510	-8.57	0.57	-8.00	11		
HT40	1	5550	-9.17	0.57	-8.60	11		
HT40	1	5670	-8.32	0.57	-7.75	11		

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	-10.48	0.71	-9.77	4		
VHT80	1	5290	-10.87	0.71	-10.16	11		
VHT80	1	5530	-11.05	0.71	-10.34	11		

Note: D.F is duty factor



Note: Power density plot without duty factor

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3.5 Peak Excursion

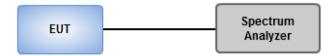
3.5.1 Peak Excursion Limit

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	5240	9.07	0.56	8.51	13		
11a	QPSK	1	5240	10.52	1.03	9.49	13		
11a	16QAM	1	5240	11.89	1.85	10.04	13		
11a	64QAM	1	5240	13.36	3.02	10.34	13		
HT20	BPSK	1	5240	9.12	0.52	8.60	13		
HT20	QPSK	1	5240	9.82	1.09	8.73	13		
HT20	16QAM	1	5240	11.58	1.82	9.76	13		
HT20	64QAM	1	5240	12.79	2.90	9.89	13		
HT40	BPSK	1	5230	10.30	0.57	9.73	13		
HT40	QPSK	1	5230	10.45	1.04	9.41	13		
HT40	16QAM	1	5230	11.04	1.74	9.30	13		
HT40	64QAM	1	5230	12.12	2.70	9.42	13		
VHT20	BPSK	1	5180	8.83	0.76	8.07	13		
VHT20	QPSK	1	5180	9.53	1.38	8.15	13		
VHT20	16QAM	1	5180	9.92	2.27	7.65	13		
VHT20	64QAM	1	5180	11.65	3.39	8.26	13		
VHT20	256QAM	1	5180	11.72	3.77	7.95	13		
VHT40	BPSK	1	5230	9.38	0.71	8.67	13		
VHT40	QPSK	1	5230	11.59	1.33	10.26	13		
VHT40	16QAM	1	5230	10.67	2.01	8.66	13		
VHT40	64QAM	1	5230	10.62	2.80	7.82	13		
VHT40	256QAM	1	5230	10.77	3.25	7.52	13		
VHT80	BPSK	1	5210	10.15	0.71	9.44	13		
VHT80	QPSK	1	5210	9.27	1.28	7.99	13		
VHT80	16QAM	1	5210	9.55	1.84	7.71	13		
VHT80	64QAM	1	5210	9.63	2.39	7.24	13		
VHT80	256QAM	1	5210	9.51	2.51	7.00	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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Frequenc	y band(MHz)				5250~5350		
Mode	Modulation Mode	N _{TX}	Freq. (MHz)	Measured value(dB)	Duty factor (dB)	Peak Excursion (dB)	Limit
11a	BPSK	1	5260	8.77	0.56	8.21	13
11a	QPSK	1	5260	10.13	1.03	9.10	13
11a	16QAM	1	5260	11.35	1.85	9.50	13
11a	64QAM	1	5260	12.65	3.02	9.63	13
HT20	BPSK	1	5320	10.39	0.52	9.87	13
HT20	QPSK	1	5320	10.26	1.09	9.17	13
HT20	16QAM	1	5320	11.81	1.82	9.99	13
HT20	64QAM	1	5320	12.25	2.90	9.35	13
HT40	BPSK	1	5310	9.17	0.57	8.60	13
HT40	QPSK	1	5310	10.11	1.04	9.07	13
HT40	16QAM	1	5310	11.39	1.74	9.65	13
HT40	64QAM	1	5310	11.47	2.70	8.77	13
VHT20	BPSK	1	5320	8.92	0.76	8.16	13
VHT20	QPSK	1	5320	9.56	1.38	8.18	13
VHT20	16QAM	1	5320	10.17	2.27	7.90	13
VHT20	64QAM	1	5320	11.98	3.39	8.59	13
VHT20	256QAM	1	5320	11.58	3.77	7.81	13
VHT40	BPSK	1	5310	9.39	0.71	8.68	13
VHT40	QPSK	1	5310	11.6	1.33	10.27	13
VHT40	16QAM	1	5310	10.65	2.01	8.64	13
VHT40	64QAM	1	5310	10.49	2.80	7.69	13
VHT40	256QAM	1	5310	10.87	3.25	7.62	13
VHT80	BPSK	1	5290	9.15	0.71	8.44	13
VHT80	QPSK	1	5290	9.30	1.28	8.02	13
VHT80	16QAM	1	5290	9.40	1.84	7.56	13
VHT80	64QAM	1	5290	9.70	2.39	7.31	13
VHT80	256QAM	1	5290	9.46	2.51	6.95	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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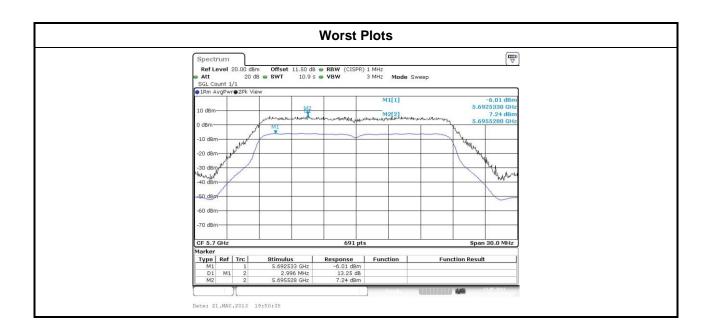
Frequency	y band(MHz)	5470~5725					
Mode	Modulation Mode	N _{TX}	Freq. (MHz)	Measured value(dB)	Duty factor (dB)	Peak Excursion (dB)	Limit
11a	BPSK	1	5700	8.98	0.56	8.42	13
11a	QPSK	1	5700	10.19	1.03	9.16	13
11a	16QAM	1	5700	11.45	1.85	9.60	13
11a	64QAM	1	5700	12.32	3.02	9.30	13
HT20	BPSK	1	5700	10.03	0.52	9.51	13
HT20	QPSK	1	5700	10.85	1.09	9.76	13
HT20	16QAM	1	5700	11.52	1.82	9.70	13
HT20	64QAM	1	5700	13.25	2.90	10.35	13
HT40	BPSK	1	5670	9.31	0.57	8.74	13
HT40	QPSK	1	5670	10.15	1.04	9.11	13
HT40	16QAM	1	5670	11.12	1.74	9.38	13
HT40	64QAM	1	5670	11.42	2.70	8.72	13
VHT20	BPSK	1	5700	8.85	0.76	8.09	13
VHT20	QPSK	1	5700	9.52	1.38	8.14	13
VHT20	16QAM	1	5700	10.56	2.27	8.29	13
VHT20	64QAM	1	5700	12.03	3.39	8.64	13
VHT20	256QAM	1	5700	11.41	3.77	7.64	13
VHT40	BPSK	1	5670	9.36	0.71	8.65	13
VHT40	QPSK	1	5670	11.65	1.33	10.32	13
VHT40	16QAM	1	5670	10.75	2.01	8.74	13
VHT40	64QAM	1	5670	10.71	2.80	7.91	13
VHT40	256QAM	1	5670	10.87	3.25	7.62	13
VHT80	BPSK	1	5530	8.88	0.71	8.17	13
VHT80	QPSK	1	5530	9.05	1.28	7.77	13
VHT80	16QAM	1	5530	9.51	1.84	7.67	13
VHT80	64QAM	1	5530	9.76	2.39	7.37	13
VHT80	256QAM	1	5530	9.85	2.51	7.34	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 **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.

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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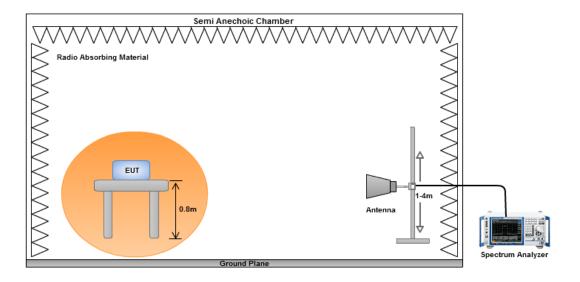
3.6.2 Test Procedures

- 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.
- 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.

3.6.3 Test Setup

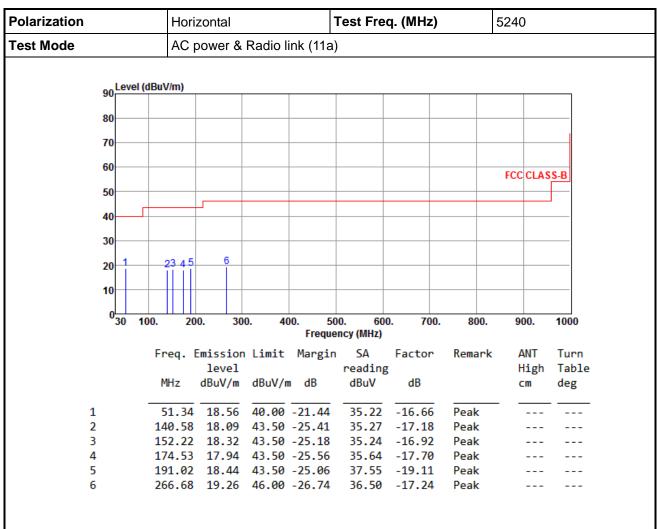


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3.6.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)



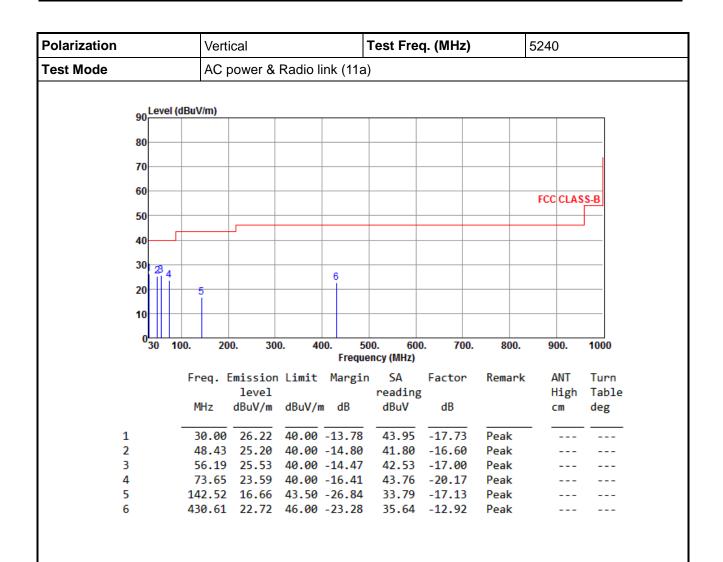
Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB). 2: Margin (dB) = Limit Line (dBuV/m) - Level (dBuV/m).

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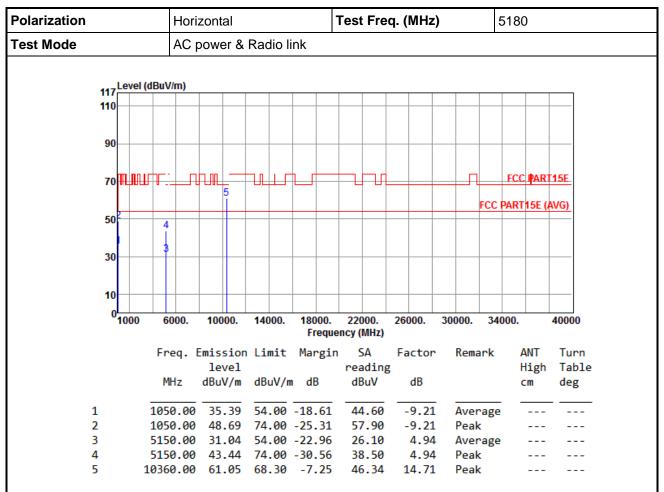
Note 1: Level (dBuV/m) = Read Level (dBuV/m) + Antenna Factor (dB) + Cable Loss (dB) - Preamp Factor (dB). 2: Margin (dB) = Limit Line (dBuV/m) - Level (dBuV/m).

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

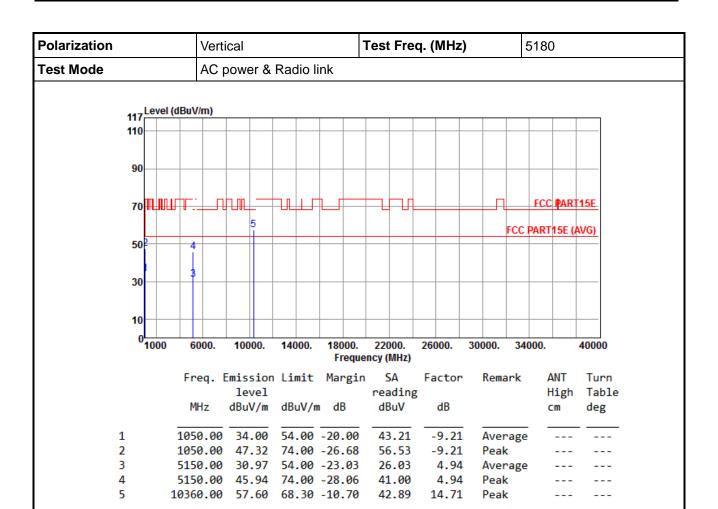
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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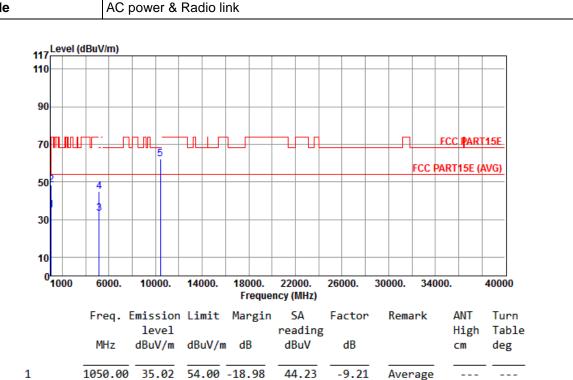
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Polarization Horizontal Test Freq. (MHz) 5200

Test Mode AC power & Radio link



57.68

28.13

40.11

47.22

-9.21

4.94

4.94

14.75

Peak

Peak

Peak

Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Report Version: Rev. 01

2

3

4

5

1050.00

5147.00

48.47

33.07

5147.00 45.05 74.00 -28.95

10400.00 61.97 68.30 -6.33

74.00 -25.53

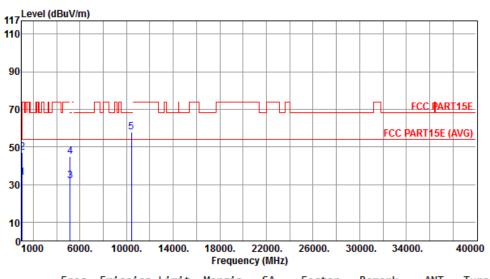
54.00 -20.93

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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PolarizationVerticalTest Freq. (MHz)5200Test ModeAC power & Radio link



	•	Emission level dBuV/m	Limit dBuV/m		SA reading dBuV		Remark	ANT High cm	Turn Table deg
1	1050.00	33.81	54.00	-20.19	43.02	-9.21	Average		
2	1050.00	47.13	74.00	-26.87	56.34	-9.21	Peak		
3	5147.00	31.83	54.00	-22.17	26.89	4.94	Average		
4	5147.00	44.80	74.00	-29.20	39.86	4.94	Peak		
5	10400.00	58.00	68.30	-10.30	43.25	14.75	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

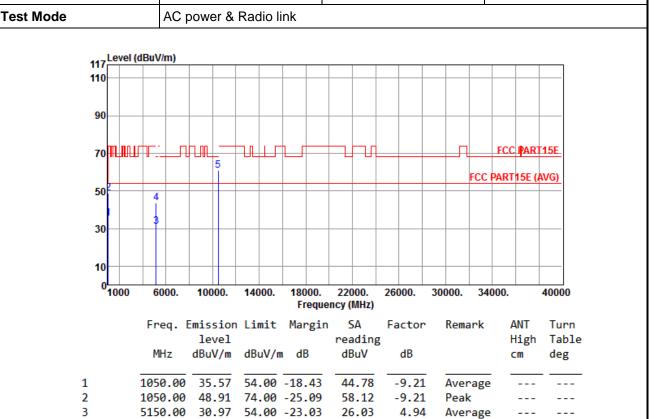
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C. Tel: 886-3-271-8666 Fax: 886-3-318-0155

Polarization Horizontal Test Freq. (MHz) 5240



38.47

45.91

4.94

14.84

Peak

Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

74.00 -30.59

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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5

5150.00 43.41

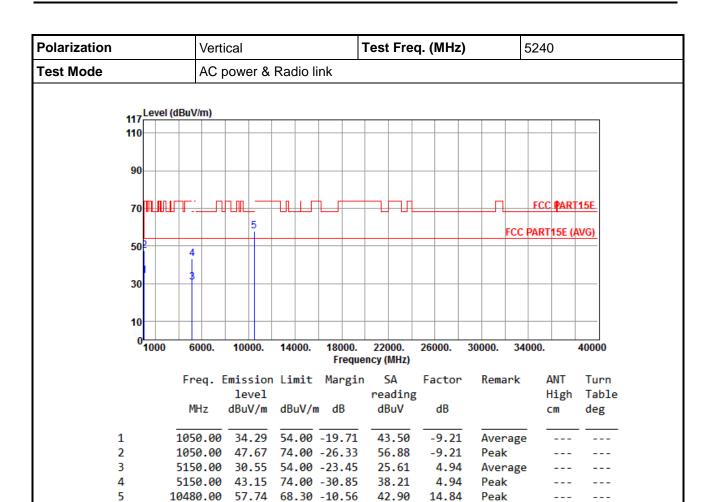
10480.00 60.75 68.30 -7.55

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

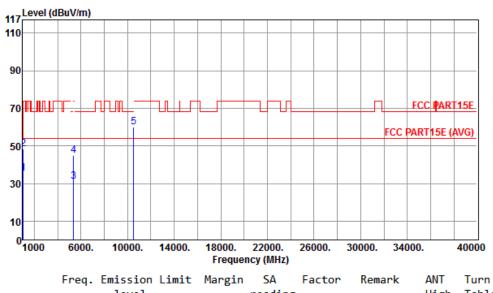
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C. Tel: 886-3-271-8666 Fax: 886-3-318-0155

PolarizationHorizontalTest Freq. (MHz)5260Test ModeAC power & Radio link



	•	mission level dBuV/m	Limit dBuV/m		SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1050.00	35.25	54.00	-18.75	44.46	-9.21	Average		
2	1050.00	48.42	74.00	-25.58	57.63	-9.21	Peak		
3	5350.00	31.09	54.00	-22.91	26.00	5.09	Average		
4	5350.00	45.00	74.00	-29.00	39.91	5.09	Peak		
5	10520.00	60.01	68.30	-8.29	45.14	14.87	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

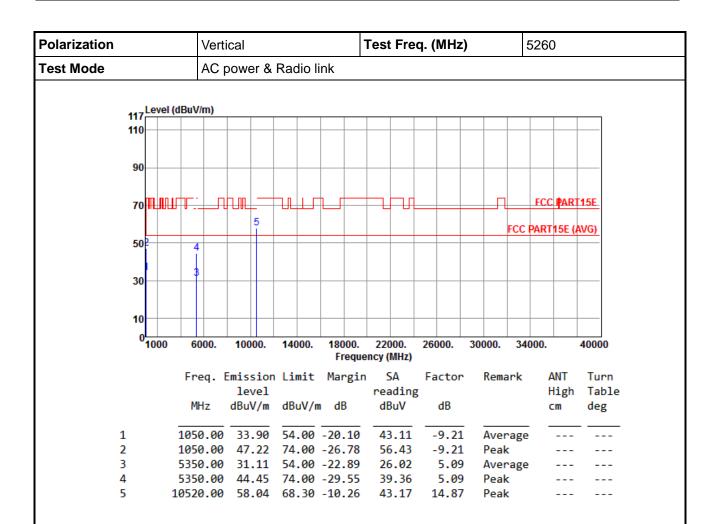
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

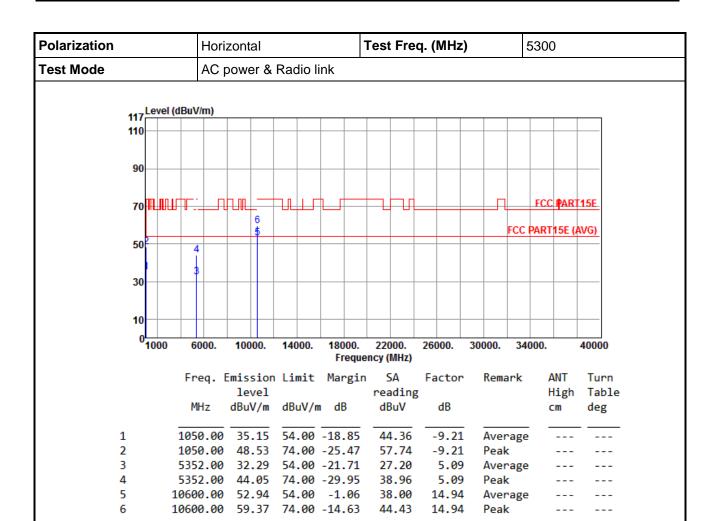
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

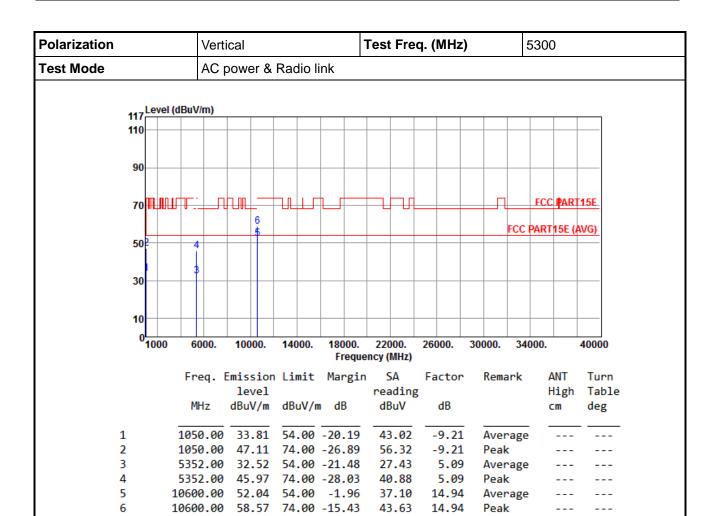
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

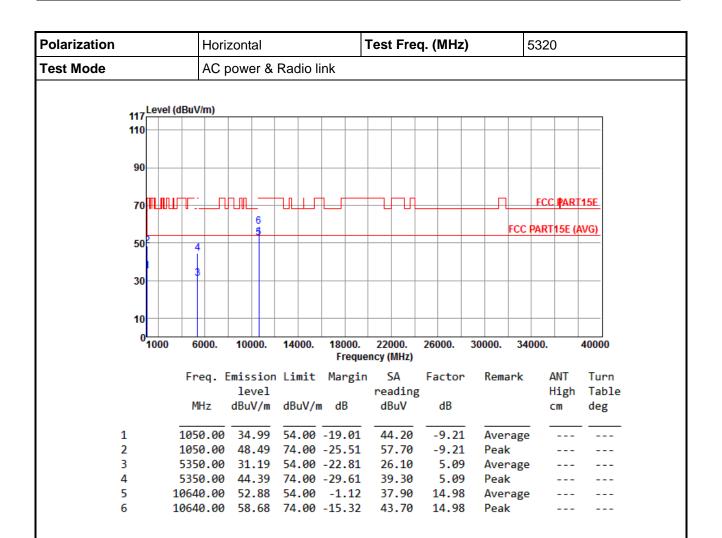
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

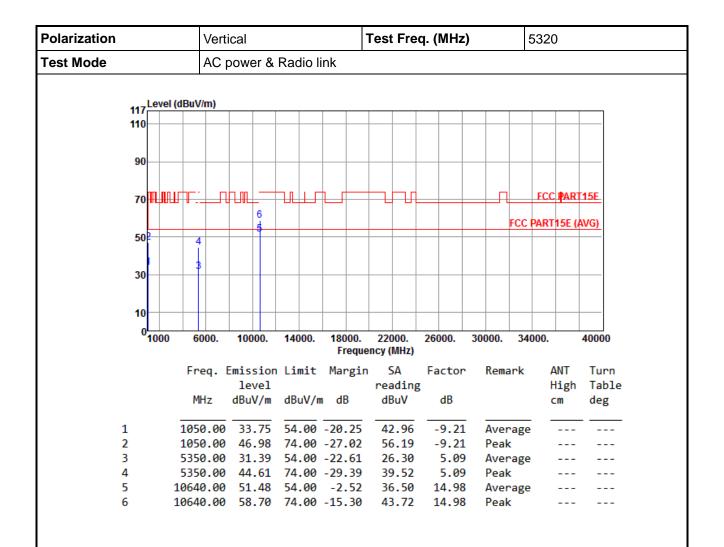
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

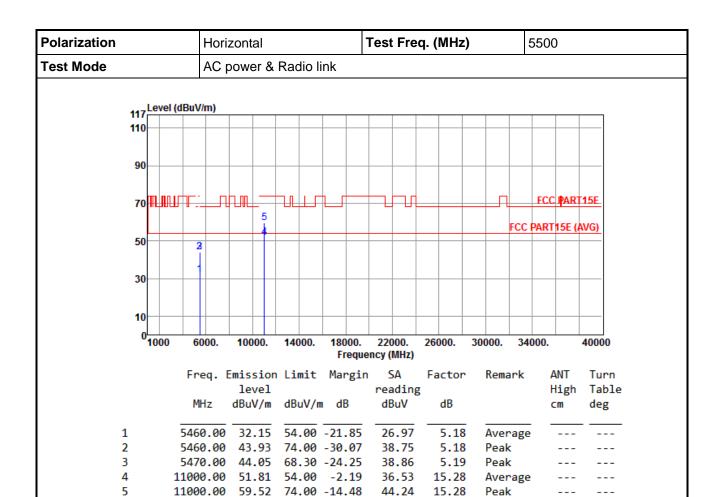
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

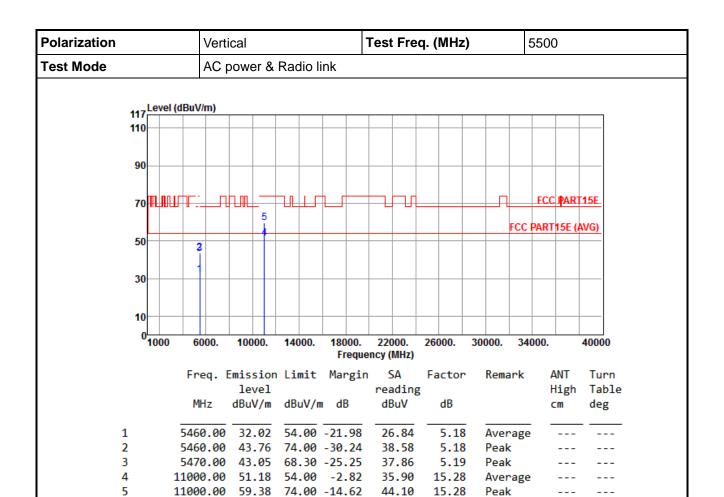
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

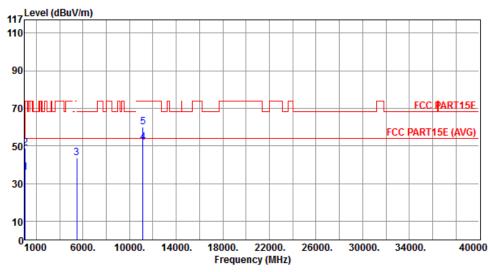
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C. Tel: 886-3-271-8666 Fax: 886-3-318-0155

PolarizationHorizontalTest Freq. (MHz)5580Test ModeAC power & Radio link



		Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1050.00	35.67	54.00	-18.33	44.88	-9.21	Average		
2	1050.00	48.97	74.00	-25.03	58.18	-9.21	Peak		
3	5470.00	43.73	68.30	-24.57	38.54	5.19	Peak		
4	11160.00	51.80	54.00	-2.20	36.62	15.18	Average		
5	11160.00	59.88	74.00	-14.12	44.70	15.18	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

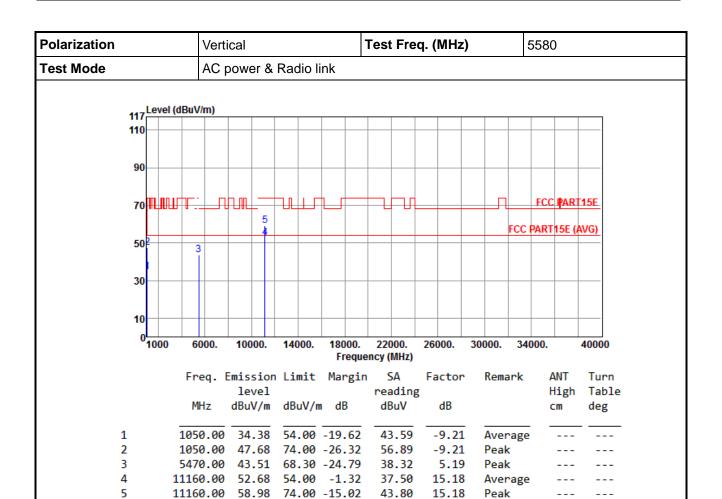
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

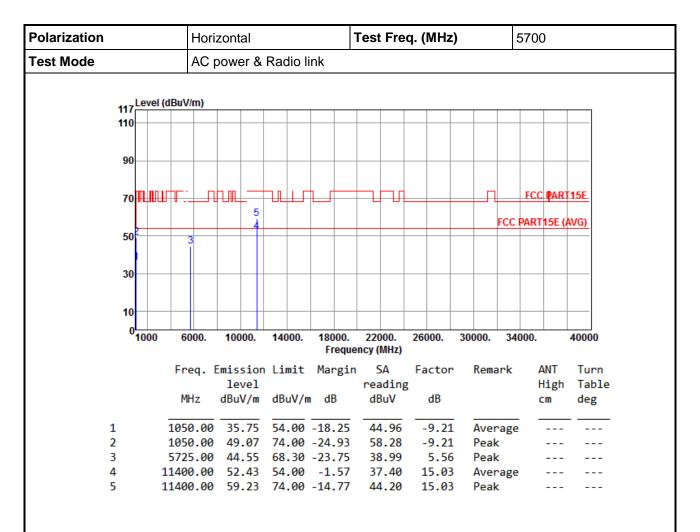
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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147. 666 3 271 6666



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

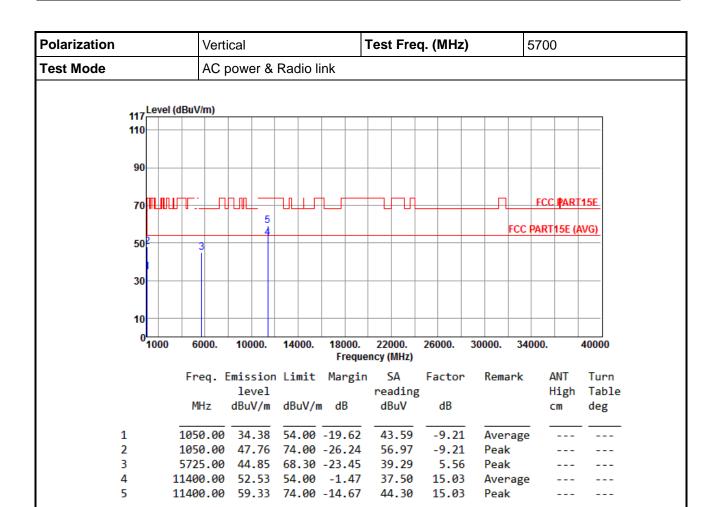
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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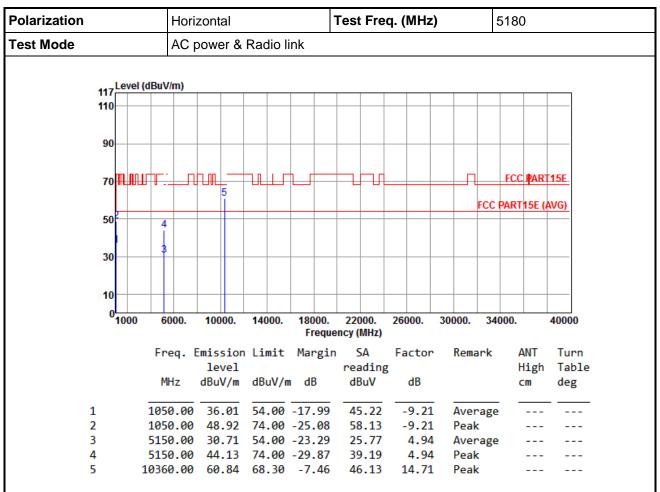
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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

3.6.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for HT20



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

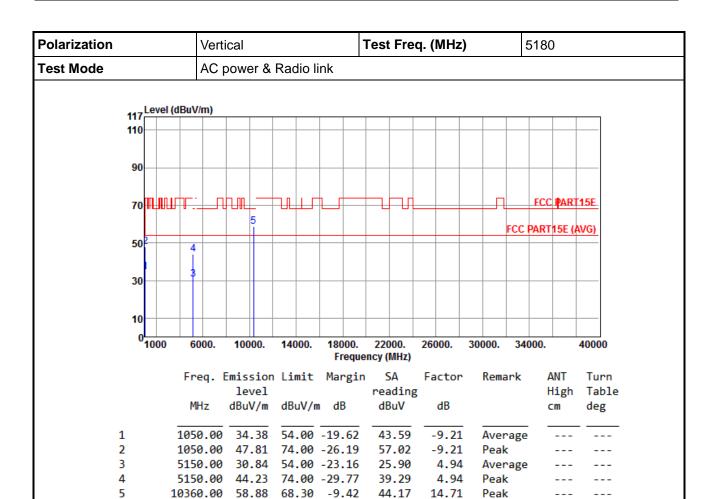
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

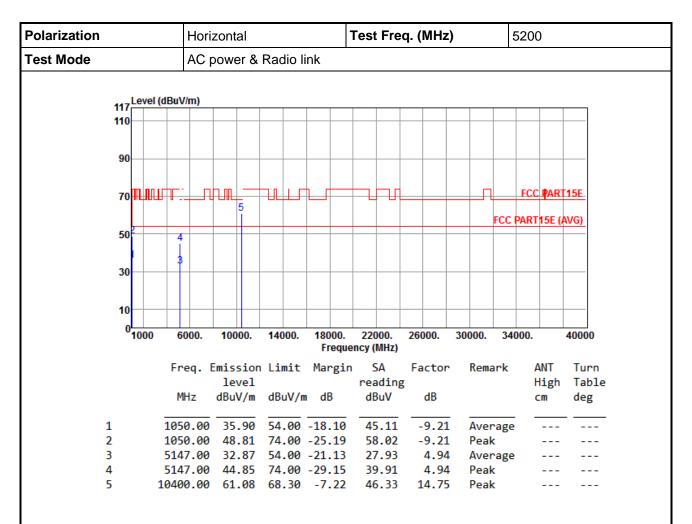
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C. Tel: 886-3-271-8666 Fax: 886-3-318-0155

Tel. 600 3 271 6000 Tel. 600 3 310 6133



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

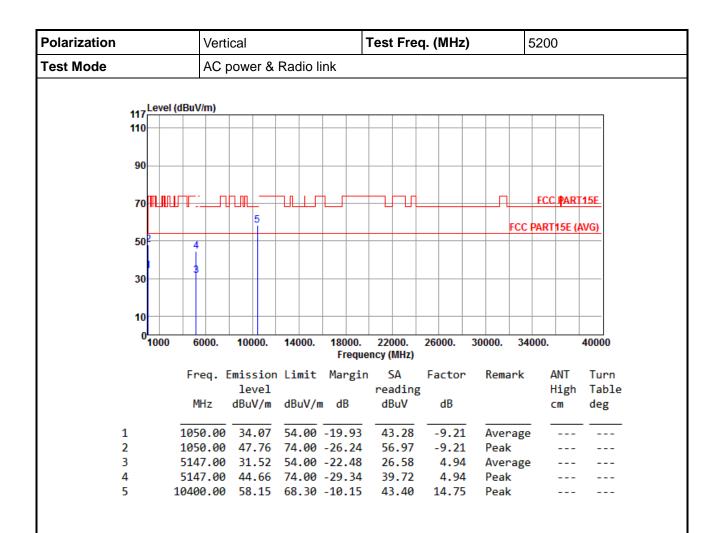
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

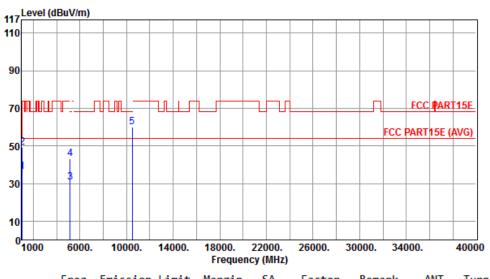
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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PolarizationHorizontalTest Freq. (MHz)5240Test ModeAC power & Radio link



	Freq. E	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV		Remark	ANT High cm	Turn Table deg
1	1050.00	36.10	54.00	-17.90	45.31	-9.21	Average		
2	1050.00	49.12	74.00	-24.88	58.33	-9.21	Peak		
3	5150.00	30.55	54.00	-23.45	25.61	4.94	Average		
4	5150.00	43.23	74.00	-30.77	38.29	4.94	Peak		
5	10480.00	60.14	68.30	-8.16	45.30	14.84	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

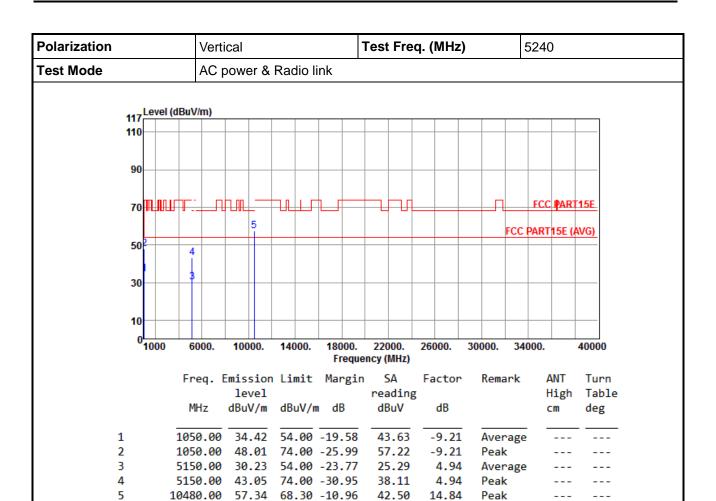
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

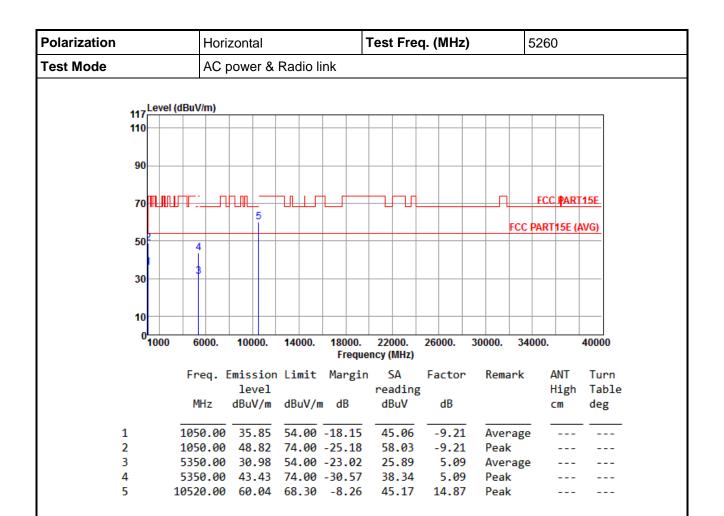
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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PolarizationVerticalTest Freq. (MHz)5260Test ModeAC power & Radio link



	Freq.	Emission level	Limit	Margin	SA reading		Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	1050.00	34.08	54.00	-19.92	43.29	-9.21	Average		
2	1050.00	47.71	74.00	-26.29	56.92	-9.21	Peak		
3	5350.00	30.95	54.00	-23.05	25.86	5.09	Average		
4	5350.00	44.36	74.00	-29.64	39.27	5.09	Peak		
5	10520.00	57.68	68.30	-10.62	42.81	14.87	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

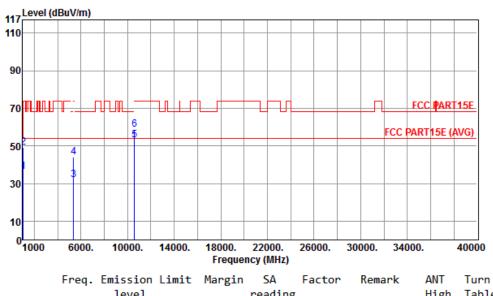
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C. Tel: 886-3-271-8666 Fax: 886-3-318-0155

PolarizationHorizontalTest Freq. (MHz)5300Test ModeAC power & Radio link



	Freq.	Emission level dBuV/m	Limit dBuV/m	J	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1050.00	36.23	54.00	-17.77	45.44	-9.21	Average		
2	1050.00	49.07	74.00	-24.93	58.28	-9.21	Peak		
3	5352.00	32.02	54.00	-21.98	26.93	5.09	Average		
4	5352.00	43.86	74.00	-30.14	38.77	5.09	Peak		
5	10600.00	52.95	54.00	-1.05	38.01	14.94	Average		
6	10600.00	58.73	74.00	-15.27	43.79	14.94	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

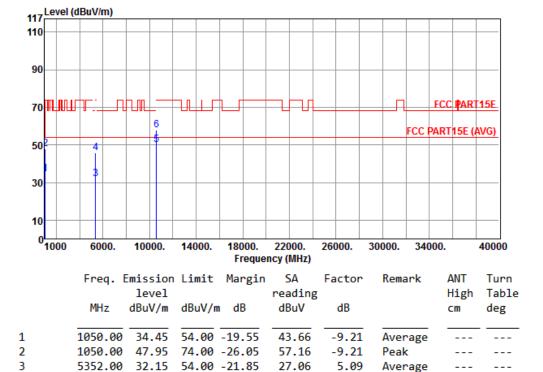
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C. Tel: 886-3-271-8666 Fax: 886-3-318-0155

PolarizationVerticalTest Freq. (MHz)5300Test ModeAC power & Radio link



40.67

35.20

42.99

5.09

14.94

14.94

Peak

Peak

Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

74.00 -28.24

54.00 -3.86

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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5

6

5352.00 45.76

50.14

10600.00 57.93 74.00 -16.07

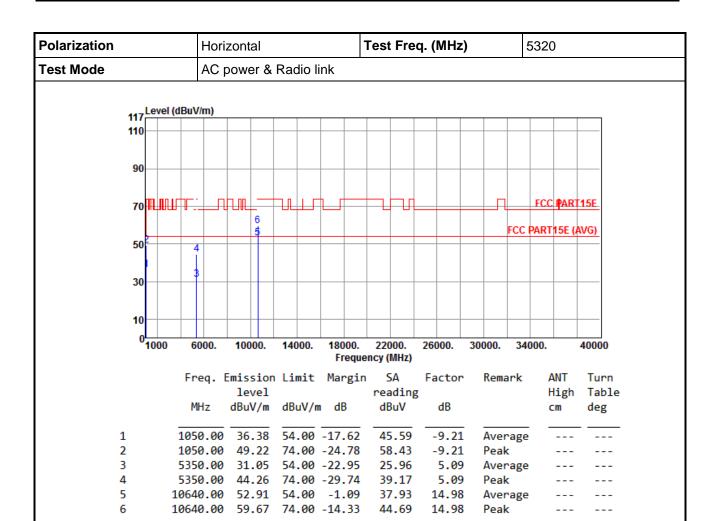
10600.00

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

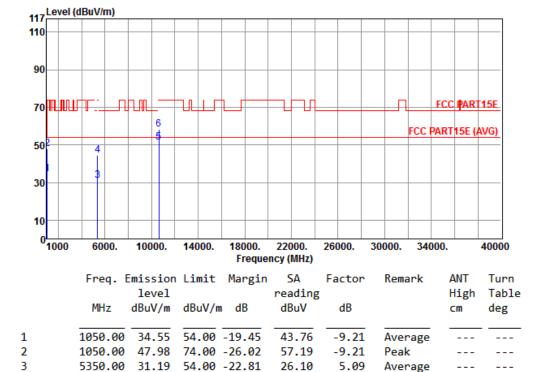
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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PolarizationVerticalTest Freq. (MHz)5320Test ModeAC power & Radio link



39.42

36.60

43.33

5.09

14.98

14.98

Peak

Peak

Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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4

5

6

5350.00

10640.00

44.51

51.58

10640.00 58.31 74.00 -15.69

74.00 -29.49

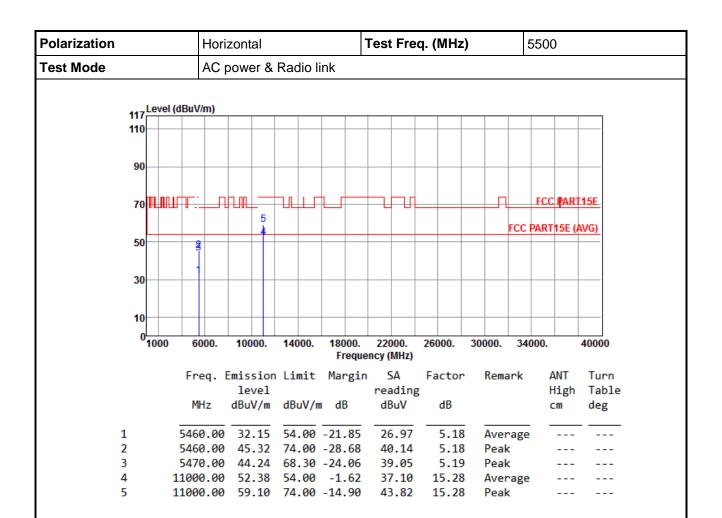
54.00 -2.42

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

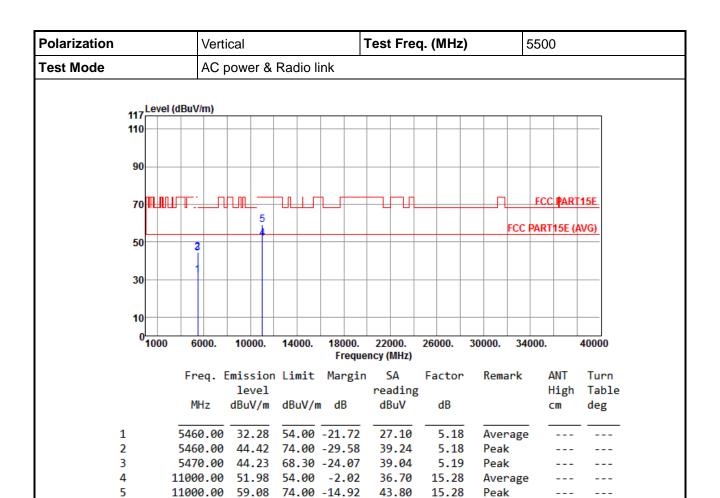
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

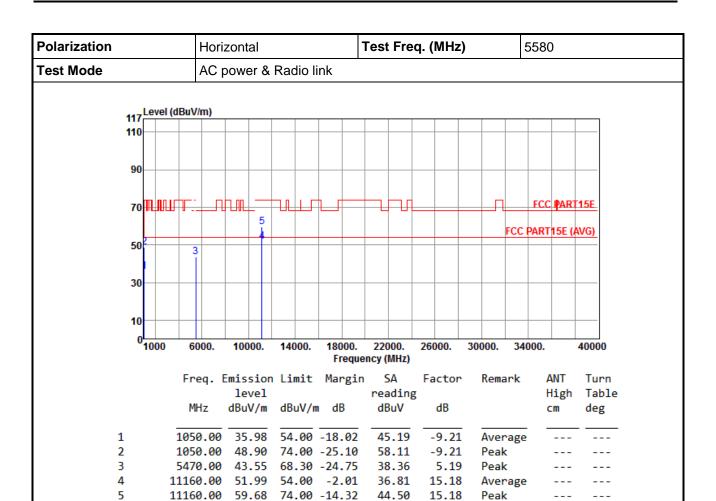
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

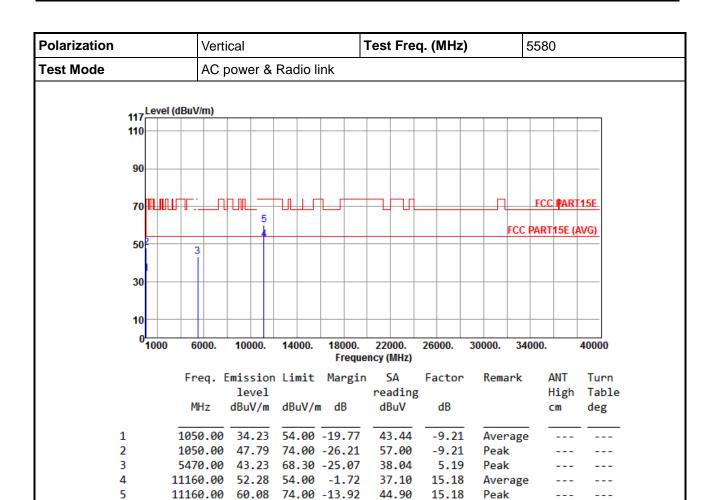
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

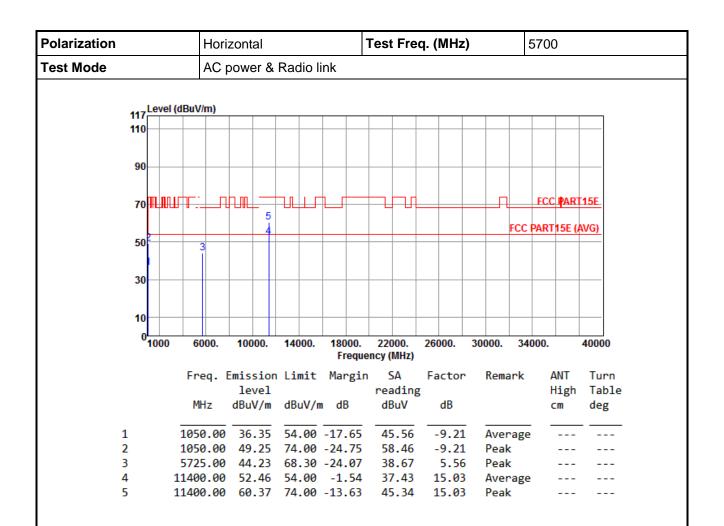
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

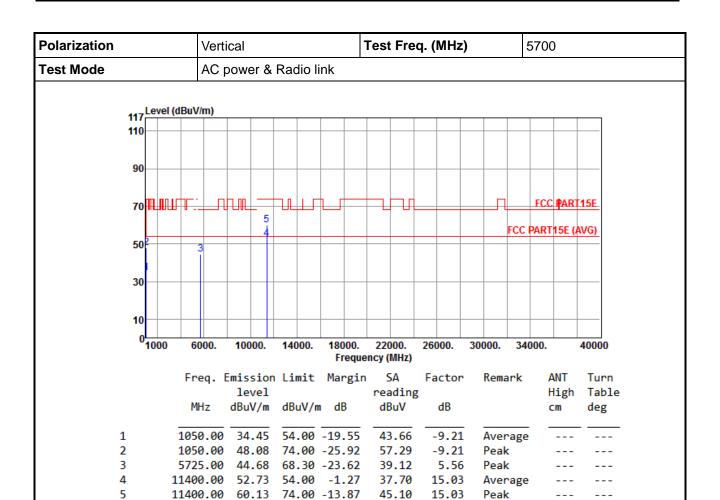
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

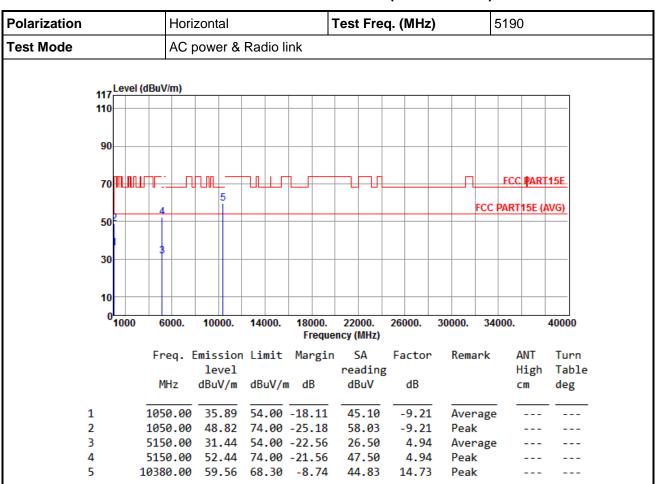
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

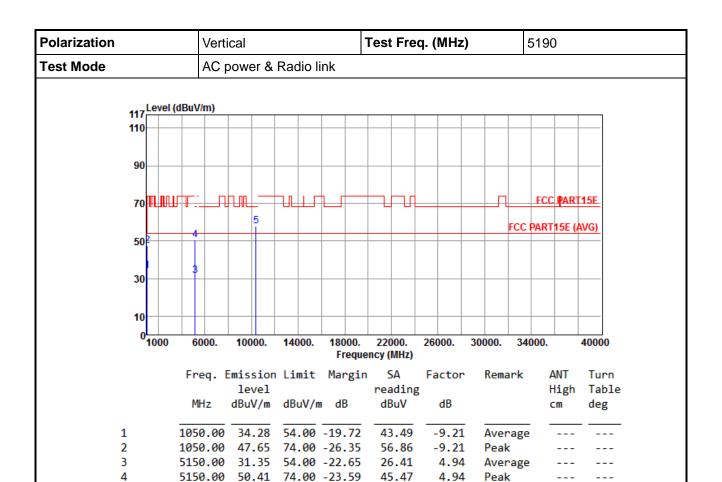
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Tel: 886-3-271-8666 Fax: 886-3-318-0155

10380.00 57.83 68.30 -10.47



43.10

14.73

Peak

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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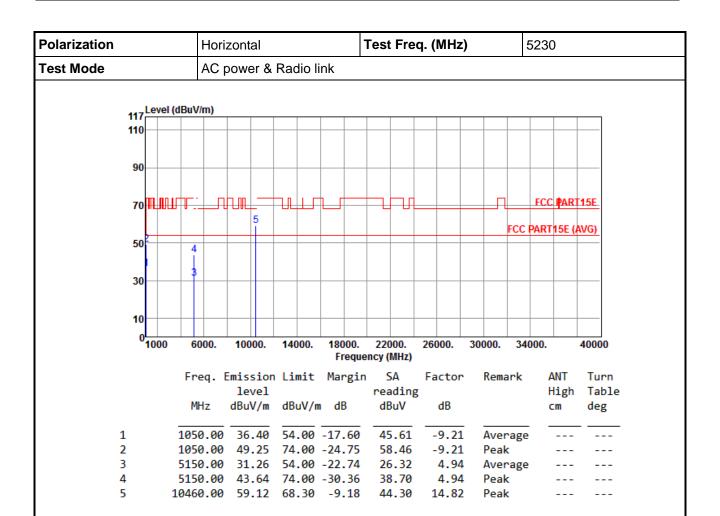
5

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

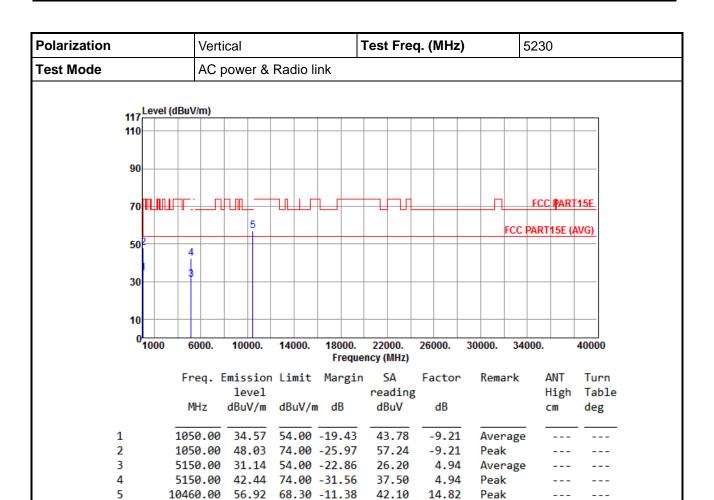
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

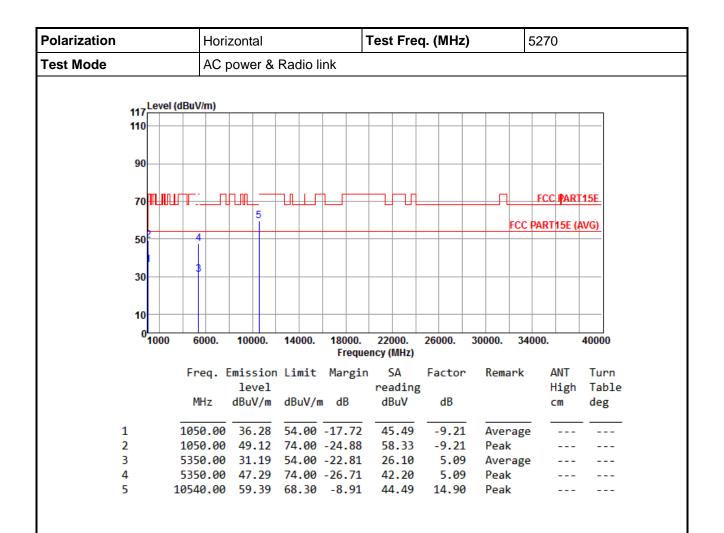
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

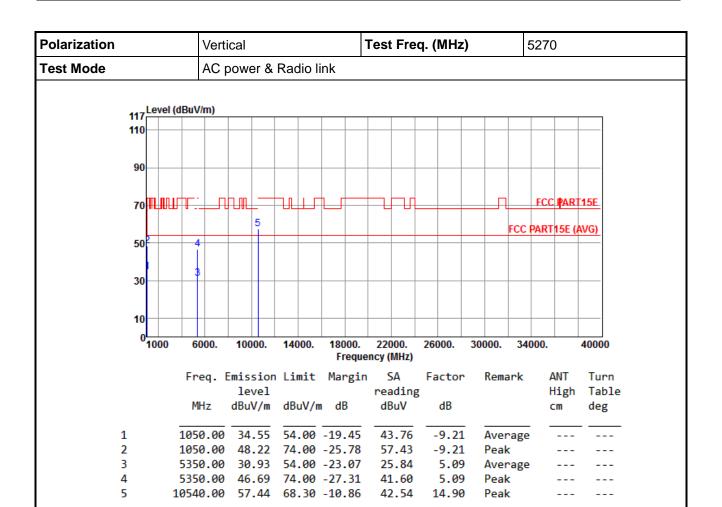
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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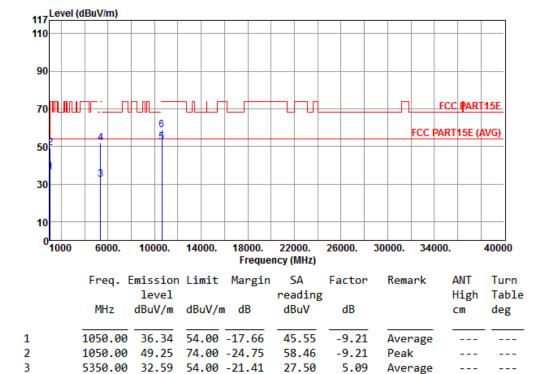
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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 Polarization
 Horizontal
 Test Freq. (MHz)
 5310

 Test Mode
 AC power & Radio link



46.70

37.20

5.09

14.96

14.96

Peak

Peak

Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

74.00 -22.21

54.00 -1.84

10620.00 58.56 74.00 -15.44 43.60

5350.00 51.79

10620.00 52.16

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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5

6

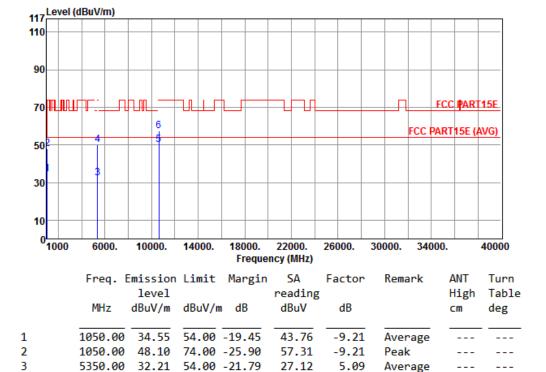
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Polarization Vertical Test Freq. (MHz) 5310

Test Mode AC power & Radio link



44.90

35.10

42.63

5.09

14.96

14.96

Peak

Peak

Average

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

74.00 -24.01

54.00 -3.94

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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4

5

6

5350.00 49.99

50.06

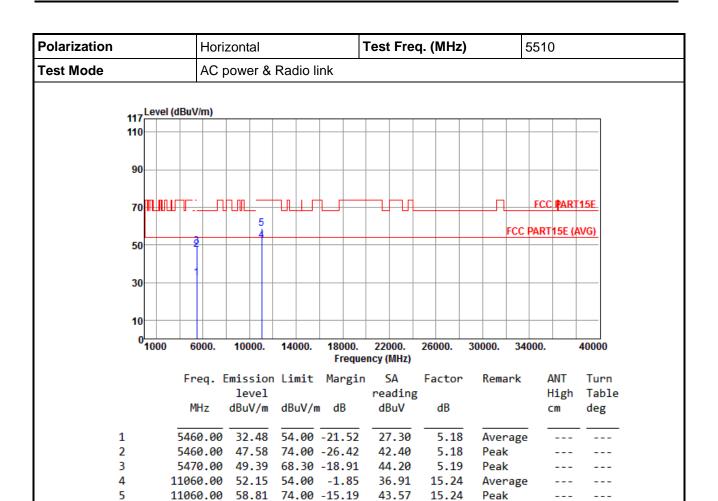
10620.00 57.59 74.00 -16.41

10620.00



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

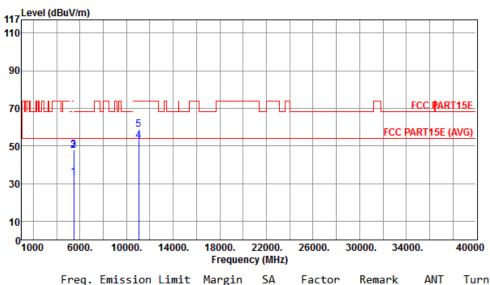
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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PolarizationVerticalTest Freq. (MHz)5510Test ModeAC power & Radio link



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	5460.00	33.08	54.00	-20.92	27.90	5.18	Average		
2	5460.00	47.48	74.00	-26.52	42.30	5.18	Peak		
3	5470.00	47.99	68.30	-20.31	42.80	5.19	Peak		
4	11060.00	52.82	54.00	-1.18	37.58	15.24	Average		
5	11060.00	58.75	74.00	-15.25	43.51	15.24	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

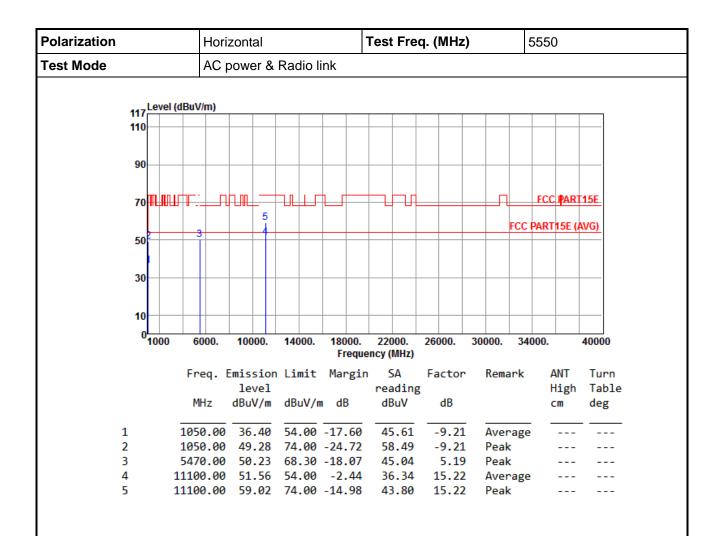
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

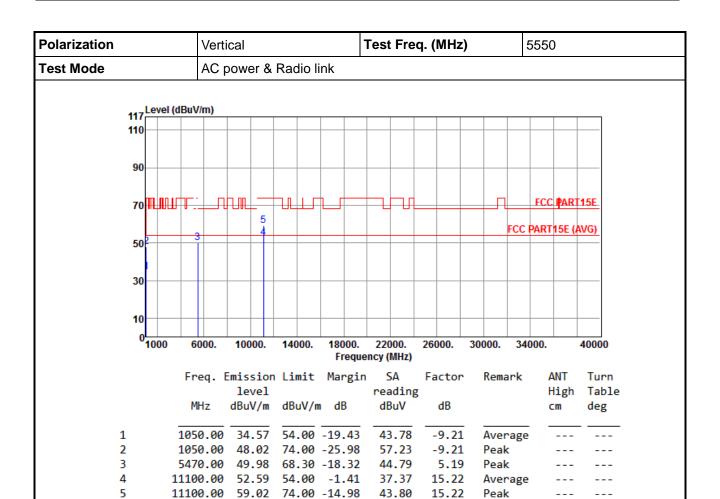
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

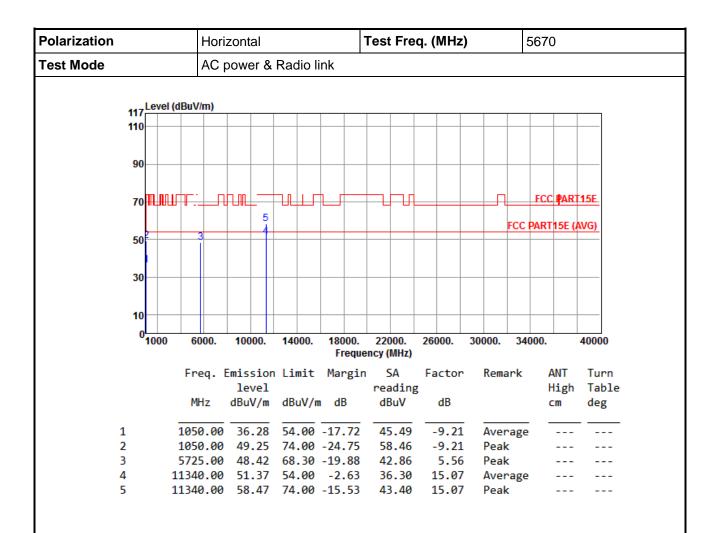
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

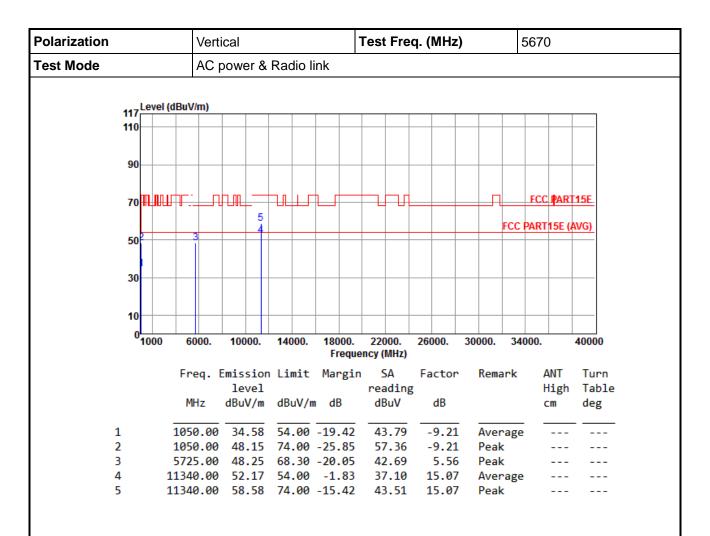
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

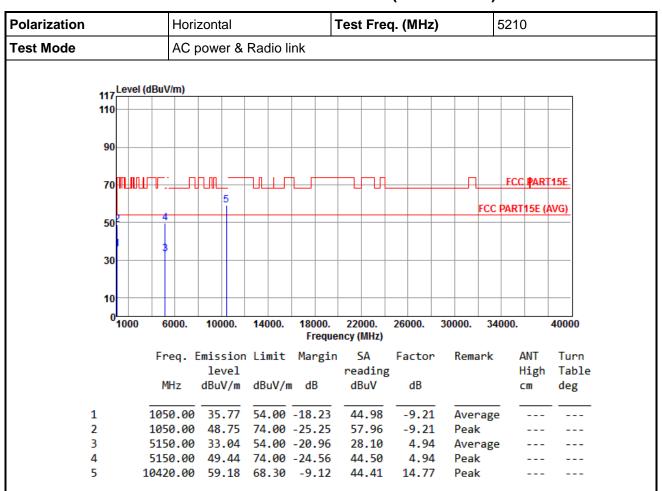
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

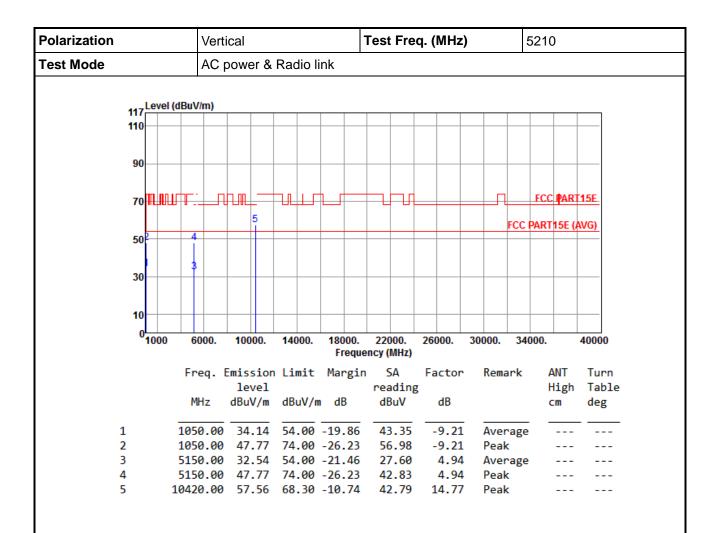
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

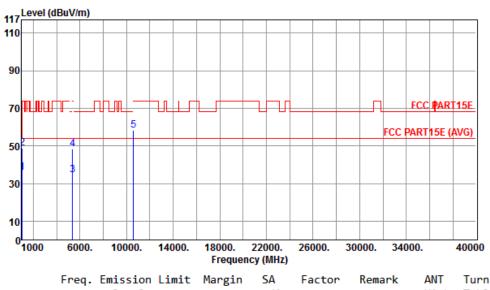
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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PolarizationHorizontalTest Freq. (MHz)5290Test ModeAC power & Radio link



	Freq.	Emission	Limit	Margin		Factor	Remark	ANT	Turn
	MU-	level dBuV/m	dBuV/m	4D	reading dBuV	4D			Table
	MHz	ubuv/m	ubuv/m	ub	abuv	dB		cm	deg
1	1050.00	35.81	54.00	-18.19	45.02	-9.21	Average		
2	1050.00	48.81	74.00	-25.19	58.02	-9.21	Peak		
3	5350.00	34.69	54.00	-19.31	29.60	5.09	Average		
4	5350.00	48.39	74.00	-25.61	43.30	5.09	Peak		
5	10580.00	58.13	68.30	-10.17	43.20	14.93	Peak		

Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

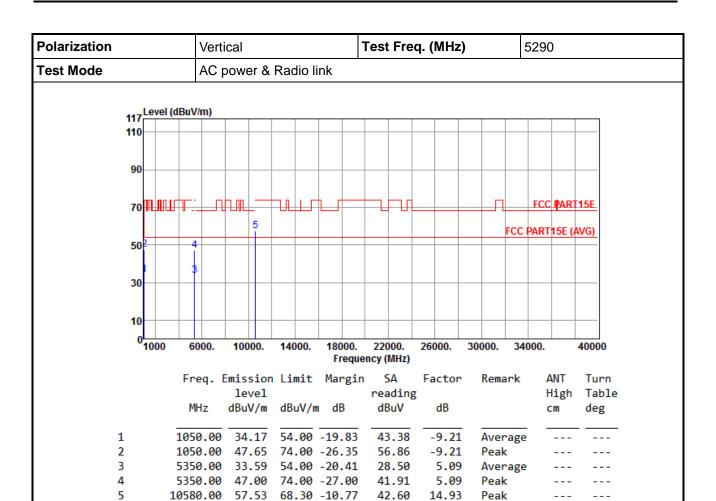
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

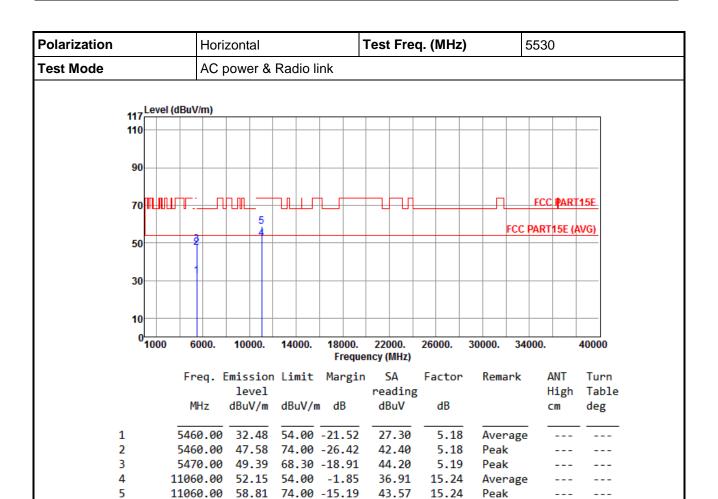
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

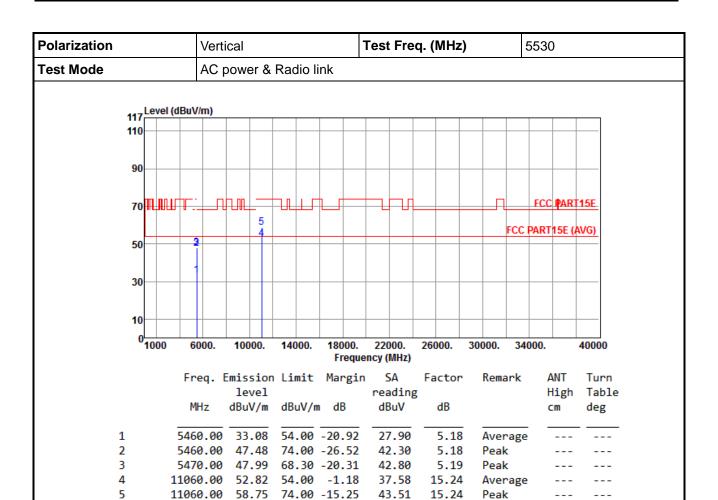
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Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.



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



Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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3.7 Frequency Stability

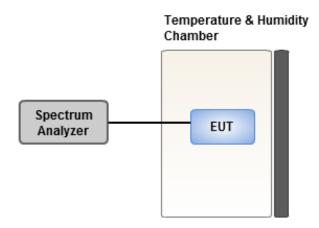
3.7.1 Limit of Frequency Stability

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.
- 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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Test Result of Frequency Stability 3.7.4

Frequency: 5200 MHz	Frequency Drift (ppm)							
Temperature (°C)	0 minute	2 minutes	5 minutes	10 minutes				
T20°CVmax	0.68	1.15	0.93	0.38				
T20°CVmin	5.61	5.78	5.98	6.09				
T50°CVnom	2.51	3.07	4.04	5.31				
T40°CVnom	3.65	3.52	3.65	3.94				
T30°CVnom	-0.42	-0.53	-0.38	-0.73				
T20°CVnom	-0.10	-0.16	-0.09	0.25				
T10°CVnom	1.93	1.98	2.17	1.58				
T0°CVnom	1.82	2.19	1.44	2.24				
T-10°CVnom	1.55	1.39	1.54	2.40				
T-20°CVnom	0.74	0.36	1.61	0.91				
T-30°CVnom	1.30	1.66	1.42	1.14				
Vnom [Vdc]: 3.9		Vmax [Vdc]: 4.29	Vmin [Vdc]: 3.51					
Tnom [°C]: 20		Tmax [°C]: 50	Tmin [°C]: -30					



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