

FCC Test Report

FCC ID : SQG-SSD45N

Equipment : Radio Module

Model No. : SSD45N

Brand Name : Laird Technologies

Applicant : Laird Technologies

Address : 11160 Thompson Ave. / Lenexa, Kansas /

66219 / USA

Standard : 47 CFR FCC Part 15.247

Received Date : May 08, 2013

Tested Date : May 08 ~ Jul. 23, 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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Report No.: FR442904AC Report Version: Rev. 01



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Release Record

Report No.	Version	Description	Issued Date
FR442904AC	Rev. 01	Initial issue	May 13, 2014

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Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	Conducted Emissions	[dBuV]: 0.150MHz 50.06 (Margin -15.94dB) - QP	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 4924.00MHz 52.93 (Margin -1.07dB) - AV	Pass
15.247(b)(3)	Fundamental Emission Output Power	Power [dBm]: 11b: 18.82 11g: 21.95 HT20: 22.61	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	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 Specification of the Equipment under Test (EUT)

RF General Information							
Frequency Range (MHz)	IEEE Std. 802.11	Ch. Freq. (MHz)	Channel Number	Transmit Chains (N _{TX})	Data Rate / MCS		
2400-2483.5	b	2412-2462	1-11 [11]	1	1-11 Mbps		
2400-2483.5	g	2412-2462	1-11 [11]	1	6-54 Mbps		
2400-2483.5	n (HT20)	2412-2462	1-11 [11]	1	MCS 0-7		

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

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

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

1.1.2 Antenna Details

Ant.	Brand / Model	Туре	Connector	Operat	ing Frequenc	cies (MHz) / A	ntenna Gain	(dBi)
No.	Brand / Woder	Type	Connector	2400~2483.5	5150~5250	5250~5350	5470~5725	5725~5850
1	MAG.LAYERS EDA-1513-25GR 2-B2-CY	Dipole	SMA Jack Reverse	2	2	2	2	2
2	MAG.LAYERS PCA-4606-2G4C 1-A13-CY	PCB Dipole	UFL	2.21	2.21	2.21	2.21	2.21
3	Larid NanoBlade-IP04	PCB Dipole	UFL	2	3.9	3.9	4	4
4	Larid MAF95310 Mini NanoBlade Flex	PCB Dipole	UFL	2.79	3.38	3.38	3.38	3.38
5	Laird NanoBlue-IP04	PCB Dipole	UFL	2				
6	Ethertronics WLAN_1000146	PIFA	UFL	2.5	3.5	3.5	3.5	3.5

1.1.3 EUT Operational Condition

Supply Voltage	☐ AC mains	□ DC (3.3Vdc)	
Type of DC Source	☐ Internal DC supply	☐ External DC adapter	

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1.1.4 Accessories

N/A

1.1.5 Channel List

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

1.1.6 Test Tool and Duty Cycle

Test tool	ART V0.2
Duty Cycle Of Test Signal (%)	100.00% - IEEE 802.11b 99.30% - IEEE 802.11g 99.25% - IEEE 802.11n (HT20)
Duty Factor	0.00 - IEEE 802.11b 0.03 - IEEE 802.11g 0.03 - IEEE 802.11n (HT20)

1.1.7 Power Setting

	Test Frequency (MHz)				
Modulation Mode	b / g / HT20				
	2412	2437	2462		
b	16	16.5	14.5		
g	15	19.5	13		
n (HT20)	14.5	19.5	13.5		

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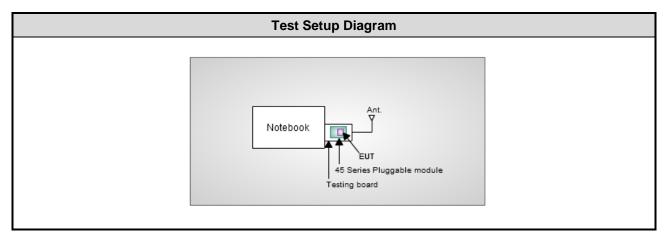


1.2 Local Support Equipment List

	Support Equipment List							
No.	Equipment	Brand	Model	FCC ID	Signal cable / Length (m)			
1	Notebook	DELL	E6430	DoC				
2	45 Series Pluggable module	Laird Technologies	MSD45N	SQG-MSD45N				
3	Testing board							

Note: Item 2-3 are provided by applicant.

1.3 Test Setup Chart



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1.4 The Equipment List

Test Item	Conducted Emission	onducted Emission							
Test Site	Conduction room 1 / (C	Conduction room 1 / (CO01-WS)							
Instrument	Manufacturer	Manufacturer Model No. Serial No. Calibration Date Calibration Until							
EMC Receiver	R&S	ESCS 30	100169	Oct. 02, 2012	Oct. 01, 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				
50 ohm terminal (Support Unit)	NA	50	04	Apr. 22, 2013	Apr. 21, 2014				
Note: Calibration Inter	val of instruments listed a	above is one year.							

Test Item	Radiated Emission	Radiated Emission					
Test Site	966 chamber1 / (03Ch	H01-WS)					
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	ROHDE&SCHWAR Z	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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Test Item	RF 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				
Power Meter	Anritsu	ML2495A	1241002	Oct. 15, 2012	Oct. 14, 2013				
Power Sensor	Anritsu	MA2411B	1027366	Oct. 24, 2012	Oct. 23, 2013				
Signal Generator	R&S	SMB100A	175727	Jan. 14, 2013	Jan. 13, 2014				
Note: Calibration Interval of instruments listed above is one year.									

1.5 Test Standards

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

47 CFR FCC Part 15.247

ANSI C63.10-2009

FCC KDB 558074 D01 DTS Meas Guidance v03r01

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	±35.286 Hz						
Conducted power	±0.536 dB						
Frequency error	±35.286 Hz						
Temperature	±0.3 °C						
Conducted emission	±2.946 dB						
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	23°C / 63%	Peter Ling
Radiated Emissions	03CH01-WS	25°C / 65%	Aska Huang Haru Yang
RF Conducted	TH01-WS	22°C / 60%	Brad Wu Felix Sung

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

2.2 The Worst Test Modes and Channel Details

Test item	Modulation Mode	Test Frequency (MHz)	Data rate (Mbps) / MCS	Test Configuration
Conducted Emissions	HT20	2437	MCS0	1
Radiated Emissions (below 1GHz)	HT20	2437	MCS0	1, 2, 3
Radiated Emissions (above 1GHz)	11b 11g HT20	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462	1 6 MCS 0	1, 2, 3
Fundamental Emission Output Power 6dB bandwidth Power spectral density	11b 11g HT20	2412 / 2437 / 2462 2412 / 2437 / 2462 2412 / 2437 / 2462	1 6 MCS 0	1

NOTE:

1. 3 types antenna are used for this device, highest gain antenna of each type is selected to perform radiated emission test as below test configuration

1) Configuration 1 : Dipole antenna (Antenna No.1) , Y-plane

2) Configuration 2: PCB Dipole antenna (Antenna No.4), Y-plane

3) Configuration 3: PIFA antenna (Antenna No.6), Y-plane

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3 Transmitter Test Results

3.1 Conducted Emissions

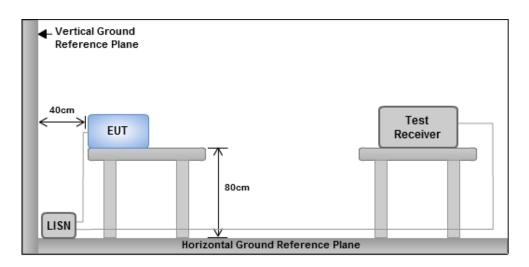
3.1.1 Limit of Conducted Emissions

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.
- This measurement was performed with AC 120V / 60Hz.

3.1.3 Test Setup



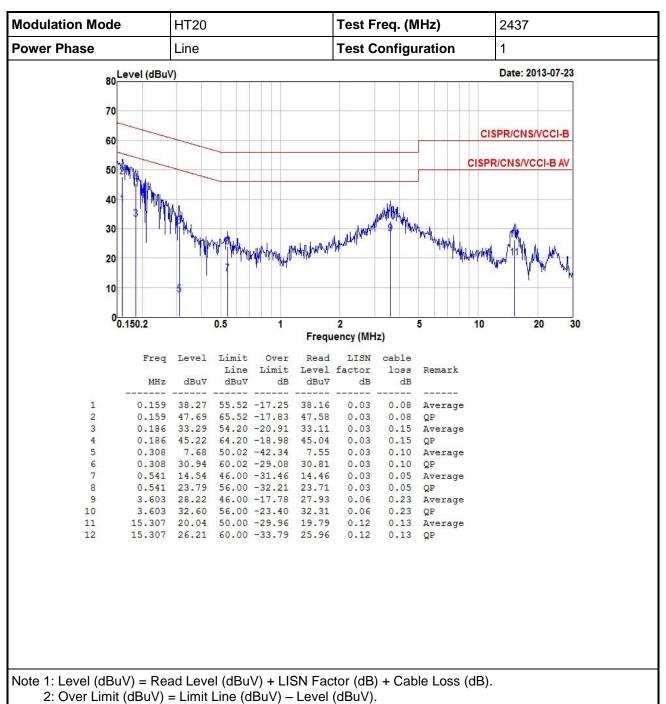
Note: 1. Support units were connected to second LISN.

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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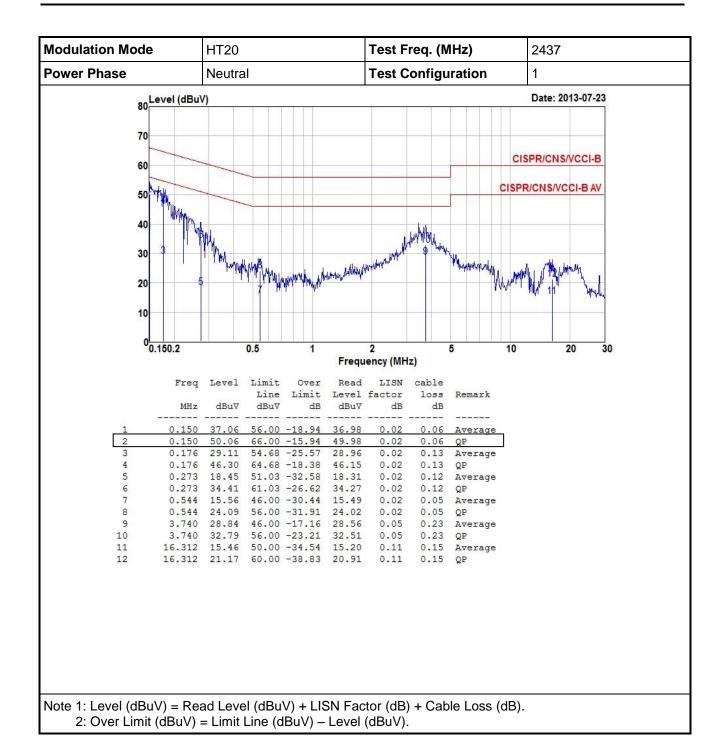


3.1.4 Test Result of Conducted Emissions



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3.2 6dB and Occupied Bandwidth

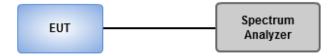
3.2.1 Limit of 6dB Bandwidth

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

3.2.2 Test Procedures

- 1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
- 2. Detector = Peak, Trace mode = max hold.
- 3. Sweep = auto couple, Allow the trace to stabilize.
- 4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

3.2.3 Test Setup

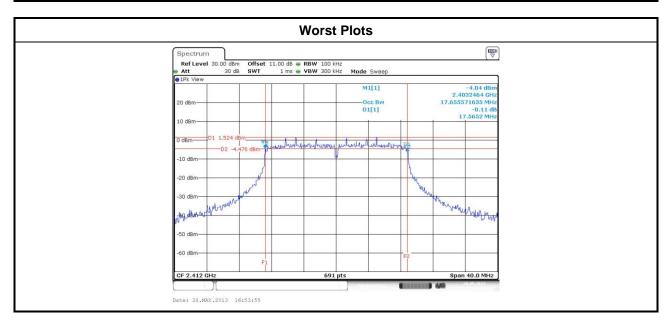


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3.2.4 Test Result of 6dB and Occupied Bandwidth

Modulation	l NI	Eron (MU=)					
Mode	N _{TX}	Freq. (MHz)	Chain 0	Chain 1	Chain 2	Chain 3	Limit (kHz)
11b	1	2412	10.09				500
11b	1	2437	10.09				500
11b	1	2462	10.09				500
11g	1	2412	16.29				500
11g	1	2437	16.35				500
11g	1	2462	16.35				500
HT20	1	2412	17.57				500
HT20	1	2437	17.28				500
HT20	1	2462	17.51				500



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Modulation	Eroa (MU=)	99% Occupied Bandwidth (MHz)					
Mode	Freq. (MHz)	Chain 0	Chain 1	Chain 2	Chain 3		
11b	2412	13.84					
11b	2437	13.95					
11b	2462	13.84					
11g	2412	17.08					
11g	2437	21.94					
11g	2462	17.13					
HT20	2412	18.18					
HT20	2437	23.50					
HT20	2462	18.12					



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3.3 RF Output Power

3.3.1 Limit of RF Output Power

Cor	duct	ed po	ower shall not exceed 1Watt.
\boxtimes	Ante	enna	gain <= 6dBi, no any corresponding reduction is in output power limit.
	Ante	enna	gain > 6dBi
		The	Fixed, point to point operations. conducted output power from the intentional radiator shall be reduced by the amount in dB the directional gain of the antenna exceeds 6 dB
		Sys Ope	ed, point to point operations tems operations in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point erations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 that the directional gain of the antenna exceeds 6 dBi.
			tems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point rations ,no any corresponding reduction is in transmitter peak output power
3.3.	2	Test	Procedures
\boxtimes	Max	kimur	n Peak Conducted Output Power
		Spe	ectrum analyzer
		1.	Set RBW = 1MHz, VBW = 3MHz, Detector = Peak.
		2.	Sweep time = auto, Trace mode = max hold, Allow trace to fully stabilize.
		3.	Use the spectrum analyzer channel power measurement function with the band limits set equal to the DTS bandwidth edges.
	\boxtimes	Pov	ver meter
		1.	A broadband Peak RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.
	Max	kimur	m Conducted Output Power (For reference only)
		Spe	ectrum analyzer
		1.	Set RBW = 1MHz, VBW = 3MHz, Detector = RMS.
		2.	Set the sweep time to: $\geq 10 \text{ x}$ (number of measurement points in sweep) x (maximum data rate per stream).
		3.	Perform the measurement over a single sweep.
		4.	Use the spectrum analyzer's band power measurement function with band limits set equal to the EBW(26dBc) band edges.
	\boxtimes	Pov	ver meter

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burst for measuring output power.

A broadband Average RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission



3.3.3 Test Setup



3.3.4 Test Result of Maximum Output Power

Modulation	N _{TX}	Freq.	Peak	Peak conducted output power (dBm)			Total Power	Total Power	Limit
Mode		(MHz)	Chain 0	Chain 1	Chain 2	Chain 3	(mW)	(dBm)	(dBm)
11b	1	2412	17.93				62.09	17.93	30
11b	1	2437	18.82				76.21	18.82	30
11b	1	2462	15.58				36.14	15.58	30
11g	1	2412	20.91				123.31	20.91	30
11g	1	2437	21.95				156.68	21.95	30
11g	1	2462	18.75				74.99	18.75	30
HT20	1	2412	20.43				110.41	20.43	30
HT20	1	2437	22.61				182.39	22.61	30
HT20	1	2462	18.97				78.89	18.97	30

Modulation	N _{TX}	Freq.	(abiii)				Total Power	Total Power	Limit
Mode		(MHz)	Chain 0	Chain 1	Chain 2	Chain 3	(mW)	(dBm)	(dBm)
11b	1	2412	15.82				38.19	15.82	30
11b	1	2437	16.53				44.98	16.53	30
11b	1	2462	13.59				22.86	13.59	30
11g	1	2412	13.82				24.1	13.82	30
11g	1	2437	18.25				66.83	18.25	30
11g	1	2462	11.95				15.67	11.95	30
HT20	1	2412	13.26				21.18	13.26	30
HT20	1	2437	18.48				70.47	18.48	30
HT20	1	2462	12.43				17.5	12.43	30

Note: Conducted average output power is for reference only.

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3.4 Power Spectral Density

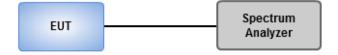
3.4.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.4.2 Test Procedures

- Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.
 - Set the RBW = 30kHz, VBW = 100kHz.
 - Detector = Peak, Sweep time = auto couple.
 - 3. Trace mode = max hold, allow trace to fully stabilize.
 - 4. Use the peak marker function to determine the maximum amplitude level.
- Maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit.
 - Set the RBW = 100kHz, VBW = 300 kHz.
 - 2. Detector = RMS, Sweep time = auto couple.
 - 3. Set the sweep time to: ≥ 10 x (number of measurement points in sweep) x (maximum data rate per stream).
 - 4. Perform the measurement over a single sweep.
 - 5. Use the peak marker function to determine the maximum amplitude level.\

3.4.3 Test Setup

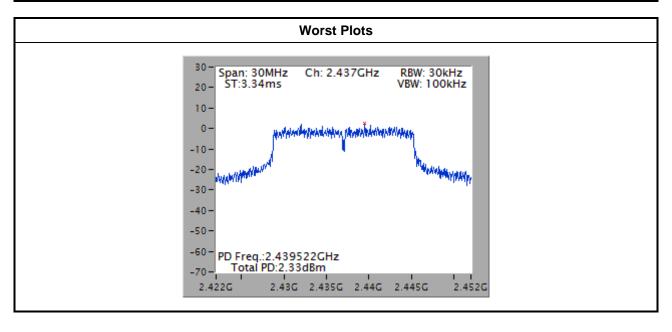


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3.4.4 Test Result of Power Spectral Density

Modulation Mode	N _{TX}	Freq. (MHz)	Total Power Spectral Density (dBm/30kHz)	Limit (dBm/3kHz)
11b	1	2412	0.52	8
11b	1	2437	1.38	8
11b	1	2462	-1.37	8
11g	1	2412	-3.48	8
11g	1	2437	2.33	8
11g	1	2462	-4.48	8
HT20	1	2412	-3.77	8
HT20	1	2437	1.86	8
HT20	1	2462	-4.38	8



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3.5 Unwanted Emissions into Restricted Frequency Bands

3.5.1 Limit of Unwanted Emissions into Restricted Frequency Bands

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

Note 1:

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

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

3.5.2 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.
- 2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
- 3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

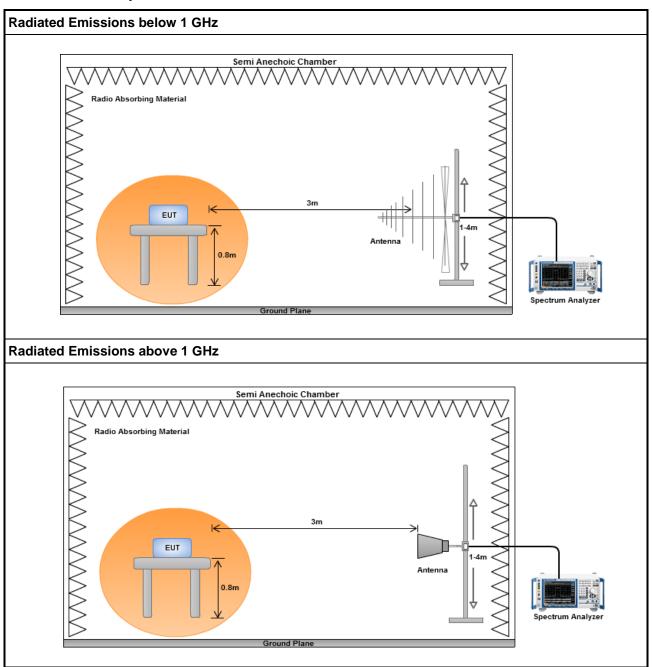
Note:

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

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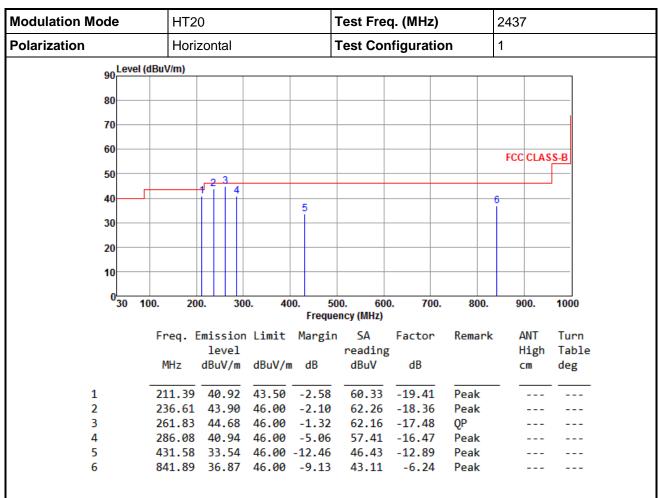
3.5.3 Test Setup



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3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)



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

*Factor includes antenna factor, cable loss and amplifier gain

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

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

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Modulation Mode	HT20)		-	Test Fre	q. (MHz)		2437		
Polarization	Verti	cal		-	Test Cor	nfiguratio	1			
90 Level	(dBuV/m)									
90										
80										
70										
60								FCC CLAS	S-B	
50										
							4 F	- 6	'	
40		12					4			
30		ĭ								
20										
10										
10										
0 30 1	00. 200). 30	0. 40	00. 50	00. 600	0. 700.	800.	900.	1000	
	200				ncy (MHz)		0001	0001		
	Freq. E	mission	Limit	Margin	SA	Factor	Remark	ANT	Turn	
		level			reading			High	Table	
	MHz	dBuV/m	dBuV/n	n dB	dBuV	dB		cm	deg	
1	236.61	37.54	46 00	-8 46	55 90	-18.36	Peak			
2	261.83	37.44	46.00	-8.56	54.92	-17.48	Peak			
3	286.08	33.23		-12.77	49.70	-16.47	Peak			
4	810.85	38.36	46.00		44.99	-6.63	Peak			
5	841.89		46.00				Peak			
6	898.15	39.11	46.00		44.65	-5.54	Peak			

*Factor includes antenna factor, cable loss and amplifier gain

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

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

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Modulation Mode	HT:	20				Test Fre	q. (MHz))	2437	
Polarization	Hoi	Horizontal					Test Configuration 2			
oo Lev	vel (dBuV/m)									
90										
80—			-							
70										
60									FCC CLA	SS-B
50		ļ.,	2							
40		12							6	_
40					4 !				Ĭ	
30										
20										
10										
0 30	100. 2	00.	300). 40		00. 60 ency (MHz)	0. 700	0. 800.	900.	1000
	Fred	Fmis	sion	limit	Margir		Factor	Remark	c ANT	Turn
			/el	222		reading		Tremer I	High	
	MHz	dBu\	//m	dBuV/n	n dB	dBuV	dB		cm	deg
1	211.38	41.	.96	43.50	-1.54	61.37	-19.41	QP		
2	236.61		.40	46.00		60.76	-18.36	_		
3	260.86		.83		-1.17	62.36		•		
4					-11.04		-12.86			
5	497.54	34.	. 22	46.00	-11.78	45.93	-11.71	Peak		

-6.24 Peak

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

*Factor includes antenna factor, cable loss and amplifier gain

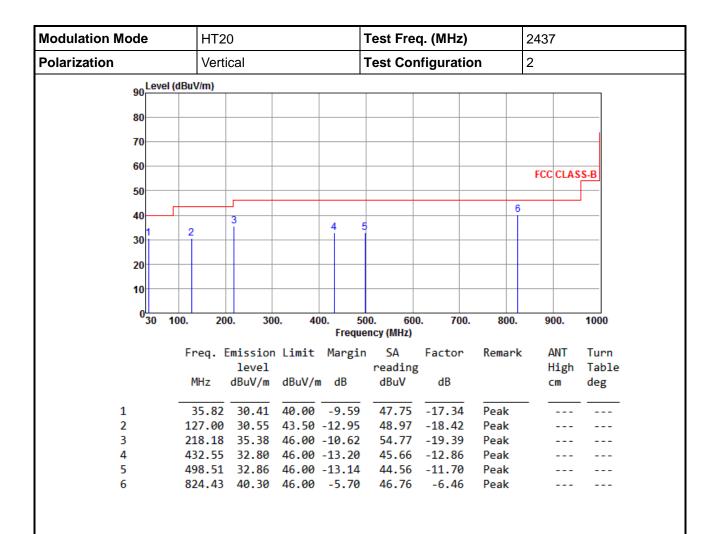
Note 2: Margin (dB) = Emission level (dBuV/m) - Limit (dBuV/m).

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

841.89 37.81 46.00 -8.19 44.05

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*Factor includes antenna factor, cable loss and amplifier gain

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

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

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Modulation Mo	ode		HT2	0				Test Fre	q. (MHz)		2437	7		
Polarization			Horizontal					Test Configuration				3		
	90 Level (dB										•			
	90													
	80													
	70													
	60										FCC	CLAS	S-B	
	50				2									
	40	+		1 2	4								'	
	40								5		6			
	30			++										
	20													
	20			Ш										
	10			++										
	0			Ш										
	0 <mark>30</mark>	100.	20	0.	30	00. 4		00. 60 ency (MHz)	0. 700	. 800.	9	00.	1000	
		F	req. E	mis	sior	n Limit	Margir	s SA	Factor	Remark		ANT	Turn	
			·	lev	/el		_	reading	3		H	High	Table	
			MHz	dBu\	//m	dBuV/ı	n dB	dBuV	dB		(cm	deg	
1			11.39	39	. 37	43.50	-4.13	58.78	-19.41	Peak				
2			36.61		.56			59.92		Peak				
3		2	61.83	44	.72	46.00	-1.28	62.20	-17.48	QP				
4			87.05		. 33			57.77		Peak				
5							-13.14	41.13		Peak				
6		8	46.74	35.	. 62	46.00	-10.38	41.79	-6.17	Peak				

*Factor includes antenna factor, cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

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Modulation Mode	HT20	Test Freq. (MHz)	2437		
Polarization	Vertical	Test Configuration	3		
90 Level (dBu\	V/m)				
80					
00					
70					
60			FCC CLASS-B		
50			FCC CLASS-B		
			5 6		
40	3 4		Ī		
30 7					
20					
10					
⁰ 30 100.		500. 600. 700. 800. Jency (MHz)	900. 1000		
Fr	req. Emission Limit Margi		: ANT Turn		
	level	reading	High Table		
N	MHz dBuV/m dBuV/m dB	dBuV dB	cm deg		
1 3	34.85 29.88 40.00 -10.12	47.31 -17.43 Peak			
	98.87 27.29 43.50 -16.21	49.06 -21.77 Peak			
	36.61 35.40 46.00 -10.60				
	50.86 37.27 46.00 -8.73 40.92 39.93 46.00 -6.07				
	98.15 38.60 46.00 -7.40				

*Factor includes antenna factor, cable loss and amplifier gain

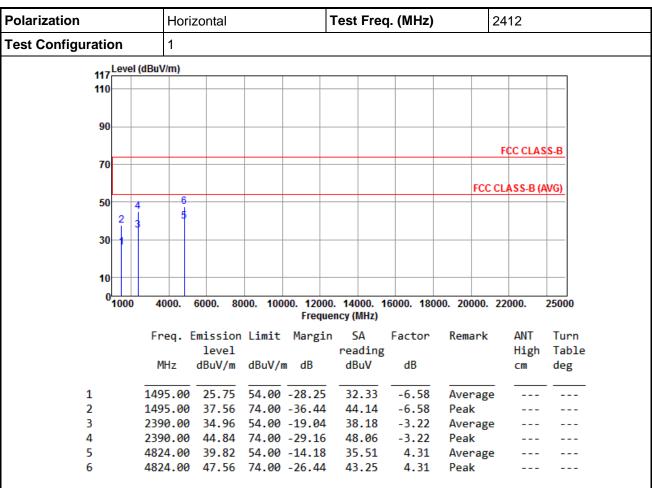
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

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

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



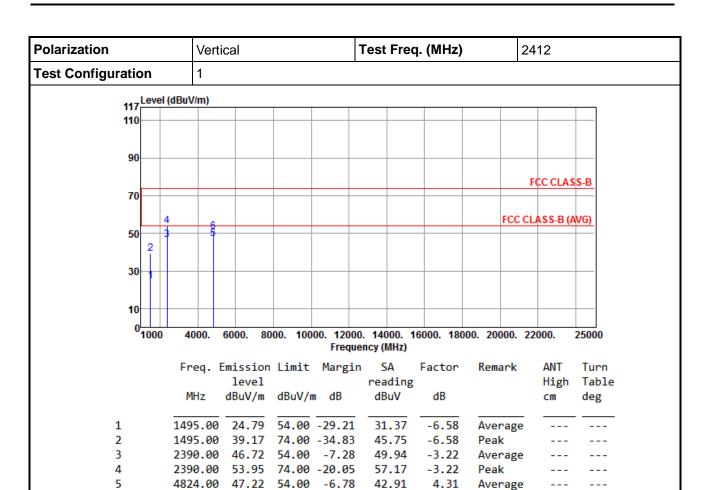
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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 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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6

4824.00

50.90

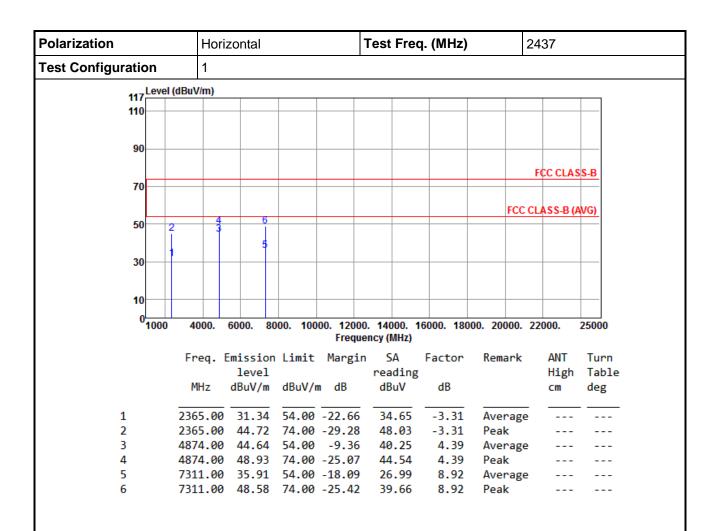
74.00 -23.10

46.59

4.31

Peak



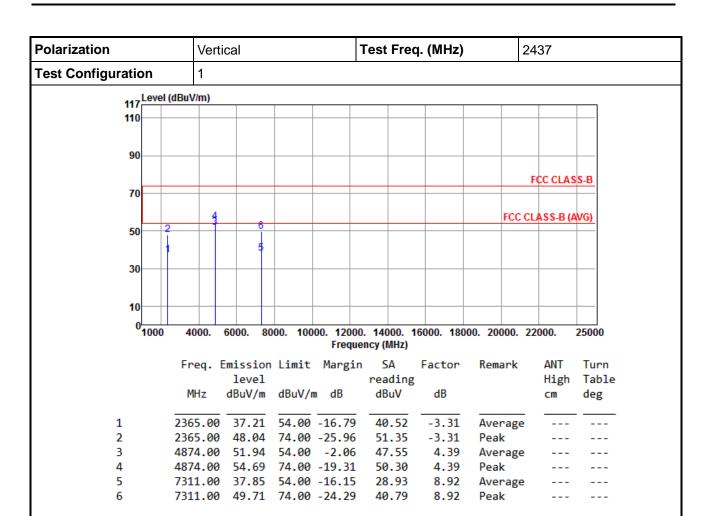


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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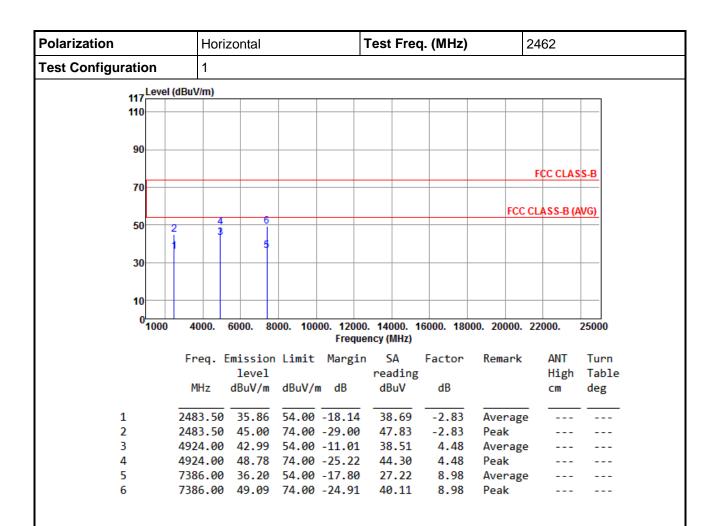


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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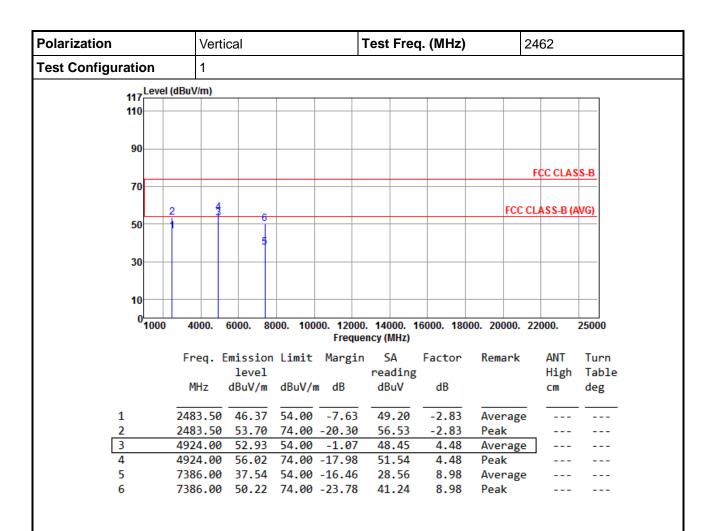


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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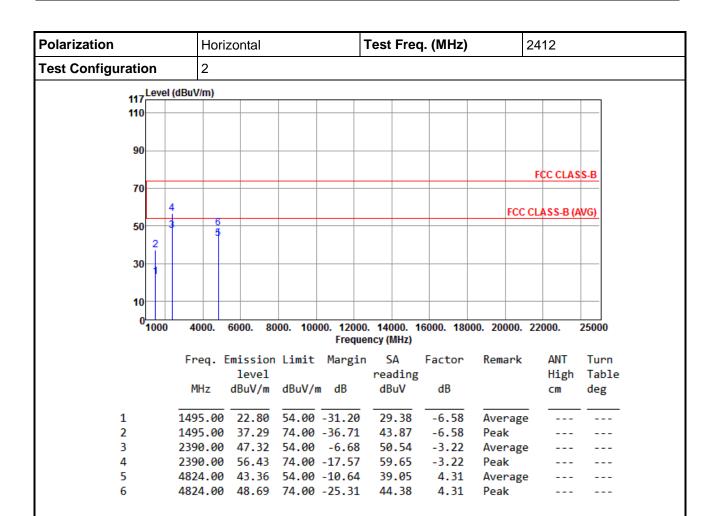


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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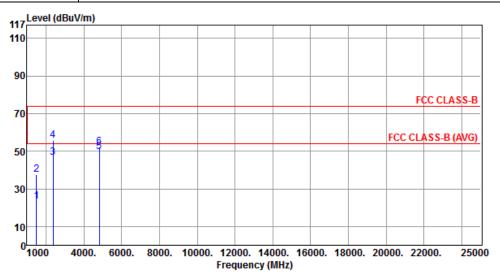
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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Polarization	Vertical	Test Freq. (MHz)	2412
Test Configuration	2		



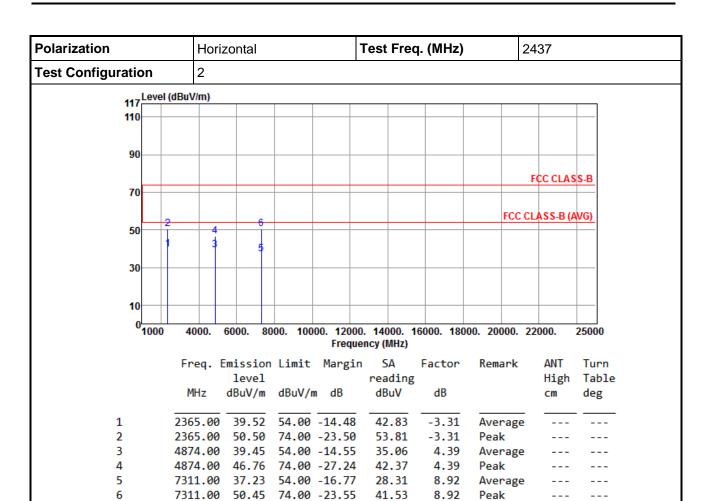
	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	1495 00	23.14	54 00	-30 86	29.72	-6.58	Average		
2		37.56			44.14	-6.58	Peak		
3	2390.00				49.68	-3.22	Average		
4	2390.00	55.60	74.00	-18.40	58.82	-3.22	Peak		
5	4824.00	49.57	54.00	-4.43	45.26	4.31	Average		
6	4824.00	52.26	74.00	-21.74	47.95	4.31	Peak		

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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Peak

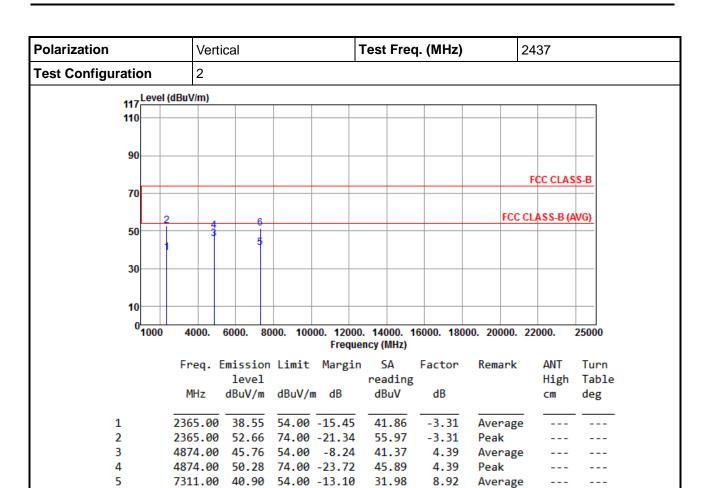
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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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8.92

Peak

7311.00 51.16 74.00 -22.84

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.

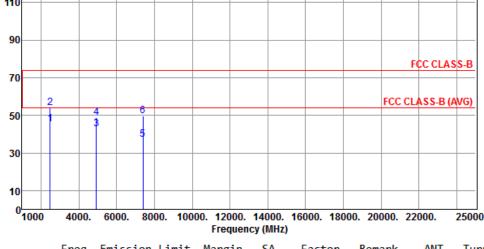
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Polarization		Horizo	Horizontal				Test Freq. (MHz)				2462		
Test Configuration		2											
117	uV/m)												
110													
90													
										F	CC CLAS	S-B	



	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2483.50	45.53	54.00	-8.47	48.36	-2.83	Average		
2		54.18			57.01	-2.83	Peak		
3	4924.00	42.55	54.00	-11.45	38.07	4.48	Average		
4	4924.00	48.61	74.00	-25.39	44.13	4.48	Peak		
5	7386.00	36.94	54.00	-17.06	27.96	8.98	Average		
6	7386.00	49.70	74.00	-24.30	40.72	8.98	Peak		

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

4

5

6

4924.00

4924.00

7386.00

7386.00

49.36

52.74

38.89

54.00 -4.64

74.00 -21.26

54.00 -15.11

50.32 74.00 -23.68

44.88

48.26

29.91

41.34

4.48

4.48

8.98

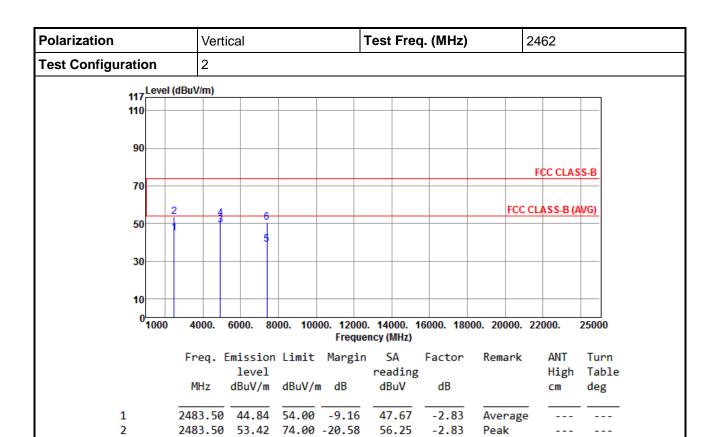
8.98

Average

Average

Peak

Peak



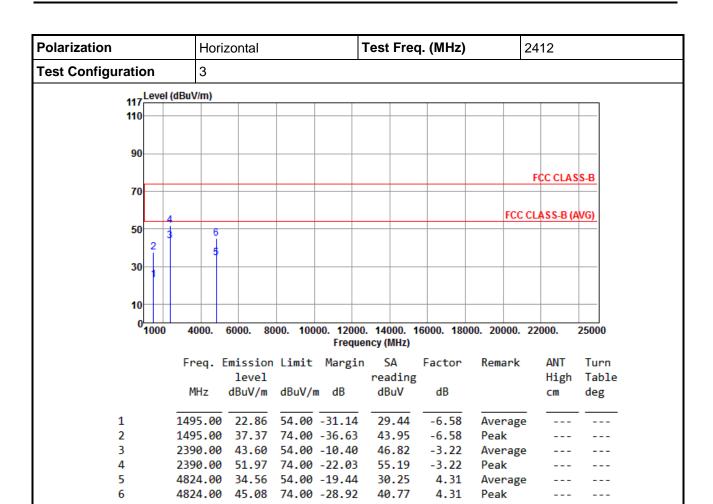
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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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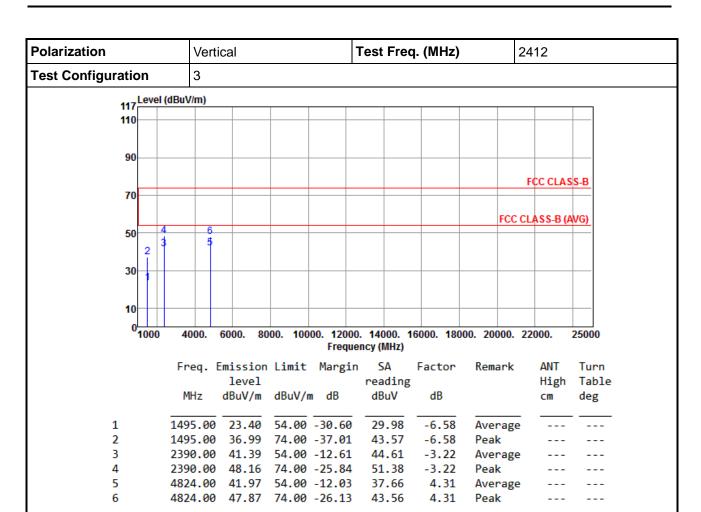


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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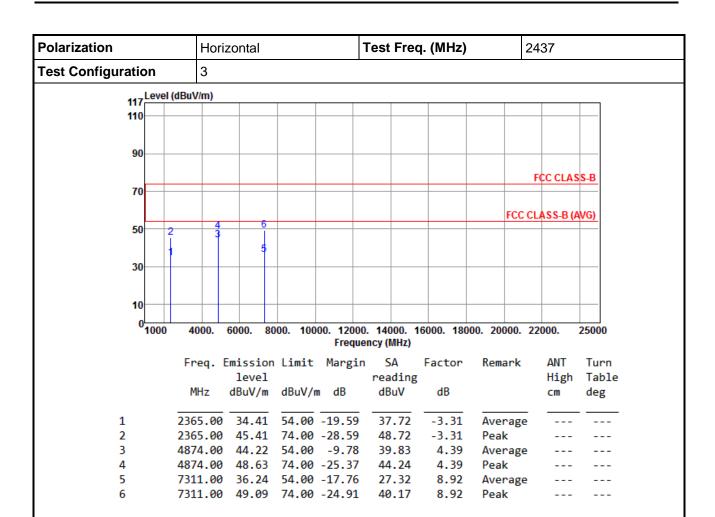


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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 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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5

6

7311.00

7311.00 47.96

36.33

54.00 -17.67

74.00 -26.04

27.41

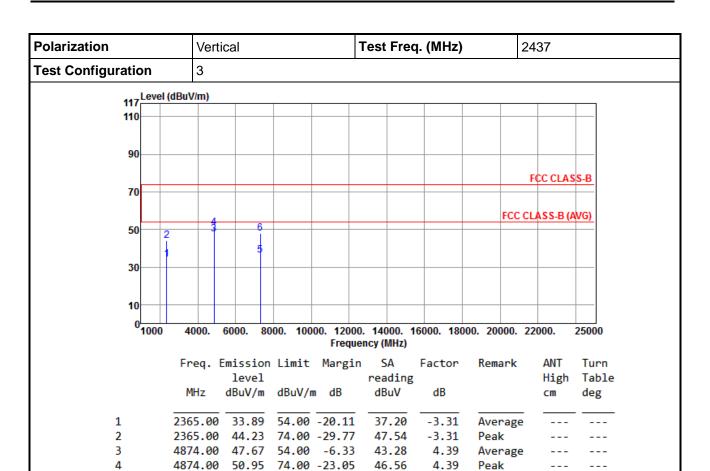
39.04

8.92

8.92

Average

Peak



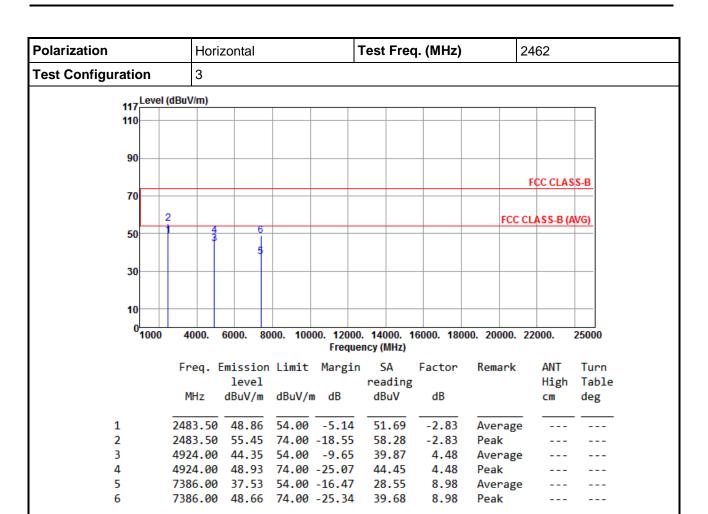
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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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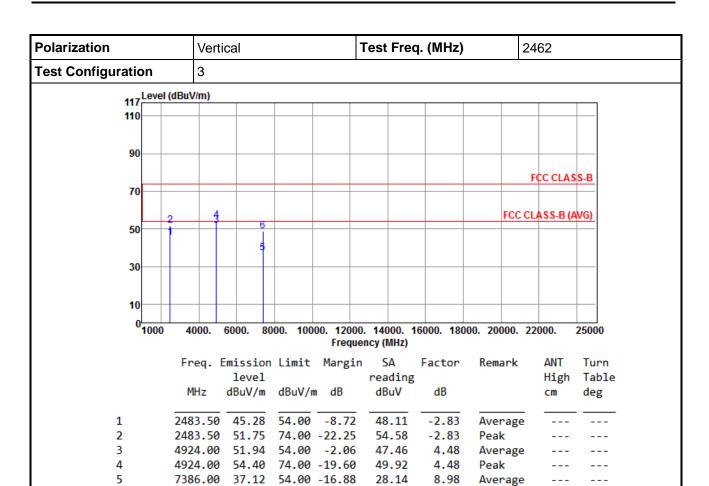


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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8.98

Peak

7386.00 48.70 74.00 -25.30

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.

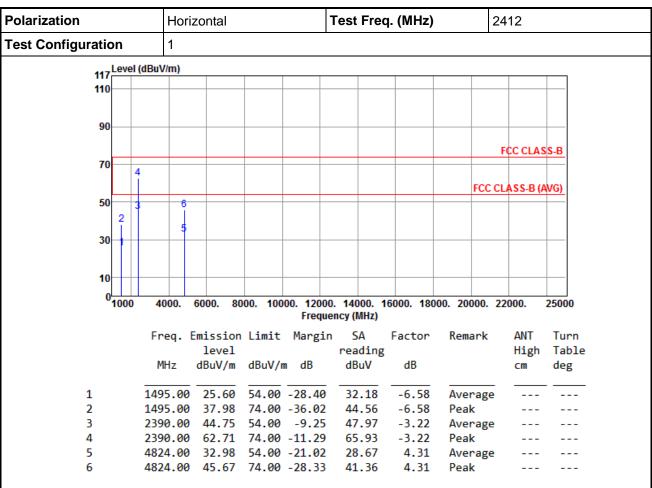
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3.5.6 Transmitter Radiated Unwanted Emissions (Above 1GHz) for 11g



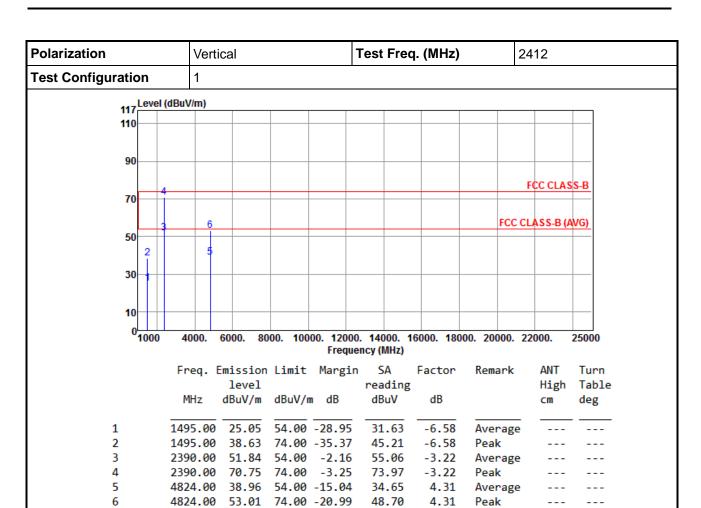
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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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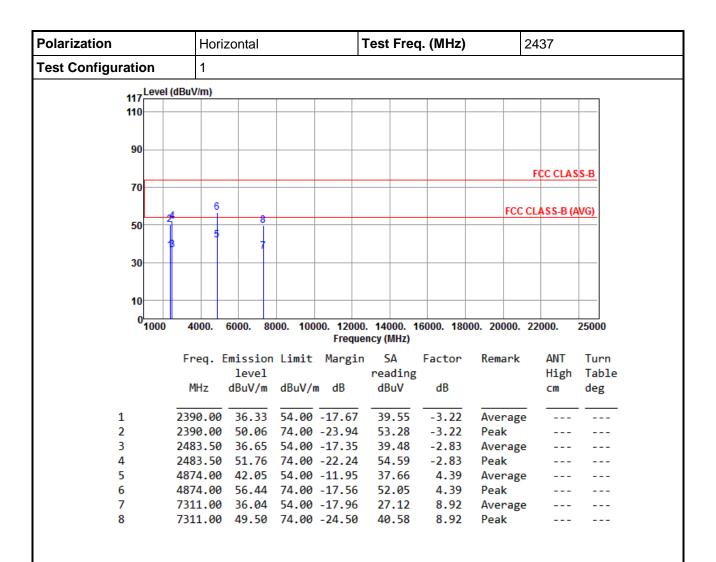


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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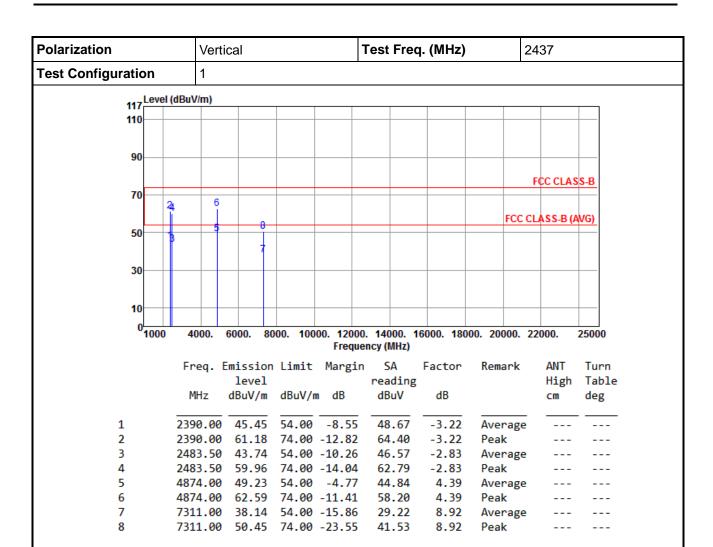


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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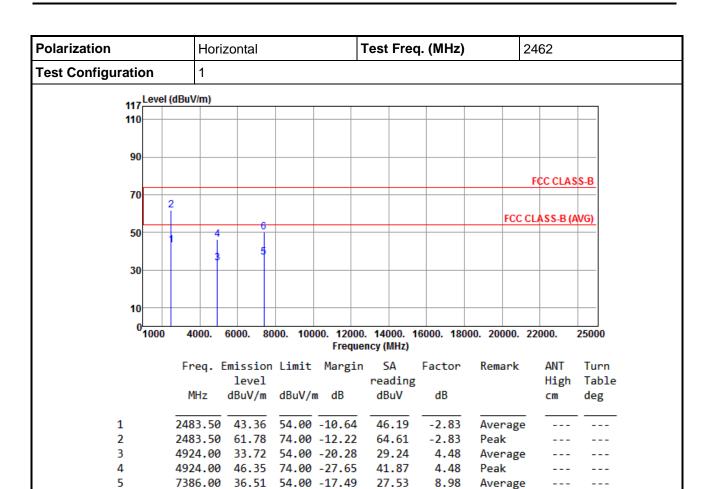


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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8.98

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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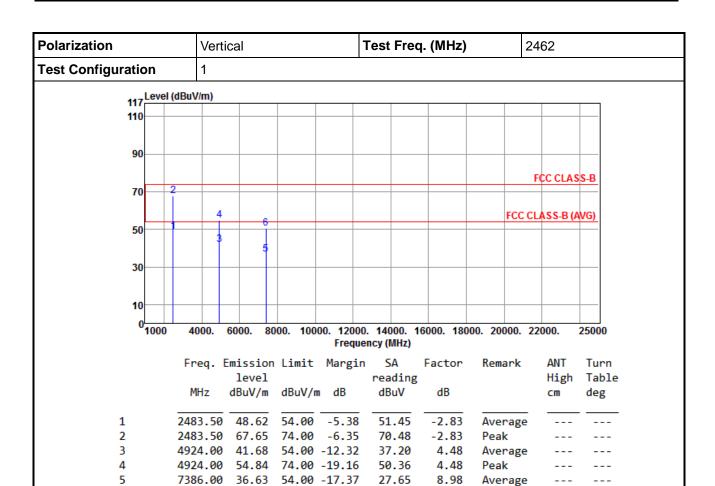
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7386.00

50.11 74.00 -23.89





8.98

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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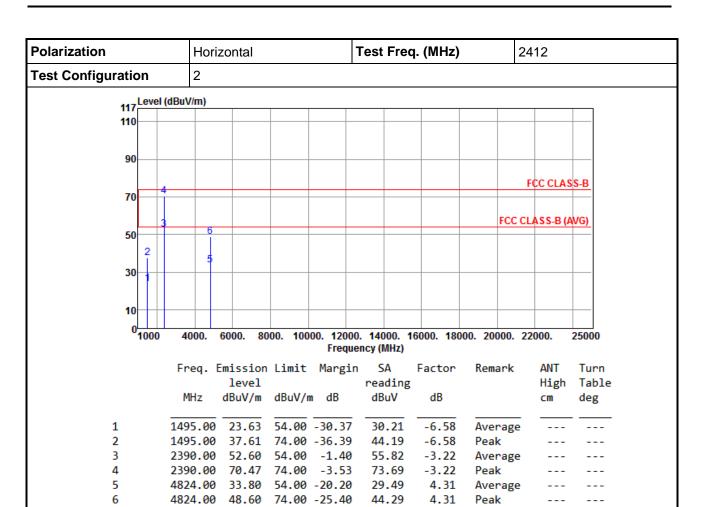
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7386.00

50.67 74.00 -23.33



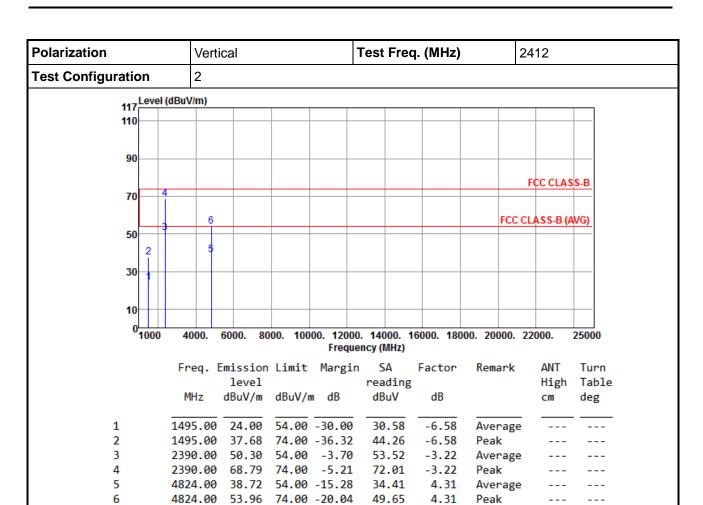


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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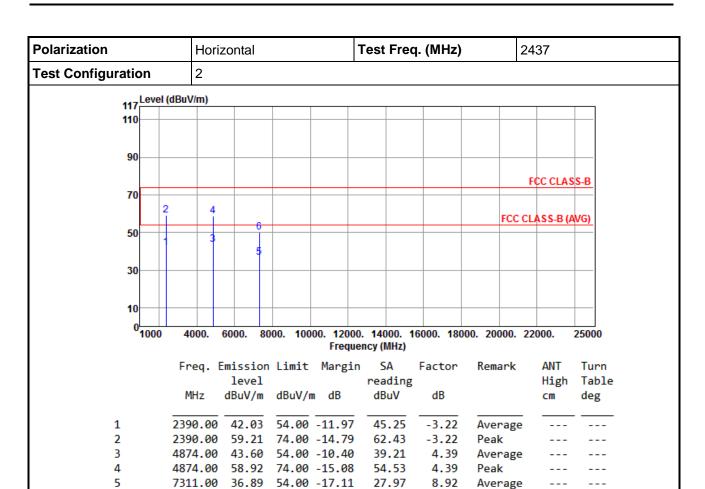


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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Peak

40.95

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

7311.00 49.87 74.00 -24.13

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.

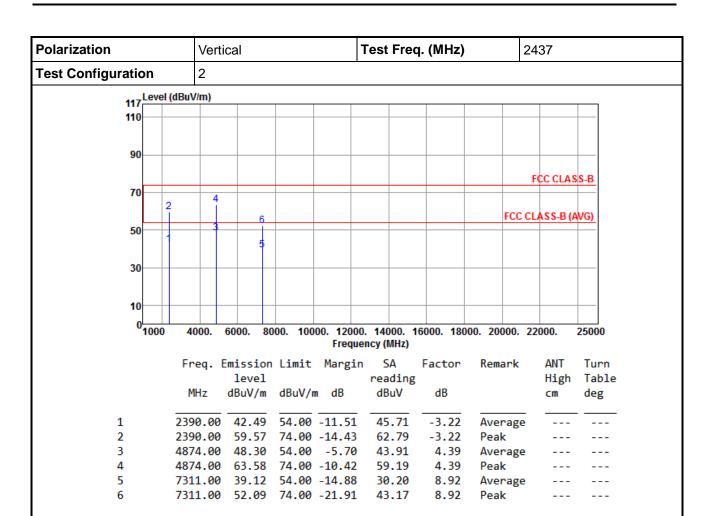
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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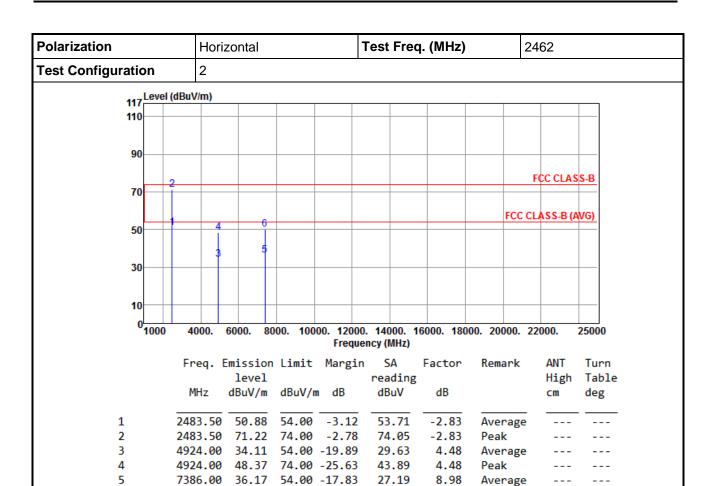


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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Peak

41.13

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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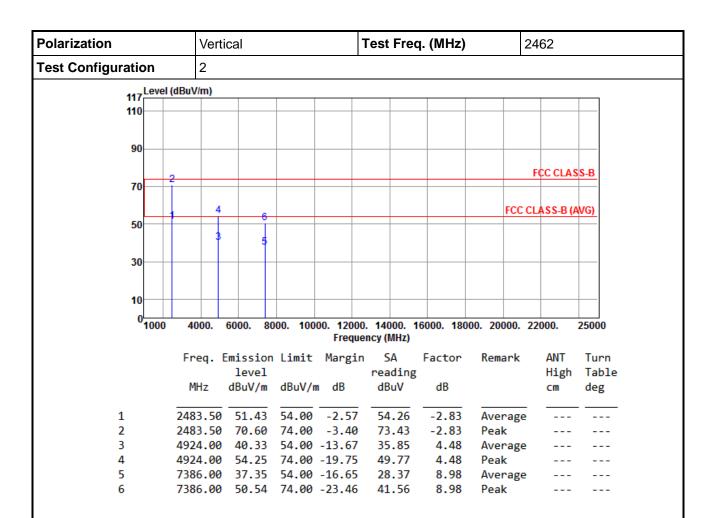
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7386.00

50.11 74.00 -23.89



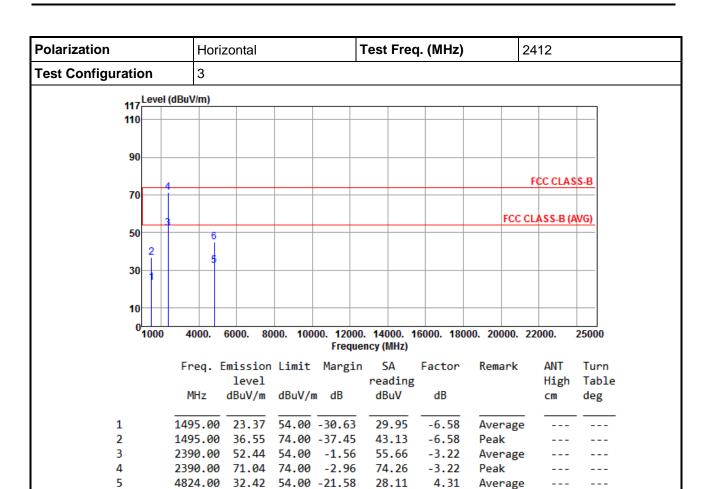


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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Peak

40.59

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

74.00 -29.10

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.

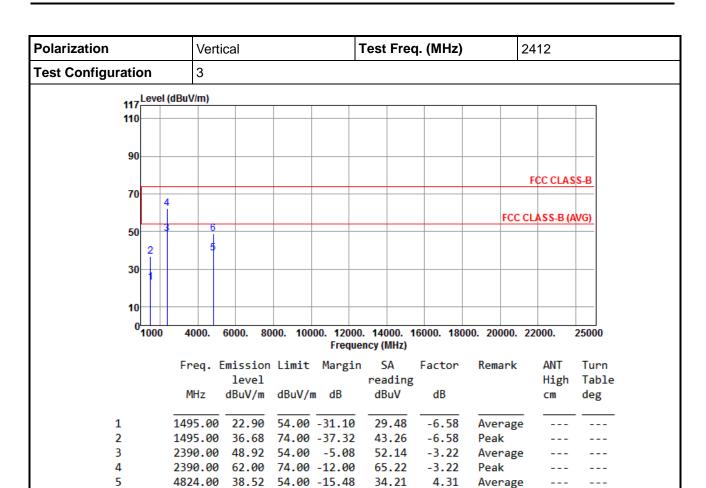
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6

4824.00 44.90





74.00 -25.34

4.31

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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6

4824.00 48.66



4

5

6

4874.00

7311.00

7311.00 49.15

51.74

35.98

74.00 -22.26

54.00 -18.02

74.00 -24.85

47.35

27.06

40.23

4.39

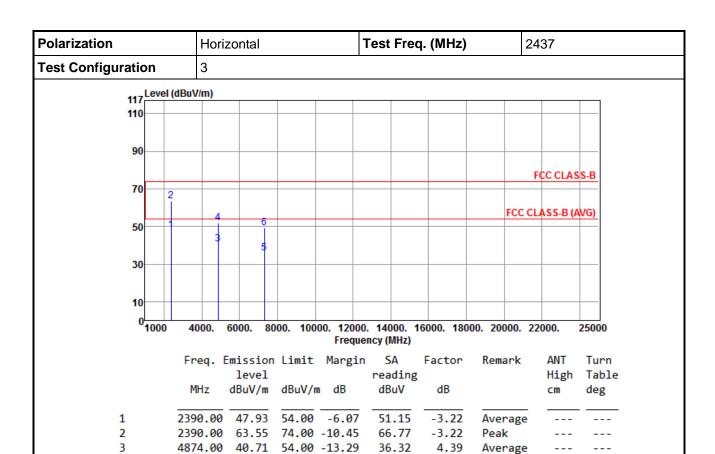
8.92

8.92

Peak

Peak

Average



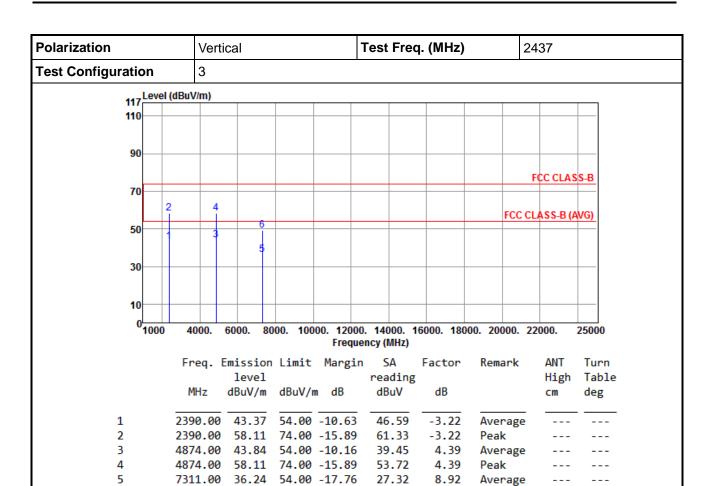
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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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8.92

Peak

7311.00 49.33 74.00 -24.67

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.

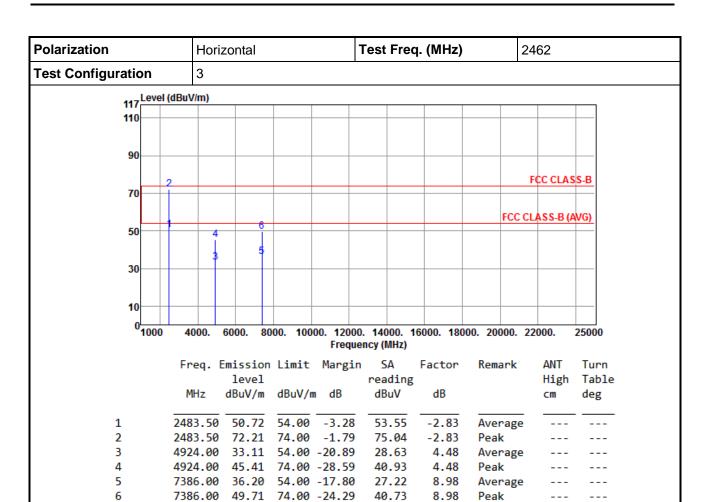
Note 3: For un-restricted bands, unwanted emissions shall be attenuated by at least 20 dB relative to the maximum measured in-band level.

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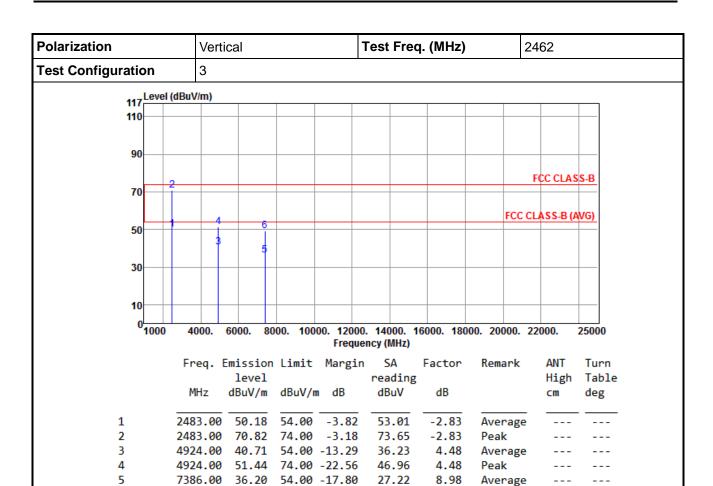


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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Peak

40.26

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

74.00 -24.76

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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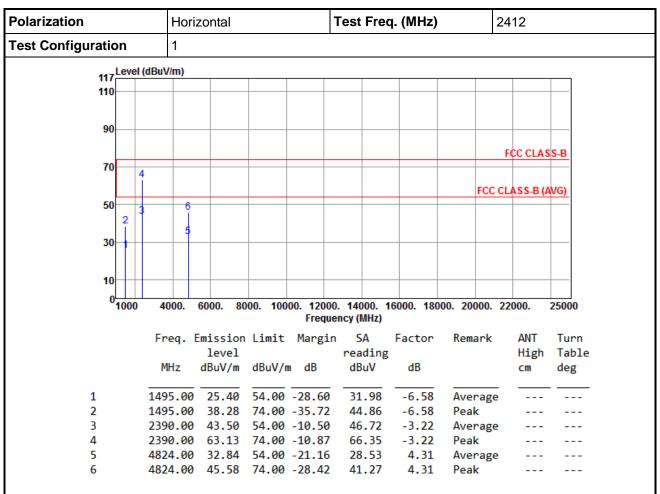
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6

7386.00 49.24



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



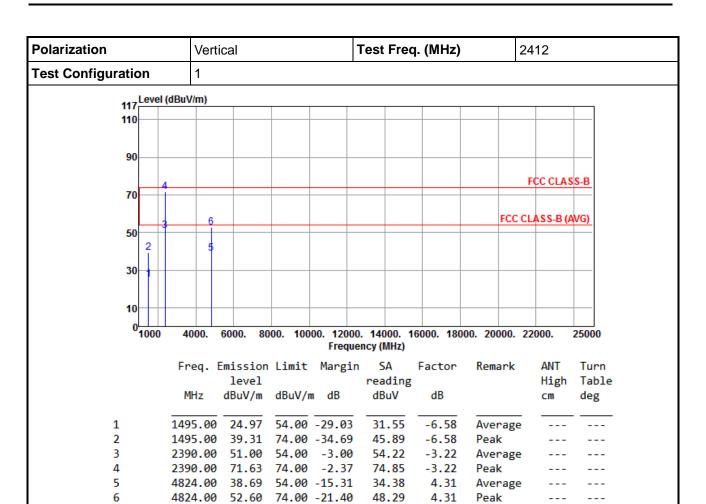
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

Note 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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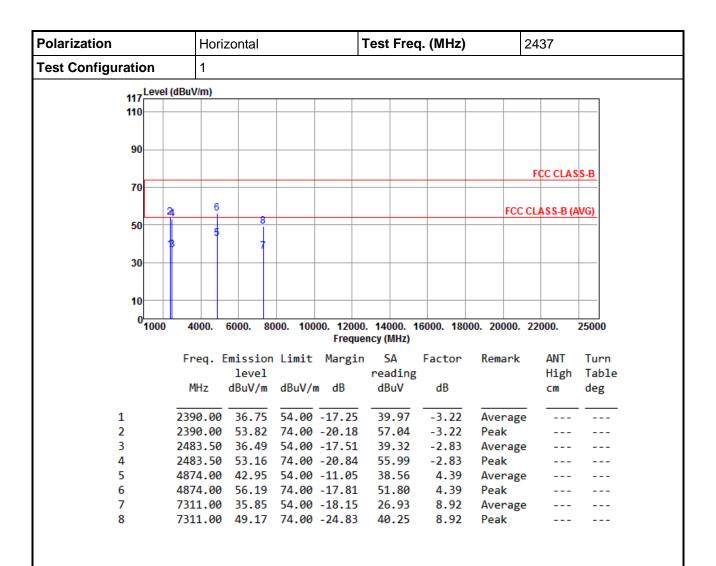


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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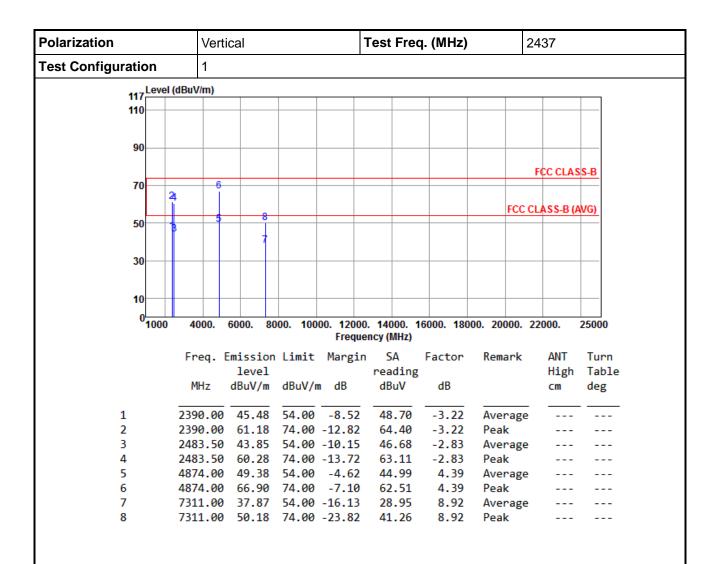


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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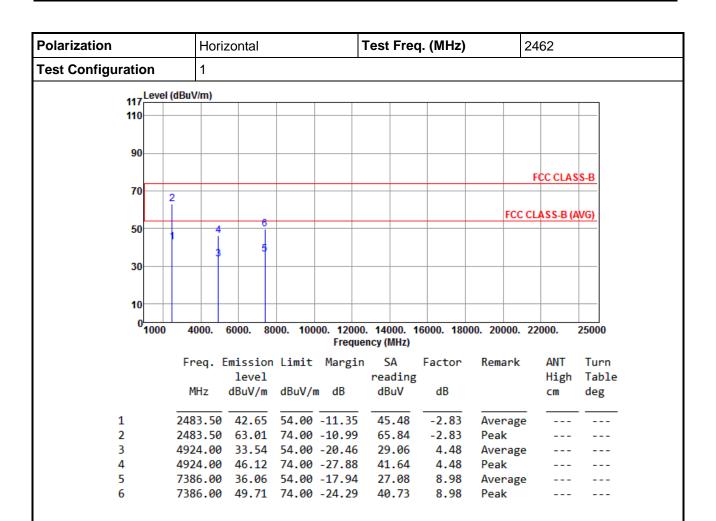


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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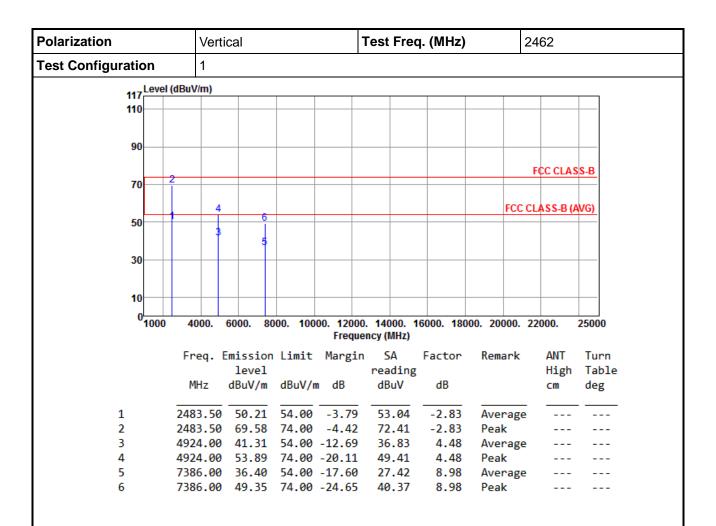


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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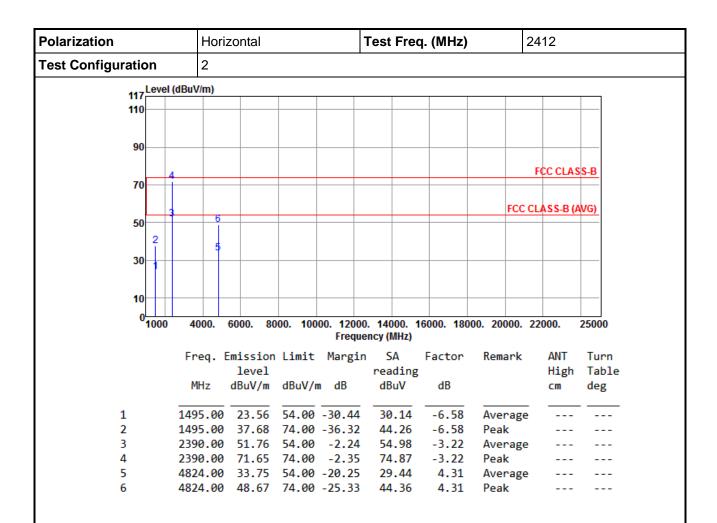


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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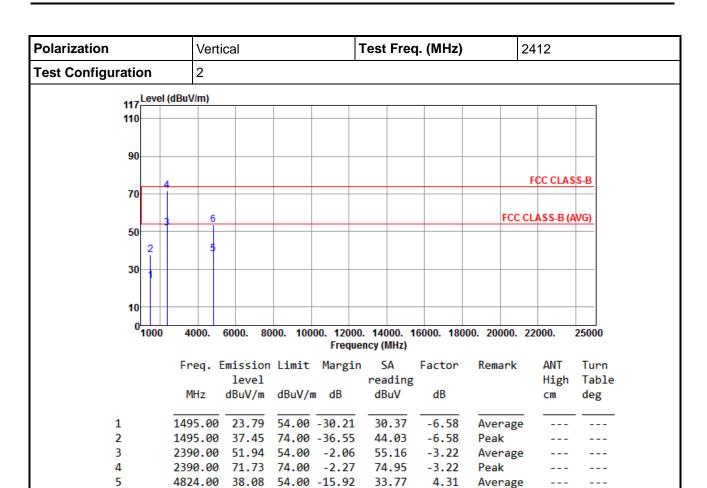


Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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Peak

49.19

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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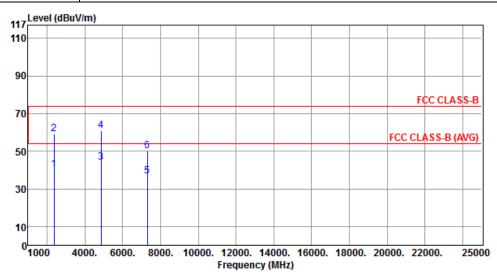
4824.00

53.50

74.00 -20.50



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



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Ū	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	10 13	54.00	_13 87	43.35	-3.22	Average		
2	2390.00		74.00		62.45	-3.22	Peak		
3	4874.00				39.56	4.39	Average		
4	4874.00		74.00		56.43	4.39	Peak		
5	7311.00		54.00		27.88	8.92	Average		
6	7311.00		74.00		41.19	8.92	Peak		

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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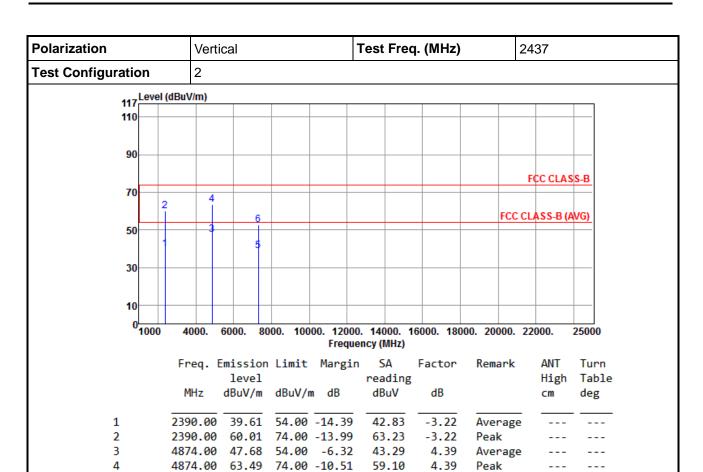


5

6

7311.00 38.78

7311.00 52.58 74.00 -21.42



54.00 -15.22

29.86

43.66

8.92

8.92

Average

Peak

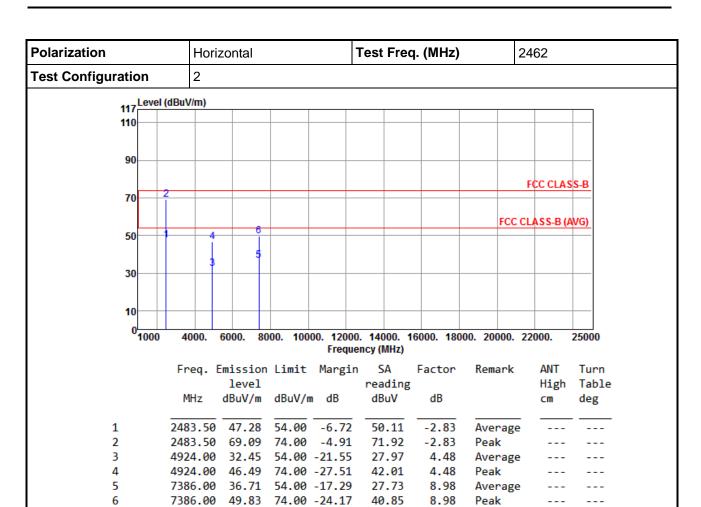
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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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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.





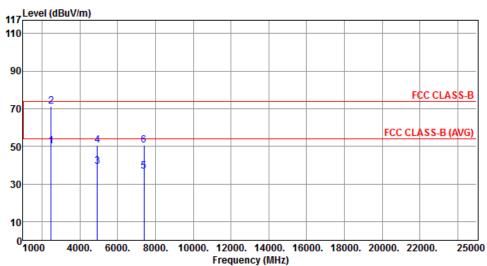
Note 2: For restricted bands, the peak measurement is fully sufficient, as the max field strength as measured with the Peak-Detector meets the AV-Limit so that the AV level does not need to be reported in addition.

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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Polarization	Vertical	Test Freq. (MHz)	2462
Test Configuration	2		



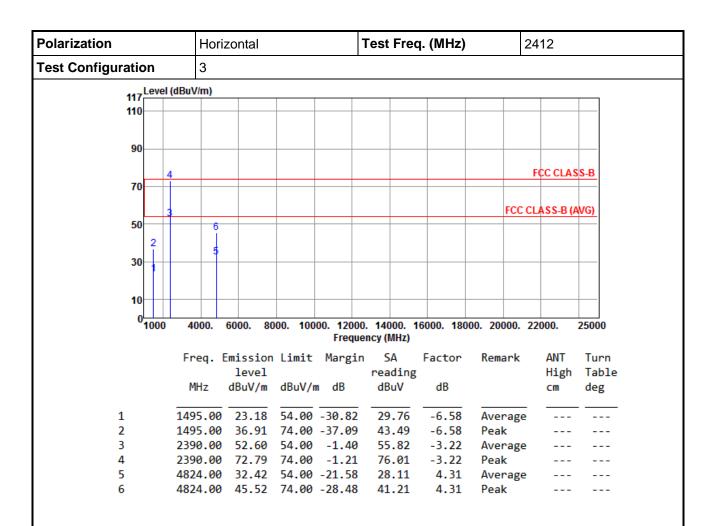
	Freq.	Emission level	Limit	Margin	SA reading	Factor	Remark	ANT High	Turn Table
	MHz	dBuV/m	dBuV/m	dB	dBuV	dB		cm	deg
1	2483.50	49.87	54.00	-4.13	52.70	-2.83	Average		
2	2483.50	71.31	74.00	-2.69	74.14	-2.83	Peak		
3	4924.00	39.49	54.00	-14.51	35.01	4.48	Average		
4	4924.00	50.44	74.00	-23.56	45.96	4.48	Peak		
5	7386.00	36.74	54.00	-17.26	27.76	8.98	Average		
6	7386.00	50.32	74.00	-23.68	41.34	8.98	Peak		

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 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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5

6

4824.00

38.57

4824.00 48.90 74.00 -25.10

54.00 -15.43

34.26

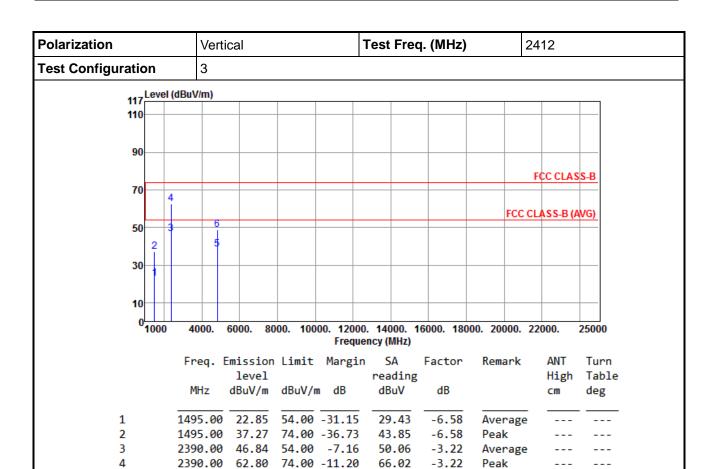
44.59

4.31

4.31

Average

Peak



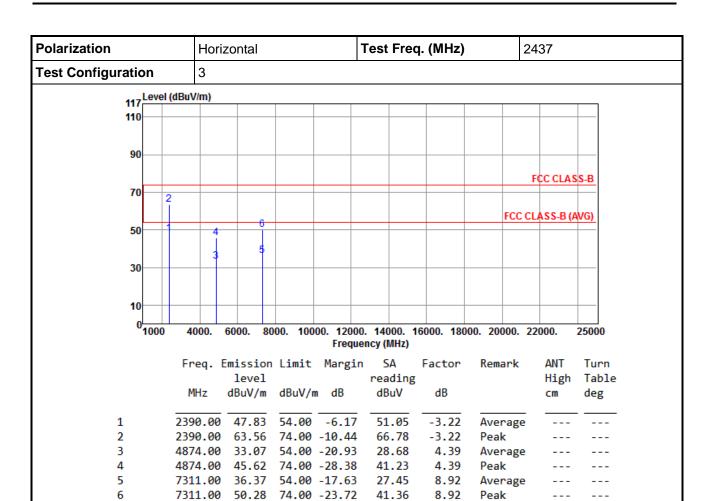
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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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Peak

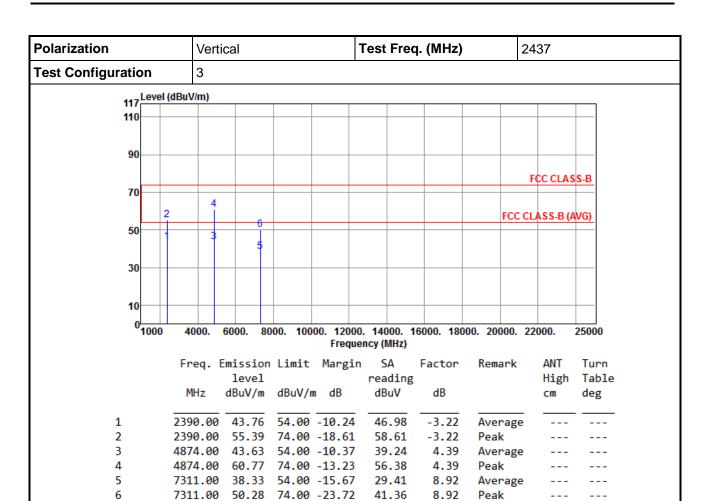
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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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Peak

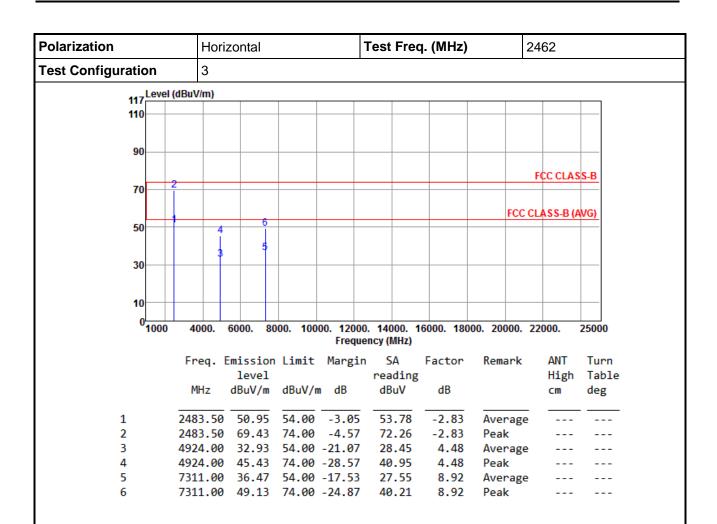
Note 1: ">20dB" means spurious emission levels that exceed the level of 20 dB below the applicable limit.

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 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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5

6

7386.00

7386.00 49.55

37.41

54.00 -16.59

74.00 -24.45

28.43

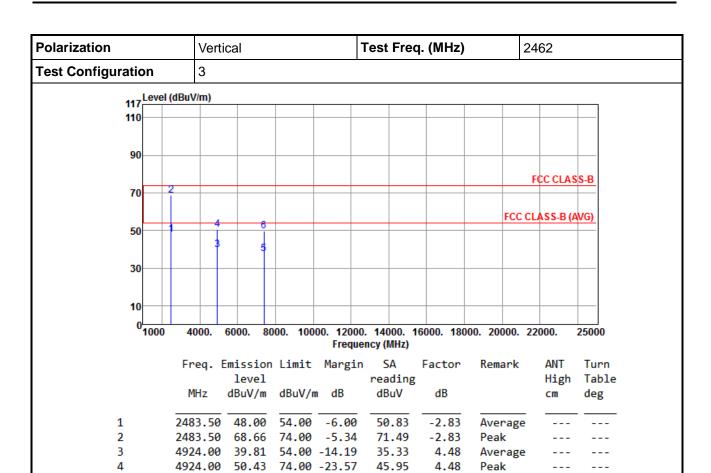
40.57

8.98

8.98

Average

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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3.6 Unwanted Emissions into Non-Restricted Frequency Bands

3.6.1 Limit of Unwanted Emissions into Non-Restricted Frequency Bands

\boxtimes	The peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band
	shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

The peak power in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.6.2 Test Procedures

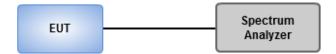
Reference Level Measurement

- 1. Set the RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
- 2. Set Sweep time = auto couple, Trace mode = max hold.
- 3. Allow trace to fully stabilize.
- 4. Use the peak marker function to determine the maximum amplitude level.

Unwanted Emissions Level Measurement

- 1. Set RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
- 2. Trace Mode = max hold, Sweep = auto couple.
- 3. Allow the trace to stabilize.
- Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

3.6.3 Test Setup



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3.6.4 Unwanted Emissions into Non-Restricted Frequency Bands for 11b

Test Configurati		ansimiler Ka	iuialeu bai	ideage Eilis	sions Resul			
Modulation		11b, chain 0		N _{TX}	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol
2390-2400	2412	90.17	2397.02	45.88	44.29	20	PK	Н
2390-2400	2412	100.66	2397.47	58.02	42.64	20	PK	V
2500-2690	2462	90.61	2522	33.06	57.55	20	PK	Н
2500-2690	2462	99.85	2522	40.51	59.34	20	PK	V
Lo	ow Banded	lge - H			Up Ban	dedge - H		
0 2310 2320. 2340.	2360. Frequency (MI	2380. 2400 Hz)). 2422	10 0 2452 2460. 247(500. 2510. 2520. lency (MHz)	2530. 2540.	255
	ow Banded	lae - V			Up Ban	dedge - V		
Lo	JW Danuet	.99 1						

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Test Configurati		ansmitter Ra	idiated Bai	naeage Emis	sions Result	<u> </u>		
Modulation	1	11b, chain 0		N _{TX}	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o]	[i] – [o] (dB)	Limit (dB)	Level Type	Pol
2390-2400	2412	101.95	2397.02	59.46	42.49	20	PK	Н
2390-2400	2412	102.43	2397.47	60.09	42.34	20	PK	V
2500-2690	2462	100.66	2520.6	39.87	60.79	20	PK	Н
2500-2690	2462	100.25	2513.3	38.35	61.9	20	PK	V
L	ow Banded	lge - H	I		Up Ban	dedge - H	1	I
30	parameter and produced his particular securities and	and the same of th		30	V Mariane	2 Vertakulungan permananan dipangkan	and the same of th	S-B (AVG)
and a commence of the comment	2360. Frequency (Mi	2380. 2400				500. 2510. 2520. ency (MHz)	2530. 2540	the system of
30 10 0 2310 2320. 2340.	2360. Frequency (MI	2380. 2400 Hz)		30	Frequ		2530. 2540	the second

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Test Configurati	ion 3							
Modulation		11b, chain 0		N _{TX}	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol
2390-2400	2412	100.39	2397.02	59.26	41.13	20	PK	Н
2390-2400	2412	97.2	2397.02	55.6	41.6	20	PK	V
2500-2690	2462	98.62	2522	38.42	60.2	20	PK	Н
2500-2690	2462	95.14	2506.8	36.4	58.74	20	PK	٧
Lo	ow Banded	lge - H			Up Ban	dedge - H		
10 0 2310 2320. 2340.	2360. Frequency (M	2380. 2400 Hz)). 2422	10 0 2452 2460. 247		500. 2510. 2520. uency (MHz)	2530. 2540.	255
Lo	ow Banded	lge - V			Up Ban	dedge - V		
117 Level (dBuV/m) 110		1 00	FCC CLASS B	117 110 90 70	L-Mummum		FCC CLASS.	:LASS-B

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3.6.5 Unwanted Emissions into Non-Restricted Frequency Bands for 11g

	Tr	ansmitter Ra	idiated Bai	ndedge Emis	sions Resul	t		
Test Configurat	ion 1							
Modulation	,	11g, chain 0		N _{TX}	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol
2390-2400	2412	89.13	2400	56.6	32.53	20	PK	Н
2390-2400	2412	99.26	2400	71.12	28.14	20	PK	V
2500-2690	2462	87.87	2500.1	36.99	50.88	20	PK	Н
2500-2690	2462	96.24	2501.1	41.98	54.26	20	PK	V
L	ow Banded	dge - H			Up Ban	dedge - H		
⁰ 23222330. 2340. 2350). 2360. 2370. Frequency (2380. 2390. 2400. MHz)	2410. 2422	⁰ 2452 2460. 241		2500. 2510. 2520. Juency (MHz)	2530. 2540	. 255
L	ow Banded	dge - V			Up Ban	dedge - V		
117 Level (dBuV/m)				117 Level (dBuV/m)				

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Test Configuration	1	ansimiler Ka	uialeu ba	ndedge Emis	Sions Resui			
Modulation		11g, chain 1		N _{TX}	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o]	[i] – [o] (dB)	Limit (dB)	Level Type	Pol
2390-2400	2412	98.25	2400	69.99	28.26	20	PK	Н
2390-2400	2412	97.36	2400	69.72	27.64	20	PK	V
2500-2690	2462	97.49	2501.1	43.84	53.65	20	PK	Н
2500-2690	2462	97.57	2500.4	44.28	53.29	20	PK	V
L	ow Banded	lge - H			Up Ban	dedge - H		
02310 2320. 2340.	2360. Frequency (N	2380. 240 MHz)	0. 2422	10 0 2452 2460. 2470		00. 2510. 2520. : ency (MHz)	2530. 2540.	2552
L	ow Banded	lge - V			Up Ban	dedge - V		

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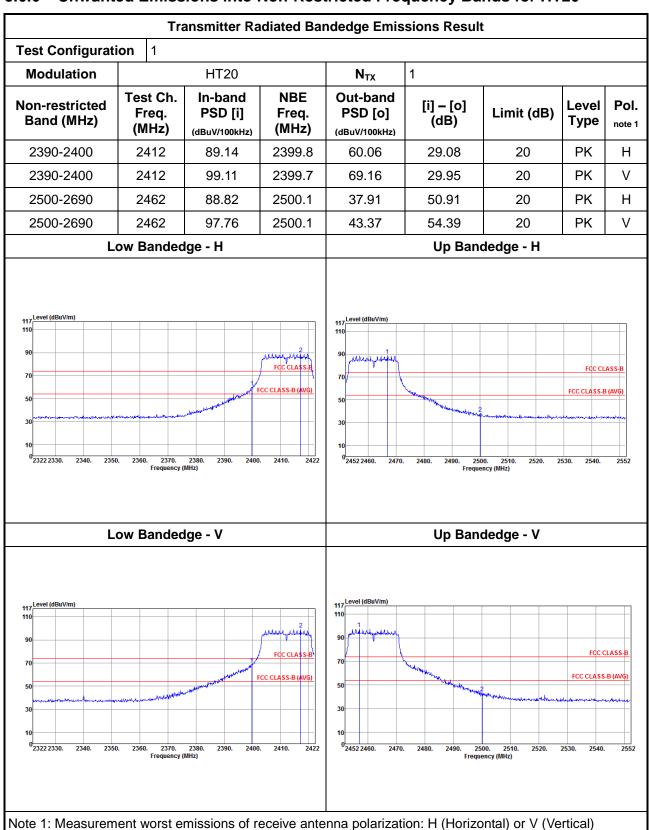


Test Configuration	on 3							
Modulation	·	11g, chain 1		N _{TX}	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol
2390-2400	2412	99.19	2400	70.88	28.31	20	PK	Н
2390-2400	2412	94.76	2399.94	65.39	29.37	20	PK	V
2500-2690	2462	96.99	2501.1	41.74	55.25	20	PK	Н
2500-2690	2462	93.19	2501.1	41.28	51.91	20	PK	V
Lo	w Banded	lge - H			Up Ban	dedge - H		
30		Molecular		10	The state of the s	The state of the s	et the state of th	Ke-Mander-
02310 2320. 2340.	2360. Frequency (N	2380. 240 NHZ)	00. 2422		70. 2480. 2490. Fred	2500. 2510. 2520. quency (MHz)	2530. 254	0. 25
10 0 2310 2320. 2340.	2360.	2380. 240 NHZ)	00. 2422	10 0 2452 2460. 241	70. 2480. 2490. Fred	2500. 2510. 2520.	2530. 254	0. 25
10 02310 2320. 2340.	2360. Frequency (N	2380. 240 NHZ)	00. 2422	10 0 2452 2460. 241	70. 2480. 2490. Fred	2500. 2510. 2520. quency (MHz)	2530. 254	0. 2
10 02310 2320. 2340.	2360. Frequency (N	2380. 240 NHZ)	2 American	10 02452 2460. 241	70. 2480. 2490. Fred	2500. 2510. 2520. quency (MHz)		
LO 117 Level (dBuV/m) 110	2360. Frequency (N	2380. 240 NHZ)	FCC CLASS-B	10 024522460. 241 117Level (dBuV/m) 110	70. 2480. 2490. Fred	2500. 2510. 2520. quency (MHz)	FCC	CLASS-
10 02310 2320. 2340.	2360. Frequency (N	2380. 240 NHZ)	2 American	10 0 2452 2460. 241 117 Level (dBuV/m) 110 90	70. 2480. 2490. Fred	2500. 2510. 2520. quency (MHz)		: CLASS-
LO 10 0 2310 2320. 2340.	2360. Frequency (N	2380. 240 NHZ)	FCC CLASS-B	10 02452 2460. 241	70. 2480. 2490. Fred	2500. 2510. 2520. quency (MHz)	FCC	: CLASS-
LO 117 Level (dBuV/m) 117 50	2360. Frequency (N	2380. 240 NHZ)	FCC CLASS-B (AVG)	10 024522460. 245 117 Level (dBuV/m) 110 90	70. 2480. 2490. Fred	2500. 2510. 2520. quency (MHz)	FCC	: CLASS-

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3.6.6 Unwanted Emissions into Non-Restricted Frequency Bands for HT20



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Test Configuration	on 2							
Modulation		HT20		N _{TX}	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol
2390-2400	2412	97.3	2399.6	68.51	28.79	20	PK	Н
2390-2400	2412	97.72	2399.71	69.71	28.01	20	PK	V
2500-2690	2462	96.73	2500.4	41.32	55.41	20	PK	Н
2500-2690	2462	97.3	2501.3	42.92	54.38	20	PK	V
Lc	ow Banded	lge - H			Up Band	dedge - H	•	
30		and department of the second		30	70 3400 3400	2	2520 251	War and Million
0 2310 2320. 2340.	2360. Frequency (M	2380. 240i	0. 2422	30	70. 2480. 2490. 2 Freq	2500. 2510. 2520. uency (MHz)	2530. 2544	0. 25
	2360. Frequency (M	2380. 240i	D. 2422	30	70. 2480. 2490. 2 Freq	dedge - V		CLASS-B

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	<u> </u>		idiated bai	ndedge Emis	Sions Resum	<u> </u>		
Test Configuration 3 Modulation HT20				N _{TX}	1			
Non-restricted Band (MHz)	Test Ch. Freq. (MHz)	In-band PSD [i] (dBuV/100kHz)	NBE Freq. (MHz)	Out-band PSD [o] (dBuV/100kHz)	[i] – [o] (dB)	Limit (dB)	Level Type	Pol
2390-2400	2412	99.02	2400	70.45	28.57	20	PK	Н
2390-2400	2412	93.31	2400	63.01	30.3	20	PK	V
2500-2690	2462	96.47	2503.3	42.84	53.63	20	PK	Н
2500-2690	2462	91.73	2503.4	40.68	51.05	20	PK	V
Low Bandedge - H				Up Bandedge - H				
0 <mark>2310 2320. 2340.</mark>	2360. Frequency (I	2380. 240 MHz)	00. 2422	0 2452 2460. 247		500. 2510. 2520. uency (MHz)	2530. 2540). 25
	ow Bandec	lge - V			Up Band	dedge - V		

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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

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

Tel: 886-3-271-8666

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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