

RF Test Report

Report No.: FCC_RF_SL21081301-ROK-006_2.4G_Rev 1.0

FCC ID: TC2-R1039

Test Model: RC-MC1

Series Model: N/A

Received Date: 08/05/2021

Test Date: 08/15/2021-11/16/2021

Issued Date: 11/24/2021

Applicant: Roku, Inc.

Address: 1155 Coleman Ave., San Jose, CA 95110 USA

Manufacturer: Roku, Inc.

Address: 1155 Coleman Ave., San Jose, CA 95110 USA

Issued By: Bureau Veritas Consumer Products Services, Inc.

Lab Address: 775 Montague Expressway, Milpitas, CA 95035

Test Location (1): 775 Montague Expressway, Milpitas, CA 95035

**FCC Registration /
Designation Number:** 540430

ISED# / CAB identifier: 4842D



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification. The report must not be used by the client to claim product certification, approval, or endorsement by A2LA or any government agencies.

Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 Summary of Test Results	5
2.1 Measurement Uncertainty.....	5
2.2 Modification Record.....	5
3 General Information	6
3.1 General Description of EUT	6
3.2 Description of Test Modes	7
3.2.1 Test Mode Applicability and Tested Channel Detail	8
3.3 Description of Support Units	9
3.3.1 Duty Cycle of Test Signal	10
3.4 General Description of Applied Standards	11
4 Test Types and Results.....	12
4.1 Radiated Emission and Bandedge Measurement.....	12
4.1.1 Limits of Radiated Emission and Bandedge Measurement.....	12
4.1.2 Test Instruments	13
4.1.3 Test Procedures	14
4.1.4 Deviation from Test Standard.....	14
4.1.5 Test Setup.....	15
4.1.6 EUT Operating Conditions	16
4.1.7 Test Results	17
4.2 Conducted Emission Measurement.....	44
4.2.1 Limits of Conducted Emission Measurement	44
4.2.2 Test Instruments	44
4.2.3 Test Procedures	45
4.2.4 Deviation from Test Standard.....	45
4.2.5 Test Setup.....	45
4.2.6 EUT Operating Conditions	45
4.2.7 Test Results	46
4.3 Conducted Output Power Measurement.....	47
4.3.1 Limits of Conducted Output Power Measurement.....	47
4.3.2 Test Setup.....	47
4.3.3 Test Instruments	47
4.3.4 Test Procedures	47
4.3.5 Deviation from Test Standard.....	47
4.3.6 EUT Operating Conditions	47
4.3.7 Test Results	48
5 Pictures of Test Arrangements.....	49
Appendix – Information on the Testing Laboratories	50

Release Control Record

Issue No.	Description	Date Issued
FCC_RF_SL21081301-ROK-006_2.4G	Original Release	11/15/2021
FCC_RF_SL21081301-ROK-006_2.4G_R1.0	Updated Section: 2 4.1.2 4.3.6	11/24/2021

1 Certificate of Conformity

Product: WiFi Remote Control

Brand: Roku, Inc.

Test Model: RC-MC1

Series Model: N/A

Sample Status: Engineering Sample

Applicant: Roku, Inc.

Test Date: 05/06/2021-11/16/2021

Standards: 47 CFR FCC Part 15, Subpart C (Section 15.247)
ANSI C63.10: 2013
KDB 558074 D01 15.247 Meas Guidance v05r02

The above equipment has been tested by **Bureau Veritas Consumer Products Services, Inc., Milpitas Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Francisco COLMENARES **Date:** 11/24/2021
Francisco COLMENARES / Test Engineer

Gary Chou
Approved by : _____ **Date:** 11/24/2021
Gary Chou / Engineer Reviewer

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (Section 15.247)			
RSS 247 Issue2, RSS Gen Issue5			
Standard	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	Not Performed	Note*
15.205 &15.209 & 15.247(d)	Radiated Emissions and Band Edge Measurement	PASS	Meet the requirement of limit.
15.247(a)(2)	6dB bandwidth & 99% bandwidth	Not Performed	Note*
15.247(b)	Conducted power	Pass	Meet the requirement of limit.
15.247(e)	Power Spectral Density	Not Performed	Note*
15.203	Antenna Requirement	PASS	The EUT uses a chip antenna and permanently attached to the device.

Note*:

Please refer FCC ID Report: TC2-R1039

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expanded Uncertainty (k=2) (\pm)
Conducted Emissions at mains ports	150kHz ~ 30MHz	3.51dB
Radiated Emissions up to 1 GHz	30MHz ~ 1GHz	3.73dB
Radiated Emissions above 1 GHz	1GHz ~ 6GHz	4.64dB
	6GHz ~ 18GHz	4.82dB
	18GHz ~ 40GHz	4.91dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	WiFi Remote Control
Brand	Roku, Inc.
Test Model	RC-MC1
Identification No. of EUT	N/A
Series Model	N/A
Status of EUT	Engineering Sample
Power Supply Rating	5Vdc powered by Adaptor/ 3.8Vdc powered by battery
Modulation Type	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
Modulation Technology	DSSS, OFDM
Transfer Rate	802.11b: up to 11Mbps 802.11g: up to 54Mbps 802.11n: up to 300Mbps
Operating Frequency	2.412 ~ 2.462GHz
Number of Channel	11 for 802.11b, 802.11g, 802.11n (HT20)
Antenna Type	Chip Antenna
Antenna Gain (dBi)	2412 MHz: -0.8 dBi 2437-2462MHz: 0.7 dBi
Antenna Connector	N/A

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

Channel	Frequency	Channel	Frequency
1	2412MHz	7	2442MHz
2	2417MHz	8	2447MHz
3	2422MHz	9	2452MHz
4	2427MHz	10	2457MHz
5	2432MHz	11	2462MHz
6	2437MHz		

Power setting is as below:

802.11b			802.11g		
Channel	Power Setting		Channel	Power Setting	
	Chain 0	Chain 1		Chain 0	Chain 1
1	73	73	1	72	72
6	66	66	6	65	65
11	66	66	11	65	65
802.11n					
Channel	Power Setting				
	Chain 0	Chain 1			
1	72	72			
6	65	66			
11	65	66			

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO				DESCRIPTION
	RE \geq 1G	RE $<$ 1G	PLC	APCM	
A	-	-	-	-	Powered by battery
B	√	√	-	√	Powered by adapter (Continue transmit)

Where RE \geq 1G: Radiated Emission above 1GHz & Bandedge Measurement
 RE $<$ 1G: Radiated Emission below 1GHz
 PLC: Power Line Conducted Emission
 APCM: Antenna Port Conducted Measurement

NOTE: The EUT had been pre-tested on the positioned of each 3 axis. The worst case was found when positioned on **Y-plane**.
NOTE: "-" means no effect.

Radiated Emission Test (Above 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
B	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
B	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

Radiated Emission Test (Below 1GHz):

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11n (20MHz)	1 to 11	6	OFDM	BPSK	6.5

Power Line Conducted Emission Test:

- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
-	802.11n (HT20)	1 to 11	6	OFDM	BPSK	6.5

Antenna Port Conducted Measurement:

- This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION TECHNOLOGY	MODULATION TYPE	DATA RATE (Mbps)
B	802.11b	1 to 11	1, 6, 11	DSSS	DBPSK	1
B	802.11g	1 to 11	1, 6, 11	OFDM	BPSK	6
B	802.11n (HT20)	1 to 11	1, 6, 11	OFDM	BPSK	6.5

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE \geq 1G	25deg. C, 65%RH	5Vdc	Francisco COLMENARES
RE<1G	25deg. C, 65%RH	5Vdc	Francisco COLMENARES
PLC	25deg. C, 68%RH	5Vdc	Francisco COLMENARES
APCM	21deg. C, 60%RH	5Vdc	Francisco COLMENARES

3.3 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Laptop	Dell	Latitude 3550	N/A	N/A	N/A
B.						
C.						
D.						
E.						
F.						
G.						

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	USB	1	0.2m	No	0	Connect from EUT to Laptop
2.	Data Cable	1	0.8m	Yes	0	Connect to Adaptor
3.						

3.3.1 Duty Cycle of Test Signal

Duty cycle of test signal is $\geq 98\%$, duty factor is not required.

Duty cycle of test signal is $< 98\%$, duty factor is required.

802.11b: Duty cycle = 100%

802.11g: Duty cycle = 100%

802.11n: Duty cycle = 100%

3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

47 CFR FCC Part 15, Subpart C (Section 15.247)

ANSI C63.10: 2013

558074 D01 15.247 Meas Guidance v05r02

All test items have been performed and recorded as per the above standards.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequencies (MHz)	Field Strength (microvolts/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

NOTE:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	DATE OF CALIBRATION	DUE DATE OF CALIBRATION
Biconilog Antenna Sunol	JB6	A111717	9/4/2020	9/4/2022
Horn Antenna ETS-Lindgren	3117	218554	4/21/2021	4/21/2022
Pre-Amplifier RF-Lambda	RAMP00M50GA	18040300055	5/7/2021	5/7/2022
PXA Signal Analyzer (Keysight)	N9030B	MY57140100	07/22/2020	07/22/2022
SMA Fixed Attenuator (50ohms, 2w, 30dB, DC- 6GHz)	VAT-03W2+	n/a	07/21/2020	07/21/2022
FSB Antenna Cable, 0.5m (Microwave Town)	FSB360PK-KMKM- 00.50M	201906110002	07/21/2020	07/21/2022
FSB Antenna Cable, 4m (Microwave Town)	FSB360PK-KMKM- 400M	21030447-002	07/21/2020	07/21/2022
10m Semi-Anechoic Chambe (ETS-Lindgren)	S2010BL8X8	1462	07/21/2020	07/21/2022
Notch Filters MICRO-TRONICS	BRM50705	041	07/21/2020	07/21/2022
Loop Antenna	N/A	00049120	11/25/2020	11/25/2021
Power Meter ETS-LINDGREN	7002-006	13I00030SNO82	01/16/2020	01/16/2023

4.1.3 Test Procedures

For Radiated emission below 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Quasi-Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9 kHz at frequency below 30MHz.

For Radiated emission above 30MHz

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.
- f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

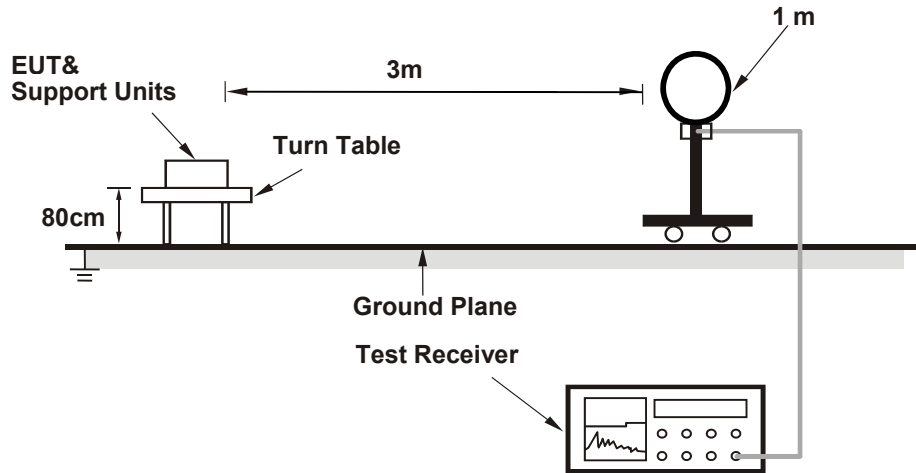
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120 kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle < 98%) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
4. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

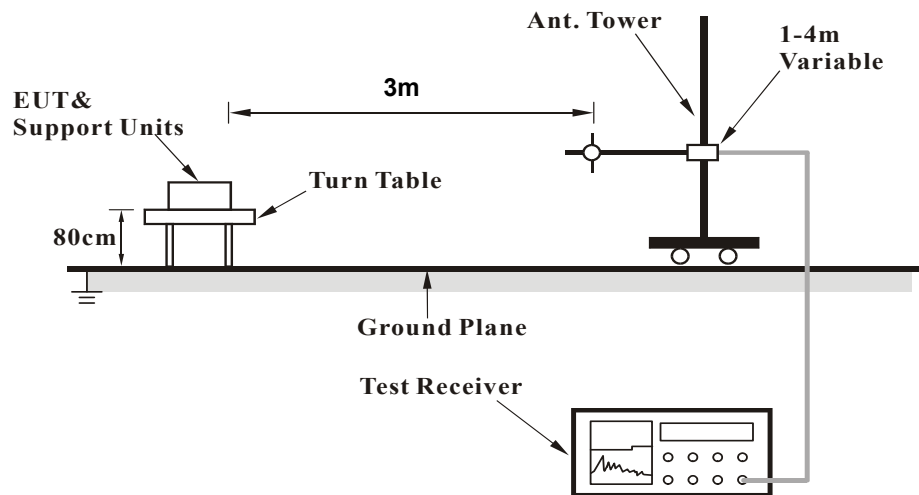
No deviation.

4.1.5 Test Setup

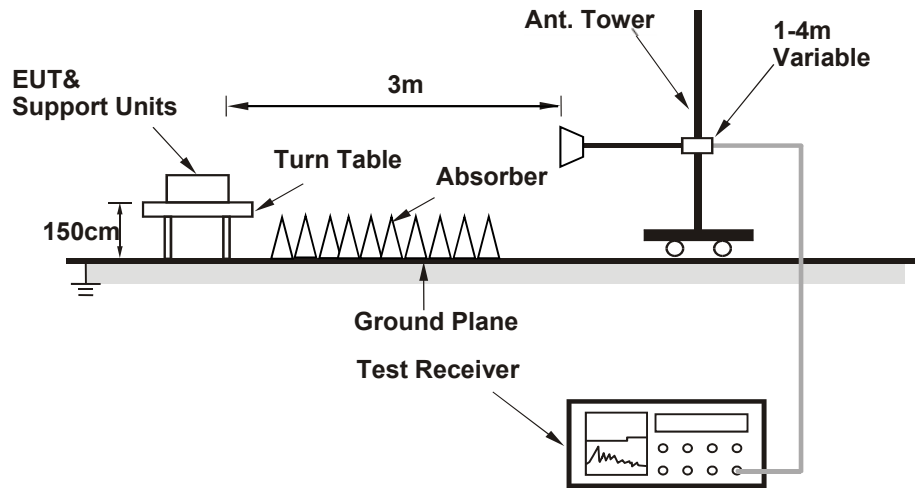
For Radiated emission below 30MHz



For Radiated emission 30MHz to 1GHz



For Radiated emission above 1GHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

- a. Connected the EUT with the Notebook Computer which is placed on remote site.
- b. Controlling software has been activated to set the EUT on specific status.

4.1.7 Test Results

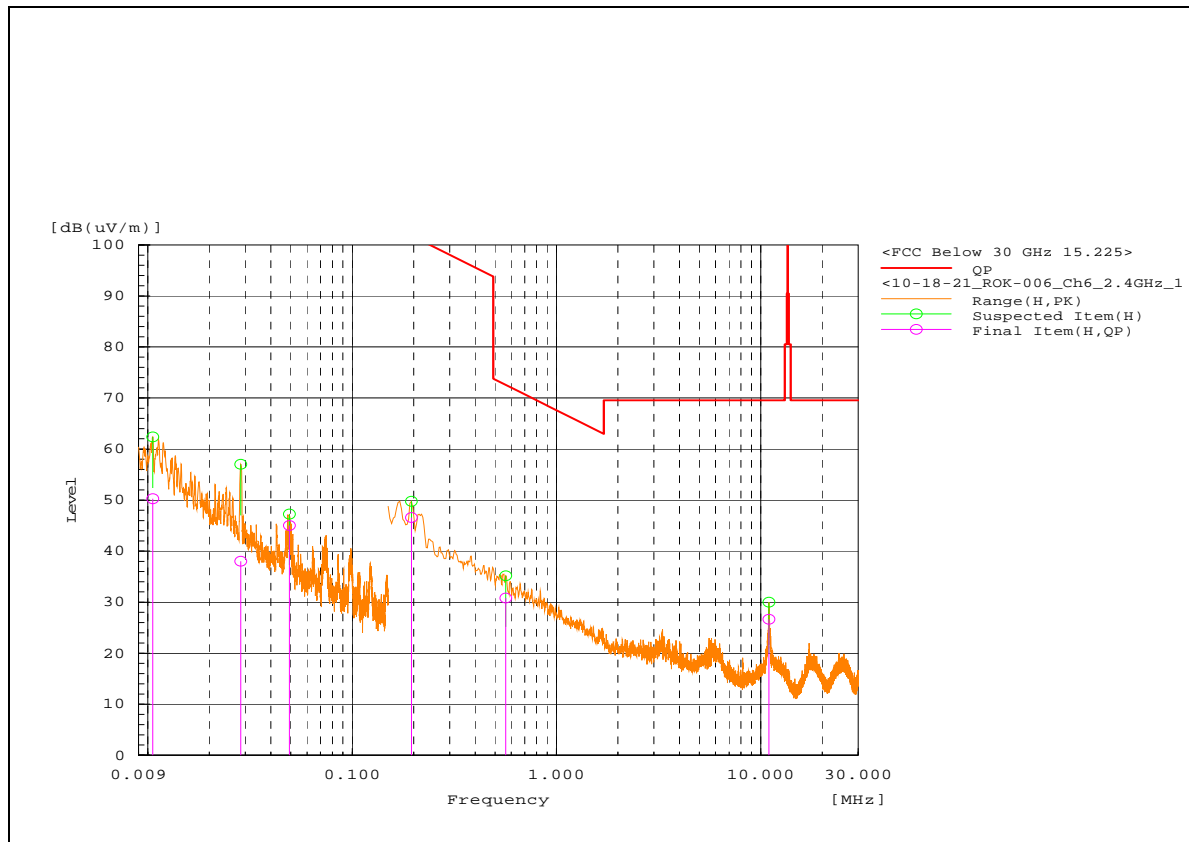
BELOW 30MHz WORST-CASE DATA:

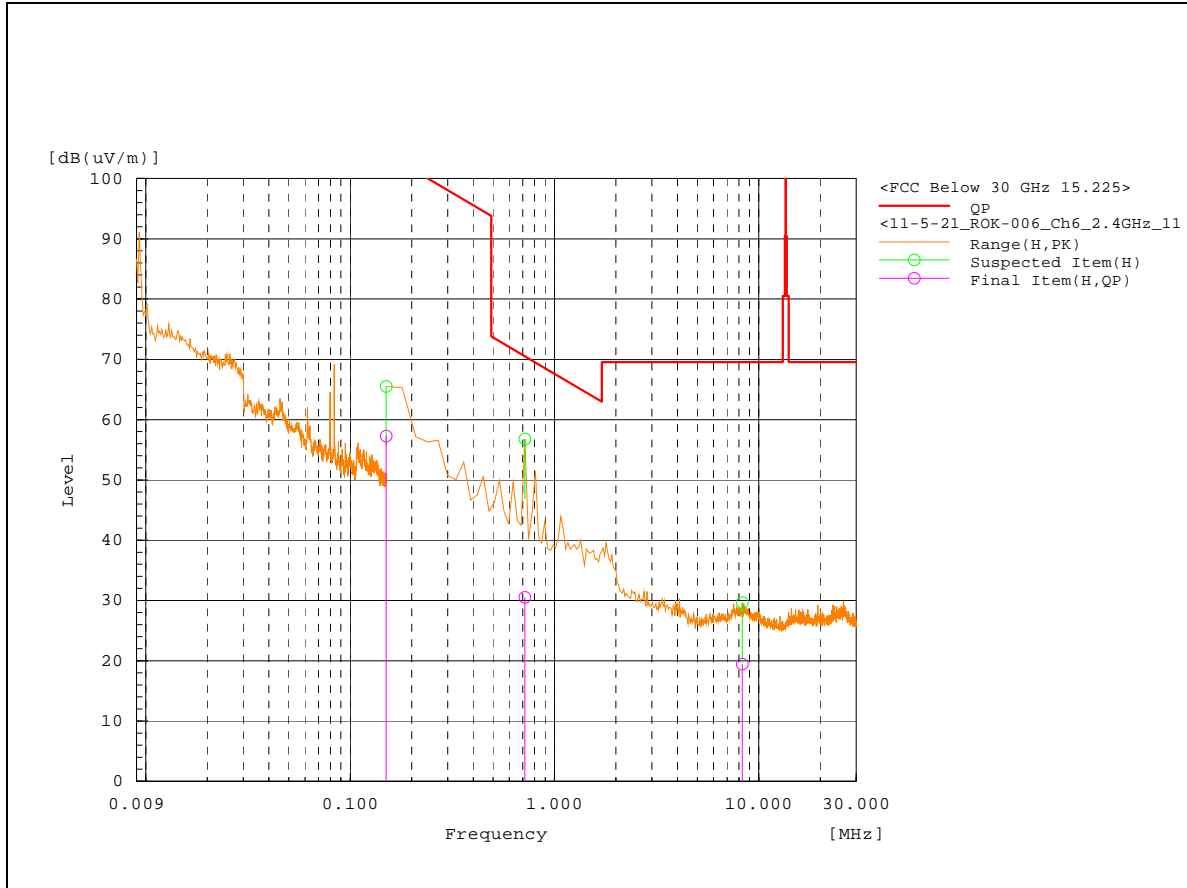
CHANNEL	802.11n Channel 6	DETECTOR FUNCTION	Quasi Peak
FREQUENCY RANGE	9KHz-30MHz		

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m- 0 Degree										
No.	Frequency (MHz)	Degree (0/90)	Reading QP [dB(uV)]	Factor [dB(1/m)]	Level QP [dB(uV/m)]	LimitQP dB(uV/m)	Margin QP [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	0.011	0	-1.1	51.4	50.3	127.1	76.8	100	41.1	Pass
2	0.028	0	-5.9	43.9	38	118.5	80.5	100	276.5	Pass
3	0.049	0	6.5	38.5	45	113.7	68.7	100	158	Pass
4	0.195	0	20.2	26.4	46.6	101.8	55.2	100	146.9	Pass
5	0.565	0	13.4	17.4	30.8	72.6	41.8	100	0	Pass
6	10.962	0	24.5	2.1	26.6	69.5	42.9	100	211.3	Pass

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Preamplifier Gain (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.





CHANNEL	802.11n Channel 6	DETECTOR FUNCTION	Quasi Peak
FREQUENCY RANGE	9KHz-30MHz		

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m- 90 Degree										
No.	Frequency (MHz)	Degree (0/90)	Reading QP [dB(uV)]	Factor [dB(1/m)]	Level QP [dB(uV/m)]	Limit\QP dB(uV/m)	Margin QP [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	0.717	90	-18.3	48.8	30.5	70.5	40	100	146.6	Pass
2	0.15	90	-4	61.3	57.3	104.1	46.8	100	303.6	Pass
3	8.299	90	-16.5	35.9	19.4	69.5	50.1	100	165.1	Pass

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Preamplifier Gain (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.

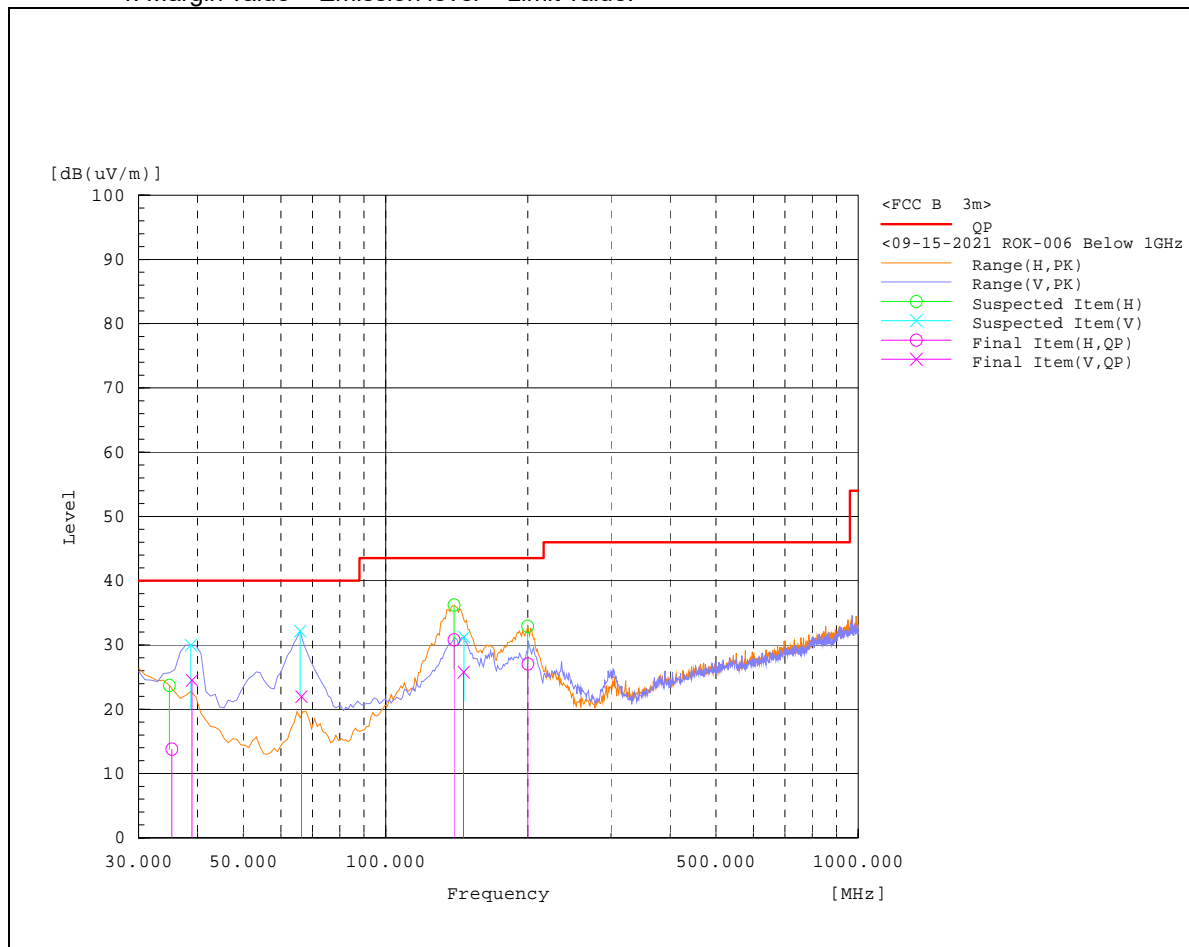
BELOW 1GHz WORST-CASE DATA:

CHANNEL	802.11n Channel 6	DETECTOR FUNCTION	Quasi Peak
FREQUENCY RANGE	30MHz – 1GHz		

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m										
No.	Frequency (MHz)	Polarization (H/V)	Reading QP [dB(uV)]	Factor [dB(1/m)]	Level QP [dB(uV/m)]	Limit\QP dB(uV/m)	Margin QP [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	35.27	H	-9.4	23.2	13.8	40	26.2	228	224.7	Pass
2	38.946	V	5.3	19.2	24.5	40	15.5	99	165.5	Pass
3	66.36	V	8.9	13.1	22	40	18	176	213	Pass
4	139.61	H	11.7	19.1	30.8	43.5	12.7	285	82.6	Pass
5	146.206	V	6.7	19.1	25.8	43.5	17.7	99	168.5	Pass
6	199.956	H	7.9	19.2	27.1	43.5	16.4	181	277	Pass

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Preamplifier Gain (dB).
3. The emission levels of other frequencies were less than 20dB margin against the limit.
4. Margin value = Emission level – Limit value.



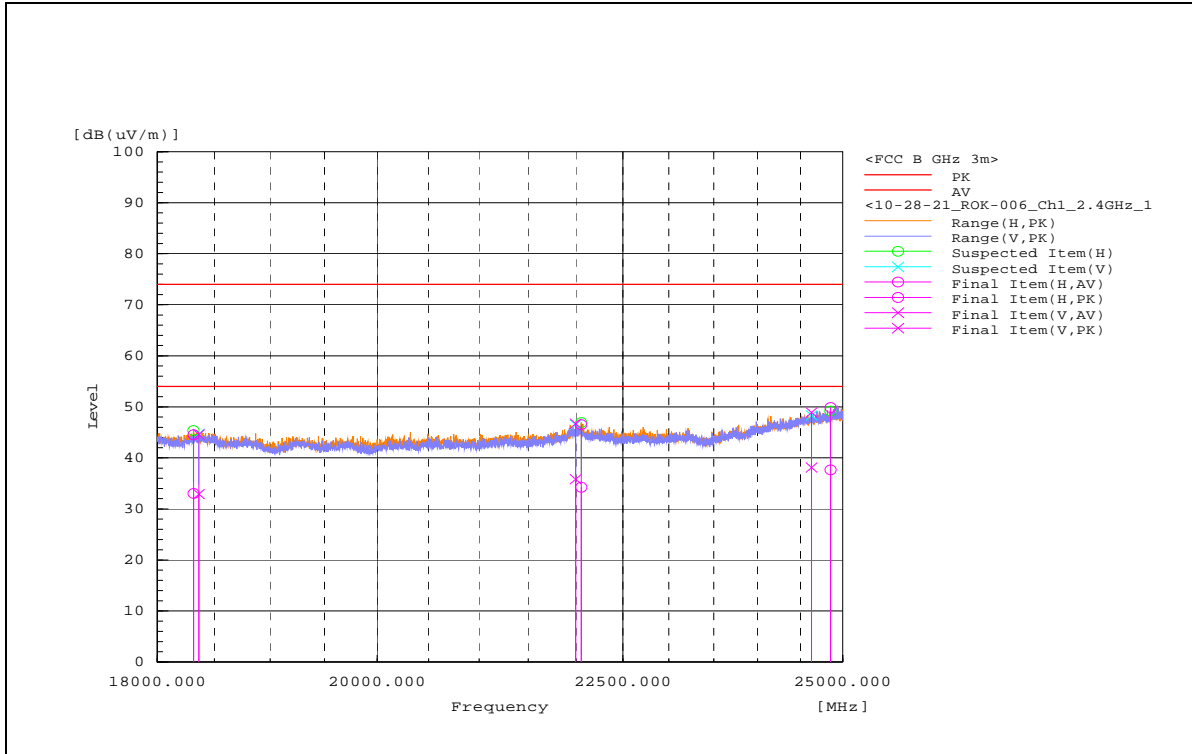
Above 1GHz Test Data:

Above 1GHz-18GHz – 802.11b – 2412 MHz

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No.	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	1333.86	H	44.2	55.6	-16.3	27.9	39.3	54	74	26.1	34.7	314	63.7	Pass
2	2569.748	H	40.3	53.3	-10.8	29.5	42.5	-	-	-	-	283	217.2	-
3	2628.652	V	40.3	52.5	-10.6	29.7	41.9	-	-	-	-	291	294.9	-
4	10656.32	V	26.5	38.2	5.5	32	43.7	54	74	22	30.3	177	2.3	Pass
5	17262.51	H	21.1	32.9	15.3	36.4	48.2	-	-	-	-	223	47.5	-
6	17278.19	V	21.2	32.8	15.2	36.4	48	-	-	-	-	147	11.9	-
7	18315.29	H	18	29.5	15	33	44.5	54	74	21	29.5	100	197	Pass
8	18360.94	V	18	29.7	14.9	32.9	44.6	54	74	21.1	29.4	374	202.1	Pass
9	21996.44	V	20.9	31.8	14.9	35.8	46.7	-	-	-	-	283	265	-
10	22055.54	H	19.3	31.6	14.9	34.2	46.5	54	74	19.8	27.5	367	33.4	Pass
11	24628.81	V	20.5	31.3	17.6	38.1	48.9	-	-	-	-	103	197.3	-
12	24853.9	H	19.9	32.2	17.7	37.6	49.9	-	-	-	-	238	350.4	-

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Pre-amplifier Gain (dB).
3. Margin value = Emission level – Limit value.
4. "-": Emissions that do not fall within the restricted frequency bands where the attenuation below the general field strength limits specified in FCC § 15.205/ RSS-Gen is not required.

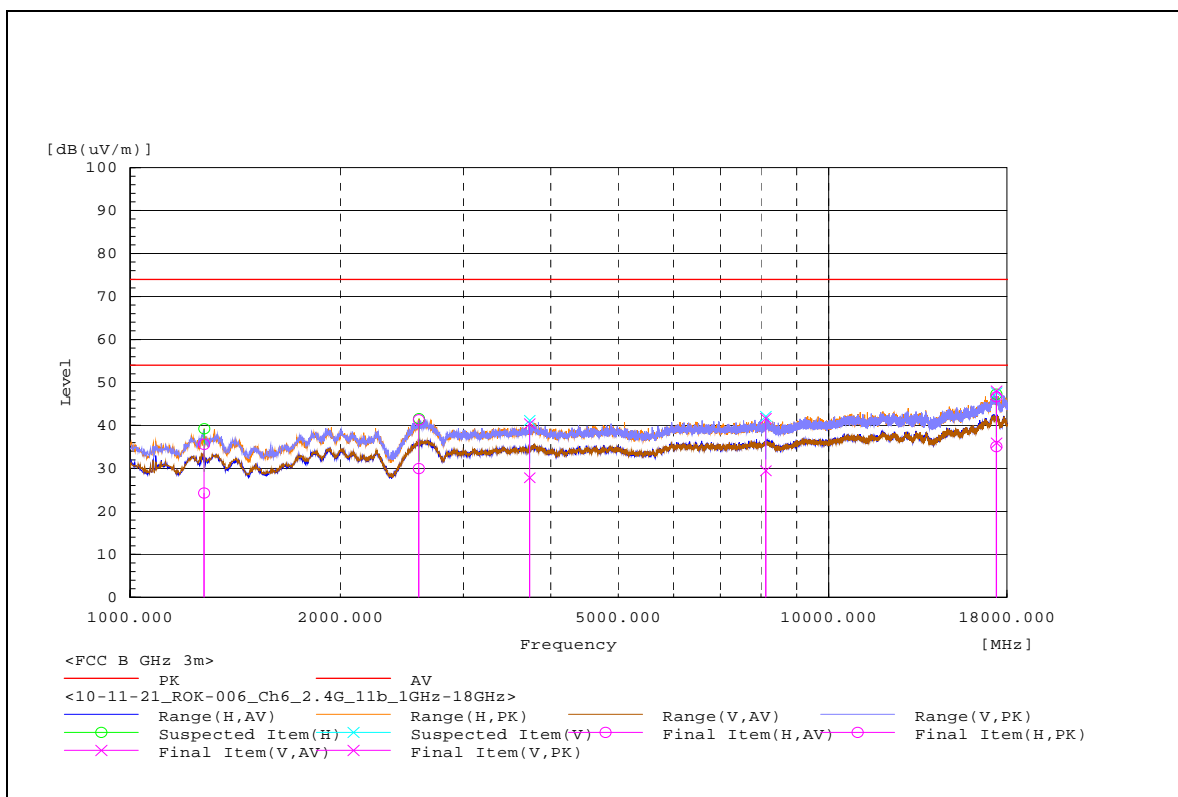


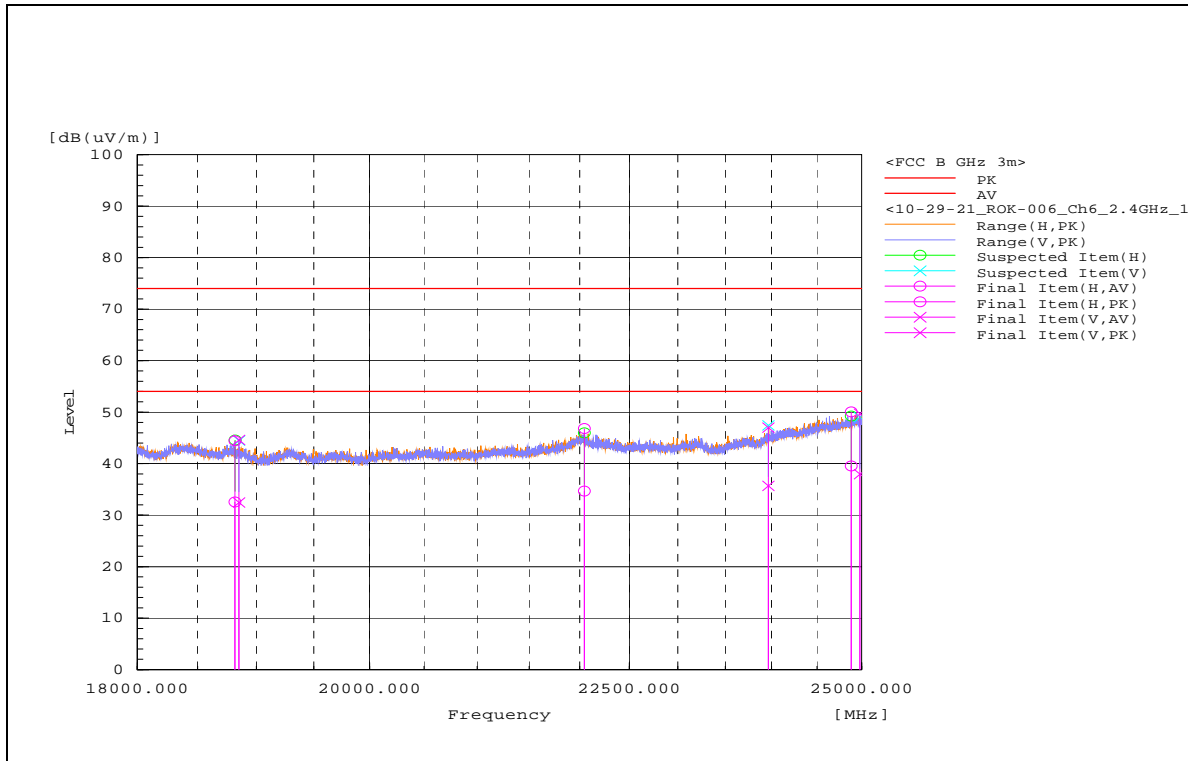
Above 1GHz-25GHz – 802.11b – 2437 MHz

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	1276.463	H	40.7	52	-16.4	24.3	35.6	-	-	-	-	100	255.7	-
2	2590.319	H	40.8	52.1	-10.8	30	41.3	-	-	-	-	298	297.9	-
3	3733.242	V	35.7	48.3	-7.9	27.8	40.4	54	74	26.2	33.6	99	348.1	Pass
4	8128.047	V	28.3	40.5	1.2	29.5	41.7	54	74	24.5	32.3	208	260.7	Pass
5	17386.06	H	19.4	31	15.7	35.1	46.7	-	-	-	-	400	355.8	-
6	17388.88	V	20.2	32.3	15.7	35.9	48	-	-	-	-	147	271.3	-
7	24883.38	H	21.8	32.4	17.7	39.5	50.1	-	-	-	-	359	95.2	-
8	22045.14	H	19.8	31.9	14.9	34.7	46.8	54	74	19.3	27.2	344	348.4	Pass
9	18815.61	H	18.9	30.7	13.7	32.6	44.4	54	74	21.4	29.6	110	264.2	Pass
10	24980.96	V	20	31.8	17.9	37.9	49.7	-	-	-	-	268	356.3	-
11	23963.78	V	19.1	30.4	16.6	35.7	47	-	-	-	-	216	237	-
12	18849.79	V	19	31.1	13.5	32.5	44.6	54	74	21.5	29.4	268	184.7	Pass

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Pre-amplifier Gain (dB).
3. Margin value = Emission level – Limit value.
4. "-": Emissions that do not fall within the restricted frequency bands where the attenuation below the general field strength limits specified in FCC § 15.205/ RSS-Gen is not required.



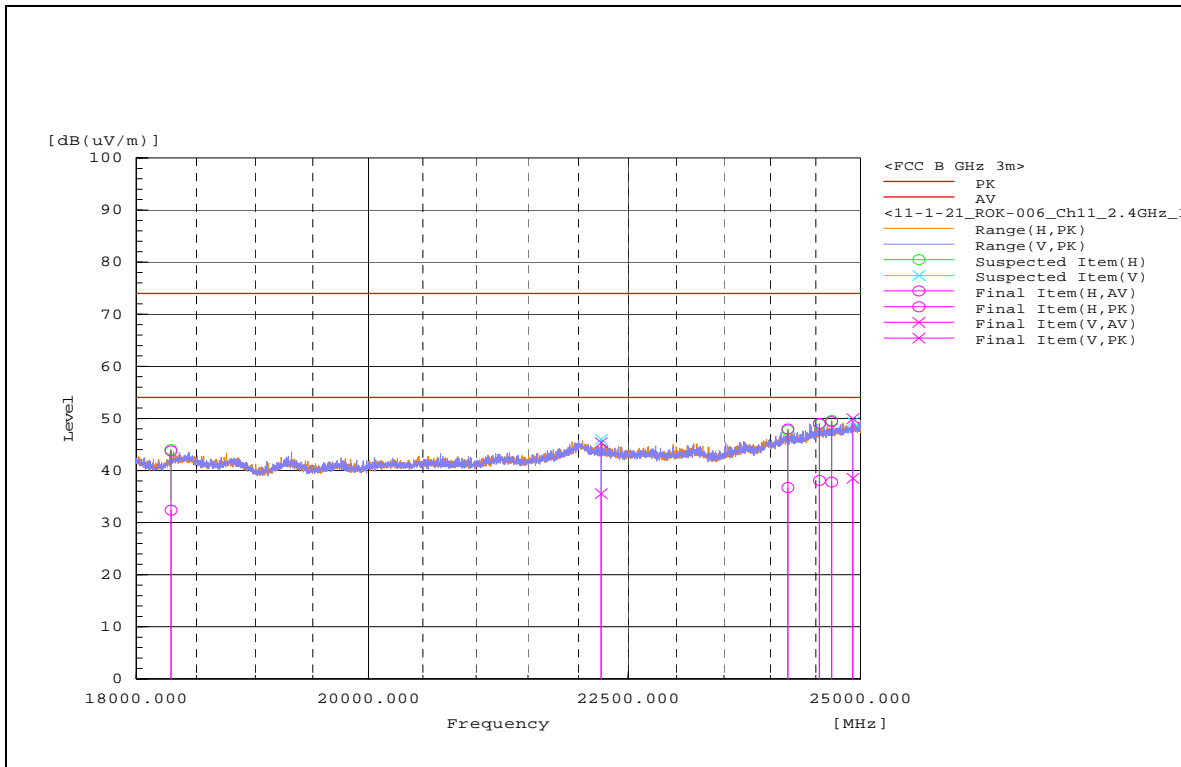
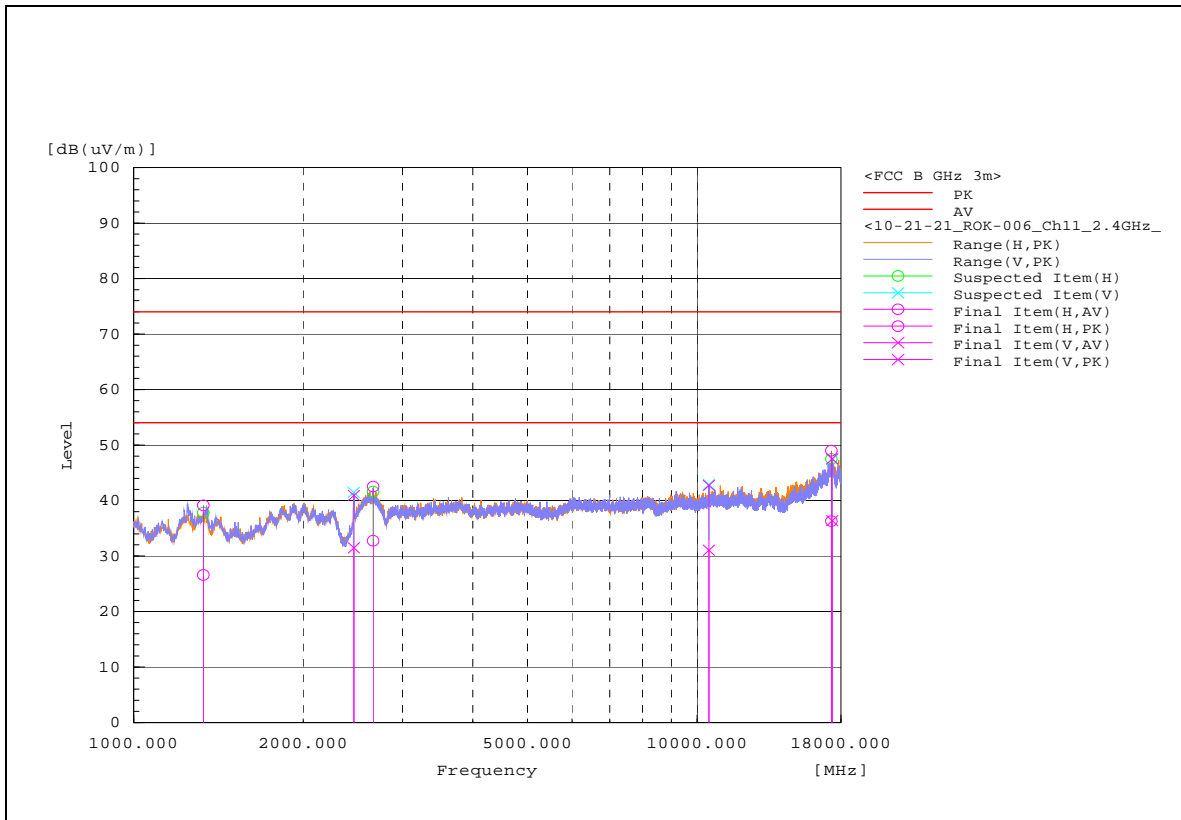


Above 1GHz-25GHz – 802.11b – 2462 MHz

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	1329.571	H	42.9	55.5	-16.3	26.6	39.2	54	74	27.4	34.8	162	96.6	Pass
2	2460.209	V	42.8	52.2	-11.3	31.5	40.9	-	-	-	-	299	334.7	-
3	2661.25	H	43.2	53	-10.5	32.7	42.5	-	-	-	-	109	0	-
4	10493.44	V	25.7	37.3	5.4	31.1	42.7	-	-	-	-	100	95.6	-
5	17317.19	H	21.1	33.8	15.2	36.3	49	-	-	-	-	132	308.5	-
6	17366.28	V	20.9	32	15.5	36.4	47.5	-	-	-	-	359	210.4	-
7	18286.33	H	17.4	28.8	15	32.4	43.8	54	74	21.6	30.2	329	72	Pass
8	22226.99	V	20.6	30.4	15	35.6	45.4	54	74	18.4	28.6	400	0	Pass
9	24190.52	H	19.7	31	17	36.7	48	-	-	-	-	359	234.5	-
10	24540.35	H	20.6	31.6	17.5	38.1	49.1	-	-	-	-	400	0	-
11	24676.44	H	20.2	31.8	17.6	37.8	49.4	-	-	-	-	201	353.4	-
12	24914.12	V	20.7	32.2	17.8	38.5	50	-	-	-	-	261	218.2	-

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Preamplifier Gain (dB).
3. Margin value = Emission level – Limit value.
4. "-": Emissions that do not fall within the restricted frequency bands where the attenuation below the general field strength limits specified in FCC § 15.205/ RSS-Gen is not required.

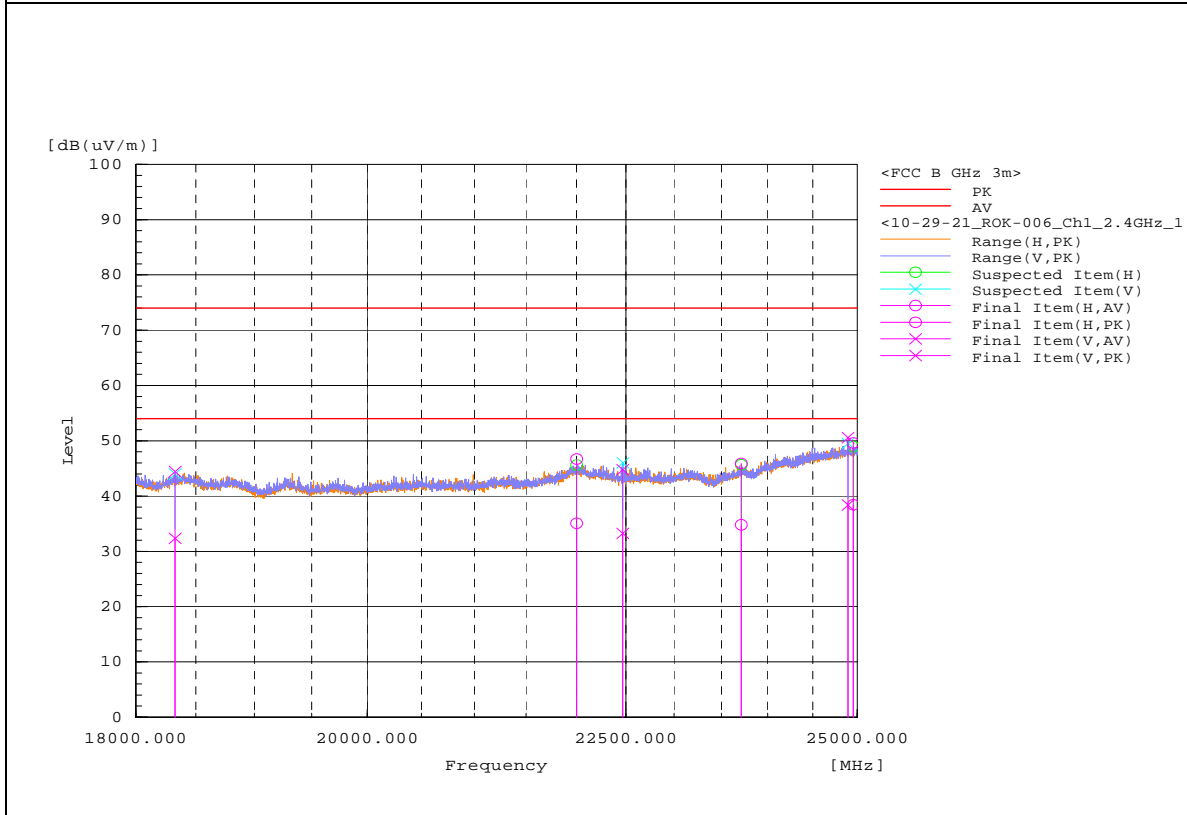
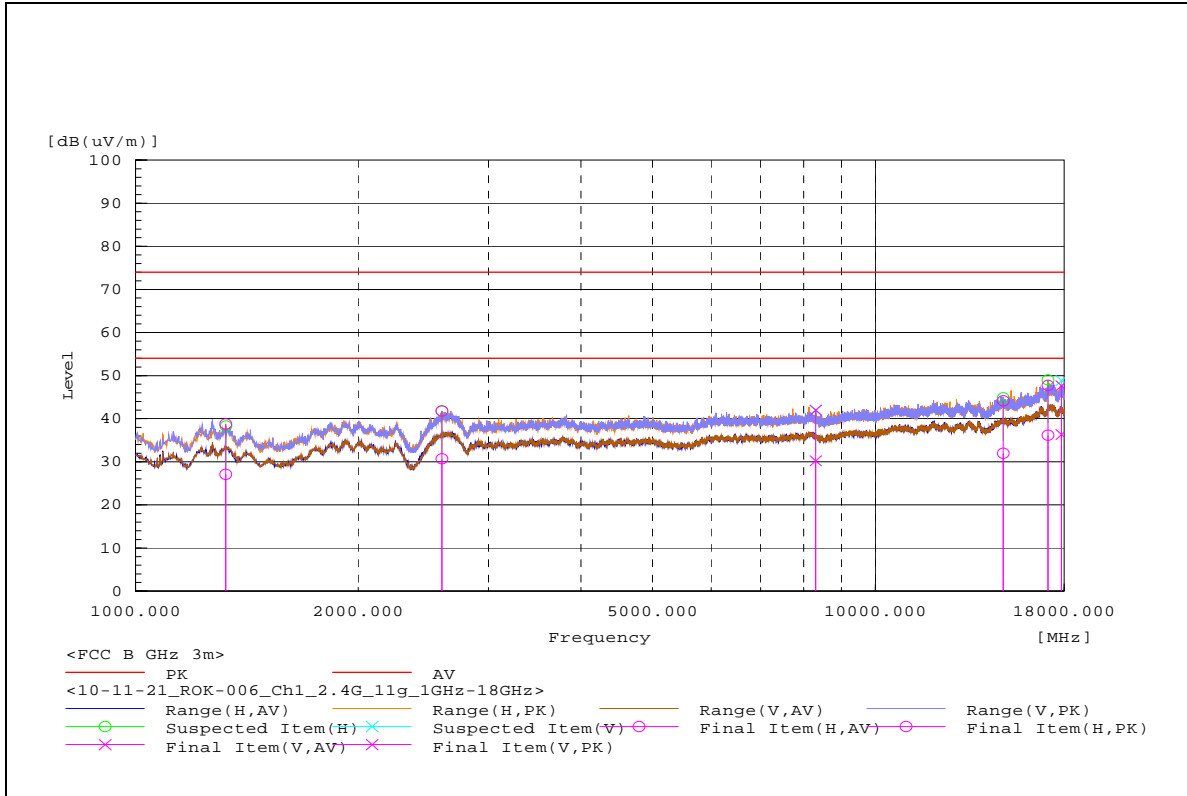


Above 1GHz-25GHz – 802.11g – 2412 MHz

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	1324.382	H	43.4	55.1	-16.3	27.1	38.8	54	74	26.9	35.2	117	133.9	Pass
2	2595.002	H	41.4	52.5	-10.7	30.7	41.8	-	-	-	-	268	0.4	-
3	8304.823	V	28.9	40.6	1.4	30.3	42	54	74	23.7	32	103	143.5	Pass
4	14896.2	H	21.6	33.8	10.4	32	44.2	-	-	-	-	100	260.8	-
5	17117.49	H	20.2	31.7	16	36.2	47.7	-	-	-	-	103	280.3	-
6	17851.51	V	19.9	31.3	16.4	36.3	47.7	54	74	17.7	26.3	103	359.9	Pass
7	18324.94	V	17.4	29.4	15	32.4	44.4	54	74	21.6	29.6	208	271.3	Pass
8	22002.01	H	20.2	31.8	14.9	35.1	46.7	54	74	18.9	27.3	178	213.7	Pass
9	22466.96	V	18.2	29.7	15.1	33.3	44.8	54	74	20.7	29.2	291	163.2	Pass
10	23713.82	H	18.7	29.8	16.1	34.8	45.9	54	74	19.2	28.1	337	19.4	Pass
11	24894.53	V	20.7	32.9	17.7	38.4	50.6	-	-	-	-	314	20.8	-
12	24953.55	H	20.6	31.8	17.8	38.4	49.6	-	-	-	-	344	337.6	-

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Pre-amplifier Gain (dB).
3. Margin value = Emission level – Limit value.
4. "-": Emissions that do not fall within the restricted frequency bands where the attenuation below the general field strength limits specified in FCC § 15.205/ RSS-Gen is not required.

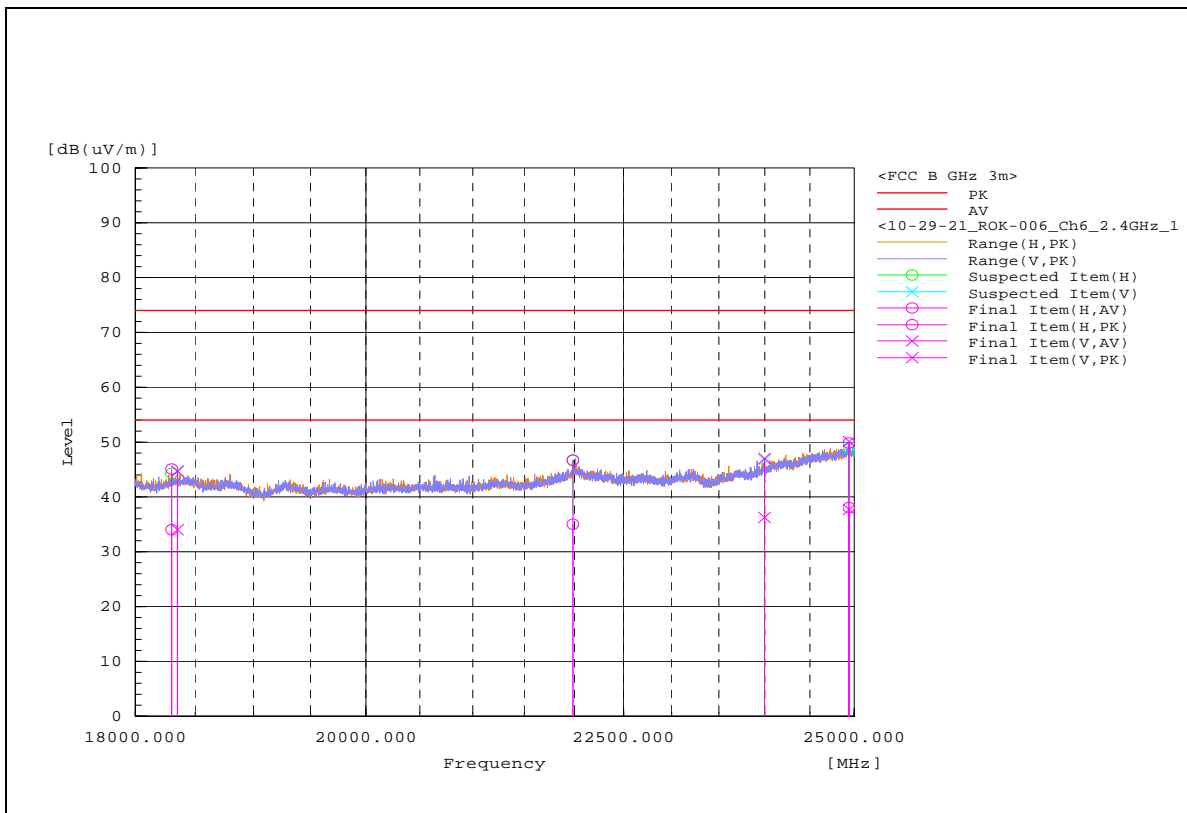
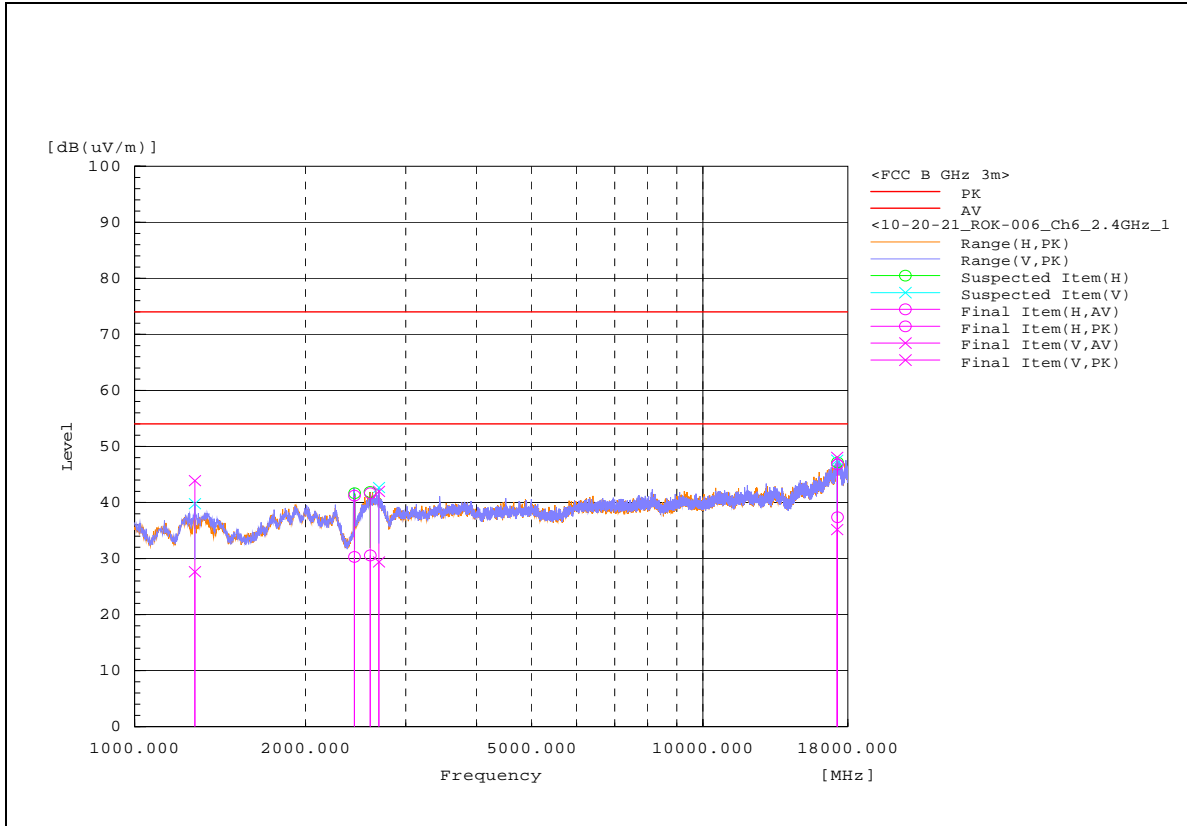


Above 1GHz-25GHz – 802.11g – 2437 MHz

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	1250.291	V	42.4	55.3	-16.5	25.9	38.8	-	-	-	-	147	287.3	-
2	2459.805	V	46.9	55.8	-11.3	35.6	44.5	-	-	-	-	253	266.9	-
3	2632.127	H	40.4	52.4	-10.6	29.8	41.8	-	-	-	-	147	235.2	-
4	6158.406	H	32.6	43.6	-2.9	29.7	40.7	-	-	-	-	253	333.3	-
5	17296.57	H	19.8	32.1	15.2	35	47.3	-	-	-	-	147	222.2	-
6	17343.75	V	19.7	32.1	15.4	35.1	47.5	-	-	-	-	261	166.2	-
7	18301.64	H	19	30.1	15	34	45.1	54	74	20	28.9	313	292.4	Pass
8	18348.99	V	19.1	29.8	14.9	34	44.7	54	74	20	29.3	276	275.9	Pass
9	21984.12	H	20.1	31.8	14.9	35	46.7	-	-	-	-	238	317.6	-
10	23994.82	V	19.7	30.4	16.6	36.3	47	54	74	17.7	27	215	225.6	Pass
11	24939.61	H	20.3	32.1	17.8	38.1	49.9	-	-	-	-	162	359.9	-
12	24941.1	V	19.9	32.3	17.8	37.7	50.1	-	-	-	-	231	78	-

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Pre-amplifier Gain (dB).
3. Margin value = Emission level – Limit value.
4. "-": Emissions that do not fall within the restricted frequency bands where the attenuation below the general field strength limits specified in FCC § 15.205/ RSS-Gen is not required.

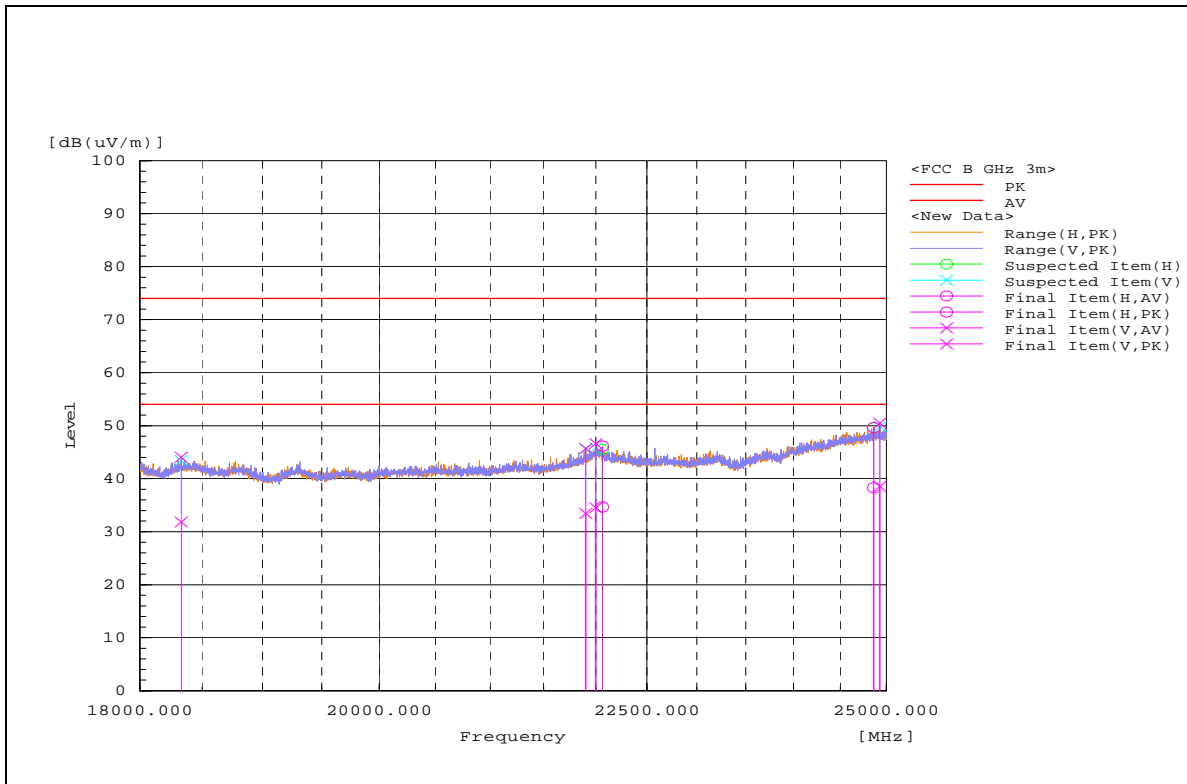
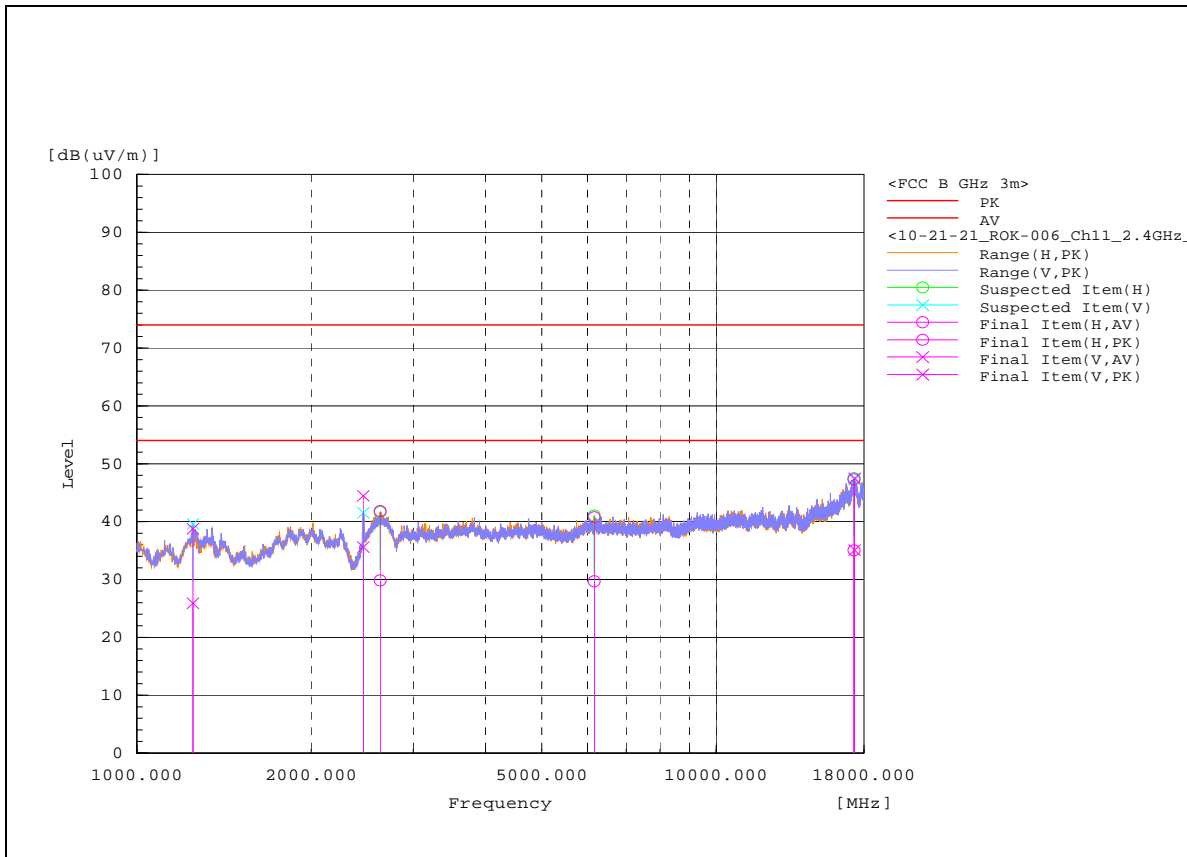


Above 1GHz-25GHz – 802.11g – 2462 MHz

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	1250.291	V	42.4	55.3	-16.5	25.9	38.8	-	-	-	-	147	287.3	-
2	2459.805	V	46.9	55.8	-11.3	35.6	44.5	-	-	-	-	253	266.9	-
3	2632.127	H	40.4	52.4	-10.6	29.8	41.8	-	-	-	-	147	235.2	-
4	6158.406	H	32.6	43.6	-2.9	29.7	40.7	-	-	-	-	253	333.3	-
5	17296.57	H	19.8	32.1	15.2	35	47.3	-	-	-	-	147	222.2	-
6	17343.75	V	19.7	32.1	15.4	35.1	47.5	-	-	-	-	261	166.2	-
7	18330.33	V	16.9	29.2	14.9	31.8	44.1	54	74	22.2	29.9	253	335.1	Pass
8	21902.95	V	18.6	30.9	14.8	33.4	45.7	-	-	-	-	374	186.6	-
9	21998.92	V	19.6	31.7	14.9	34.5	46.6	-	-	-	-	352	7.7	-
10	22063.58	H	19.8	31.2	14.9	34.7	46.1	54	74	19.3	27.9	335	17.3	Pass
11	24861.76	H	20.6	31.9	17.7	38.3	49.6	-	-	-	-	337	282	-
12	24929.2	V	20.7	32.7	17.8	38.5	50.5	-	-	-	-	208	259.9	-

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Pre-amplifier Gain (dB).
3. Margin value = Emission level – Limit value
4. "-": Emissions that do not fall within the restricted frequency bands where the attenuation below the general field strength limits specified in FCC § 15.205/ RSS-Gen is not required.

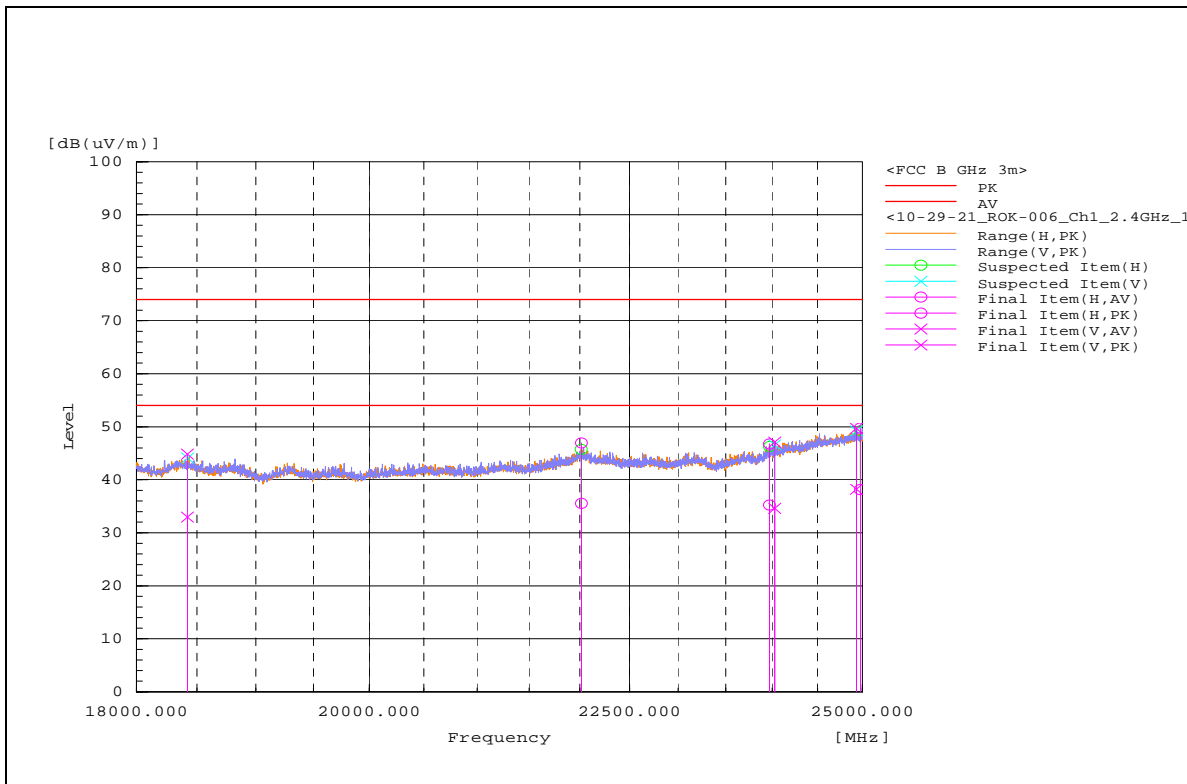
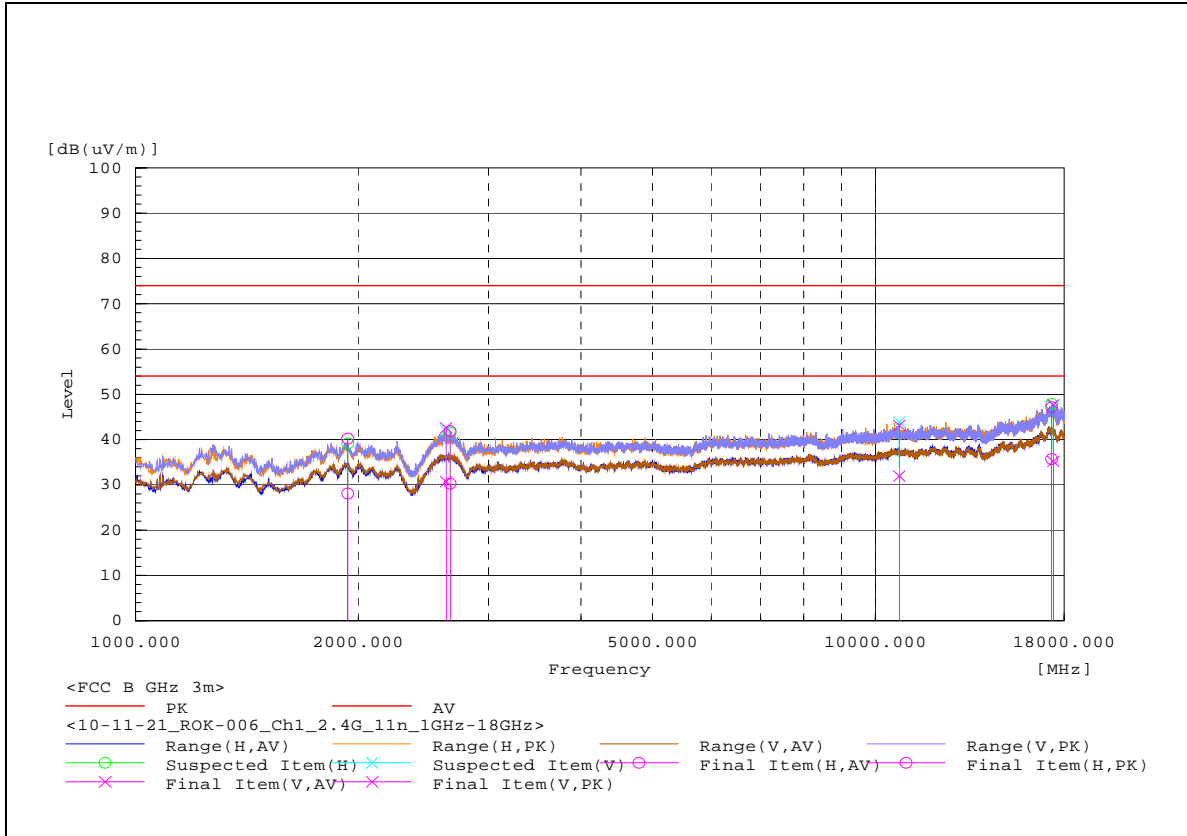


Above 1GHz-25GHz – 802.11n – 2412 MHz

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	1935.897	H	40.5	52.6	-12.4	28.1	40.2	-	-	-	-	117	1.1	-
2	2628.407	V	41.3	53.2	-10.6	30.7	42.6	-	-	-	-	231	47.5	-
3	2661.622	H	40.8	52.4	-10.5	30.3	41.9	-	-	-	-	208	131.2	-
4	10769.03	V	26.3	37.5	5.6	31.9	43.1	54	74	22.1	30.9	100	348	Pass
5	17313.08	H	20.5	32	15.2	35.7	47.2	-	-	-	-	284	95.5	-
6	17407.03	V	19.3	31.8	15.9	35.2	47.7	-	-	-	-	253	189.3	-
7	18419.46	V	18.1	29.9	14.9	33	44.8	54	74	21	29.2	306	108.6	Pass
8	22013.98	H	20.7	32	14.9	35.6	46.9	54	74	18.4	27.1	283	226.1	Pass
9	23969.91	H	18.6	30.2	16.6	35.2	46.8	54	74	18.8	27.2	382	185.6	Pass
10	24027.91	V	17.9	30.4	16.7	34.6	47.1	-	-	-	-	201	227.5	-
11	24932.11	V	20.5	31.9	17.8	38.3	49.7	-	-	-	-	344	353.1	-
12	24977.14	H	20.2	31.8	17.9	38.1	49.7	-	-	-	-	245	127.4	-

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Pre-amplifier Gain (dB).
3. Margin value = Emission level – Limit value.
4. "-": Emissions that do not fall within the restricted frequency bands where the attenuation below the general field strength limits specified in FCC § 15.205/ RSS-Gen is not required.

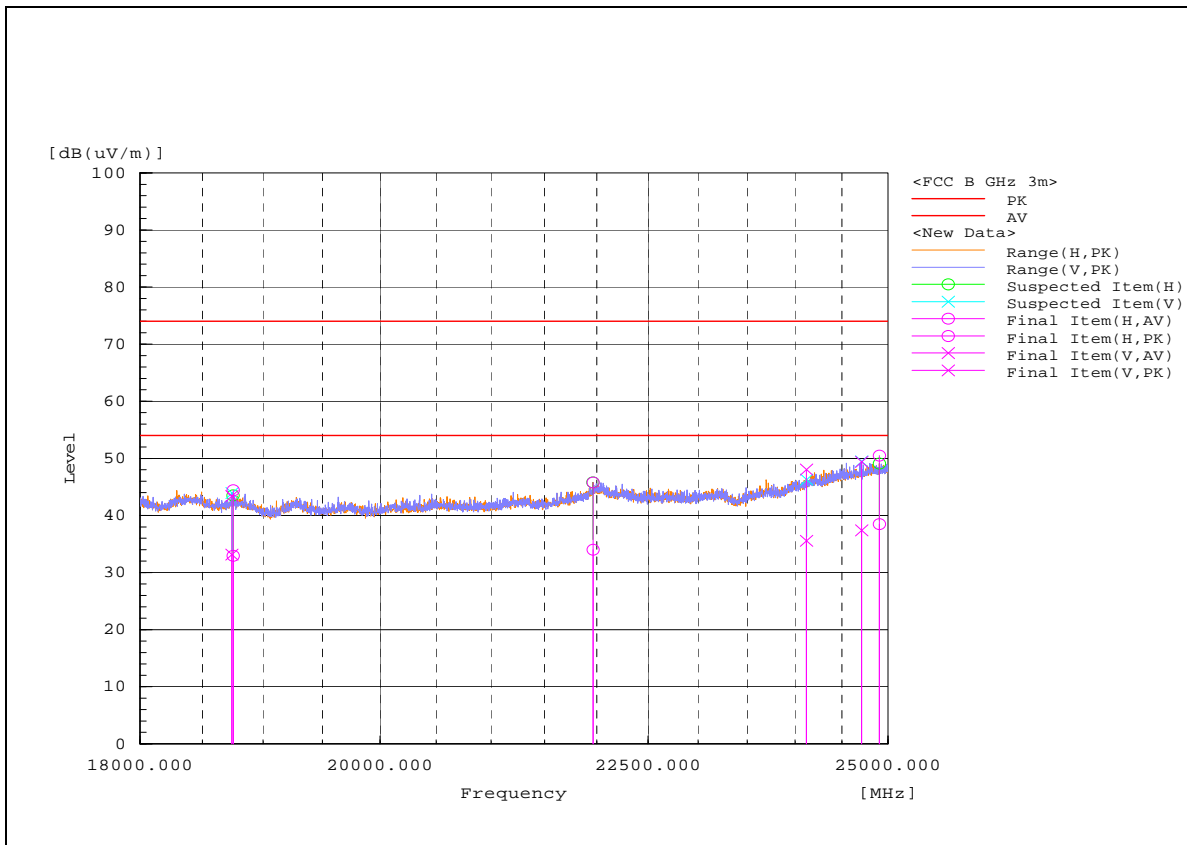
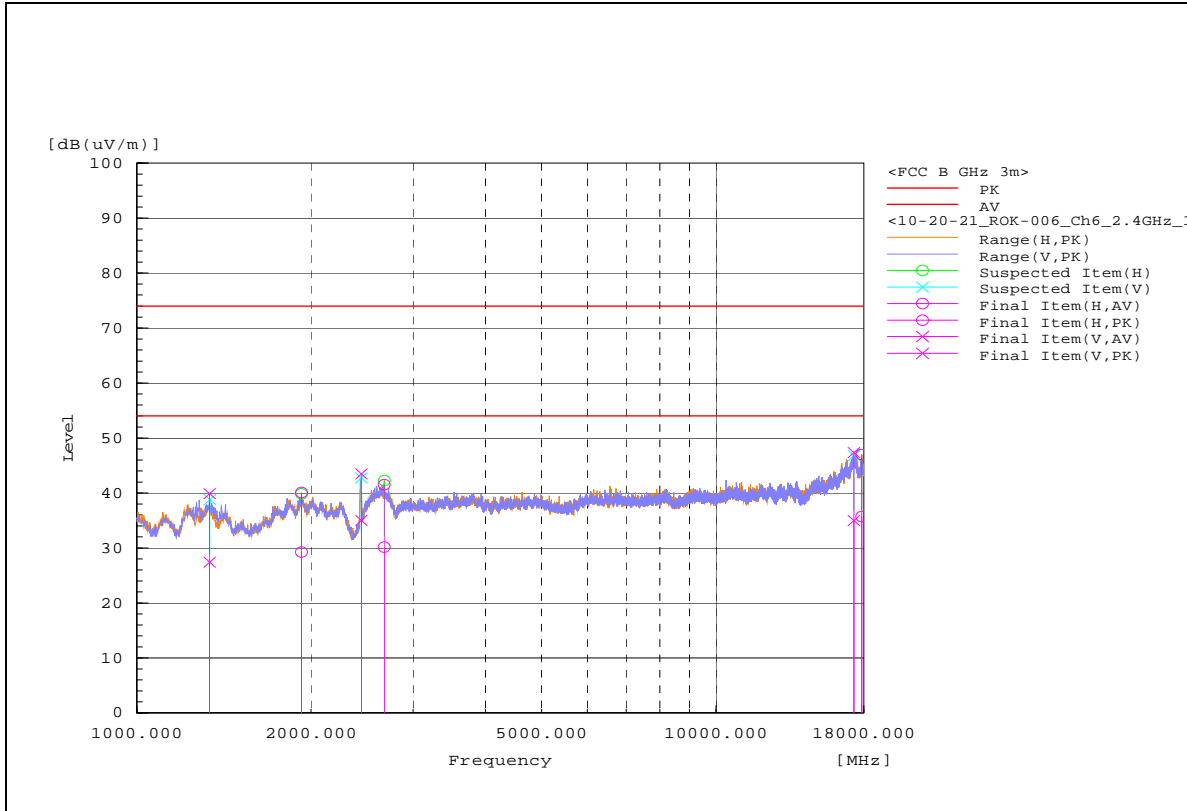


Above 1GHz-25GHz – 802.11n – 2437 MHz

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	1336.336	V	43.8	56.3	-16.4	27.4	39.9	54	74	26.6	34.1	283	221.3	Pass
2	1924.345	H	41.7	52.6	-12.5	29.2	40.1	-	-	-	-	322	229.9	-
3	2441.017	V	46.4	54.9	-11.4	35	43.5	-	-	-	-	322	286.5	-
4	2674.065	H	40.7	52	-10.5	30.2	41.5	-	-	-	-	216	76.3	-
5	17300.98	V	19.8	32.1	15.2	35	47.3	-	-	-	-	359	189.2	-
6	17850.82	H	19.3	30.6	16.4	35.7	47	54	74	18.3	27	291	200.5	Pass
7	18740.84	V	19.1	29.3	14.1	33.2	43.4	54	74	20.8	30.6	298	6.6	Pass
8	18750.88	H	18.9	30.3	14.1	33	44.4	54	74	21	29.6	100	337.6	Pass
9	21962.27	H	19.1	30.9	14.9	34	45.8	-	-	-	-	170	202	-
10	24121.7	V	18.7	31.2	16.9	35.6	48.1	-	-	-	-	223	63.6	-
11	24712.21	V	19.8	31.8	17.6	37.4	49.4	-	-	-	-	238	225.6	-
12	24905.76	H	20.8	32.8	17.7	38.5	50.5	-	-	-	-	231	158.9	-

REMARKS:

1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Pre-amplifier Gain (dB).
3. Margin value = Emission level – Limit value.
4. "-": Emissions that do not fall within the restricted frequency bands where the attenuation below the general field strength limits specified in FCC § 15.205/ RSS-Gen is not required.

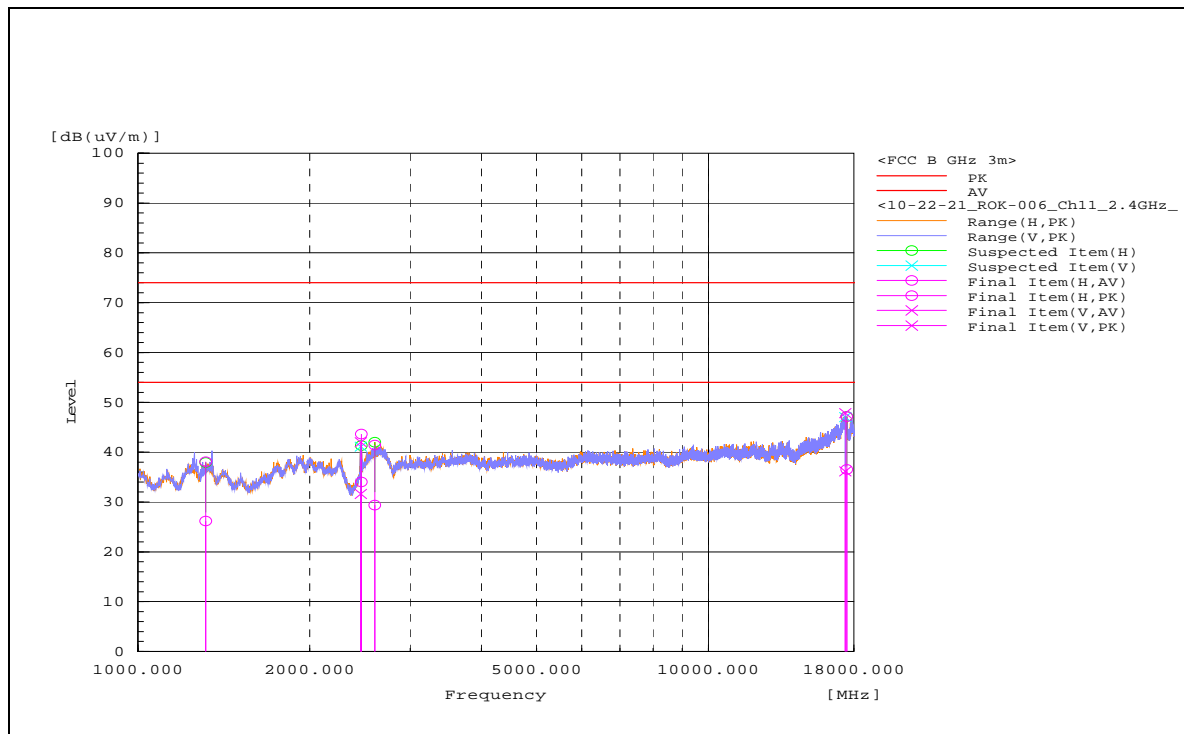


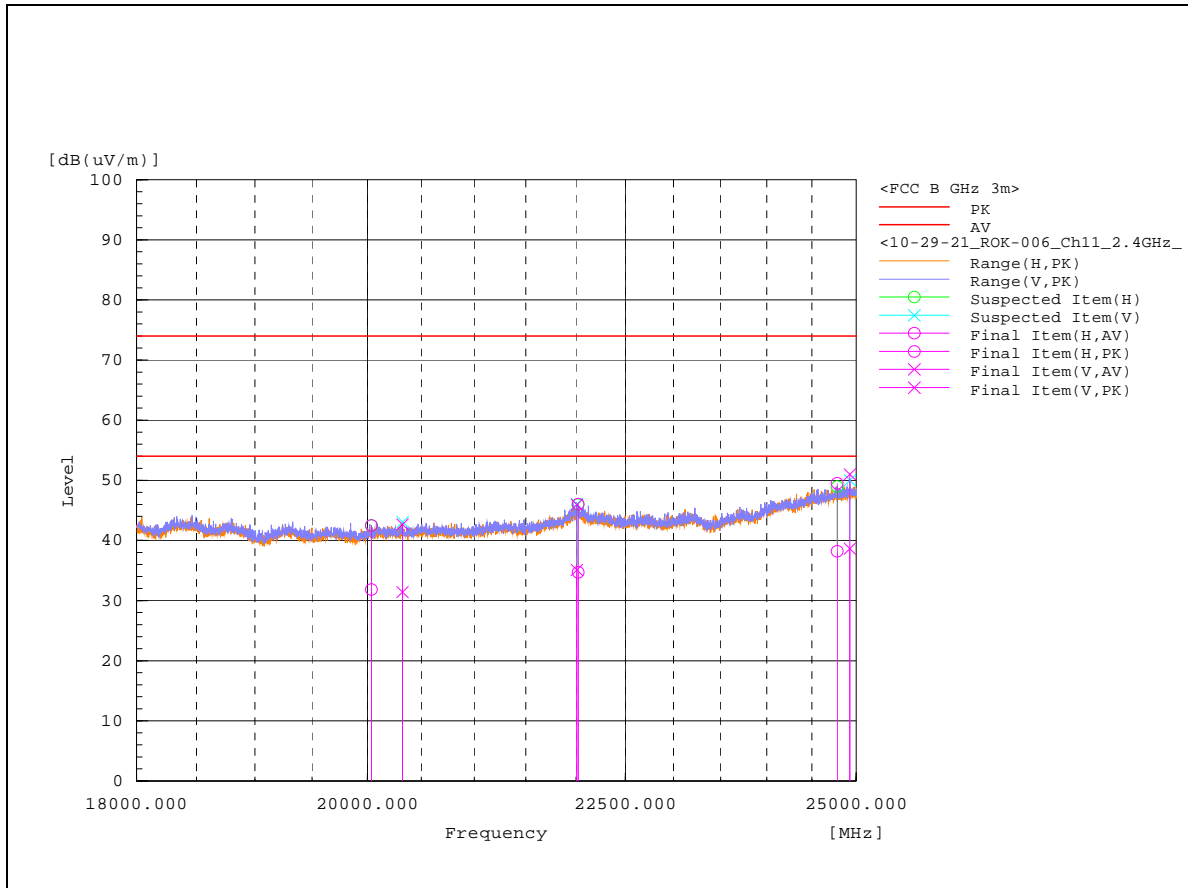
Above 1GHz-25GHz – 802.11n – 2462 MHz

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK [dB(uV/m)]	Limit AV [dB(uV/m)]	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	17377.86	V	20.6	32.2	15.6	36.2	47.8	-	-	-	-	261	200.7	-
2	17479.33	H	20.2	30.8	16.3	36.5	47.1	-	-	-	-	100	207.6	-
3	2601.069	H	40.1	52.1	-10.7	29.4	41.4	-	-	-	-	162	126.1	-
4	2463.553	H	45.3	54.9	-11.3	34	43.6	-	-	-	-	192	273.2	-
5	1314.939	H	42.5	54.4	-16.3	26.2	38.1	54	74	27.8	35.9	109	325.9	Pass
6	2458.547	V	42.9	53.3	-11.3	31.6	42	-	-	-	-	238	270.6	-
7	20037.17	H	18.4	29	13.5	31.9	42.5	54	74	22.1	31.5	283	264.4	Pass
8	20323	V	17.6	28.9	13.8	31.4	42.7	54	74	22.6	31.3	400	0	Pass
9	22006.25	V	20.2	31	14.9	35.1	45.9	-	-	-	-	140	356.2	-
10	22020.62	H	19.8	31.2	14.9	34.7	46.1	-	-	-	-	132	134	-
11	24784.37	H	20.5	31.8	17.7	38.2	49.5	54	74	15.8	24.5	110	358.4	Pass
12	24925.77	V	20.8	33.2	17.8	38.6	51	54	74	15.4	23	208	17.1	Pass

REMARKS:

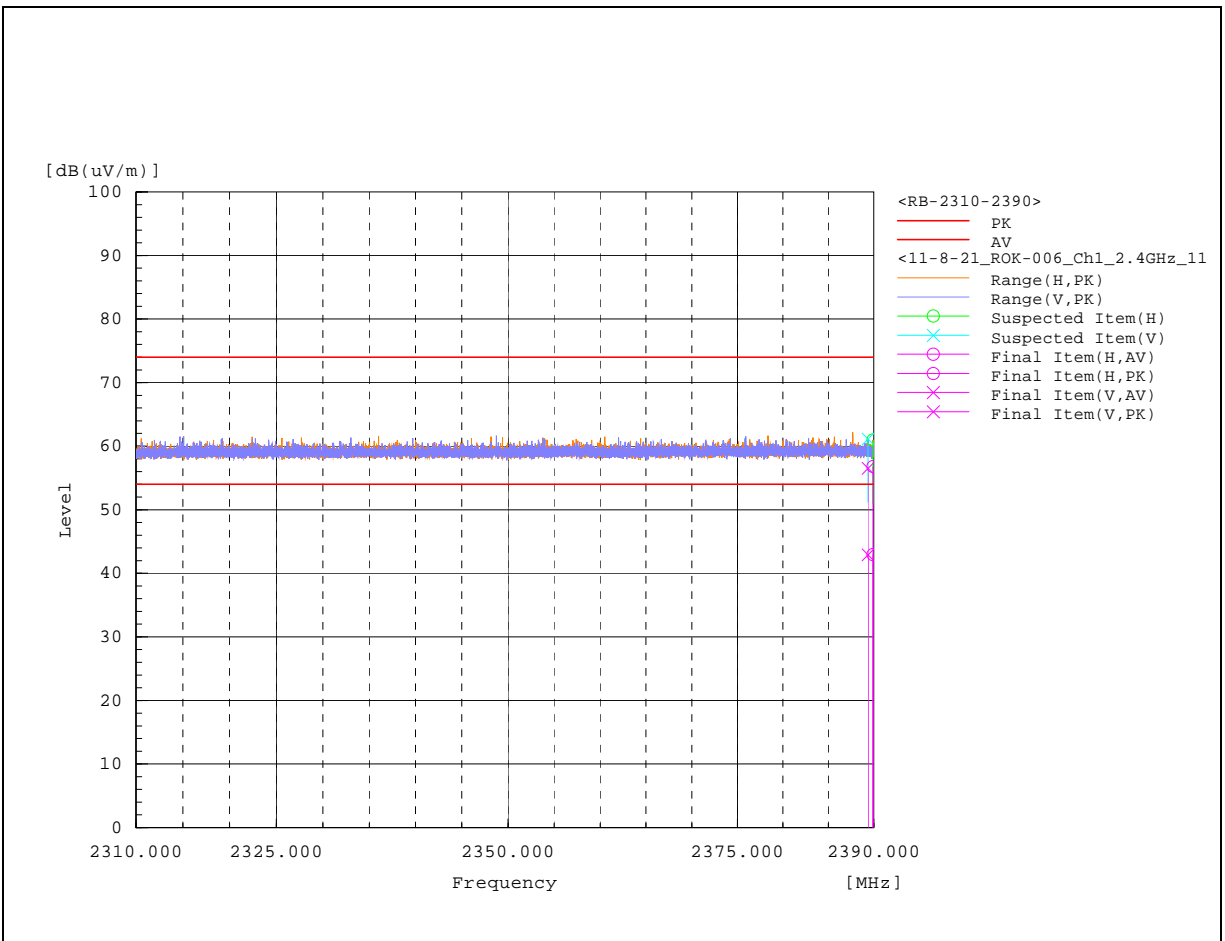
1. Emission level (dBuV/m) = Reading Value (dBuV) + Factor (dB)
2. AF (dB/m) = Antenna Factor (dB/m) – Pre-amplifier Gain (dB).
3. Margin value = Emission level – Limit value.
4. "-": Emissions that do not fall within the restricted frequency bands where the attenuation below the general field strength limits specified in FCC § 15.205/ RSS-Gen is not required.





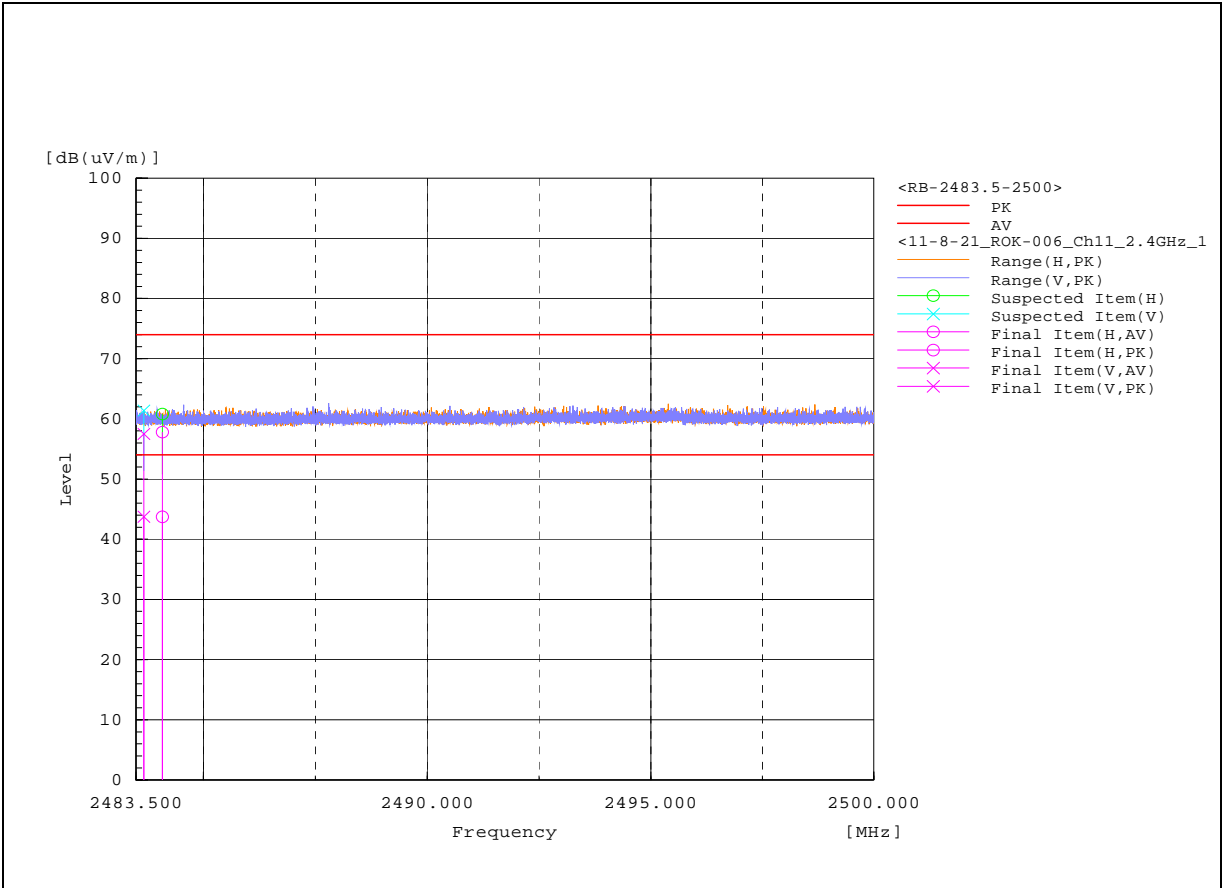
RESTRICTED BAND (802.11b LOW CHANNEL)

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	2389.92	H	7.9	21.8	35	42.9	56.8	54	74	11.1	17.2	124	6.8	Pass
2	2389.36	V	7.9	21.5	35	42.9	56.5	54	74	11.1	17.5	100	0	Pass



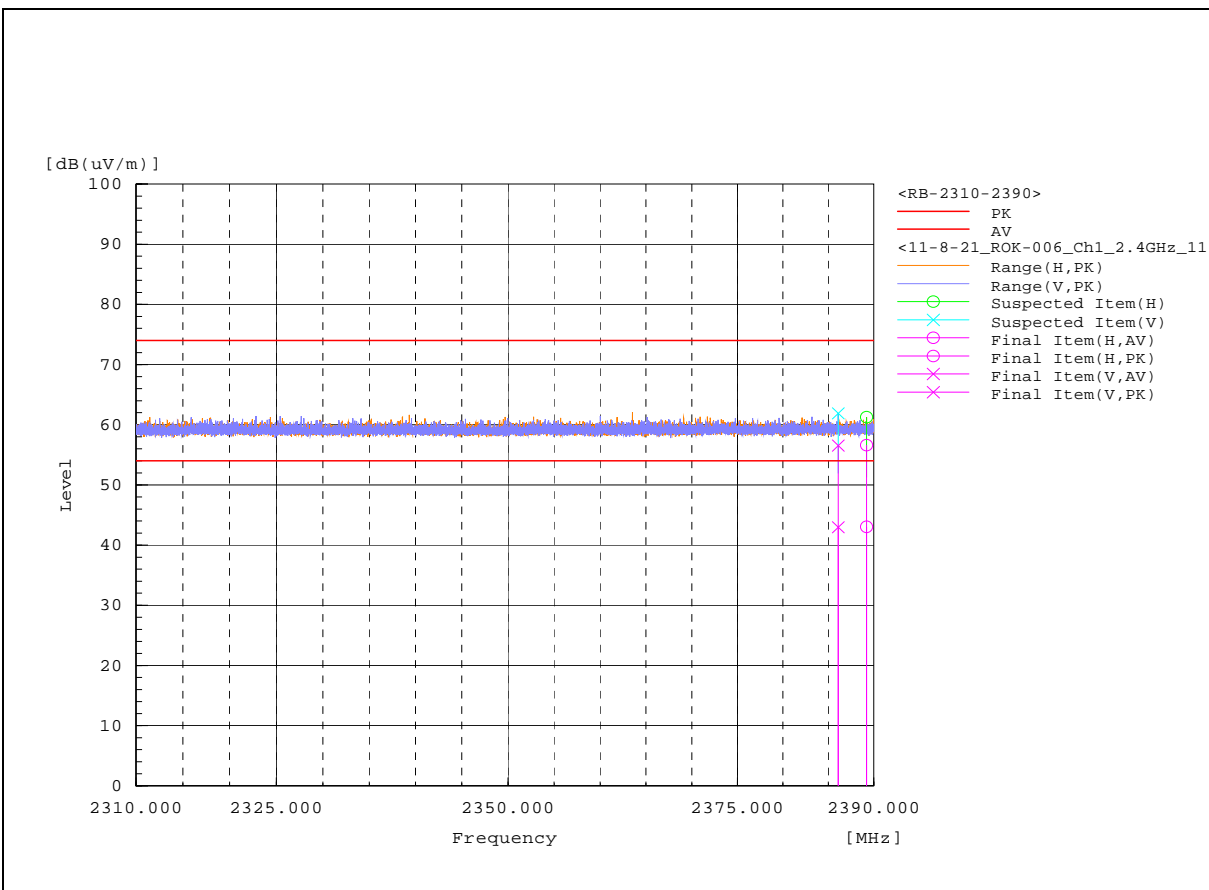
RESTRICTED BAND (802.11b High CHANNEL)

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	2484.086	H	8.3	22.4	35.4	43.7	57.8	54	74	10.3	16.2	100	0	Pass
2	2483.675	V	8.4	22.1	35.4	43.8	57.5	54	74	10.2	16.5	100	226.5	Pass



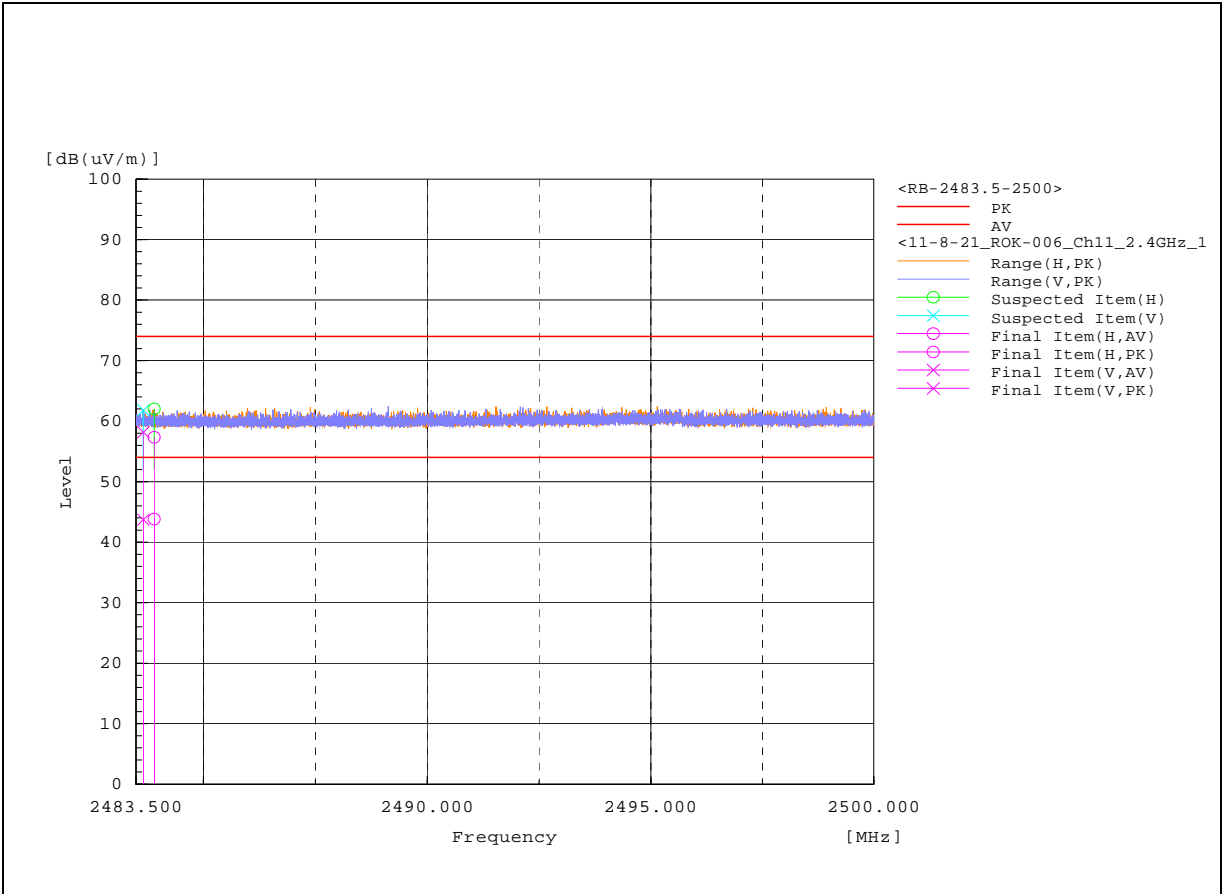
RESTRICTED BAND (802.11g LOW CHANNEL)

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	2389.208	H	8	21.6	35	43	56.6	54	74	11	17.4	100	7.4	Pass
2	2386.088	V	8	21.6	35	43	56.6	54	74	11	17.4	162	359.4	Pass



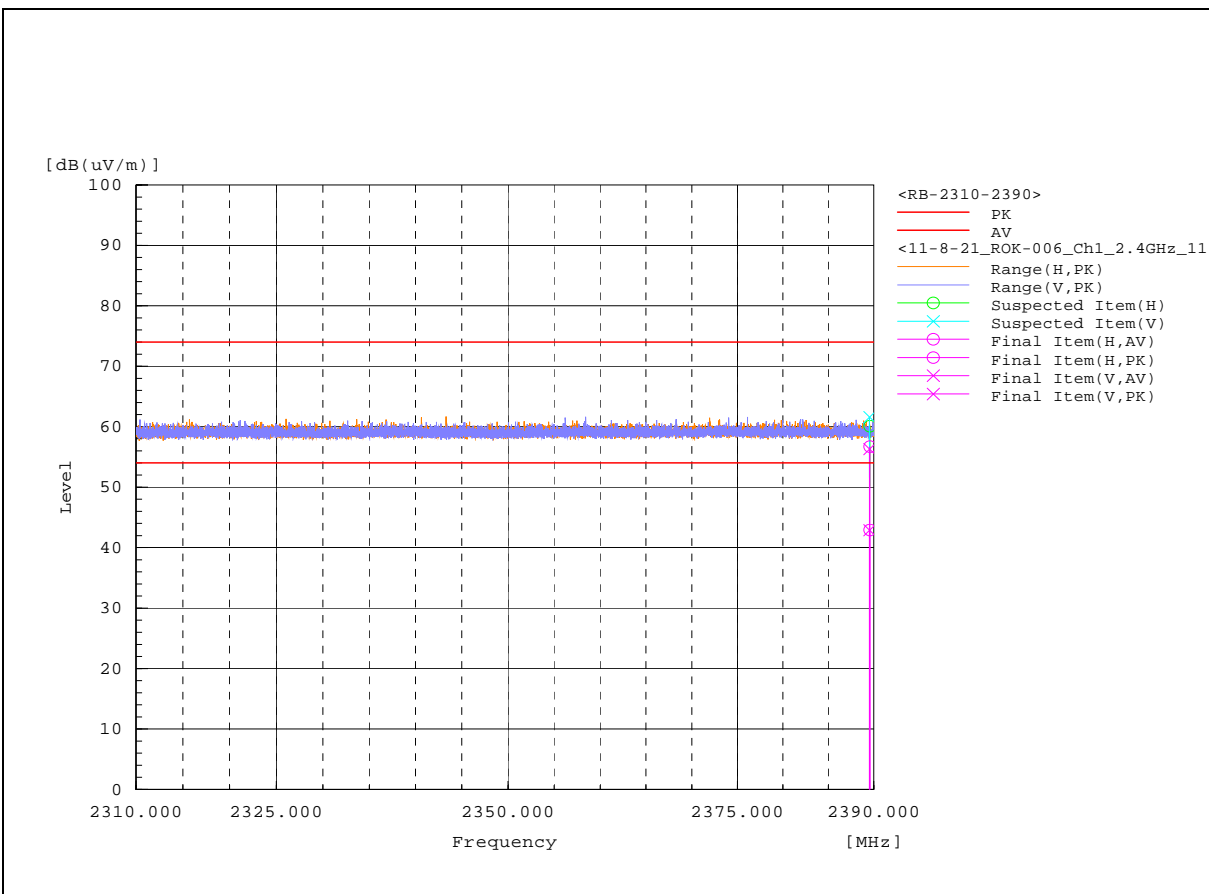
RESTRICTED BAND (802.11g High CHANNEL)

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	2483.66	V	8.3	22.8	35.4	43.7	58.2	54	74	10.3	15.8	228	216.1	Pass
2	2483.906	H	8.4	21.9	35.4	43.8	57.3	54	74	10.2	16.7	100	284.4	Pass



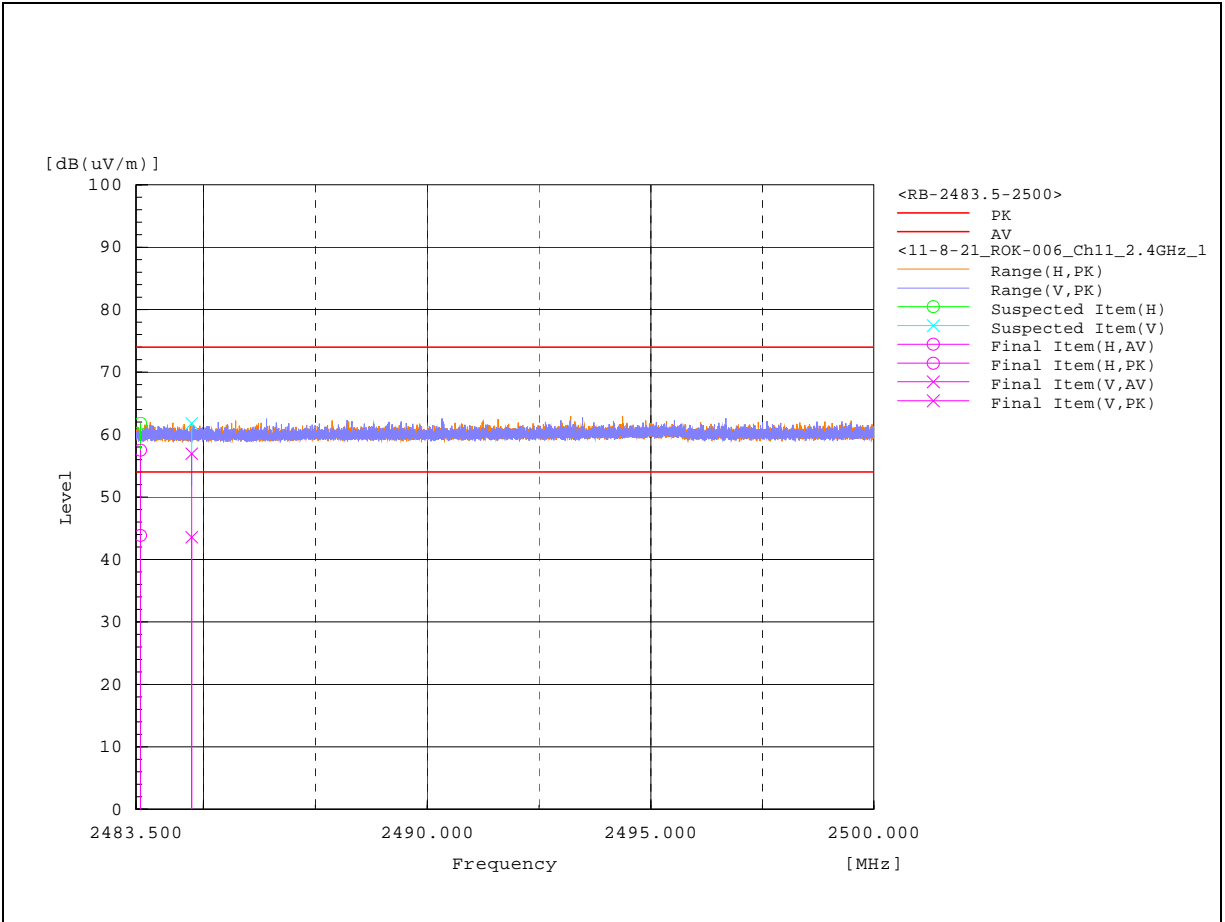
RESTRICTED BAND (802.11n LOW CHANNEL)

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	2389.56	H	7.9	21.7	35	42.9	56.7	54	74	11.1	17.3	133	239	Pass
2	2389.528	V	7.9	21.3	35	42.9	56.3	54	74	11.1	17.7	106	337.6	Pass



RESTRICTED BAND (802.11n High CHANNEL)

Antenna Polarity & Test Distance: Vertical and Horizontal at 3m														
No	Frequency (MHz)	Polarization (H/V)	Reading AV [dB(uV)]	Reading PK [dB(uV)]	Factor [dB(1/m)]	Level AV [dB(uV/m)]	Level PK dB(uV/m)	Limit AV dB(uV/m)	Limit PK [dB(uV/m)]	Margin AV [dB]	Margin PK [dB]	Height (cm)	Angle (Deg)	Pass/Fail
1	2483.601	H	8.4	22.1	35.4	43.8	57.5	54	74	10.2	16.5	106	223.6	Pass
2	2484.739	V	8.2	21.6	35.4	43.6	57	54	74	10.4	17	100	117.7	Pass



4.2 Conducted Emission Measurement

4.2.1 Limits of Conducted Emission Measurement

Frequency (MHz)	Conducted Limit (dBuV)	
	Quasi-peak	Average
0.15 - 0.5	66 - 56	56 - 46
0.50 - 5.0	56	46
5.0 - 30.0	60	50

Note: 1. The lower limit shall apply at the transition frequencies.

2. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2.2 Test Instruments

Description & Manufacturer	Model No.	Serial No.	Date Of Calibration	Due Date Of Calibration
EMI Test Receiver ROHDE & SCHWARZ	ESIB 40	100179	01/29/2021	01/29/2022
Transient Limiter ELECTRO-METRICS	EM-7600-5	106	01/29/2021	01/29/2022
LISN EMCO	3816/2NM	214372	01/29/2021	01/29/2022

4.2.3 Test Procedures

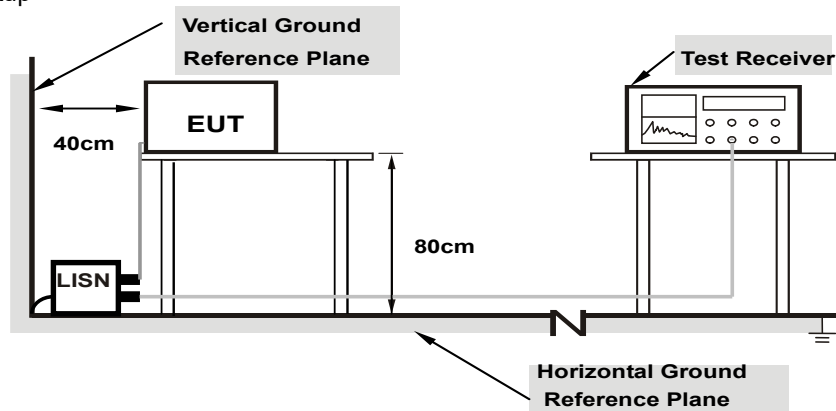
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: The resolution bandwidth and video bandwidth of test receiver is 9 kHz for quasi-peak detection (QP) and average detection (AV) at frequency 0.15MHz-30MHz.

4.2.4 Deviation from Test Standard

No deviation.

4.2.5 Test Setup



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

For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.2.6 EUT Operating Conditions

Same as 4.1.6.

4.2.7 Test Results

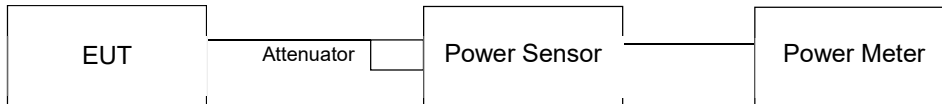
N/A

4.3 Conducted Output Power Measurement

4.3.1 Limits of Conducted Output Power Measurement

For systems using digital modulation in the 2400–2483.5 MHz bands: 1 Watt (30dBm)

4.3.2 Test Setup



4.3.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.3.4 Test Procedures

Method PM is used to perform output power measurement, trigger and gating function of wide band power meter is enabled to measure max output power of TX on burst. Duty factor is not added to measured value.

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

Same as Item 4.1.6.

4.3.7 Test Results

802.11b

Channel	Frequency (MHz)	Conducted Power (dBm)		Limit (dBm)	Pass/Fail
		Chain 0	Chain 1		
1	2412	5.52	5.55	30	Pass
6	2437	3.81	3.76	30	Pass
11	2462	3.66	3.56	30	Pass

802.11g

Channel	Frequency (MHz)	Conducted Power (dBm)		Limit (dBm)	Pass/Fail
		Chain 0	Chain 1		
1	2412	5.98	5.98	30	Pass
6	2437	3.95	4.13	30	Pass
11	2462	3.85	3.71	30	Pass

802.11n-HT20

Channel	Frequency (MHz)	Conducted Power (dBm)		Limit (dBm)	Pass/Fail
		Chain 0	Chain 1		
1	2412	5.89	5.77	30	Pass
6	2437	3.85	4.13	30	Pass
11	2462	3.76	3.76	30	Pass

5 Pictures of Test Arrangements

Please see setup photo file.

Appendix – Information on the Testing Laboratories

Bureau Veritas is a global leader in testing, inspection and certification (TIC) services. We help businesses improve safety, sustainability and productivity; and our clients include the majority of leading brands in retail, manufacturing and other industries. With a presence in every major country around the world, our quality assurance and compliance solutions are vital in helping our customers enhance product quality and concept-to-consumer journeys. We also assist with increasing speed to market, profitability and brand equity throughout the supply chain. Bureau Veritas is a leading wireless/IoT testing, inspection, audit and certification provider, with a global network of test laboratories to support the IoT industry in areas of connectivity, security, interoperability as well as quality, health & safety, and environmental/chemical requirements.

If you have any comments, please feel free to contact us at the following:

Milpitas EMC/RF/Safety/Telecom Lab

775 Montague Expressway, Milpitas, CA 95035
Tel: +1 408 526 1188

Sunnyvale OTA/Bluetooth Lab

1293 Anvilwood Avenue, Sunnyvale, CA
94089
Tel: +1 669 600 5293

Littleton EMC/RF/Safety/Environmental Lab

1 Distribution Center Cir #1, Littleton, MA 01460
Tel: +1 978 486 8880

Email: sales.eaw@us.bureauveritas.com

Web Site: www.cps.bureauveritas.com

The address and road map of all our labs can be found in our web site also.

--- END ---