

3.2 RADIATED EMISSION MEASUREMENT

3.2.1 APPLICABLE STANDARD

According to FCC Part 15.407(d) and 15.209

3.2.2 CONFORMANCE LIMIT

According to FCC Part 15.407(b)(7): radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).
According to FCC Part 15.205, Restricted bands

MHz	MHz	MHz	GHz
0.090-0.110	16.42-16.423	399.9-410	4.5-5.15
10.495-0.505	16.69475-16.69525	608-614	5.35-5.46
2.1735-2.1905	16.80425-16.80475	960-1240	7.25-7.75
4.125-4.128	25.5-25.67	1300-1427	8.025-8.5
4.17725-4.17775	37.5-38.25	1435-1626.5	9.0-9.2
4.20725-4.20775	73-74.6	1645.5-1646.5	9.3-9.5
6.215-6.218	74.8-75.2	1660-1710	10.6-12.7
6.26775-6.26825	123-138	2200-2300	14.47-14.5
8.291-8.294	149.9-150.05	2310-2390	15.35-16.2
8.362-8.366	156.52475-156.52525	2483.5-2500	17.7-21.4
8.37625-8.38675	156.7-156.9	2690-2900	22.01-23.12
8.41425-8.41475	162.0125-167.17	3260-3267	23.6-24.0
12.29-12.293	167.72-173.2	3332-3339	31.2-31.8
12.51975-12.52025	240-285	3345.8-3358	36.43-36.5
12.57675-12.57725	322-335.4	3600-4400	(2)
13.36-13.41			

20dBc in any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

Restricted Frequency(MHz)	Field Strength (μV/m)	Field Strength (dBμV/m)	Measurement Distance
0.009~0.490	2400/F(KHz)	20 log (uV/m)	300
0.490~1.705	2400/F(KHz)	20 log (uV/m)	30
1.705~30.0	30	29.5	30
30-88	100	40	3
88-216	150	43.5	3
216-960	200	46	3
Above 960	500	54	3

Limits of Radiated Emission Measurement(Above 1000MHz)

Frequency(MHz)	Class B (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Remark :1. Emission level in dBuV/m=20 log (uV/m)

2. Measurement was performed at an antenna to the closed point of EUT distance of meters.

3. Distance extrapolation factor =40log(Specific distance/ test distance)(dB);

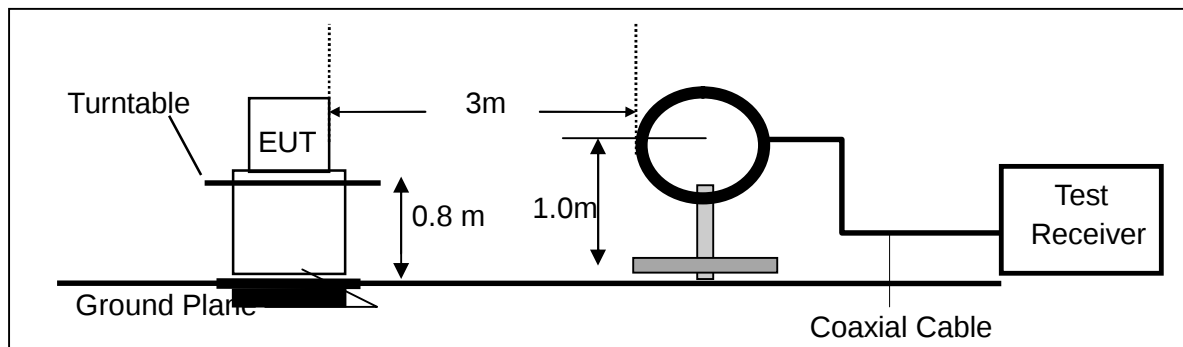
Limit line=Specific limits(dBuV) + distance extrapolation factor.

3.2.3 MEASURING INSTRUMENTS

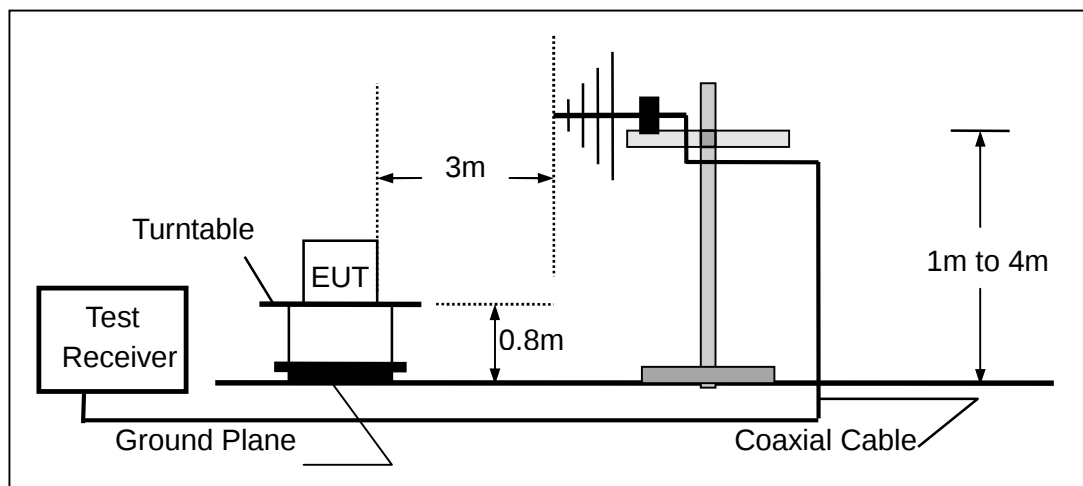
The Measuring equipment is listed in the section 6.3 of this test report.

3.2.4 TEST CONFIGURATION

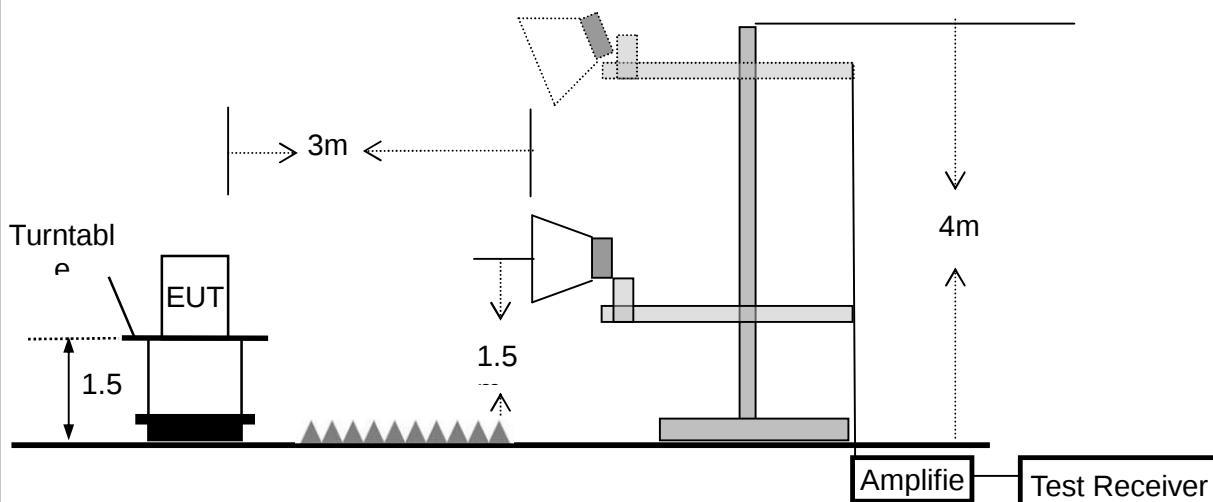
(a) For radiated emissions below 30MHz



(b) For radiated emissions from 30MHz to 1000MHz



(c) For radiated emissions above 1000MHz



3.2.5 TEST PROCEDURE

The test site semi-anechoic chamber has met the requirement of NSA tolerance 4 dB according to the standards: ANSI C63.10-2013. The test distance is 3m. The setup is according to the requirements in Section 13.1.4.1 of ANSI C63.10-2013 and CAN/CSA-CEI/IEC CISPR 22.

This test is required for any spurious emission that falls in a Restricted Band, as defined in Section 15.205. It must be performed with the highest gain of each type of antenna proposed for use with the EUT.

Use the following spectrum analyzer settings:

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

- The measuring distance of at 3 m shall be used for measurements at frequency up to 1GHz. For frequencies above 1GHz, any suitable measuring distance may be used.
- The EUT was placed on the top of a rotating table 0.8 m for below 1GHz and 1.5m for above 1GHz the ground at a 3 meter. The table was rotated 360 degrees to determine the position of the highest radiation.
- The height of the equipment or of the substitution antenna shall be 0.8 m for below 1GHz and 1.5m for above 1GHz; the height of the test antenna shall vary between 1 m to 4 m. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

During the radiated emission test, the Spectrum Analyzer was set with the following configurations:

Frequency Band (MHz)	Function	Resolution bandwidth	Video Bandwidth
30 to 1000	QP	120 kHz	300 kHz
Above 1000	Peak	1 MHz	1 MHz
	Average	1 MHz	10 Hz

Note: for the frequency ranges below 30 MHz, a narrower RBW is used for these ranges but the measured value should add a RBW correction factor (RBWCF) where $RBWCF [dB] = 10 \cdot \lg(100 [kHz] / \text{narrower RBW} [kHz])$. , the narrower RBW is 1 kHz and RBWCF is 20 dB for the frequency 9 kHz to 150 kHz, and the narrower RBW is 10 kHz and RBWCF is 10 dB for the frequency 150 kHz to 30 MHz.

3.2.6 TEST RESULTS (9KHZ – 30 MHZ)

EUT:	Notebook	Model Name. :	G139
Temperature:	20 °C	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	N/A
--	--	--	--	N/A

NOTE:

The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance/test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

3.2.7 TEST RESULTS (30MHZ – 1GHZ)

EUT :	Notebook	Model Name. :	G139
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX(5.2G)- 802.11a (High CH)		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	47.6586	21.41	11.31	32.72	40.00	-7.28	QP
V	110.1816	23.85	12.32	36.17	43.50	-7.33	QP
V	225.3080	20.93	12.01	32.94	46.00	-13.06	QP
V	325.5958	19.66	16.66	36.32	46.00	-9.68	QP
V	495.9344	14.36	21.96	36.32	46.00	-9.68	QP
V	742.2587	11.50	27.58	39.08	46.00	-6.92	QP

Remark:

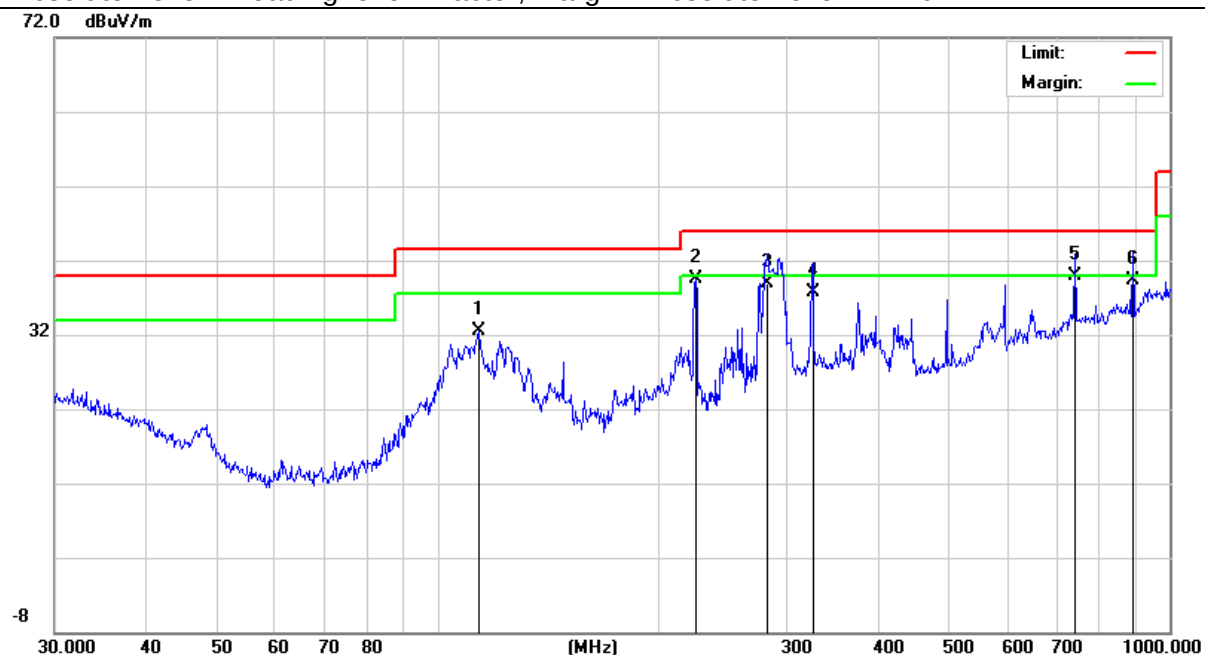
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	113.7142	19.60	12.99	32.59	43.50	-10.91	QP
H	225.3080	27.43	12.01	39.44	46.00	-6.56	QP
H	281.9946	22.18	16.63	38.81	46.00	-7.19	QP
H	325.5958	21.08	16.66	37.74	46.00	-8.26	QP
H	742.2587	12.31	27.58	39.89	46.00	-6.11	QP
H	890.7278	10.79	28.51	39.30	46.00	-6.70	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



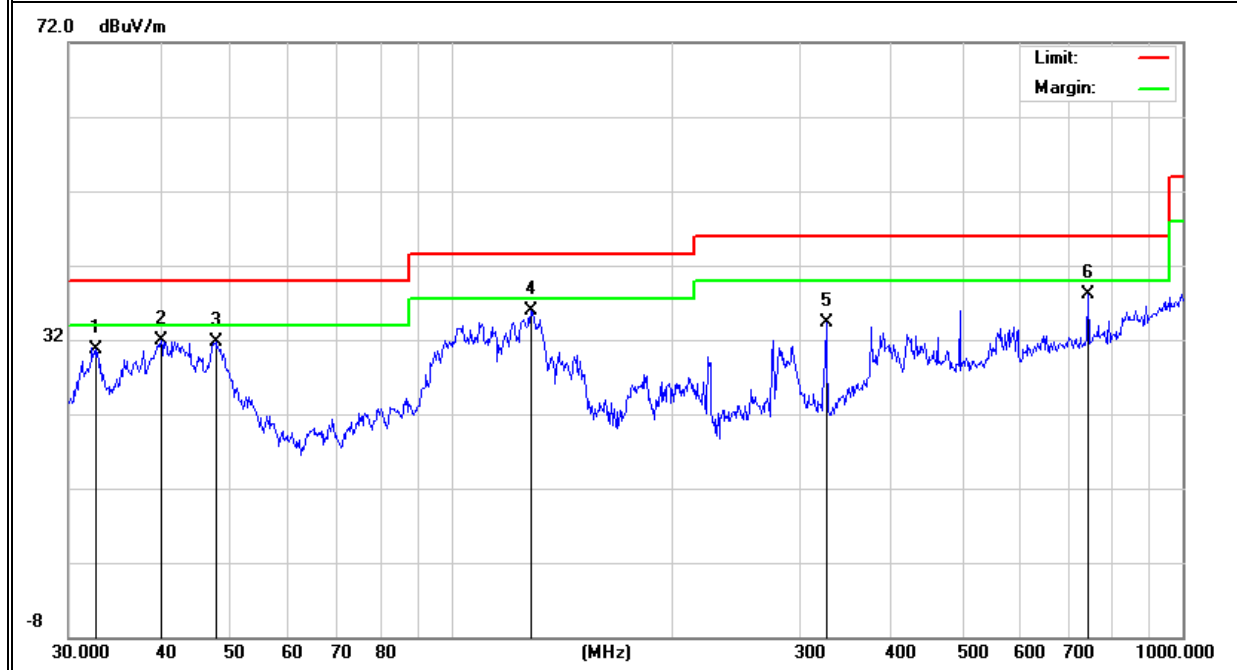
Note: The test modes were carried out for all operation modes. The worst test mode for test data was showed in the report.

EUT :	Notebook	Model Name. :	G139
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 12V
Test Mode :	TX(5.8G) - 802.11a (High CH)		

Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
V	32.6340	12.91	17.85	30.76	40.00	-9.24	QP
V	40.1347	17.52	14.36	31.88	40.00	-8.12	QP
V	47.6584	20.40	11.31	31.71	40.00	-8.29	QP
V	128.5629	22.48	13.42	35.90	43.50	-7.60	QP
V	325.5957	17.66	16.66	34.32	46.00	-11.68	QP
V	742.2586	10.50	27.58	38.08	46.00	-7.92	QP

Remark:

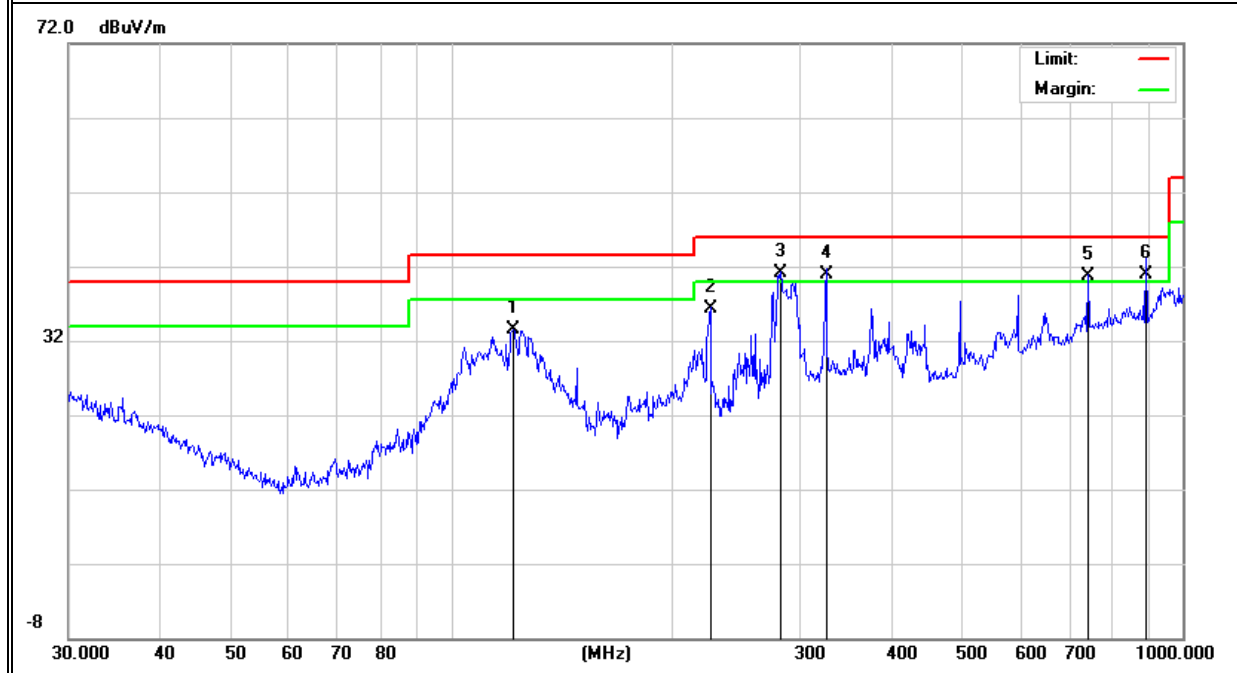
Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Polar (H/V)	Frequency	Meter Reading	Factor	Emission Level	Limits	Margin	Remark
	(MHz)	(dBuV)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
H	121.5485	20.32	13.22	33.54	43.50	-9.96	QP
H	226.0994	24.27	12.02	36.29	46.00	-9.71	QP
H	281.9945	24.52	16.63	41.15	46.00	-4.85	QP
H	325.5957	24.29	16.66	40.95	46.00	-5.05	QP
H	742.2586	13.15	27.58	40.73	46.00	-5.27	QP
H	890.7278	12.46	28.51	40.97	46.00	-5.03	QP

Remark:

Absolute Level= ReadingLevel+ Factor, Margin= Absolute Level - Limit



Note: The test modes were carried out for all operation modes. The worst test mode for test data was showed in the report.

3.2.8 TEST RESULTS (1GHz-26.5GHz)

EUT :	Notebook	Model Name. :	G139
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 7.6V
Test Mode :	TX(5.2G) - 802.11a _5180~5240MHz		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5180 MHz)-Above 1G									
Vertical	4435.390	60.70	5.94	35.40	44.00	58.04	74.00	-15.96	Pk
Vertical	4435.390	41.52	5.94	35.40	44.00	38.86	54.00	-15.14	AV
Vertical	10370.126	64.00	8.46	39.75	44.50	67.71	74.00	-6.29	Pk
Vertical	10370.126	41.17	8.46	39.75	44.50	44.88	54.00	-9.12	AV
Vertical	15540.816	60.20	10.12	38.80	44.10	65.02	74.00	-8.98	Pk
Vertical	15540.816	38.88	10.12	38.80	42.70	45.10	54.00	-8.90	AV
Horizontal	4434.158	62.58	5.94	35.18	44.00	59.70	74.00	-14.30	Pk
Horizontal	4434.158	42.98	5.94	35.18	44.00	40.10	54.00	-13.90	AV
Horizontal	10369.945	58.07	8.46	38.71	44.50	60.74	74.00	-13.26	Pk
Horizontal	10369.945	42.33	8.46	38.71	44.50	45.00	54.00	-9.00	AV
Horizontal	10540.378	56.65	10.12	38.38	44.10	61.05	74.00	-12.95	Pk
Horizontal	10540.378	40.11	10.12	38.38	44.10	44.51	54.00	-9.49	AV
Middle Channel (5200 MHz)-Above 1G									
Vertical	4592.783	57.82	6.48	36.35	44.05	56.60	74.00	-17.40	Pk
Vertical	4592.783	42.24	6.48	36.35	44.05	41.02	54.00	-12.98	AV
Vertical	10401.011	59.14	8.47	37.88	44.51	60.98	74.00	-13.02	Pk
Vertical	10401.011	40.57	8.47	37.88	44.51	42.41	54.00	-11.59	AV
Vertical	15600.084	59.36	10.12	38.80	44.10	64.18	74.00	-9.82	Pk
Vertical	15600.084	38.81	10.12	38.80	42.70	45.03	54.00	-8.97	AV
Horizontal	4592.389	57.50	6.48	36.37	44.05	56.30	74.00	-17.70	Pk
Horizontal	4592.389	44.17	6.48	36.37	44.05	42.97	54.00	-11.03	AV
Horizontal	10400.140	60.64	8.47	38.64	44.50	63.25	74.00	-10.75	Pk
Horizontal	10400.140	40.18	8.47	38.64	44.50	42.79	54.00	-11.21	AV
Horizontal	15600.469	59.22	10.12	38.38	44.10	63.62	74.00	-10.38	Pk
Horizontal	15600.469	40.43	10.12	38.38	44.10	44.83	54.00	-9.17	AV
High Channel (5240 MHz)-Above 1G									
Vertical	4739.515	63.16	7.10	37.24	43.50	64.00	74.00	-10.00	Pk
Vertical	4739.515	42.56	7.10	37.24	43.50	43.40	54.00	-10.60	AV
Vertical	10480.328	59.37	8.46	37.68	44.50	61.01	74.00	-12.99	Pk
Vertical	10480.328	41.28	8.46	37.68	44.50	42.92	54.00	-11.08	AV
Vertical	15720.352	60.75	10.12	38.80	44.10	65.57	74.00	-8.43	Pk
Vertical	15720.352	39.53	10.12	38.80	42.70	45.75	54.00	-8.25	AV
Horizontal	4739.129	60.44	7.10	37.24	43.50	61.28	74.00	-12.72	Pk
Horizontal	4739.129	40.71	7.10	37.24	43.50	41.55	54.00	-12.45	AV
Horizontal	10481.672	61.40	8.46	38.57	44.50	63.93	74.00	-10.07	Pk
Horizontal	10481.672	41.68	8.46	38.57	44.50	44.21	54.00	-9.79	AV
Horizontal	15720.396	58.97	10.12	38.38	44.10	63.37	74.00	-10.63	Pk
Horizontal	15720.396	42.29	10.12	38.38	44.10	46.69	54.00	-7.31	AV

Note:"802.11a (5.2G)" mode is the worst mode. PK value is lower than the Average value limit, So average didn't record.

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

EUT :	Notebook	Model Name. :	G139
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 7.6V
Test Mode :	TX (5.8G) -- 802.11a _5745~5825MHz		

Polar	Frequency	Meter Reading	Cable loss	Antenna Factor	Preamp Factor	Emission Level	Limits	Margin	Detector Type
(H/V)	(MHz)	(dBuV)	(dB)	dB/m	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel (5745 MHz)-Above 1G									
Vertical	4680.34	62.07	5.94	35.40	44.00	59.41	74.00	-14.59	Pk
Vertical	4680.34	43.78	5.94	35.40	44.00	41.12	54.00	-12.88	AV
Vertical	11490.45	58.40	8.46	39.75	44.50	62.11	74.00	-11.89	Pk
Vertical	11490.45	41.65	8.46	39.75	44.50	45.36	54.00	-8.64	AV
Vertical	17235.50	50.38	10.12	38.80	44.10	55.20	74.00	-18.80	Pk
Vertical	17235.50	39.88	10.12	38.80	42.70	46.10	54.00	-7.90	AV
Horizontal	4680.07	57.88	5.94	35.18	44.00	55.00	74.00	-19.00	Pk
Horizontal	4680.07	40.04	5.94	35.18	44.00	37.16	54.00	-16.84	AV
Horizontal	11490.32	57.33	8.46	38.71	44.50	60.00	74.00	-14.00	Pk
Horizontal	11490.32	40.73	8.46	38.71	44.50	43.40	54.00	-10.60	AV
Horizontal	17235.32	59.86	10.12	38.38	44.10	64.26	74.00	-9.74	Pk
Horizontal	17235.32	38.97	10.12	38.38	44.10	43.37	54.00	-10.63	AV
Middle Channel (5785 MHz)-Above 1G									
Vertical	4592.22	60.99	6.48	36.35	44.05	59.77	74.00	-14.23	Pk
Vertical	4592.22	41.34	6.48	36.35	44.05	40.12	54.00	-13.88	AV
Vertical	11570.26	58.85	8.47	37.88	44.51	60.69	74.00	-13.31	Pk
Vertical	11570.26	41.41	8.47	37.88	44.51	43.25	54.00	-10.75	AV
Vertical	17355.69	59.74	10.12	38.80	44.10	64.56	74.00	-9.44	Pk
Vertical	17355.69	37.92	10.12	38.80	42.70	44.14	54.00	-9.86	AV
Horizontal	4592.13	58.30	6.48	36.37	44.05	57.10	74.00	-16.90	Pk
Horizontal	4592.13	41.15	6.48	36.37	44.05	39.95	54.00	-14.05	AV
Horizontal	11570.13	61.04	8.47	38.64	44.50	63.65	74.00	-10.35	Pk
Horizontal	11570.13	42.28	8.47	38.64	44.50	44.89	54.00	-9.11	AV
Horizontal	17355.34	60.85	10.12	38.38	44.10	65.25	74.00	-8.75	Pk
Horizontal	17355.34	41.85	10.12	38.38	44.10	46.25	54.00	-7.75	AV
High Channel (5825 MHz)-Above 1G									
Vertical	6039.66	61.25	7.10	37.24	43.50	62.09	74.00	-11.91	Pk
Vertical	6039.66	42.39	7.10	37.24	43.50	43.23	54.00	-10.77	AV
Vertical	11652.27	60.96	8.46	37.68	44.50	62.60	74.00	-11.40	Pk
Vertical	11652.27	42.35	8.46	37.68	44.50	43.99	54.00	-10.01	AV
Vertical	17473.59	59.82	10.12	38.80	44.10	64.64	74.00	-9.36	Pk
Vertical	17473.59	39.99	10.12	38.80	42.70	46.21	54.00	-7.79	AV
Horizontal	6039.48	59.48	7.10	37.24	43.50	60.32	74.00	-13.68	Pk
Horizontal	6039.48	40.82	7.10	37.24	43.50	41.66	54.00	-12.34	AV
Horizontal	11652.52	59.53	8.46	38.57	44.50	62.06	74.00	-11.94	Pk
Horizontal	11652.52	41.08	8.46	38.57	44.50	43.61	54.00	-10.39	AV
Horizontal	17474.53	57.44	10.12	38.38	44.10	61.84	74.00	-12.16	Pk
Horizontal	17474.53	40.57	10.12	38.38	44.10	44.97	54.00	-9.03	AV

Note:"802.11a (5.8G)" mode is the worst mode. PK value is lower than the Average value limit, So average didn't record.

The amplitude of spurious emissions that are attenuated by more than 20dB below the permissible value

has no need to be reported.

Emission level (dBuV/m) = 20 log Emission level (uV/m).

Corrected Reading: Antenna Factor + Cable Loss + Read Level - Preamp Factor = Level.

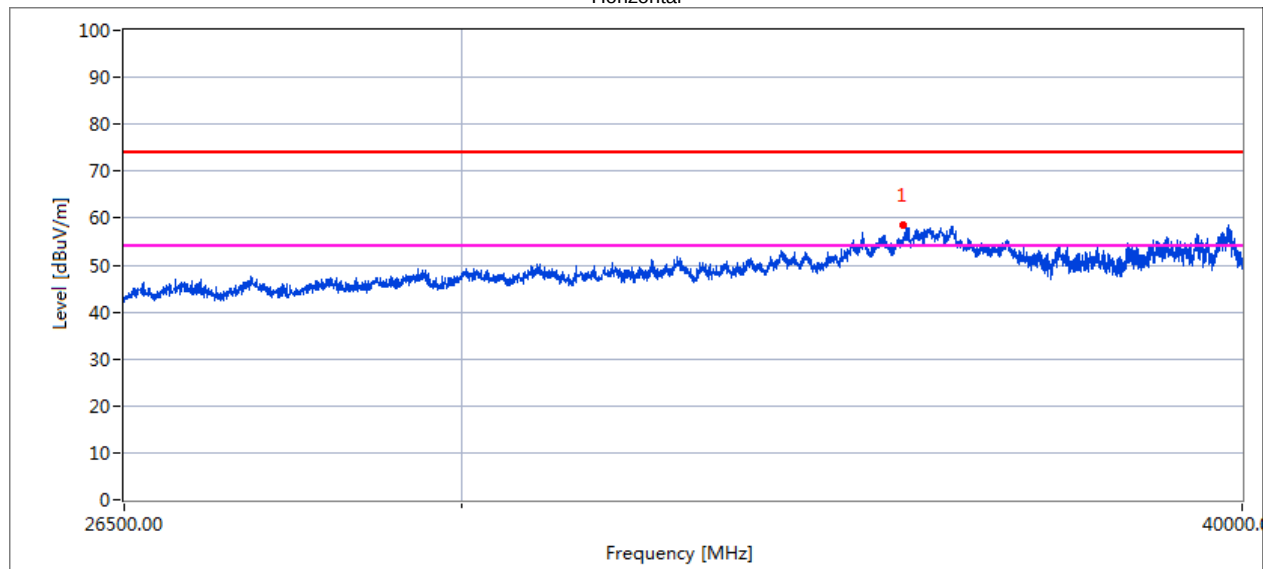
3.2.9 TEST RESULTS (26.5GHZ-40GHZ)

EUT :	Notebook	Model Name. :	G139
Temperature :	20 °C	Relative Humidity :	48%
Pressure :	1010 hPa	Test Voltage :	DC 7.6V
Test Mode :	TX (5.2G)-802.11a 5180MHz~5240MHz , TX (5.8G)-802.11a 5745MHz~5825MHz		

All the modulation modes have been tested, and the worst result was report as below:

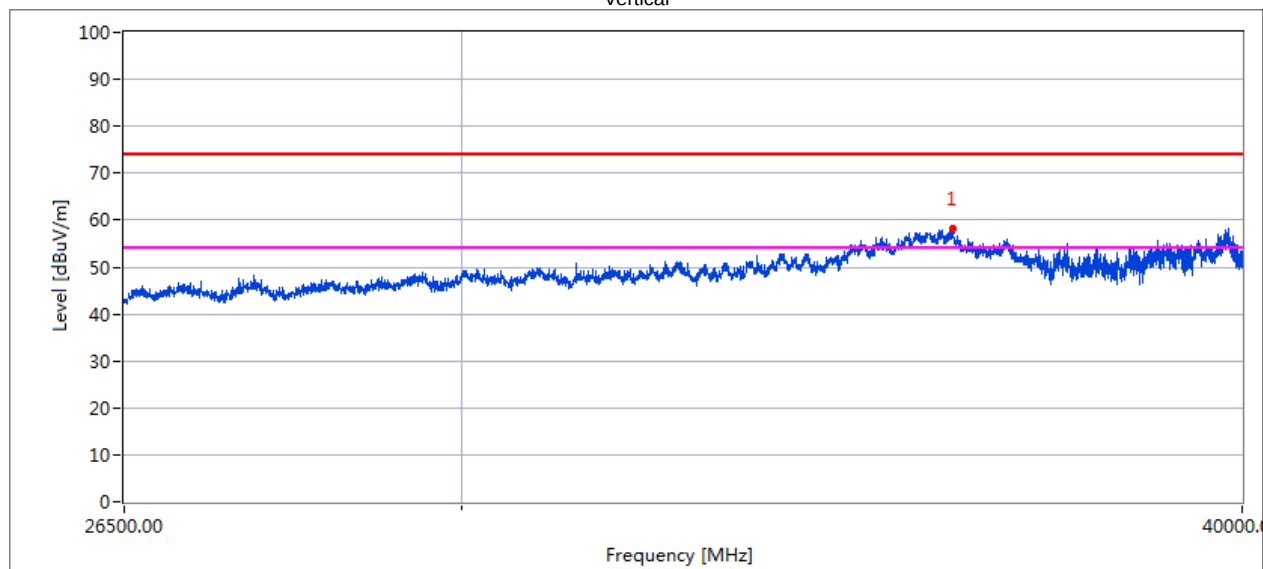
Low Channel (5180 MHz)-Above 1G

Horizontal

**Measurement Result:**

Frequency MHz	Pre-scan Level MaxPeak dBuV/m	Final Test Level MaxPeak dBuV/m	Limit MaxPeak dBuV/m	Margin dB	Detector Type
35385.248	58.6	54.3	74.0	19.7	PK
35385.248	46.3	43.5	54.0	10.5	AV

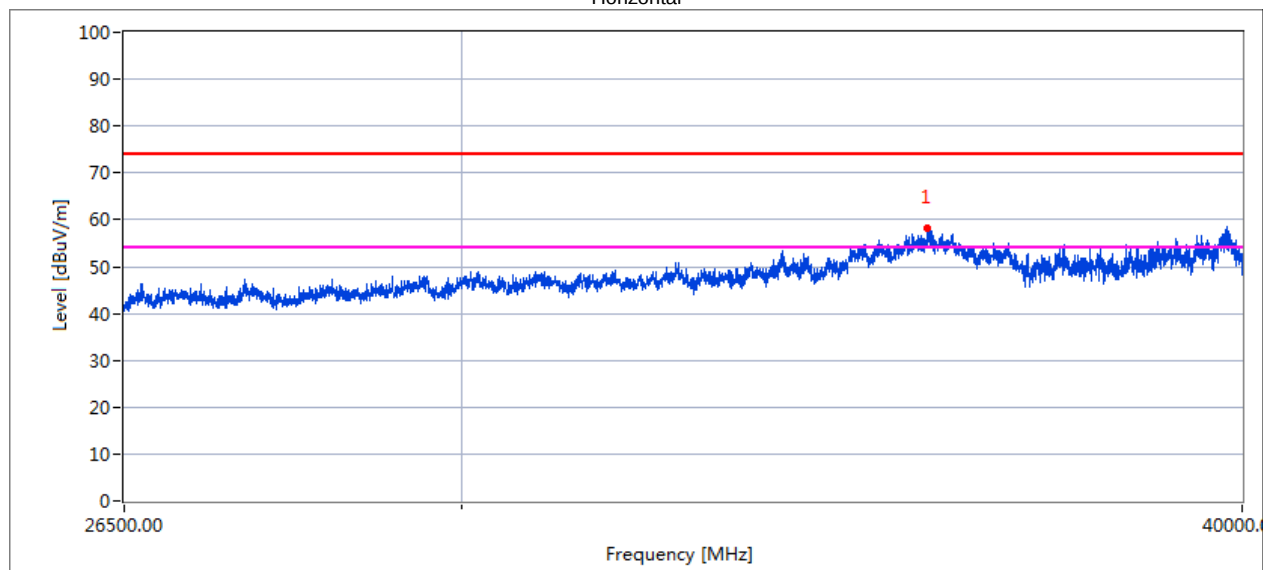
Vertical

**Measurement Result:**

Frequency MHz	Pre-scan Level MaxPeak dBuV/m	Final Test Level MaxPeak dBuV/m	Limit MaxPeak dBuV/m	Margin dB	Detector Type
35869.624	58.5	55.4	74.0	18.6	PK
35869.624	44.1	43.4	54.0	10.6	AV

High Channel (5240 MHz)-Above 1G

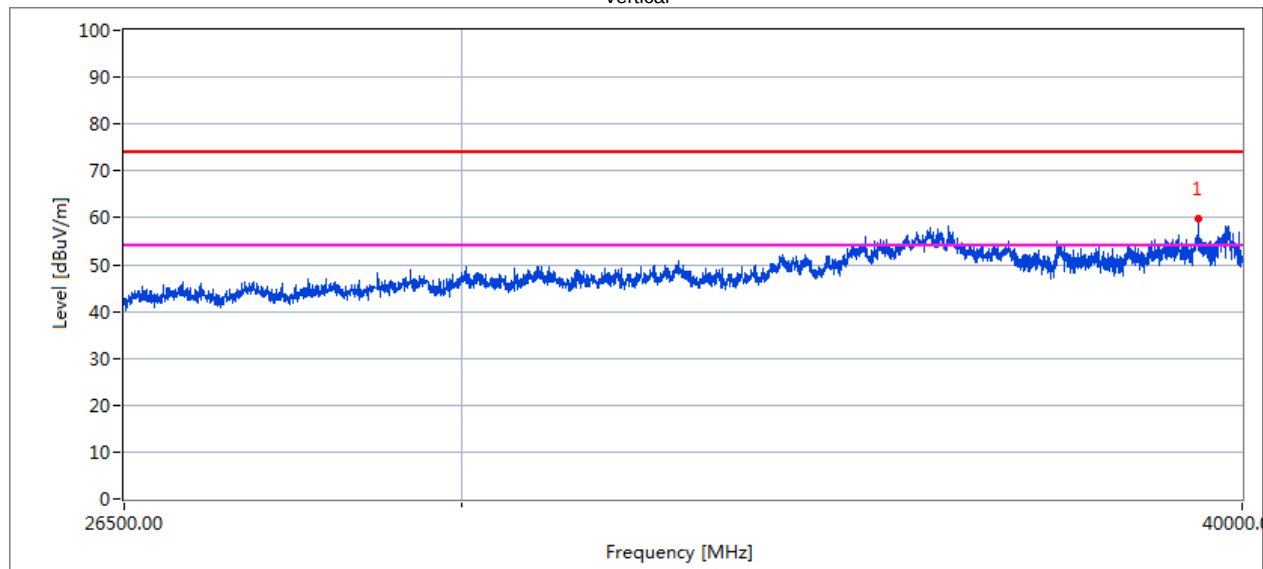
Horizontal



Measurement Result:

Frequency MHz	Pre-scan Level MaxPeak dBuV/m	Final Test Level MaxPeak dBuV/m	Limit MaxPeak dBuV/m	Margin dB	Detector Type
35623.214	58.6	55.8	74.0	18.2	PK
35623.214	42.6	42.3	54.0	11.7	AV

Vertical

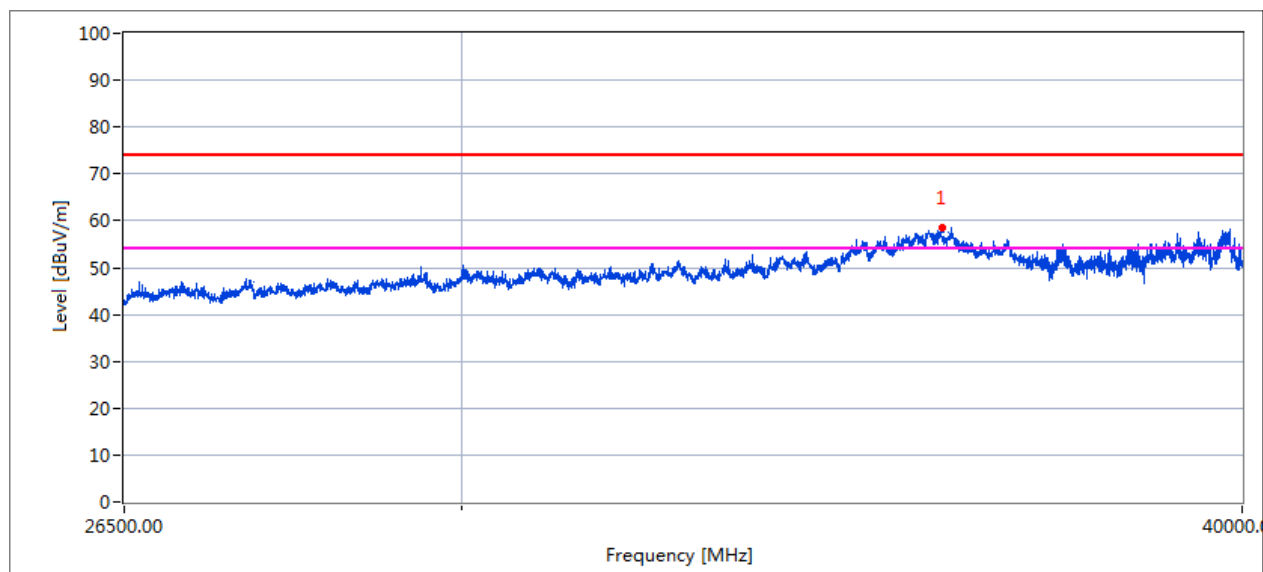


Measurement Result:

Frequency MHz	Pre-scan Level MaxPeak dBuV/m	Final Test Level MaxPeak dBuV/m	Limit MaxPeak dBuV/m	Margin dB	Detector Type
39439.764	59.5	57.1	74.0	16.9	PK
39439.764	43.2	43.2	54.0	10.8	AV

Low Channel (5745 MHz)-Above 1G

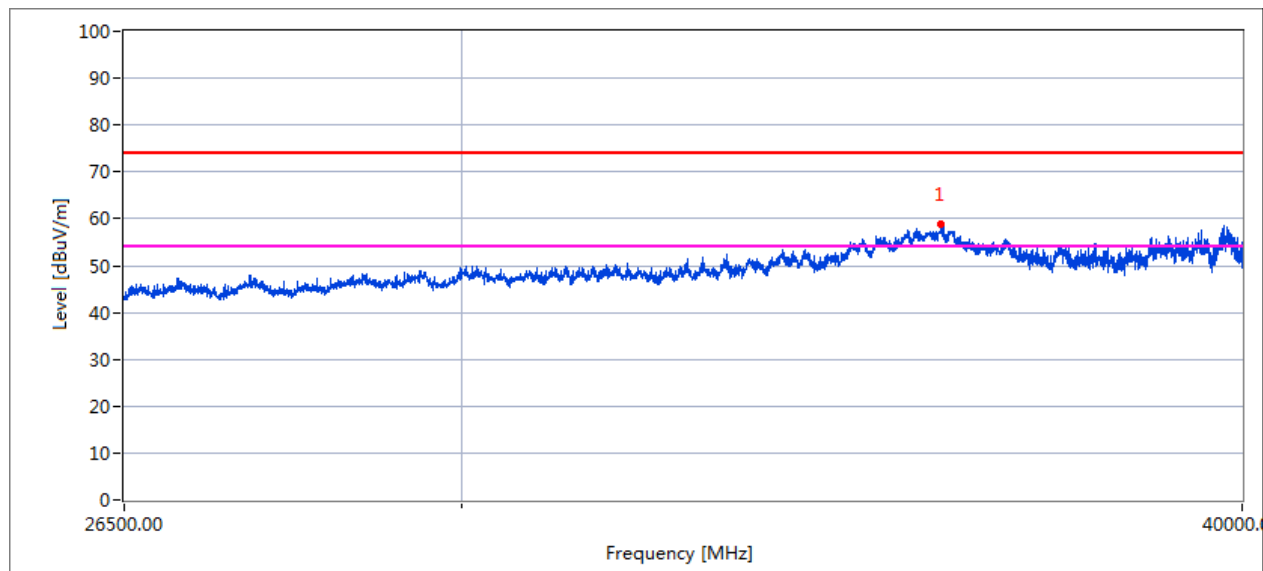
Horizontal



Measurement Result:

Frequency MHz	Pre-scan Level MaxPeak dBuV/m	Final Test Level MaxPeak dBuV/m	Limit MaxPeak dBuV/m	Margin dB	Detector Type
35675.504	58.6	48.6	74.0	25.4	PK
35675.504	43.5	43.1	54.0	10.9	AV

Vertical

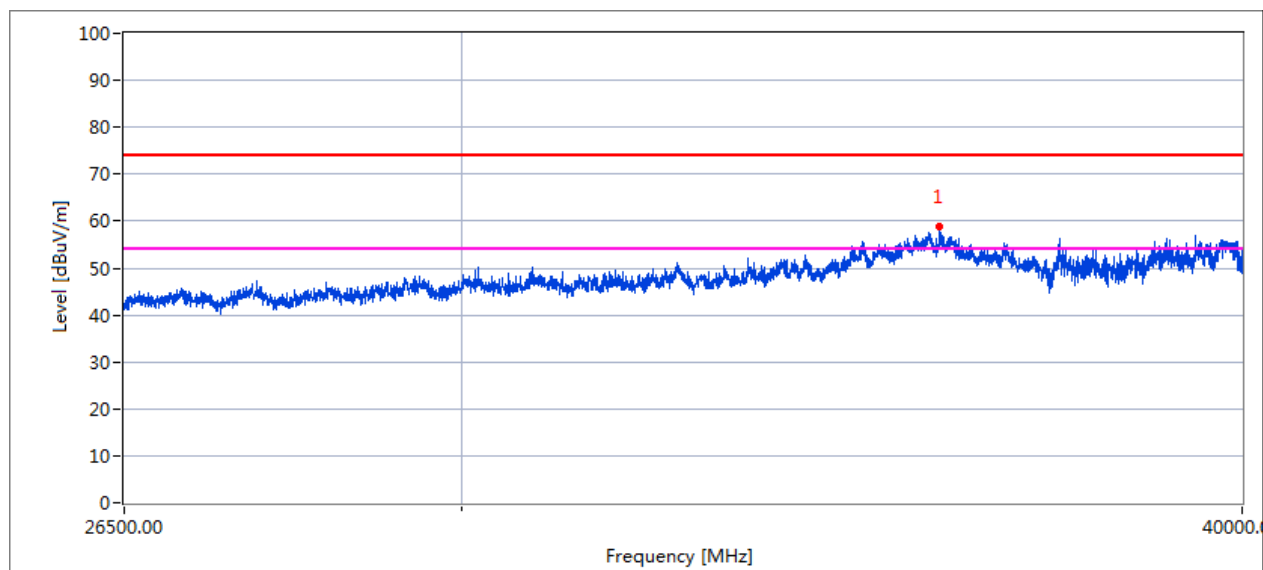


Measurement Result:

Frequency MHz	Pre-scan Level MaxPeak dBuV/m	Final Test Level MaxPeak dBuV/m	Limit MaxPeak dBuV/m	Margin dB	Detector Type
35645.824	58.2	54.2	74.0	19.8	PK
35645.824	42.6	42.5	54.0	11.5	AV

High Channel (5825 MHz)-Above 1G

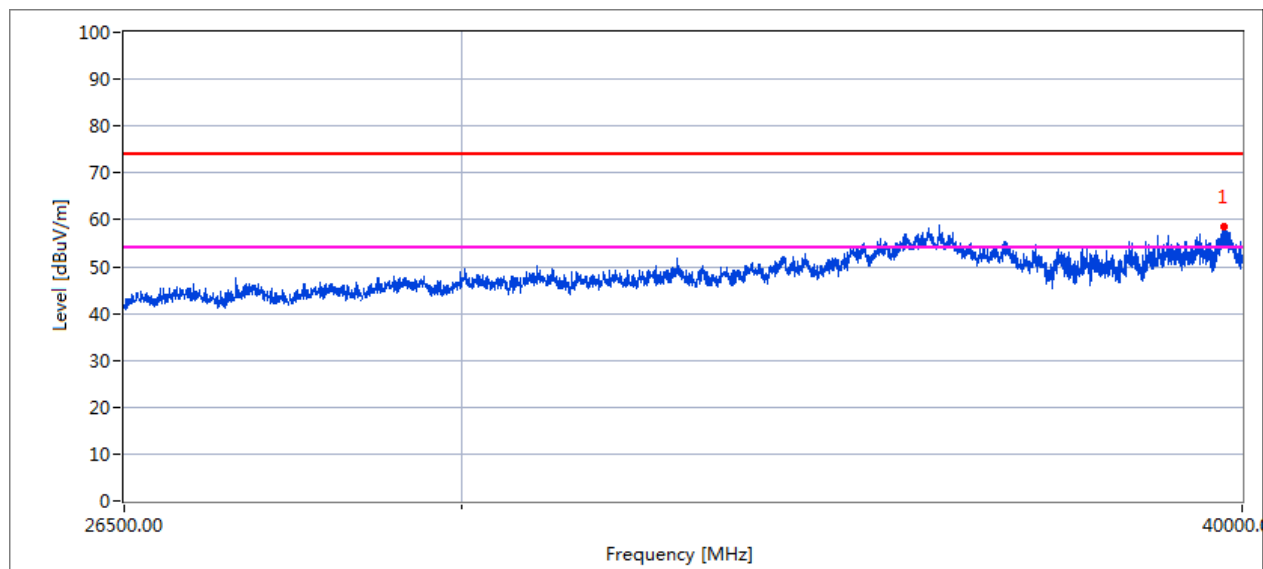
Horizontal



Measurement Result:

Frequency MHz	Pre-scan Level MaxPeak dBuV/m	Final Test Level MaxPeak dBuV/m	Limit MaxPeak dBuV/m	Margin dB	Detector Type
35658.157	58.3	56.1	74.0	17.9	PK
35658.157	44.1	43.4	54.0	10.6	AV

Vertical



Measurement Result:

Frequency MHz	Pre-scan Level MaxPeak dBuV/m	Final Test Level MaxPeak dBuV/m	Limit MaxPeak dBuV/m	Margin dB	Detector Type
39757.175	58.6	58.2	74.0	15.8	PK
39757.175	43.9	43.3	54.0	10.7	AV

4. POWER SPECTRAL DENSITY TEST

4.1 APPLIED PROCEDURES / LIMIT

According to FCC §15.407(a)(3)

For the band 5.15-5.25 GHz,

(i) For an outdoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi. The maximum e.i.r.p. at any elevation angle above 30 degrees as measured from the horizon must not exceed 125 mW (21 dBm).

(ii) For an indoor access point operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

(iii) For fixed point-to-point access points operating in the band 5.15-5.25 GHz, the maximum power spectral density shall not exceed 17 dBm in any 1 megahertz band. Fixed point-to-point U-NII devices may employ antennas with directional gain up to 23 dBi without any corresponding reduction in the maximum conducted output power or maximum power spectral density. For fixed point-to-point transmitters that employ a directional antenna gain greater than 23 dBi, a 1 dB reduction in maximum conducted output power and maximum power spectral density is required for each 1 dB of antenna gain in excess of 23 dBi. Fixed, point-to-point operations exclude the use of point-to-multipoint systems, omnidirectional applications, and multiple colocated transmitters transmitting the same information. The operator of the U-NII device, or if the equipment is professionally installed, the installer, is responsible for ensuring that systems employing high gain directional antennas are used exclusively for fixed, point-to-point operations.

(iv) For client devices in the 5.15-5.25 GHz band, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

For the band 5.725-5.85 GHz

(3) For the band 5.725-5.85 GHz, the maximum power spectral density shall not exceed 30 dBm in any 500-kHz band. If transmitting antennas of directional gain greater than 6 dBi are used, both the maximum conducted output power and the maximum power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

,

4.2 TEST PROCEDURE

For devices operating in the bands 5.15-5.25 GHz, 5.25-5.35 GHz, and 5.47-5.725 GHz, the above procedures make use of 1 MHz RBW to satisfy directly the 1 MHz reference bandwidth specified in § 15.407(a)(5). For devices operating in the band 5.725-5.85 GHz, the rules specify a measurement bandwidth of 500 kHz. Many spectrum analyzers do not have 500 kHz RBW, thus a narrower RBW may need to be used. The rules permit the use of a RBWs less than 1 MHz, or 500 kHz, “provided that the measured power is integrated over the full reference bandwidth” to show the total power over the specified measurement bandwidth (i.e., 1 MHz, or 500 kHz). If measurements are performed using a reduced resolution bandwidth (< 1 MHz, or < 500 kHz) and integrated over 1 MHz, or 500 KHz bandwidth, the following adjustments to the procedures apply:

- a) Set $RBW \geq 1/T$, where T is defined in section II.B.I.a).
- b) Set $VBW \geq 3 RBW$.
- c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add $10\log(500\text{kHz}/RBW)$ to the measured result, whereas $RBW (< 500 \text{ KHz})$ is the reduced resolution bandwidth of the spectrum analyzer set during measurement.
- d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add $10\log(1\text{MHz}/RBW)$ to the measured result, whereas $RBW (< 1 \text{ MHz})$ is the reduced resolution bandwidth of spectrum analyzer set during measurement.
- e) Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

Note: As a practical matter, it is recommended to use reduced RBW of 100 KHz for the sections 5.c) and 5.d) above, since $RBW=100 \text{ KHz}$ is available on nearly all spectrum analyzers.

4.3 DEVIATION FROM STANDARD

No deviation.

4.4 TEST SETUP



4.5 EUT OPERATION CONDITIONS

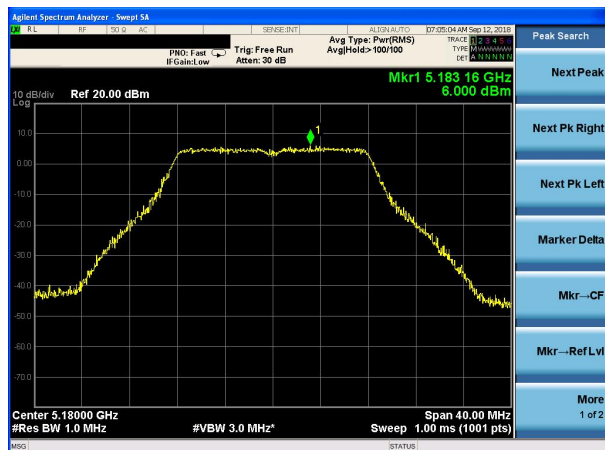
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

4.6 TEST RESULTS

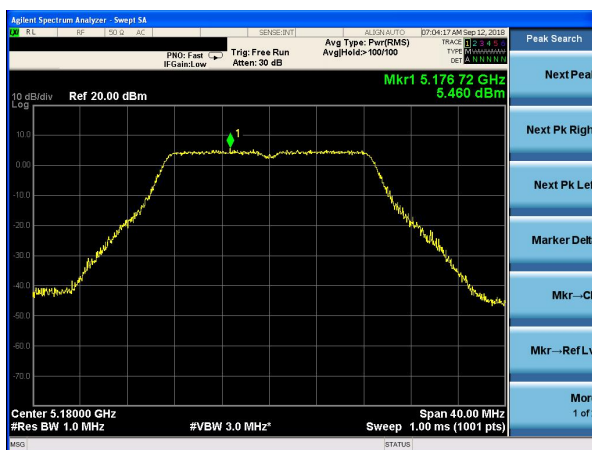
EUT :	Notebook	Model Name. :	G139
Temperature :	25 °C	Relative Humidity :	56%
Pressure :	1015 hPa	Test Voltage :	DC 7.6V
Test Mode :	TX Frequency Band I (5150-5250MHz)		

Mode	Frequency	Measured Power Density (dBm)	Limit (dBm)	Result
802.11 a	5180 MHz	6.000	11	PASS
	5200 MHz	6.094	11	PASS
	5240 MHz	6.092	11	PASS
802.11 n20	5180 MHz	5.460	11	PASS
	5200 MHz	5.218	11	PASS
	5240 MHz	5.440	11	PASS
802.11 n40	5190 MHz	3.173	11	PASS
	5230 MHz	2.696	11	PASS
802.11 ac20	5180 MHz	4.932	11	PASS
	5200 MHz	4.895	11	PASS
	5240 MHz	5.071	11	PASS
802.11 ac40	5190 MHz	3.034	11	PASS
	5230 MHz	3.239	11	PASS
802.11 ac80	5210 MHz	0.759	11	PASS

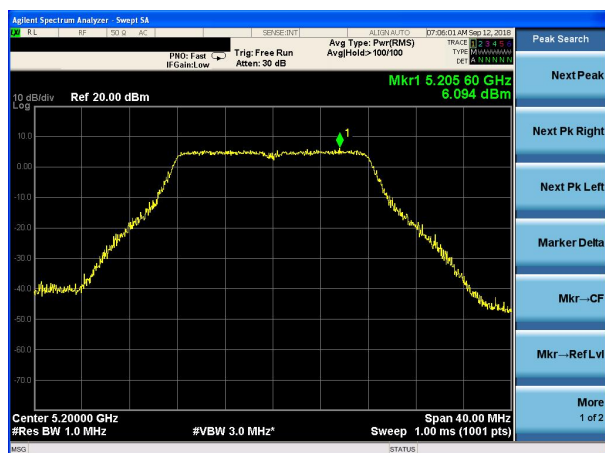
(802.11a) PSD plot on channel 36



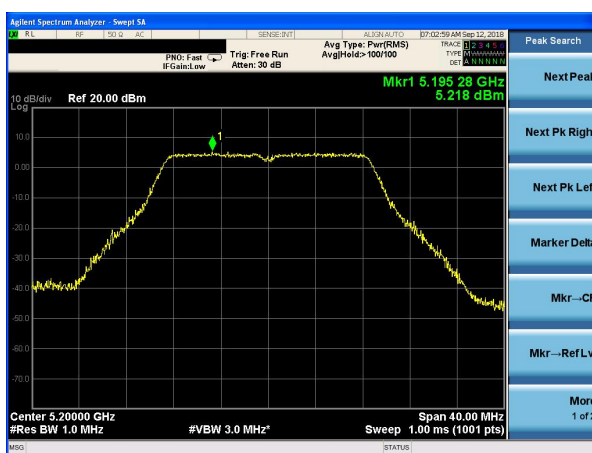
(802.11n20) PSD plot on channel 36



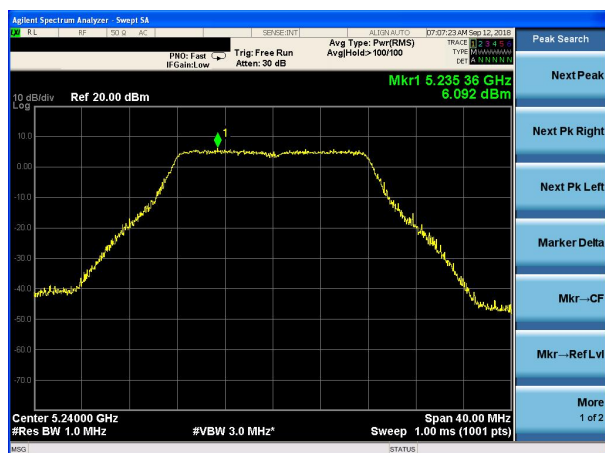
(802.11a) PSD plot on channel 40



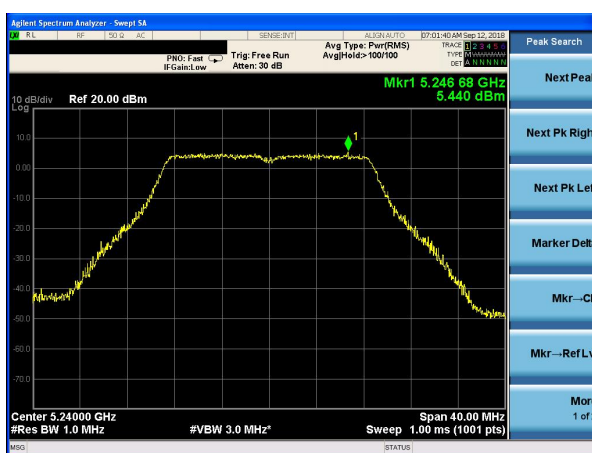
(802.11n20) PSD plot on channel 40



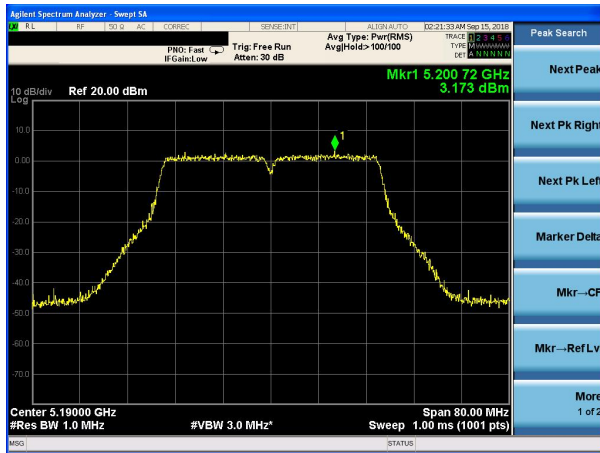
(802.11a) PSD plot on channel 48



(802.11n20) PSD plot on channel 48



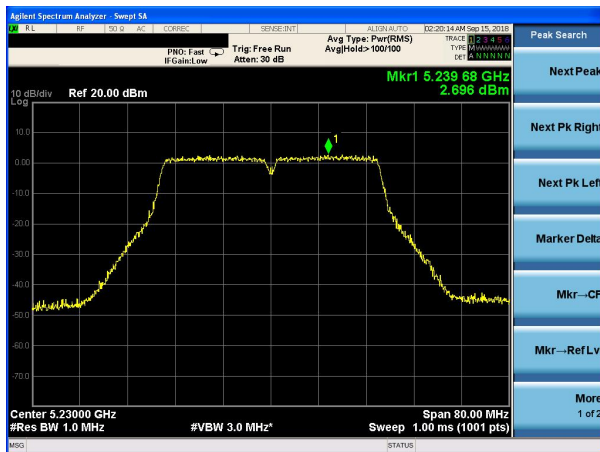
(802.11n40) PSD plot on channel 38



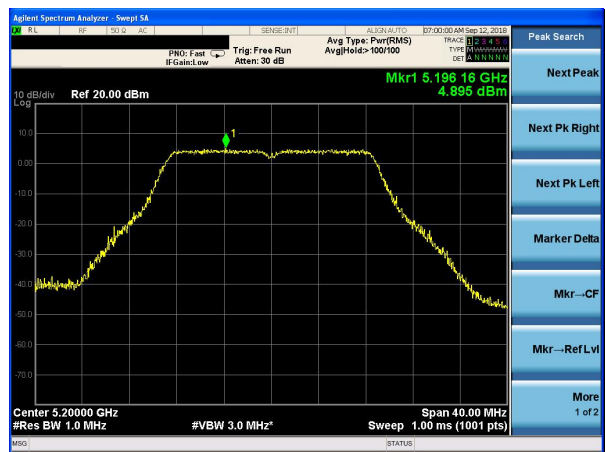
(802.11ac20) PSD plot on channel 36



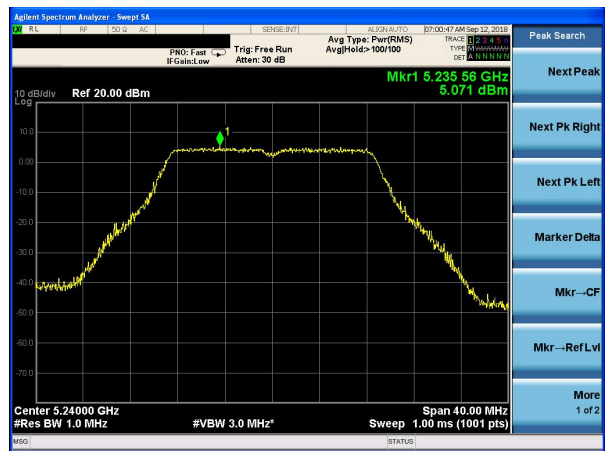
(802.11n40) PSD plot on channel 46



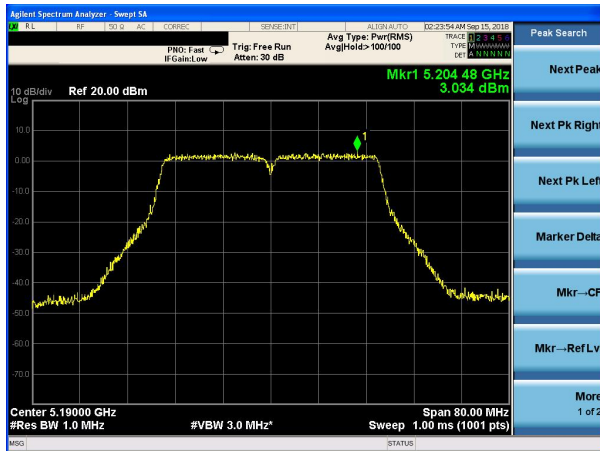
(802.11ac20) PSD plot on channel 40



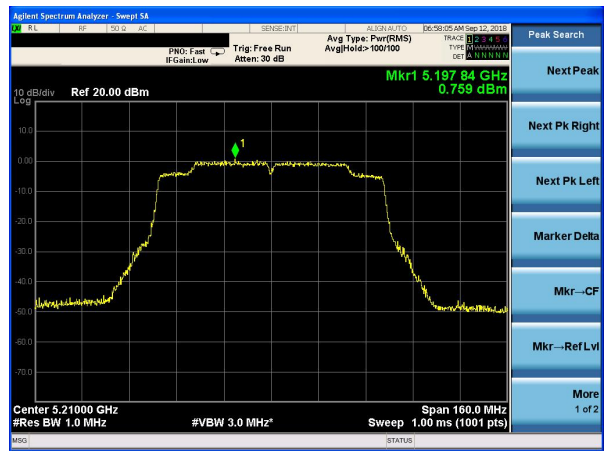
(802.11ac20) PSD plot on channel 48



(802.11ac40) PSD plot on channel 38



(802.11ac80) PSD plot on channel 42



(802.11ac40) PSD plot on channel 46

