

6.5 Maximum Power Spectral Density

LIMIT

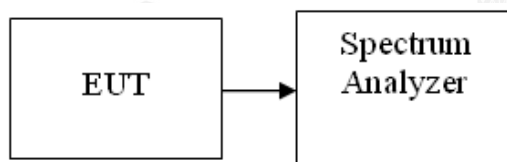
According to §15.407(a),

For mobile and portable client devices in the 5.5-5.25 GHz band, the maximum power spectral density shall not exceed 11dBm in any 1 megahertz band.

For the 5.25-5.725 GHz bands, the maximum power spectral density shall not exceed 11 dBm in any 1 megahertz band

If transmitting antennas of directional gain greater than 6dBi are used, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

Test Configuration



TESTPROCEDURE

7. Place the EUT on the table and set it in transmitting mode.
Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
8. Set the spectrum analyzer as RBW = 1MHz, VBW = 3MHz, Span must be greater than 26dB bandwidth, adjust as necessary, Sweep= auto, Detector RMS
9. Record the max. reading.

TESTRESULTS

No non-compliance noted

Test Data

Test mode: IEEE802.11a mode

5250~5350MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit(dBm)	Result
Low	5260	-2.40	11	PASS
Mid	5280	-0.87	11	PASS
High	5320	-1.20	11	PASS

5470~5725MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit(dBm)	Result
Low	5500	-0.65	11	PASS
Mid	5580	-0.80	11	PASS
High	5700	-1.23	11	PASS

**Testmode:IEEE802.11n HT20 mode
5250~5350MHz**

Channel	Frequency (MHz)	PPSD (dBm)	Limit(dBm)	Result
Low	5260	-2.28	11	PASS
Mid	5280	-1.86	11	PASS
High	5320	-2.18	11	PASS

5470~5725MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit(dBm)	Result
Low	5500	-1.00	11	PASS
Mid	5580	-0.86	11	PASS
High	5700	-1.31	11	PASS

Testmode:IEEE802.11n HT40 mode
5250~5350MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit(dBm)	Result
Low	5270	-3.66	11	PASS
High	5310	-5.14	11	PASS

5470~5725MHz

Channel	Frequency (MHz)	PPSD (dBm)	Limit(dBm)	Result
Low	5510	-3.52	11	PASS
Mid	5550	-5.03	11	PASS
High	5670	-3.63	11	PASS

Note:

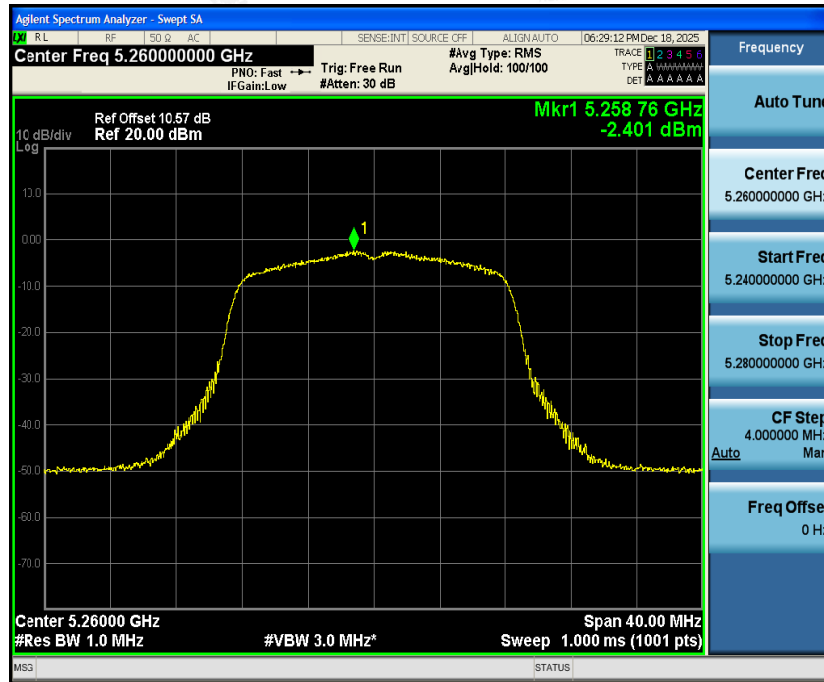
1.Duty factor has been off seted with cable loss

Test Plot

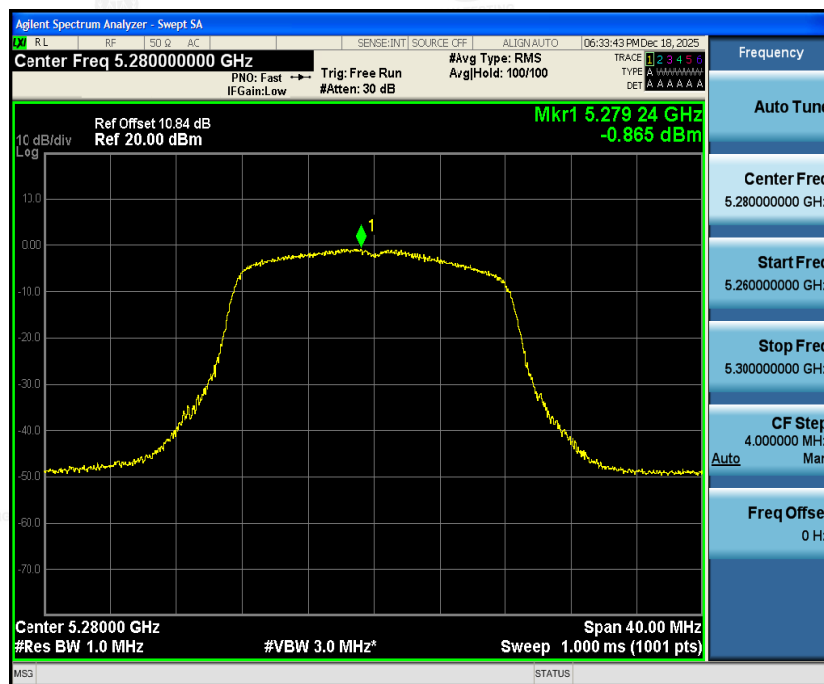
IEEE802.11a mode:

5250~5350MHz

Low Channel

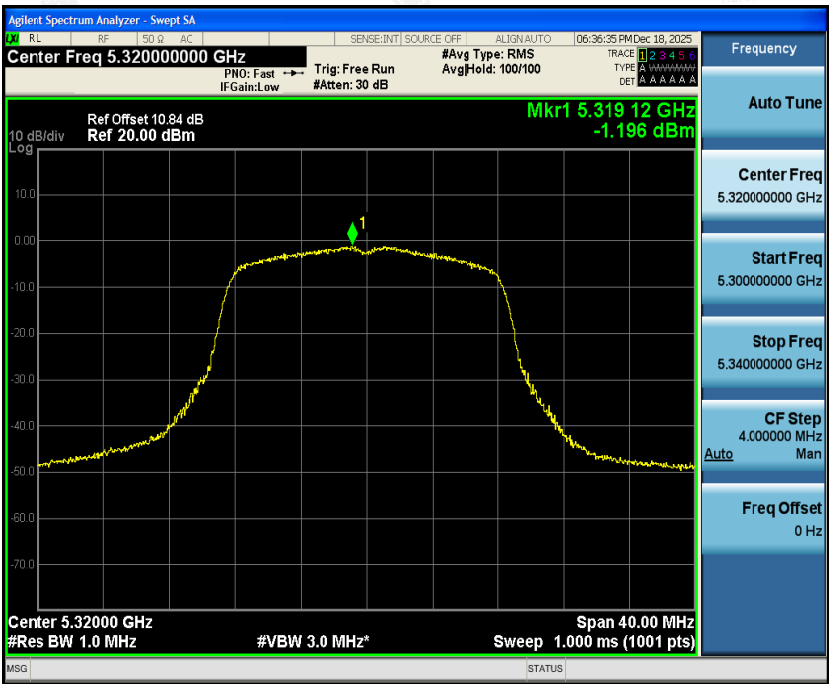


Mid Channel



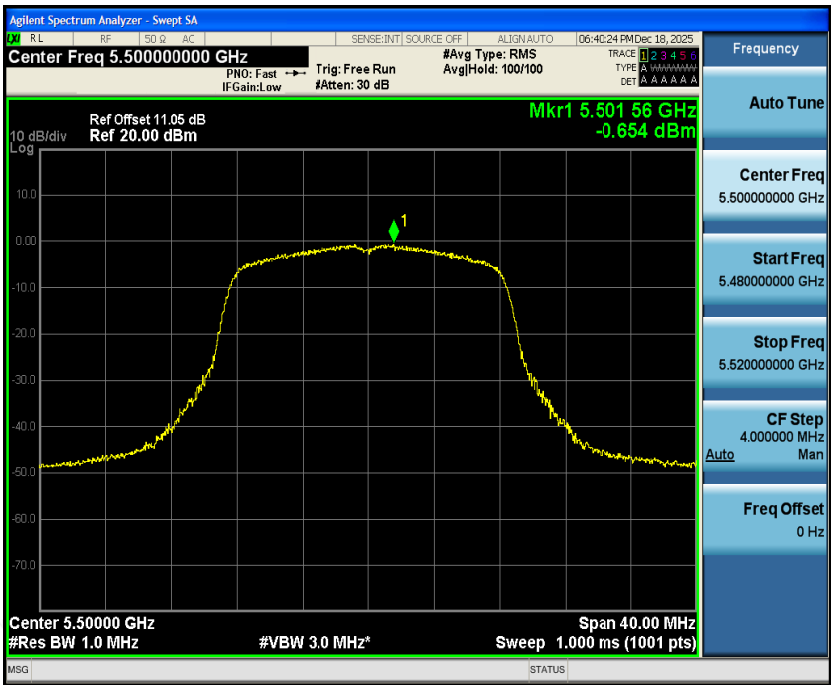
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High Channel



5470~5725MHz

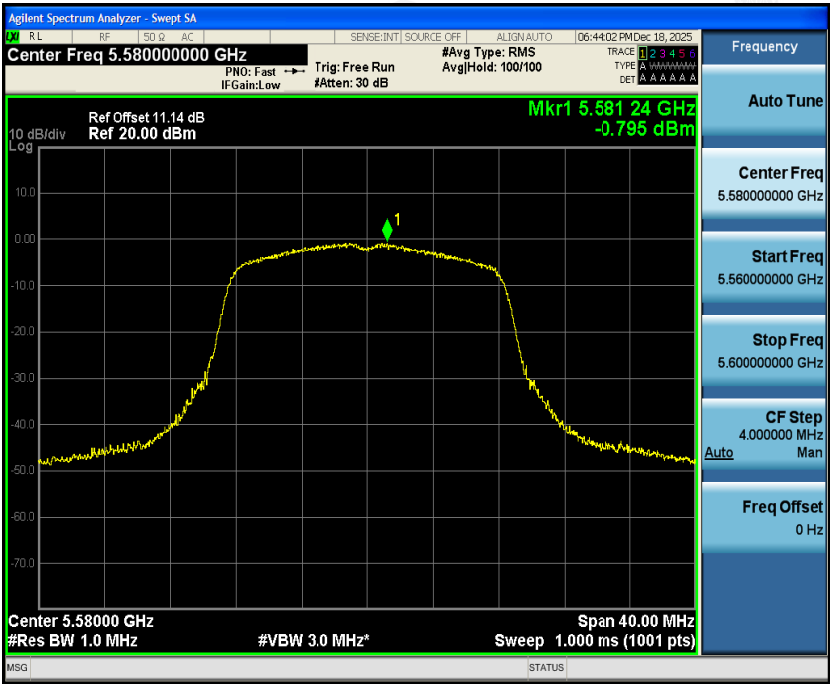
Low Channel



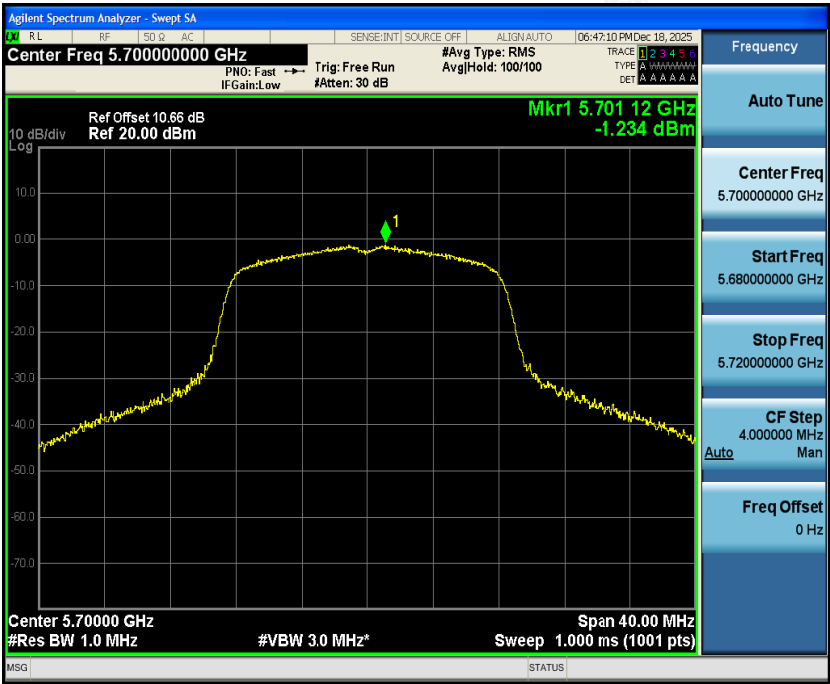
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Mid Channel



High Channel



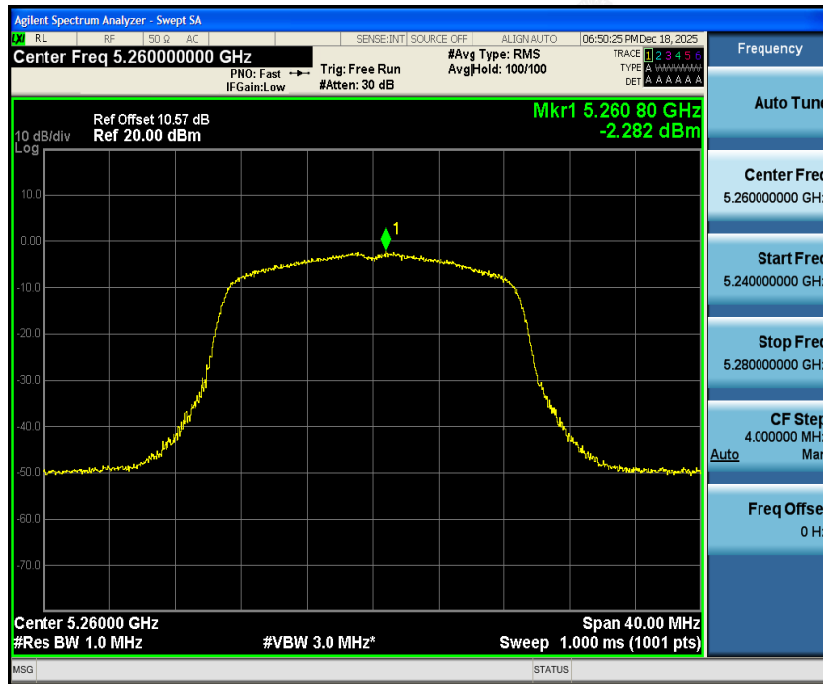
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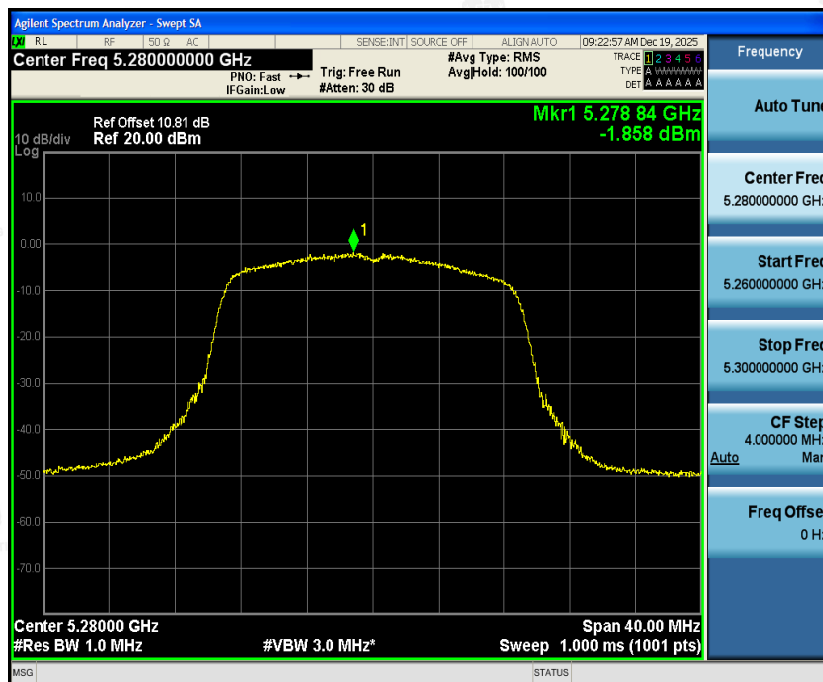
IEEE802.11n HT20 mode

5250~5350MHz

Low Channel



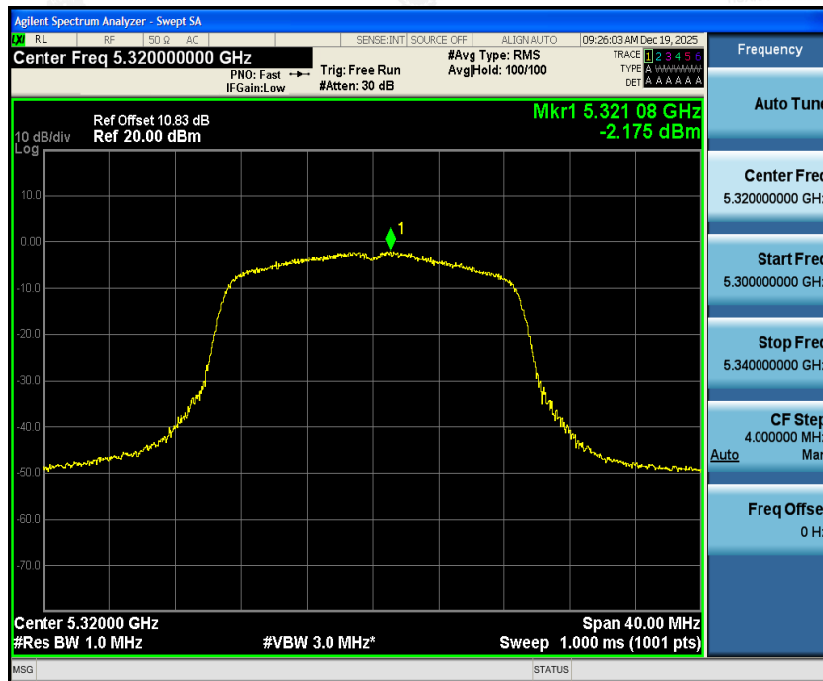
Mid Channel



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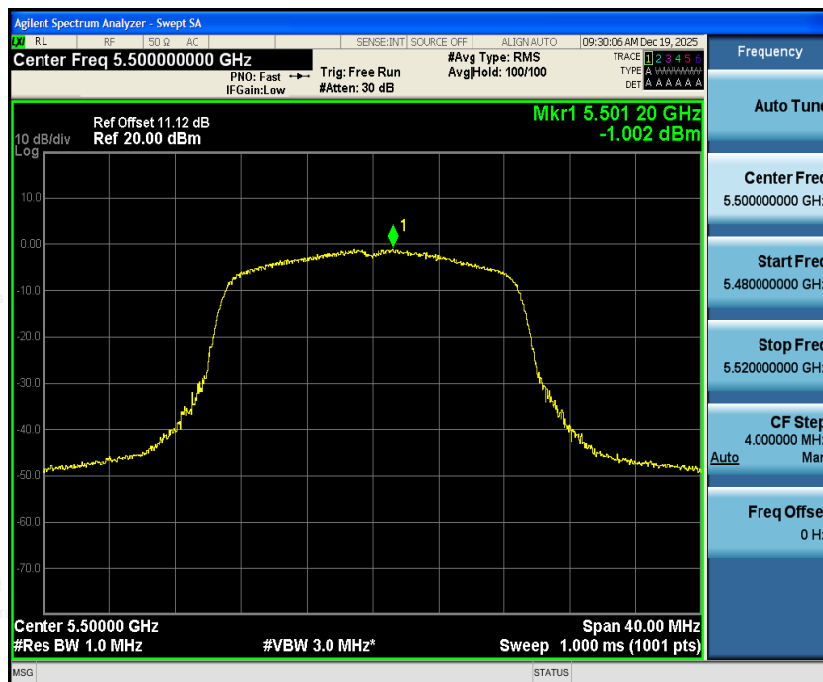
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High Channel

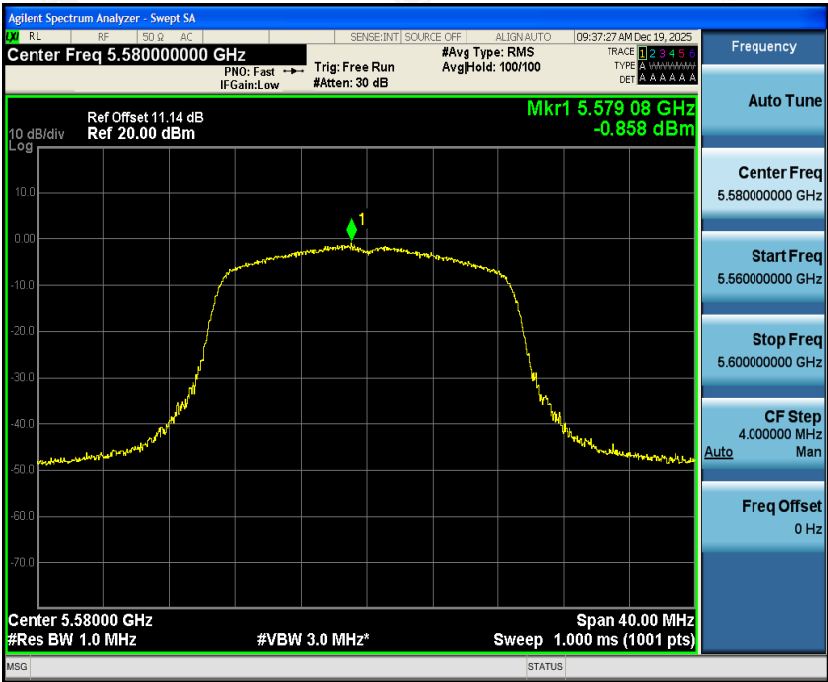


5470~5725MHz

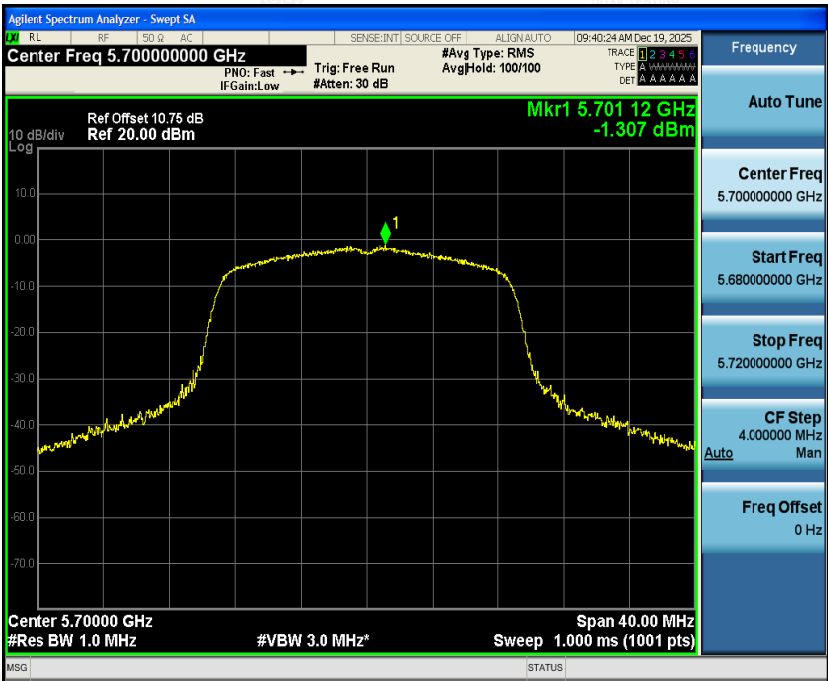
Low Channel



Mid Channel



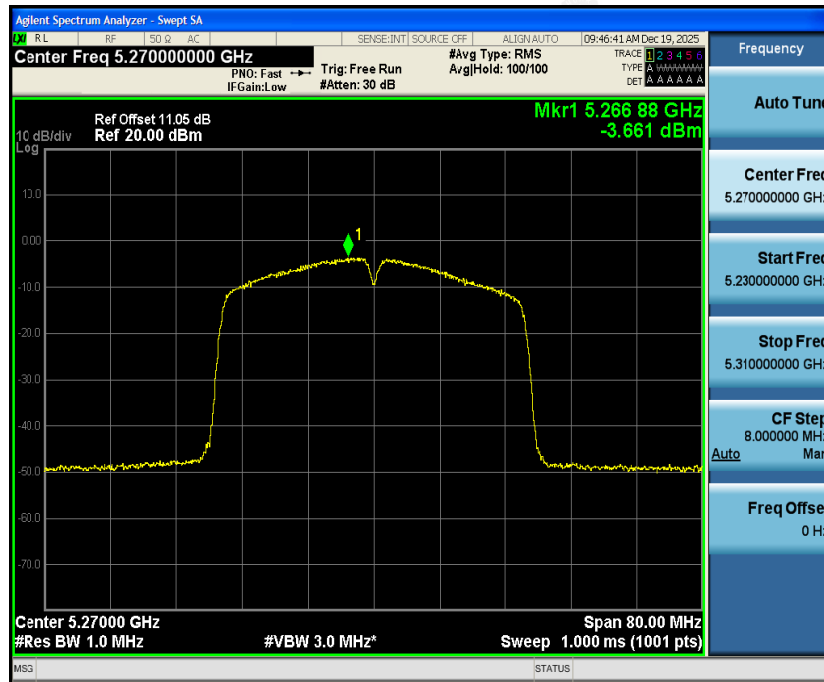
High Channel



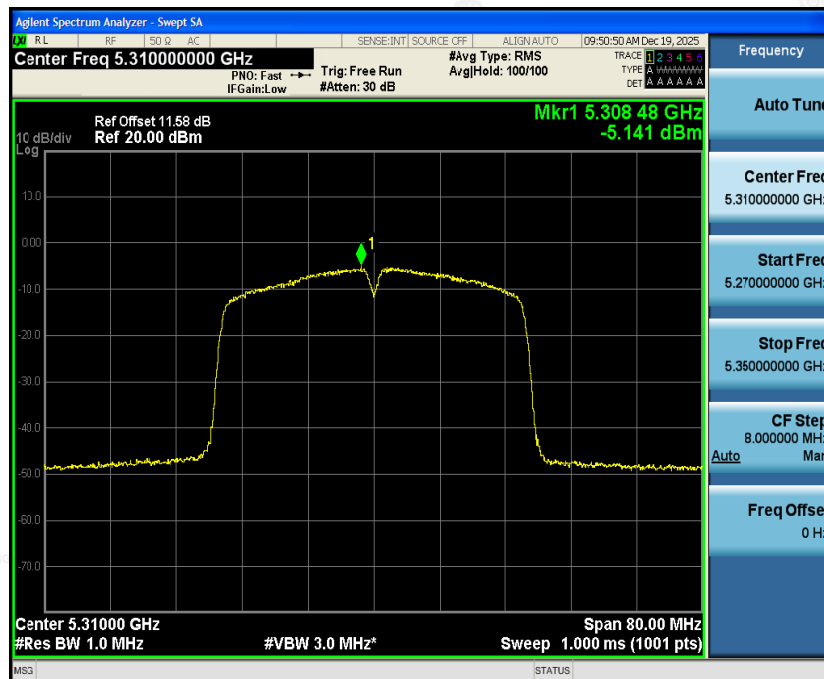
IEEE802.11n HT40 mode

5250~5350MHz

Low Channel



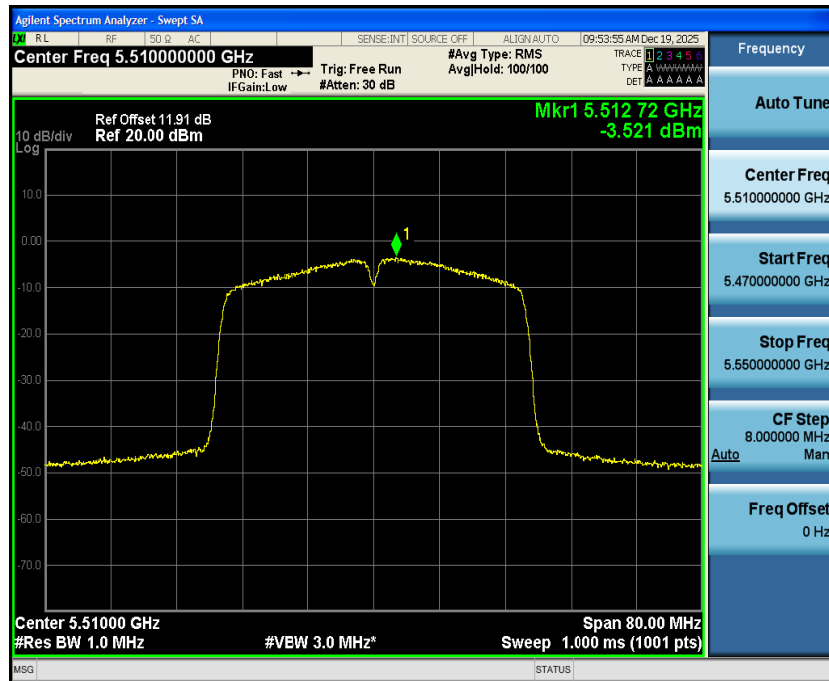
High Channel



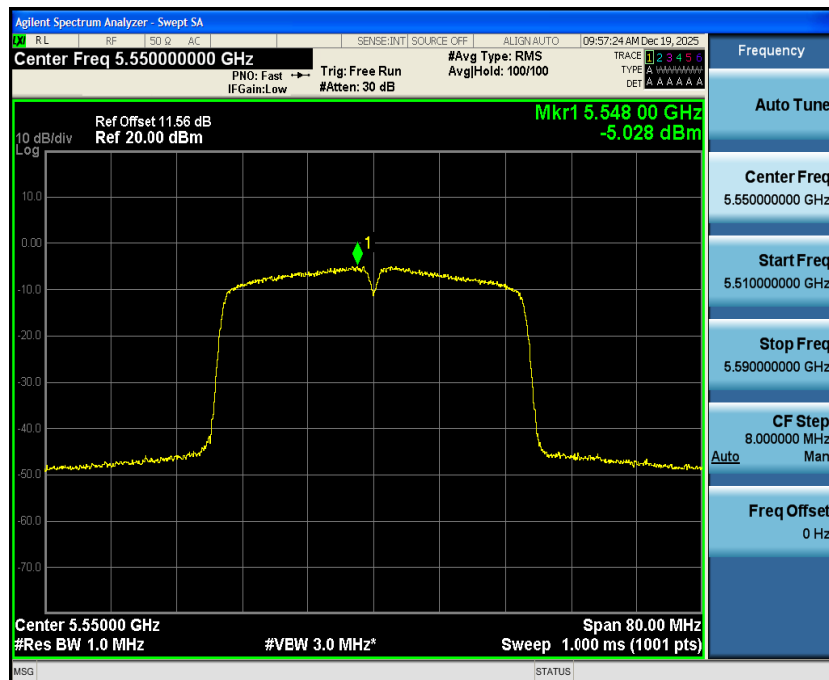
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5470~5725MHz

Low Channel



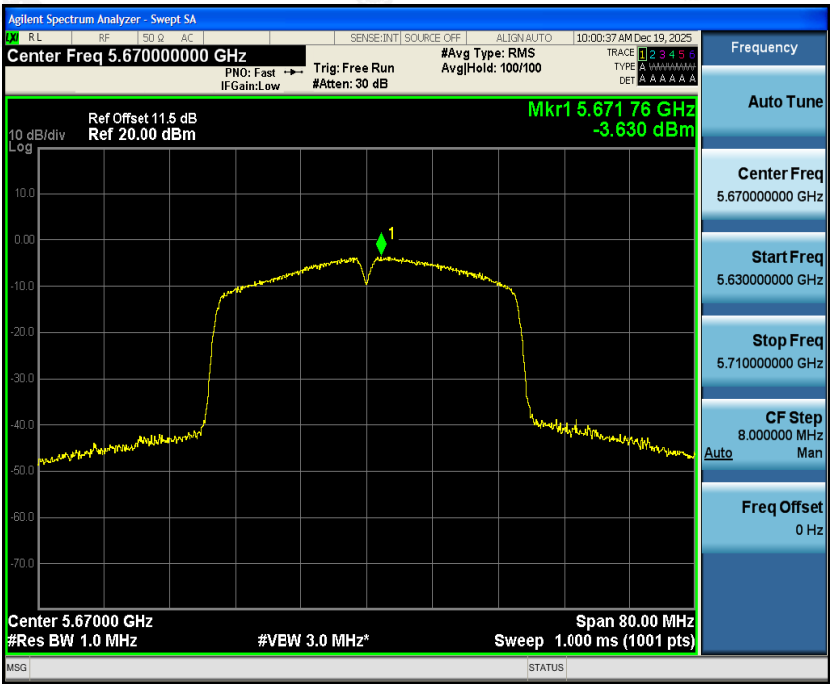
Mid Channel



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High Channel



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6.6 Duty Cycle

LIMIT

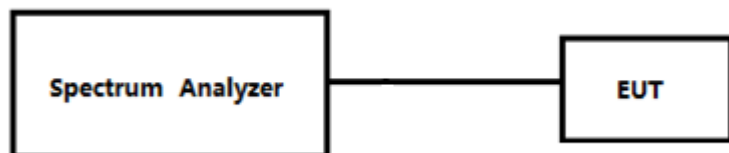
All measurements are to be performed with the EUT transmitting at 100% duty cycle at its maximum power control level; however, if 100% duty cycle cannot be achieved, measurements of duty cycle, x , and maximum-power transmission duration, T , are required for each tested mode of operation.

a) T refers to the minimum transmission duration over which the transmitter is on and is transmitting at its maximum power control level for the tested mode of operation.

b) Duty cycle (x), as used in this document, refers to the fraction of time over which the transmitter is on and is transmitting at its maximum power control level.

c) The term “maximum power control level” is intended to distinguish between operating power levels of the EUT and differences in power levels of individual symbols that occur with some modulation types such as quadrature amplitude modulation (QAM). During testing, the EUT is not required to transmit continuously its highest possible *symbol* power level. Rather, it shall transmit all of the symbols and shall do so at the highest power control level (i.e., highest operating power level) of the EUT.

TEST CONFIGURATION



TEST METHOD

Measurements of duty cycle and transmission duration shall be performed using one of the following techniques:

a) A diode detector and an oscilloscope that together have sufficiently short response time to permit accurate measurements of the on and off times of the transmitted signal.

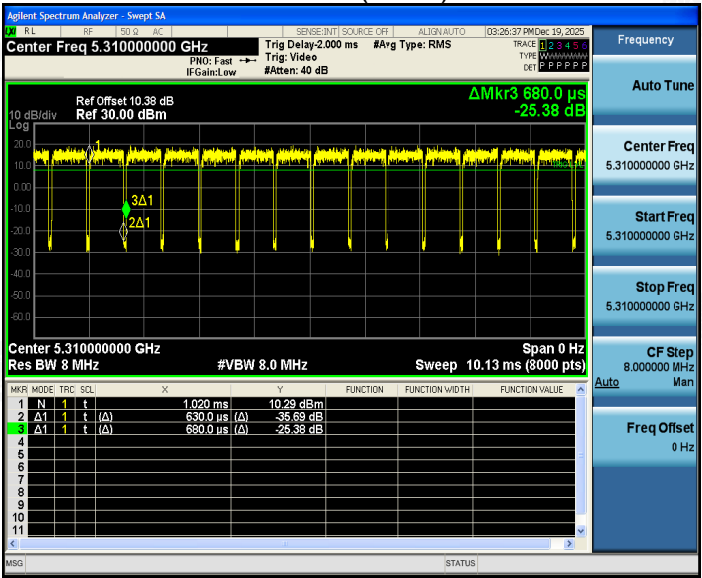
789033 D02 General UNII Test Procedures New Rules v02r01 Page 3 .

b) The zero-span mode on a spectrum analyzer or EMI receiver, if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the on and off times of the transmitted signal. Set the center frequency of the instrument to the center frequency of the transmission. Set $RBW \geq EBW$ if possible; otherwise, set RBW to the largest available value. Set $VBW \geq RBW$. Set detector = peak or average. The zero-span measurement method shall not be used unless both RBW and VBW are $> 50/T$, where T is defined in II.B.1.a), and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring duty cycle shall not be used if $T \leq 16.7$ microseconds.)

TEST RESULTS

PASS

802.11n(HT40)



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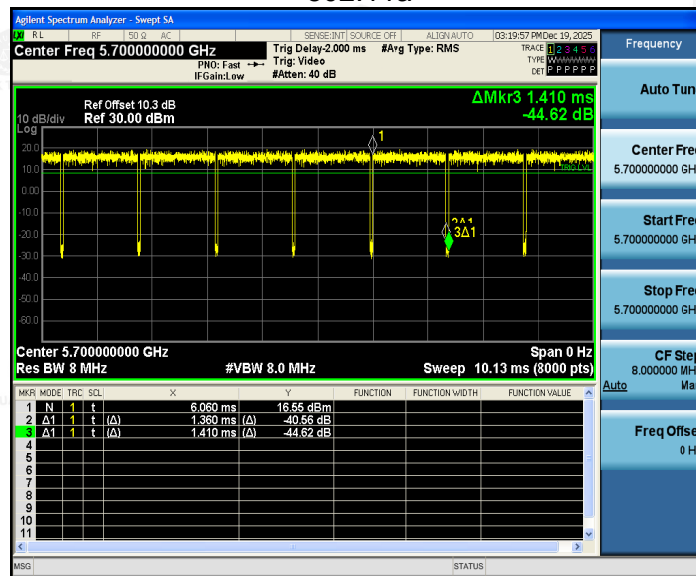


HUAKE TESTING

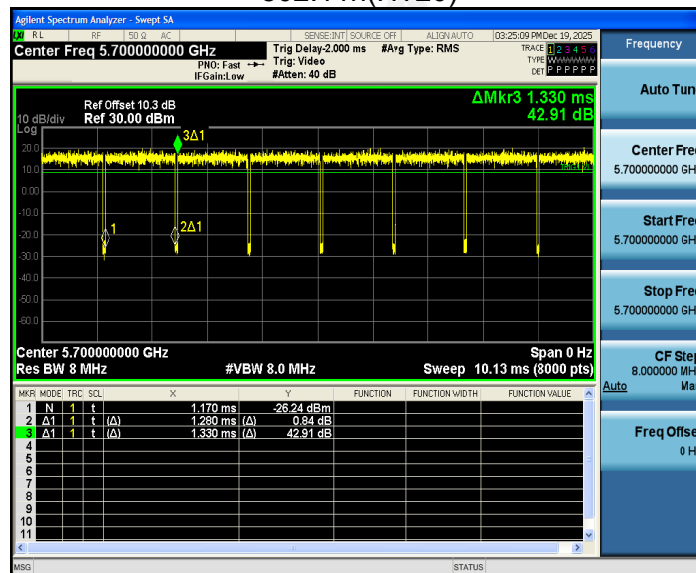
Mode Test Duty Cycle: 5500-5700MHz

Mode	Duty Cycle
802.11a	0.9645
802.11n(HT20)	0.9624
802.11n(HT40)	0.9130

802.11a



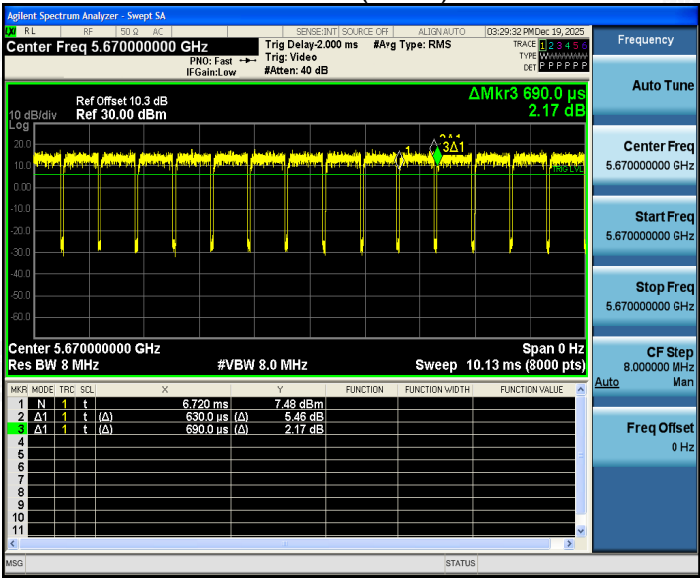
802.11n(HT20)



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802.11n(HT40)



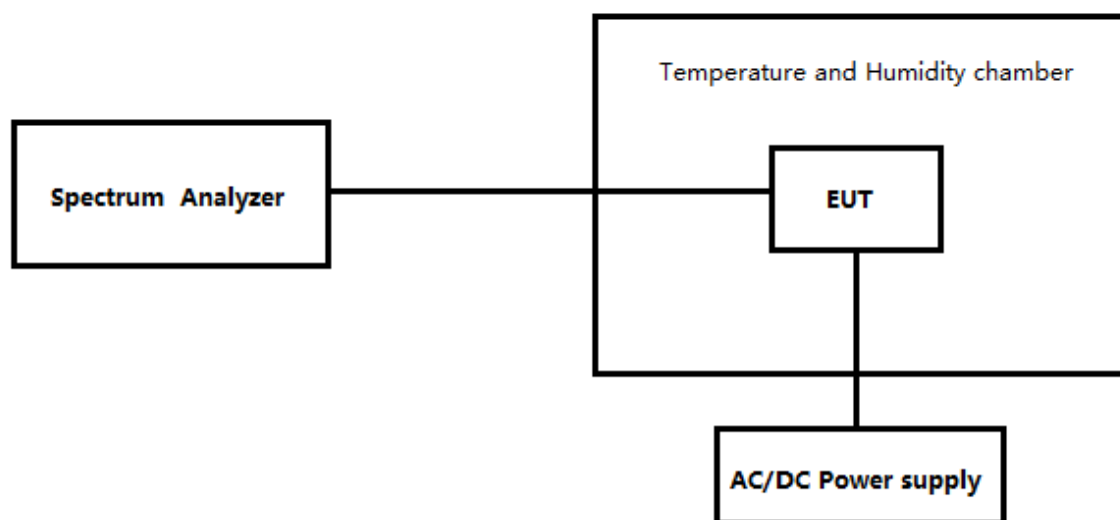
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6.7 Frequency Stability Measurement

LIMIT

According to §15.407(g), Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual.

TEST CONFIGURATION



TEST PROCEDURE

1. To ensure emission at the band edge is maintained within the authorized band, those values shall be measured by radiation emissions at upper and lower frequency points, and finally compensated by frequency deviation as procedures below.
2. The EUT was operated at the maximum output power, and connected to the spectrum analyzer, which is set to maximum hold function and peak detector. The peak value of the power envelope was measured and noted. The upper and lower frequency points were respectively measured relatively 10dB lower than the measured peak value.
3. The frequency deviation was calculated by adding the upper frequency point and the lower frequency point divided by two. Those detailed values of frequency deviation are provided in table below.

TESTRESULTS

U-NII-1-(5250MHz-5350MHz)					
Freq.(MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)
5260	5259.961	-0.039	-7.414	25	V _{min}
5260	5260.074	0.074	14.068	25	V _{max}
5260	5259.955	-0.045	-8.555	25	V _{nor}
5260	5259.943	-0.057	-10.837	-10	V _{nor}
5260	5260.002	0.002	0.380	40	V _{nor}

U-NII-1-(5470MHz-5725MHz)					
Freq.(MHz)	Center Frequency (MHz)	Frequency Deviation (MHz)	Frequency Stability (ppm)	Temperature (°C)	Voltage (V)
5500	5499.967	-0.033	-6.000	25	V _{min}
5500	5500.084	0.084	15.273	25	V _{max}
5500	5499.913	-0.087	-15.818	25	V _{nor}
5500	5499.942	-0.058	-10.545	-10	V _{nor}
5500	5500.055	0.055	10.000	40	V _{nor}

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6.8 Radiated Undesirable Emission

LIMIT

Radiated emissions from 9 kHz to 25 GHz were measured according to the methods defined in ANSI C63.10-2013. The EUT was placed above the ground plane, 0.8 meter for frequency below 1 GHz and 1.5 meter for frequency above 1 GHz. The interface cables and equipment positions were varied within limits of reasonable applications to determine the positions producing maximum radiated emissions.

- For transmitters operating in the 5250-5350 MHz band: all emissions outside of the 5150-5350 MHz band shall not exceed an EIRP of -27 dBm/MHz. Devices operating in the 5250-5350 MHz band that generate emissions in the 5150-5250 MHz band must meet all applicable technical requirements for operation in the 5150-5250 MHz band (including indoor use) or alternatively meet an out-of-band emission EIRP limit of -27 dBm/MHz in the 5150-5250 MHz band.

For transmitters operating in the 5470-5600 MHz and 5650-5725 MHz band: all emissions outside of the 5470-5600 MHz and 5650-5725 MHz band shall not exceed an EIRP of -27 dBm/MHz.

- KDB789033v02r01G)2)c) As specified in 15.407(b), emissions above 1000 MHz that are outside of the restricted bands are subject to a peak emission limit of -27 dBm/MHz (or -17 dBm/MHz as specified in 15.407(b)(4)). However, an out-of-band emission that complies with both the average and peak limits of 15.209 is not required to satisfy the -27 dBm/MHz or -17 dBm/MHz peak emission limit.
- According to §15.209(a), except as provided elsewhere in this Subpart, the emissions from an intentional radiator shall not exceed the field strength levels specified in the following table:

FREQUENCIES(MHz)	FIELD STRENGTH (microvolt/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

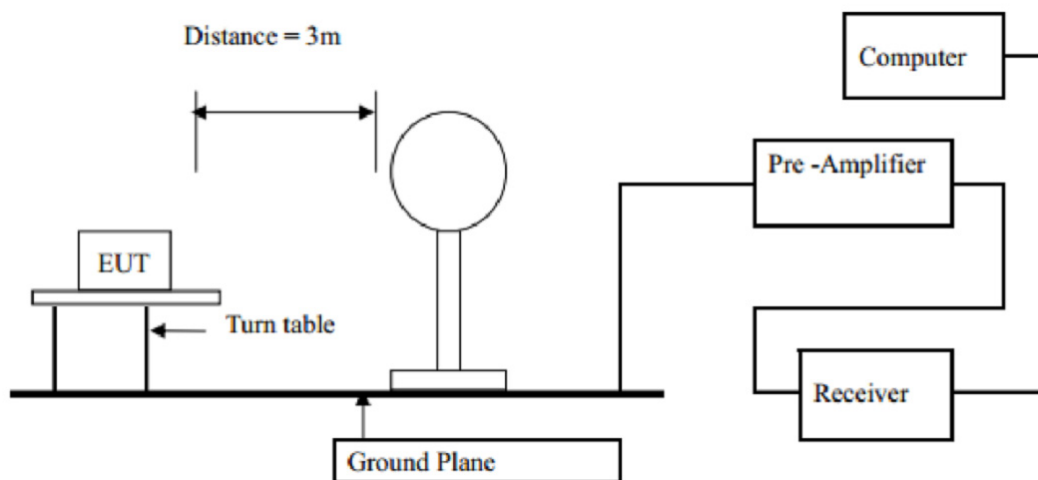
Remark: Except as provided in paragraph (g), fundamental emissions from intentional radiators operating under this Section shall not be located in the frequency bands 54-72 MHz, 76-88 MHz, 174-216 MHz or 470-806 MHz. However, operation within these frequency bands is permitted under other sections of this Part, e.g., Sections 15.231 and 15.241.

- In the emission table above, the tighter limit applies at the band edges.

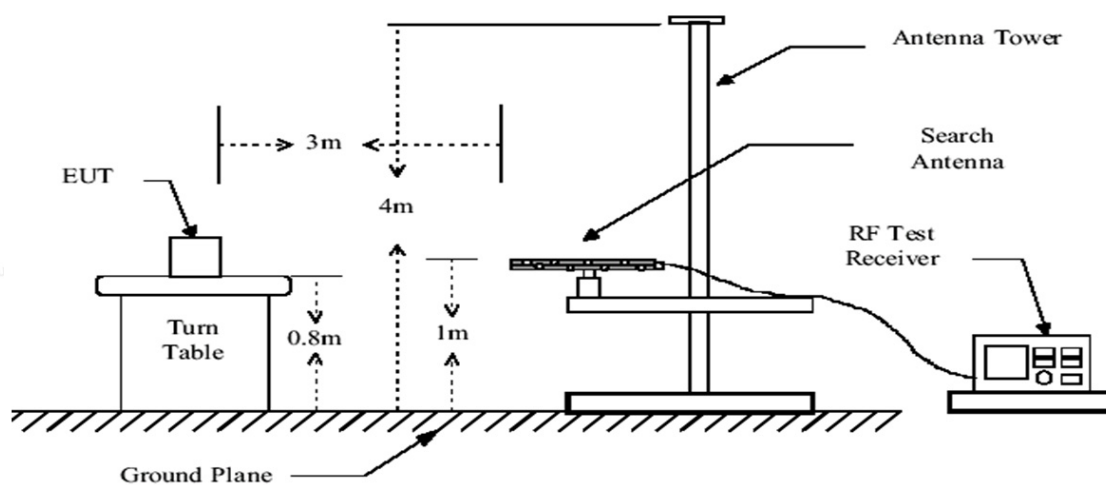
Frequency (MHz)	Field Strength(μV/mat)	Field Strength(dBμV/mat)
30-88	100	40
88-216	150	43.5
216-960	200	46
Above 960	500	54

Test Configuration

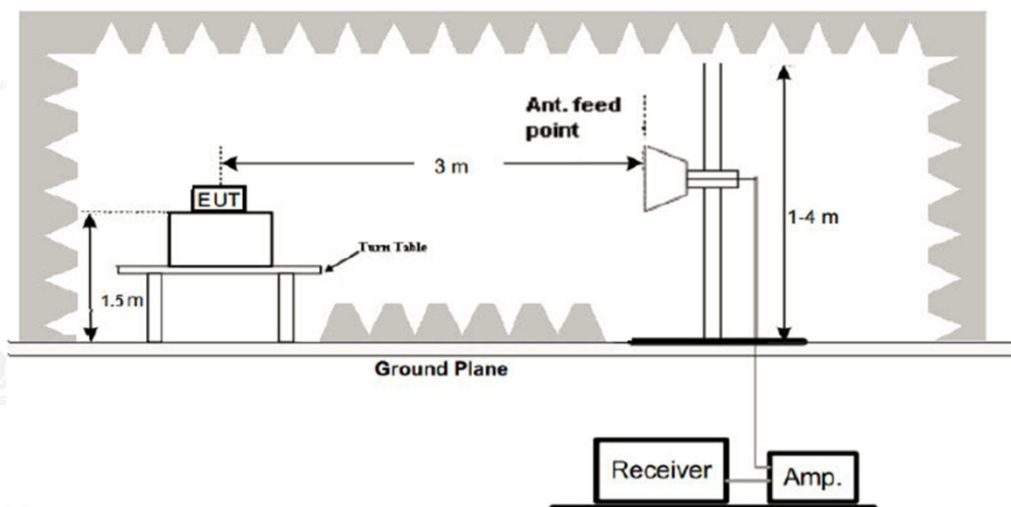
Below 30MHz



Below 1GHz



Above 1 GHz



TESTPROCEDURE

1. The EUT is placed on a turntable above ground plane, which is 0.8 meter for frequency below 1GHz and 1.5 meter for frequency above 1GHz.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
3. EUT is set 3m away from the receiving antenna, which is varied from 1m to 4m to find out the highest emissions.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Set the spectrum analyzer in the following setting as:

Below 1GHz:

RBW=100kHz/ VBW=300kHz / Sweep=AUTO

Above 1GHz:

(a) PEAK: RBW=VBW=1MHz / Sweep=AUTO

(b) AVERAGE: RBW=1MHz / Sweep=AUTO

VBW=10Hz, when duty cycle is no less than 98 percent.

VBW $\geq 1/T$, when duty cycle is less than 98 percent, where is the minimum transmission duration over which the transmitter is on and transmitting at its maximum power control level for the tested mode of operation.

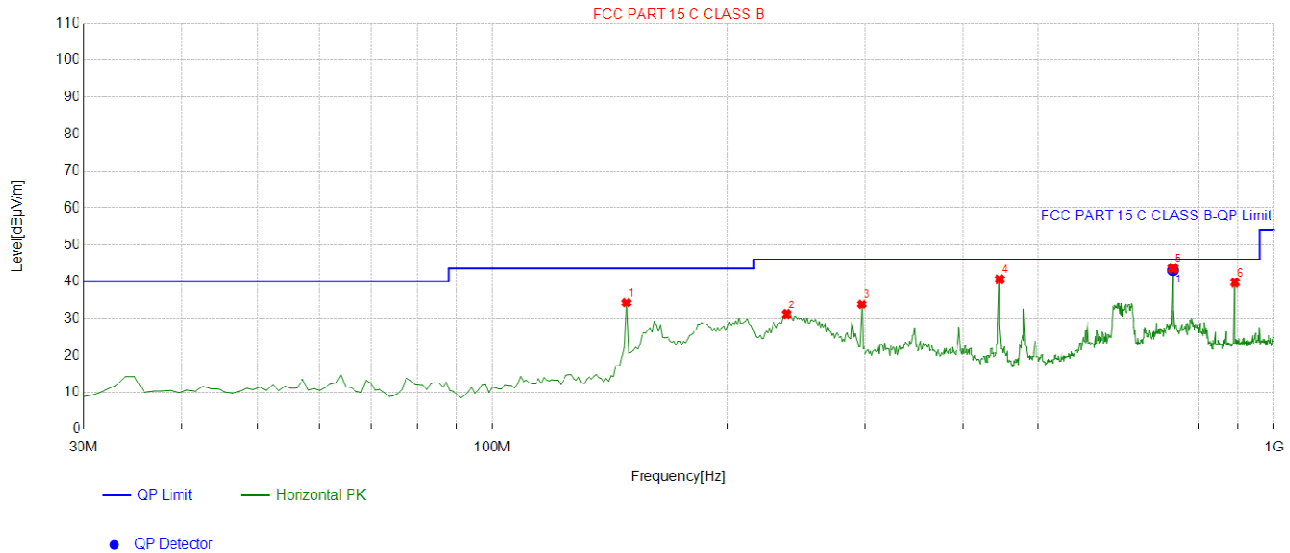
Band	Duty Cycle(%)	T(ms)	1/T(kHz)	VBW Setting
IEEE 802.11 a	100	--	--	10Hz
IEEE 802.11n HT20	100	--	--	10Hz
IEEE 802.11n HT40	100	--	--	10Hz

7. Repeat above procedures until the measurements for all frequencies are complete.

Below 1GHz Test Results

All modes have been tested, only the worst mode of GFSK Low channel TX is reflected.

Antenna polarity: Horizontal



Suspected List

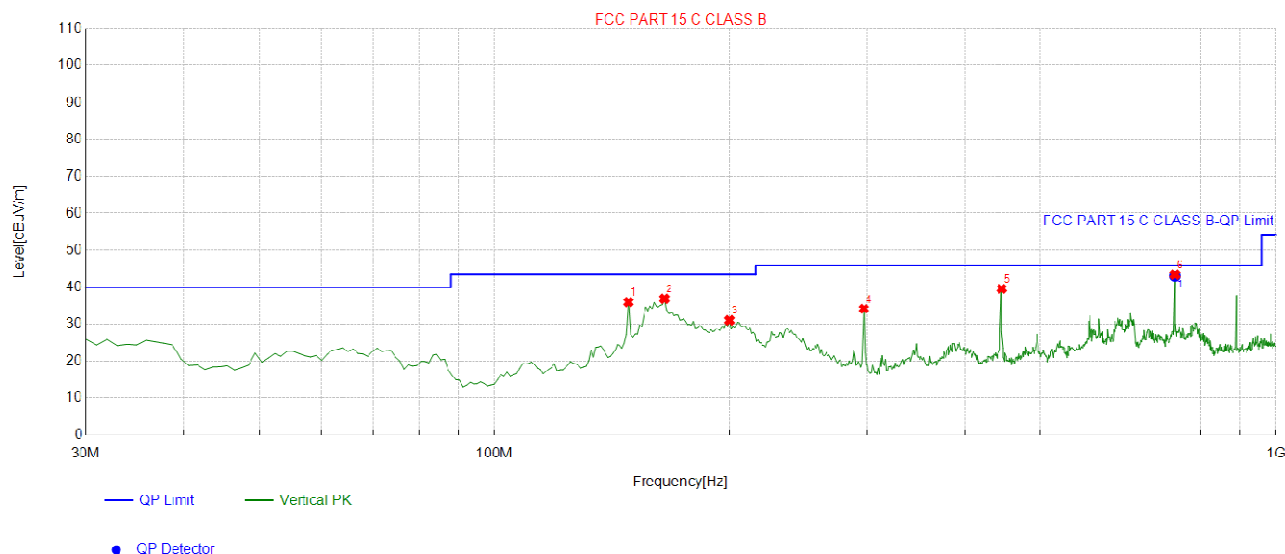
NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	148.4585	-18.14	52.57	34.43	43.50	9.07	100	71	Horizontal
2	237.7878	-13.77	45.07	31.30	46.00	14.70	100	133	Horizontal
3	297.0170	-11.84	45.85	34.01	46.00	11.99	100	308	Horizontal
4	445.5756	-8.66	49.26	40.60	46.00	5.40	100	147	Horizontal
5	742.6927	-3.41	46.93	43.52	46.00	2.48	100	111	Horizontal
6	891.2513	-1.49	41.25	39.76	46.00	6.24	100	294	Horizontal

Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBμV/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	742.499	-3.41	46.44	43.03	46.00	2.97	100	111	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Vertical



Suspected List

NO.	Freq. [MHz]	Factor [dB]	Reading [dBμV/m]	Level [dBμV/m]	Limit [dBμV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	148.4585	-18.14	54.23	36.09	43.50	7.41	100	120	Vertical
2	164.9650	-17.49	54.45	36.96	43.50	6.54	100	134	Vertical
3	199.9199	-15.09	46.21	31.12	43.50	12.38	100	74	Vertical
4	297.0170	-11.84	46.07	34.23	46.00	11.77	100	20	Vertical
5	445.5756	-8.66	48.35	39.69	46.00	6.31	100	213	Vertical
6	742.6927	-3.41	46.93	43.52	46.00	2.48	100	9	Vertical

Final Data List

NO.	Freq. [MHz]	Factor [dB]	QP Reading [dBμV/m]	QP Value [dBμV/m]	QP Limit [dBμV/m]	QP Margin [dB]	Height [cm]	Angle [°]	Polarity
1	742.499	-3.41	46.53	43.12	46.00	2.88	100	9	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Harmonics and Spurious Emissions

Frequency Range (9 kHz-30MHz)

Frequency (MHz)	Level@3m (dBμV/m)	Limit@3m (dBμV/m)
--	--	--
--	--	--
--	--	--
--	--	--

Note: 1. Emission Level=Reading+ Cable loss-Antenna factor-Amp factor

2. The emission levels are 20 dB below the limit value, which are not reported. It is deemed to comply with the requirement

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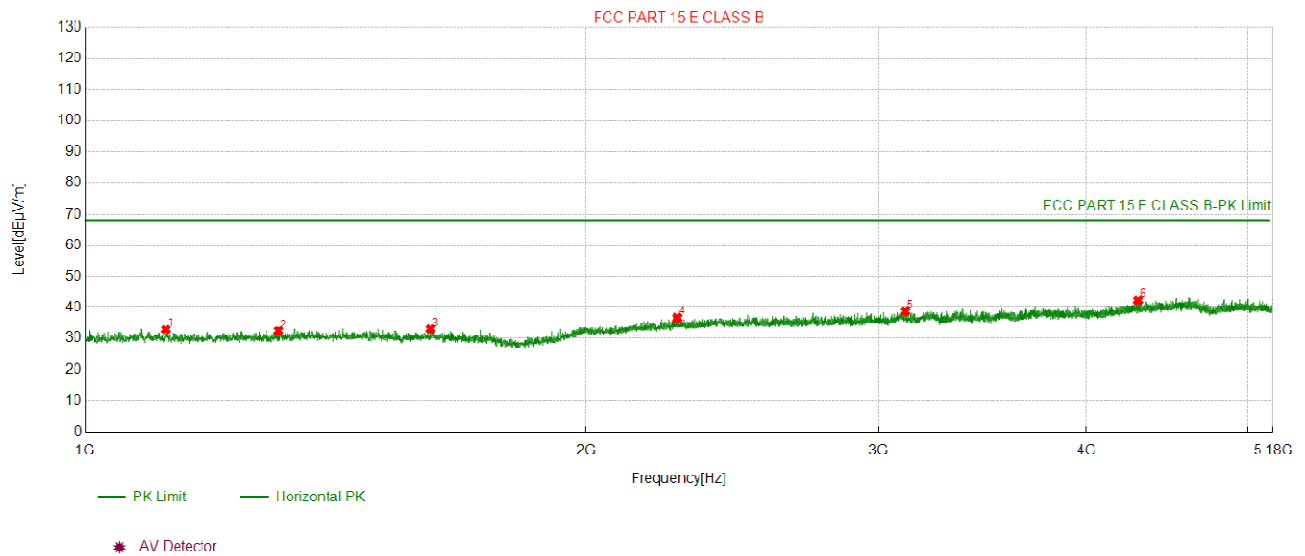
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Above 1 GHz 5250~5350MHz

All the test modes completed for test. Only the worst result was reported as below:

For 1GHz to 5.18GHz

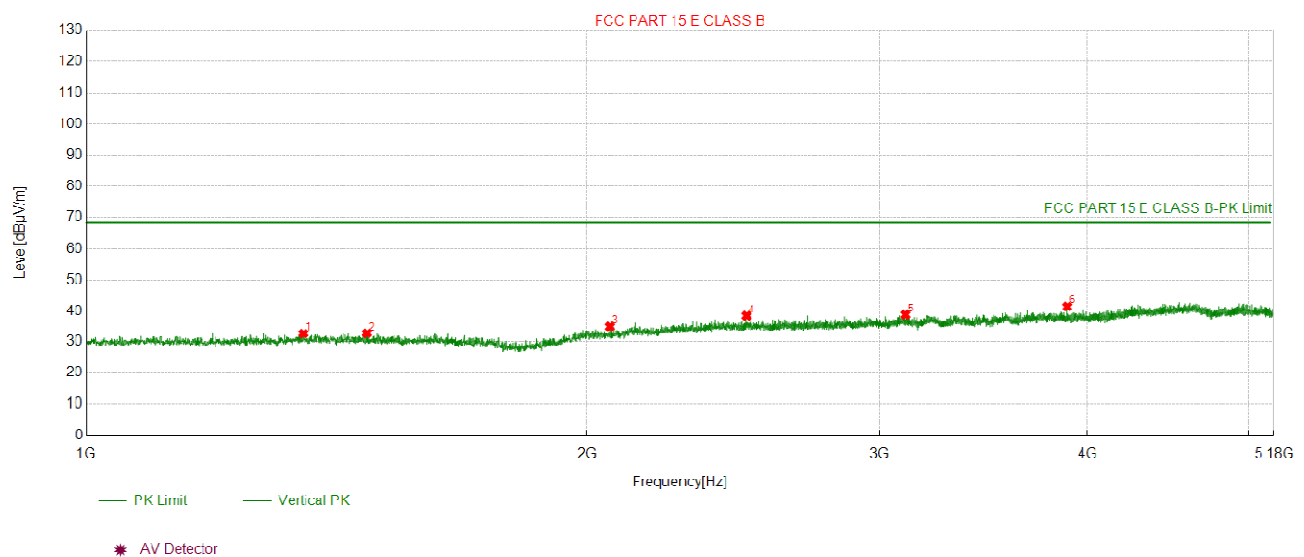
Antenna polarity: Horizontal



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1117.887	54.01	32.83	-21.18	68.20	35.37	150	180	Horizontal
2	1306.842	53.11	32.40	-20.71	68.20	35.80	150	230	Horizontal
3	1612.849	53.17	32.99	-20.18	68.20	35.21	150	60	Horizontal
4	2269.593	53.55	36.59	-16.96	68.20	31.61	150	30	Horizontal
5	3111.947	53.46	38.65	-14.81	68.20	29.55	150	280	Horizontal
6	4297.095	52.89	42.28	-10.61	68.20	25.92	150	200	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Pre-amplifier; Level = Reading + Factor; Margin = Limit – Level

Antenna polarity: Vertical

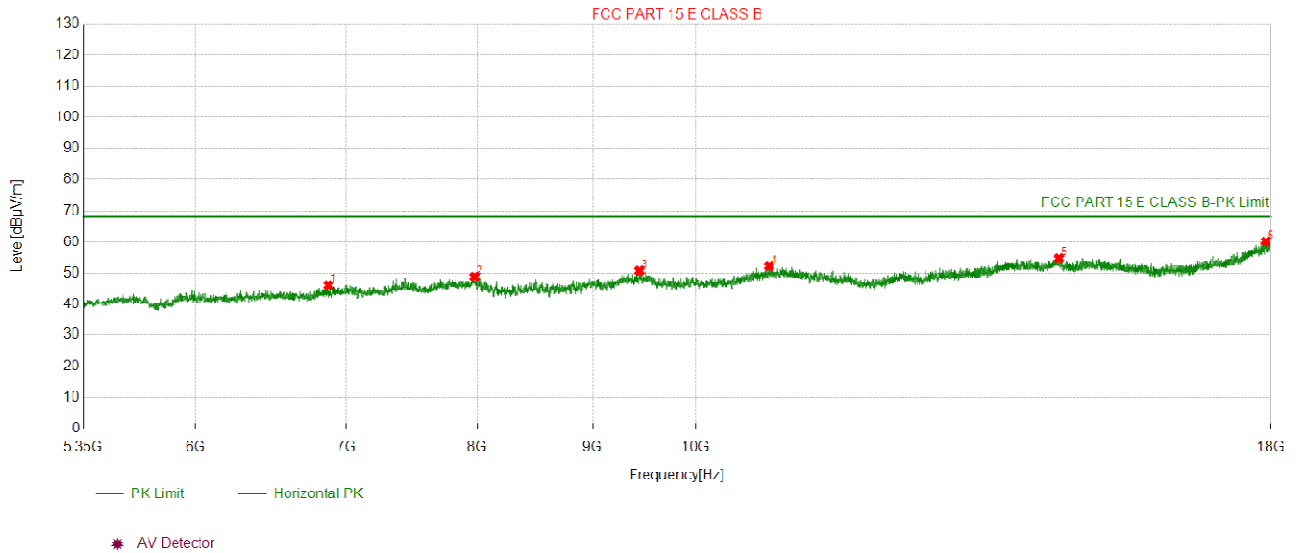


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1350.737	53.23	32.68	-20.55	68.20	35.52	150	150	Vertical
2	1474.895	53.15	32.77	-20.38	68.20	35.43	150	210	Vertical
3	2064.752	53.12	34.96	-18.16	68.20	33.24	150	320	Vertical
4	2495.335	54.63	38.40	-16.23	68.20	29.80	150	30	Vertical
5	3108.602	53.59	38.75	-14.84	68.20	29.45	150	180	Vertical
6	3890.341	53.61	41.42	-12.19	68.20	26.78	150	330	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

For 5.35GHz to 18GHz

Antenna polarity: Horizontal

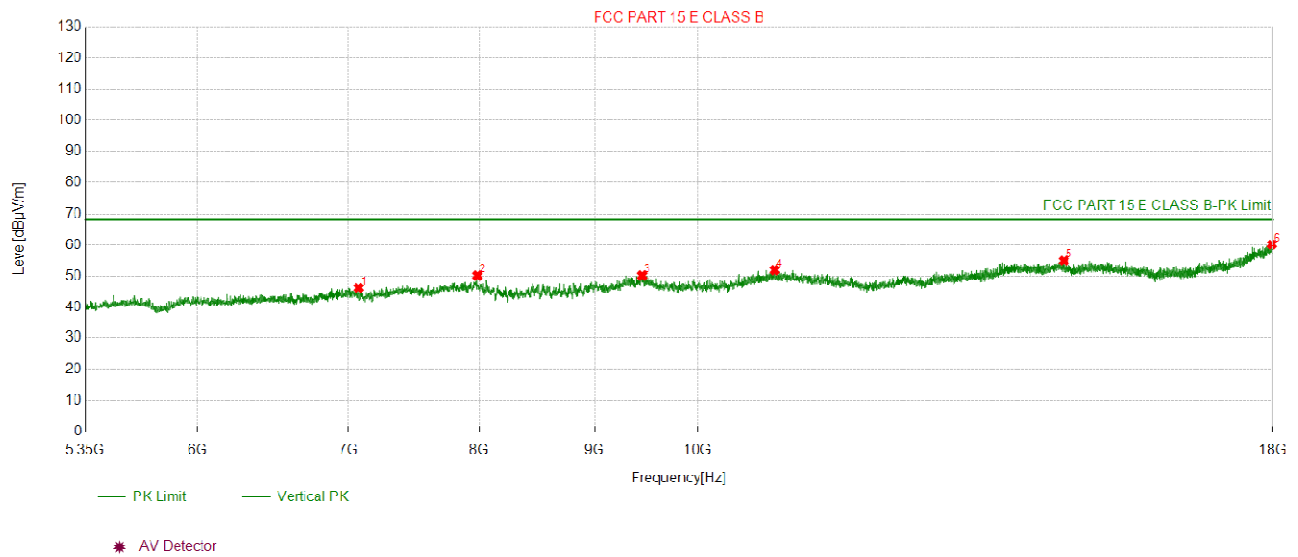


Suspected Data List

NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6871.947	50.97	46.00	-4.97	68.20	22.20	150	180	Horizontal
2	7978.932	50.95	48.79	-2.16	68.20	19.41	150	100	Horizontal
3	9441.419	51.46	50.67	-0.79	68.20	17.53	150	110	Horizontal
4	10781.18	51.08	52.17	1.09	68.20	16.03	150	190	Horizontal
5	14494.33	48.02	54.73	6.71	68.20	13.47	150	220	Horizontal
6	17902.58	46.46	60.16	13.70	68.20	8.04	150	180	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Antenna polarity: Vertical

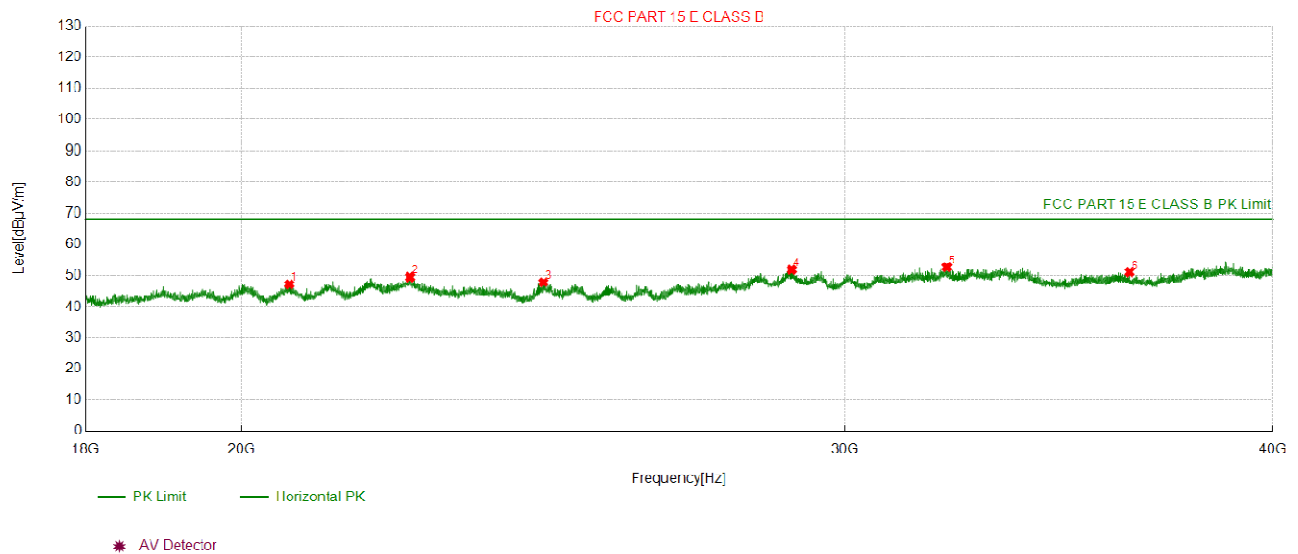


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	7071.837	50.94	46.13	-4.81	68.20	22.07	150	340	Vertical
2	7986.523	52.26	50.12	-2.14	68.20	18.08	150	100	Vertical
3	9449.009	50.85	50.13	-0.72	68.20	18.07	150	90	Vertical
4	10819.14	50.60	51.82	1.22	68.20	16.38	150	220	Vertical
5	14538.61	48.43	54.92	6.49	68.20	13.28	150	210	Vertical
6	17977.22	45.53	60.14	14.61	68.20	8.06	150	340	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

For 18GHz to 40GHz

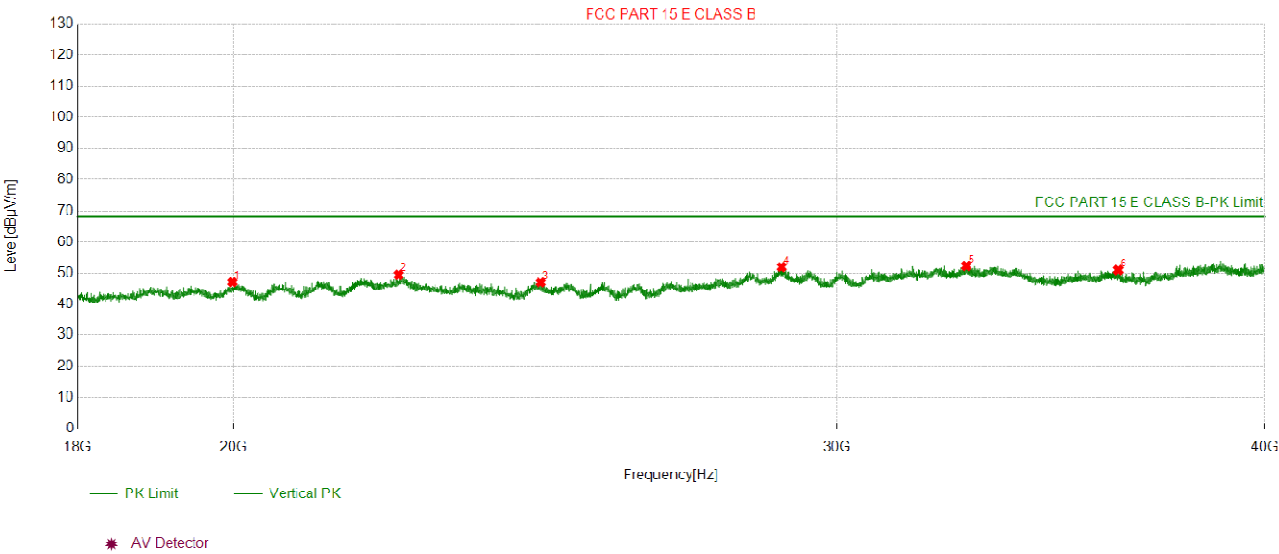
Antenna polarity: Horizontal



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20646.86	41.27	47.09	5.82	68.20	21.11	150	140	Horizontal
2	22389.43	43.74	49.42	5.68	68.20	18.78	150	250	Horizontal
3	24492.84	42.00	47.72	5.72	68.20	20.48	150	330	Horizontal
4	28941.69	42.73	51.73	9.00	68.20	16.47	150	200	Horizontal
5	32123.21	42.66	52.57	9.91	68.20	15.63	150	110	Horizontal
6	36321.23	42.31	50.97	8.66	68.20	17.23	150	120	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Antenna polarity: Vertical



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	19977.99	40.83	47.03	6.20	68.20	21.17	150	350	Vertical
2	22338.83	43.71	49.41	5.70	68.20	18.79	150	160	Vertical
3	24576.45	41.10	46.93	5.83	68.20	21.27	150	110	Vertical
4	28899.89	42.86	51.84	8.98	68.20	16.36	150	210	Vertical
5	32721.67	41.60	52.18	10.58	68.20	16.02	150	330	Vertical
6	36237.62	42.23	50.93	8.70	68.20	17.27	150	300	Vertical

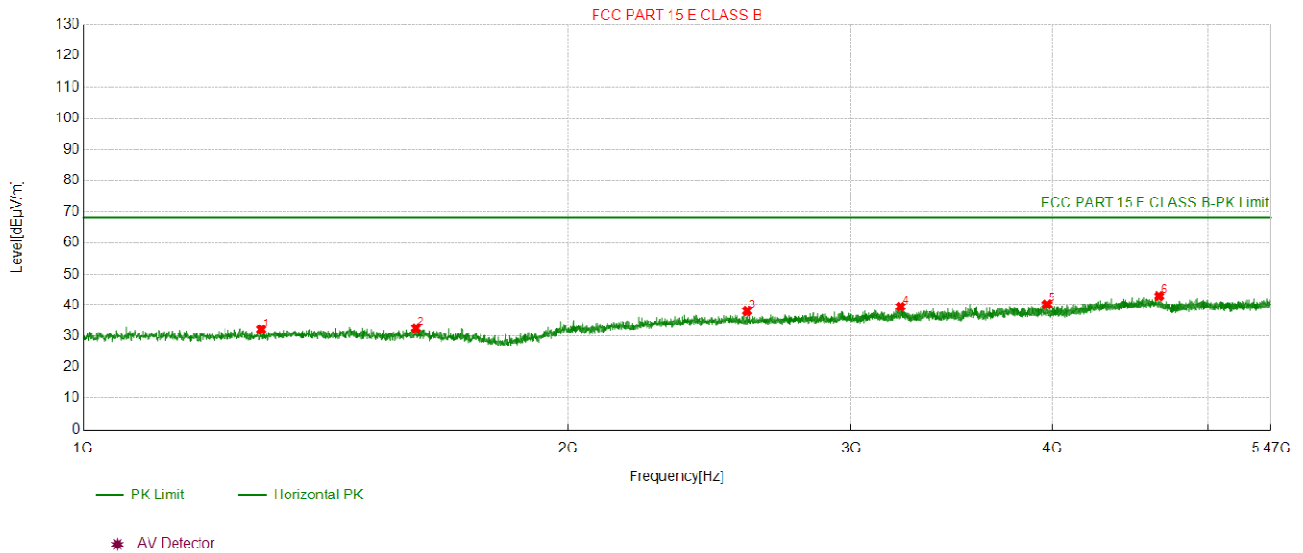
Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

5470~5725MHz

All the test modes completed for test. Only the worst result was reported as below:

For 1GHz to 5.47GHz

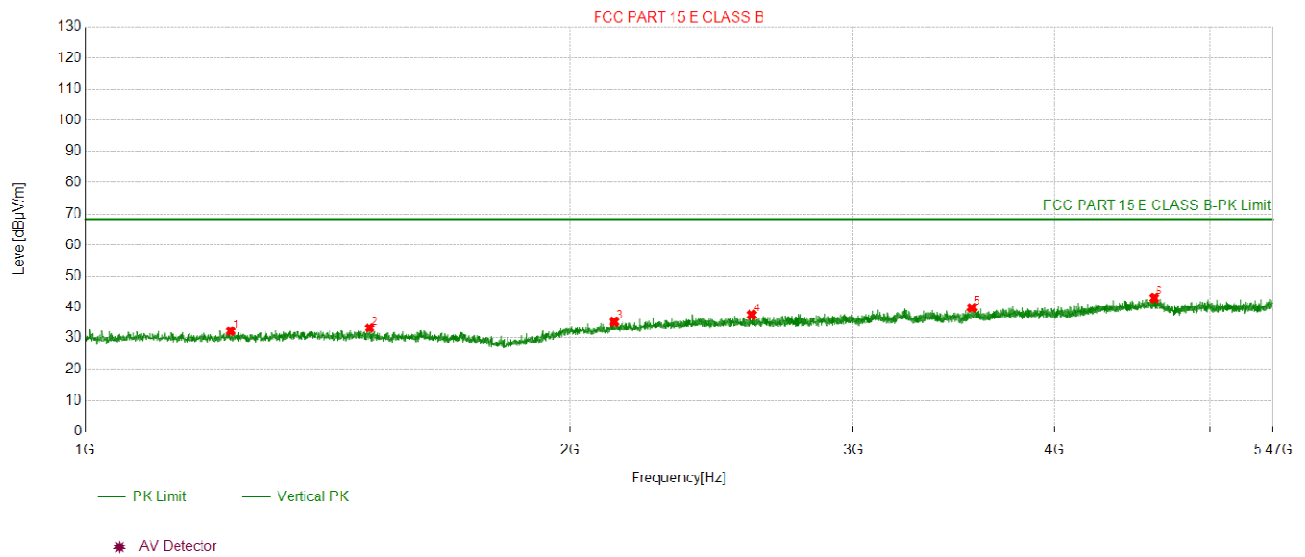
Antenna polarity: Horizontal



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1290.132	52.95	32.18	-20.77	68.20	36.02	150	190	Horizontal
2	1609.321	52.73	32.55	-20.18	68.20	35.65	150	280	Horizontal
3	2584.773	54.19	38.14	-16.05	68.20	30.06	150	280	Horizontal
4	3219.577	54.06	39.54	-14.52	68.20	28.66	150	10	Horizontal
5	3969.718	52.14	40.26	-11.88	68.20	27.94	150	260	Horizontal
6	4659.955	52.56	42.99	-9.57	68.20	25.21	150	60	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Antenna polarity: Vertical

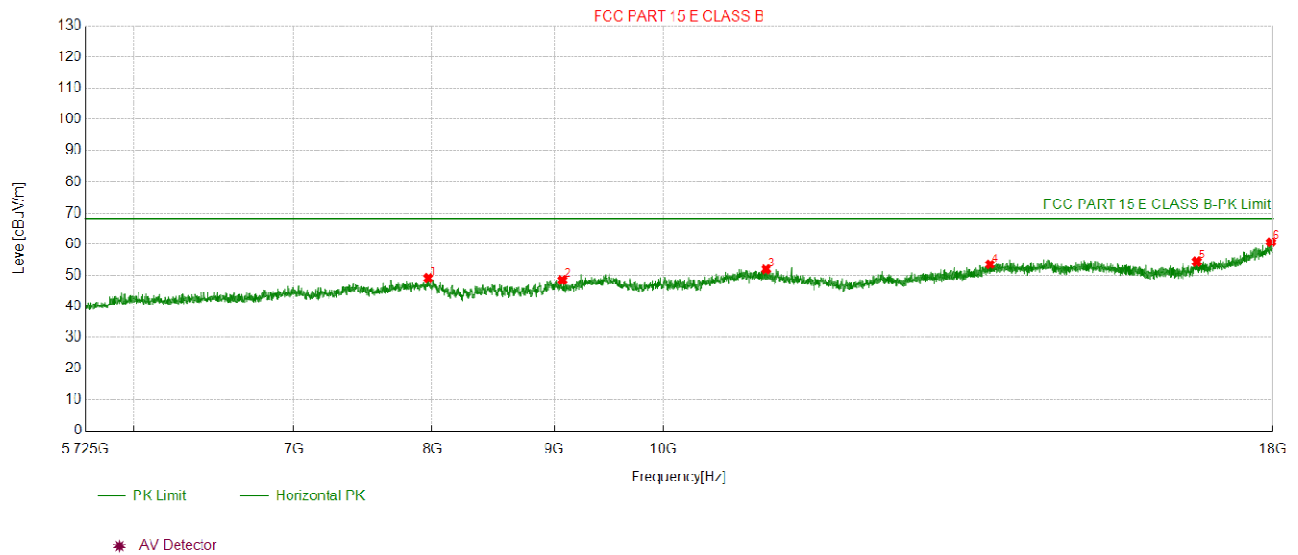


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	1231.122	53.24	32.18	-21.06	68.20	36.02	150	330	Vertical
2	1501.584	53.64	33.20	-20.44	68.20	35.00	150	90	Vertical
3	2130.576	53.15	35.29	-17.86	68.20	32.91	150	110	Vertical
4	2594.161	53.44	37.41	-16.03	68.20	30.79	150	160	Vertical
5	3555.754	53.43	39.71	-13.72	68.20	28.49	150	260	Vertical
6	4614.803	52.39	42.86	-9.53	68.20	25.34	150	180	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

For 5.725GHz to 18GHz

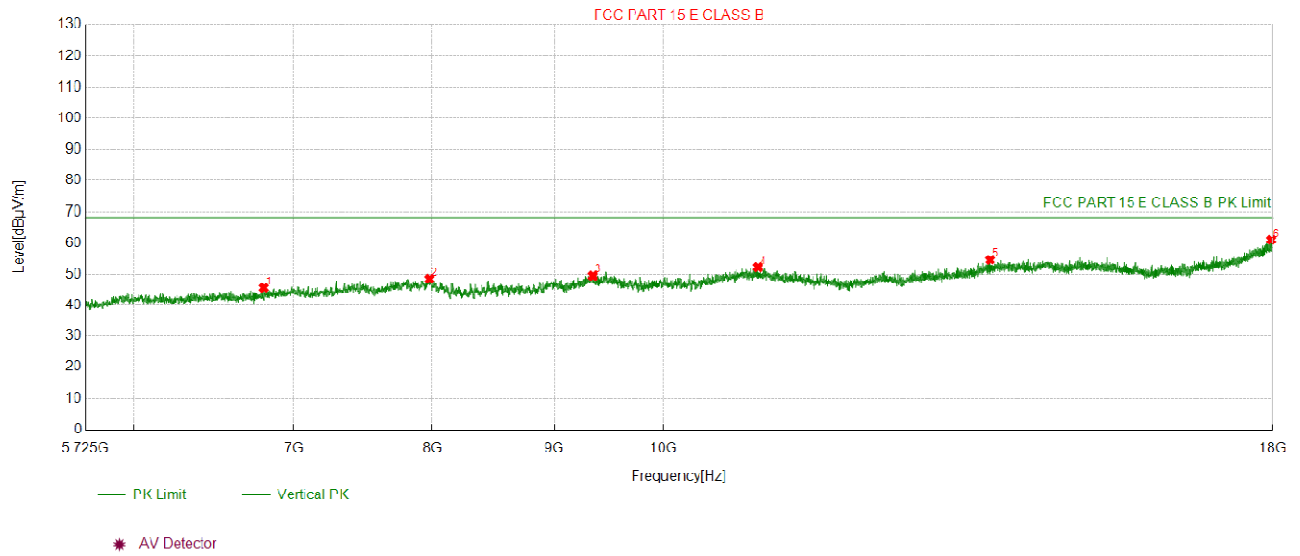
Antenna polarity: Horizontal



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	7970.322	51.23	49.04	-2.19	68.20	19.16	150	110	Horizontal
2	9067.816	50.46	48.40	-2.06	68.20	19.80	150	190	Horizontal
3	11036.92	50.07	51.82	1.75	68.20	16.38	150	180	Horizontal
4	13700.86	48.63	53.38	4.75	68.20	14.82	150	330	Horizontal
5	16722.04	47.75	54.33	6.58	68.20	13.87	150	90	Horizontal
6	17964.39	46.12	60.57	14.45	68.20	7.63	150	320	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Antenna polarity: Vertical

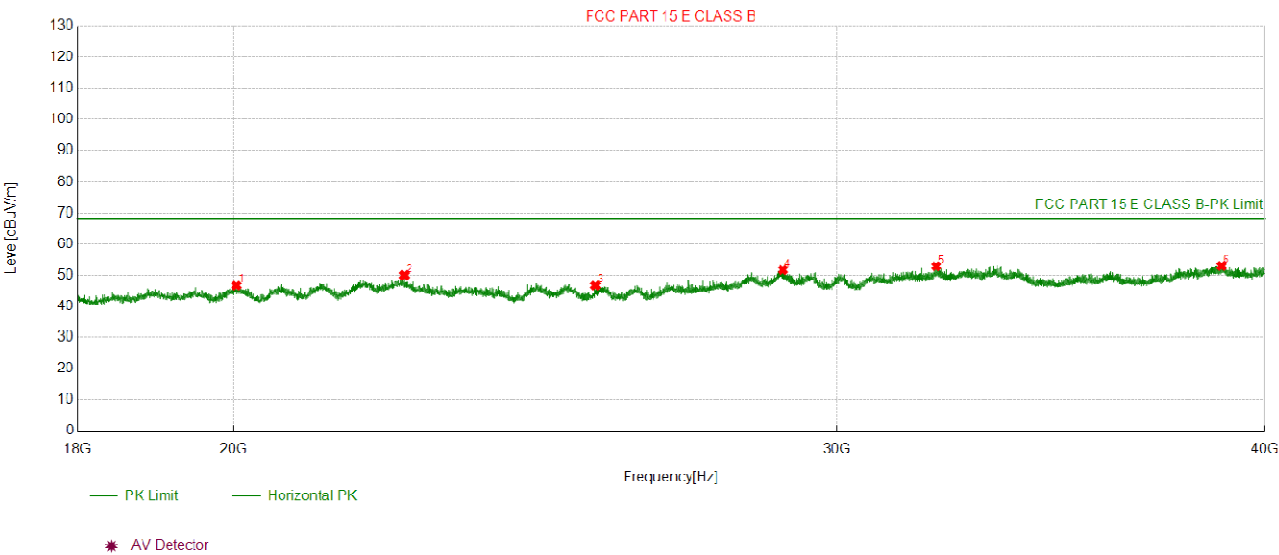


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	6800.397	50.70	45.55	-5.15	68.20	22.65	150	140	Vertical
2	7978.915	50.65	48.49	-2.16	68.20	19.71	150	160	Vertical
3	9340.349	50.76	49.48	-1.28	68.20	18.72	150	140	Vertical
4	10952.21	50.54	52.20	1.66	68.20	16.00	150	110	Vertical
5	13702.09	49.86	54.61	4.75	68.20	13.59	150	80	Vertical
6	17966.85	46.61	61.08	14.47	68.20	7.12	150	40	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

For 18GHz to 40GHz

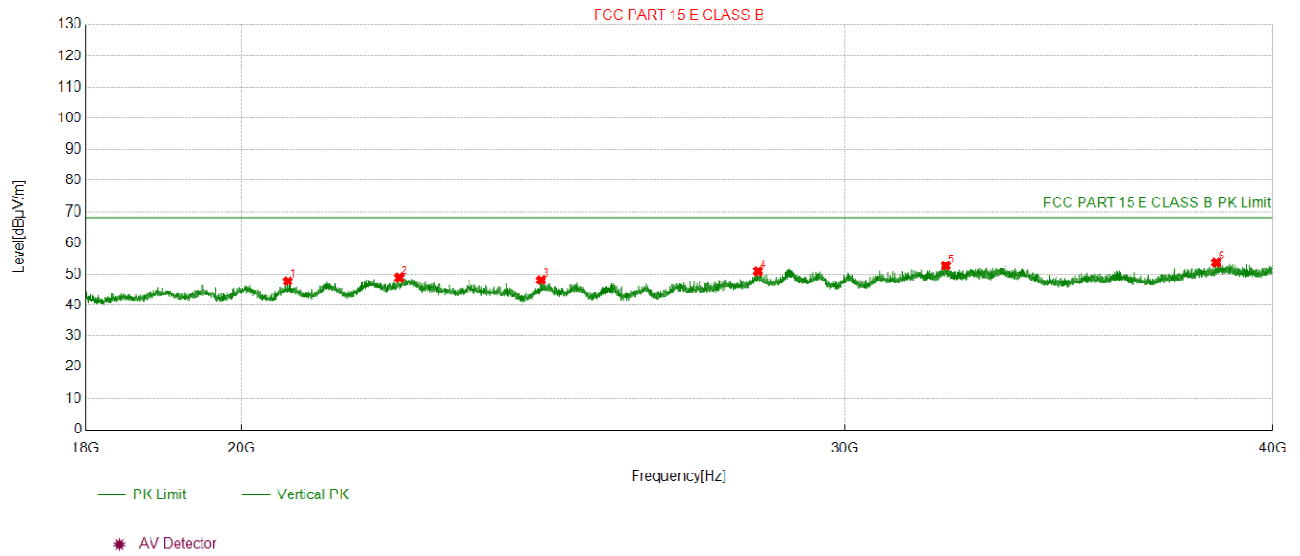
Antenna polarity: Horizontal



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20030.80	40.40	46.59	6.19	68.20	21.61	150	210	Horizontal
2	22426.84	44.25	49.92	5.67	68.20	18.28	150	170	Horizontal
3	25500.55	40.36	46.60	6.24	68.20	21.60	150	90	Horizontal
4	28924.09	42.64	51.63	8.99	68.20	16.57	150	280	Horizontal
5	32063.80	42.98	52.80	9.82	68.20	15.40	150	330	Horizontal
6	38842.68	41.79	52.92	11.13	68.20	15.28	150	190	Horizontal

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

Antenna polarity: Vertical



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBμV/m]	PK Level [dBμV/m]	Factor [dB]	PK Limit [dBμV/m]	PK Margin [dB]	Height [cm]	Angle [°]	Polarity
1	20627.06	41.90	47.75	5.85	68.20	20.45	150	290	Vertical
2	22231.02	43.16	48.90	5.74	68.20	19.30	150	200	Vertical
3	24453.24	42.39	48.07	5.68	68.20	20.13	150	50	Vertical
4	28292.62	42.26	50.91	8.65	68.20	17.29	150	350	Vertical
5	32099.00	42.81	52.68	9.87	68.20	15.52	150	30	Vertical
6	38501.65	43.19	53.74	10.55	68.20	14.46	150	0	Vertical

Remark: Factor = Cable loss + Antenna factor + Attenuator – Preamplifier; Level = Reading + Factor; Margin = Limit – Level

6.9 AC Powerline Conducted Emissions

LIMIT

According to §15.207(a), except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies within the band 150 kHz to 30 MHz shall not exceed the limits in the following table, as measured using a 50 μ H/50ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

TEST CONFIGURATION

See test photographs attached in Appendix 1 for the actual connections between EUT and support equipment.

TEST PROCEDURE

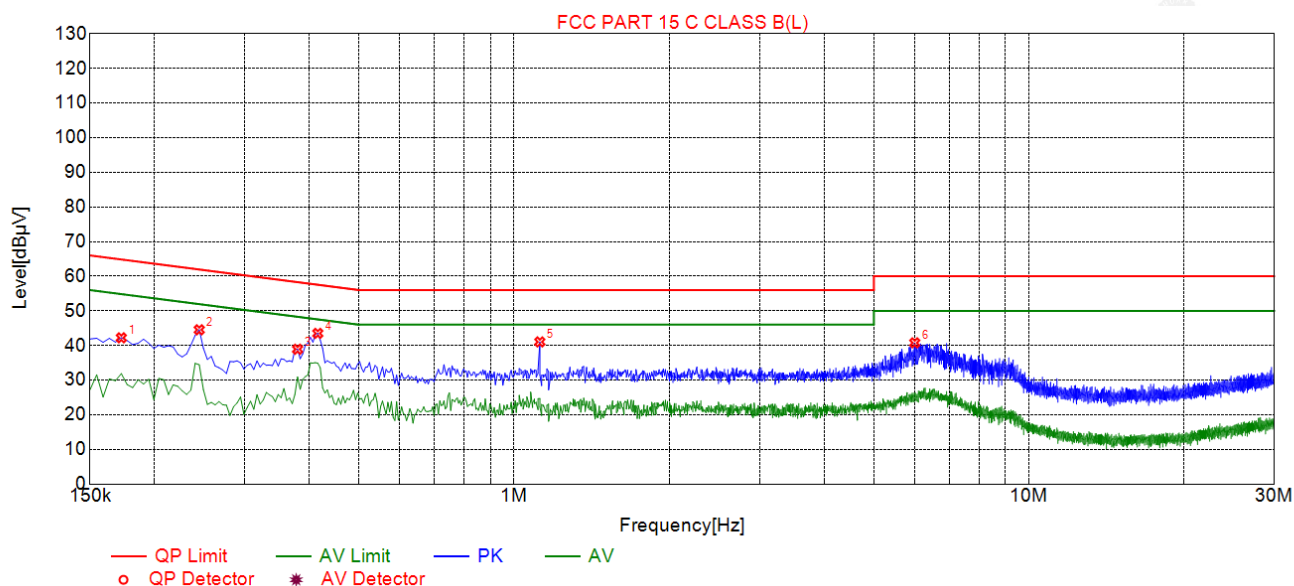
10. The EUT was placed on a table, which is 0.8m above ground plane.
11. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
12. Repeat above procedures until all frequency measured were complete.

TEST RESULTS

The initial step in collecting conducted data is a spectrum analyzer peaks can of the measurement range. Significant peaks are then marked as shown on the following data page, and these signals are then quasi-peaked.

Test Data

Test Specification: Line



Suspected List

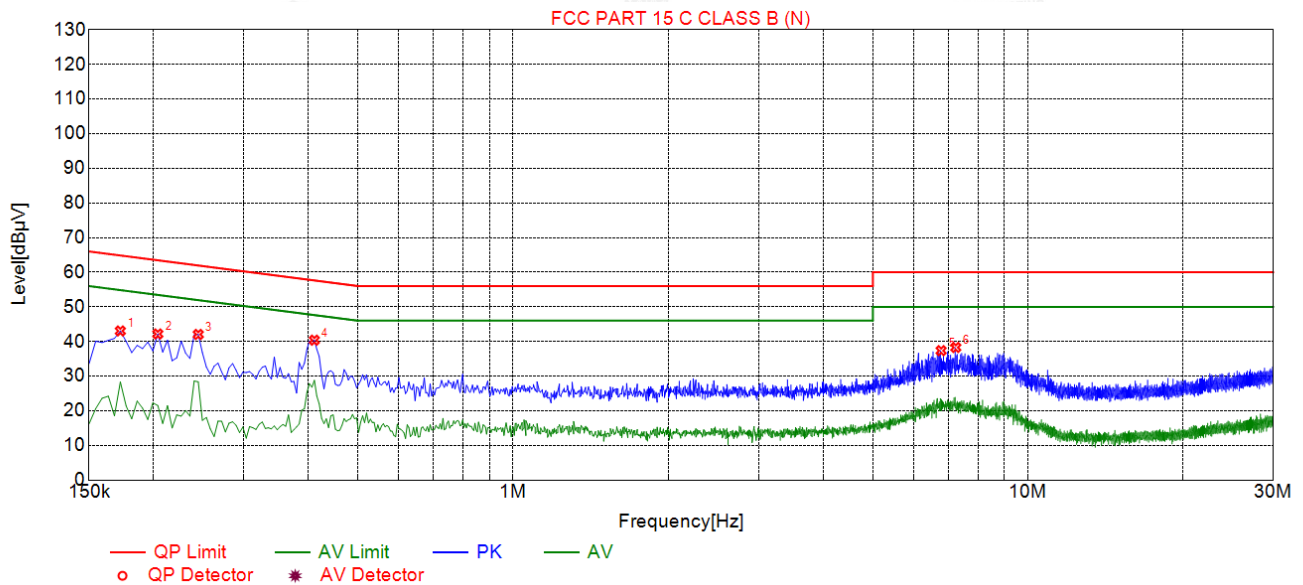
NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1725	42.23	19.67	64.84	22.61	22.56	PK	L
2	0.2445	44.54	19.83	61.94	17.40	24.71	PK	L
3	0.3795	38.93	19.85	58.29	19.36	19.08	PK	L
4	0.4155	43.51	19.83	57.54	14.03	23.68	PK	L
5	1.1220	41.04	19.82	56.00	14.96	21.22	PK	L
6	6.0045	40.77	20.40	60.00	19.23	20.37	PK	L

Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

Test Specification: Neutral



Suspected List

NO.	Freq. [MHz]	Level [dBμV]	Factor [dB]	Limit [dBμV]	Margin [dB]	Reading [dBμV]	Detector	Type
1	0.1725	43.04	19.64	64.84	21.80	23.40	PK	N
2	0.2040	42.18	19.64	63.45	21.27	22.54	PK	N
3	0.2445	42.05	19.65	61.94	19.89	22.40	PK	N
4	0.4110	40.39	19.70	57.63	17.24	20.69	PK	N
5	6.7875	37.36	20.48	60.00	22.64	16.88	PK	N
6	7.2465	38.28	20.53	60.00	21.72	17.75	PK	N

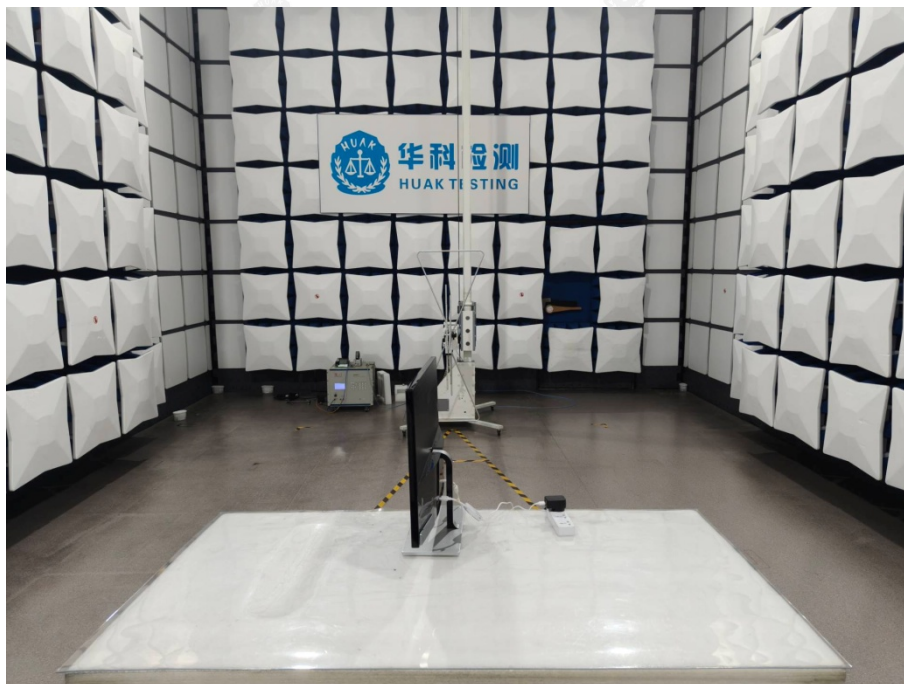
Remark: Margin = Limit – Level

Correction factor = Cable lose + LISN insertion loss

Level=Test receiver reading + correction factor

7. Test Setup Photos of the EUT

Radiated Emission

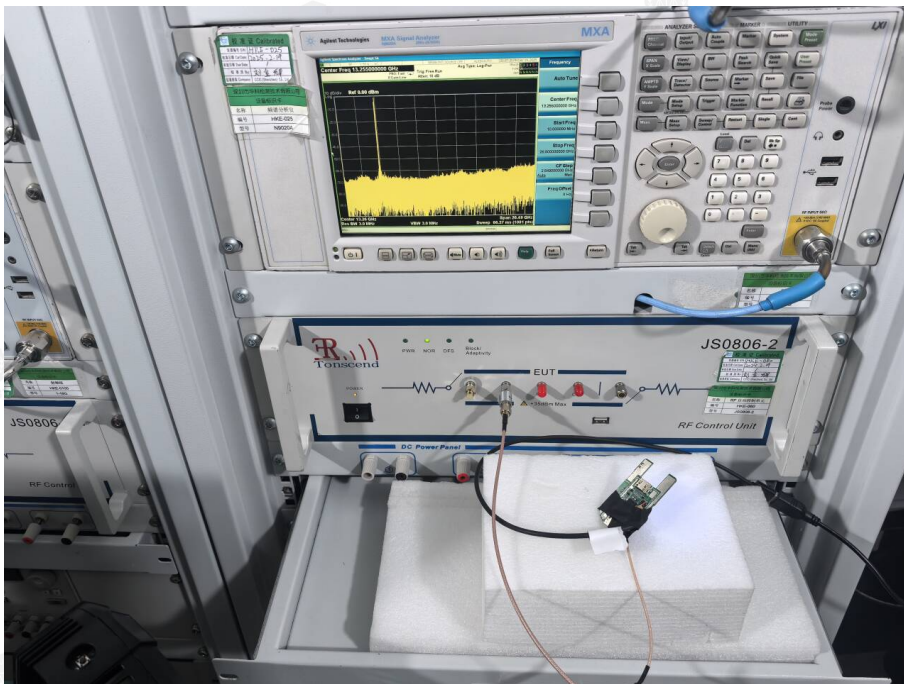


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AC Conducted Emission



RF Conducted Emission



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8. Photos of the EUT

Reference to the report: ANNEX A of external photos and ANNEX B of internal photos.

-----End of test report-----

