

Channel	TX Channel 13	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	87.6 PK			2.14 H	238	89.5	-1.9
2	*2472.00	77.0 AV			2.14 H	238	78.9	-1.9
3	2483.50	64.5 PK	74.0	-9.5	2.14 H	238	66.4	-1.9
4	2483.50	44.3 AV	54.0	-9.7	2.14 H	238	46.2	-1.9
5	4944.00	37.8 PK	74.0	-36.2	3.13 H	214	35.0	2.8
6	4944.00	27.7 AV	54.0	-26.3	3.13 H	214	24.9	2.8
7	7416.00	43.1 PK	74.0	-30.9	3.30 H	209	34.1	9.0
8	7416.00	33.2 AV	54.0	-20.8	3.30 H	209	24.2	9.0

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2472.00	102.3 PK			1.22 V	72	104.2	-1.9
2	*2472.00	93.7 AV			1.22 V	72	95.6	-1.9
3	2484.23	65.6 PK	74.0	-8.4	1.22 V	72	67.5	-1.9
4	2484.23	53.8 AV	54.0	-0.2	1.22 V	72	55.7	-1.9
5	4944.00	37.7 PK	74.0	-36.3	3.16 V	216	34.9	2.8
6	4944.00	27.9 AV	54.0	-26.1	3.16 V	216	25.1	2.8
7	7416.00	42.7 PK	74.0	-31.3	3.24 V	217	33.7	9.0
8	7416.00	32.8 AV	54.0	-21.2	3.24 V	217	23.8	9.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

802.11ax (HE40)

Channel	TX Channel 3	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2389.44	53.5 PK	74.0	-20.5	2.85 H	256	55.4	-1.9
2	2389.44	44.4 AV	54.0	-9.6	2.85 H	256	46.3	-1.9
3	*2422.00	96.8 PK			2.85 H	256	98.7	-1.9
4	*2422.00	85.7 AV			2.85 H	256	87.6	-1.9
5	4844.00	42.7 PK	74.0	-31.3	1.00 H	54	39.8	2.9
6	4844.00	30.0 AV	54.0	-24.0	1.00 H	54	27.1	2.9
7	7266.00	42.5 PK	74.0	-31.5	1.00 H	172	33.7	8.8
8	7266.00	32.6 AV	54.0	-21.4	1.00 H	172	23.8	8.8
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	61.2 PK	74.0	-12.8	1.18 V	71	63.1	-1.9
2	2390.00	52.7 AV	54.0	-1.3	1.18 V	71	54.6	-1.9
3	*2422.00	107.8 PK			1.18 V	71	109.7	-1.9
4	*2422.00	99.1 AV			1.18 V	71	101.0	-1.9
5	4844.00	42.4 PK	74.0	-31.6	3.25 V	203	39.5	2.9
6	4844.00	31.4 AV	54.0	-22.6	3.25 V	203	28.5	2.9
7	7266.00	42.8 PK	74.0	-31.2	1.00 V	160	34.0	8.8
8	7266.00	32.8 AV	54.0	-21.2	1.00 V	160	24.0	8.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

Channel	TX Channel 4	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	56.4 PK	74.0	-17.6	2.79 H	241	58.3	-1.9
2	2390.00	45.2 AV	54.0	-8.8	2.79 H	241	47.1	-1.9
3	*2427.00	99.9 PK			2.79 H	241	101.9	-2.0
4	*2427.00	86.6 AV			2.79 H	241	88.6	-2.0
5	4854.00	48.5 PK	74.0	-25.5	1.13 H	106	45.7	2.8
6	4854.00	35.0 AV	54.0	-19.0	1.13 H	106	32.2	2.8
7	7281.00	41.6 PK	74.0	-32.4	3.22 H	222	32.8	8.8
8	7281.00	31.9 AV	54.0	-22.1	3.22 H	222	23.1	8.8

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	63.6 PK	74.0	-10.4	1.15 V	111	65.5	-1.9
2	2390.00	53.5 AV	54.0	-0.5	1.15 V	111	55.4	-1.9
3	*2427.00	109.2 PK			1.15 V	111	111.2	-2.0
4	*2427.00	99.9 AV			1.15 V	111	101.9	-2.0
5	4854.00	46.1 PK	74.0	-27.9	1.00 V	210	43.3	2.8
6	4854.00	33.8 AV	54.0	-20.2	1.00 V	210	31.0	2.8
7	7281.00	42.0 PK	74.0	-32.0	3.24 V	220	33.2	8.8
8	7281.00	31.8 AV	54.0	-22.2	3.24 V	220	23.0	8.8

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

Channel	TX Channel 6	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	59.1 PK	74.0	-14.9	2.75 H	239	61.0	-1.9
2	2390.00	44.5 AV	54.0	-9.5	2.75 H	239	46.4	-1.9
3	*2437.00	101.3 PK			2.75 H	239	103.3	-2.0
4	*2437.00	88.4 AV			2.75 H	239	90.4	-2.0
5	2483.50	55.6 PK	74.0	-18.4	2.75 H	239	57.5	-1.9
6	2483.50	42.4 AV	54.0	-11.6	2.75 H	239	44.3	-1.9
7	4874.00	48.1 PK	74.0	-25.9	1.00 H	110	45.3	2.8
8	4874.00	36.2 AV	54.0	-17.8	1.00 H	110	33.4	2.8
9	7311.00	42.0 PK	74.0	-32.0	3.20 H	234	33.1	8.9
10	7311.00	32.3 AV	54.0	-21.7	3.20 H	234	23.4	8.9

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	2390.00	64.0 PK	74.0	-10.0	2.11 V	243	65.9	-1.9
2	2390.00	53.6 AV	54.0	-0.4	2.11 V	243	55.5	-1.9
3	*2437.00	111.0 PK			2.11 V	243	113.0	-2.0
4	*2437.00	101.2 AV			2.11 V	243	103.2	-2.0
5	2483.50	65.2 PK	74.0	-8.8	2.11 V	243	67.1	-1.9
6	2483.50	53.3 AV	54.0	-0.7	2.11 V	243	55.2	-1.9
7	4874.00	47.3 PK	74.0	-26.7	1.08 V	219	44.5	2.8
8	4874.00	36.1 AV	54.0	-17.9	1.08 V	219	33.3	2.8
9	7311.00	42.2 PK	74.0	-31.8	3.25 V	222	33.3	8.9
10	7311.00	32.4 AV	54.0	-21.6	3.25 V	222	23.5	8.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

Channel	TX Channel 8	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2447.00	99.9 PK			2.75 H	244	101.8	-1.9
2	*2447.00	86.3 AV			2.75 H	244	88.2	-1.9
3	2483.50	57.6 PK	74.0	-16.4	2.75 H	244	59.5	-1.9
4	2483.50	46.8 AV	54.0	-7.2	2.75 H	244	48.7	-1.9
5	4894.00	47.8 PK	74.0	-26.2	1.08 H	98	45.1	2.7
6	4894.00	34.6 AV	54.0	-19.4	1.08 H	98	31.9	2.7
7	7341.00	41.8 PK	74.0	-32.2	3.18 H	238	32.8	9.0
8	7341.00	32.2 AV	54.0	-21.8	3.18 H	238	23.2	9.0

Antenna Polarity & Test Distance : Vertical at 3 m

No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2447.00	109.5 PK			1.16 V	123	111.4	-1.9
2	*2447.00	100.1 AV			1.16 V	123	102.0	-1.9
3	2483.50	62.7 PK	74.0	-11.3	1.16 V	123	64.6	-1.9
4	2483.50	53.6 AV	54.0	-0.4	1.16 V	123	55.5	-1.9
5	4894.00	46.7 PK	74.0	-27.3	1.02 V	219	44.0	2.7
6	4894.00	34.2 AV	54.0	-19.8	1.02 V	219	31.5	2.7
7	7341.00	42.3 PK	74.0	-31.7	3.27 V	230	33.3	9.0
8	7341.00	32.2 AV	54.0	-21.8	3.27 V	230	23.2	9.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

Channel	TX Channel 9	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	98.7 PK			2.80 H	256	100.6	-1.9
2	*2452.00	85.5 AV			2.80 H	256	87.4	-1.9
3	2484.06	58.7 PK	74.0	-15.3	2.80 H	256	60.6	-1.9
4	2484.06	46.1 AV	54.0	-7.9	2.80 H	256	48.0	-1.9
5	4904.00	43.3 PK	74.0	-30.7	1.13 H	216	40.6	2.7
6	4904.00	32.0 AV	54.0	-22.0	1.13 H	216	29.3	2.7
7	7356.00	43.6 PK	74.0	-30.4	1.17 H	221	34.7	8.9
8	7356.00	32.3 AV	54.0	-21.7	1.17 H	221	23.4	8.9
Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2452.00	107.9 PK			1.13 V	116	109.8	-1.9
2	*2452.00	99.3 AV			1.13 V	116	101.2	-1.9
3	2483.50	63.5 PK	74.0	-10.5	1.13 V	116	65.4	-1.9
4	2483.50	53.5 AV	54.0	-0.5	1.13 V	116	55.4	-1.9
5	4904.00	43.2 PK	74.0	-30.8	1.16 V	222	40.5	2.7
6	4904.00	32.0 AV	54.0	-22.0	1.16 V	222	29.3	2.7
7	7356.00	41.8 PK	74.0	-32.2	3.29 V	210	32.9	8.9
8	7356.00	32.0 AV	54.0	-22.0	3.29 V	210	23.1	8.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.
6. " # ": The radiated frequency is out of the restricted band.

Channel	TX Channel 10	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2457.00	99.2 PK			3.13 H	256	101.1	-1.9
2	*2457.00	83.4 AV			3.13 H	256	85.3	-1.9
3	2485.27	58.8 PK	74.0	-15.2	3.13 H	256	60.7	-1.9
4	2485.27	48.3 AV	54.0	-5.7	3.13 H	256	50.2	-1.9
5	4914.00	45.7 PK	74.0	-28.3	1.02 H	207	43.0	2.7
6	4914.00	33.8 AV	54.0	-20.2	1.02 H	207	31.1	2.7
7	7371.00	42.7 PK	74.0	-31.3	3.19 H	198	33.8	8.9
8	7371.00	33.3 AV	54.0	-20.7	3.19 H	198	24.4	8.9

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2457.00	105.9 PK			1.12 V	112	107.8	-1.9
2	*2457.00	95.4 AV			1.12 V	112	97.3	-1.9
3	2484.75	62.3 PK	74.0	-11.7	1.12 V	112	64.2	-1.9
4	2484.75	53.7 AV	54.0	-0.3	1.12 V	112	55.6	-1.9
5	2488.01	69.6 PK	74.0	-4.4	1.12 V	112	71.5	-1.9
6	2488.01	51.7 AV	54.0	-2.3	1.12 V	112	53.6	-1.9
7	4914.00	45.4 PK	74.0	-28.6	1.01 V	219	42.7	2.7
8	4914.00	33.4 AV	54.0	-20.6	1.01 V	219	30.7	2.7
9	7371.00	42.5 PK	74.0	-31.5	3.25 V	209	33.6	8.9
10	7371.00	32.9 AV	54.0	-21.1	3.25 V	209	24.0	8.9

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

Channel	TX Channel 11	Detector Function	Peak (PK)
Frequency Range	1GHz ~ 25GHz		Average (AV)

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	97.7 PK			3.12 H	256	99.6	-1.9
2	*2462.00	81.1 AV			3.12 H	256	83.0	-1.9
3	2485.32	57.0 PK	74.0	-17.0	3.12 H	256	58.9	-1.9
4	2485.32	46.9 AV	54.0	-7.1	3.12 H	256	48.8	-1.9
5	4924.00	43.0 PK	74.0	-31.0	3.15 H	218	40.3	2.7
6	4924.00	33.2 AV	54.0	-20.8	3.15 H	218	30.5	2.7
7	7386.00	43.0 PK	74.0	-31.0	3.18 H	193	34.0	9.0
8	7386.00	33.5 AV	54.0	-20.5	3.18 H	193	24.5	9.0

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	*2462.00	106.6 PK			1.67 V	242	108.5	-1.9
2	*2462.00	95.1 AV			1.67 V	242	97.0	-1.9
3	2484.66	60.8 PK	74.0	-13.2	1.67 V	242	62.7	-1.9
4	2484.66	53.3 AV	54.0	-0.7	1.67 V	242	55.2	-1.9
5	2486.87	62.7 PK	74.0	-11.3	1.67 V	242	64.6	-1.9
6	2486.87	50.3 AV	54.0	-3.7	1.67 V	242	52.2	-1.9
7	4924.00	41.7 PK	74.0	-32.3	1.13 V	224	39.0	2.7
8	4924.00	31.4 AV	54.0	-22.6	1.13 V	224	28.7	2.7
9	7386.00	42.9 PK	74.0	-31.1	3.19 V	203	33.9	9.0
10	7386.00	33.2 AV	54.0	-20.8	3.19 V	203	24.2	9.0

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit.
5. " * ": Fundamental frequency.

Below 1GHz Worst-Case Data

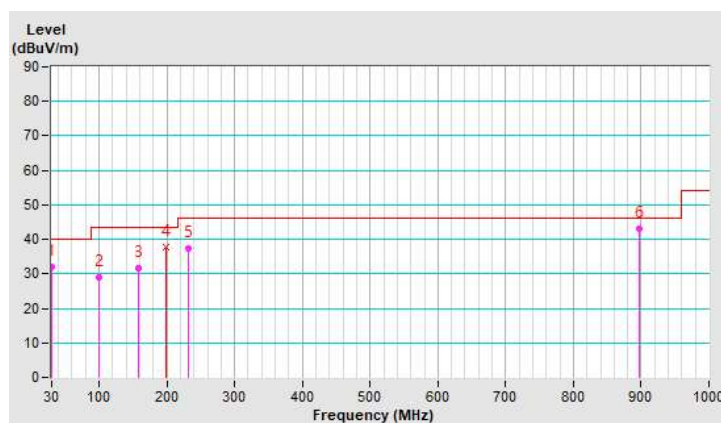
802.11b

Channel	TX Channel 6	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

Antenna Polarity & Test Distance : Horizontal at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	30.58	31.9 QP	40.0	-8.1	3.00 H	110	40.8	-8.9
2	99.62	28.8 QP	43.5	-14.7	2.00 H	286	40.6	-11.8
3	158.19	31.7 QP	43.5	-11.8	2.00 H	320	38.5	-6.8
4	199.54	37.9 QP	43.5	-5.6	1.00 H	341	48.0	-10.1
5	232.34	37.3 QP	46.0	-8.7	1.50 H	194	46.1	-8.8
6	896.21	42.9 QP	46.0	-3.1	1.50 H	279	35.6	7.3

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.

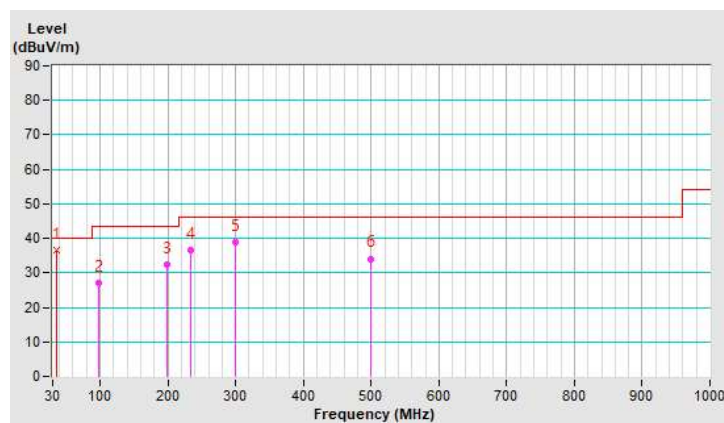


Channel	TX Channel 6	Detector Function	Quasi-Peak (QP)
Frequency Range	9kHz ~ 1GHz		

Antenna Polarity & Test Distance : Vertical at 3 m								
No	Frequency (MHz)	Emission Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Antenna Height (m)	Table Angle (Degree)	Raw Value (dBuV)	Correction Factor (dB/m)
1	35.28	36.6 QP	40.0	-3.4	1.00 V	213	45.2	-8.6
2	97.37	27.2 QP	43.5	-16.3	1.50 V	276	39.2	-12.0
3	199.56	32.4 QP	43.5	-11.1	2.00 V	251	42.5	-10.1
4	232.83	36.5 QP	46.0	-9.5	1.00 V	360	45.2	-8.7
5	299.34	38.8 QP	46.0	-7.2	3.00 V	283	44.7	-5.9
6	498.90	34.1 QP	46.0	-11.9	1.00 V	204	34.5	-0.4

Remarks:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. Margin value = Emission Level – Limit value
4. The other emission levels were very low against the limit of frequency range 30MHz~1000MHz.
5. The emission levels were very low against the limit of frequency range 9kHz~30MHz: the amplitude of spurious emissions attenuated more than 20 dB below the permissible value to be report.



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.	CALIBRATED DATE	CALIBRATED UNTIL
Test Receiver R&S	ESCS 30	847124/029	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for EUT) R&S	ESH3-Z5	848773/004	Oct. 23, 2019	Oct. 22, 2020
Line-Impedance Stabilization Network (for Peripheral) R&S	ESH3-Z5	835239/001	Mar. 19, 2020	Mar. 18, 2021
50 ohms Terminator	50	3	Oct. 23, 2019	Oct. 22, 2020
RF Cable	5D-FB	COCCAB-001	Sep. 27, 2019	Sep. 26, 2020
Fixed attenuator EMCI	STI02-2200-10	005	Aug. 29, 2020	Aug. 28, 2021
Software BVADT	BVADT_Cond_ V7.3.7.4	NA	NA	NA

Note:

1. The calibration interval of the above test instruments are 12 months and the calibrations are traceable to NML/ROC and NIST/USA.
2. The test was performed in Conduction 1.
3. Tested Date: Sep. 08, 2020

4.2.3 Test Procedures

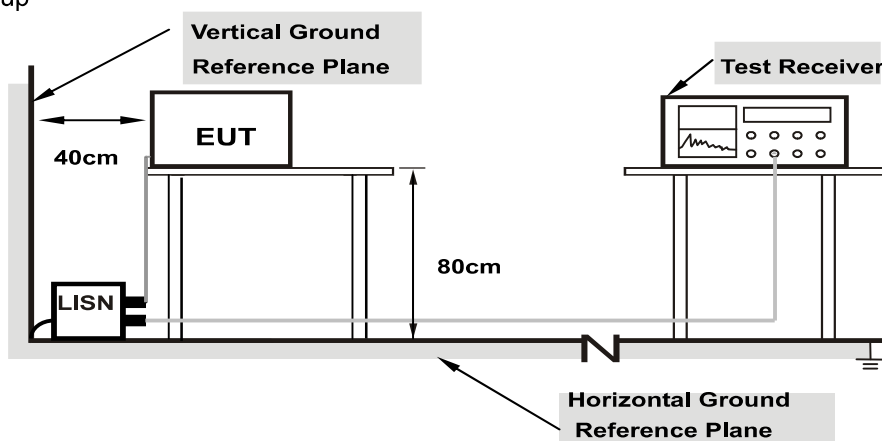
- The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance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

Note: The resolution bandwidth and video bandwidth of test receiver is 9kHz 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

Phase	Line (L)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	----------	-------------------	--------------------------------

Phase Of Power : Line (L)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBUV)		Emission Level (dBUV)		Limit (dBUV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17253	9.92	37.63	11.06	47.55	20.98	64.84	54.84	-17.29	-33.86
2	0.25744	9.94	24.46	0.37	34.40	10.31	61.51	51.51	-27.11	-41.20
3	0.43516	9.95	24.29	5.69	34.24	15.64	57.15	47.15	-22.91	-31.51
4	1.32072	10.00	22.88	7.34	32.88	17.34	56.00	46.00	-23.12	-28.66
5	21.16822	11.05	35.95	35.78	47.00	46.83	60.00	50.00	-13.00	-3.17
6	25.87259	11.18	34.29	34.19	45.47	45.37	60.00	50.00	-14.53	-4.63

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value



Phase	Neutral (N)	Detector Function	Quasi-Peak (QP) / Average (AV)
-------	-------------	-------------------	--------------------------------

Phase Of Power : Neutral (N)										
No	Frequency (MHz)	Correction Factor (dB)	Reading Value (dBuV)		Emission Level (dBuV)		Limit (dBuV)		Margin (dB)	
			Q.P.	AV.	Q.P.	AV.	Q.P.	AV.	Q.P.	AV.
1	0.17234	9.92	37.23	11.03	47.15	20.95	64.85	54.85	-17.70	-33.90
2	0.20547	9.93	34.21	12.62	44.14	22.55	63.39	53.39	-19.25	-30.84
3	0.43591	9.95	23.54	5.00	33.49	14.95	57.14	47.14	-23.65	-32.19
4	1.27259	10.00	20.66	4.51	30.66	14.51	56.00	46.00	-25.34	-31.49
5	21.16822	10.78	34.63	34.44	45.41	45.22	60.00	50.00	-14.59	-4.78
6	25.87184	10.86	32.25	32.18	43.11	43.04	60.00	50.00	-16.89	-6.96

Remarks:

1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. The emission levels of other frequencies were very low against the limit.
3. Margin value = Emission level – Limit value
4. Correction factor = Insertion loss + Cable loss
5. Emission Level = Correction Factor + Reading Value

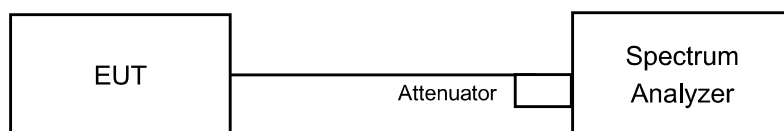


4.3 6dB Bandwidth Measurement

4.3.1 Limits of 6dB Bandwidth Measurement

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

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 Procedure

- Set resolution bandwidth (RBW) = 100kHz
- Set the video bandwidth (VBW) $\geq 3 \times$ RBW, Detector = Peak.
- Trace mode = max hold.
- Sweep = auto couple.
- Measure the maximum width of the emission that is constrained by the frequencies associated with the two amplitude points (upper and lower) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission. In order to obtain results more easily, change max hold to view. It has no effect on the result

4.3.5 Deviation from Test Standard

No deviation.

4.3.6 EUT Operating Conditions

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.3.7 Test Result

802.11b

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	8.11	8.12	0.5	Pass
2	2417	8.11	8.1	0.5	Pass
6	2437	8.12	8.1	0.5	Pass
10	2457	8.12	8.11	0.5	Pass
11	2462	8.08	8.09	0.5	Pass
12	2467	8.1	8.12	0.5	Pass
13	2472	8.11	8.1	0.5	Pass

802.11g

Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	15.83	16.35	0.5	Pass
2	2417	15.86	16.36	0.5	Pass
6	2437	15.85	16.35	0.5	Pass
10	2457	15.75	16.34	0.5	Pass
11	2462	15.84	16.39	0.5	Pass
12	2467	15.83	16.14	0.5	Pass
13	2472	15.84	16.35	0.5	Pass

802.11ax (HE20)

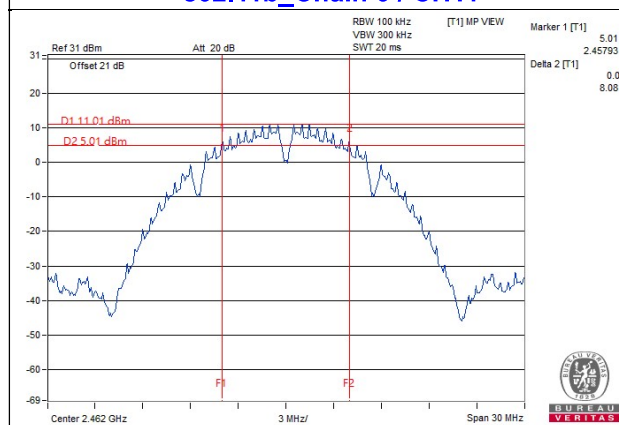
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
1	2412	18.76	18.35	0.5	Pass
2	2417	18.73	18.73	0.5	Pass
6	2437	18.63	18.66	0.5	Pass
10	2457	18.56	18.39	0.5	Pass
11	2462	18.53	18.56	0.5	Pass
12	2467	18.59	18.85	0.5	Pass
13	2472	18.71	18.79	0.5	Pass

802.11ax (HE40)

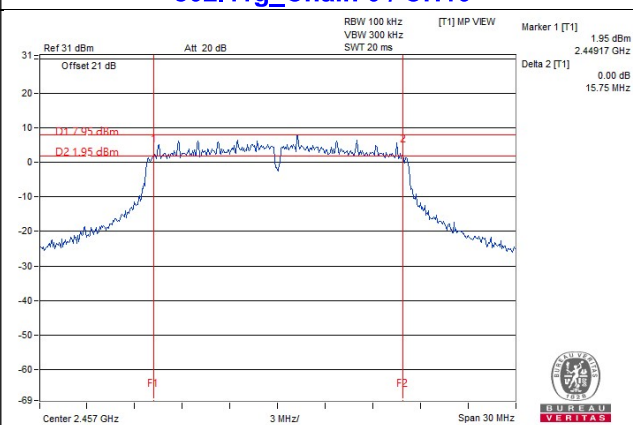
Channel	Frequency (MHz)	6dB Bandwidth (MHz)		Minimum Limit (MHz)	Pass / Fail
		Chain 0	Chain 1		
3	2422	37.67	37.46	0.5	Pass
4	2427	37.4	37.62	0.5	Pass
6	2437	37.42	36.69	0.5	Pass
8	2447	37.53	37.31	0.5	Pass
9	2452	37.59	37.61	0.5	Pass
10	2457	37.73	35.41	0.5	Pass
11	2462	37.63	36.76	0.5	Pass

Spectrum Plot of Worst Value

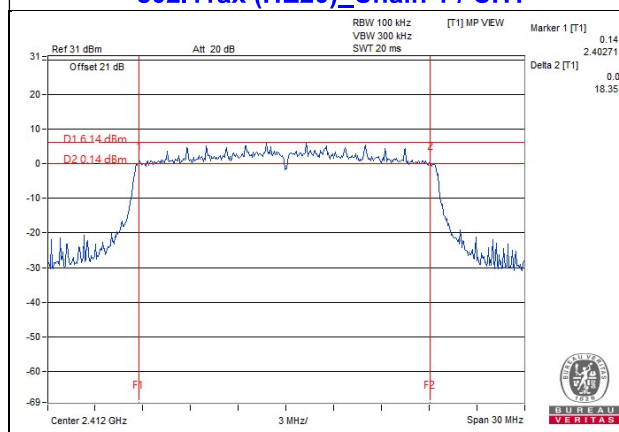
802.11b_Chain 0 / CH11



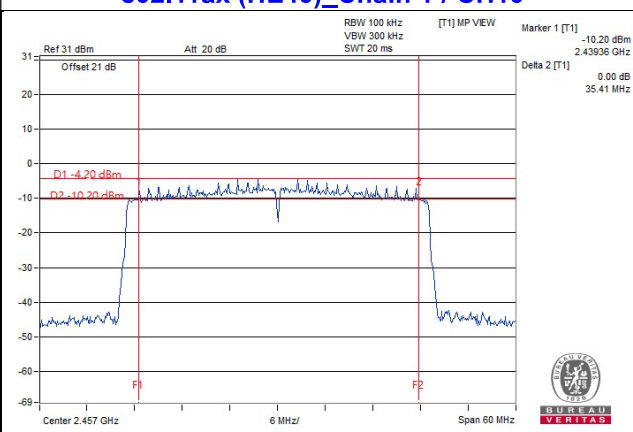
802.11g_Chain 0 / CH10



802.11ax (HE20)_Chain 1 / CH1



802.11ax (HE40)_Chain 1 / CH10



4.4 Conducted Output Power Measurement

4.4.1 Limits of Conducted Output Power Measurement

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

Per KDB 662911 D01 Multiple Transmitter Output Method of conducted output power measurement on IEEE 802.11 devices,

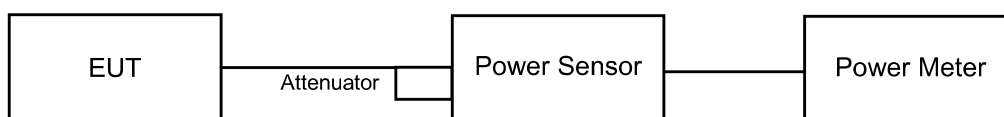
Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leq 4$;

Array Gain = 0 dB (i.e., no array gain) for channel widths ≥ 40 MHz for any N_{ANT} ;

Array Gain = $5 \log(N_{ANT}/N_{SS})$ dB or 3 dB, whichever is less for 20-MHz channel widths with $N_{ANT} \geq 5$.

For power measurements on all other devices: Array Gain = $10 \log(N_{ANT}/N_{SS})$ dB.

4.4.2 Test Setup



4.4.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.4.4 Test Procedures

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

Average power sensor was 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.

4.4.5 Deviation from Test Standard

No deviation.

4.4.6 EUT Operating Conditions

Same as Item 4.3.6.

4.4.7 Test Results

FOR PEAK POWER

802.11b

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	22.06	21.73	309.63	24.91	30.00	Pass
2	2417	22.11	21.77	312.869	24.95	30.00	Pass
6	2437	22.19	21.68	312.808	24.95	30.00	Pass
10	2457	21.99	21.63	303.671	24.82	30.00	Pass
11	2462	21.95	21.64	302.557	24.81	30.00	Pass
12	2467	18.04	18.21	129.901	21.14	30.00	Pass
13	2472	11.54	11.80	29.392	14.68	30.00	Pass

802.11g

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	25.39	25.79	725.254	28.60	30.00	Pass
2	2417	25.99	26.17	811.191	29.09	30.00	Pass
6	2437	25.63	25.93	757.337	28.79	30.00	Pass
10	2457	25.93	25.76	768.446	28.86	30.00	Pass
11	2462	24.86	24.64	597.268	27.76	30.00	Pass
12	2467	21.22	20.99	258.037	24.12	30.00	Pass
13	2472	14.95	16.39	74.812	18.74	30.00	Pass

VHT20

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	25.29	25.58	699.475	28.45	30.00	Pass
2	2417	25.37	25.56	704.099	28.48	30.00	Pass
6	2437	25.80	26.15	792.287	28.99	30.00	Pass
10	2457	25.25	25.52	691.417	28.40	30.00	Pass
11	2462	24.03	24.38	527.087	27.22	30.00	Pass
12	2467	18.81	19.59	167.024	22.23	30.00	Pass
13	2472	12.81	15.28	52.827	17.23	30.00	Pass

VHT40

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	23.80	23.70	474.306	26.76	30.00	Pass
4	2427	24.02	23.98	502.383	27.01	30.00	Pass
6	2437	23.86	24.46	522.475	27.18	30.00	Pass
8	2447	23.42	24.16	480.401	26.82	30.00	Pass
9	2452	23.43	23.54	446.236	26.50	30.00	Pass
10	2457	16.92	17.37	103.78	20.16	30.00	Pass
11	2462	15.72	15.55	73.217	18.65	30.00	Pass

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
1	2412	25.54	25.87	744.463	28.72	30.00	Pass
2	2417	25.63	25.74	740.568	28.70	30.00	Pass
6	2437	26.06	26.43	843.187	29.26	30.00	Pass
10	2457	25.42	25.77	725.91	28.61	30.00	Pass
11	2462	24.31	24.63	560.176	27.48	30.00	Pass
12	2467	19.02	19.83	175.961	22.45	30.00	Pass
13	2472	13.10	15.56	56.392	17.51	30.00	Pass

802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	Peak Power (dBm)		Total Power (mW)	Total Power (dBm)	Limit (dBm)	Pass / Fail
		Chain 0	Chain 1				
3	2422	24.06	23.99	505.294	27.04	30.00	Pass
4	2427	24.26	24.22	530.927	27.25	30.00	Pass
6	2437	24.14	24.70	554.539	27.44	30.00	Pass
8	2447	23.47	24.41	498.389	26.98	30.00	Pass
9	2452	23.70	23.76	472.107	26.74	30.00	Pass
10	2457	17.16	17.59	109.411	20.39	30.00	Pass
11	2462	15.98	15.79	77.559	18.90	30.00	Pass

FOR AVERAGE POWER

802.11b

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	19.54	19.11	171.42	22.34
2	2417	19.61	19.18	174.206	22.41
6	2437	19.73	19.24	177.918	22.50
10	2457	19.54	19.11	171.42	22.34
11	2462	19.52	19.13	171.383	22.34
12	2467	15.53	15.66	72.54	18.61
13	2472	9.16	9.25	16.655	12.22

802.11g

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	17.17	17.65	110.33	20.43
2	2417	18.24	18.44	136.504	21.35
6	2437	18.32	18.57	139.865	21.46
10	2457	18.25	18.30	134.443	21.29
11	2462	17.14	17.23	104.605	20.20
12	2467	12.12	12.33	33.393	15.24
13	2472	6.91	7.33	10.317	10.14

VHT20

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	16.59	16.86	94.133	19.74
2	2417	17.54	17.69	115.503	20.63
6	2437	17.92	18.29	129.397	21.12
10	2457	17.35	17.62	112.135	20.50
11	2462	16.30	16.62	88.578	19.47
12	2467	10.21	10.51	21.741	13.37
13	2472	5.48	5.94	7.458	8.73

VHT40

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
3	2422	15.09	15.39	66.879	18.25
4	2427	15.64	15.79	74.575	18.73
6	2437	16.17	16.42	85.253	19.31
8	2447	15.49	15.74	72.897	18.63
9	2452	15.06	15.17	64.948	18.13
10	2457	8.50	8.83	14.718	11.68
11	2462	6.43	6.87	9.259	9.67

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
1	2412	16.86	17.12	100.052	20.00
2	2417	17.76	17.93	121.79	20.86
6	2437	18.14	18.50	135.957	21.33
10	2457	17.57	17.89	118.666	20.74
11	2462	16.59	16.88	94.357	19.75
12	2467	10.46	10.76	23.03	13.62
13	2472	5.71	6.17	7.864	8.96

802.11ax (HE40)

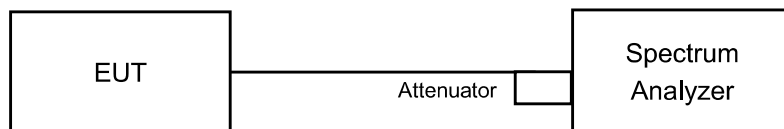
Chan.	Chan. Freq. (MHz)	Average Power (dBm)		Total Average Power (mW)	Total Average Power (dBm)
		Chain 0	Chain 1		
3	2422	15.34	15.62	70.673	18.49
4	2427	15.89	16.01	78.718	18.96
6	2437	16.39	16.63	89.577	19.52
8	2447	15.74	15.99	77.216	18.88
9	2452	15.27	15.46	68.807	18.38
10	2457	8.71	9.10	15.558	11.92
11	2462	6.68	7.09	9.773	9.90

4.5 Power Spectral Density Measurement

4.5.1 Limits of Power Spectral Density Measurement

The Maximum of Power Spectral Density Measurement is 8dBm in any 3 kHz.

4.5.2 Test Setup



4.5.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.5.4 Test Procedure

- Set analyzer center frequency to DTS channel center frequency.
- Set the span to 1.5 times the DTS bandwidth.
- Set the RBW to: $3 \text{ kHz} \leq \text{RBW} \leq 100 \text{ kHz}$.
- Set the VBW $\geq 3 \times \text{RBW}$.
- Detector = peak.
- Sweep time = auto couple.
- Trace mode = max hold.
- Allow trace to fully stabilize.
- Use the peak marker function to determine the maximum amplitude level within the RBW.
In order to obtain results more easily, change max hold to view. It has no effect on the result

4.5.5 Deviation from Test Standard

No deviation.

4.5.6 EUT Operating Condition

Same as Item 4.3.6

4.5.7 Test Results

802.11b

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
1	2412	-2.53	-2.90	0.30	7.81	Pass
2	2417	-2.16	-2.54	0.66	7.81	Pass
6	2437	-2.45	-0.96	1.37	7.81	Pass
10	2457	-1.86	-2.54	0.82	7.81	Pass
11	2462	-1.26	-3.31	0.85	7.81	Pass
12	2467	-4.78	-6.16	-2.41	7.81	Pass
13	2472	-12.67	-12.05	-9.34	7.81	Pass

Note: Directional gain = $3.18\text{dBi} + 10\log(2) = 6.19\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.19-6) = 7.81\text{dBm}$.

802.11g

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
1	2412	-6.25	-6.64	-3.43	7.81	Pass
2	2417	-4.93	-5.69	-2.28	7.81	Pass
6	2437	-5.38	-5.47	-2.41	7.81	Pass
10	2457	-5.61	-5.78	-2.68	7.81	Pass
11	2462	-7.17	-6.45	-3.78	7.81	Pass
12	2467	-11.32	-10.47	-7.86	7.81	Pass
13	2472	-17.20	-16.67	-13.92	7.81	Pass

Note: Directional gain = $3.18\text{dBi} + 10\log(2) = 6.19\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.19-6) = 7.81\text{dBm}$.

802.11ax (HE20)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
1	2412	-7.34	-8.19	-4.73	7.81	Pass
2	2417	-7.70	-7.11	-4.38	7.81	Pass
6	2437	-6.87	-6.39	-3.61	7.81	Pass
10	2457	-6.07	-6.83	-3.42	7.81	Pass
11	2462	-7.62	-6.75	-4.15	7.81	Pass
12	2467	-15.54	-14.12	-11.76	7.81	Pass
13	2472	-19.95	-19.67	-16.80	7.81	Pass

Note: Directional gain = $3.18\text{dBi} + 10\log(2) = 6.19\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.19-6) = 7.81\text{dBm}$.

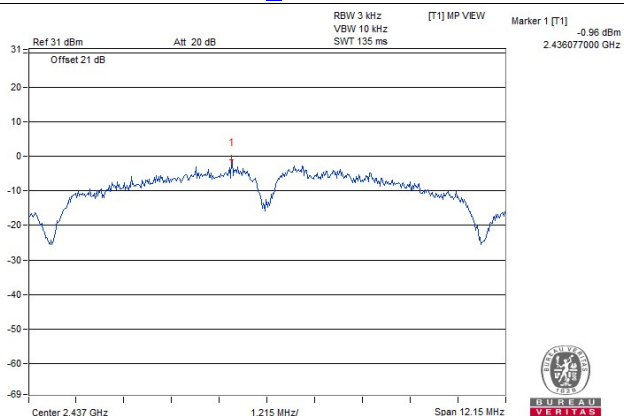
802.11ax (HE40)

Chan.	Chan. Freq. (MHz)	PSD (dBm/3kHz)		Total PSD (dBm/3kHz)	PSD Limit (dBm/3kHz)	Pass / Fail
		Chain 0	Chain 1			
3	2422	-12.42	-11.91	-9.15	7.81	Pass
4	2427	-11.10	-12.03	-8.53	7.81	Pass
6	2437	-11.64	-11.30	-8.46	7.81	Pass
8	2447	-11.48	-11.19	-8.32	7.81	Pass
9	2452	-11.68	-13.15	-9.34	7.81	Pass
10	2457	-19.39	-18.95	-16.15	7.81	Pass
11	2462	-19.11	-19.73	-16.40	7.81	Pass

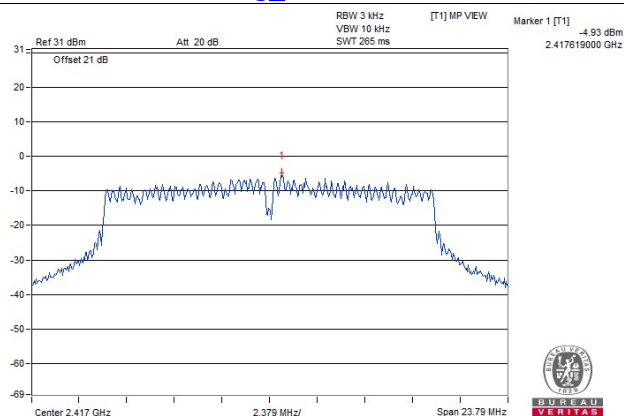
Note: Directional gain = $3.18\text{dBi} + 10\log(2) = 6.19\text{dBi} > 6\text{dBi}$, so the power density limit shall be reduced to $8-(6.19-6) = 7.81\text{dBm}$.

Spectrum Plot of Worst Value

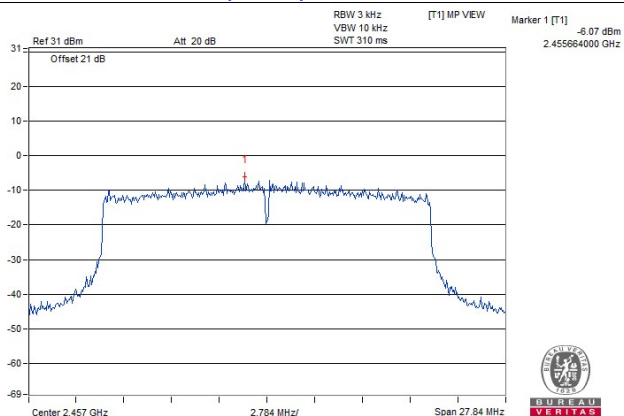
802.11b_Chain 1 / CH6



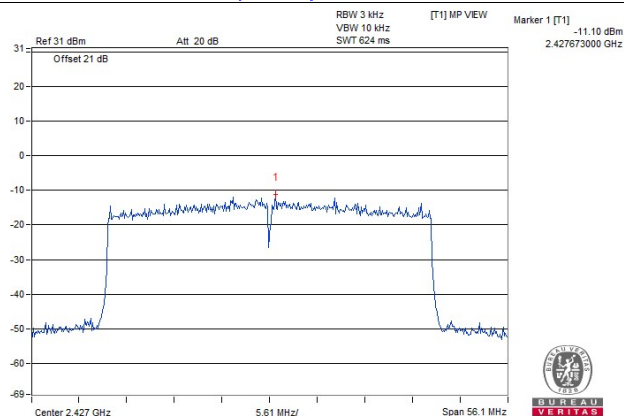
802.11g_Chain 0 / CH2



802.11ax (HE20)_Chain 0 / CH10



802.11ax (HE20)_Chain 0 / CH4

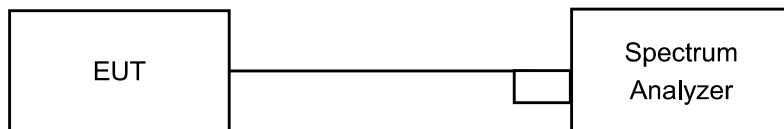


4.6 Conducted Out of Band Emission Measurement

4.6.1 Limits of Conducted Out of Band Emission Measurement

Below 20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

4.6.2 Test Setup



4.6.3 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.6.4 Test Procedure

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.. In order to obtain results more easily, change max hold to view. It has no effect on the result.

MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep = auto couple.
5. Trace Mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum amplitude level.
In order to obtain results more easily, change max hold to view. It has no effect on the result.

4.6.5 Deviation from Test Standard

No deviation.

4.6.6 EUT Operating Condition

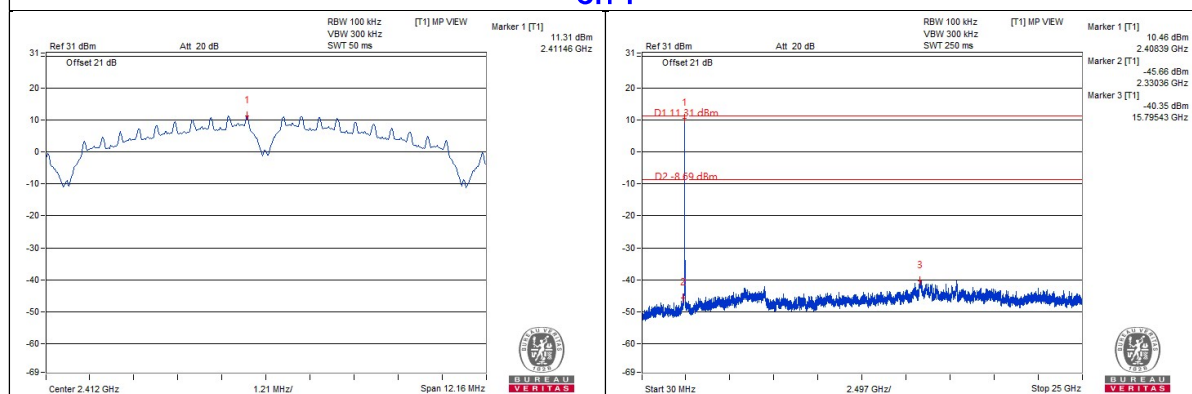
Same as Item 4.3.6

4.6.7 Test Results

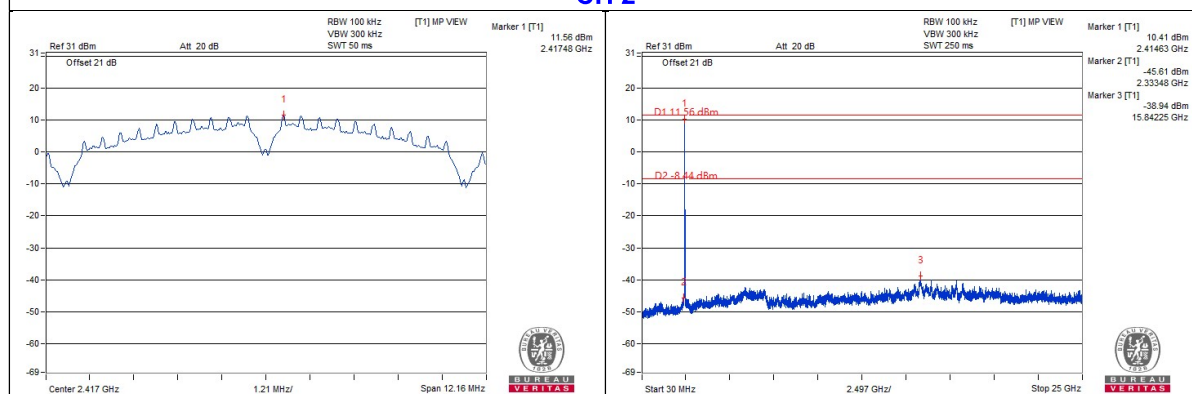
The spectrum plots are attached on the following pages. D1 line indicates the highest level, and D2 line indicates the 20dB offset below D1. It shows compliance with the requirement.

802.11b Chain 0

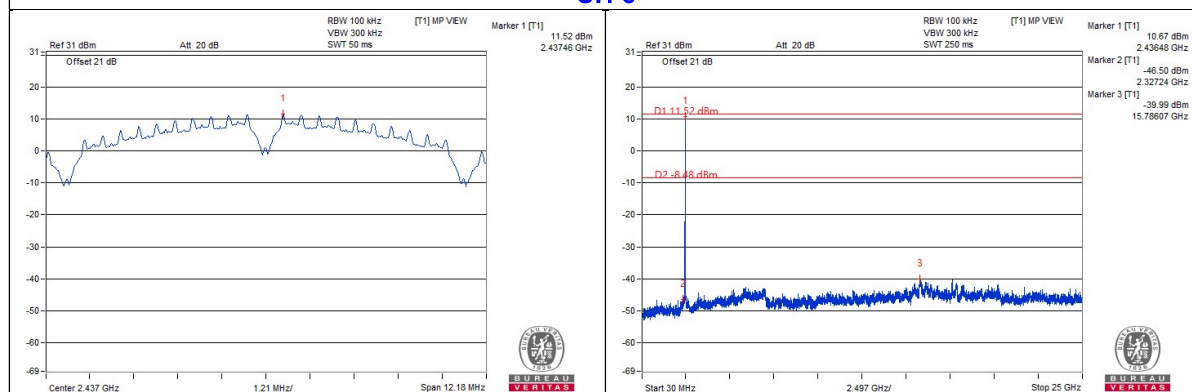
CH 1



CH 2



CH 6



CH 10

