1 CO-LOCATION

1.1 Transmitter Unwanted Emissions

1.1.1 Transmitter Unwanted Emissions Limit

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

Note 1: Test distance for frequencies at or above 30 MHz, measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).

Note 2: Test distance for frequencies at below 30 MHz, measurements may be performed at a distance closer than the EUT limit distance; however, an attempt should be made to avoid making measurements in the near field. When performing measurements below 30 MHz at a closer distance than the limit distance, the results shall be extrapolated to the specified distance by either making measurements at a minimum of two or more distances on at least one radial to determine the proper extrapolation factor or by using the square of an inverse linear distance extrapolation factor (40 dB/decade). The test report shall specify the extrapolation method used to determine compliance of the EUT.

Un-restricted Band Emissions Limit	
RF output power procedure	**Limit (dB)**
Peak output power procedure	20
Average output power procedure	30

Note 1: If the peak output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum measured in-band peak PSD level.

Note 2: If the average output power procedure is used to measure the fundamental emission power to demonstrate compliance to requirements, then the power in any 100 kHz outside of the authorized frequency band shall be attenuated by at least 30 dB relative to the maximum measured in-band average PSD level.

1.1.2 Measuring Instruments

Refer a test equipment and calibration data table in this test report.

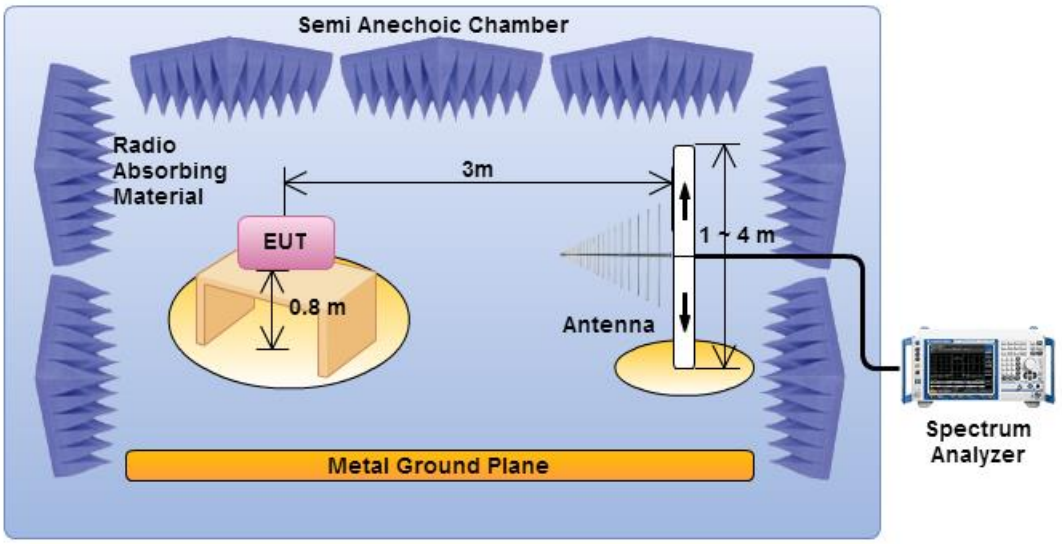
1.1.3 Test Procedures

Test Method	
☒	Measurements may be performed at a distance other than the limit distance provided they are not performed in the near field and the emissions to be measured can be detected by the measurement equipment. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor of 20 dB/decade (inverse of linear distance for field-strength measurements, inverse of linear distance-squared for power-density measurements).
☒	For the transmitter unwanted emissions shall be measured using following options below:
	☒ Refer as ANSI C63.10, clause 4.2.3.2.3 (Reduced VBW). VBW ≥ 1/T, where T is pulse time.
	☒ Refer as KDB 558074, clause 12.2.3 measurement procedure peak limit.
☒	For radiated measurement, refer as ANSI C63.10,
	☒ Refer as ANSI C63.10, clause 6.4 for radiated emissions from below 30 MHz.
	☒ Refer as ANSI C63.10, clause 6.5 for radiated emissions from 30 MHz to 1000 MHz.
	☒ Refer as ANSI C63.10, clause 6.6 for radiated emissions from above 1 GHz.

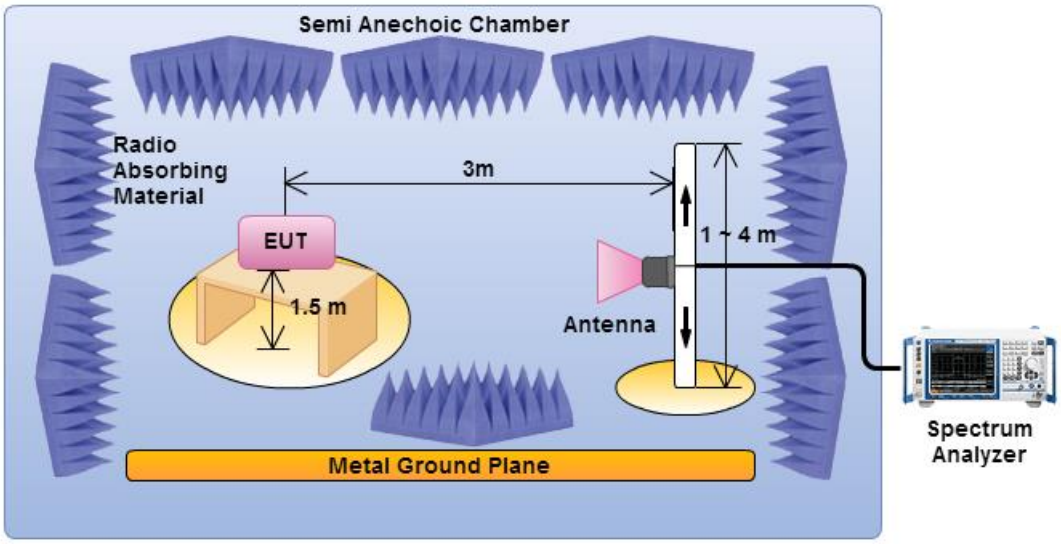
1.1.4 Test Setup

Transmitter Radiated Unwanted Emissions

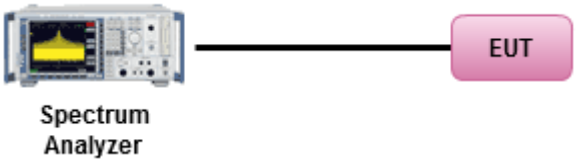
Below 1GHz test:



Above 1GHz test:



Magnetic field tests shall be performed in the frequency range of 9 kHz to 30 MHz using a calibrated loop antenna. Electric field tests shall be performed in the frequency range of 30 MHz to 1000 MHz using a calibrated bi-log antenna and the frequency range of 1 GHz to 40 GHz using a calibrated horn antenna.

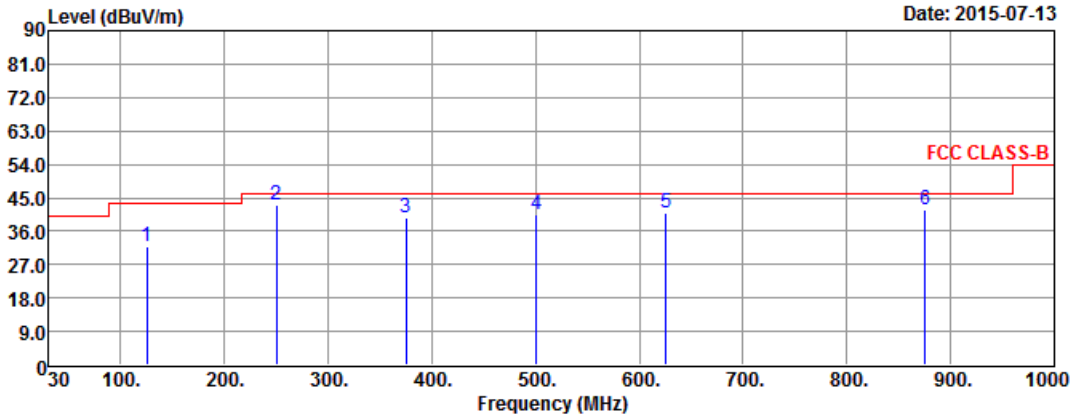
Transmitter Conducted Unwanted Emissions


1.1.5 Transmitter Radiated Unwanted Emissions (Below 30MHz)

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

1.1.6 Results of Radiated Emissions (Below 1GHz)

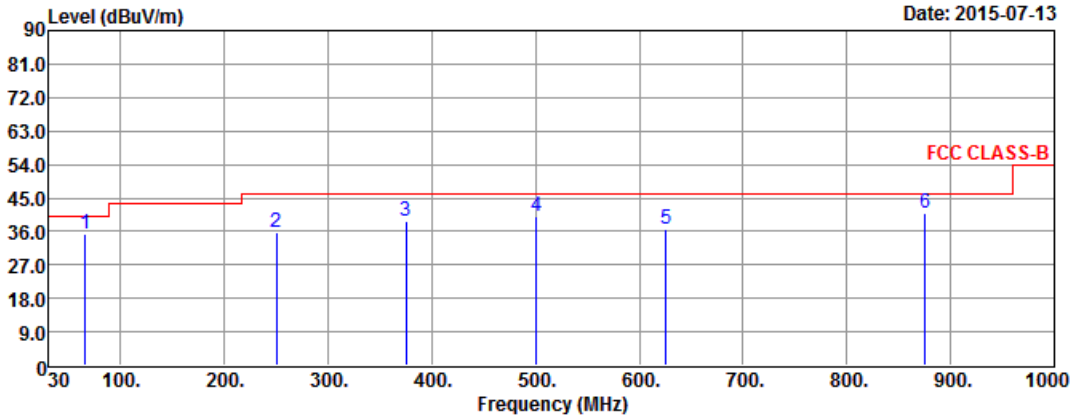
Transmitter Radiated Unwanted Emissions			
Operating Mode	1	**Polarization**	H
Operating Function	WLAN 2.4GHz 11g CH6 + 5GHz 11ac VHT20 CH157		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	125.16	31.84	-11.66	43.50	50.97	11.77	0.76	31.66	---	---	Peak
2	250.14	42.97	-3.03	46.00	60.84	12.60	1.01	31.48	---	---	QP
3	375.32	39.62	-6.38	46.00	53.93	15.86	1.27	31.44	---	---	Peak
4	500.46	40.68	-5.32	46.00	52.39	18.21	1.43	31.35	---	---	Peak
5	625.59	40.87	-5.13	46.00	50.14	20.50	1.61	31.38	---	---	Peak
6	875.76	41.96	-4.04	46.00	47.57	23.76	1.95	31.32	---	---	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Transmitter Radiated Unwanted Emissions			
Operating Mode	1	**Polarization**	V
Operating Function	WLAN 2.4GHz 11g CH6 + 5GHz 11ac VHT20 CH157		

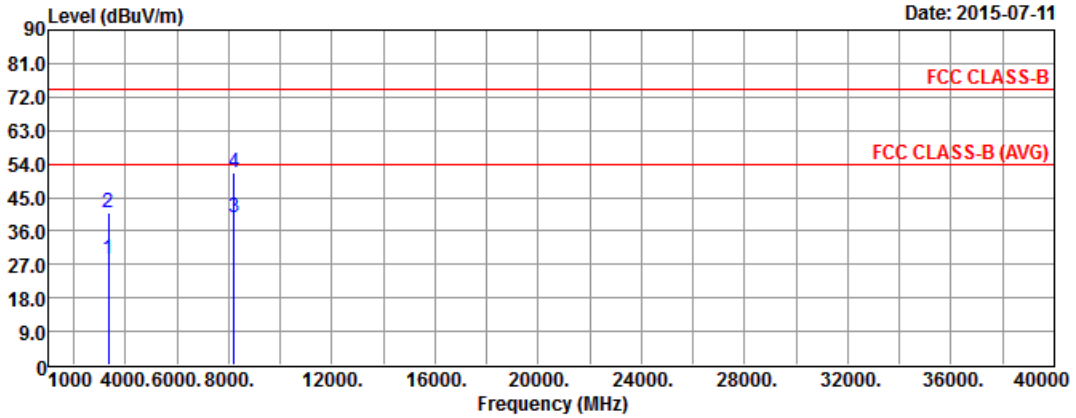


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	65.89	35.11	-4.89	40.00	53.38	12.95	0.60	31.82	---	---	QP
2	250.21	35.90	-10.10	46.00	53.76	12.61	1.01	31.48	---	---	Peak
3	375.35	38.76	-7.24	46.00	53.07	15.86	1.27	31.44	---	---	Peak
4	500.53	40.12	-5.88	46.00	51.83	18.21	1.43	31.35	---	---	Peak
5	625.41	36.51	-9.49	46.00	45.78	20.50	1.61	31.38	---	---	Peak
6	875.76	40.71	-5.29	46.00	46.32	23.76	1.95	31.32	---	---	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

1.1.7 Results for Radiated Emissions (Above 1GHz)

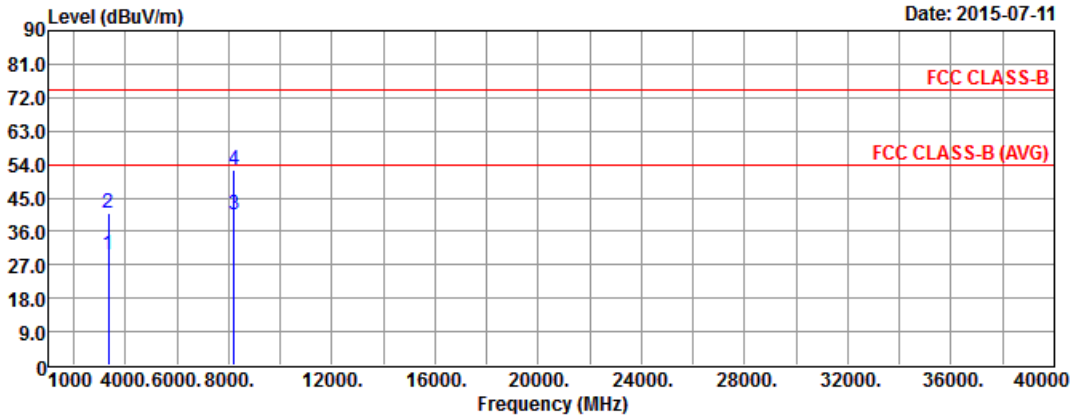
Transmitter Radiated Unwanted Emissions			
Operating Mode	1	**Polarization**	H
Operating Function	WLAN 2.4GHz 11g CH6 + 5GHz 11ac VHT20 CH157		



	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	3348.00	28.21	-25.79	54.00	27.77	28.84	5.46	33.86	107	51	Average
2	3348.00	41.12	-32.88	74.00	40.68	28.84	5.46	33.86	107	51	Peak
3	8222.00	39.42	-14.58	54.00	28.32	37.06	9.02	34.98	109	228	Average
4	8222.00	51.59	-22.41	74.00	40.49	37.06	9.02	34.98	109	228	Peak

Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

Transmitter Radiated Unwanted Emissions			
Operating Mode	1	**Polarization**	V
Operating Function	WLAN 2.4GHz 11g CH6 + 5GHz 11ac VHT20 CH157		

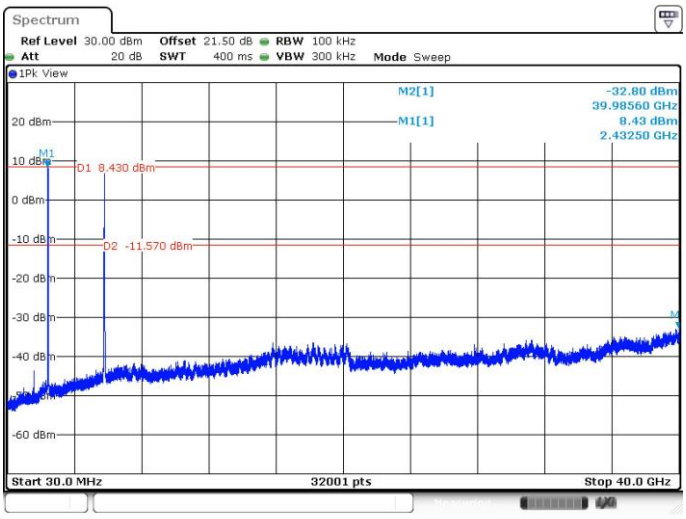


	Freq	Level	Over Limit	Limit Line	Read Level	Antenna Factor	Cable Loss	Preamp Factor	A/Pos	T/Pos	Remark
	MHz	dBuV/m	dB	dBuV/m	dBuV	dB/m	dB	dB	cm	deg	
1	3348.00	29.90	-24.10	54.00	29.46	28.84	5.46	33.86	115	85	Average
2	3348.00	41.02	-32.98	74.00	40.58	28.84	5.46	33.86	115	85	Peak
3	8222.00	40.56	-13.44	54.00	29.46	37.06	9.02	34.98	103	157	Average
4	8222.00	52.64	-21.36	74.00	41.54	37.06	9.02	34.98	103	157	Peak

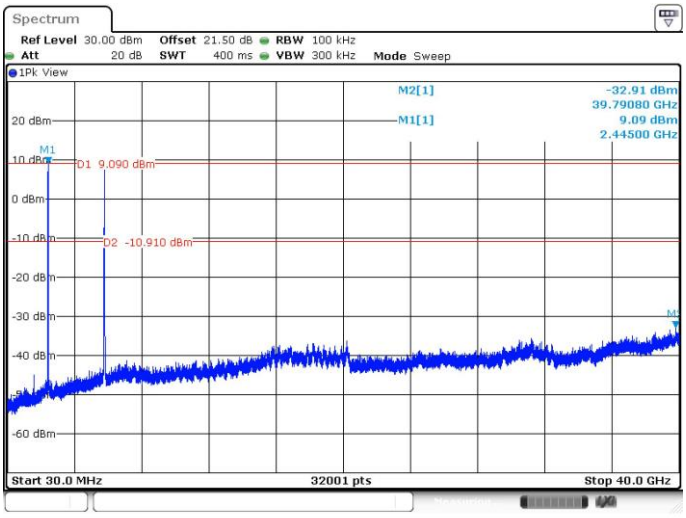
Note 1: “>20dB” means spurious emission levels that exceed the level of 20 dB below the applicable limit.
Note 2: “N/F” means Nothing Found spurious emissions (No spurious emissions were detected.)
Note 3: Measurement receive antenna polarization: H (Horizontal), V (Vertical)

1.1.8 Results for Conducted Emissions (30MHz~40GHz)

Conducted Emission Plots of Antenna port 0



Conducted Emission Plots of Antenna port 1



2 TEST EQUIPMENT AND CALIBRATION DATA

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
3m Semi Anechoic Chamber	SIDT FRANKONIA	SAC-3M	03CH03-HY	30MHz ~ 1GHz 3m	Nov. 29, 2014	Radiation (03CH03-HY)
Amplifier	HP	8447D	2944A08033	10kHz ~ 1.3GHz	May 11, 2015	Radiation (03CH03-HY)
Amplifier	Agilent	8449B	3008A02120	1GHz ~ 26.5GHz	Sep. 01, 2014	Radiation (03CH03-HY)
Spectrum	R&S	FSP40	100004	9kHz ~ 40GHz	Apr. 02, 2015	Radiation (03CH03-HY)
Bilog Antenna	SCHAFFNER	CBL 6112D	22237	30MHz ~ 1GHz	Sep. 20, 2014	Radiation (03CH03-HY)
Horn Antenna	AARONIA AG	POWERLOG 70180	05192	1GHz ~ 18GHz	May 01, 2015	Radiation (03CH03-HY)
Horn Antenna	SCHWARZBECK	BBHA9170	BBHA9170154	18GHz ~ 40GHz	Jan. 27, 2015	Radiation (03CH03-HY)
RF Cable-R03m	Jye Bao	RG142	CB021	9kHz ~ 1GHz	Nov. 15, 2014	Radiation (03CH03-HY)
RF Cable-high	SUHNER	SUCOFLEX 106	03CH03-HY	1GHz ~ 40GHz	Dec. 12, 2014	Radiation (03CH03-HY)
Turn Table	EM Electronics	EM Electronics	060615	0 ~ 360 degree	N/A	Radiation (03CH03-HY)
Antenna Mast	MF	MF-7802	MF780208179	1 ~ 4 m	N/A	Radiation (03CH03-HY)

Note: Calibration Interval of instruments listed above is one year.

Instrument	Manufacturer	Model No.	Serial No.	Characteristics	Calibration Date	Remark
Spectrum Analyzer	R&S	FSV 40	101500	9KHz~40GHz	May 06, 2015	Conducted (TH01-HY)
Temp. and Humidity Chamber	Giant Force	GTH-225-20-SP-SD	MAA1112-007	-20 ~ 100℃	Apr. 07, 2015	Conducted (TH01-HY)
Power Sensor	Anritsu	MA2411B	0917017	300MHz ~ 40GHz	Feb. 17, 2015	Conducted (TH01-HY)
Power Meter	Anritsu	ML2495A	0949003	300MHz ~ 40GHz	Feb. 17, 2015	Conducted (TH01-HY)
RF Cable-2m	HUBER+SUHNER	SUCOFLEX_ 104	SN 345675/4	30MHz ~ 26.5GHz	Nov. 30, 2014	Conducted (TH01-HY)
RF Cable-3m	HUBER+SUHNER	SUCOFLEX_ 104	SN 345669/4	30MHz ~ 26.5GHz	Nov. 30, 2014	Conducted (TH01-HY)

Note: Calibration Interval of instruments listed above is one year.