

8.3.4 Test Procedure

Methods refer to FCC KDB 789033.

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.

8.3.5 Test Results

Temperature:	24°C
Relative Humidity:	61%
ATM Pressure:	1011 mbar

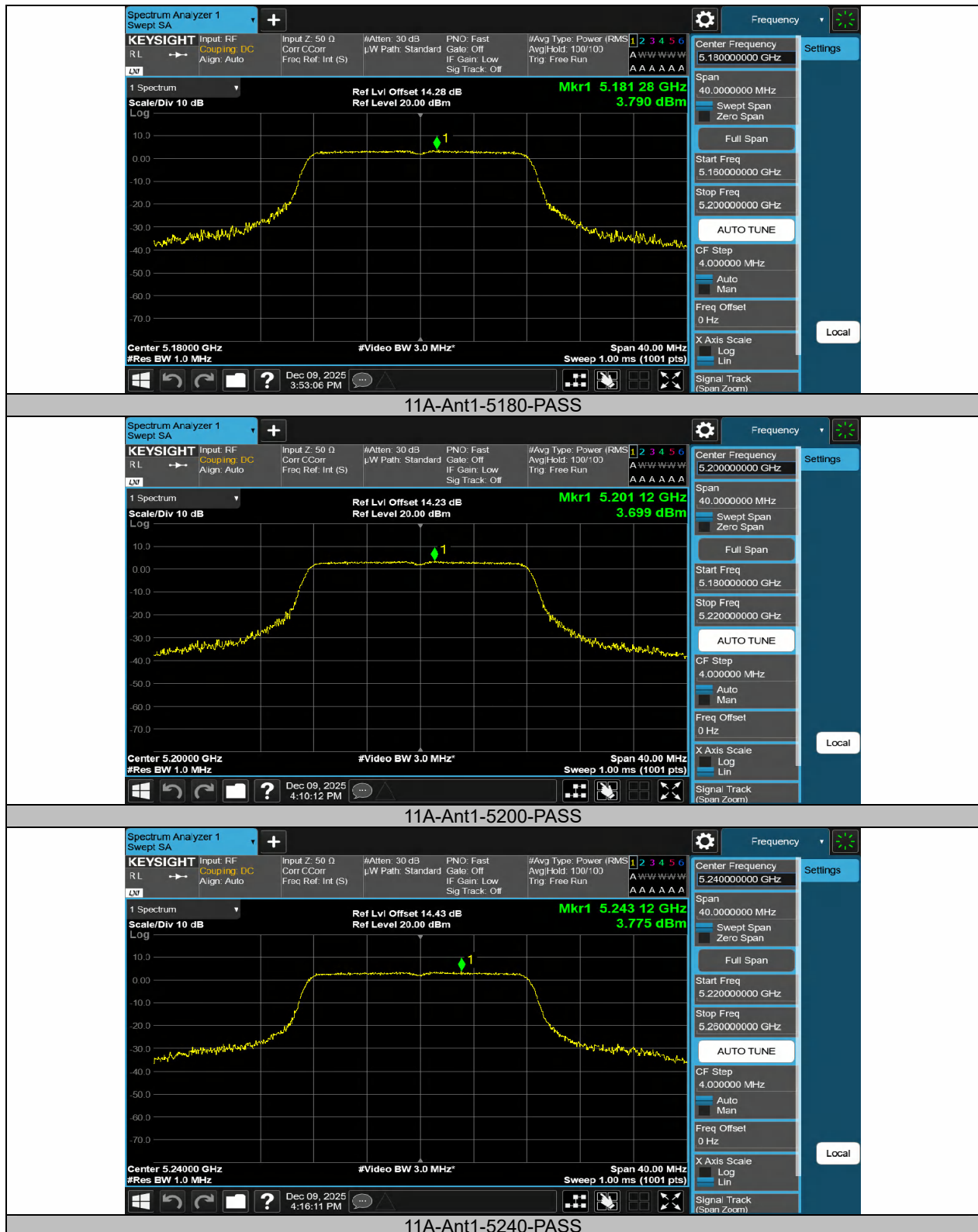
Note: The sample(EMC3589-S) with higher antenna gain were selected for the conduction test.

Power Density

TestMode	Antenna	Frequency[MHz]	Result [dBm/MHz]	Limit[dBm/MHz]	Verdict
11A	Ant1	5180	3.79	≤11.00	PASS
11A	Ant1	5200	3.70	≤11.00	PASS
11A	Ant1	5240	3.78	≤11.00	PASS
11A	Ant1	5260	4.38	≤11.00	PASS
11A	Ant1	5280	4.34	≤11.00	PASS
11A	Ant1	5320	2.98	≤11.00	PASS
11A	Ant1	5500	4.22	≤11.00	PASS
11A	Ant1	5580	4.23	≤11.00	PASS
11A	Ant1	5700	4.27	≤11.00	PASS
11A	Ant1	5745	1.14	≤30.00	PASS
11A	Ant1	5785	1.04	≤30.00	PASS
11A	Ant1	5825	1.25	≤30.00	PASS
11N20SISO	Ant1	5180	3.79	≤11.00	PASS
11N20SISO	Ant1	5200	3.66	≤11.00	PASS
11N20SISO	Ant1	5240	3.57	≤11.00	PASS
11N20SISO	Ant1	5260	4.20	≤11.00	PASS
11N20SISO	Ant1	5280	4.11	≤11.00	PASS
11N20SISO	Ant1	5320	2.11	≤11.00	PASS
11N20SISO	Ant1	5500	4.11	≤11.00	PASS
11N20SISO	Ant1	5580	4.49	≤11.00	PASS
11N20SISO	Ant1	5700	2.75	≤11.00	PASS
11N20SISO	Ant1	5745	0.78	≤30.00	PASS
11N20SISO	Ant1	5785	0.99	≤30.00	PASS
11N20SISO	Ant1	5825	1.65	≤30.00	PASS
11N40SISO	Ant1	5190	-1.39	≤11.00	PASS
11N40SISO	Ant1	5230	0.87	≤11.00	PASS
11N40SISO	Ant1	5270	1.28	≤11.00	PASS
11N40SISO	Ant1	5310	-3.64	≤11.00	PASS
11N40SISO	Ant1	5510	-0.91	≤11.00	PASS
11N40SISO	Ant1	5550	0.50	≤11.00	PASS
11N40SISO	Ant1	5670	0.60	≤11.00	PASS
11N40SISO	Ant1	5755	-1.00	≤30.00	PASS
11N40SISO	Ant1	5795	-1.22	≤30.00	PASS

Note: 1.The Result and Limit Unit is dBm/500 kHz in the band 5.725–5.85 GHz.
2.The Duty Cycle Factor and RBW Factor is compensated in the graph.

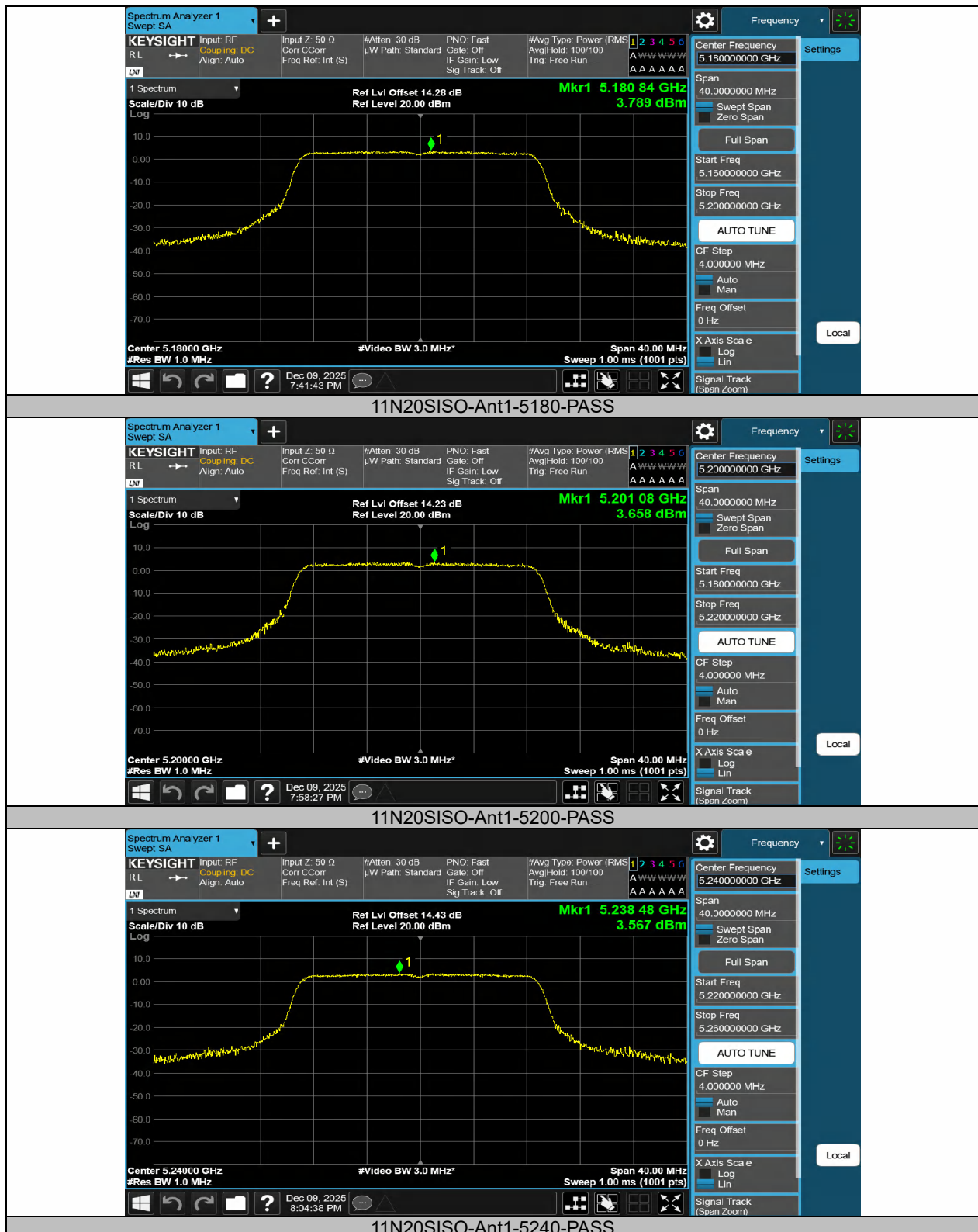
Power Density Test Graphs









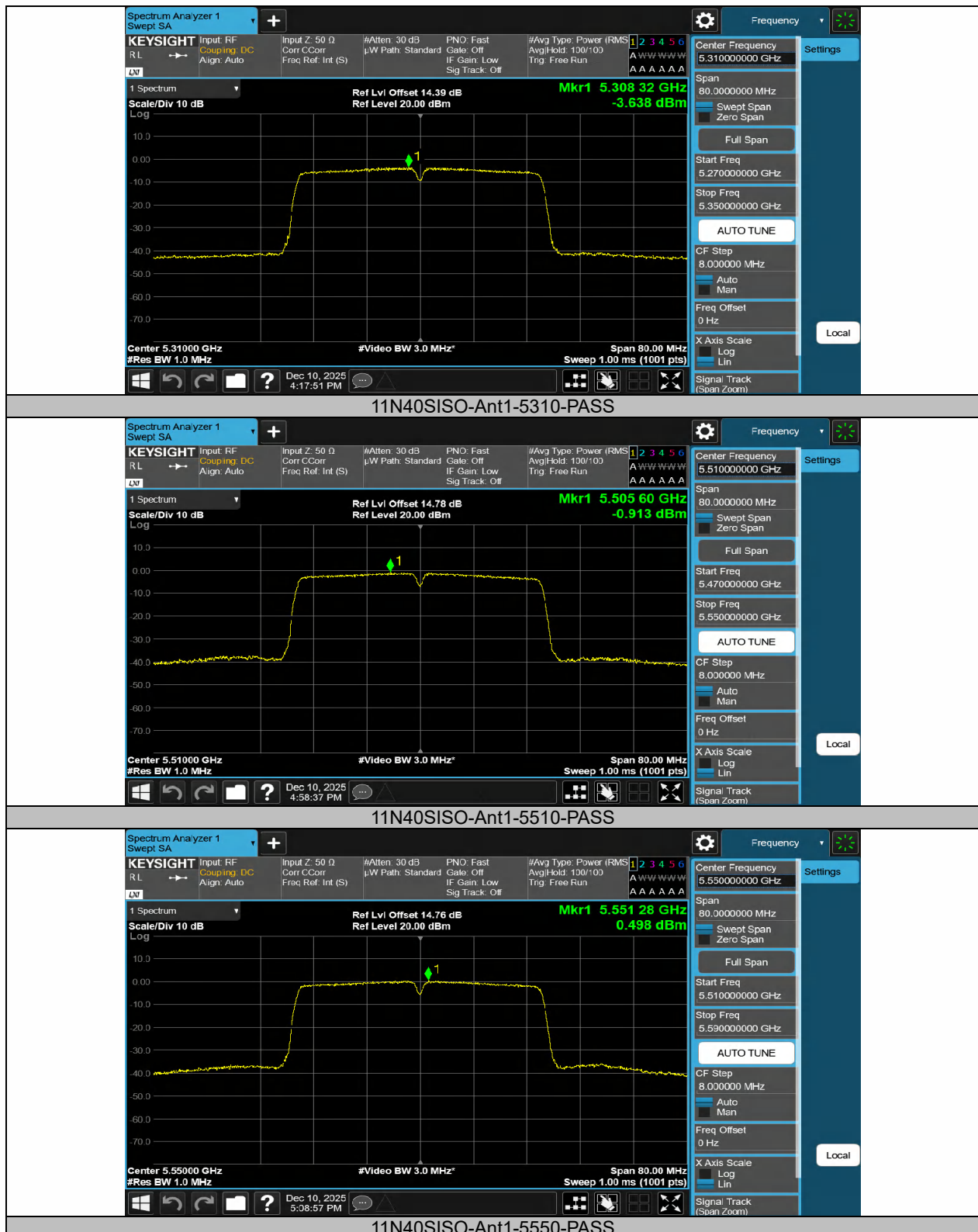














8.4 CONDUCTED BAND EDGE AND OUT-OF-BAND EMISSIONS

8.4.1 Provisions Applicable

Restricted bands	Applicable to	Limit	
	789033 D02 General UNII Test Procedures New Rules v02r01	Field strength at 3m (dBuV/m)	
		PK: 74	AV: 54
Out of the restricted bands	Applicable to	EIRP Limit (dBm/MHz)	Equivalent field Strength at 3m (dBuV/m)
	FCC 15.407(b)(1)	PK: -27	PK: 68.2
	15.407(b)(2)		
	15.407(b)(3)		
	15.407(b)(4)	See Note 2	

Note 1: The following formula is used to convert the equipment isotropic radiated power (eirp) to field strength:

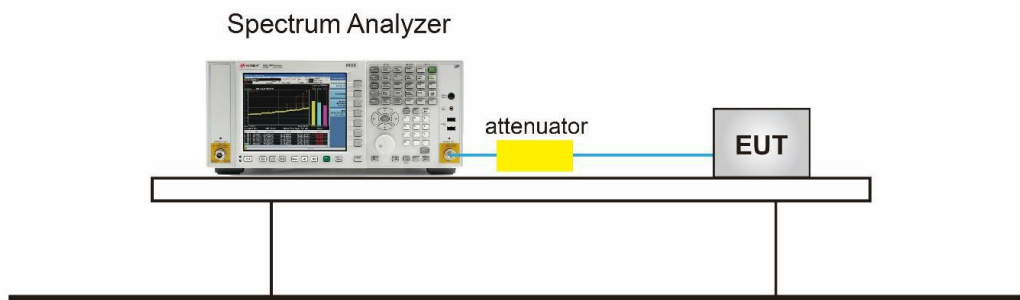
$$E = \frac{1000000}{3} \sqrt{30 P} \quad \mu\text{V/m, where } P \text{ is the eirp (Watts).}$$

Note 2: All emissions shall be limited to a level of -27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

8.4.2 Measurement Procedure

1. Connect EUT RF output port to the Spectrum Analyzer through an RF attenuator
2. Set the Span = wide enough to capture the peak level of the in-band emission and all spurious emissions from the lowest frequency generated in the EUT up through the 10th harmonic.
3. RBW = 1MHz; VBW= 3MHz; Sweep = auto; Detector function = Peak. (Test frequency below 1GHz)
4. RBW = 1 MHz; VBW= 3 MHz; Sweep = auto; Detector function = Peak. (Test frequency Above 1GHz)
5. Set SPA Trace 1 Max hold, then View.
6. Antenna gain and path loss have been compensated to the Correction factor.
7. Mark the maximum useless stray point and compare it with the limit value to record the result.

8.4.3 Measurement Setup (Block Diagram of Configuration)



8.4.4 Test Result

All of the configurations or modes are tested, the report contains the data of antenna 1.

Note: The sample(EMC3589-S) with higher antenna gain were selected for the conduction test.

Band edge measurements

Test Result B1/2/3

TestMode	Antenna	ChName	Frequency[MHz]	Result[dBm]	Limit[dBm]	Verdict
11A	Ant1	Low	5180	-29.31	≤ -27	PASS
11A	Ant1	High	5320	-29.63	≤ -27	PASS
11A	Ant1	Low	5500	-30.03	≤ -27	PASS
11A	Ant1	High	5700	-28.35	≤ -27	PASS
11N20SISO	Ant1	Low	5180	-27.65	≤ -27	PASS
11N20SISO	Ant1	High	5320	-27.76	≤ -27	PASS
11N20SISO	Ant1	Low	5500	-29.49	≤ -27	PASS
11N20SISO	Ant1	High	5700	-27.75	≤ -27	PASS
11N40SISO	Ant1	Low	5190	-31.29	≤ -27	PASS
11N40SISO	Ant1	High	5310	-30.61	≤ -27	PASS
11N40SISO	Ant1	Low	5510	-27.67	≤ -27	PASS
11N40SISO	Ant1	High	5670	-33.93	≤ -27	PASS

Test Result B4

TestMode	Antenna	ChName	Frequency[MHz]	FreqRange [MHz]	Result [dBm]	Limit [dBm]	Verdict
11A	Ant1	Low	5745	5720~5725	-17.06	≤21.32	PASS
11A	Ant1	Low	5745	5700~5720	-23.36	≤15.59	PASS
11A	Ant1	Low	5745	5650~5700	-38.48	≤-26.45	PASS
11A	Ant1	Low	5745	5760~5650	-36.98	≤-27	PASS
11A	Ant1	High	5825	5850~5855	-27.59	≤15.73	PASS
11A	Ant1	High	5825	5855~5875	-29.41	≤14.48	PASS
11A	Ant1	High	5825	5875~5925	-38.02	≤-26.91	PASS
11A	Ant1	High	5825	5925~5935	-37.64	≤-27	PASS
11N20SIS O	Ant1	Low	5745	5720~5725	-15.46	≤18.18	PASS
11N20SIS O	Ant1	Low	5745	5700~5720	-20.56	≤15.59	PASS
11N20SIS O	Ant1	Low	5745	5650~5700	-38.17	≤-26.19	PASS
11N20SIS O	Ant1	Low	5745	5760~5650	-38.11	≤-27	PASS
11N20SIS O	Ant1	High	5825	5850~5855	-27.06	≤15.73	PASS
11N20SIS O	Ant1	High	5825	5855~5875	-24.72	≤15.35	PASS
11N20SIS O	Ant1	High	5825	5875~5925	-38.1	≤-26.91	PASS
11N20SIS O	Ant1	High	5825	5925~5935	-37.16	≤-27	PASS
11N40SIS O	Ant1	Low	5755	5720~5725	-11.73	≤17.89	PASS
11N40SIS O	Ant1	Low	5755	5700~5720	-12.98	≤15.24	PASS
11N40SIS O	Ant1	Low	5755	5650~5700	-38.63	≤-26.10	PASS
11N40SIS O	Ant1	Low	5755	5780~5650	-36.91	≤-27	PASS
11N40SIS O	Ant1	High	5795	5850~5855	-31.19	≤16.79	PASS
11N40SIS O	Ant1	High	5795	5855~5875	-33.47	≤10.85	PASS
11N40SIS O	Ant1	High	5795	5875~5925	-38.51	≤-26.59	PASS
11N40SIS O	Ant1	High	5795	5925~5935	-37.21	≤-27	PASS

Test Graphs B1/2/3

