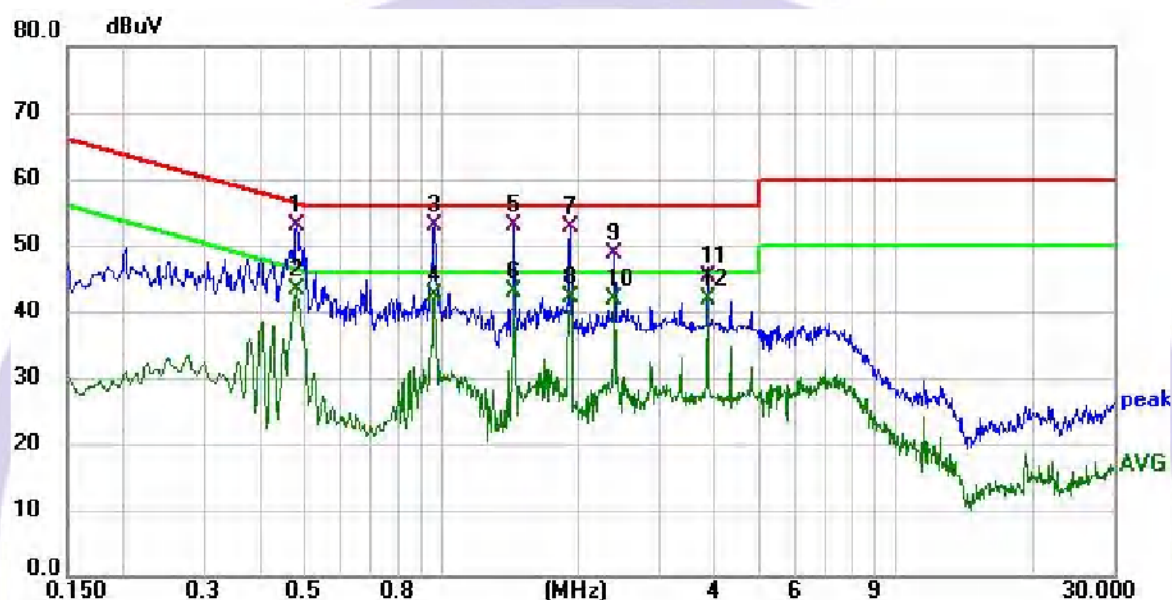


Channel:	Low	Phase :	N
Model:	A502PRO		

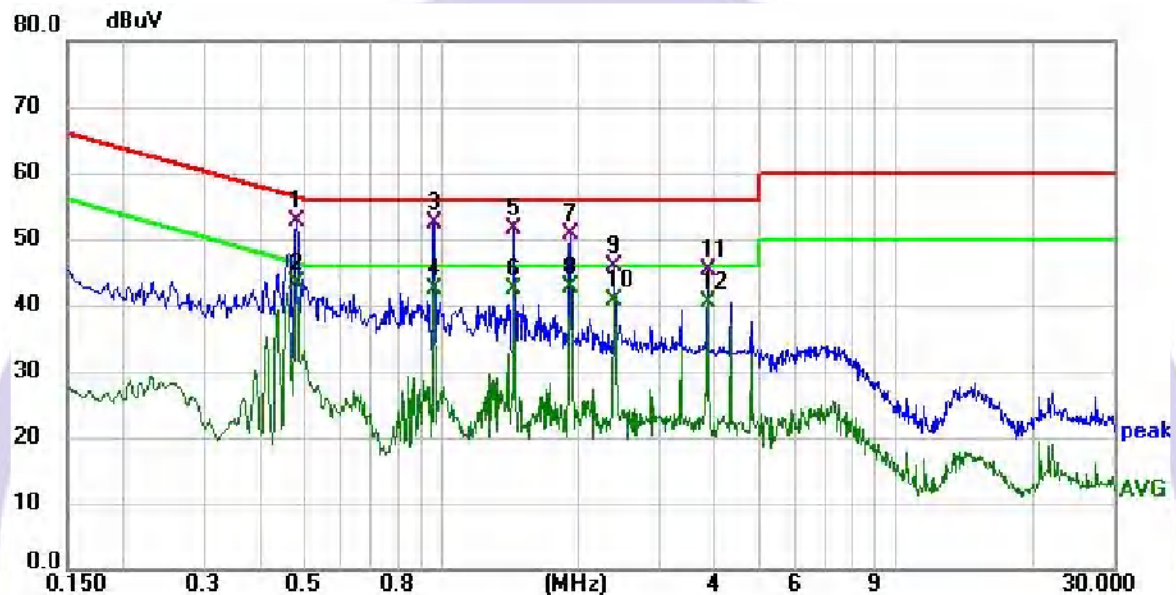


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.480	42.44	10.68	53.12	56.34	-3.22	QP	P
2	0.480	32.57	10.68	43.25	46.34	-3.09	AVG	P
3	0.964	41.84	11.05	52.89	56.00	-3.11	QP	P
4	0.964	31.52	11.05	42.57	46.00	-3.43	AVG	P
5	1.441	41.87	11.09	52.96	56.00	-3.04	QP	P
6	1.441	31.78	11.09	42.87	46.00	-3.13	AVG	P
7	1.927	41.63	11.03	52.66	56.00	-3.34	QP	P
8	1.927	30.98	11.03	42.01	46.00	-3.99	AVG	P
9	2.404	37.62	11.03	48.65	56.00	-7.35	QP	P
10	2.404	30.93	11.03	41.96	46.00	-4.04	AVG	P
11	3.844	34.33	11.03	45.36	56.00	-10.64	QP	P
12	3.844	30.83	11.03	41.86	46.00	-4.14	AVG	P

Notes:

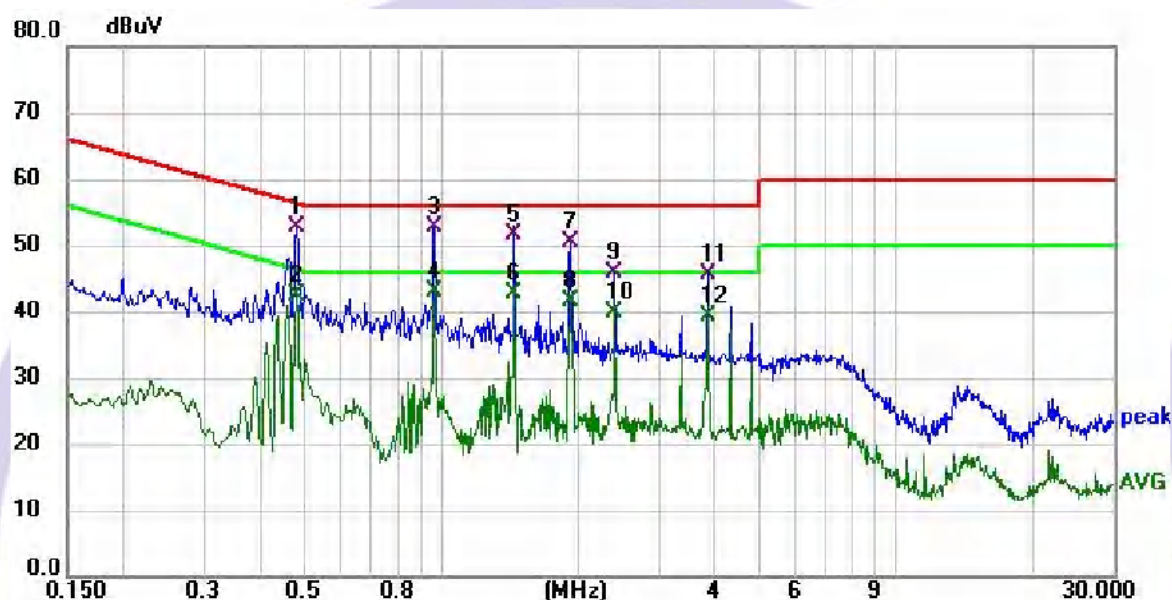
1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor

Channel:	Low	Phase :	L
Model:	A502		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.480	41.98	10.65	52.63	56.34	-3.71	QP	P
2 *	0.480	32.61	10.65	43.26	46.34	-3.08	AVG	P
3	0.964	41.28	11.06	52.34	56.00	-3.66	QP	P
4	0.964	31.47	11.06	42.53	46.00	-3.47	AVG	P
5	1.441	40.61	11.08	51.69	56.00	-4.31	QP	P
6	1.441	31.30	11.08	42.38	46.00	-3.62	AVG	P
7	1.927	39.62	11.01	50.63	56.00	-5.37	QP	P
8	1.927	31.72	11.01	42.73	46.00	-3.27	AVG	P
9	2.404	34.94	11.02	45.96	56.00	-10.04	QP	P
10	2.404	29.78	11.02	40.80	46.00	-5.20	AVG	P
11	3.844	34.16	11.07	45.23	56.00	-10.77	QP	P
12	3.844	29.27	11.07	40.34	46.00	-5.66	AVG	P

Channel:	Low	Phase :	N
Model:	A502		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.480	42.01	10.68	52.69	56.34	-3.65	QP	P
2	0.480	31.67	10.68	42.35	46.34	-3.99	AVG	P
3	0.964	41.69	11.05	52.74	56.00	-3.26	QP	P
4 *	0.964	31.86	11.05	42.91	46.00	-3.09	AVG	P
5	1.441	40.54	11.09	51.63	56.00	-4.37	QP	P
6	1.441	31.56	11.09	42.65	46.00	-3.35	AVG	P
7	1.927	39.33	11.03	50.36	56.00	-5.64	QP	P
8	1.927	30.56	11.03	41.59	46.00	-4.41	AVG	P
9	2.404	34.86	11.03	45.89	56.00	-10.11	QP	P
10	2.404	28.96	11.03	39.99	46.00	-6.01	AVG	P
11	3.844	34.65	11.03	45.68	56.00	-10.32	QP	P
12	3.844	28.20	11.03	39.23	46.00	-6.77	AVG	P

Notes:

1. An initial pre-scan was performed on the line and neutral lines with peak detector.
2. Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3. Measurement Level = Reading level + Correct Factor

7 Radiated Spurious Emissions

Test Requirement : FCC CFR47 Part 15 Section 15.209 & 15.247 & RSS-247 [5.5]
Test Method : ANSI C63.10:2013
Test Result : PASS
Measurement Distance : 3m
Limit : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	$2400/F(\text{kHz})$	300	$10000 * 2400/F(\text{kHz})$	$20\log^{(2400/F(\text{kHz}))} + 80$
0.490 ~ 1.705	$24000/F(\text{kHz})$	30	$100 * 24000/F(\text{kHz})$	$20\log^{(24000/F(\text{kHz}))} + 40$
1.705 ~ 30	30	30	$100 * 30$	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

7.1 EUT Operation

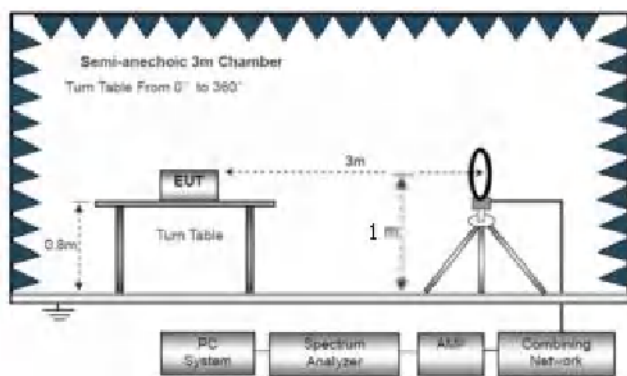
Operating Environment :

Temperature : 24.5 °C
Humidity : 55.5% RH
Atmospheric Pressure : 101.3kPa
Test Voltage : AC 120V60Hz

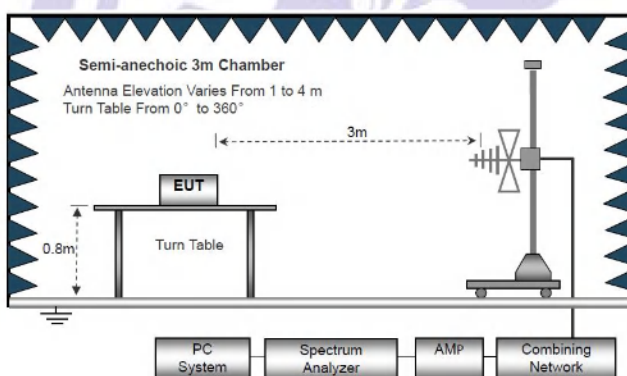
7.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

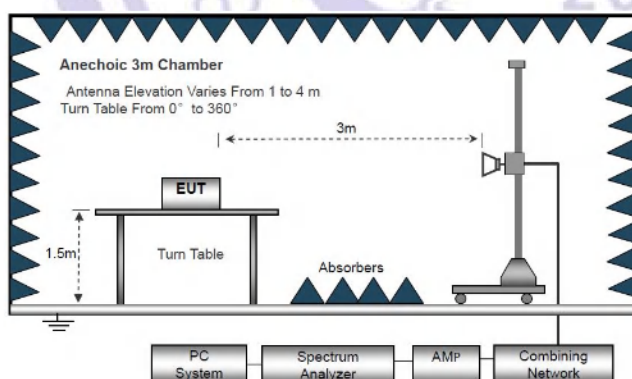
The test setup for emission measurement below 30MHz.



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz.



7.3 Spectrum Analyzer Setup

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

7.4 Test Procedure

1. The testing follows the guidelines in Spurious Radiated Emissions of ANSI C63.10-2013.
2. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane. And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.
3. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
4. For each suspected emission, the EUT was arranged to its worst case and then tune the Antenna tower (From 1m to 4m) and turntable (from 0 degree to 360 degree) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level to comply with the guidelines.
5. Set to the maximum power setting and enable the EUT transmit continuously.
6. Final measurement (Above 1GHz): The frequency range will be divided into different sub ranges depending of the frequency range of the used horn antenna. The EMI Receiver set to peak and average mode and a resolution bandwidth of 1MHz. The measurement will be performed in horizontal and vertical polarization of the measuring antenna and while rotating the EUT in its vertical axis in the range of 0 degree to 360 degree in order to have the antenna inside the cone of radiation.
7. Test Procedure of measurement (For Above 1GHz):
 - 1) Monitor the frequency range at horizontal polarization and move the antenna over all sides of the EUT(if necessary move the EUT to another orthogonal axis).
 - 2) Change the antenna polarization and repeat 1) with vertical polarization.
 - 3) Make a hardcopy of the spectrum.
 - 4) Measure the frequency of the detected emissions with a lower span and resolution bandwidth to increase the accuracy and note the frequency value.
 - 5) Change the analyser mode to Clear/ Write and found the cone of emission.
 - 6) Rotate and move the EUT, so that the measuring distance can be enlarged to 3m and the antenna will be still inside the cone of emission.
 - 7) Measure the level of the detected frequency with the correct resolution bandwidth, with the antenna polarization and azimuth and the peak and average detector, which causes the maximum emission.
 - 8) Repeat steps 1) to 7) for the next antenna spot if the EUT is larger than the antenna beamwidth.
7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

7.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

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

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

Test Frequency: 30MHz ~ 1GHz

Please refer to the following test plots, Low Channel (2402MHz) Worst case GFSK for record:

Model:	A41 PRO
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Test plot for Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 !	75.977	28.18	7.78	35.96	40.00	-4.04	QP
2 !	84.110	27.11	9.24	36.35	40.00	-3.65	QP
3 *	85.597	26.76	9.72	36.48	40.00	-3.52	QP
4 !	110.569	27.84	11.42	39.26	43.50	-4.24	QP
5 !	192.418	29.33	10.53	39.86	43.50	-3.64	QP
6 !	213.015	28.34	11.50	39.84	43.50	-3.66	QP

Remark: Emission Level = Reading + Factor

Model: A41 PRO

Test plot for Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1 *	36.637	24.64	11.95	36.59	40.00	-3.41	QP
2 !	51.481	24.28	12.20	36.48	40.00	-3.52	QP
3 !	54.261	24.34	12.08	36.42	40.00	-3.58	QP
4 !	66.499	27.09	9.29	36.38	40.00	-3.62	QP
5 !	110.569	28.41	11.48	39.89	43.50	-3.61	QP
6 !	193.773	29.07	10.61	39.68	43.50	-3.82	QP

Remark: Emission Level = Reading + Factor