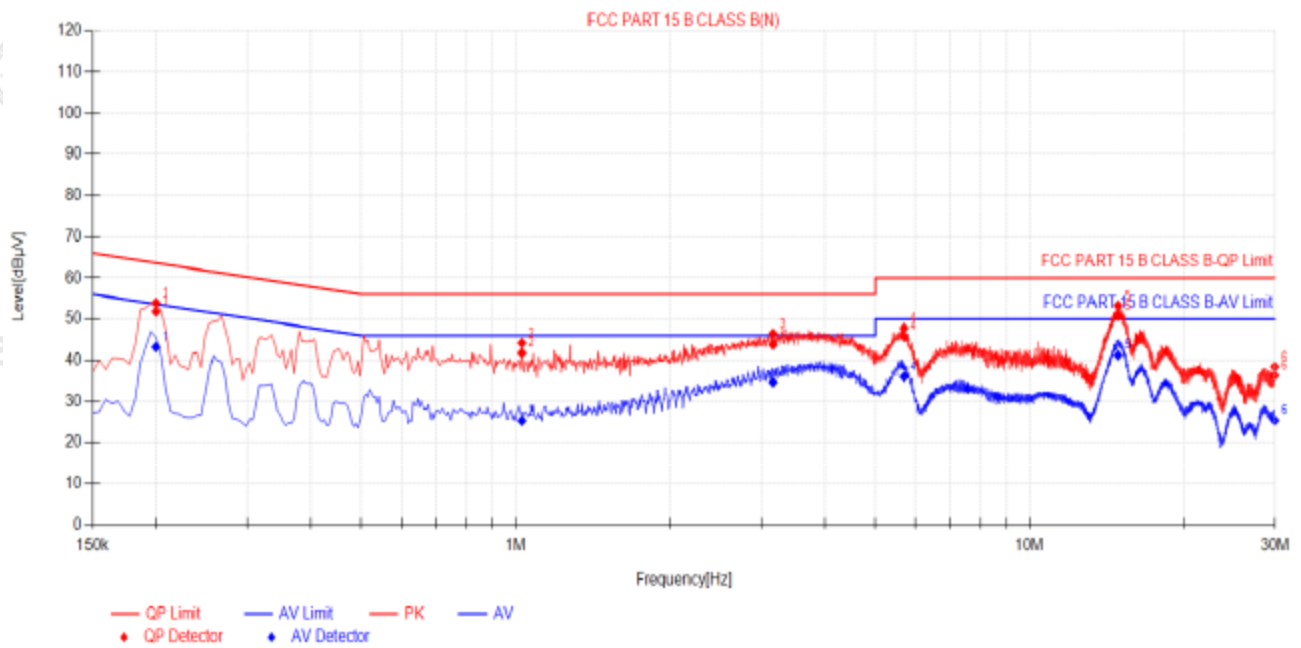


Power supply:	AC 120V/60Hz	Polarization	N
---------------	--------------	--------------	---



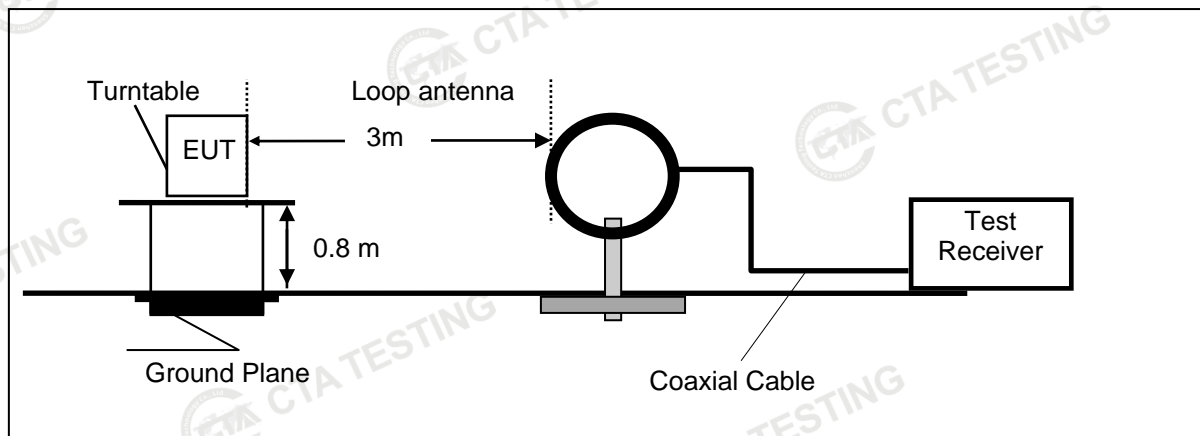
Final Data List											
NO.	Freq. [MHz]	Factor [dB]	QP Reading[dB µV]	QP Value [dBµV]	QP Limit [dBµV]	QP Margin [dB]	AV Reading [dBµV]	AV Value [dBµV]	AV Limit [dBµV]	AV Margin [dB]	Verdict
1	0.1995	9.95	41.88	51.83	63.63	11.80	33.24	43.19	53.63	10.44	PASS
2	1.0275	10.13	31.66	41.79	58.00	14.21	15.20	25.33	46.00	20.67	PASS
3	3.165	10.22	33.53	43.75	56.00	12.25	24.47	34.69	46.00	11.31	PASS
4	5.664	10.20	35.54	45.74	60.00	14.26	25.82	36.02	50.00	13.98	PASS
5	14.8335	10.42	40.35	50.77	60.00	9.23	30.82	41.24	50.00	8.76	PASS
6	29.9625	10.84	25.46	36.30	60.00	23.70	14.55	25.39	50.00	24.61	PASS

- Note:1). Value (dBµV)= Reading (dBµV)+ Factor (dB)  
 2). Factor (dB)=insertion loss of LISN (dB) + Cable loss (dB)  
 3). Margin(dB) = Limit (dBµV) - Value (dBµV)

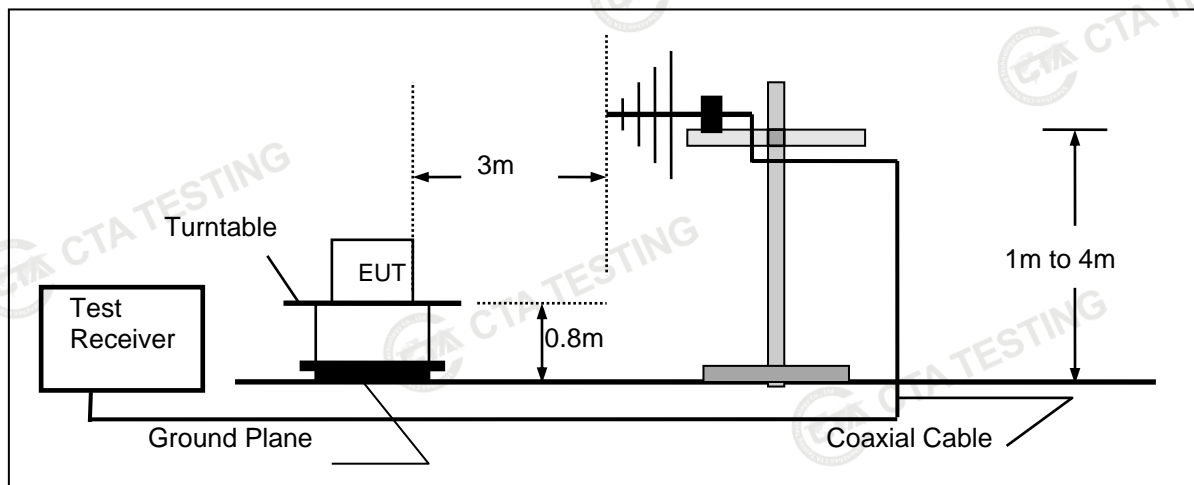
Radiated Emission

**TEST CONFIGURATION**

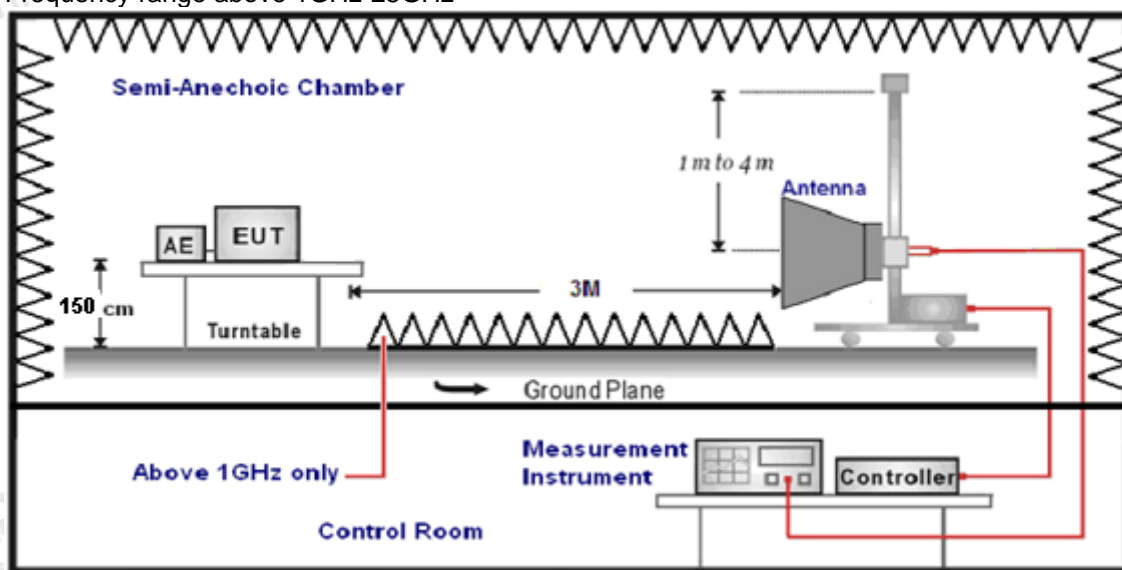
Frequency range 9 KHz – 30MHz



Frequency range 30MHz – 1000MHz



Frequency range above 1GHz-25GHz



**TEST PROCEDURE**

- The EUT was placed on a turn table which is 0.8m above ground plane when testing frequency range 9 KHz –1GHz;the EUT was placed on a turn table which is 1.5m above ground plane when testing frequency range 1GHz – 25GHz.
- Maximum procedure was performed by raising the receiving antenna from 1m to 4m and rotating the turn table from 0° to 360° to acquire the highest emissions from EUT.
- And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
- Repeat above procedures until all frequency measurements have been completed.
- Radiated emission test frequency band from 9KHz to 25GHz.
- The distance between test antenna and EUT as following table states:

Test Frequency range	Test Antenna Type	Test Distance
9KHz-30MHz	Active Loop Antenna	3
30MHz-1GHz	Ultra-Broadband Antenna	3
1GHz-18GHz	Double Ridged Horn Antenna	3
18GHz-25GHz	Horn Antenna	1

- Setting test receiver/spectrum as following table states:

Test Frequency range	Test Receiver/Spectrum Setting	Detector
9KHz-150KHz	RBW=200Hz/VBW=3KHz,Sweep time=Auto	QP
150KHz-30MHz	RBW=9KHz/VBW=100KHz,Sweep time=Auto	QP
30MHz-1GHz	RBW=120KHz/VBW=1000KHz,Sweep time=Auto	QP
1GHz-40GHz	Peak Value: RBW=1MHz/VBW=3MHz, Sweep time=Auto Average Value: RBW=1MHz/VBW=10Hz, Sweep time=Auto	Peak

**Field Strength Calculation**

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor(if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CL - AG$$

Where FS = Field Strength	CL = Cable Attenuation Factor (Cable Loss)
RA = Reading Amplitude	AG = Amplifier Gain
AF = Antenna Factor	

$$Transd=AF +CL-AG$$

**RADIATION LIMIT**

For intentional device, according to § 15.209(a), the general requirement of field strength of radiated emission from intentional radiators at a distance of 3 meters shall not exceed the following table. According to § 15.247(d), in any 100kHz bandwidth outside the frequency band in which the EUT is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the100kHz bandwidth within the band that contains the highest level of desired power.

The pre-test have done for the EUT in three axes and found the worst emission at position shown in test setup photos.

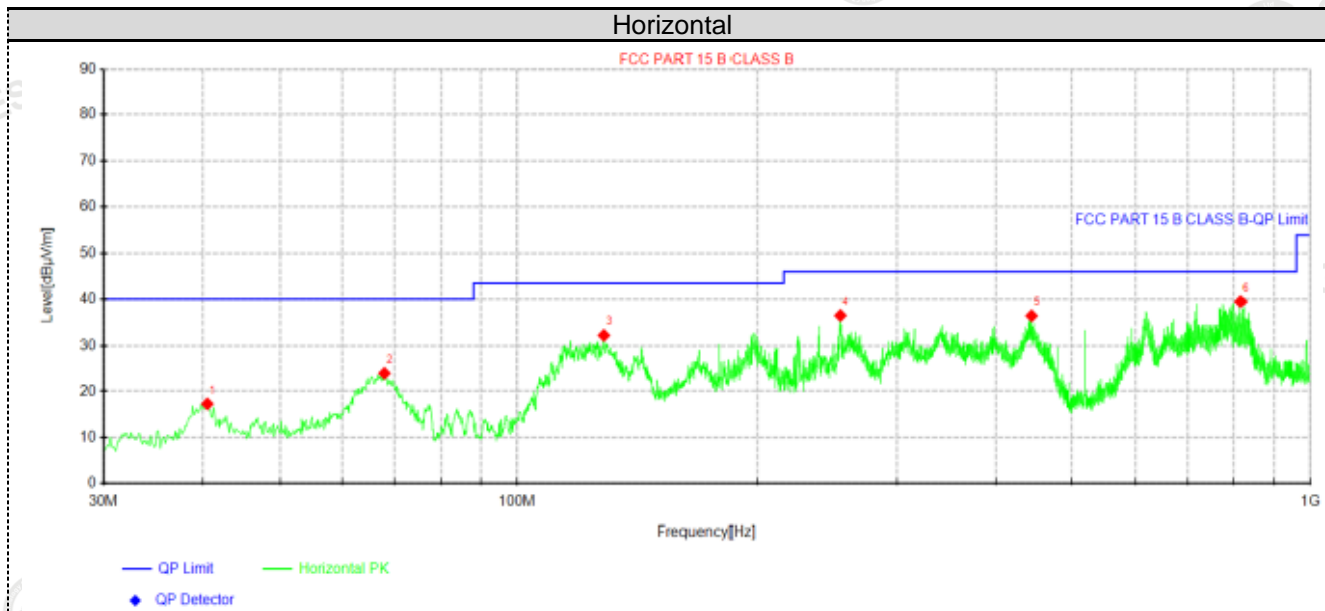
Frequency (MHz)	Distance (Meters)	Radiated (dBµV/m)	Radiated (µV/m)
0.009-0.49	3	20log(2400/F(KHz))+40log(300/3)	2400/F(KHz)
0.49-1.705	3	20log(24000/F(KHz))+ 40log(30/3)	24000/F(KHz)
1.705-30	3	20log(30)+ 40log(30/3)	30
30-88	3	40.0	100
88-216	3	43.5	150
216-960	3	46.0	200
Above 960	3	54.0	500

**TEST RESULTS**

Remark:

1. This test was performed with EUT in X, Y, Z position and the worse case was found when EUT in X position.
2. All three channels (lowest/middle/highest) of each mode were measured below 1GHz and recorded worst case at 802.11b low channel.
3. Radiated emission test from 9 KHz to 10th harmonic of fundamental was verified, and no emission found except system noise floor in 9 KHz to 30MHz and not recorded in this report.

**For 30MHz-1GHz**

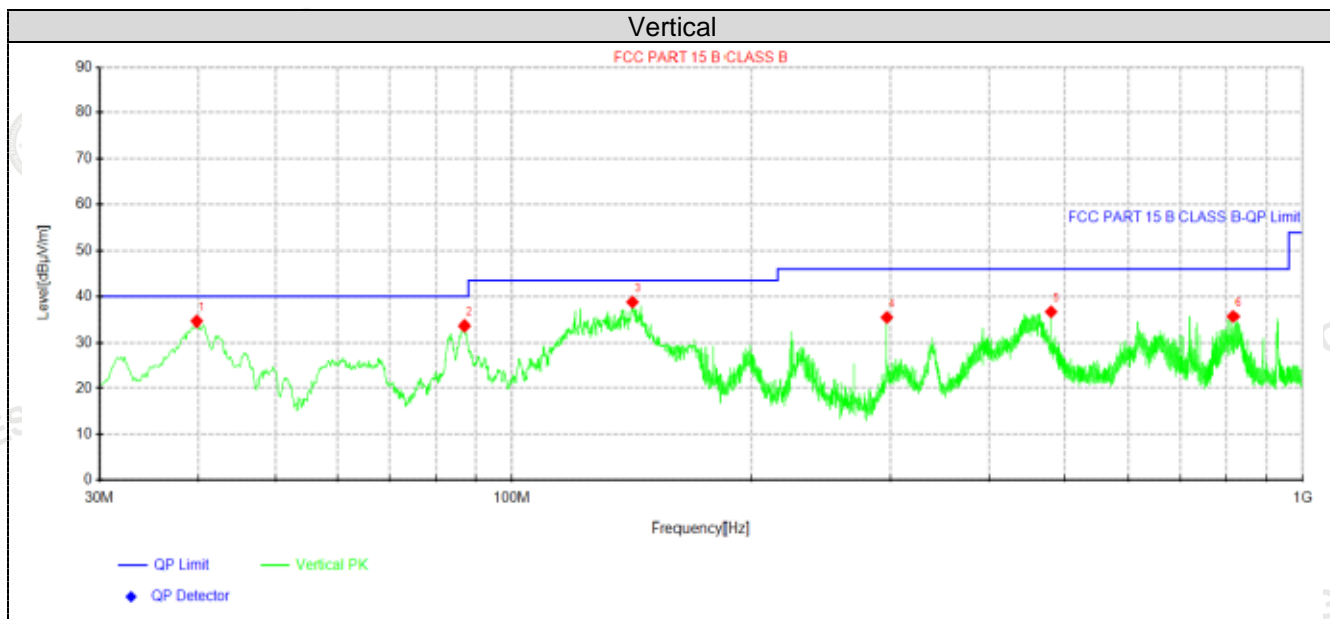


Suspected Data List									
NO.	Freq. [MHz]	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	40.5488	29.42	17.24	-12.18	40.00	22.76	100	305	Horizontal
2	67.9512	38.57	23.94	-14.63	40.00	16.06	100	203	Horizontal
3	128.576	48.95	32.26	-16.69	43.50	11.24	100	157	Horizontal
4	254.312	48.95	36.39	-12.56	46.00	9.61	100	248	Horizontal
5	444.19	46.37	36.32	-10.05	46.00	9.68	100	66	Horizontal
6	816.791	43.58	39.43	-4.15	46.00	6.57	100	270	Horizontal

Note:1).Level (dBµV/m)= Reading (dBµV)+ Factor (dB/m)

2). Factor(dB/m)=Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)

3). Margin(dB) = Limit (dBµV/m) - Level (dBµV/m)



Suspected Data List									
NO.	Freq. [MHz]	Reading [dBµV]	Level [dBµV/m]	Factor [dB/m]	Limit [dBµV/m]	Margin [dB]	Height [cm]	Angle [°]	Polarity
1	39.8212	46.87	34.58	-12.29	40.00	5.42	100	357	Vertical
2	86.9875	49.51	33.62	-15.89	40.00	6.38	100	316	Vertical
3	142.156	54.84	38.73	-16.11	43.50	4.77	100	6	Vertical
4	296.992	46.85	35.36	-11.49	46.00	10.64	100	357	Vertical
5	479.958	46.16	36.60	-9.56	46.00	9.40	100	169	Vertical
6	816.791	39.72	35.57	-4.15	46.00	10.43	100	357	Vertical

- Note:1). Level (dBµV/m) = Reading (dBµV) + Factor (dB/m)  
 2). Factor (dB/m) = Antenna Factor (dB/m) + Cable loss (dB) - Pre Amplifier gain (dB)  
 3). Margin (dB) = Limit (dBµV/m) - Level (dBµV/m)

## For 1GHz to 25GHz

Note: 802.11b/802.11g/802.11n (H20) Mode all have been tested, only worse case 802.11b mode is reported

(above 1GHz)

Frequency(MHz):			2412		Polarity:		HORIZONTAL		
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4824.00	61.01	PK	74	12.99	65.37	32.4	5.11	41.87	-4.36
4824.00	47.10	AV	54	6.90	51.46	32.4	5.11	41.87	-4.36
7236.00	55.79	PK	74	18.21	56.42	36.58	6.43	43.64	-0.63
7236.00	43.93	AV	54	10.07	44.56	36.58	6.43	43.64	-0.63

Frequency(MHz):			2412		Polarity:		VERTICAL		
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4824.00	59.63	PK	74	14.37	63.99	32.4	5.11	41.87	-4.36
4824.00	45.02	AV	54	8.98	49.38	32.4	5.11	41.87	-4.36
7236.00	53.60	PK	74	20.40	54.23	36.58	6.43	43.64	-0.63
7236.00	42.44	AV	54	11.56	43.07	36.58	6.43	43.64	-0.63

Frequency(MHz):			2437		Polarity:		HORIZONTAL		
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4874.00	60.26	PK	74	13.74	64.21	32.56	5.34	41.85	-3.95
4874.00	44.32	AV	54	9.68	48.27	32.56	5.34	41.85	-3.95
7311.00	54.84	PK	74	19.16	55.20	36.54	6.81	43.71	-0.36
7311.00	43.18	AV	54	10.82	43.54	36.54	6.81	43.71	-0.36

Frequency(MHz):			2437		Polarity:		VERTICAL		
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4874.00	58.63	PK	74	15.37	62.58	32.56	5.34	41.85	-3.95
4874.00	42.86	AV	54	11.14	46.81	32.56	5.34	41.85	-3.95
7311.00	52.61	PK	74	21.39	52.97	36.54	6.81	43.71	-0.36
7311.00	41.45	AV	54	12.55	41.81	36.54	6.81	43.71	-0.36

Frequency(MHz):			2462		Polarity:		HORIZONTAL		
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4924.00	59.65	PK	74	14.35	63.11	32.73	5.64	41.83	-3.46
4924.00	46.68	AV	54	7.32	50.14	32.73	5.64	41.83	-3.46
7386.00	53.77	PK	74	20.23	53.83	36.5	7.23	43.79	-0.06
7386.00	43.17	PK	54	10.83	43.23	36.5	7.23	43.79	-0.06

Frequency(MHz):			2462		Polarity:		VERTICAL		
Frequency (MHz)	Emission Level (dBuV/m)		Limit (dBuV/m)	Margin (dB)	Raw Value (dBuV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-amplifier (dB)	Correction Factor (dB/m)
4924.00	57.94	PK	74	16.06	61.40	32.73	5.64	41.83	-3.46
4924.00	44.18	AV	54	9.82	47.64	32.73	5.64	41.83	-3.46
7386.00	52.39	PK	74	21.61	52.45	36.5	7.23	43.79	-0.06
7386.00	41.71	PK	54	12.29	41.77	36.5	7.23	43.79	-0.06

Shenzhen CTA Testing Technology Co., Ltd.

Room 106, Building 1, Yibaolai Industrial Park, Qiaotou Community, Fuhai Street, Bao'an District, Shenzhen, China

Tel:+86-755 2322 5875 E-mail:cta@cta-test.cn Web:http://www.cta-test.cn