

EMC TEST REPORT

Applicant:	Quectel Wireless Solutions Co., Ltd.
Address:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233

Manufacturer or Supplier:	Quectel Wireless Solutions Co., Ltd.
Address:	Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai, China 200233
Product:	LTE Module
Brand Name:	Quectel
Model Name:	SC66-A
FCC ID:	XMR201908SC66A
Date of tests:	Jul. 13, 2019 ~ Oct. 24, 2019

The submitted sample of the above equipment has been tested for according to the requirements of the following standards:

- ☐ FCC Part 15, Subpart B, Class A
☒ FCC Part 15, Subpart B, Class B
☒ ANSI C63.4:2014

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Alex Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Oct. 25, 2019	 Date: Oct. 25, 2019

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Test Report No.: FV190522W005

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV190522W005	Original release	Oct. 25, 2019



1 GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

PRODUCT	LTE Module	
BRAND NAME	Quectel	
MODEL NAME	SC66-A	
POWER SUPPLY	$V_{\min}=3.55\text{Vdc}$, $V_{\text{nor}}=4\text{Vdc}$, $V_{\max}=4.4\text{Vdc}$	
MODULATION TYPE	WLAN	CCK, DQPSK, DBPSK for DSSS 16QAM, QPSK, BPSK for OFDM
	BT_LE	DTS
	Bluetooth	GFSK, $\pi/4$ -DQPSK, 8DPSK
	GPS/ GLONASS	BPSK
	WCDMA	BPSK/QPSK
	LTE	QPSK, 16QAM
OPERATING FREQUENCY	Bluetooth/BT_LE	2402MHz ~ 2480MHz
	GPS	1575.42MHz
	GLONASS	1602MHz
	WIFI 2.4G	2412~ 2462MHz for 11b/g/n(HT20) 2422~ 2452MHz for 11b/g/n(HT40)
	WIFI 5G	5180 ~ 5240MHz, 5260 ~5320MHz, 5500 ~ 5700MHz, 5745 ~ 5805MHz for 11a/n(HT20)/ n(HT40)/n(VHT80)
	WCDMA	1852.4-1907.6MHz (FOR WCDMA II) 1712.4-1752.6MHz (FOR WCDMA IV) 826.4-846.6MHz (FOR WCDMA V)
	LTE	1850.7MHz ~ 1909.3MHz (FOR LTE Band2) 1710.7MHz ~ 1754.3MHz (FOR LTE Band4) 824.7MHz ~ 848.3MHz (FOR LTE Band5) 2502.5MHz-2567.5MHz (FOR LTE Band7) 699.7MHz ~ 715.3MHz (FOR LTE Band12) 779.5MHz-784.5MHz (FOR LTE Band13) 790.5MHz-795.5MHz (FOR LTE Band14) 706.5MHz-713.5MHz (FOR LTE Band17) 1850.7MHz-1914.3MHz (FOR LTE Band25) 814.7MHz-848.3MHz (FOR LTE Band26) 2498.5MHz-2687.5MHz (FOR LTE Band41) 1710.7MHz ~ 1779.3MHz (FOR LTE Band66) 665.5MHz-695.5MHz (FOR LTE Band71)



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HW VERSION	R1.0
SW VERSION	SC66ANAR01A06
CABLE SUPPLIED	N/A
ACCESSORY DEVICES	Refer to note as below

NOTE:

1. For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
2. For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

1.2 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC Part 15, Subpart B		
Standard Section	Test Item	Result
FCC Part 15, Subpart B, Class B ANSI C63.4:2014	Conducted Test	Compliance
	Radiated Emission Test (30MHz ~ 1GHz)	Compliance
	Radiated Emission Test (Above 1GHz)	Compliance

1.3 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

MEASUREMENT	FREQUENCY	UNCERTAINTY
Conducted emissions	150kHz ~ 30MHz	±2.70dB
Radiated emissions	30MHz~1GMHz	±4.98dB
	1GMHz ~6GMHz	±4.70dB
	6GMHz ~18GMHz	±4.60dB



1.4 DESCRIPTION OF TEST MODES

Test Mode	Test Condition
Radiated emission test	
1	WCDMA B2 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
2	WCDMA B4 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
3	WCDMA B5 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
4	LTE B2 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx+ MPG4
5	LTE B4 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
6	LTE B5 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
7	LTE B7 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
8	LTE B12 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
9	LTE B13 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
10	LTE B14 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
11	LTE B17 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
12	LTE B25 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
13	LTE B26 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
14	LTE B41 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
15	LTE B66 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
16	LTE B71 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
17	WCDMA B2 Idle + USB Link + Data Trasmission + PC to EUT + WIFI 2.4G Idle + GPS RX
18	WCDMA B4 Idle + USB Link + Data Trasmission + PC to SD + WIFI 5G Idle + GPS RX
Conducted emission test	
1	WCDMA B2 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
2	WCDMA B4 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
3	WCDMA B5 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
4	LTE B2 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx+ MPG4
5	LTE B4 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
6	LTE B5 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
7	LTE B7 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
8	LTE B12 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
9	LTE B13 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
10	LTE B14 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
11	LTE B17 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
12	LTE B25 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
13	LTE B26 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On
14	LTE B41 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
15	LTE B66 Idle + Adapter + WIFI 2.4G Idle + BT Idle + GPS RX + Front Camera On



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16	LTE B71 Idle + Adapter + WIFI 5G Idle + BT Idle + Glonass Rx + MPG4
17	WCDMA B2 Idle + USB Link + Data Trasmission + PC to EUT + WIFI 2.4G Idle + GPS RX
18	WCDMA B4 Idle + USB Link + Data Trasmission + PC to SD + WIFI 5G Idle + GPS RX

NOTE:

1. For conducted emission test, test mode 14 was the worst case and only this mode was presented in this report.
2. For radiated emission test, test mode 1 was the worst case and only this mode was presented in this report

1.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

FOR ALL TESTS

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Wireless AP	ABOCOM	WR224GR	060500749P	N/A
2	Laptop	Lenovo	T450	PC0494WJ	N/A
3	GPS Simulator	Spetctracom/ USA	GSG-5	200782	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	N/A
3	N/A

2 EMISSION TEST

2.1 CONDUCTED EMISSION MEASUREMENT

2.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107 a CLASS B)

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.107 b CLASS A)

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dBμV)	
	Quasi-peak	Average
0.15 ~ 0.5	79	66
0.5 ~ 30	73	60

- 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.
 3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

2.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Feb. 26,19	Feb. 25, 20
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Feb. 26,19	Feb. 25, 20

- NOTE:**
1. The test was performed in CE shielded room.
 2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.

2.1.3 TEST PROCEDURES

- a. 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.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150 kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

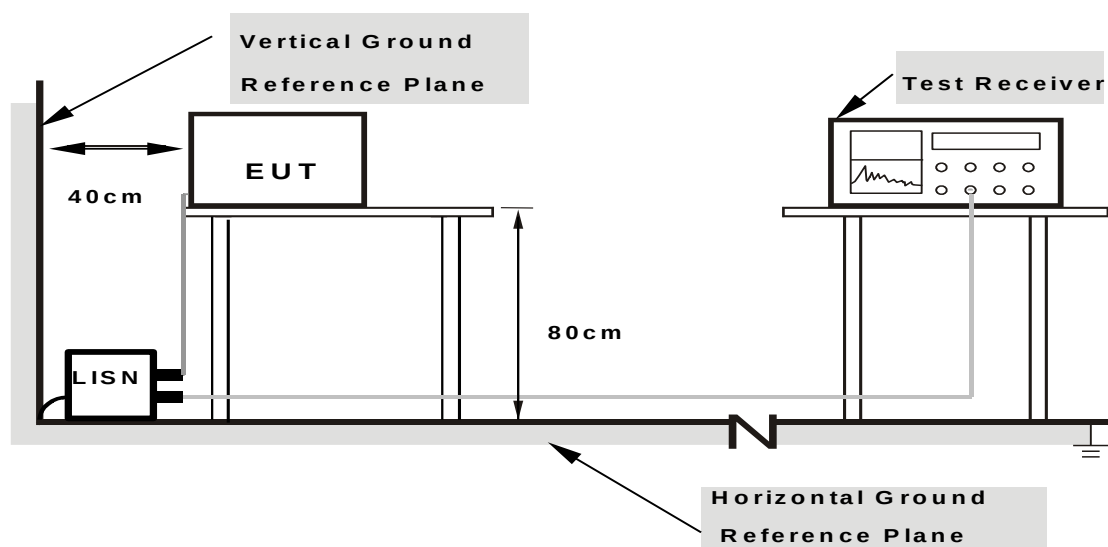
NOTE: All modes of operation were investigated and the worst-case emissions are reported.

2.1.4 DEVIATION FROM TEST STANDARD

No deviation.



2.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.

2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

2.1.6 EUT OPERATING CONDITIONS

- Turned on the power and connected of all equipment.
- EUT was operated according to the use type described in the manufacturer's specifications or the user's manual.



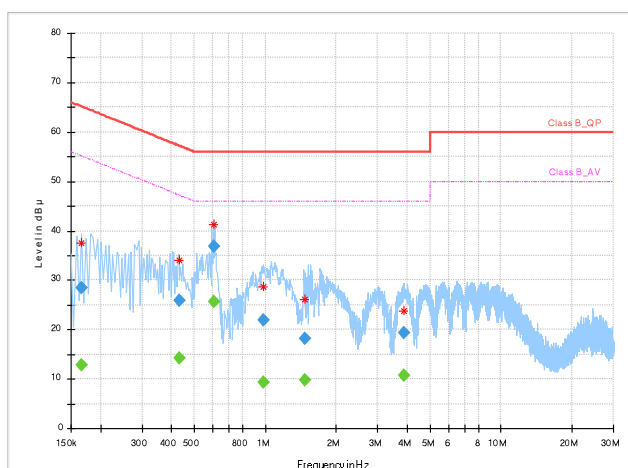
2.1.7 TEST RESULTS

TEST VOLTAGE	Input 120 Vac, 60 Hz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 52RH	TESTED BY	Jimmy Liu

Frequency (MHz)	QuasiPeak (dB μ V)	CAverage (dB μ V)	Limit (dB μ V)	Margin (dB)	Line	Filter	Corr. (dB)
0.166000	---	12.85	55.16	-42.31	L	ON	9.9
0.166000	28.41	---	65.16	-36.75	L	ON	9.9
0.432000	---	14.14	47.21	-33.08	L	ON	10.0
0.432000	25.89	---	57.21	-31.33	L	ON	10.0
0.608000	---	25.60	46.00	-20.40	L	ON	10.0
0.608000	36.91	---	56.00	-19.09	L	ON	10.0
0.980000	---	9.40	46.00	-36.60	L	ON	10.1
0.980000	21.92	---	56.00	-34.08	L	ON	10.1
1.472000	---	9.76	46.00	-36.24	L	ON	10.1
1.472000	18.26	---	56.00	-37.74	L	ON	10.1
3.880000	---	10.68	46.00	-35.32	L	ON	10.2
3.880000	19.36	---	56.00	-36.64	L	ON	10.2

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.

Full Spectrum

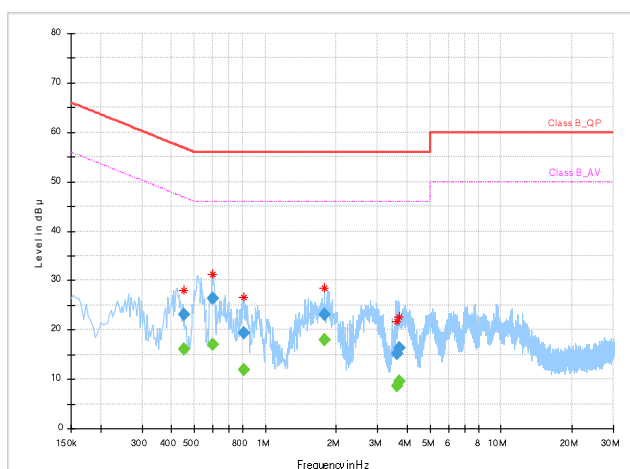


TEST VOLTAGE	Input 120 Vac, 60 Hz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 52RH	TESTED BY	Jimmy Liu

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.452000	---	16.05	46.84	-30.79	N	ON	9.9
0.452000	23.17	---	56.84	-33.67	N	ON	9.9
0.600000	---	17.13	46.00	-28.87	N	ON	9.9
0.600000	26.31	---	56.00	-29.69	N	ON	9.9
0.812000	---	11.87	46.00	-34.13	N	ON	9.9
0.812000	19.33	---	56.00	-36.67	N	ON	9.9
1.784000	---	18.07	46.00	-27.93	N	ON	10.0
1.784000	23.19	---	56.00	-32.81	N	ON	10.0
3.624000	---	8.68	46.00	-37.32	N	ON	10.1
3.624000	15.13	---	56.00	-40.87	N	ON	10.1
3.700000	---	9.48	46.00	-36.52	N	ON	10.1
3.700000	16.44	---	56.00	-39.56	N	ON	10.1

- REMARKS:**
1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
 2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
 3. The emission levels of other frequencies were very low against the limit.
 4. Margin value = Emission level - Limit value
 5. Correction factor = Insertion loss + Cable loss
 6. Emission Level = Correction Factor + Reading Value.

Full Spectrum





2.2 RADIATED EMISSION MEASUREMENT

2.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

TEST STANDARD: FCC Part 15, Subpart B (Section: 15.109)

Emissions radiated outside of the specified bands, shall be according to the general radiated limits as following:

Radiated Emissions Limits at 3 meters (dB μ V/m)		
Frequencies (MHz)	FCC 15B / ICES-003, Class A	FCC 15B / ICES-003, Class B
30-88	49	40
88-216	53.5	43.5
216-960	56	46
960-1000	59.5	54
Above 1000	Avg: 59.5 Peak: 79.5	Avg: 54 Peak: 74

Frequency Range (For unintentional radiators)

Highest frequency generated or used in the device or on which the device operates or tunes (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	30
1.705-108	1000
108-500	2000
500-1000	5000
Above 1000	5 th harmonic of the highest frequency or 40GHz, whichever is lower

- NOTE:**
1. The lower limit shall apply at the transition frequencies.
 2. Emission level (dB μ V/m) = 20 log Emission level (uV/m).
 3. As shown in 15.35(b), for frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.
 4. QP detector shall be applied if not specified.

2.2.2 TEST INSTRUMENTS

Frequency range below 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Feb. 26,19	Feb. 25,20
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 26,19	Feb. 25,20
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 26,19	Feb. 25,20
Signal Pre-Amplifier	EMSI	EMC 9135	980249	Jun. 24,19	Jun. 23,20

Frequency range above 1GHz

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Feb. 26,19	Feb. 25,20
Horn Antenna	ETS-LINDGREN	3117	00168728	Feb. 26,19	Feb. 25,20
Horn Antenna	SCHWARZBECK	BBHA 9170	BBHA9170242	May 01,19	May 02,20
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 26,19	Feb. 25, 20
Signal Pre-Amplifier (1~18GHz)	EMSI	EMC 012645B	980257	Jun. 24,19	Jun. 23,20
Signal Pre-Amplifier (18GHz-40GHz)	EMSI	EMC 184045	980102	Dec. 27,18	Dec. 26,19

- NOTE:** 1. The test was performed in 3m chamber.
 2. The calibration interval of the above test instruments is 12 months or 24 months and the calibrations are traceable to CEPREI/CHINA, GREGT/CHINA and NIM/CHINA.
 3. The FCC Site Registration No. is 525120; The Designation No. is CN1171.

2.2.3 TEST PROCEDURE

<Frequency Range below 1GHz>

The basic test procedure was in accordance with ANSI C63.4:2014 (section 12).

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from 1 meter to 4 meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1GHz.

NOTE:

1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. $\text{Emission level(dBuV/m)} = \text{Raw Value(dBuV)} + \text{Correction Factor(dB/m)}$
3. $\text{Correction Factor(dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)}$ (if the raw value not contains the amplifier);
4. $\text{Correction Factor(dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)} - \text{Amplifier Gain(dB)}$ (if the raw value contains the amplifier).
5. $\text{Margin value} = \text{Emission level} - \text{Limit value}$.

<Frequency Range above 1GHz>

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter fully-anechoic chamber room. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement. The bore sight should be used during the test above 1GHz.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz

NOTE:

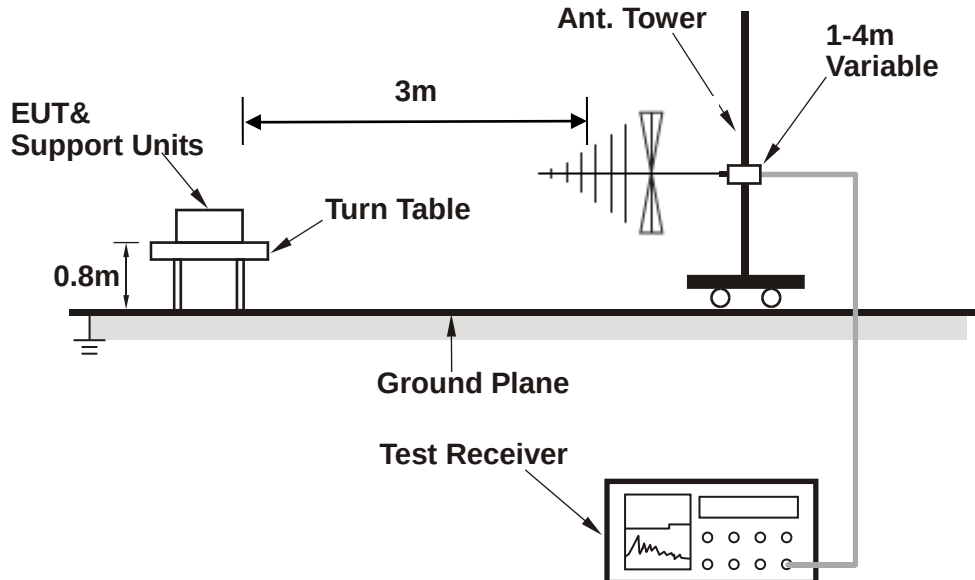
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and video bandwidth of test receiver/spectrum analyzer is 1Hz for Average detection (AV) at frequency above 1GHz.
3. For measurement of frequency above 1000 MHz, the EUT was set 3 meters away from the receiver antenna.
4. $\text{Emission level(dBuV/m)} = \text{Raw Value(dBuV)} + \text{Correction Factor(dB/m)}$
5. $\text{Correction Factor(dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)}$ (if the raw value not contains the amplifier);
6. $\text{Correction Factor(dB/m)} = \text{Antenna Factor (dB/m)} + \text{Cable Factor (dB)} - \text{Amplifier Gain(dB)}$ (if the raw value contains the amplifier)
7. $\text{Margin value} = \text{Emission level} - \text{Limit value}$.

2.2.4 DEVIATION FROM TEST STANDARD

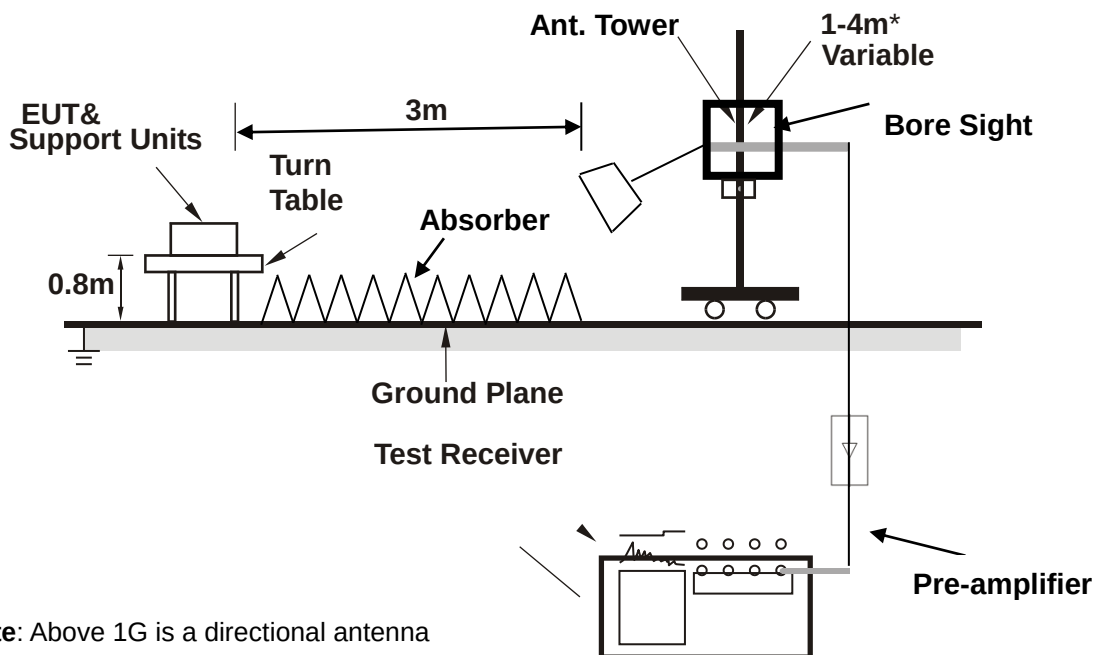
No deviation.

2.2.5 TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

depends on the EUT height and the antenna 3dB bandwidth both, refer to section 7.3 of CISPR 16-2-3.

2.2.6 EUT OPERATING CONDITIONS

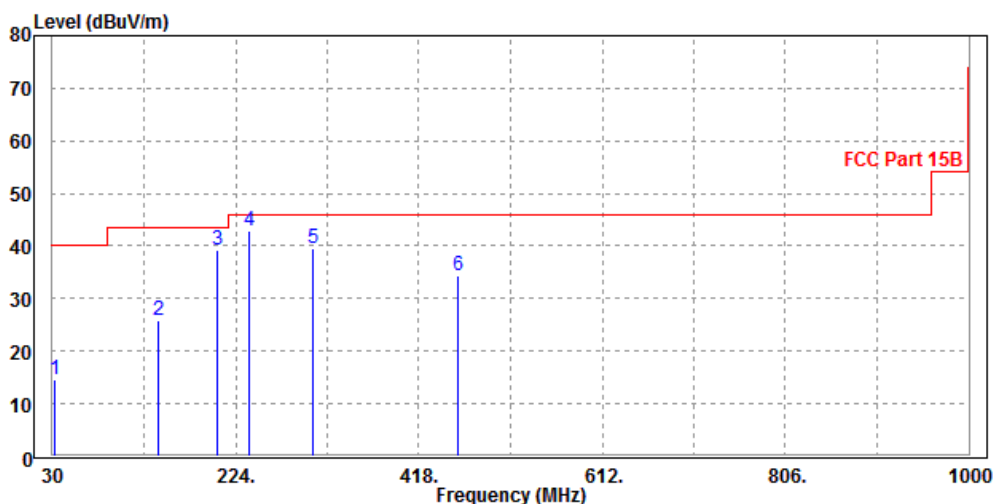
Same as item 2.1.6.

2.2.7 TEST RESULTS

TEST VOLTAGE	Input 120 Vac, 60 Hz	FREQUENCY RANGE	30-1000 MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Quasi-Peak, 120 kHz
TESTED BY	Star Le		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
31.94	14.57	34.99	40	-25.43	16.2	0.8	37.42	200	186	QP
141.55	25.9	52.3	43.5	-17.6	8.94	1.56	36.9	200	117	QP
204.6	39.39	63.14	43.5	-4.11	11	1.81	36.56	200	109	QP
238.55	42.96	65.11	46	-3.04	12.5	1.98	36.63	200	237	QP
306.45	39.61	59.83	46	-6.39	14.3	2.24	36.76	200	196	QP
458.74	34.36	50.49	46	-11.64	17.96	2.84	36.93	200	185	QP

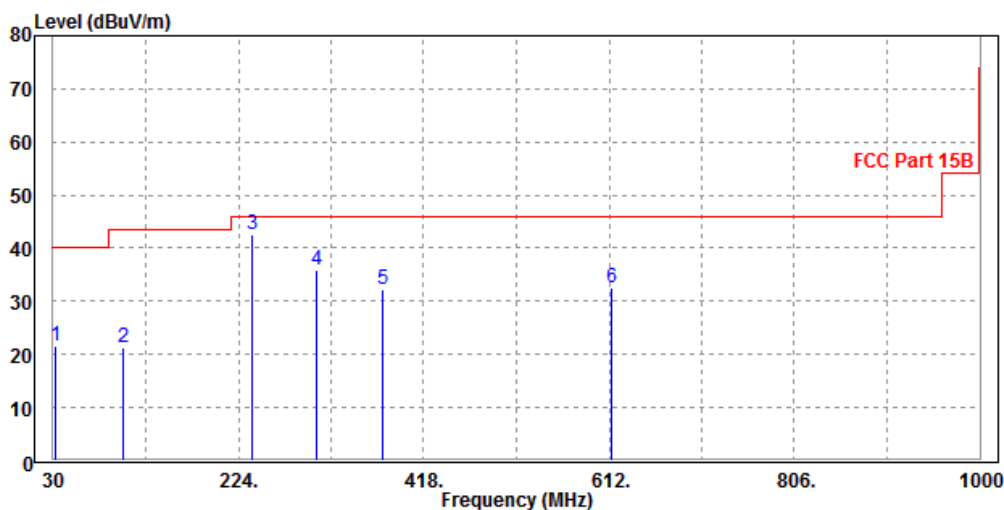
- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 30MHz to 1000MHz.
 4. Only emissions significantly above equipment noise floor are reported.



TEST VOLTAGE	Input 120 Vac, 60 Hz	FREQUENCY RANGE	30-1000 MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Quasi-Peak, 120 kHz
TESTED BY	Star Le		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
31.94	21.55	42.03	40	-18.45	16.14	0.8	37.42	100	178	QP
102.75	21.3	47.47	43.5	-22.2	9.65	1.33	37.15	100	139	QP
238.55	42.68	64.68	46	-3.32	12.65	1.98	36.63	100	198	QP
306.45	35.88	56	46	-10.12	14.4	2.24	36.76	100	195	QP
375.32	32.3	50.06	46	-13.7	16.53	2.52	36.81	100	227	QP
613.94	32.62	46.3	46	-13.38	20.5	3.21	37.39	100	244	QP

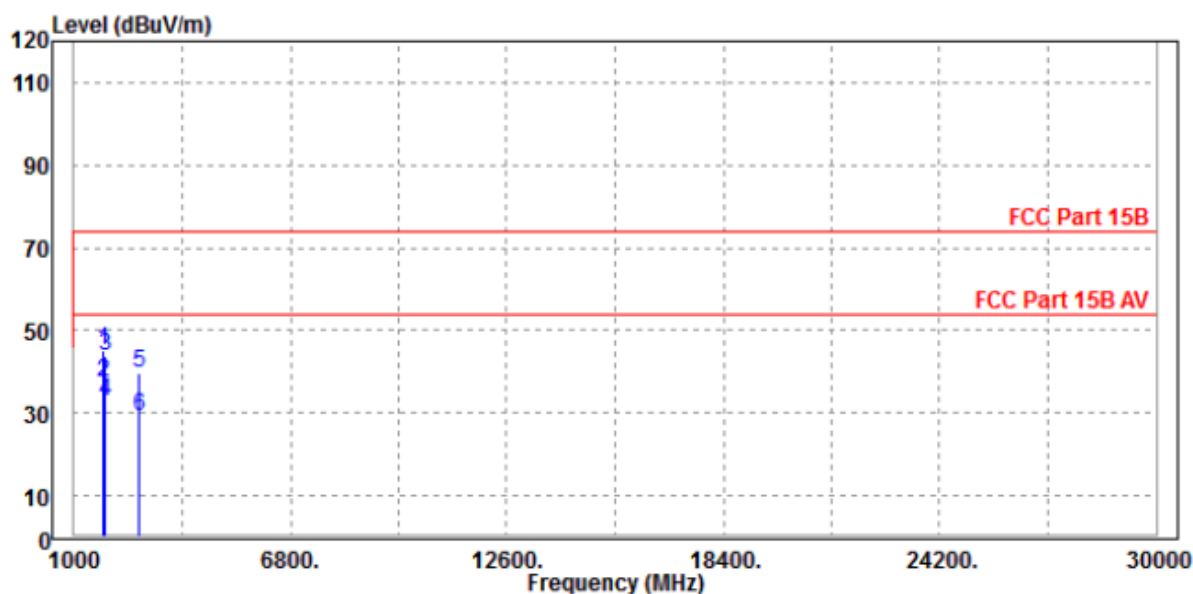
- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 30MHz to 1000MHz.
 4. Only emissions significantly above equipment noise floor are reported.



TEST VOLTAGE	Input 120 Vac, 60 Hz	FREQUENCY RANGE	1-30 GHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Peak/Average, 1 MHz
TESTED BY	Star Le		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1790	44.97	51.4	74	-29.03	30.76	4.13	41.32	100	38	Peak
1790	37.57	44	54	-16.43	30.76	4.13	41.32	100	38	Average
1837	43.86	49.85	74	-30.14	31.13	4.21	41.33	100	312	Peak
1837	32.66	38.65	54	-21.34	31.13	4.21	41.33	100	312	Average
2722	39.71	42.67	74	-34.29	33.34	5.23	41.53	100	278	Peak
2722	29.16	32.12	54	-24.84	33.34	5.23	41.53	100	278	Average

- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 1GHz to 30GHz.
 4. Only emissions significantly above equipment noise floor are reported.

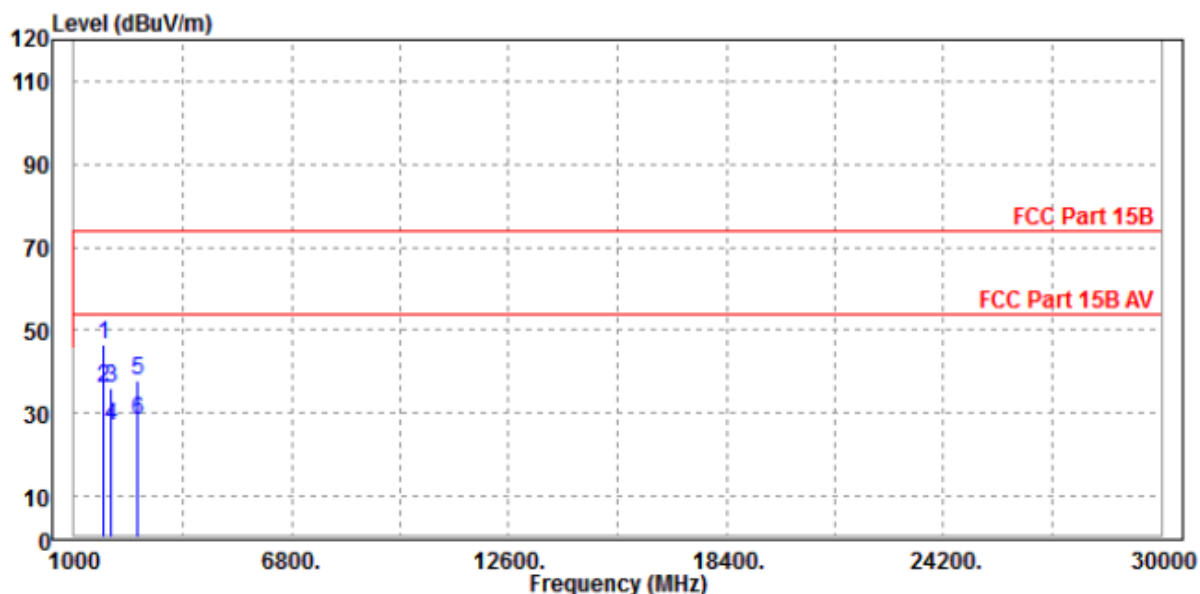


TEST VOLTAGE	Input 120 Vac, 60 Hz	FREQUENCY RANGE	1-30 GHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Peak/Average, 1 MHz
TESTED BY	Star Le		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
1798	46.56	53.27	74	-27.44	30.47	4.14	41.32	100	79	Peak
1798	36.17	42.88	54	-17.83	30.47	4.14	41.32	100	79	Average
1988	35.91	41.69	74	-38.09	31.16	4.44	41.38	100	145	Peak
1988	26.78	32.56	54	-27.22	31.16	4.44	41.38	100	145	Average
2682	37.95	41.67	74	-36.05	32.61	5.19	41.52	100	221	Peak
2682	28.39	32.11	54	-25.61	32.61	5.19	41.52	100	221	Average

REMARKS:

1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 1GHz to 30GHz.
4. Only emissions significantly above equipment noise floor are reported.





Test Report No.: FV190522W005

3 APPENDIX A – MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications were made to the EUT by the lab during the test.

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