EMC TEST REPORT

Applicant:	UNIMAX Communications
Address:	Unimax Communications LLC 18201 McDurmott Street W. Suite E Irvine, CA 92614

Manufacturer or Supplier:	UNIMAX Communications
Address:	Unimax Communications LLC 18201 McDurmott Street W. Suite E Irvine, CA 92614
Product:	U505TL
Brand Name:	UNIMAX
Model Name:	U505TL
FCC ID:	P46-U505TL
Date of tests:	Mar. 21, 2019 ~ Apr. 08, 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 B**
☒ **ANSI C63.4:2014**

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

Issued by Alex Chen Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
Alex	Luke Lu
Date: Apr. 09, 2019	Date: Apr. 09, 2019

TABLE OF CONTENTS

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV190320W004	Original release	Apr. 09, 2019

1 GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

PRODUCT	U505TL	
BRAND NAME	UNIMAX	
MODEL NAME	U505TL	
NOMINAL VOLTAGE	5.0Vdc (adapter or host equipment) 3.85Vdc (Li-ion, battery)	
BATTERY	Brand Name: HONDEE Model Name: U505TLBATT Power Rating: DC 3.85V, 2400mAh, Li-ion	
MODULATION TYPE	**WLAN**	CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM
	BT_LE	BT-LE(GFSK) for DTS
	Bluetooth	GFSK, π/4-DQPSK, 8DPSK, LE
	GPS	C/A code
	GLONASS	FDMA code
	WCDMA	BPSK/QPSK
	LTE	QPSK/16QAM
OPERATING FREQUENCY	**WLAN**	2412-2462MHz for 11b/g/n(HT20) 2422-2452MHz for 11n(HT40)
	Bluetooth/BT_LE	2402MHz ~ 2480MHz
	GPS	1575.42MHz
	GLONASS	1602MHz
	WCDMA	1852.4MHz ~ 1907.6MHz(FOR WCDMA Band 2) 1712.4MHz ~ 1752.6MHz(FOR WCDMA Band 4) 826.4MHz ~ 846.6MHz (FOR WCDMA Band 5)
	LTE	1850.7MHz ~ 1909.3MHz (FOR LTE Band2) 1710.7MHz ~ 1754.3MHz (FOR LTE Band4) 824.7MHz ~ 848.3MHz (FOR LTE Band5) 699.7MHz ~ 715.3MHz (FOR LTE Band12) 1710.7MHz ~ 1754.3MHz (FOR LTE Band66) 665.5MHz ~ 695.5MHz (FOR LTE Band71)
HW VERSION	Q5008_V1.0	
SW VERSION	U505TL_01.01.11.190306011100	
I/O PORTS	Refer to user's manual	
CABLE SUPPLIED	USB cable: non-shielded, detachable, 1.0meter	

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. The EUT was powered by the following adapter:

ADAPTER	
BRAND:	Tianyin
MODEL:	TPA-5950100UU
INPUT:	AC 100-240V, 50/60Hz 0.2A
OUTPUT:	DC 5V, 1000mA

3. The EUT matched the following USB cable:

USB CABLE	
BRAND:	GuoJun
MODEL:	micro 5pin Blk 1m
SIGNAL LINE:	1.0 METER

4. 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**	**Remark**
FCC Part 15, Subpart B, Class B ANSI C63.4:2014	Conducted Test	PASS	Meets limits minimum passing margin is -11.71dB at 0.18200MHz.
	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -4.01dB at 39.7MHz
	Radiated Emission Test (Above 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -14.92dB at 3598MHz

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	+/-2.66dB
Radiated emissions	30MHz ~ 1GHz	+/-3.26dB
	1GHz ~ 18GHz	+/-4.48dB

1.4 DESCRIPTION OF TEST MODES

Test Mode	Test Condition
Radiated emission test	
1	WCDMAB2 Idle + Adapter + USB cable + BT Idle + WIFI Idle(2.4G) + SIM 1 + Earphone + GPS RX
2	WCDMAB2 Idle + Adapter + USB cable + BT Idle + WIFI Idle(2.4G) + SIM2 + Earphone + GLonass RX
3	Worst Case of(1-2) + WCDMA B4 Idle
4	Worst Case of(1-2) + WCDMA B5 Idle
5	Worst Case of(1-2) + LTE B2 Idle
6	Worst Case of(1-2) + LTE B4 Idle
7	Worst Case of(1-2) + LTE B5 Idle
8	Worst Case of(1-2) + LTE B12 Idle
9	Worst Case of(1-2) + LTE B66 Idle
10	Worst Case of(1-2) + LTE B71 Idle
11	Worst Case of(1-10) + Front Camera On
12	Worst Case of(1-10) + Back Camera On
13	Worst Case of(1-10) + MPG4
14	Usb Link + USB cable + Data Trasimission(PC to EUT) + Earphone + BT Idle + WIFI Idle(2.4G) + GPS RX
15	Usb Link + USB cable + Data Trasimission(PC to SD) + Earphone + BT Idle + WIFI Idle(2.4G) + GLonass RX

Conducted emission test	
1	WCDMAB2 Idle + Adapter + USB cable + BT Idle + WIFI Idle(2.4G) + SIM 1 + Earphone + GPS RX
2	WCDMAB2 Idle + Adapter + USB cable + BT Idle + WIFI Idle(2.4G) + SIM2 + Earphone + GLonass RX
3	Worst Case of(1-2) + WCDMA B4 Idle
4	Worst Case of(1-2) + WCDMA B5 Idle
5	Worst Case of(1-2) + LTE B2 Idle
6	Worst Case of(1-2) + LTE B4 Idle
7	Worst Case of(1-2) + LTE B5 Idle
8	Worst Case of(1-2) + LTE B12 Idle
9	Worst Case of(1-2) + LTE B66 Idle
10	Worst Case of(1-2) + LTE B71 Idle
11	Worst Case of(1-10) + Front Camera On
12	Worst Case of(1-10) + Back Camera On
13	Worst Case of(1-10) + MPG4
14	Usb Link + USB cable + Data Trasimission(PC to EUT) + Earphone + BT Idle + WIFI Idle(2.4G) + GPS RX
15	Usb Link + USB cable + Data Trasimission(PC to SD) + Earphone + BT Idle + WIFI Idle(2.4G) + GLonass RX

NOTE:

1. For conducted emission test, test mode 1, 14 was the worst case and only this mode was presented in this report.
2. For radiated emission test, test mode 1, 15 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 EMISSION TESTS

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	GPS Simulator +Antenna	TOJOIN	GNSS-5000A	E1-010-010119	N/A
2	Wireless AP	ABOCOM	WR224GR	060500749P	N/A
3	FM signal generator	Rohde & Schwarz	SMB100A	109279	N/A
4	Printer	HP	Hp LaserJet 1300	CNSJF75989	N/A
5	Notebook	Lenovo	Thnikpad X520	SL10H14859JS	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	N/A
2	N/A
3	N/A
4	N/A
5	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)

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

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.

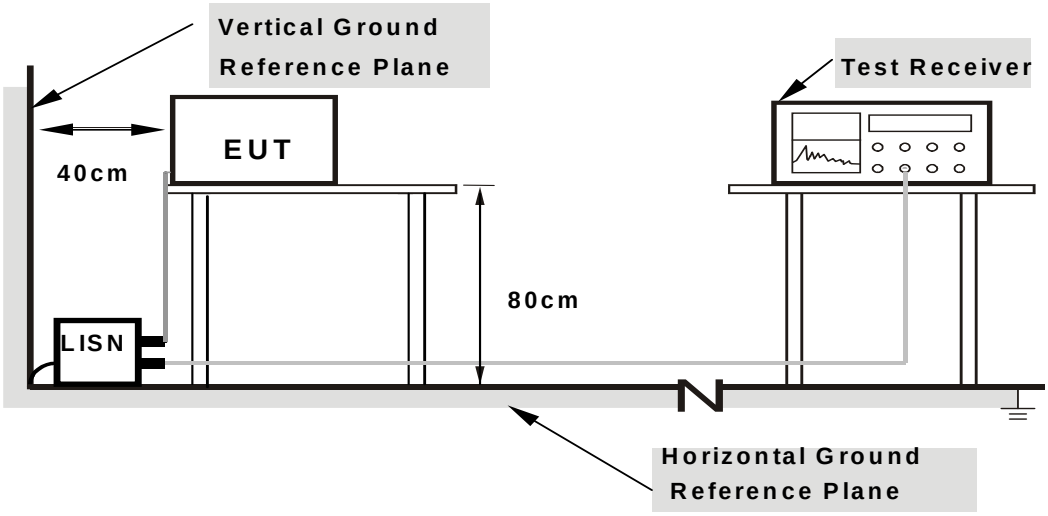
c. The frequency range from 150 kHz to 30MHz was searched. Emission levels under (Limit - 20dB) were not recorded.

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 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

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

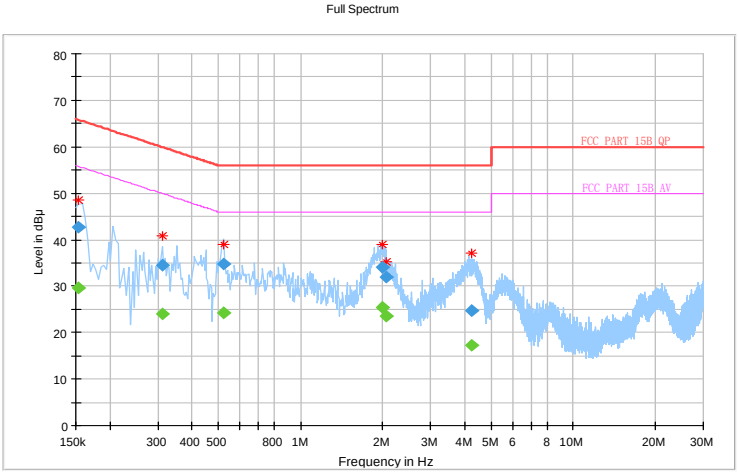
2.1.7 TEST RESULTS

Mode 1

TEST VOLTAGE	DC 5V From Adapter Input 120 Vac, 60 Hz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 50RH	TESTED BY	John Wen

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.154000	---	29.70	55.78	-26.08	L	ON	9.9
0.154000	42.72	---	65.78	-23.07	L	ON	9.9
0.312000	---	23.97	49.92	-25.95	L	ON	10.0
0.312000	34.46	---	59.92	-25.45	L	ON	10.0
0.520000	---	24.29	46.00	-21.71	L	ON	10.0
0.520000	34.85	---	56.00	-21.15	L	ON	10.0
1.996000	---	25.36	46.00	-20.64	L	ON	10.1
1.996000	34.06	---	56.00	-21.94	L	ON	10.1
2.060000	---	23.52	46.00	-22.48	L	ON	10.1
2.060000	31.86	---	56.00	-24.14	L	ON	10.1
4.232000	---	17.26	46.00	-28.74	L	ON	10.2
4.232000	24.75	---	56.00	-31.25	L	ON	10.2

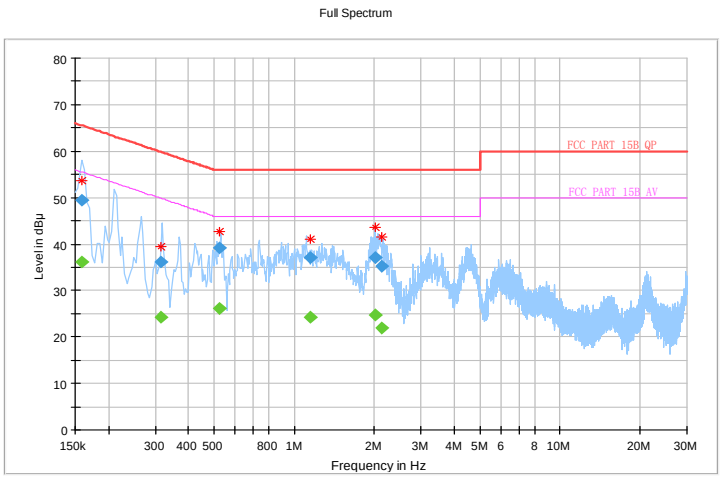
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



TEST VOLTAGE	DC 5V From Adapter Input 120 Vac, 60 Hz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 50RH	TESTED BY	John Wen

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.158000	---	36.15	55.57	-19.42	N	ON	9.9
0.158000	49.51	---	65.57	-16.06	N	ON	9.9
0.316000	---	24.16	49.81	-25.65	N	ON	9.9
0.316000	36.14	---	59.81	-23.67	N	ON	9.9
0.520000	---	26.09	46.00	-19.91	N	ON	9.9
0.520000	39.12	---	56.00	-16.88	N	ON	9.9
1.146000	---	24.18	46.00	-21.82	N	ON	10.0
1.146000	36.98	---	56.00	-19.02	N	ON	10.0
2.012000	---	24.72	46.00	-21.28	N	ON	10.0
2.012000	37.19	---	56.00	-18.81	N	ON	10.0
2.132000	---	21.95	46.00	-24.05	N	ON	10.0
2.132000	35.20	---	56.00	20.80	N	ON	10.0

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.

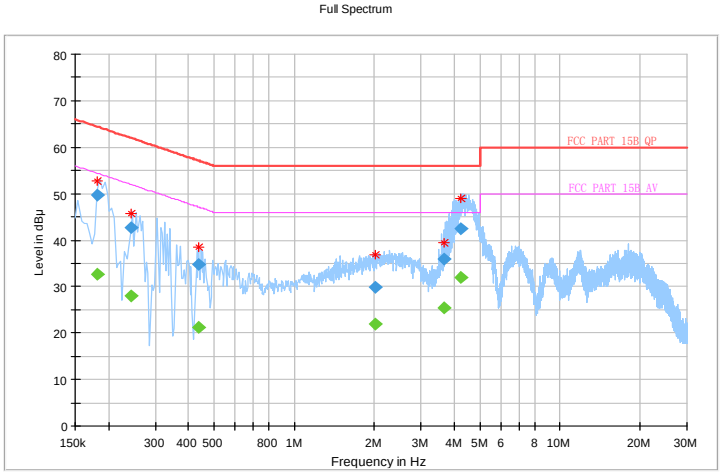


Mode 14

TEST VOLTAGE	Data trasmission Input 120 Vac, 60 Hz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 50RH	**TESTED BY**	John Wen

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.182000	---	32.66	54.39	-21.73	L	ON	9.9
0.182000	49.67	---	64.39	-14.72	L	ON	9.9
0.244000	---	27.96	51.96	-24.00	L	ON	9.9
0.244000	42.74	---	61.96	-19.22	L	ON	9.9
0.436000	---	21.26	47.14	-25.88	L	ON	10.0
0.436000	34.75	---	57.14	-22.38	L	ON	10.0
2.016000	---	21.94	46.00	-24.06	L	ON	10.1
2.016000	29.95	---	56.00	-26.05	L	ON	10.1
3.668000	---	25.42	46.00	-20.58	L	ON	10.2
3.668000	35.92	---	56.00	-20.08	L	ON	10.2
4.236000	---	31.86	46.00	-14.14	L	ON	10.2
4.236000	42.56	---	56.00	-13.44	L	ON	10.2

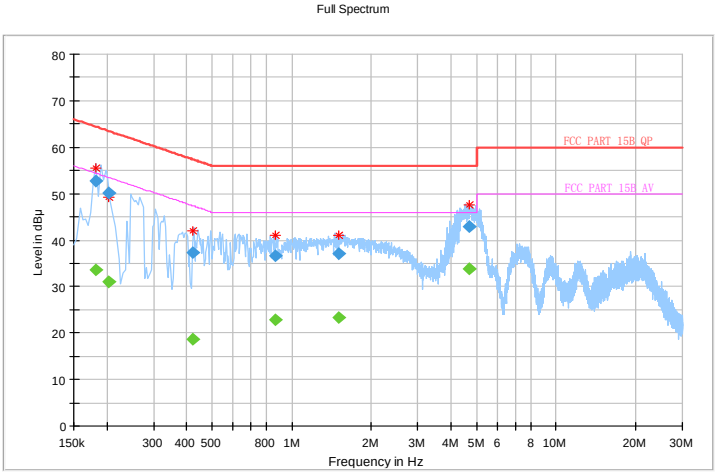
REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Emission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



TEST VOLTAGE	Data trasmission Input 120 Vac, 60 Hz	**Detector Function & Resolution Bandwidth**	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 50RH	**TESTED BY**	John Wen

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.182000	---	33.64	54.39	-20.76	N	ON	9.9
0.182000	**52.69**	**---**	**64.39**	**-11.71**	**N**	**ON**	**9.9**
0.204000	---	31.08	53.45	-22.37	N	ON	9.9
0.204000	50.15	---	63.45	-13.30	N	ON	9.9
0.424000	---	18.76	47.37	-28.61	N	ON	9.9
0.424000	37.22	---	57.37	-20.15	N	ON	9.9
0.872000	---	22.79	46.00	-23.21	N	ON	10.0
0.872000	36.53	---	56.00	-19.47	N	ON	10.0
1.504000	---	23.40	46.00	-22.60	N	ON	10.0
1.504000	37.09	---	56.00	-18.91	N	ON	10.0
4.704000	---	33.86	46.00	-12.14	N	ON	10.1
4.704000	42.96	---	56.00	-13.04	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.



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 10 meters (dBμV/m)				
Frequencies (MHz)	**FCC 15B/ ICES-003, Class A**	**FCC 15B / ICES-003, Class B**	**CISPR 22, Class A**	**CISPR 22, Class B**
30-88	39	29.5	40	30
88-216	43.5	33.1		
216-230	46.4	35.6		
230-960			47	37
960-1000	49.5	43.5		
1000-3000	Avg: 49.5 Peak: 69.5	Avg: 43.5 Peak: 63.5	Not defined	Not defined
3000+			Not defined	Not defined

Radiated Emissions Limits at 3 meters (dBμV/m)				
Frequencies (MHz)	**FCC 15B / ICES-003, Class A**	**FCC 15B / ICES-003, Class B**	**CISPR 22, Class A**	**CISPR 22, Class B**
30-88	49.5	40	50.5	40.5
88-216	54	43.5		
216-230	56.9	46		
230-960			57.5	47.5
960-1000	60	54		
1000-3000	Avg: 60 Peak: 80	Avg: 54 Peak: 74	Avg: 56 Peak: 76	Avg: 50 Peak: 70
3000+			Avg: 60 Peak: 80	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	5th harmonic of the highest frequency or 40GHz, whichever is lower

NOTE: 1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/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 below1GHz

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	Jul. 09,18	Jul. 08,19

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
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Feb. 26,19	Feb. 25, 20
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	Jul. 09,18	Jul. 08,19

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, GRGT/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. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
3. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
4. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier).
5. Margin value = Emission level – 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:

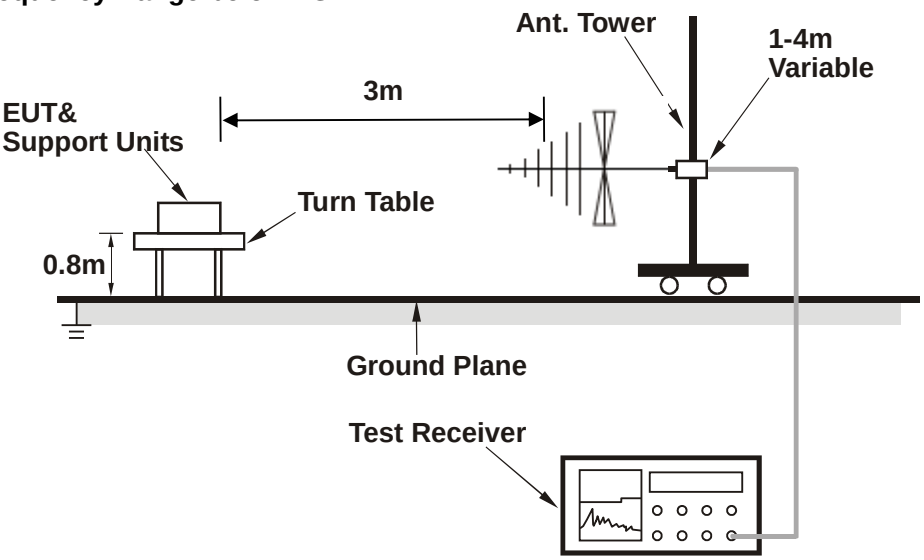
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test 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. Emission level(dBuV/m)=Raw Value(dBuV) + Correction Factor(dB/m)
5. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) (if the raw value not contains the amplifier);
6. Correction Factor(dB/m) = Antenna Factor (dB/m) + Cable Factor (dB) – Amplifier Gain(dB) (if the raw value contains the amplifier)
7. Margin value = Emission level – Limit value.

2.2.4. DEVIATION FROM TEST STANDARD

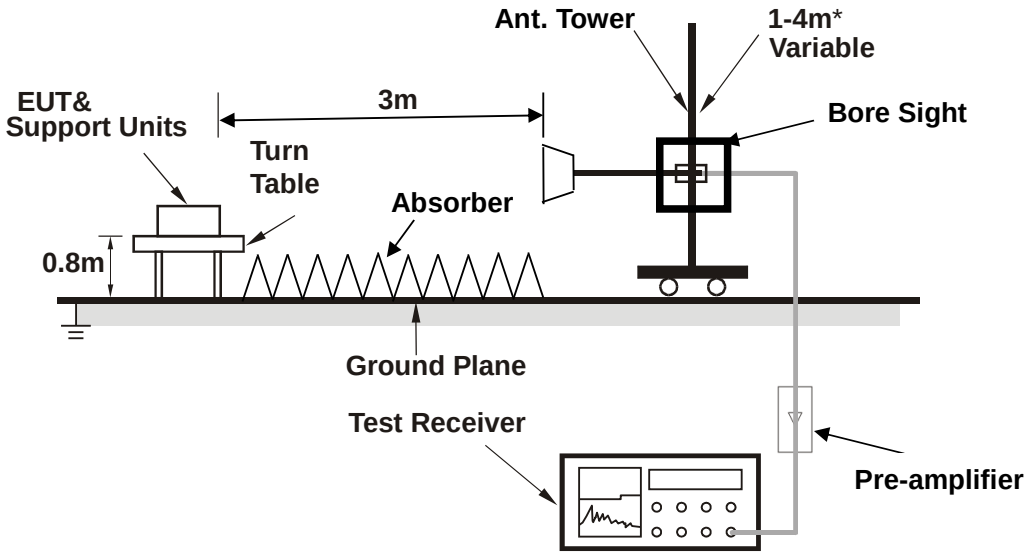
No deviation.

2.2.5. TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



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

2.2.6. EUT OPERATING CONDITIONS

Same as item 2.1.6.

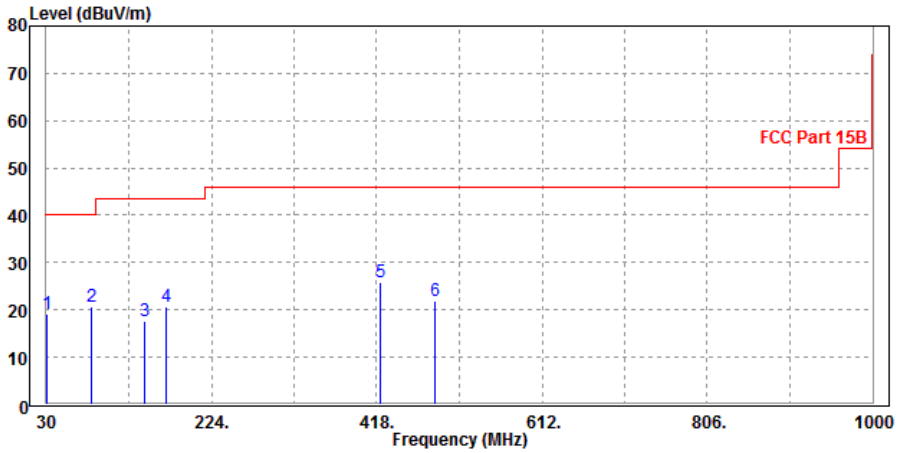
2.2.7. TEST RESULTS

Mode 1

TEST VOLTAGE	DC 5V From Adapter 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		

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
30.97	19.16	39.12	40	-20.84	16.8	0.79	37.55	200	127	QP
82.38	20.68	48.38	40	-19.32	8.2	1.22	37.12	200	139	QP
146.4	17.52	43.39	43.5	-25.98	9.38	1.56	36.81	200	205	QP
170.65	20.64	45.28	43.5	-22.86	10.39	1.68	36.71	200	274	QP
422.85	25.81	42.38	46	-20.19	17.5	2.7	36.77	200	217	QP
486.87	21.89	37.55	46	-24.11	18.33	2.94	36.93	200	104	QP

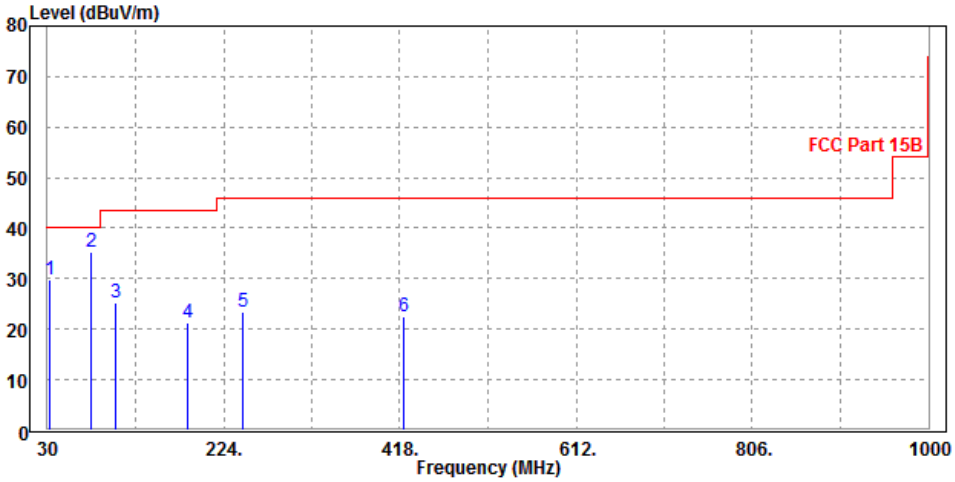
REMARKS:
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions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



TEST VOLTAGE	DC 5V From Adapter 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		

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	29.73	50.33	40	-10.27	16.14	0.8	37.54	100	183	QP
77.53	35.16	63.01	40	-4.84	8.13	1.2	37.18	100	255	QP
104.69	25.36	51.46	43.5	-18.14	9.54	1.34	36.98	100	298	QP
184.23	21.42	45.88	43.5	-22.08	10.48	1.72	36.66	100	184	QP
244.37	23.46	45.04	46	-22.54	12.93	2.01	36.52	100	265	QP
422.85	22.6	39.05	46	-23.4	17.62	2.7	36.77	100	148	QP

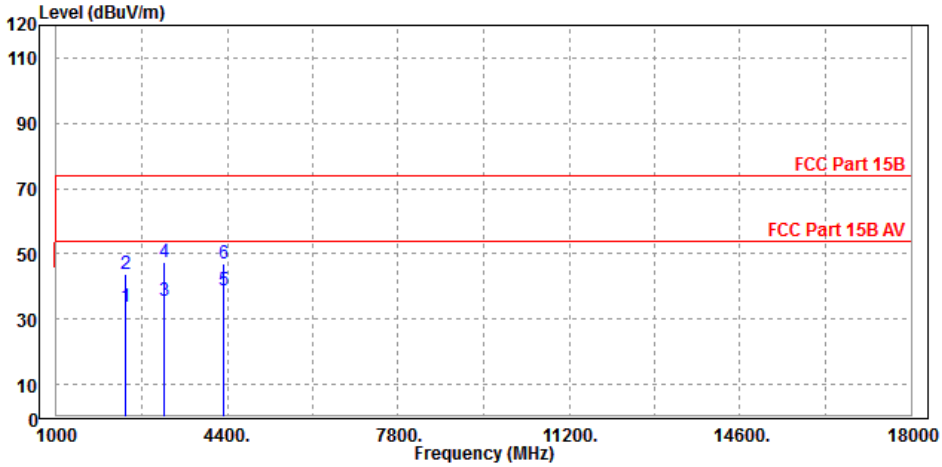
REMARKS:
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions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



TEST VOLTAGE	DC 5V From Adapter Input 120 Vac, 60 Hz	**FREQUENCY RANGE**	1-18 GHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak/Average, 1 MHz
TESTED BY	Star		

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**
2369	33.74	42.19	54	-20.26	33.06	4.86	46.37	100	316	Average
2369	43.9	52.35	74	-30.1	33.06	4.86	46.37	100	316	Peak
3154	35.4	42.31	54	-18.6	33.83	5.63	46.37	100	165	Average
3154	47.32	54.23	74	-26.68	33.83	5.63	46.37	100	165	Peak
4323	38.74	43.27	54	-15.26	36.28	5.58	46.39	100	156	Average
4323	46.95	51.48	74	-27.05	36.28	5.58	46.39	100	156	Peak

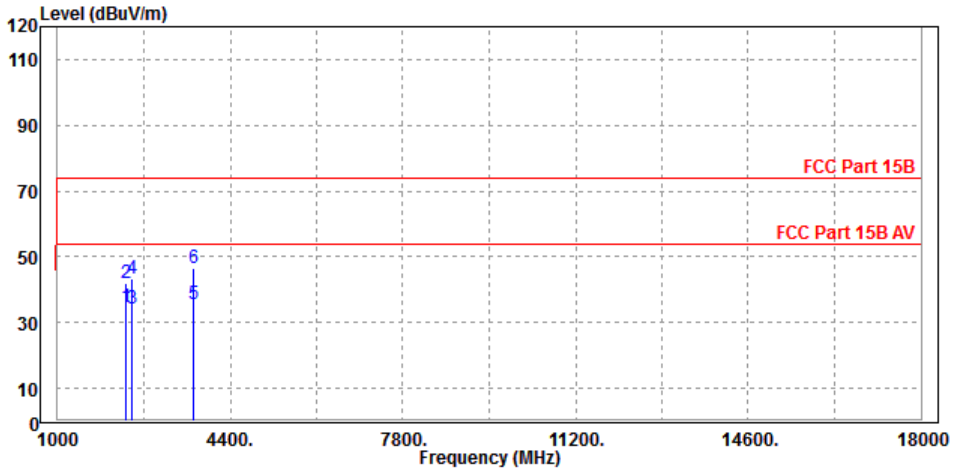
REMARKS:
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 1GHz to 18GHz.
4. Only emissions significantly above equipment noise floor are reported.



TEST VOLTAGE	DC 5V From Adapter Input 120 Vac, 60 Hz	**FREQUENCY RANGE**	1-18 GHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak/Average, 1 MHz
TESTED BY	Star		

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
2358	34.78	44.17	54	-19.22	32.13	4.85	46.37	100	167	Average
2358	41.86	51.25	74	-32.14	32.13	4.85	46.37	100	167	Peak
2478	34.33	43.28	54	-19.67	32.44	4.98	46.37	100	247	Average
2478	43.39	52.34	74	-30.61	32.44	4.98	46.37	100	247	Peak
3687	35.43	41.58	54	-18.57	34.48	5.75	46.38	100	312	Average
3687	46.34	52.49	74	-27.66	34.48	5.75	46.38	100	312	Peak

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 18GHz.
4. Only emissions significantly above equipment noise floor are reported.

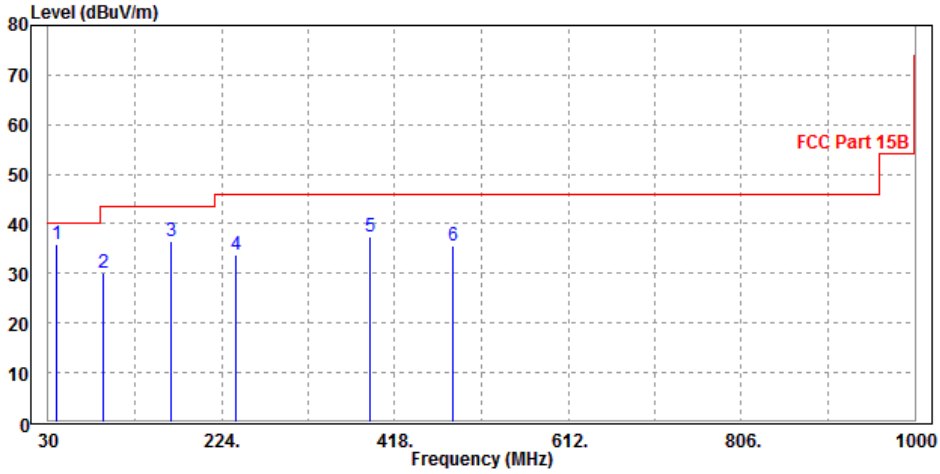


Mode 15

TEST VOLTAGE	Data trasmission 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		

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**
39.7	**35.99**	**59.01**	**40**	**-4.01**	**13.55**	**0.91**	**37.48**	**200**	**137**	**QP**
92.13	29.98	56.96	43.5	-13.52	8.76	1.29	37.03	200	294	QP
167.74	36.61	61.23	43.5	-6.89	10.42	1.68	36.72	200	164	QP
240.49	33.83	55.78	46	-12.17	12.58	1.99	36.52	200	200	QP
389.87	37.56	54.79	46	-8.44	16.89	2.58	36.7	200	0	QP
482.34	35.62	51.35	46	-10.38	18.27	2.92	36.92	200	236	QP

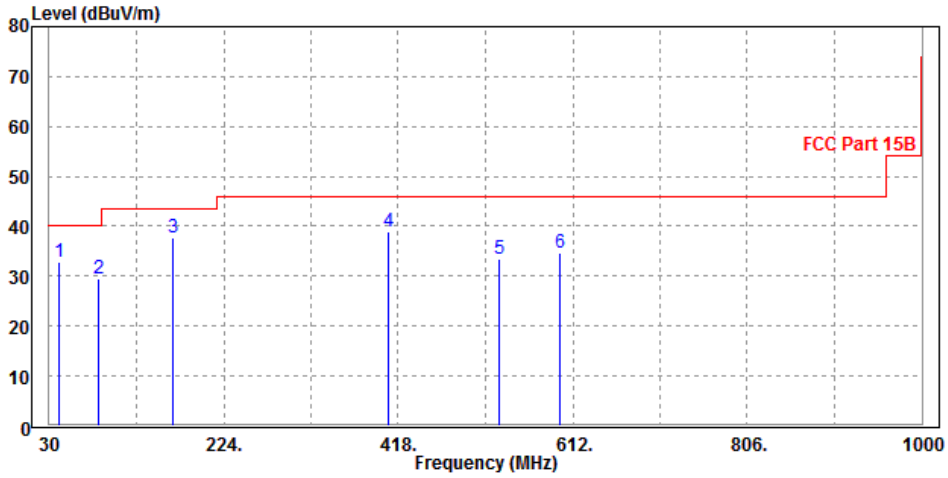
REMARKS:
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions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



TEST VOLTAGE	Data trasmission 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		

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**
40.67	32.95	56.61	40	-7.05	12.88	0.93	37.47	200	360	QP
84.32	29.45	56.89	40	-10.55	8.43	1.23	37.1	200	260	QP
167.74	37.6	62.24	43.5	-5.9	10.4	1.68	36.72	200	185	QP
406.36	39.03	55.74	46	-6.97	17.39	2.64	36.74	200	126	QP
530.52	33.51	48.39	46	-12.49	19.13	3.04	37.05	200	107	QP
597.45	34.68	48.7	46	-11.32	20.06	3.16	37.24	200	245	QP

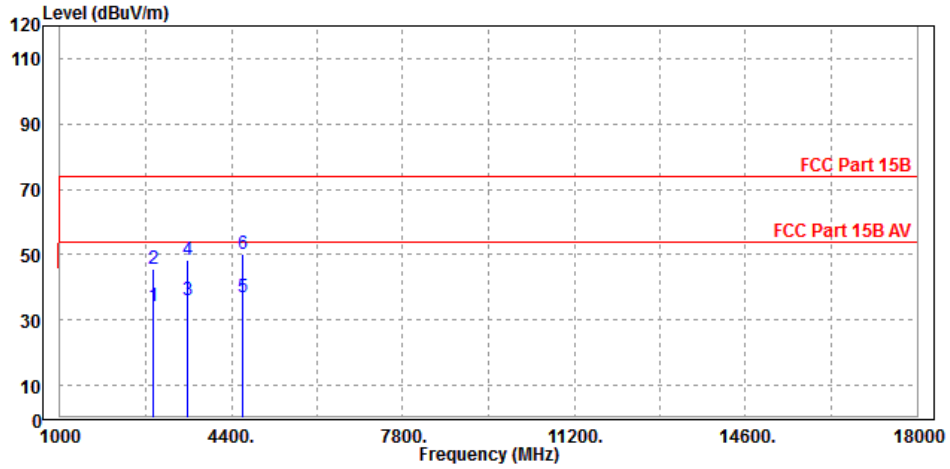
REMARKS:
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions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



TEST VOLTAGE	Data trasmission Input 120 Vac, 60 Hz	**FREQUENCY RANGE**	1-18 GHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak/Average, 1 MHz
TESTED BY	Star		

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**
2856	34.12	41.75	54	-19.88	33.37	5.37	46.37	100	210	Average
2856	45.82	53.45	74	-28.18	33.37	5.37	46.37	100	210	Peak
3542	36.21	41.67	54	-17.79	35.06	5.86	46.38	100	166	Average
3542	48.22	53.68	74	-25.78	35.06	5.86	46.38	100	166	Peak
4633	37.18	41.97	54	-16.82	35.51	6.09	46.39	100	217	Average
4633	49.96	54.75	74	-24.04	35.51	6.09	46.39	100	217	Peak

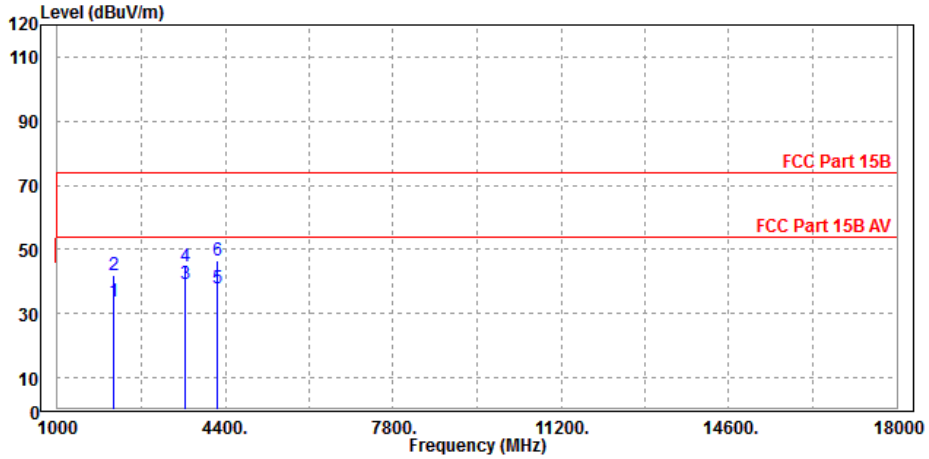
REMARKS:
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 1GHz to 18GHz.
4. Only emissions significantly above equipment noise floor are reported.



TEST VOLTAGE	Data trasmission Input 120 Vac, 60 Hz	**FREQUENCY RANGE**	1-18 GHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	**DETECTOR FUNCTION & RESOLUTION BANDWIDTH**	Peak/Average, 1 MHz
TESTED BY	Star		

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**
2134	33.68	43.89	54	-20.32	31.55	4.6	46.36	100	231	Average
2134	42.16	52.37	74	-31.84	31.55	4.6	46.36	100	231	Peak
3598	**39.08**	**45.67**	**54**	**-14.92**	**33.97**	**5.82**	**46.38**	**100**	**174**	**Average**
3598	44.67	51.26	74	-29.33	33.97	5.82	46.38	100	174	Peak
4236	37.65	42.36	54	-16.35	36.11	5.56	46.38	100	312	Average
4236	46.57	51.28	74	-27.43	36.11	5.56	46.38	100	312	Peak

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 18GHz.
4. Only emissions significantly above equipment noise floor are reported.



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.

---END---