

EMC TEST REPORT

Applicant:	Corporativo Lanix S.A. de C.V.
Address:	Carretera Internacional Hermosillo-Nogales Km 8.5, Hermosillo Sonora, Mexico

Manufacturer or Supplier:	Corporativo Lanix S.A. de C.V.
Address:	Carretera Internacional Hermosillo-Nogales Km 8.5, Hermosillo Sonora, Mexico
Product:	smartphone
Brand Name:	LANIX
Model Name:	Ilium M9s
FCC ID:	ZC4M9S
Date of tests:	Apr. 19, 2019 ~ May. 23, 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
	
Date: May. 23, 2019	Date: May. 23, 2019

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Test Report No.: FV190418W001

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
FV190418W001	Original release	May. 23, 2019

1 GENERAL INFORMATION

1.1 GENERAL DESCRIPTION OF EUT

PRODUCT	smartphone	
BRAND NAME	LANIX	
MODEL NAME	Ilium M9s	
NOMINAL VOLTAGE	5.0Vdc (adapter or host equipment) 3.85Vdc (Li-ion, battery)	
BATTERY	Brand Name: lanix Model Name: Ilium M9s-BAT Power Rating: DC 3.85V, 4000mAh, 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, $\pi/4$ -DQPSK, 8DPSK, LE
	GPS	C/A code
	FM	FSK
	GSM	GMSK/8PSK
	WCDMA	BPSK/QPSK
	LTE	QPSK/16QAM
OPERATING FREQUENCY	WLAN	2412-2462MHz for 11b/g/n(HT20)
	Bluetooth/BT_LE	2402MHz ~ 2480MHz
	GPS	1575.42MHz
	FM	87.5MHz ~ 108MHz
	GSM	824.2MHz ~ 848.8MHz (FOR GSM 850) 1850.2MHz ~ 1909.8MHz (FOR GSM 1900)
	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) 2500MHz ~ 2570MHz (FOR LTE Band7) 699.7MHz ~ 715.3MHz (FOR LTE Band12) 1710.7MHz ~ 1754.3MHz (FOR LTE Band66)
HW VERSION	V0.10	



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SW VERSION	Ilium M9s_SW_01_V01
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	USB cable: non-shielded, detachable, 1.0meter Earphone cable: non-shielded, detachable, 1.2meter
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:	Ianix
MODEL:	Ilium M9s-C
INPUT:	AC 100-240V, 250mA
OUTPUT:	DC 5V, 1550mA

3. The EUT matched the following USB cable and Earphone:

USB CABLE	
BRAND:	Ianix
MODEL:	M9s
SIGNAL LINE:	1.0 meter

EARPHONE	
BRAND:	Ianix
MODEL:	M9s
SIGNAL LINE:	1.2 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 -5.33dB at 0.628000MHz.
	Radiated Emission Test (30MHz ~ 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -3.2dB at 33.88MHz
	Radiated Emission Test (Above 1GHz)	PASS	Meets Class B Limit Minimum passing margin is -12.05dB at 3669MHz

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	GSM 850 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM1
2	GSM 1900 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2
3	WCDMA B2 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 1
4	WCDMA B4 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2
5	WCDMA B5 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 1
6	LTE B2 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2
7	LTE B4 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 1
8	LTE B5 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2
9	LTE B7 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 1
10	LTE B12 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM2
11	LTE B66 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM1
12	Worst case of(1-11) + FM RX
13	Worst case of(1-11) + Front Camera On
14	Worst case of(1-11) + Back Camera On
15	Worst case of(1-11) + MPG4
16	USB link+ USB cable+ Data Trasimission(PC to EUT) +Earphone + BT Idle + WIFI Idle (2.4G) + GPS Rx + SIM 1
17	USB link + USB cable + Data Trasimission(PC to SD) + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2

Conducted emission test	
1	GSM 850 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM1
2	GSM 1900 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2
3	WCDMA B2 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 1
4	WCDMA B4 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2
5	WCDMA B5 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 1
6	LTE B2 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2
7	LTE B4 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 1
8	LTE B5 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2
9	LTE B7 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 1
10	LTE B12 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM2
11	LTE B66 Idle + Adapter + USB cable + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM1
12	Worst case of(1-11) + FM RX
13	Worst case of(1-11) + Front Camera On
14	Worst case of(1-11) + Back Camera On
15	Worst case of(1-11) + MPG4
16	USB link+ USB cable+ Data Trasimission(PC to EUT) +Earphone + BT Idle + WIFI Idle (2.4G) + GPS Rx + SIM 1
17	USB link + USB cable + Data Trasimission(PC to SD) + Earphone + BT Idle + WIFI Idle(2.4G) + GPS Rx + SIM 2

NOTE:

1. For conducted emission test, test mode 14, 16 was the worst case and only this mode was presented in this report.
2. For radiated emission test, test mode 4, 16 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, GRG/CHINA and NIM/CHINA.

2.1.3 TEST PROCEDURES

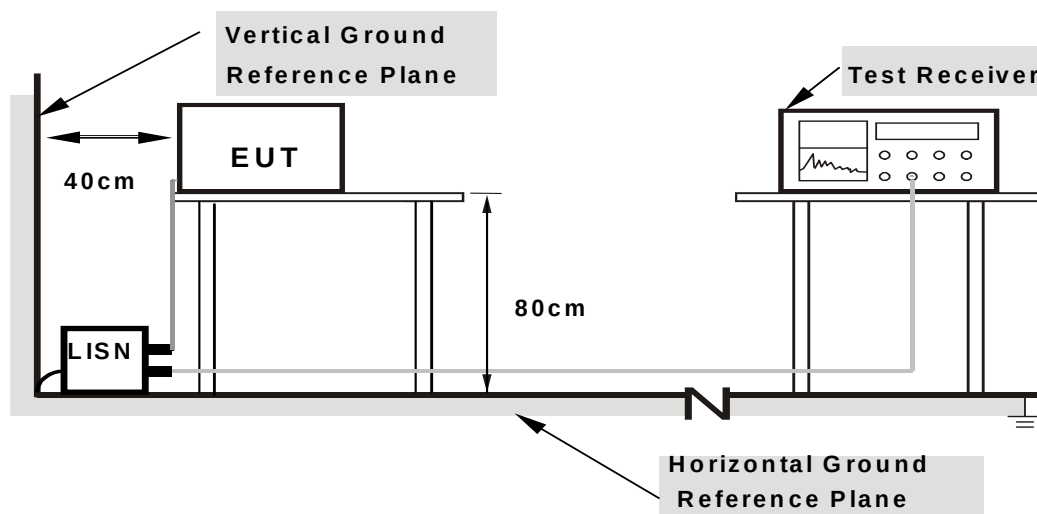
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling 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

- 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

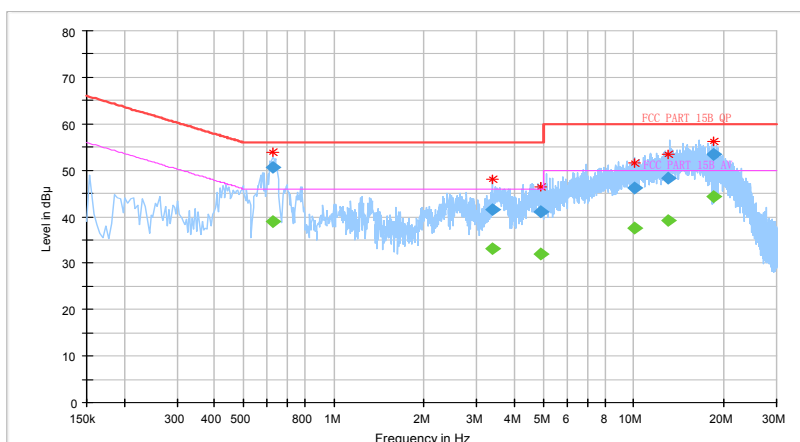
Mode 14

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, 52RH	TESTED BY	John Wen

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.628000	---	39.04	46.00	-6.96	L	ON	10.0
0.628000	50.67	---	56.00	-5.33	L	ON	10.0
3.388000	---	33.11	46.00	-12.89	L	ON	10.2
3.388000	41.59	---	56.00	-14.41	L	ON	10.2
4.900000	---	31.91	46.00	-14.09	L	ON	10.2
4.900000	41.05	---	56.00	-14.95	L	ON	10.2
10.108000	---	37.63	50.00	-12.37	L	ON	10.5
10.108000	46.27	---	60.00	-13.73	L	ON	10.5
13.120000	---	39.26	50.00	-10.74	L	ON	10.5
13.120000	48.17	---	60.00	-11.83	L	ON	10.5
18.416000	---	44.20	50.00	-5.80	L	ON	10.5
18.416000	53.33	---	60.00	-6.67	L	ON	10.5

- 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

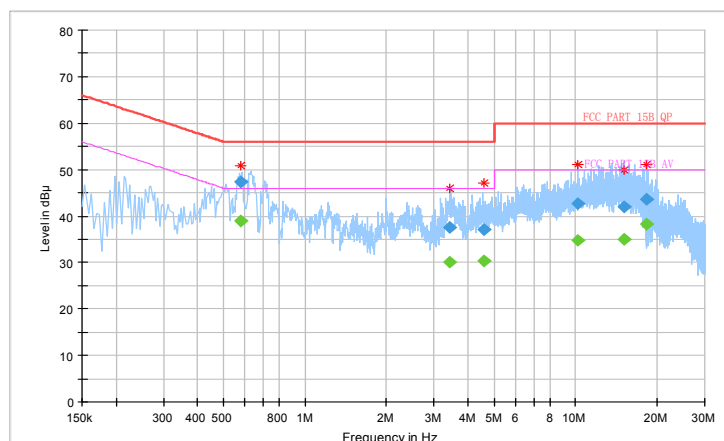


TEST VOLTAGE	DC 5V From Adapter Input 120 Vac, 60 Hz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 52RH	TESTED BY	John Wen

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.576000	---	38.94	46.00	-7.06	N	ON	9.9
0.576000	47.38	---	56.00	-8.62	N	ON	9.9
3.420000	---	30.19	46.00	-15.81	N	ON	10.1
3.420000	37.51	---	56.00	-18.49	N	ON	10.1
4.588000	---	30.37	46.00	-15.63	N	ON	10.1
4.588000	37.19	---	56.00	-18.81	N	ON	10.1
10.172000	---	34.65	50.00	-15.35	N	ON	10.3
10.172000	42.58	---	60.00	-17.42	N	ON	10.3
15.092000	---	34.95	50.00	-15.05	N	ON	10.4
15.092000	41.96	---	60.00	-18.04	N	ON	10.4
18.348000	---	38.36	50.00	-11.64	N	ON	10.4
18.348000	43.60	---	60.00	-16.40	N	ON	10.4

- 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



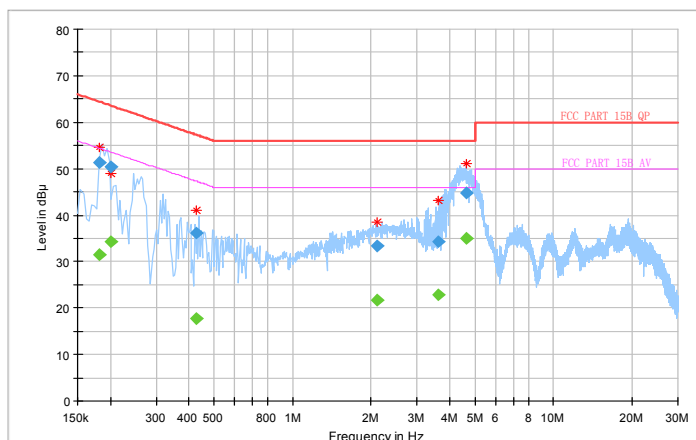
Mode 16

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

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.182000	---	31.44	54.39	-22.96	L	ON	9.9
0.182000	51.22	---	64.39	-13.17	L	ON	9.9
0.200000	---	34.23	53.61	-19.38	L	ON	9.9
0.200000	50.40	---	63.61	-13.21	L	ON	9.9
0.428000	---	17.63	47.29	-29.66	L	ON	10.0
0.428000	36.13	---	57.29	-21.17	L	ON	10.0
2.100000	---	21.59	46.00	-24.41	L	ON	10.1
2.100000	33.34	---	56.00	-22.66	L	ON	10.1
3.616000	---	22.75	46.00	-23.25	L	ON	10.2
3.616000	34.40	---	56.00	-21.60	L	ON	10.2
4.632000	---	34.90	46.00	-11.10	L	ON	10.2
4.632000	44.77	---	56.00	-11.23	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

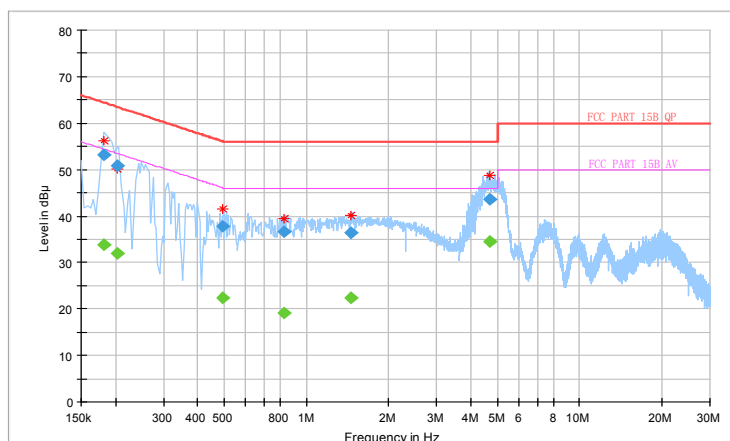


TEST VOLTAGE	Data trasmission Input 120 Vac, 60 Hz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
ENVIRONMENTAL CONDITIONS	25deg. C, 52RH	TESTED BY	John Wen

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.182000	---	33.84	54.39	-20.55	N	ON	9.9
0.182000	53.10	---	64.39	-11.30	N	ON	9.9
0.204000	---	31.86	53.45	-21.58	N	ON	9.9
0.204000	50.81	---	63.45	-12.64	N	ON	9.9
0.492000	---	22.33	46.13	-23.80	N	ON	9.9
0.492000	37.87	---	56.13	-18.27	N	ON	9.9
0.832000	---	19.22	46.00	-26.78	N	ON	10.0
0.832000	36.53	---	56.00	-19.47	N	ON	10.0
1.448000	---	22.32	46.00	-23.68	N	ON	10.0
1.448000	36.44	---	56.00	-19.56	N	ON	10.0
4.700000	---	34.58	46.00	-11.42	N	ON	10.1
4.700000	43.55	---	56.00	-12.45	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 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				
960-1000	49.5	43.5	47	37
1000-3000	Avg: 49.5	Avg: 43.5	Not defined	Not defined
3000+	Peak: 69.5	Peak: 63.5	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				
960-1000	60	54	57.5	47.5
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	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 (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 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	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. $\text{Emission level(dBuV/m)} = \text{Raw Value(dBuV)} + \text{Correction Factor(dB/m)}$
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:

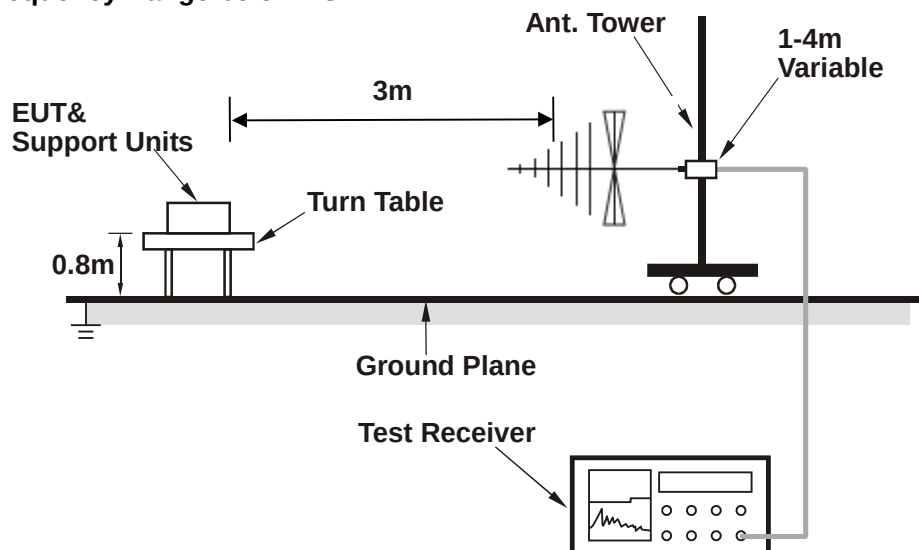
1. The resolution bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. The resolution bandwidth is 1MHz and video bandwidth of test receiver/spectrum analyzer is 3MHz for Peak detection at frequency above 1GHz. The resolution bandwidth of test 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

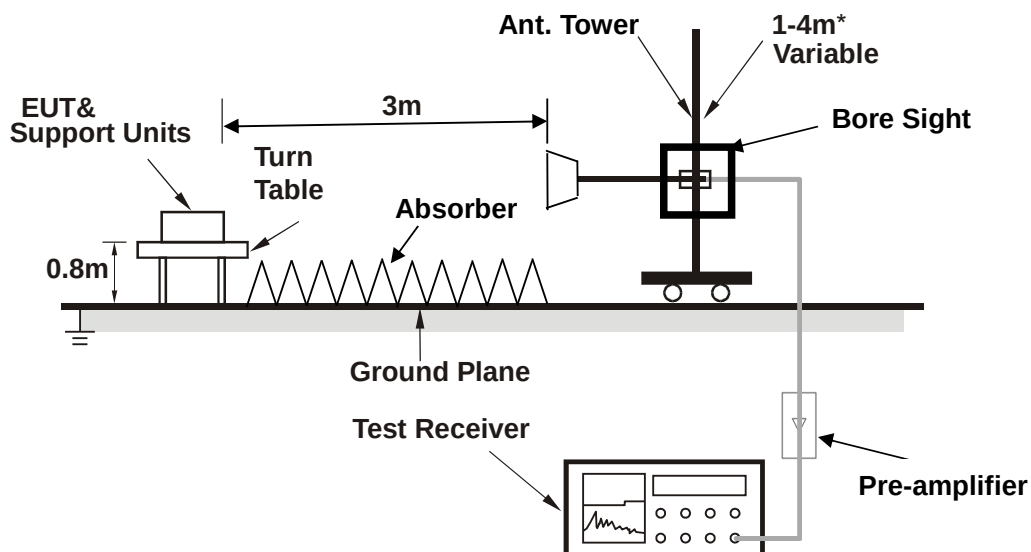
No deviation.

2.2.5. TEST SETUP

<Frequency Range below 1GHz>



<Frequency Range above 1GHz>



* : 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.

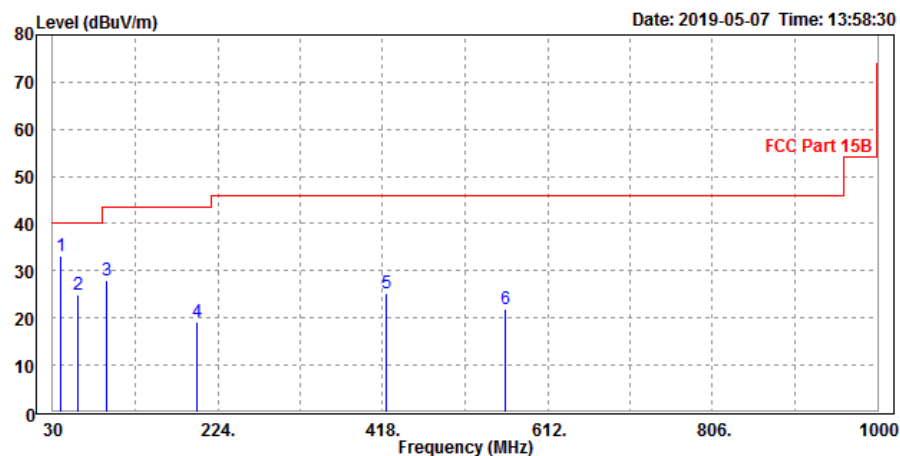
2.2.7. TEST RESULTS

Mode 4

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	Tony		

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	33.16	56.22	40	-6.84	13.55	0.91	37.52	200	360	QP
60.07	25.06	54.42	40	-14.94	6.9	1.07	37.33	200	360	QP
93.05	27.91	54.97	43.5	-15.59	8.87	1.29	37.22	200	360	QP
199.75	19.26	43.23	43.5	-24.24	10.79	1.79	36.55	200	360	QP
422.85	25.36	42.03	46	-20.64	17.5	2.7	36.87	200	360	QP
562.53	21.83	36.46	46	-24.17	19.5	3.1	37.23	200	360	QP

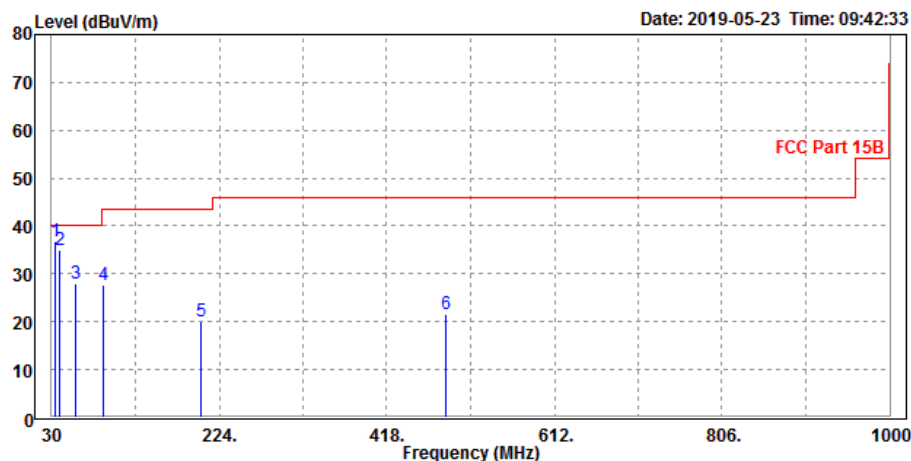
- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 30MHz to 1000MHz.
 4.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

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
33.88	36.8	58.71	40	-3.2	14.78	0.84	37.53	100	175	QP
39.7	34.93	57.82	40	-5.07	13.72	0.91	37.52	100	176	QP
57.16	27.96	57.27	40	-12.04	6.97	1.05	37.33	100	0	QP
90.14	27.56	54.91	43.5	-15.94	8.62	1.28	37.25	100	0	QP
202.66	20.08	43.91	43.5	-23.42	10.93	1.8	36.56	100	0	QP
486.87	21.64	37.16	46	-24.36	18.52	2.94	36.98	100	0	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.

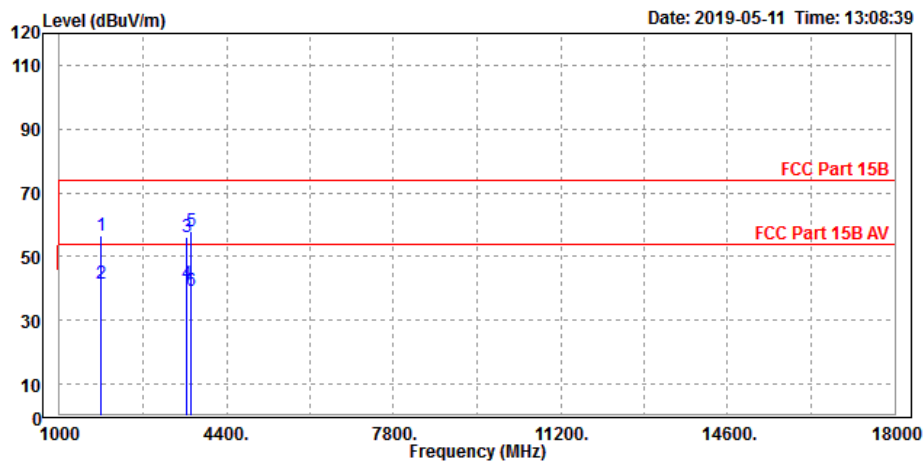


TEST VOLTAGE	DC 5V From Adapter Input 120 Vac, 60 Hz	FREQUENCY RANGE	1-18 GHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Peak/Average, 1 MHz
TESTED BY	Tony		

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
1833	56.68	62.71	74	-17.32	31.1	4.2	41.33	100	360	Peak
1833	41.64	47.67	54	-12.36	31.1	4.2	41.33	100	360	Average
3584	55.99	56.59	74	-18.01	35.32	5.83	41.75	100	360	Peak
3584	41.31	41.91	54	-12.69	35.32	5.83	41.75	100	360	Average
3669	57.98	58.15	74	-16.02	35.85	5.76	41.78	100	360	Peak
3669	39.4	39.57	54	-14.6	35.85	5.76	41.78	100	360	Average

REMARKS:

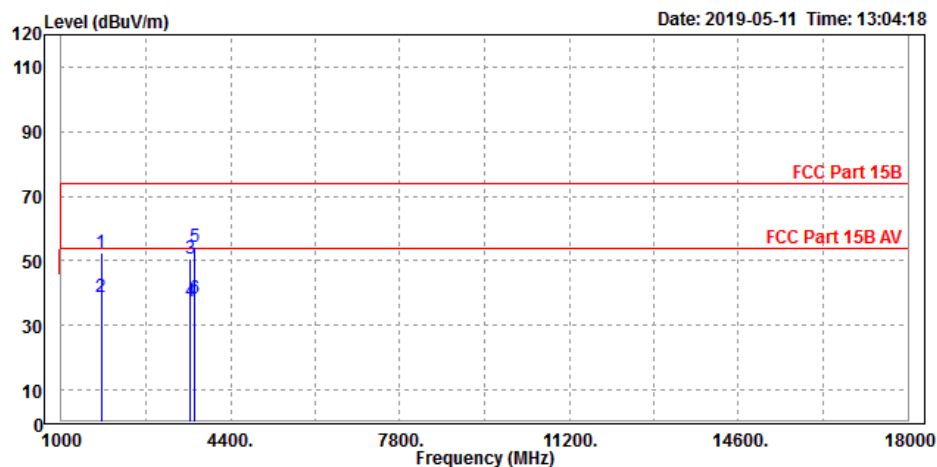
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 1GHz to 18GHz.
4. Only emissions significantly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

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
1799	52.66	59.35	74	-21.34	30.48	4.15	41.32	200	360	Peak
1799	38.68	45.37	54	-15.32	30.48	4.15	41.32	200	360	Average
3584	50.7	52.73	74	-23.3	33.89	5.83	41.75	200	360	Peak
3584	37.47	39.5	54	-16.53	33.89	5.83	41.75	200	360	Average
3669	54.16	55.8	74	-19.84	34.38	5.76	41.78	200	360	Peak
3669	38.47	40.11	54	-15.53	34.38	5.76	41.78	200	360	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 18GHz.
 4. Only emissions significantly above equipment noise floor are reported.

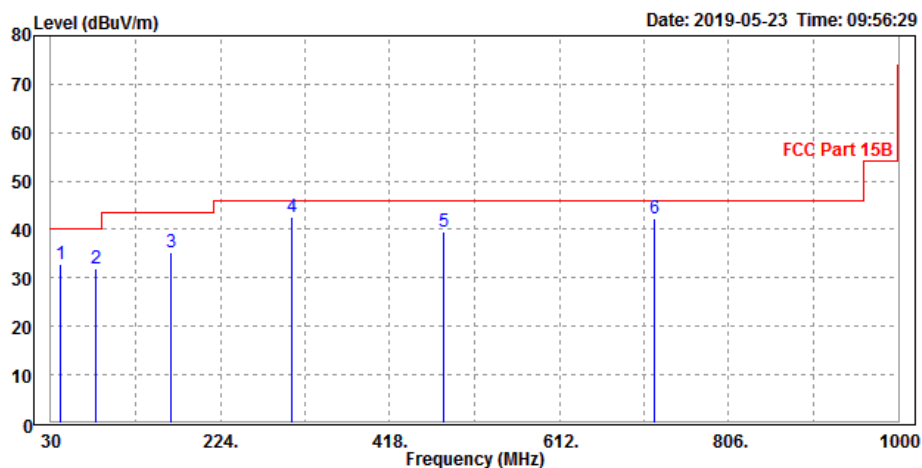


Mode 16

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	Tony		

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
41.01	32.99	57.25	40	-7.01	12.29	0.94	37.49	200	200	QP
82.02	31.89	59.81	40	-8.11	8.18	1.22	37.32	165	290	QP
167.74	35.21	59.81	43.5	-8.29	10.42	1.68	36.7	200	290	QP
305.48	42.48	62.73	46	-3.52	14.27	2.23	36.75	185	251	QP
480.08	39.51	55.32	46	-6.49	18.24	2.92	36.97	172	233	QP
720.64	42.16	53.05	46	-3.84	23.08	3.6	37.57	110	282	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.

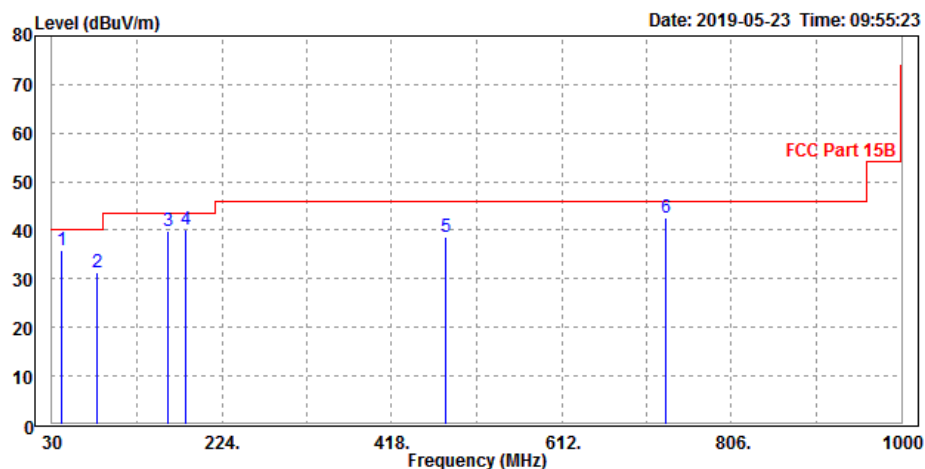


TEST VOLTAGE	Data trasmission Input 120 Vac, 60 Hz	FREQUENCY RANGE	30-1000 MHz
ENVIRONMENTAL CONDITIONS	23deg. C, 70 %RH	DETECTOR FUNCTION & RESOLUTION BANDWIDTH	Quasi-Peak, 120 kHz
TESTED BY	Tony		

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
41.27	35.87	60.26	40	-4.13	12.15	0.94	37.48	100	320	QP
81.68	31.43	59.19	40	-8.57	8.35	1.21	37.32	177	181	QP
162.89	39.78	64.43	43.5	-3.72	10.4	1.67	36.72	166	103	QP
183.26	40.21	64.66	43.5	-3.29	10.47	1.71	36.63	200	251	QP
480.08	38.76	54.39	46	-7.24	18.42	2.92	36.97	200	124	QP
730.34	42.7	53.52	46	-3.3	23.12	3.64	37.58	200	132	QP

REMARKS:

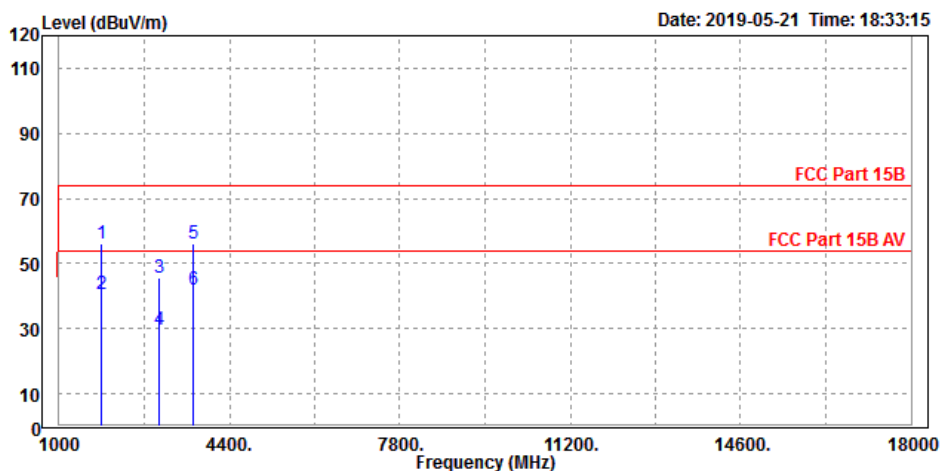
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
2. Negative sign (-) in the margin column signify levels below the limit.
3. Frequency range scanned: 30MHz to 1000MHz.
4. Only emissions significantly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

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
1833	56.02	62.05	74	-17.98	31.1	4.2	41.33	100	360	Peak
1833	40.4	46.43	54	-13.6	31.1	4.2	41.33	100	360	Average
2989	45.5	48.21	74	-28.5	33.4	5.51	41.62	100	360	Peak
2989	29.45	32.16	54	-24.55	33.4	5.51	41.62	100	360	Average
3669	56.02	56.19	74	-17.98	35.85	5.76	41.78	100	360	Peak
3669	41.95	42.12	54	-12.05	35.85	5.76	41.78	100	360	Average

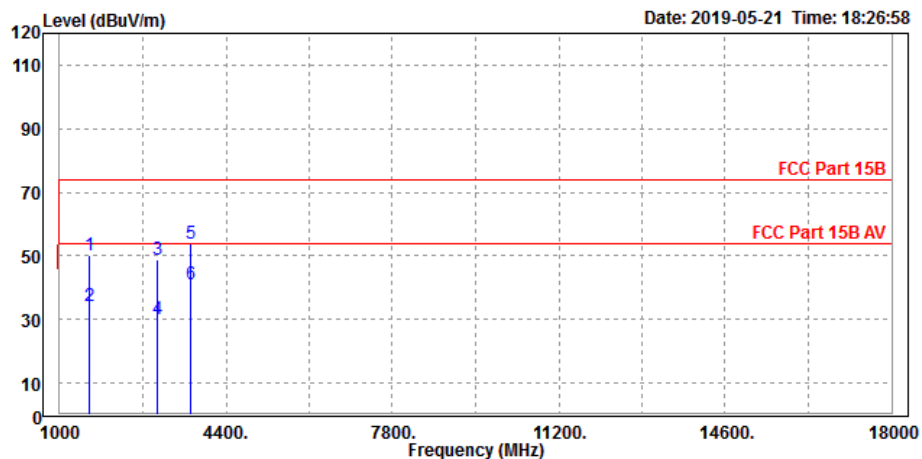
- REMARKS:**
1. Peak detector quick scan is showed on the graph and final quasi-peak detector data is measured corresponding to relevant limit and recorded in the data table.
 2. Negative sign (-) in the margin column signify levels below the limit.
 3. Frequency range scanned: 1GHz to 18GHz.
 4. Only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

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
1595	49.99	57.69	74	-24.01	29.74	3.83	41.27	100	0	Peak
1595	34.31	42.01	54	-19.69	29.74	3.83	41.27	100	0	Average
2989	49.01	52.33	74	-24.99	32.79	5.51	41.62	100	0	Peak
2989	29.97	33.29	54	-24.03	32.79	5.51	41.62	100	0	Average
3669	54.02	55.66	74	-19.98	34.38	5.76	41.78	100	0	Peak
3669	40.84	42.48	54	-13.16	34.38	5.76	41.78	100	0	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 18GHz.
 4. Only emissions significantly above equipment noise floor are reported.





Test Report No.: FV190418W001

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---