FCC RADIO TEST REPORT

Applicant	:	ELO TOUCH SOLUTIONS, INC.
Address	:	670 N. McCarthy Blvd., Suite 100 Milpitas, CA 95035 USA
Equipment	:	Touch All-in-One Computer
Model No.	:	ESY15I1E-C
Trade Name	:	Elo or elo
FCC ID	:	RBWESY15I1EC

I HEREBY CERTIFY THAT :

The sample was received on Jun. 27, 2024 and the testing was completed on Aug. 24, 2024 at Cerpass Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of Cerpass Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Supervisor

Laboratory Accreditation:

Cerpass Technology Corporation Test Laboratory

Contents

History of this test report

Report No.	Issued Date	Description
24060472-TRFCC07	Sep. 30, 2024	Original

1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.10:2013

. Description of Test	Result
. CO-LOCATION	PASS

*The lab has reduced the uncertainty risk factor from test equipment, environment and staff technicians which according to the standard on contract. Therefore, the test result will only be determined by standard requirement,measurement uncertainty evaluation is not considered.

2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Operation Frequency Range	BT / BLE: 2400-2483.5MHz WLAN:802.11b/g/n/ax: 2400-2483.5MHz 5GHz:802.11a/n/ac/ax:5150-5250MHz, 5250-5350MHz, 5470-5725MHz, 5725-5875MHz 6GHz: 802.11a/ax: 5925MHz~6425MHz, 6425MHz~6525MHz 6525MHz~6875MHz, 6875MHz~7125MHz
Center Frequency Range	BT / BLE: 2402MHz-2480MHz WLAN:802.11b/g/n/ax: 2412MHz-2462MHz 5GHz:802.11a/n/ac/ax:5180-5240MHz, 5260-5320MHz, 5500-5720MHz, 5745-5825MHz 6GHz: 802.11a/ax: 5955MHz~6415MHz, 6435MHz~6515MHz 6535MHz~6855MHz, 6875MHz~7115MHz
Modulation Type	BT: GFSK, π/4-DQPSK, 8DPSK BLE: GFSK WLAN: 2.4GHz: 802.11b: CCK, DQPSK, DBPSK 802.11g/n: BPSK, QPSK, 16QAM, 64QAM 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM 5GHz: 802.11a/n: BPSK, QPSK, 16QAM, 64QAM 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM 6GHz 802.11a: BPSK, QPSK, 16QAM, 64QAM 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Modulation Technology	DSSS, OFDM, FHSS, DTS, OFDMA
Data Rate	BT: GFSK: 1Mbps, π/4-DQPSK: 2Mbps, 8DPSK: 3Mbps BLE: GFSK: 1Mbps, 2Mbps WLAN: 2.4GHz: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 802.11ax: MCS0 – MCS11, HE20/40 5GHz: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS15, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40/80/160 802.11ax: MCS0 – MCS11, HE20/40/80/160 6GHz 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11ax: MCS0 – MCS11, HE20/40/80/160
Antenna Type	PIFA Antenna

Antenna Gain	For BT / BLE: 2400-2500MHz: ANT A: 1.97dBi For WLAN: 2400-2500MHz: ANT A: 1.97dBi, ANT B: 1.82dBi 5150-5250MHz: ANT A: 2.73dBi, ANT B: 2.11dBi 5250-5350MHz: ANT A: 2.73dBi, ANT B: 2.54dBi 5470-5725MHz: ANT A: 2.35dBi, ANT B: 2.4dBi 5725-5850MHz: ANT A: 2.4dBi, ANT B: 2.34dBi 5925~6425MHz:ANT A: 2.07dBi, ANT B: 2.48dBi 6425~6525MHz:ANT A: 1.77dBi, ANT B: 1.79dBi 6525~6875MHz:ANT A: 2.43dBi, ANT B: 2.37dBi 6875~7125MHz:ANT A: 2.24dBi, ANT B: 2.19dBi
Adapter	Brand: Delta Model: ADP-150EH B
Adapter	Brand: Delta Model: ADP-65JH HB
Adapter	Brand: Billion Model: BA070-190342MBX
Adapter	Brand: FSP Model: FSP150-AABN3
Power cord (US)	Brand: I-SHENG Model: V44VS336T1218000-A01
Power cord (EU)	Brand: I-SHENG Model: EU85B300S121800
USBC-POS-STAND	Brand: ELO Model: KIT, Z30-POS-Stand-CFD-Gen 2-15
USBC-POS-STAND	Brand: ELO Model: KIT, Z30-POS-STAND-GEN2-15
USBC-IO-HUB	Brand: ELO Model: USBC-IO-HUB-POWER-BARICK-V2
Panel	Brand: AUO Model: A156HAN01.1
Panel	Brand: BOE Model: PV156FHM-N30

Note:
1. EUT support TPC Function.
2. EUT supports DFS Client Mode, without radar detection.
3. WLAN and BT can simultaneously transmission.
4.The device not support Channel Puncturing or Bandwidth Reduction mechanisms supported
5.802.11ax EUT only Support Full RU
6. EUT Operating mode: Indoor Client
7. For more details, please refer to the User's manual of the EUT.

2.2 Test Mode and Test Software

a. During testing, the interface cables and equipment positions were varied according to ANSI C63.4.
b. The complete test system included Notebook and EUT for RF test.
c. An executive program, ”QRCT ver.4.0.211.0” under Windows OS system was executed to transmit and receive data via Bluetooth.
d. An executive program, ”QRCT ver.4.0.211.0” under Windows OS system was executed to transmit and receive data via WLAN.
e. The following test modes were performed for the test:

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	BT GFSK CH39 + 2.4G 11ax20 CH06 With Adapter (AC120V/60Hz)
2	BT GFSK CH39 + 2.4G 11ax20 CH06 With Adapter (AC240V/60Hz)
3	BT GFSK CH39 + 5G 11ax20 CH157 With Adapter (AC120V/60Hz)
4	BT GFSK CH39 + 5G 11ax20 CH157 With Adapter (AC240V/60Hz)
5	BT GFSK CH39 + 6E 11ax160 CH207 With Adapter (AC120V/60Hz)
6	BT GFSK CH39 + 6E 11ax160 CH207 With Adapter (AC240V/60Hz)
caused “Test Mode 1,3,5” generated the worst case, it was reported as the final data.	
Radiation Emissions (9KHz ~30MHz & 30MHz ~ 1GHz)	
Test Mode	Operating Description
1	BT GFSK CH39 + 2.4G 11ax20 CH06 With Adapter (AC120V/60Hz)
2	BT GFSK CH39 + 2.4G 11ax20 CH06 With Adapter (AC240V/60Hz)
3	BT GFSK CH39 + 5G 11ax20 CH157 With Adapter (AC120V/60Hz)
4	BT GFSK CH39 + 5G 11ax20 CH157 With Adapter (AC240V/60Hz)
5	BT GFSK CH39 + 6E 11ax160 CH207 With Adapter (AC120V/60Hz)
6	BT GFSK CH39 + 6E 11ax160 CH207 With Adapter (AC240V/60Hz)
caused “Test Mode 1,3,5” generated the worst case, it was reported as the final data.	
Radiation Emissions (1GHz ~ 40GHz)	
Test Mode	Operating Description
1	BT GFSK CH39 + 2.4G 11ax20 CH06 With Adapter (AC120V/60Hz)
2	BT GFSK CH39 + 5G 11ax20 CH157 With Adapter (AC120V/60Hz)
3	BT GFSK CH39 + 6E 11ax160 CH207 With Adapter (AC120V/60Hz)
caused “Test Mode 1-3” generated the worst case, it was reported as the final data.	

Note:1. There are two kinds of test voltage: AC 120V / 60Hz and AC 240V / 60Hz.
worst case (V)

Test Item /test voltage	AC 120V / 60Hz	AC 240V / 60Hz.
AC Power Line Conducted Emission: SISO ANT/ MIMO ANT	V	
Radiation Emissions (Below 1GHz) : SISO ANT/ MIMO ANT	V	

2.The EUT has Four types of Adapters. After engineering evaluation,
For AC Power Line Conducted Emission, FSP150-AABN3 is worst case.
For Radiated Spurious Emission(9kHz~30MHz,30MHz~1GHz), ADP-65JH is worst case.
For Radiated Spurious Emission(1GHz~40GHz), ADP-150EH B is worst case., hence, are used at test report

Adapter	Brand: Delta Model: ADP-150EH B
Adapter	Brand: Delta Model: ADP-65JH HB
Adapter	Brand: Billion Model: BA070-190342MBX
Adapter	Brand: FSP Model: FSP150-AABN3

3. There are two types of Panels: AUO&BOE. After engineering evaluation, AUO is worst case, hence, is used at test report.

Panel	Brand: AUO Model: A156HAN01.1
	Brand: BOE Model: PV156FHM-N30

4. The EUT has Two types of USBC-POS-STANDS. After engineering evaluation,
For AC Power Line Conducted Emission, KIT, Z30-POS-STAND-GEN2-15 is worst case.
For Radiated Spurious Emission(9kHz~30MHz,30MHz~1GHz), none-docking is worst case.
For Radiated Spurious Emission(1GHz~40GHz), KIT, Z30-POS-STAND-CFD-Gen 2-15 is worst case., hence, are used at test report

USBC-POS-STAND	Brand: ELO Model: KIT, Z30-POS-Stand-CFD-Gen 2-15
USBC-POS-STAND	Brand: ELO Model: KIT, Z30-POS-STAND-GEN2-15

2.3 Description of Test System

Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	DELL	Latitude E5470	N/A	Adapter / 1.8m / NS
Micro USB(Blue)	kolin	KEX-DLCP07	1m / NS	N/A
Flash*4	TranScend	USB3.0 3GB	N/A	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A

AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	DELL	Latitude E5470	N/A	Adapter / 1.8m / NS
Micro USB(White)	kolin	KEX-DLCP07	1m / NS	N/A
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
Cash Drawer	PARTNER	5E415	1.8m / NS	N/A
TYPE-C(Blue)	kolin	KEX-DLCP08	1m / NS	N/A
Flash*4	TranScend	USB3.0 3GB	N/A	N/A
Power USB Panel Type - 24V	TAIMING	Power USB	1.8m / NS	N/A

2.4 General Information of Test

☒ Test Site	Cerpass Technology Corporation Test Laboratory Address: No.10, Ln. 2, Lianfu St., Luzhu Dist., Taoyuan City 33848, Taiwan (R.O.C.) Tel: +886-3-3226-888 Fax: +886-3-3226-881	
	FCC	TW1439, TW1079
	IC	4934E-1, 4934E-2
Frequency Range Investigated	Conducted: from 150kHz to 30 MHz Radiation: from 30 MHz to 40,000MHz	
Test Distance	The test distance of radiated emission from antenna to EUT is 3 M.	

Test Item	Test Site	Test Period	Environmental Conditions	Tested By
Radiated Emissions	3M02-NK	2024/08/08	21.8°C / 46%	Leon Huang
AC Power Line Conducted Emission	CON02-NK	2024/08/23	25.3°C / 53%	Leon Huang
AC Power Line Conducted Emission	CON02-NK	2024/08/24	26.5°C / 43%	Leon Huang

2.5 Measurement Uncertainty

ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report. The measurement uncertainties given below are based on a 95% confidence level (based on a coverage factor (k=2)

2.4G/5G

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±3.12dB
Radiated Spurious Emission(9KHz~30MHz)	±3.5dB
Radiated Spurious Emission(30MHz~1GHz)	±5.1dB
Radiated Spurious Emission(1GHz~40GHz)	±5.2dB
6dB Bandwidth	±5.4%
26dB Bandwidth	±4.4%
Occupied Bandwidth	±4.5%
Peak Output Power(Conducted Power Meter)	±1.1dB
Power Spectral Density	±2.0dB
Duty Cycle	±3.5%
Frequency Stability	±0.23KHz

6E

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±3.12dB
Radiated Spurious Emission(9KHz~30MHz)	±3.4dB
Radiated Spurious Emission(30MHz~1GHz)	±5.7dB
Radiated Spurious Emission(1GHz~40GHz)	±6.8dB
6dB Bandwidth	±4.4%
26dB Bandwidth	±4.4%
Occupied Bandwidth	±4.4%
Peak Output Power(Conducted Power Meter)	±1.1dB
Power Spectral Density	±1.8dB
Duty Cycle	±1.2%
Frequency Stability	±0.21KHz

3. Test Equipment and Ancillaries Used for Tests

Test Item	Radiated Emissions				
Test Site	Semi Anechoic Room(3M02-NK)				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Bilog Antenna	Schwarzbeck	VULB9168	369	2024/02/19	2025/02/18
Active Loop Antenna	Schwarzbeck	FMZB 1513	414	2024/01/16	2025/01/15
Horn Antenna	EMCO	3115	31589	2024/02/26	2025/02/25
Horn Antenna	EMCO	3116	31974	2023/10/16	2024/10/15
EMI Receiver	ROHDE & SCHWARZ	ESR 7	101906	2024/05/13	2025/05/12
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	101329	2024/07/16	2025/07/15
Preamplifier	Agilent	8449B	3008A01954	2024/03/01	2025/02/28
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2023/10/13	2024/10/12
Preamplifier	EM Electronics corp.	EM330	60659	2024/02/17	2025/02/16
Cable-6m(9k~300M)	N/A	EMC5D-BM-BM-6	130606	2024/03/13	2025/03/12
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2024/02/23	2025/02/22
Cable-0.5m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805443/4	2024/03/05	2025/03/04
Cable-3m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805796/4	2024/03/05	2025/03/04
Cable-8m(1G-26.5G)	WOKEN	WCBA-WCA203SM	CCE1374	2024/03/05	2025/03/04
Cable-1m(1G-40G)	HUBER SUHNER	HUBER SUHNER / SF102	804398/2	2023/10/12	2024/10/11
Cable-3m(1G-40G)	HUBER SUHNER	HUBER SUHNER / SF102	804619/2	2023/10/12	2024/10/11
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA
Highpass Filter	Warison	WFIL-H3000-18000F-03	WRJ5CFWC2J1	2024/07/03	2025/07/02
Notch Filter	Warison	WFIL-N5925-7125F-04	WRQ4BFWC4M1	2024/03/11	2025/03/10
Hipass Filter	Warison	WFIL-H7500-18000F	WRQ4BFWC2J1	2024/03/11	2025/03/10

Test Item	AC Power Line Conducted Emission				
Test Site	CON02-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EMI Receiver	ROHDE & SCHWARZ	ESR 7	101906	2024/05/13	2025/05/12
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127740	2023/08/28	2024/08/27
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127516	2023/10/03	2024/10/02
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	101934	2024/03/01	2025/02/28
Cable-6m(9k~300M)	N/A	EMC5D-BM-BM-6	130606	2024/03/13	2025/03/12
E3	AUDIX	v8.2014-8-6	RK-000536	NA	NA

4. Test of AC Power Line Conducted Emission

4.1 Test Limit

Conducted Emissions were measured from 150 kHz to 30 MHz with a bandwidth of 9 KHz, according to the methods defined in ANSI C63.10-2013. The EUT was placed on a nonmetallic stand in a shielded room 0.8 meters above the ground plane. The interface cables and equipment positioning were varied within limits of reasonable applications to determine the position produced maximum conducted emissions.

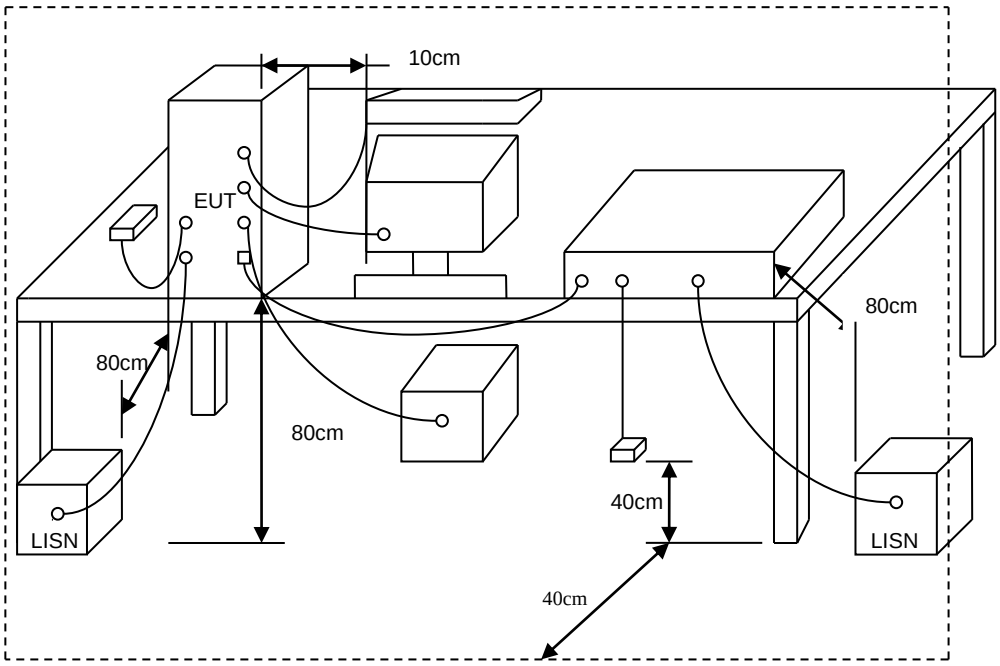
Frequency (MHz)	Quasi Peak (dB μ V)	Average (dB μ V)
0.15 – 0.5	66-56*	56-46*
0.5 – 5.0	56	46
5.0 – 30.0	60	50

*Decreases with the logarithm of the frequency.

4.2 Test Procedures

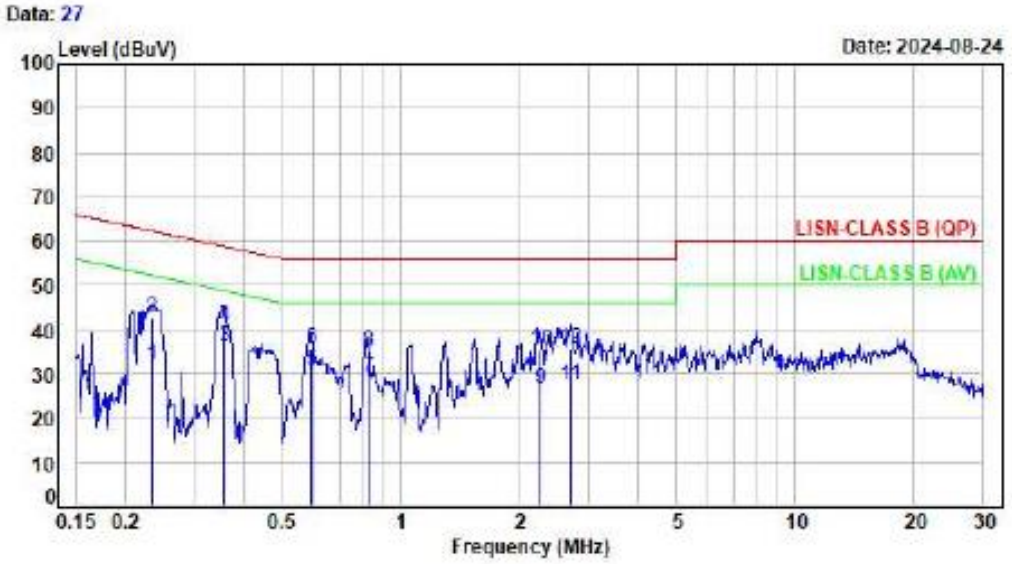
a. The EUT was placed 0.4 meter from the conducting wall of the shielding room was kept at least 80 centimeters from any other grounded conducting surface.
b. Connect EUT to the power mains through a line impedance stabilization network (LISN).
c. All the support units are connecting to the other LISN.
d. The LISN provides 50 ohm coupling impedance for the measuring instrument.
e. The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
f. Both sides of AC line were checked for maximum conducted interference.
g. The frequency range from 150 kHz to 30 MHz was searched.
h. Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.

4.3 Typical Test Setup



4.4 Test Result and Data

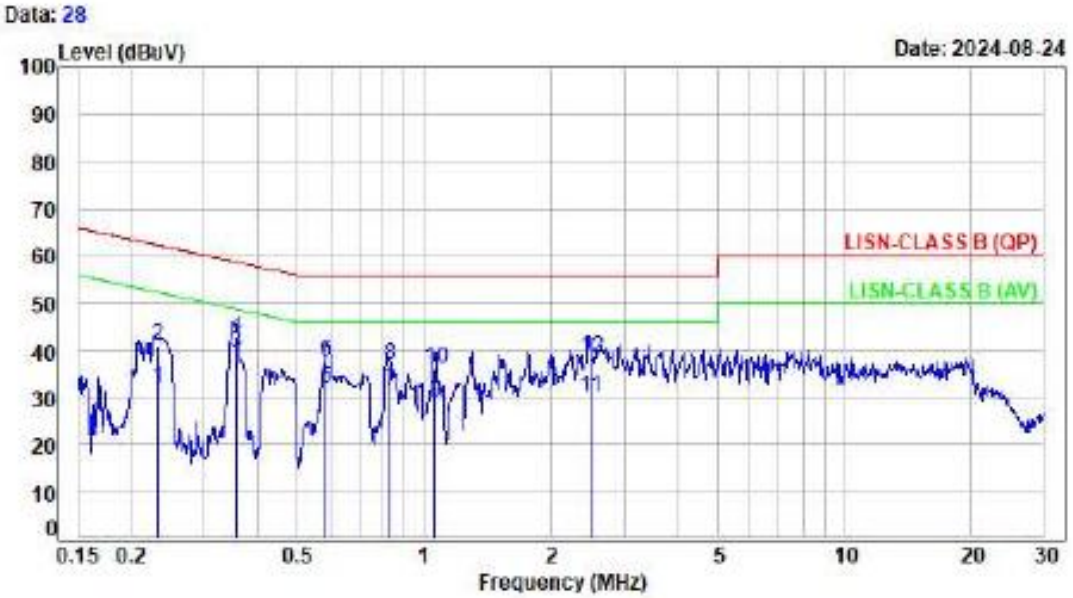
Test Mode : 2TX 11ax20 CH06+BT 1TX CH39 1Mbps
Voltage : From Adapter(AC 120V/60Hz)
Phase : Line



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2331	9.92	22.01	31.93	52.34	-20.41	Average	P
2	0.2331	9.92	32.81	42.73	62.34	-19.61	QP	P
3	0.3560	9.93	26.19	36.12	48.82	-12.70	Average	P
4	0.3560	9.93	30.84	40.77	58.82	-18.05	QP	P
5	0.5924	9.93	20.83	30.76	46.00	-15.24	Average	P
6	0.5924	9.93	25.63	35.56	56.00	-20.44	QP	P
7	0.8312	9.95	19.16	29.11	46.00	-16.89	Average	P
8	0.8312	9.95	25.20	35.15	56.00	-20.85	QP	P
9	2.2559	10.02	16.72	26.74	46.00	-19.26	Average	P
10	2.2559	10.02	25.50	35.52	56.00	-20.48	QP	P
11	2.6866	10.04	17.33	27.37	46.00	-18.63	Average	P
12	2.6866	10.04	25.55	35.59	56.00	-20.41	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

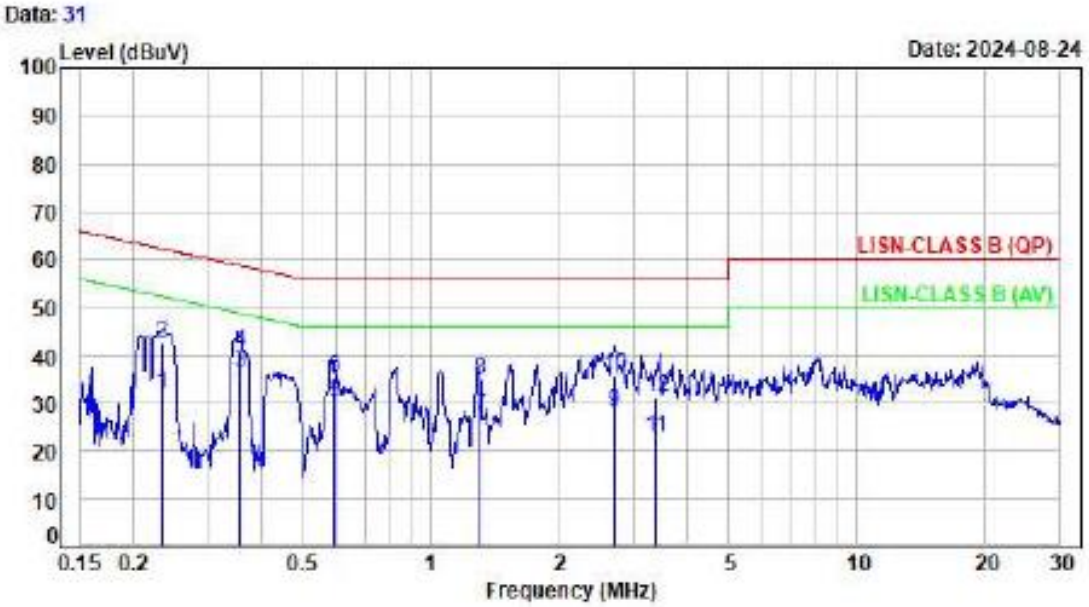
Test Mode : 2TX 11ax20 CH06+BT 1TX CH39 1Mbps
Voltage : From Adapter(AC 120V/60Hz)
Phase : Neutral



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2313	9.94	22.07	32.01	52.40	-20.39	Average	P
2	0.2313	9.94	31.01	40.95	62.40	-21.45	QP	P
3	0.3558	9.96	29.53	39.49	48.83	-9.34	Average	P
4	0.3558	9.96	32.67	42.63	58.83	-16.20	QP	P
5	0.5840	9.96	21.90	31.86	46.00	-14.14	Average	P
6	0.5840	9.96	27.85	37.81	56.00	-18.19	QP	P
7	0.8300	9.98	21.07	31.05	46.00	-14.95	Average	P
8	0.8300	9.98	27.01	36.99	56.00	-19.01	QP	P
9	1.0652	9.99	19.01	29.00	46.00	-17.00	Average	P
10	1.0652	9.99	26.08	36.07	56.00	-19.93	QP	P
11	2.4902	10.04	20.01	30.05	46.00	-15.95	Average	P
12	2.4902	10.04	28.43	38.47	56.00	-17.53	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

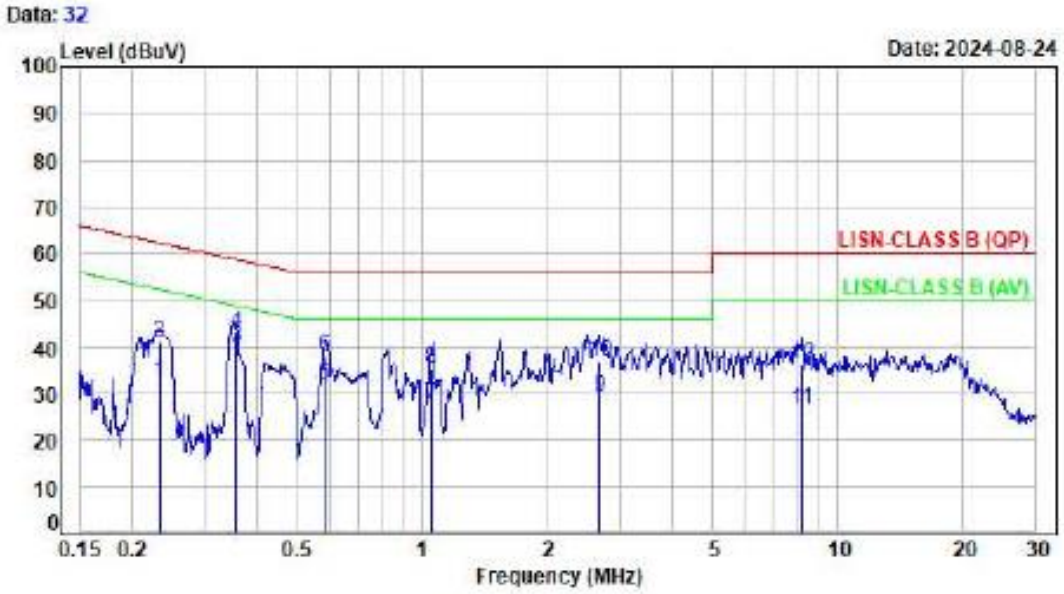
Test Mode : 2TX 11ax20 CH157+BT 1TX CH39 1Mbps
Voltage : From Adapter(AC 120V/60Hz)
Phase : Line



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2331	9.92	21.99	31.91	52.34	-20.43	Average	P
2	0.2331	9.92	32.75	42.67	62.34	-19.67	QP	P
3	0.3553	9.93	26.57	36.50	48.84	-12.34	Average	P
4	0.3553	9.93	30.86	40.79	58.84	-18.05	QP	P
5	0.5937	9.93	20.17	30.10	46.00	-15.90	Average	P
6	0.5937	9.93	25.60	35.53	56.00	-20.47	QP	P
7	1.3031	9.98	17.31	27.29	46.00	-18.71	Average	P
8	1.3031	9.98	24.85	34.83	56.00	-21.17	QP	P
9	2.6879	10.04	17.95	27.99	46.00	-18.01	Average	P
10	2.6879	10.04	25.82	35.86	56.00	-20.14	QP	P
11	3.3853	10.06	12.67	22.73	46.00	-23.27	Average	P
12	3.3853	10.06	21.30	31.36	56.00	-24.64	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

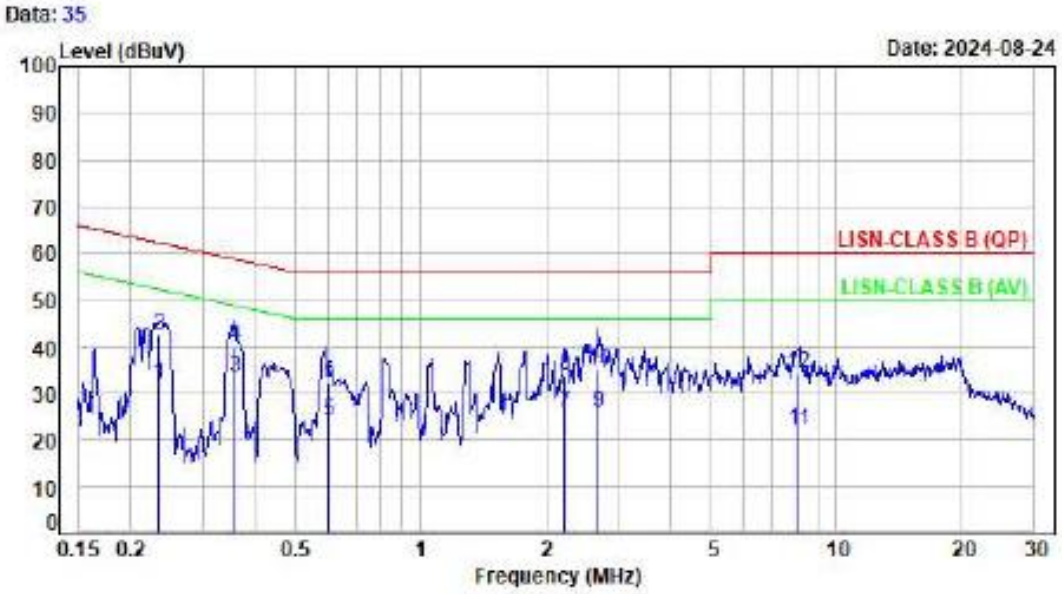
Test Mode : 2TX 11ax20 CH157+BT 1TX CH39 1Mbps
Voltage : From Adapter(AC 120V/60Hz)
Phase : Neutral



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2328	9.94	22.51	32.45	52.35	-19.90	Average	P
2	0.2328	9.94	31.02	40.96	62.35	-21.39	QP	P
3	0.3554	9.96	29.81	39.77	48.83	-9.06	Average	P
4	0.3554	9.96	32.88	42.84	58.83	-15.99	QP	P
5	0.5848	9.96	21.80	31.76	46.00	-14.24	Average	P
6	0.5848	9.96	27.88	37.84	56.00	-18.16	QP	P
7	1.0507	9.99	17.66	27.65	46.00	-18.35	Average	P
8	1.0507	9.99	25.51	35.50	56.00	-20.50	QP	P
9	2.6732	10.06	19.04	29.10	46.00	-16.90	Average	P
10	2.6732	10.06	26.95	37.01	56.00	-18.99	QP	P
11	8.1862	10.26	16.36	26.62	50.00	-23.38	Average	P
12	8.1862	10.26	25.93	36.19	60.00	-23.81	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

Test Mode : 2TX 11ax160 CH207+BT 1TX CH39 1Mbps
Voltage : From Adapter(AC 120V/60Hz)
Phase : Line

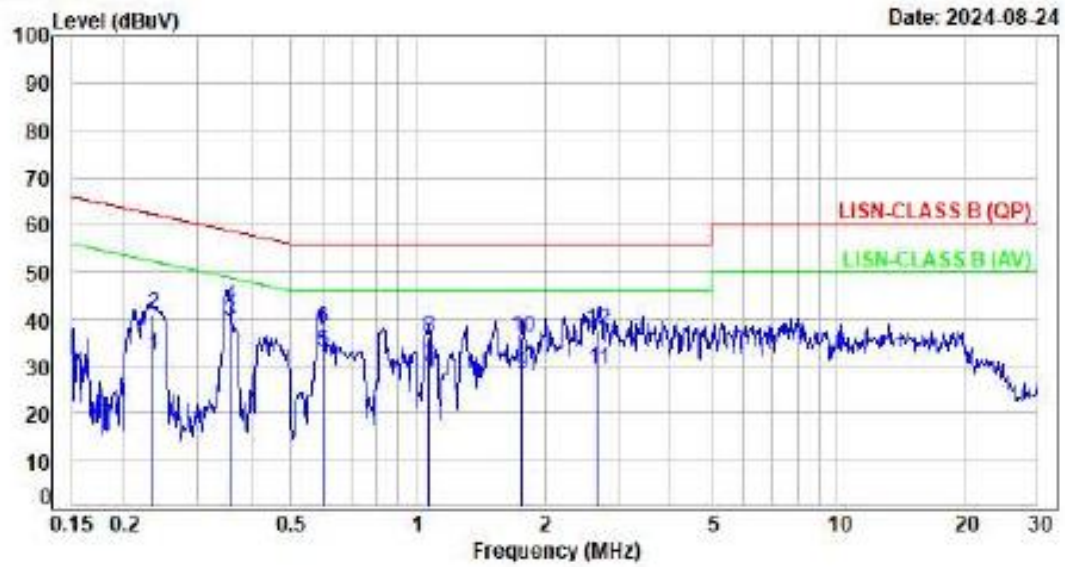


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2335	9.92	22.06	31.98	52.32	-20.34	Average	P
2	0.2335	9.92	32.75	42.67	62.32	-19.65	QP	P
3	0.3582	9.93	23.72	33.65	48.77	-15.12	Average	P
4	0.3582	9.93	29.92	39.85	58.77	-18.92	QP	P
5	0.5979	9.94	14.08	24.02	46.00	-21.98	Average	P
6	0.5979	9.94	22.40	32.34	56.00	-23.66	QP	P
7	2.2226	10.02	16.02	26.04	46.00	-19.96	Average	P
8	2.2226	10.02	23.77	33.79	56.00	-22.21	QP	P
9	2.6702	10.04	15.76	25.80	46.00	-20.20	Average	P
10	2.6702	10.04	25.03	35.07	56.00	-20.93	QP	P
11	8.0452	10.26	11.88	22.14	50.00	-27.86	Average	P
12	8.0452	10.26	24.10	34.36	60.00	-25.64	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

Test Mode : 2TX 11ax160 CH207+8T 1TX CH39 1Mbps
Voltage : From Adapter(AC 120V/60Hz)
Phase : Neutral

Data: 36



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.2330	9.94	22.52	32.46	52.34	-19.88	Average	P
2	0.2330	9.94	30.98	40.92	62.34	-21.42	QP	P
3	0.3558	9.96	29.59	39.55	48.83	-9.28	Average	P
4	0.3558	9.96	32.81	42.77	58.83	-16.06	QP	P
5	0.5931	9.96	23.15	33.11	46.00	-12.89	Average	P
6	0.5931	9.96	28.18	38.14	56.00	-17.86	QP	P
7	1.0666	9.99	19.59	29.58	46.00	-16.42	Average	P
8	1.0666	9.99	26.13	36.12	56.00	-19.88	QP	P
9	1.7769	10.02	18.21	28.23	46.00	-17.77	Average	P
10	1.7769	10.02	26.16	36.18	56.00	-19.82	QP	P
11	2.6825	10.06	19.38	29.44	46.00	-16.56	Average	P
12	2.6825	10.06	27.50	37.56	56.00	-18.44	QP	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=(LISN or ISN or Current Probe)Factor + Cable Loss

5. Test of Spurious Emission (Radiated)

5.1 Test Limit

In any 100kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement. If the transmitter measurement is based on the maximum conducted output power, the attenuation required under this paragraph shall be 30dB instead of 20dB. In addition, radiated emissions which fall in section 15.205(a) the restricted bands must also comply with the radiated emission limit specified in section 15.209(a).

Frequency (MHz)	Field Strength (microvolt/meter)	Measurement Distance (meters)
0.009 ~ 0.490	2400/F(kHz)	300
0.490 ~ 1.705	24000/F(kHz)	30
1.705 ~ 30.0	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 960	200	3
Above 960	500	3

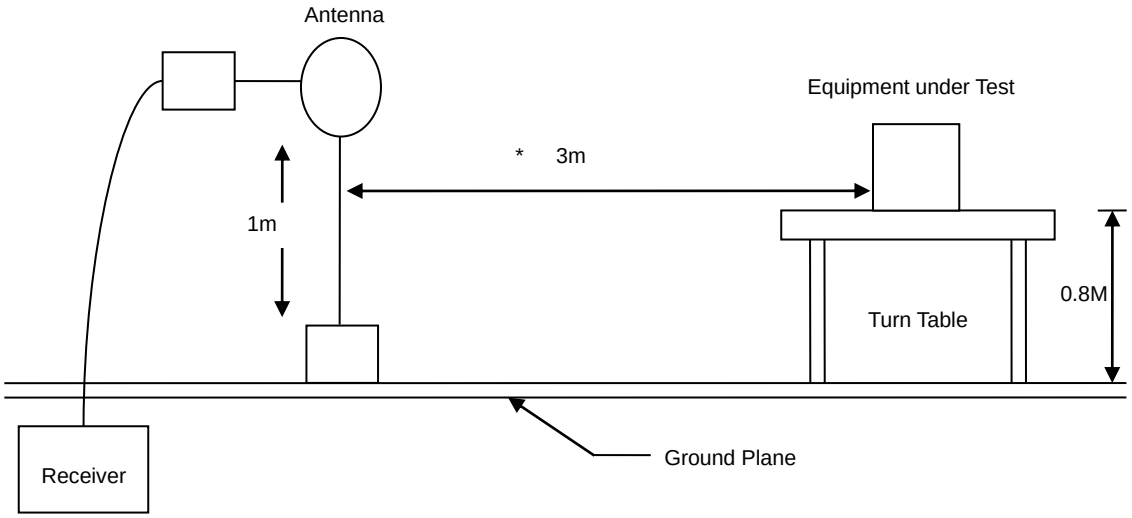
5.2 Test Procedures

a. The EUT was placed on a rotatable table top 0.8 meter above ground.
b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
c. The table was rotated 360 degrees to determine the position of the highest radiation.
d. The antenna is a broadband antenna and its height is varied between one meter and four meters above ground to find the maximum value of the field strength both horizontal polarization and vertical polarization of the antenna are set to make the measurement.
e. For each suspected emission the EUT was arranged to its worst case and then tune the antenna tower (from 1 M to 4 M) and turn table (from 0 degree to 360 degrees) to find the maximum reading.
f. Set the test-receiver system to Peak or CISPR quasi-peak Detect Function and specified bandwidth with Maximum Hold Mode.
g. If the emission level of the EUT in peak mode was 3 dB lower than the limit specified, then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions which do not have 3 dB margin will be repeated one by one using the quasi-peak method and reported.
h. For testing above 1GHz, the emission level of the EUT in peak mode was 20dB lower than average limit (that means the emission level in peak mode also complies with the limit in average mode), then testing will be stopped and peak values of EUT will be reported, otherwise, the emissions will be measured in average mode again and reported.
i. “Cone of radiation” has been considered to be 3dB bandwidth of the measurement antenna.

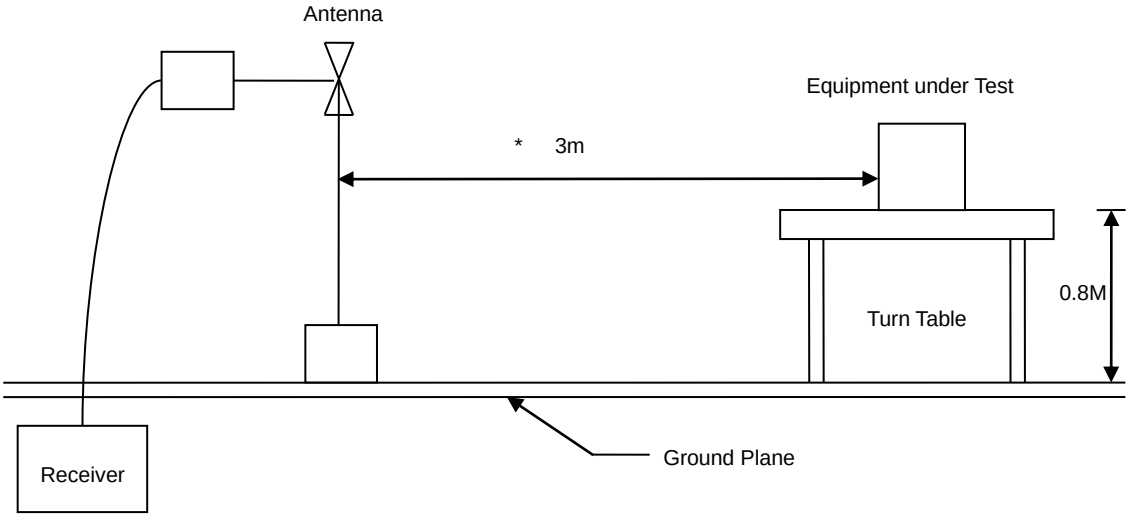
Note: The supporting fixture shall permit orientation of the EUT in each of three orthogonal axis positions such that emissions from the EUT are maximized.

5.3 Typical Test Setup

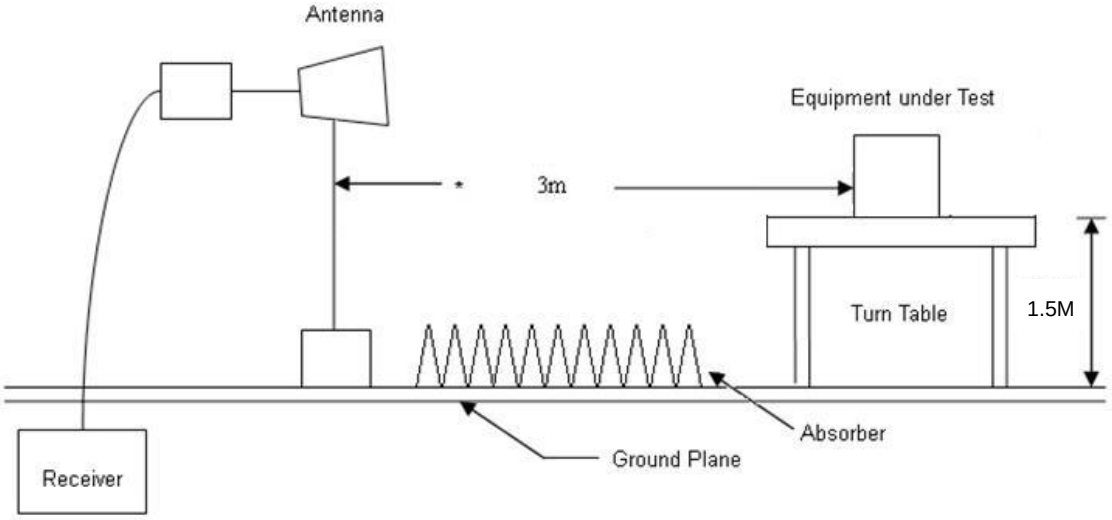
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup

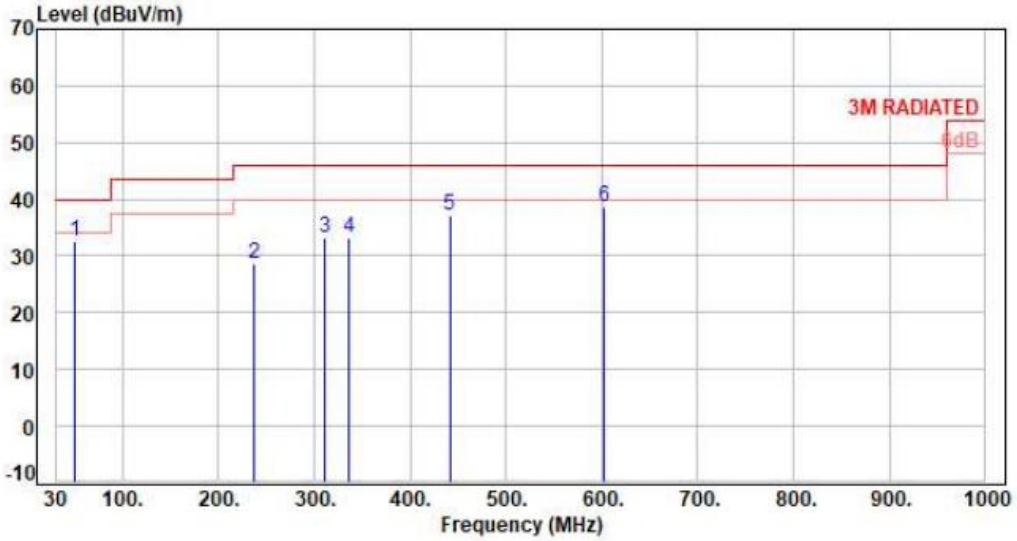


5.4 Test Result and Data (9kHz ~ 30MHz)

The 9kHz - 30MHz spurious emission is under limit 20dB more.

5.5 Test Result and Data (30MHz ~ 1GHz)

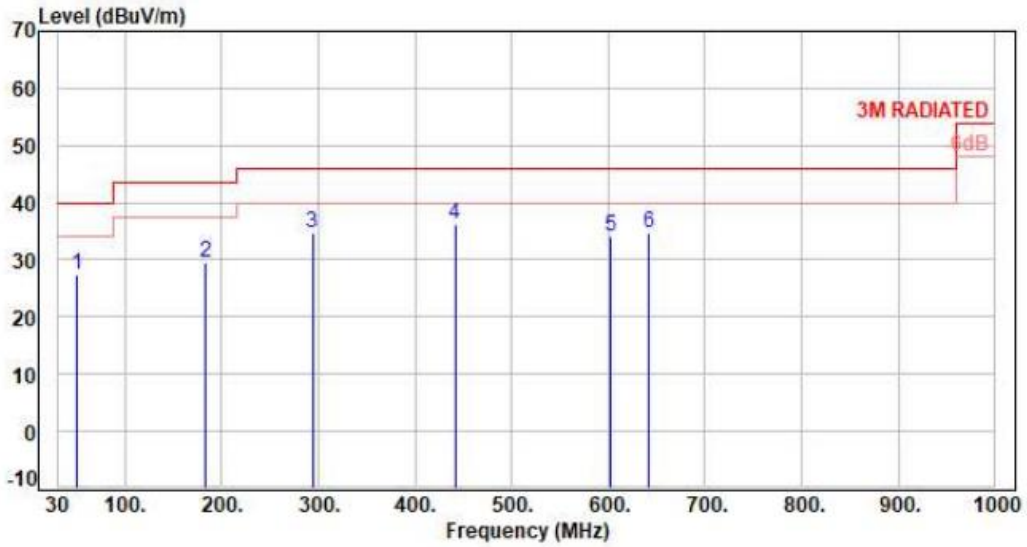
Test Mode : 2TX 11ax20 CH06 +BT 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	49.40	-9.20	41.89	32.69	40.00	-7.31	Peak	400	360	P
2	237.58	-10.61	39.14	28.53	46.00	-17.47	Peak	400	360	P
3	311.30	-8.23	41.35	33.12	46.00	-12.88	Peak	400	360	P
4	336.52	-7.42	40.58	33.16	46.00	-12.84	Peak	400	360	P
5	441.28	-4.58	41.83	37.25	46.00	-8.75	Peak	400	360	P
6	602.30	-0.74	39.27	38.53	46.00	-7.47	Peak	400	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

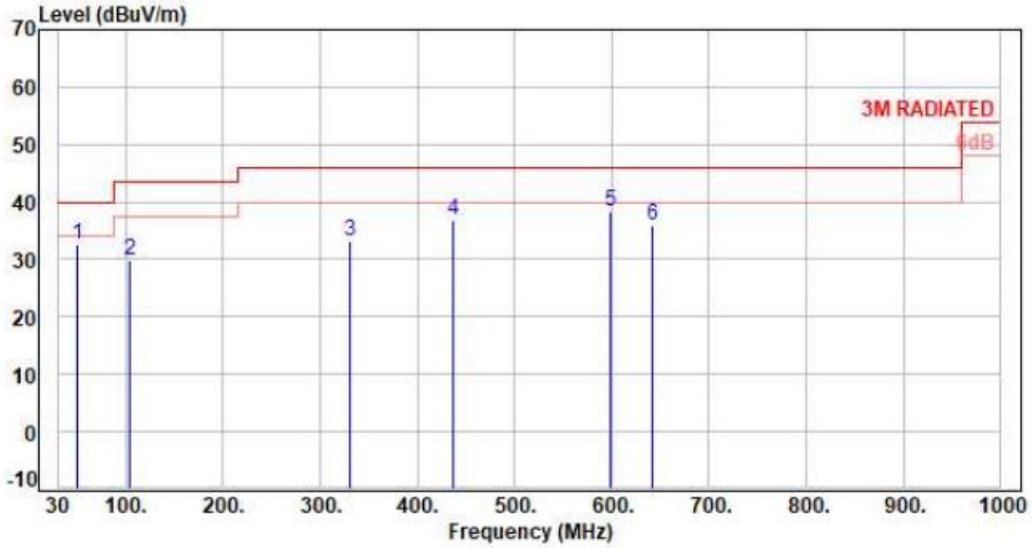
Test Mode : 2TX 11ax20 CH06 +BT 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	49.40	-9.20	36.56	27.36	40.00	-12.64	Peak	400	360	P
2	183.26	-10.97	40.65	29.68	43.50	-13.82	Peak	400	360	P
3	293.84	-8.64	43.42	34.78	46.00	-11.22	Peak	400	360	P
4	441.28	-4.58	40.76	36.18	46.00	-9.82	Peak	400	360	P
5	602.30	-0.74	35.00	34.26	46.00	-11.74	Peak	400	360	P
6	641.10	-0.33	35.15	34.82	46.00	-11.18	Peak	400	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

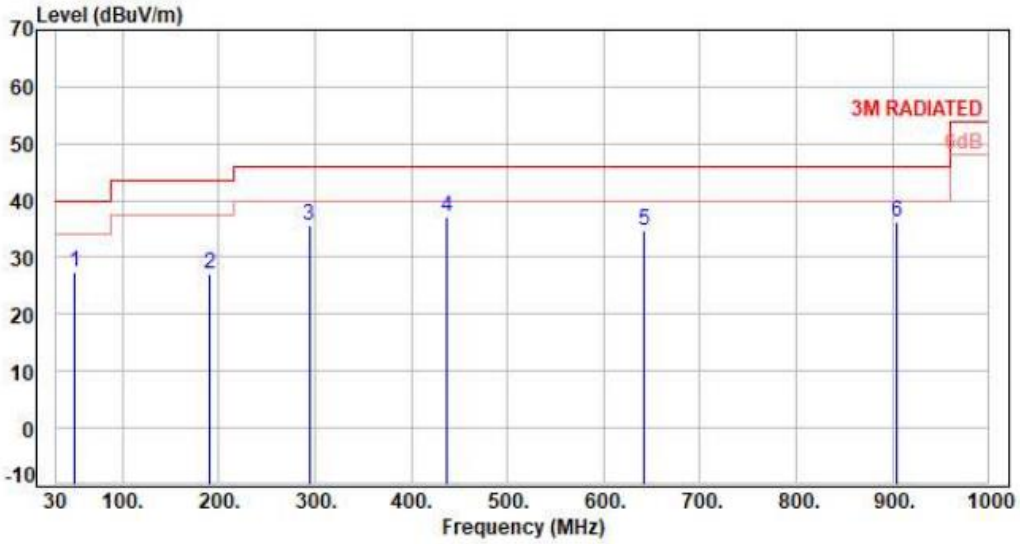
Test Mode : 2TX 11ax20 CH157+BT 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	49.40	-9.20	41.75	32.55	40.00	-7.45	Peak	400	360	P
2	103.72	-13.70	43.59	29.89	43.50	-13.61	Peak	400	360	P
3	330.70	-7.57	40.64	33.07	46.00	-12.93	Peak	400	360	P
4	437.40	-4.72	41.69	36.97	46.00	-9.03	Peak	400	360	P
5	598.42	-0.84	39.18	38.34	46.00	-7.66	Peak	400	360	P
6	641.10	-0.33	36.32	35.99	46.00	-10.01	Peak	400	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

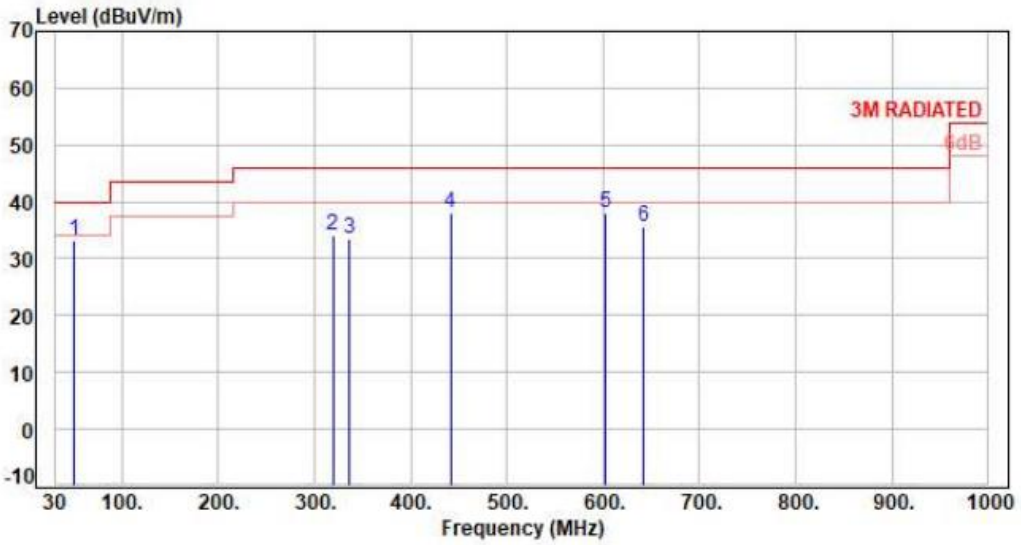
Test Mode : 2TX 11ax20 CH157+BT 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	49.40	-9.20	36.73	27.53	40.00	-12.47	Peak	400	360	P
2	191.02	-11.60	38.76	27.16	43.50	-16.34	Peak	400	360	P
3	293.84	-8.64	44.32	35.68	46.00	-10.32	Peak	400	360	P
4	437.40	-4.72	42.00	37.28	46.00	-8.72	Peak	400	360	P
5	641.10	-0.33	35.05	34.72	46.00	-11.28	Peak	400	360	P
6	904.94	3.82	32.45	36.27	46.00	-9.73	Peak	400	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

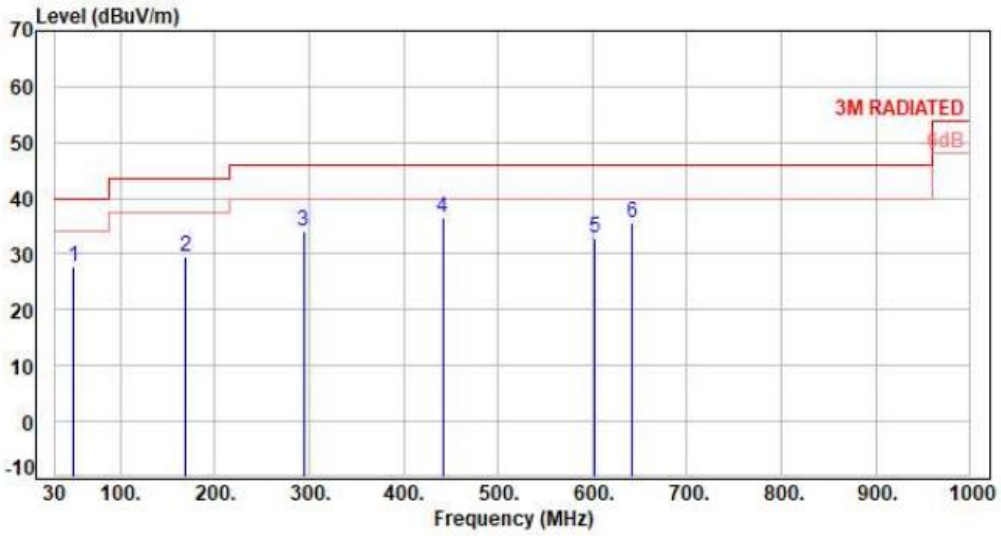
Test Mode : 2TX 11ax160 CH207+BT 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	49.40	-9.20	42.36	33.16	40.00	-6.84	Peak	400	360	P
2	319.06	-7.96	41.95	33.99	46.00	-12.01	Peak	400	360	P
3	336.52	-7.42	40.80	33.38	46.00	-12.62	Peak	400	360	P
4	441.28	-4.58	42.54	37.96	46.00	-8.04	Peak	400	360	P
5	602.30	-0.74	38.81	38.07	46.00	-7.93	Peak	400	360	P
6	641.10	-0.33	36.02	35.69	46.00	-10.31	Peak	400	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

Test Mode : 2TX 11ax160 CH207+BT 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Horizontal

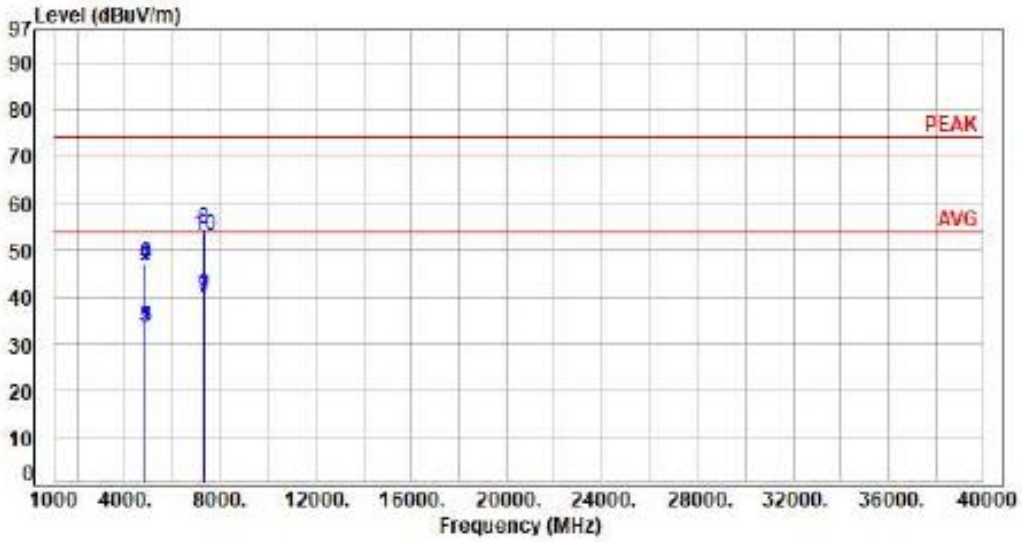


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	49.40	-9.20	37.04	27.84	40.00	-12.16	Peak	400	360	P
2	169.68	-9.71	39.10	29.39	43.50	-14.11	Peak	400	360	P
3	293.84	-8.64	42.73	34.09	46.00	-11.91	Peak	400	360	P
4	441.28	-4.58	40.98	36.40	46.00	-9.60	Peak	400	360	P
5	602.30	-0.74	33.69	32.95	46.00	-13.05	Peak	400	360	P
6	641.10	-0.33	35.96	35.63	46.00	-10.37	Peak	400	360	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

5.6 Test Result and Data (1GHz ~ 40GHz)

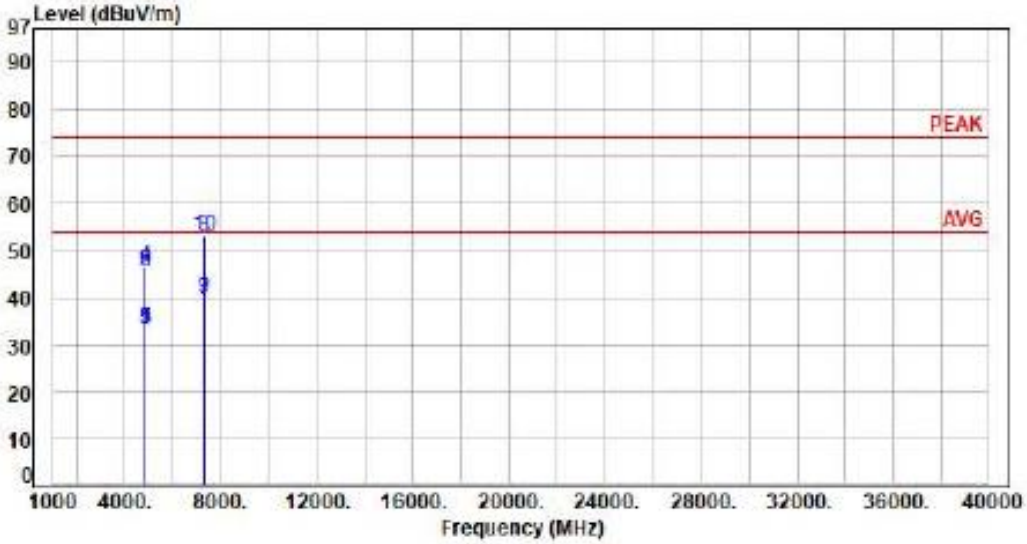
Test Mode : 2TX 11ax20 CH06 +BT 1TX CH39 1Mbps
Voltage : From Adapter(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4874.00	6.13	27.30	33.43	54.00	-20.57	Average	100	159	P
2	4874.00	6.13	40.45	46.58	74.00	-27.42	Peak	100	159	P
3	4878.00	6.15	27.36	33.51	54.00	-20.49	Average	100	322	P
4	4878.00	6.15	40.61	46.76	74.00	-27.24	Peak	100	322	P
5	4882.00	6.16	27.33	33.49	54.00	-20.51	Average	100	245	P
6	4882.00	6.16	40.90	47.06	74.00	-26.94	Peak	100	245	P
7	7311.00	11.23	28.77	40.00	54.00	-14.00	Average	100	244	P
8	7311.00	11.23	43.38	54.61	74.00	-19.39	Peak	100	244	P
9	7323.00	11.26	28.85	40.11	54.00	-13.89	Average	100	155	P
10	7323.00	11.26	41.91	53.17	74.00	-20.83	Peak	100	155	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

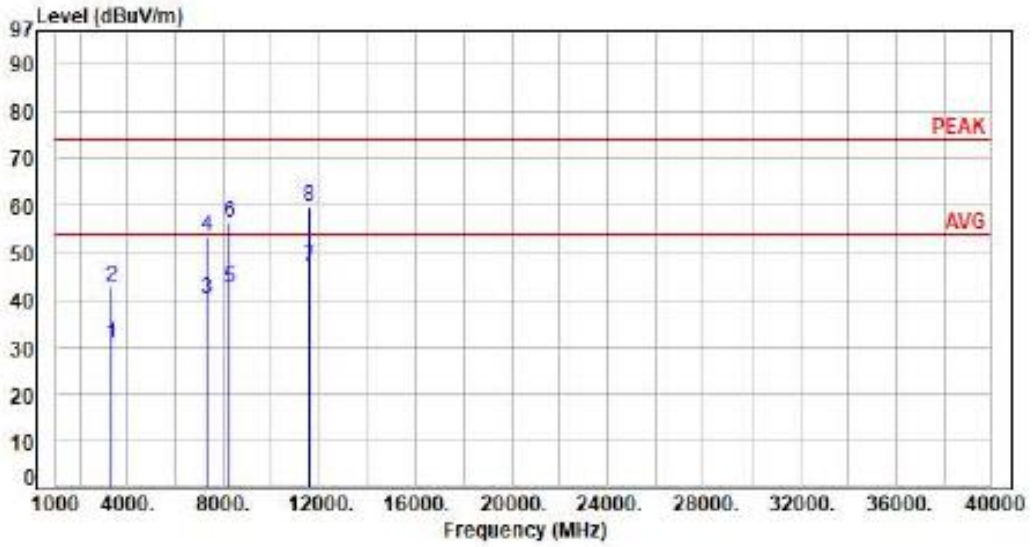
Test Mode : 2TX 11ax20 CH06 +BT 1TX CH39 1Mbps
Voltage : From Adetper(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4874.00	6.13	27.04	33.17	54.00	-20.83	Average	100	168	P
2	4874.00	6.13	39.72	45.85	74.00	-28.15	Peak	100	168	P
3	4878.00	6.15	27.04	33.19	54.00	-20.81	Average	100	135	P
4	4878.00	6.15	40.23	46.38	74.00	-27.62	Peak	100	135	P
5	4882.00	6.16	27.00	33.16	54.00	-20.84	Average	100	234	P
6	4882.00	6.16	39.75	45.91	74.00	-28.09	Peak	100	234	P
7	7311.00	11.23	28.40	39.63	54.00	-14.37	Average	100	213	P
8	7311.00	11.23	41.67	52.90	74.00	-21.10	Peak	100	213	P
9	7323.00	11.26	28.44	39.70	54.00	-14.30	Average	100	311	P
10	7323.00	11.26	41.83	53.09	74.00	-20.91	Peak	100	311	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

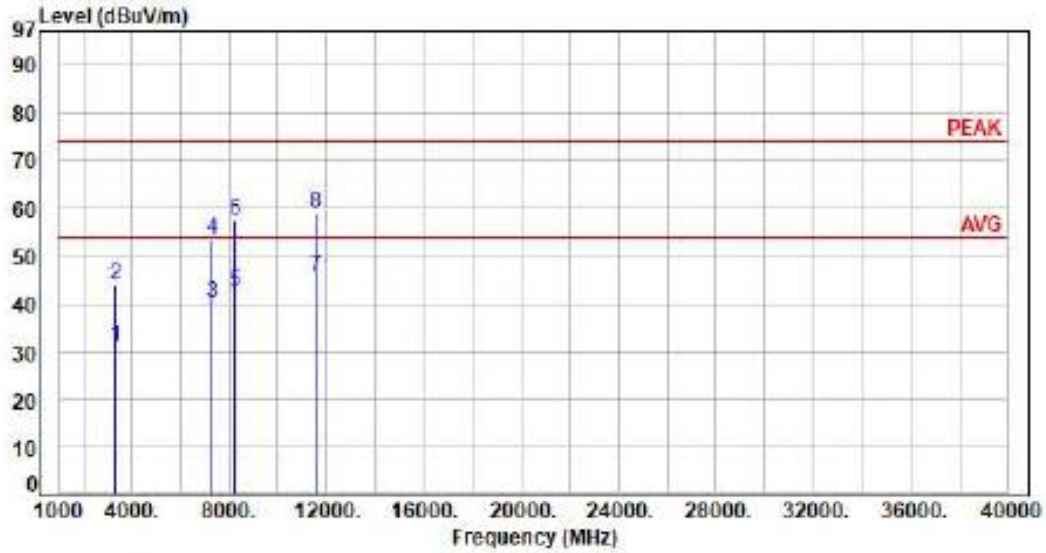
Test Mode : 2TX 11ax20 CH157+BT 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	3344.00	2.04	28.51	30.55	54.00	-23.45	Average	100	213	P
2	3344.00	2.04	40.89	42.93	74.00	-31.07	Peak	100	213	P
3	7323.00	11.87	28.46	40.33	54.00	-13.67	Average	100	322	P
4	7323.00	11.87	41.67	53.54	74.00	-20.46	Peak	100	322	P
5	8226.00	12.70	29.84	42.54	54.00	-11.46	Average	100	159	P
6	8226.00	12.70	43.71	56.41	74.00	-17.59	Peak	100	159	P
7	11570.00	16.76	30.00	46.76	54.00	-7.24	Average	100	177	P
8	11570.00	16.76	43.01	59.77	74.00	-14.23	Peak	100	177	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

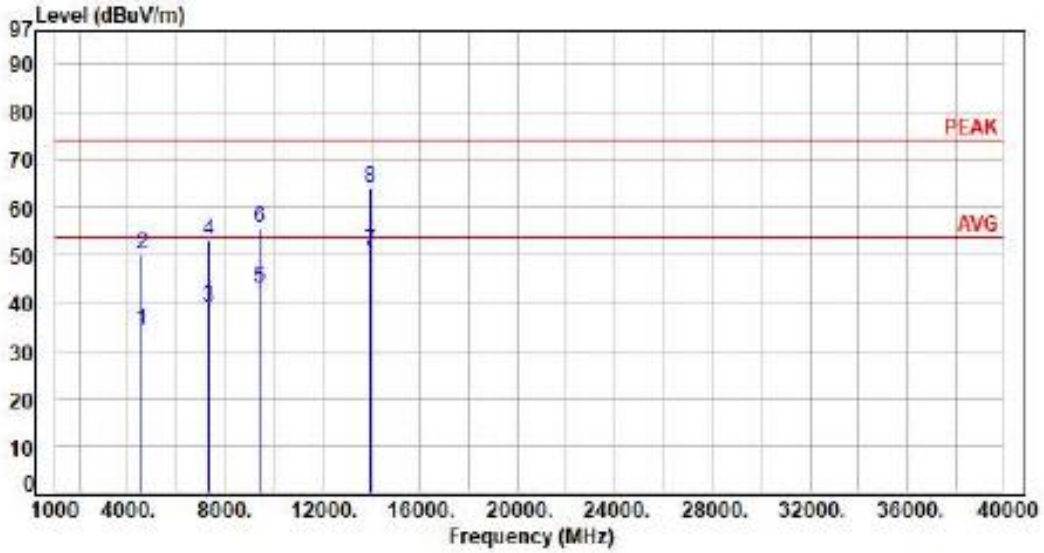
Test Mode : 2TX 11ax20 CH157+BT 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	3344.00	2.04	28.82	30.86	54.00	-23.14	Average	100	241	P
2	3344.00	2.04	42.02	44.06	74.00	-29.94	Peak	100	241	P
3	7323.00	11.87	28.41	40.28	54.00	-13.72	Average	100	156	P
4	7323.00	11.87	41.45	53.32	74.00	-20.68	Peak	100	156	P
5	8226.00	12.70	29.90	42.60	54.00	-11.40	Average	100	241	P
6	8226.00	12.70	44.86	57.56	74.00	-16.44	Peak	100	241	P
7	11570.00	16.76	28.97	45.73	54.00	-8.27	Average	100	218	P
8	11570.00	16.76	42.39	59.15	74.00	-14.85	Peak	100	218	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

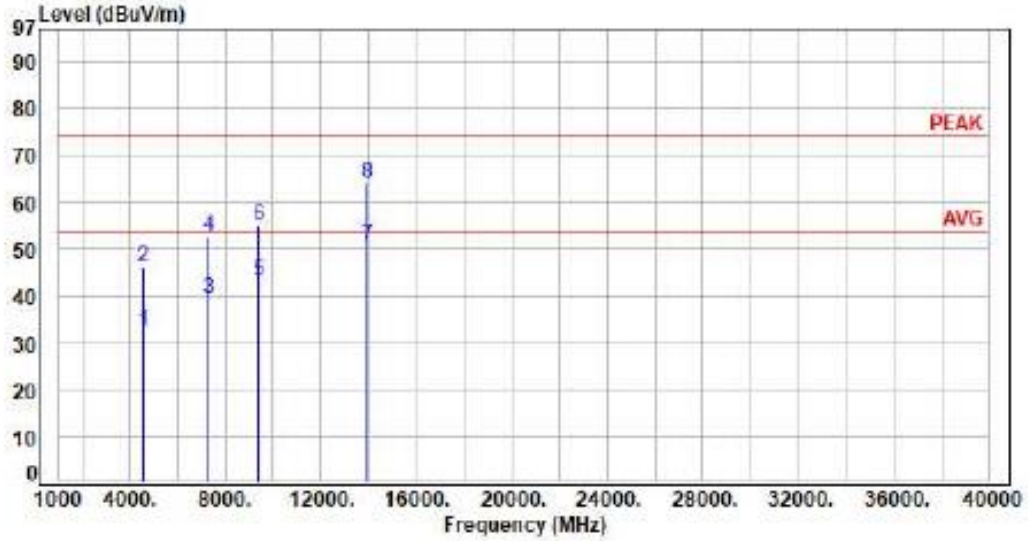
Test Mode : 2TX 11ax160 CH207+8T 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Vertical



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4544.00	4.88	29.52	34.40	54.00	-19.60	Average	100	116	P
2	4544.00	4.88	45.20	50.08	74.00	-23.92	Peak	100	116	P
3	7323.00	10.93	28.20	39.13	54.00	-14.87	Average	100	123	P
4	7323.00	10.93	42.36	53.29	74.00	-20.71	Peak	100	123	P
5	9426.00	13.64	29.41	43.05	54.00	-10.95	Average	100	344	P
6	9426.00	13.64	42.09	55.73	74.00	-18.27	Peak	100	344	P
7	13970.00	22.09	28.64	50.73	54.00	-3.27	Average	100	155	P
8	13970.00	22.09	42.21	64.30	74.00	-9.70	Peak	100	155	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

Test Mode : 2TX 11ax160 CH207+BT 1TX CH39 1Mbps
Voltage : From Adatper(AC120V/60Hz)
Pol : Horizontal



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4544.00	4.88	27.63	32.51	54.00	-21.49	Average	100	133	P
2	4544.00	4.88	41.25	46.13	74.00	-27.87	Peak	100	133	P
3	7323.00	10.93	28.63	39.56	54.00	-14.44	Average	100	195	P
4	7323.00	10.93	41.66	52.59	74.00	-21.41	Peak	100	195	P
5	9426.00	13.64	29.38	43.02	54.00	-10.98	Average	100	214	P
6	9426.00	13.64	41.33	54.97	74.00	-19.03	Peak	100	214	P
7	13970.00	22.09	28.65	50.74	54.00	-3.26	Average	100	315	P
8	13970.00	22.09	41.98	64.07	74.00	-9.93	Peak	100	315	P

Note: Level=Reading+Factor
Margin=Level-Limit
Factor=Antenna Factor + cable loss - Amplifier Factor

5.7 Restricted Bands of Operation

Only spurious emissions are permitted in any of the frequency bands listed below:

MHz	MHz	MHz	GHz
0.09000 – 0.11000	16.42000 – 16.42300	399.9 – 410.0	4.500 – 5.250
0.49500 – 0.505**	16.69475 – 16.69525	608.0 – 614.0	5.350 – 5.460
2.17350 – 2.19050	16.80425 – 16.80475	960.0 – 1240.0	7.250 – 7.750
4.12500 – 4.12800	25.50000 – 25.67000	1300.0 – 1427.0	8.025 – 8.500
4.17725 – 4.17775	37.50000 – 38.25000	1435.0 – 1626.5	9.000 – 9.200
4.20725 – 4.20775	73.00000 – 74.60000	1645.5 – 1646.5	9.300 – 9.500
6.21500 – 6.21800	74.80000 – 75.20000	1660.0 – 1710.0	10.600 – 12.700
6.26775 – 6.26825	108.00000 – 121.94000	1718.8 – 1722.2	13.250 – 13.400
6.31175 – 6.31225	123.00000 – 138.00000	2200.0 – 2300.0	14.470 – 14.500
8.29100 – 8.29400	149.90000 – 150.05000	2310.0 – 2390.0	15.350 – 16.200
8.36200 – 8.36600	156.52475 – 156.52525	2483.5 – 2500.0	17.700 – 21.400
8.37625 – 8.38675	156.70000 – 156.90000	2655.0 – 2900.0	22.010 – 23.120
8.41425 – 8.41475	162.01250 – 167.17000	3260.0 – 3267.0	23.600 – 24.000
12.29000 – 12.29300	167.72000 – 173.20000	3332.0 – 3339.0	31.200 – 31.800
12.51975 – 12.52025	240.00000 – 285.00000	3345.8 – 3358.0	36.430 – 36.500
12.57675 – 12.57725	322.00000 – 335.40000	3600.0 – 4400.0	Above 38.6
13.36000 – 13.41000			

**: Until February 1, 1999, this restricted band shall be 0.490-0.510 MHz