



FCC RADIO TEST REPORT

Applicant : Ubiquiti Inc
Address : 685 Third Avenue, New York, New York 10017,
USA
Equipment : UniFi Connect 13
Model No. : UC-Display13
Trade Name : UBIQUITI
FCC ID : SWX-UCD13

I HEREBY CERTIFY THAT :

The sample was received on Apr. 01, 2021 and the testing was completed on Aug. 03, 2021 at CerpPASS Technology Corp. The test result refers exclusively to the test presented test model / sample. Without written approval of CerpPASS Technology Corp., the test report shall not be reproduced except in full.

Approved by:

Mark Liao / Supervisor

Laboratory Accreditation:

CerpPASS Technology Corporation Test Laboratory





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History of this test report

Report No.	Issue Date	Description
21030229-TRFCC07	Aug. 13, 2021	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.

*This EUT has been also tested and compiled with the requirement of FCC Part 15, Subpart B, recorded in a separate test report(21030206-TEFV01).



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Frequency Range	NFC: 13.553MHz~13.567MHz BT / BLE: 2402MHz~2480MHz 802.11b/g/n: 2412MHz~2462MHz 802.11a/n/ac: 5180MHz~5240MHz, 5260MHz~5320MHz, 5500MHz~5720MHz, 5745MHz~5825MHz
Modulation Type	NFC: ASK BT: GFSK, $\pi/4$ -DQPSK, 8DPSK BLE: GFSK WLAN: 2.4GHz: 802.11b: CCK, DQPSK, DBPSK 802.11g/n: BPSK, QPSK, 16QAM, 64QAM, 5GHz: 802.11n/a: BPSK, QPSK, 16QAM, 64QAM 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM
Modulation Technology	DSSS, OFDM, FHSS, DTS,
Data Rate	BT: GFSK: 1Mbps, $\pi/4$ -DQPSK: 2Mbps, 8DPSK: 3Mbps BLE: GFSK: 1Mbps WLAN: 2.4GHz: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS7, HT20/40 5GHz: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS7, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40/80
Antenna Type	Internal Antenna
Antenna Gain	For NFC: 13.553MHz~13.567MHz: 0dBi For BT / BLE: 2402MHz~2480MHz: 1.00dBi For WLAN: 2412MHz~2462MHz: 1.00dBi 5180MHz~5240MHz: 4.00dBi 5260MHz~5320MHz: 4.00dBi 5500MHz~5720MHz: 4.00dBi 5745MHz~5825MHz: 4.00dBi

Note:

1. EUT support TPC Function.
2. WLAN and BT can simultaneously transmission.
3. EUT supports DFS Client Mode, without radar detection.
4. EUT support indoor / outdoor function.
5. 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.4.0.00129.0" under Windows OS system was executed to transmit and receive data via WLAN.
- d. An executive program, "QRCT ver.4.0.00129.0" under Windows OS system was executed to transmit and receive data via Bluetooth.
- e. The following test modes were performed for the test:

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	BT 8DPSK CH78 + 2.4G 11n20 CH06. Power from Adapter
2	BT 8DPSK CH78 + 5G 11ac VHT20 CH144. Power from Adapter
3	BT 8DPSK CH78 + 2.4G 11n20 CH06. Power from POE
4	BT 8DPSK CH78 + 5G 11ac VHT20 CH144. Power from POE
caused "Test Mode 3, 4" generated the worst case, it was reported as the final data.	
Radiation Emissions (9KHz ~30MHz & 30MHz ~ 1GHz)	
Test Mode	Operating Description
1	BT 8DPSK CH78 + 2.4G 11n20 CH06. Power from Adapter
2	BT 8DPSK CH78 + 5G 11ac VHT20 CH144. Power from Adapter
3	BT 8DPSK CH78 + 2.4G 11n20 CH06. Power from POE
4	BT 8DPSK CH78 + 5G 11ac VHT20 CH144. Power from POE
caused "Test Mode 1, 2" generated the worst case, it was reported as the final data.	
Radiation Emissions (1GHz ~ 25GHz)	
Test Mode	Operating Description
1	BT 8DPSK CH78 + 2.4G 11n20 CH06. Power from Adapter
2	BT 8DPSK CH78 + 5G 11ac VHT20 CH144. Power from Adapter
3	BT 8DPSK CH78 + 2.4G 11n20 CH06. Power from POE
4	BT 8DPSK CH78 + 5G 11ac VHT20 CH144. Power from POE
caused "Test Mode 1, 2" generated the worst case, it was reported as the final data.	



2.3 Description of Test System

RF Conducted				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
Micro USB Cable	kolin	EX-DLCP07	1m / NS	N/A
Adapter	UBIQUITI	GP-M015-QC	N/A	N/A
Radiated Emissions				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
Micro USB Cable	kolin	EX-DLCP07	1m / NS	N/A
Adapter	UBIQUITI	GP-M015-QC	N/A	N/A
AC Power Line Conducted Emission				
Equipment	Brand	Model	Length/Type	Power cord/Length/Type
Notebook	ASUS	P2430U	N/A	Adapter / 1.8m / NS
RJ45 Cable	TE CONNECTIVITY	CAT5E	1.2m / NS	N/A
Micro USB Cable	kolin	EX-DLCP07	1m / NS	N/A
POE	UBIQUITI	GP-H480-050G	N/A	0.6m / NS
Adapter	UBIQUITI	GP-M015-QC	N/A	N/A



2.4 General Information of Test

Test Site	CerpPASS 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
	VCCI	T-2205 for Telecommunication test C-4663 for Conducted emission test R-4218 for Radiated emission test G-10812, G-10813 for radiated disturbance above 1GHz
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
RF Conducted	RFCON01-NK	2021/08/03	24.6°C / 59%	Nick Guan
Radiated Emissions	3M02-NK	2021/06/21~2021/06/22	25~27°C / 41~43%	Nick Guan
AC Power Line Conducted Emission	CON01-NK	2021/06/26	24°C / 51%	Dian Chen

2.5 Measurement Uncertainty

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	±3.63dB
Radiated Spurious Emission(9KHz~30MHz)	±3.4dB
Radiated Spurious Emission(30MHz~1GHz)	±5.6dB
Radiated Spurious Emission(1GHz~40GHz)	±6.6dB
Conducted Spurious Emission	±1.8dB



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	2021/04/26	2022/04/25
Active Loop Antenna	EMCO	6507	40855	2021/06/10	2022/06/09
Horn Antenna	EMCO	3115	31601	2020/10/16	2021/10/15
Horn Antenna	EMCO	3116	31974	2020/09/24	2021/09/23
EMI Receiver	ROHDE & SCHWARZ	ESCI	101423	2020/06/23	2021/06/22
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2020/08/03	2021/08/02
Preamplifier	EM Electronics corp.	EM330	60658	2020/10/20	2021/10/19
Preamplifier	EM Electronics corp.	EM330	60660	2021/03/18	2022/03/17
Preamplifier	Agilent	8449B	3008A01954	2021/03/22	2022/03/21
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2020/11/06	2021/11/05
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2021/04/19	2022/04/18
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2021/04/12	2022/04/11
Cable-0.5m(1G-18G)	E MEC	EM104-SMSM-0.5M	CCE1354	2021/05/06	2022/05/05
Cable-3m(1G-18G)	E MEC	EM104-SMSM-3M	CCE1355	2021/05/06	2022/05/05
Cable-8m(1G-18G)	E MEC	EM104-SMSM-8M	CCE1356	2021/05/06	2022/05/05
Cable-0.5m(30M-40G)	HUBER SUHNER	SUCOFLEX 102	28420/2	2021/04/03	2022/04/02
Cable-3m(30M-40G)	HUBER SUHNER	SUCOFLEX 102	MY2608/2	2021/04/09	2022/04/08
Cable-0.5m(1G-40G)	Rapidtek	40GHZ 50CM	38MS-38MS50 314	2021/04/08	2022/04/07
Cable-6m(9k~300M)	NA	EMC5D-BM-BM-6	130605	2020/09/18	2021/09/17
E3	AUDIX	v8.2014-8-6	RK-000529	NA	NA

Test Item	RF Conducted				
Test Site	RFCON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2020/08/03	2021/08/02
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2021/07/14	2022/07/13
Bluetooth Tester	ROHDE & SCHWARZ	CBT	101133	2021/04/19	2022/04/18
CAX Signal Analyzer	KEYSIGHT	N9000B	MY57100339	2020/12/25	2021/12/24
Attenuator	KEYSIGHT	8491B	MY39250703	2021/04/09	2022/04/08
TEMP & HUMIDITY CHAMBER	T-MACHINE	TMJ-9712	T-12-040111	2020/08/25	2021/08/24
Power Meter	Anritsu	ML2495A	1224005	2021/04/14	2022/04/13
Power Sensor	Anritsu	MA2411B	1207295	2021/04/14	2022/04/13



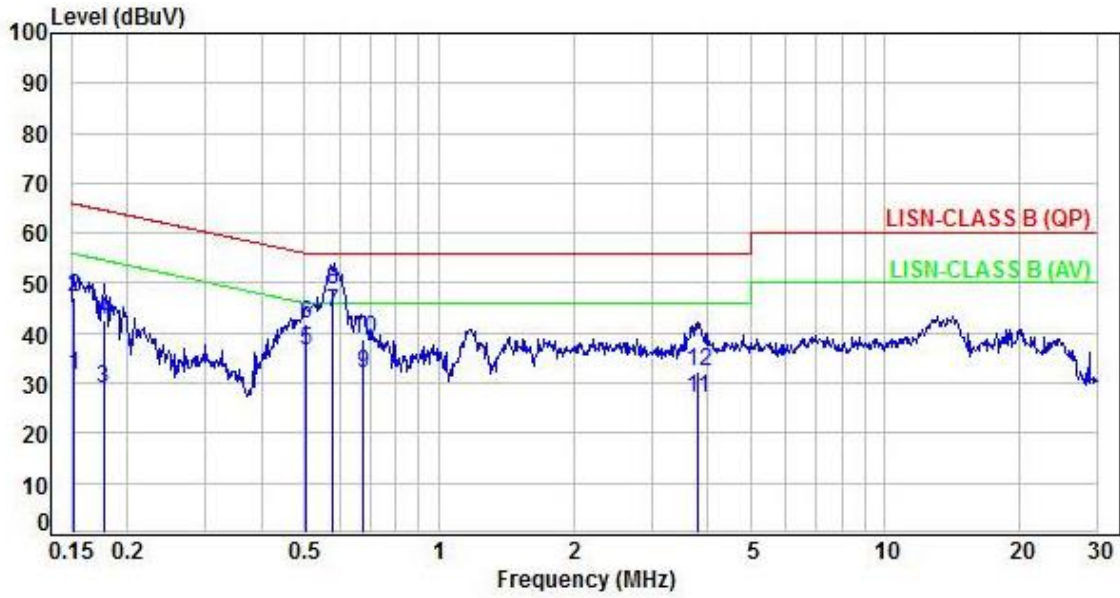
Test Item	AC Power Line Conducted Emission				
Test Site	CON01-NK				
Instrument	Manufacturer	Model No	Serial No	Calibration Date	Valid Date
EMI Receiver	ROHDE & SCHWARZ	ESCI	100821	2020/09/11	2021/09/10
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127-516	2020/09/26	2021/09/25
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	101933	2020/09/17	2021/09/16
Cable-6m(9k~300M)	NA	EMC5D-BM-BM-6	130605	2020/09/18	2021/09/17
E3	AUDIX	v8.2014-8-6	RK-000531	NA	NA



4. Test of AC Power Line Conducted Emission

4.1 Test Result and Data

Power	: From POE DC48V	Pol/Phase	: LINE
Test Mode	: Mode 3		:

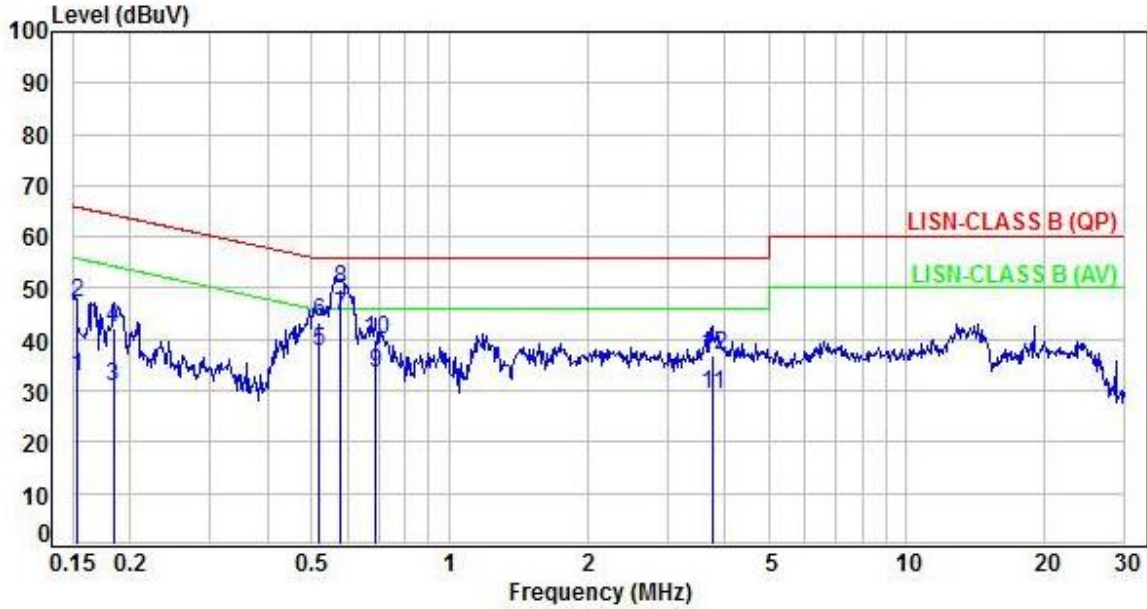


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.96	21.73	31.69	55.89	-24.20	Average	P
2	0.15	9.96	37.12	47.08	65.89	-18.81	QP	P
3	0.18	9.96	18.91	28.87	54.64	-25.77	Average	P
4	0.18	9.96	32.73	42.69	64.64	-21.95	QP	P
5	0.50	9.98	26.56	36.54	46.00	-9.46	Average	P
6	0.50	9.98	31.92	41.90	56.00	-14.10	QP	P
7	0.58	9.99	34.12	44.11	46.00	-1.89	Average	P
8	0.58	9.99	38.58	48.57	56.00	-7.43	QP	P
9	0.68	10.00	21.83	31.83	46.00	-14.17	Average	P
10	0.68	10.00	28.63	38.63	56.00	-17.37	QP	P
11	3.81	10.22	16.96	27.18	46.00	-18.82	Average	P
12	3.81	10.22	22.24	32.46	56.00	-23.54	QP	P

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



Power	: From POE DC48V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 3		:

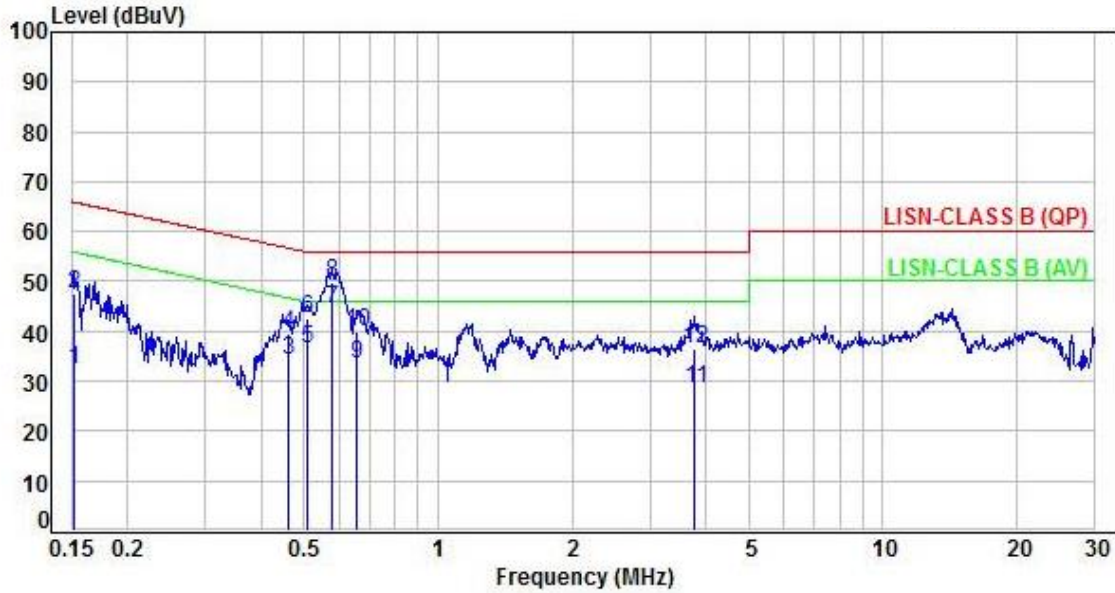


No.	Frequency (MHz)	Factor (dB)	Reading (dBUV)	Level (dBUV)	Limit (dBUV)	Margin (dB)	Detector	P/F
1	0.15	9.97	22.69	32.66	55.84	-23.18	Average	P
2	0.15	9.97	37.31	47.28	65.84	-18.56	QP	P
3	0.18	9.97	20.73	30.70	54.31	-23.61	Average	P
4	0.18	9.97	32.40	42.37	64.31	-21.94	QP	P
5	0.52	9.99	27.83	37.82	46.00	-8.18	Average	P
6	0.52	9.99	33.18	43.17	56.00	-12.83	QP	P
7	0.58	10.00	34.36	44.36	46.00	-1.64	Average	P
8	0.58	10.00	39.97	49.97	56.00	-6.03	QP	P
9	0.69	10.00	23.28	33.28	46.00	-12.72	Average	P
10	0.69	10.00	29.77	39.77	56.00	-16.23	QP	P
11	3.76	10.18	19.24	29.42	46.00	-16.58	Average	P
12	3.76	10.18	26.58	36.76	56.00	-19.24	QP	P

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



Power	: From POE DC48V	Pol/Phase	: LINE
Test Mode	: Mode 4		:

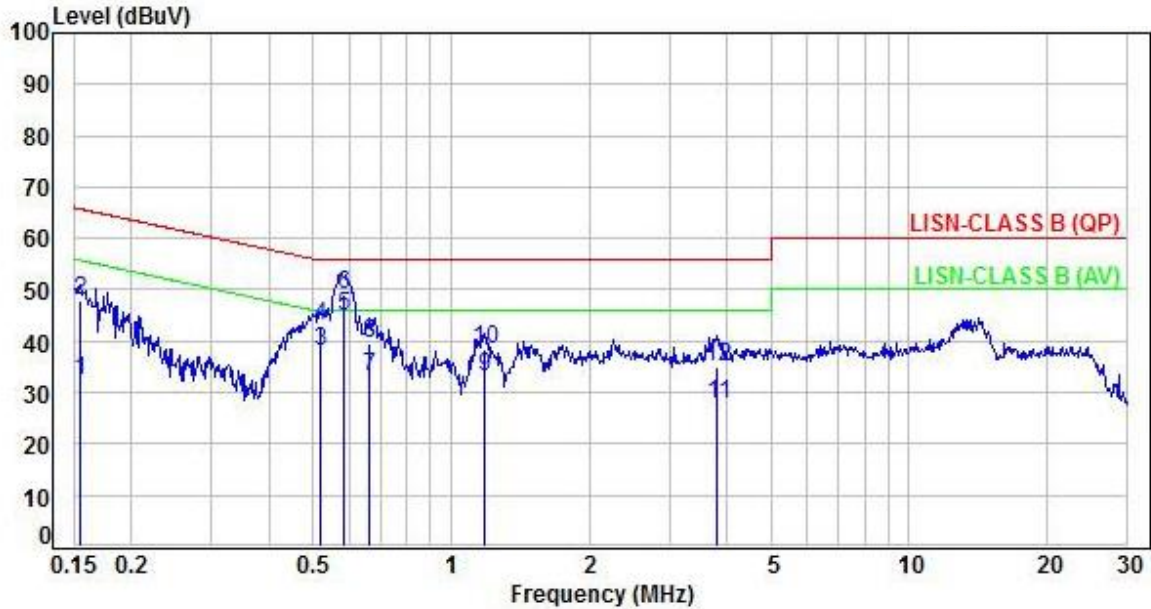


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.96	22.34	32.30	55.89	-23.59	Average	P
2	0.15	9.96	37.53	47.49	65.89	-18.40	QP	P
3	0.46	9.97	24.23	34.20	46.67	-12.47	Average	P
4	0.46	9.97	29.40	39.37	56.67	-17.30	QP	P
5	0.51	9.98	26.67	36.65	46.00	-9.35	Average	P
6	0.51	9.98	32.49	42.47	56.00	-13.53	QP	P
7	0.58	9.99	34.39	44.38	46.00	-1.62	Average	P
8	0.58	9.99	39.76	49.75	56.00	-6.25	QP	P
9	0.66	10.00	23.59	33.59	46.00	-12.41	Average	P
10	0.66	10.00	29.96	39.96	56.00	-16.04	QP	P
11	3.78	10.22	18.37	28.59	46.00	-17.41	Average	P
12	3.78	10.22	26.29	36.51	56.00	-19.49	QP	P

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



Power	: From POE DC48V	Pol/Phase	: NEUTRAL
Test Mode	: Mode 4		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.15	9.96	22.21	32.17	55.74	-23.57	Average	P
2	0.15	9.96	37.76	47.72	65.74	-18.02	QP	P
3	0.52	9.98	28.13	38.11	46.00	-7.89	Average	P
4	0.52	9.98	33.06	43.04	56.00	-12.96	QP	P
5	0.58	10.00	34.79	44.79	46.00	-1.21	Average	P
6	0.58	10.00	38.91	48.91	56.00	-7.09	QP	P
7	0.66	10.00	23.18	33.18	46.00	-12.82	Average	P
8	0.66	10.00	29.72	39.72	56.00	-16.28	QP	P
9	1.18	10.05	22.99	33.04	46.00	-12.96	Average	P
10	1.18	10.05	28.19	38.24	56.00	-17.76	QP	P
11	3.82	10.22	17.62	27.84	46.00	-18.16	Average	P
12	3.82	10.22	24.67	34.89	56.00	-21.11	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

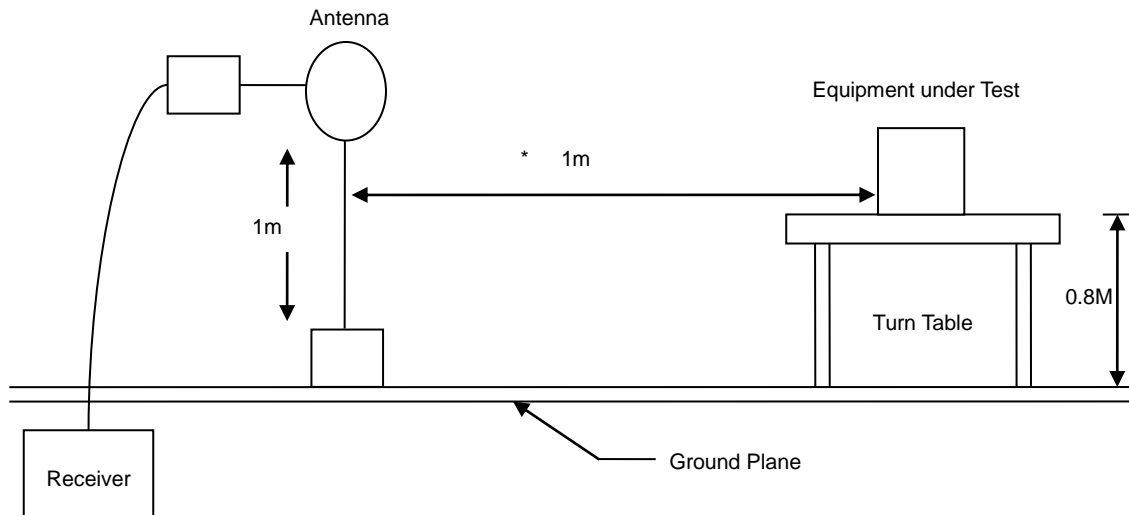
- a. The EUT was placed on a rotatable table top 0.8 meter above ground.
- b. The EUT was set 3 meters from the interference receiving antenna which was mounted on the top of a variable height antenna tower.
- c. The table was rotated 360 degrees to determine the position of the highest radiation.
- 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.
(Y-AXIS is the worst.)

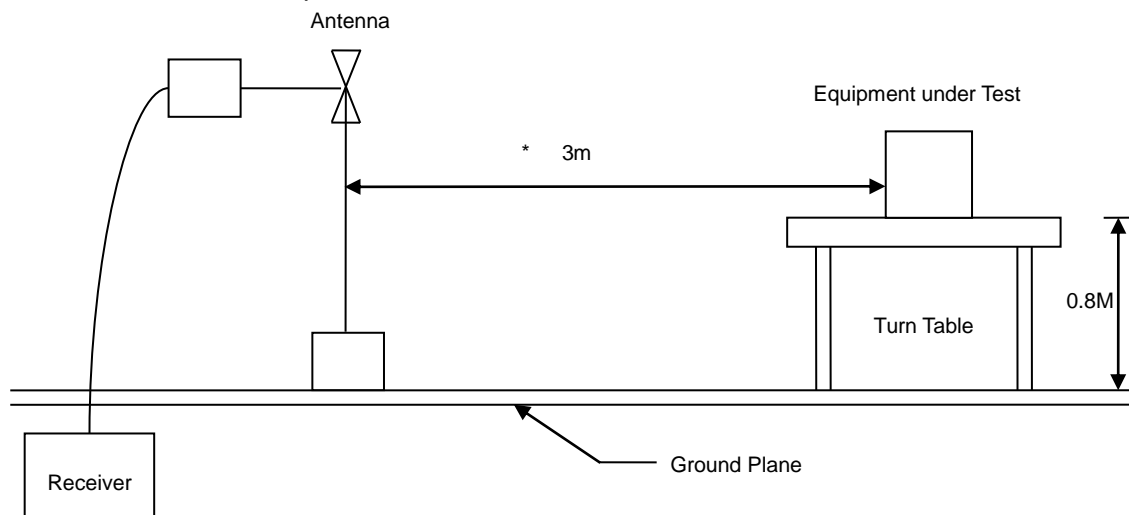


5.3 Typical Test Setup

Below 30MHz test setup

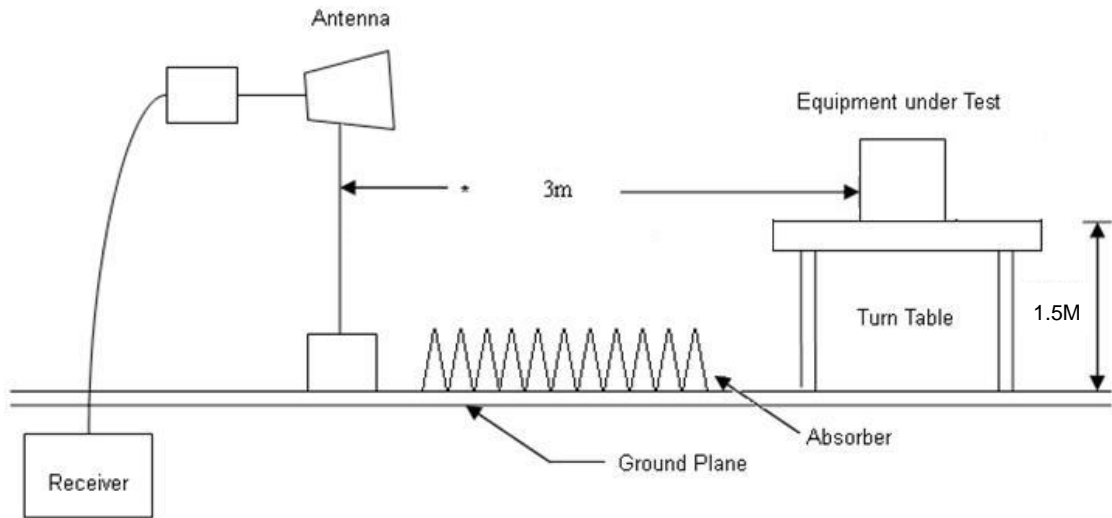


30MHz- 1GHz Test Setup





Above 1GHz Test Setup



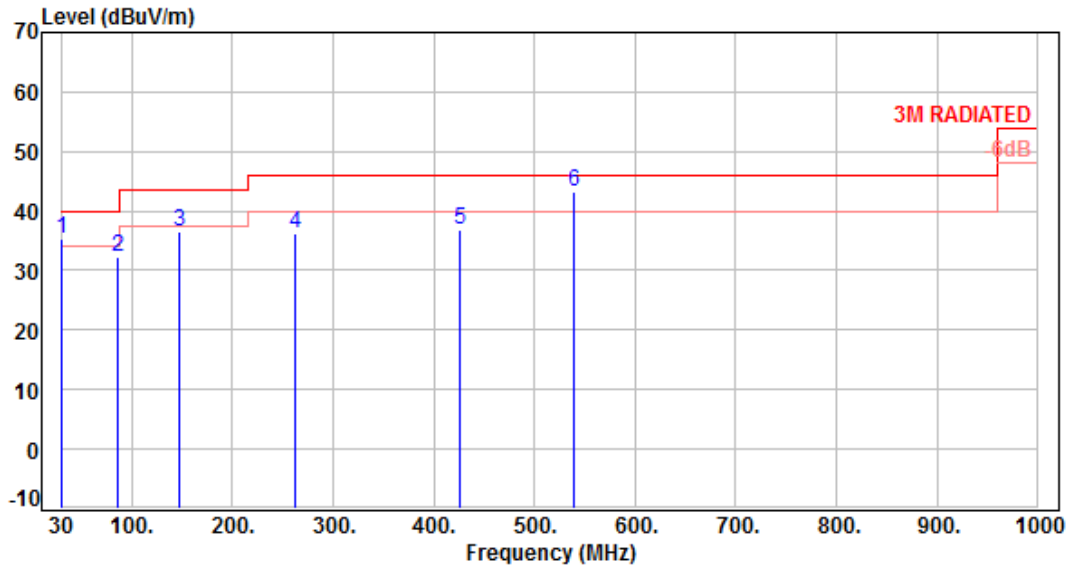


5.4 Test Result and Data (9kHz ~ 30MHz)

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

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

Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 1		:



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	30.00	-11.62	46.86	35.24	40.00	-4.76	QP	100	18	P
2	86.45	-16.25	48.54	32.29	40.00	-7.71	Peak	400	360	P
3	146.77	-10.93	47.35	36.42	43.50	-7.08	Peak	400	360	P
4	263.23	-11.04	47.24	36.20	46.00	-9.80	Peak	400	360	P
5	426.59	-6.33	43.11	36.78	46.00	-9.22	Peak	400	360	P
6	539.28	-3.96	47.34	43.38	46.00	-2.62	QP	126	121	P

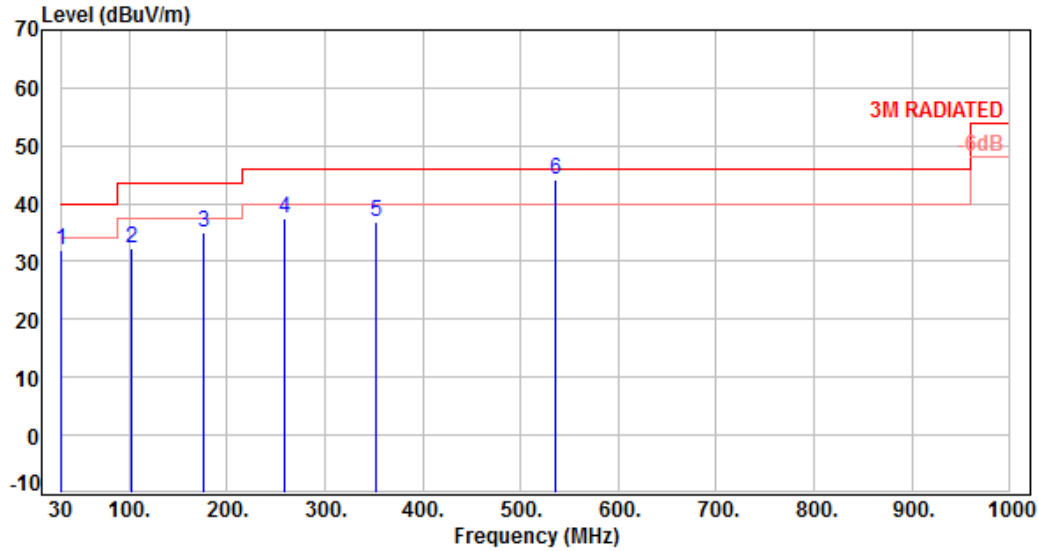
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1		:

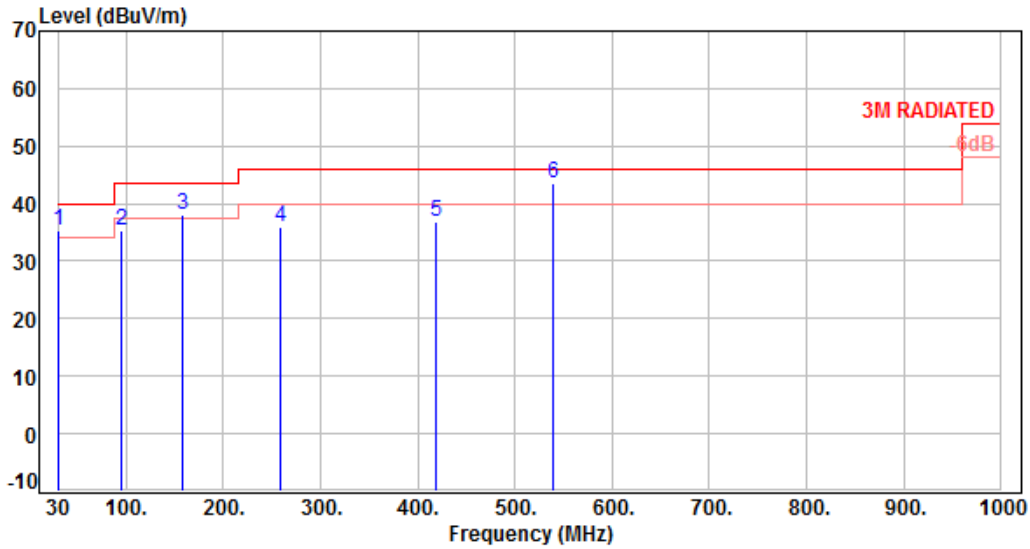


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	30.00	-11.62	43.66	32.04	40.00	-7.96	Peak	400	360	P
2	102.38	-15.19	47.57	32.38	43.50	-11.12	Peak	400	360	P
3	176.33	-11.71	46.58	34.87	43.50	-8.63	Peak	400	360	P
4	259.39	-11.19	48.66	37.47	46.00	-8.53	Peak	400	360	P
5	352.74	-8.36	45.22	36.86	46.00	-9.14	Peak	400	360	P
6	536.45	-4.09	48.33	44.24	46.00	-1.76	QP	148	232	P

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



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 2		:

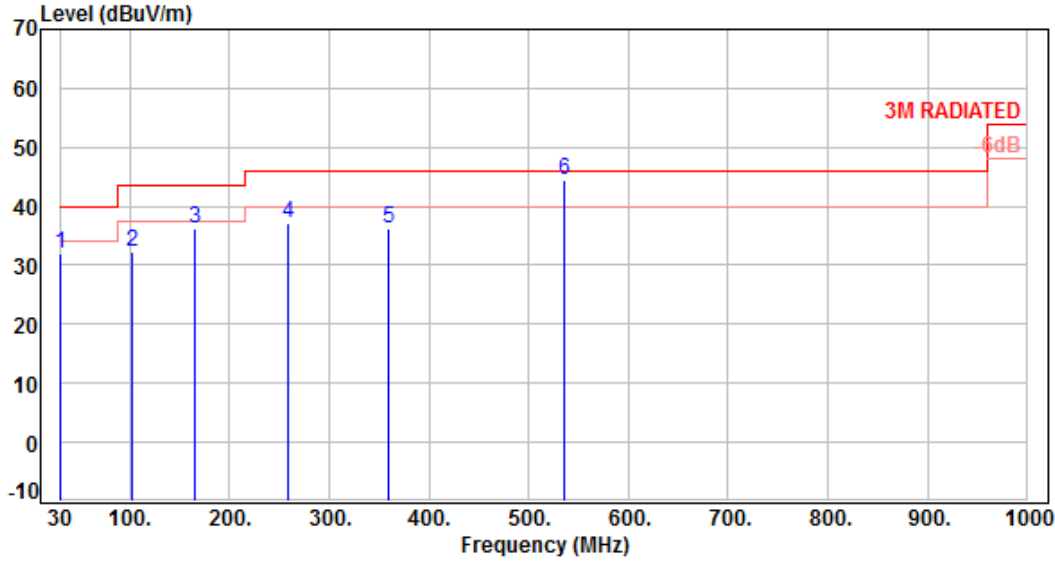


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	30.00	-11.62	46.85	35.23	40.00	-4.77	QP	100	18	P
2	94.78	-16.70	51.97	35.27	43.50	-8.23	Peak	400	360	P
3	158.45	-10.74	48.66	37.92	43.50	-5.58	Peak	400	360	P
4	259.12	-11.20	46.99	35.79	46.00	-10.21	Peak	400	360	P
5	419.15	-6.62	43.49	36.87	46.00	-9.13	Peak	400	360	P
6	539.82	-3.94	47.55	43.61	46.00	-2.39	QP	123	126	P

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



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2		:



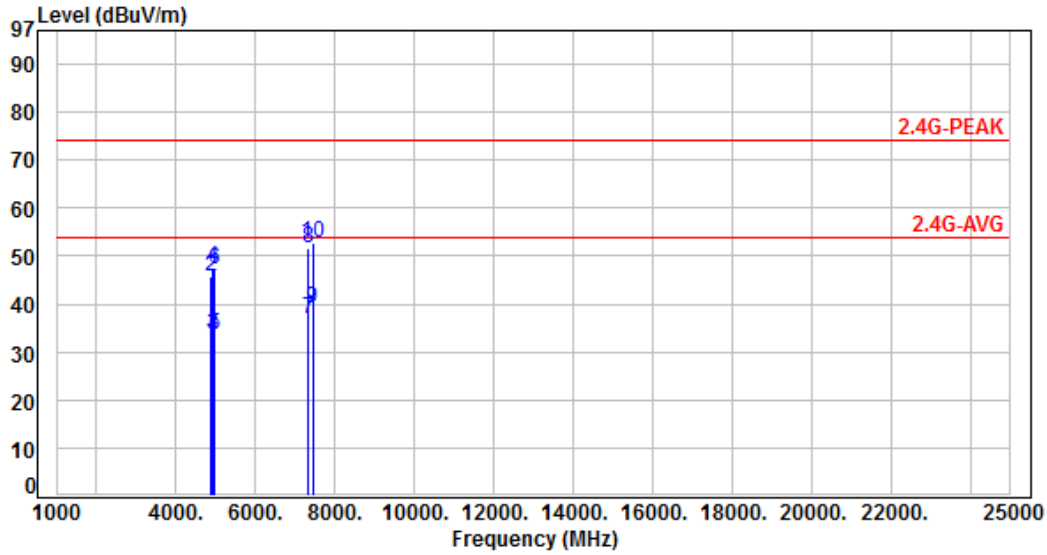
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	30.00	-11.62	43.49	31.87	40.00	-8.13	Peak	400	360	P
2	102.39	-15.19	47.33	32.14	43.50	-11.36	Peak	400	360	P
3	164.94	-10.65	46.96	36.31	43.50	-7.19	Peak	400	360	P
4	258.78	-11.21	48.28	37.07	46.00	-8.93	Peak	400	360	P
5	359.86	-8.19	44.57	36.38	46.00	-9.62	Peak	400	360	P
6	536.28	-4.10	48.56	44.46	46.00	-1.54	QP	150	229	P

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



5.6 Test Result and Data (1GHz ~ 25GHz)

Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 1		:

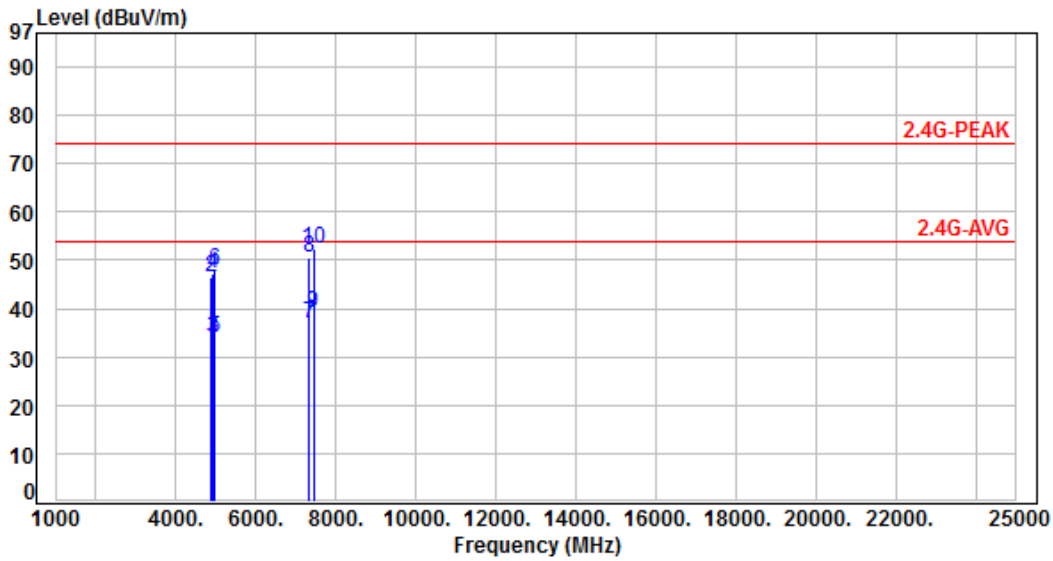


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4874.00	3.90	28.10	32.00	54.00	-22.00	Average	100	163	P
2	4874.00	3.90	41.72	45.62	74.00	-28.38	Peak	100	163	P
3	4917.00	4.07	29.61	33.68	54.00	-20.32	Average	100	194	P
4	4917.00	4.07	43.47	47.54	74.00	-26.46	Peak	100	194	P
5	4960.00	4.27	29.28	33.55	54.00	-20.45	Average	100	177	P
6	4960.00	4.27	43.03	47.30	74.00	-26.70	Peak	100	177	P
7	7311.00	8.48	28.28	36.76	54.00	-17.24	Average	100	172	P
8	7311.00	8.48	43.01	51.49	74.00	-22.51	Peak	100	172	P
9	7440.00	8.61	30.43	39.04	54.00	-14.96	Average	100	194	P
10	7440.00	8.61	44.20	52.81	74.00	-21.19	Peak	100	194	P

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



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 1		:

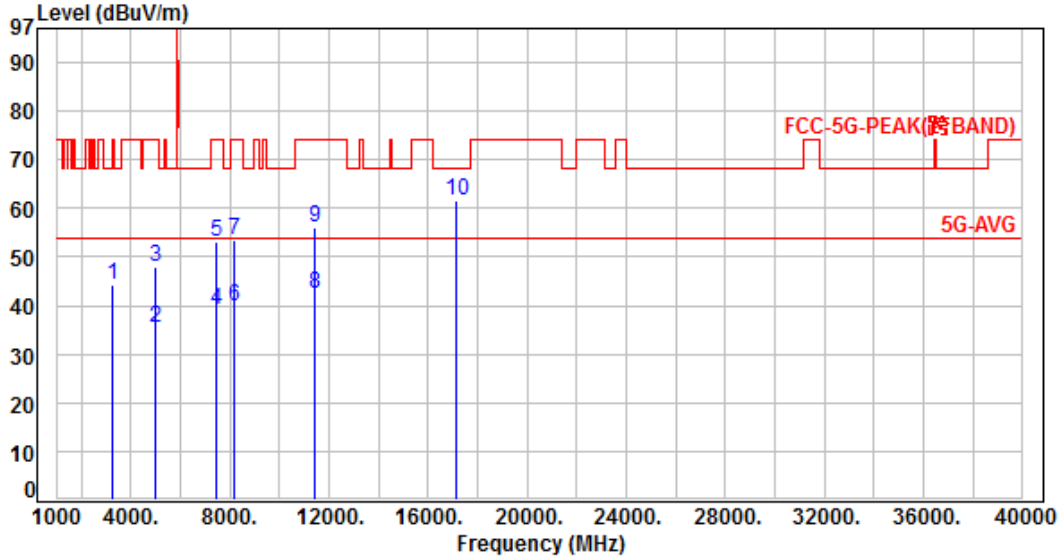


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	4874.00	3.90	28.15	32.05	54.00	-21.95	Average	100	242	P
2	4874.00	3.90	42.43	46.33	74.00	-27.67	Peak	100	242	P
3	4917.00	4.07	29.70	33.77	54.00	-20.23	Average	100	238	P
4	4917.00	4.07	43.13	47.20	74.00	-26.80	Peak	100	238	P
5	4960.00	4.27	29.62	33.89	54.00	-20.11	Average	100	217	P
6	4960.00	4.27	43.53	47.80	74.00	-26.20	Peak	100	217	P
7	7311.00	8.48	28.28	36.76	54.00	-17.24	Average	100	236	P
8	7311.00	8.48	42.11	50.59	74.00	-23.41	Peak	100	236	P
9	7440.00	8.61	30.47	39.08	54.00	-14.92	Average	100	228	P
10	7440.00	8.61	43.79	52.40	74.00	-21.60	Peak	100	228	P

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



Power	: AC 120V / 60Hz	Pol/Phase	: VERTICAL
Test Mode	: Mode 2		:

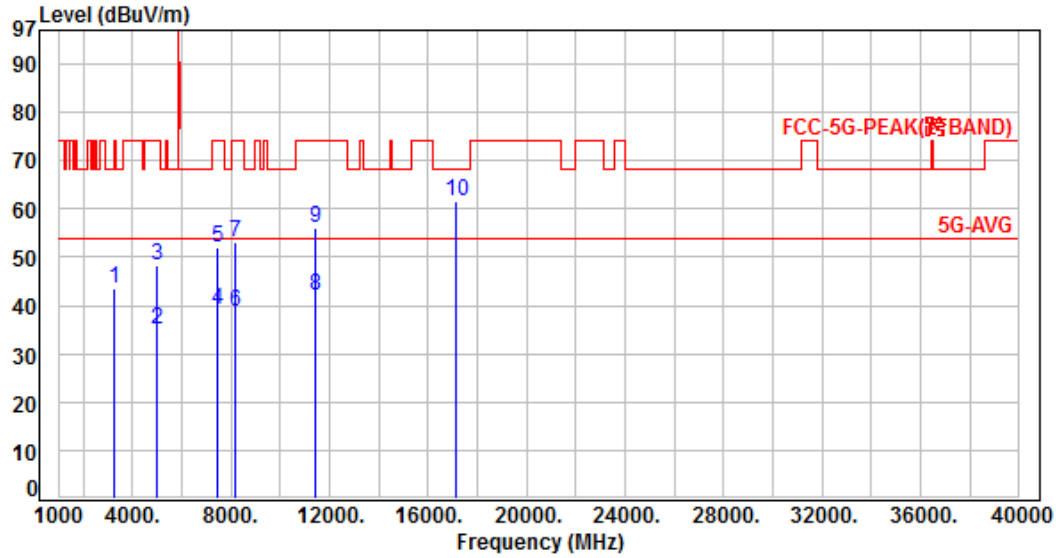


No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	3240.00	-0.20	44.33	44.13	68.20	-24.07	Peak	100	162	P
2	4960.00	4.27	31.21	35.48	54.00	-18.52	Average	182	136	P
3	4960.00	4.27	43.80	48.07	74.00	-25.93	Peak	182	136	P
4	7440.00	8.61	30.44	39.05	54.00	-14.95	Average	100	153	P
5	7440.00	8.61	44.55	53.16	74.00	-20.84	Peak	100	153	P
6	8200.00	9.45	30.57	40.02	54.00	-13.98	Average	100	168	P
7	8200.00	9.45	44.19	53.64	74.00	-20.36	Peak	100	168	P
8	11440.00	13.08	29.27	42.35	54.00	-11.65	Average	100	184	P
9	11440.00	13.08	43.08	56.16	74.00	-17.84	Peak	100	184	P
10	17160.00	18.42	43.31	61.73	68.20	-6.47	Peak	100	192	P

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



Power	: AC 120V / 60Hz	Pol/Phase	: HORIZONTAL
Test Mode	: Mode 2		



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	3240.00	-0.20	43.84	43.64	68.20	-24.56	Peak	100	217	P
2	4960.00	4.27	30.88	35.15	54.00	-18.85	Average	100	231	P
3	4960.00	4.27	43.90	48.17	74.00	-25.83	Peak	100	231	P
4	7440.00	8.61	30.41	39.02	54.00	-14.98	Average	100	203	P
5	7440.00	8.61	43.55	52.16	74.00	-21.84	Peak	100	203	P
6	8200.00	9.45	29.19	38.64	54.00	-15.36	Average	100	218	P
7	8200.00	9.45	43.73	53.18	74.00	-20.82	Peak	100	218	P
8	11440.00	13.08	29.06	42.14	54.00	-11.86	Average	100	243	P
9	11440.00	13.08	43.08	56.16	74.00	-17.84	Peak	100	243	P
10	17160.00	18.42	43.31	61.73	68.20	-6.47	Peak	100	251	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



6. Test of Conducted Spurious Emission

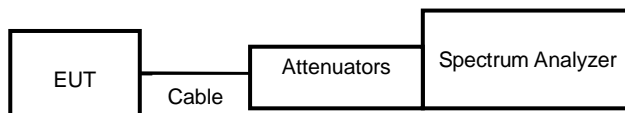
6.1 Test Limit

Below -20dB of the highest emission level of operating band (In 100 kHz Resolution Bandwidth)

6.2 Test Procedure

- a. The transmitter output was connected to the spectrum analyzer via a low loss cable.
- b. Set RBW of spectrum analyzer to 100 KHz and VBW of spectrum analyzer to 300 KHz with convenient frequency span including 100 KHz bandwidth from band edge.
- c. Peak conducted output power measured within any 100 kHz outside the authorized frequency band shall be attenuated by at least 20dB relative to the maximum measured in-band peak PSD level.
- d. The band edges was measured and recorded.

6.3 Test Setup Layout



6.4 Test Result and Data

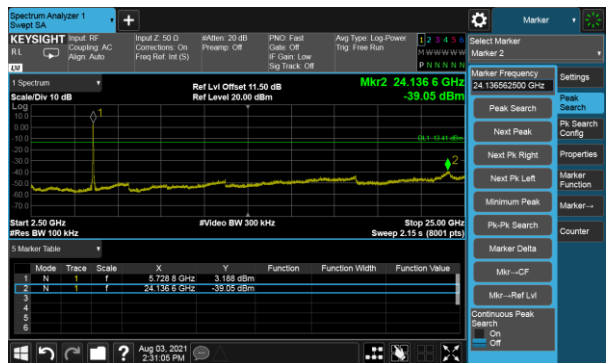
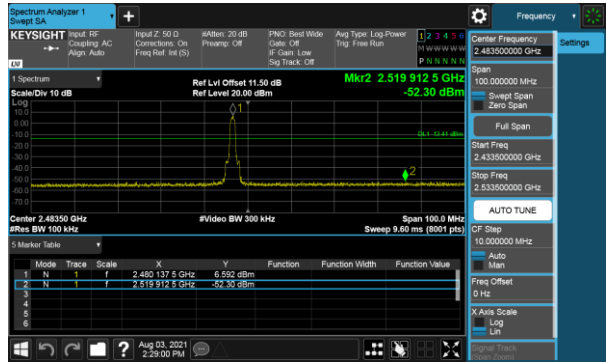
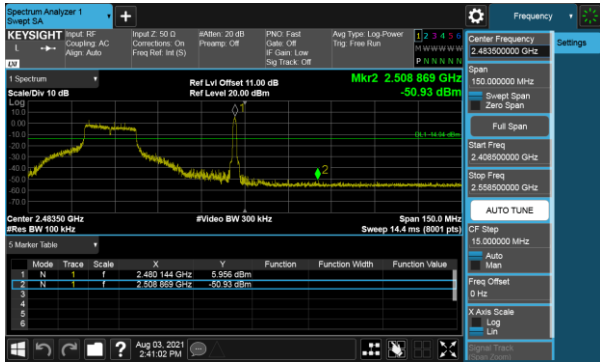
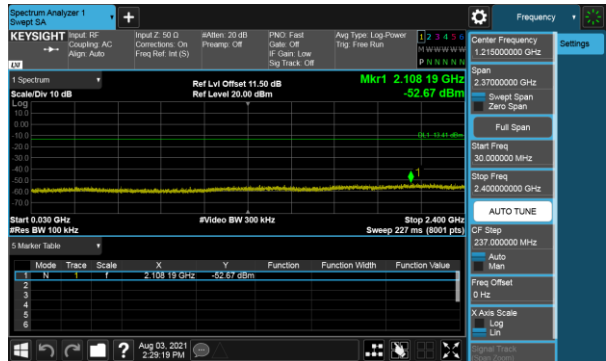
Note: Test plots refers to the following pages.



Modulation Type:
BT 8DPSK CH78 + 2.4G 11n20 CH06



Modulation Type:
BT 8DPSK CH78 + 5G 11ac VHT20 CH144



-----THE END OF REPORT-----