



FCC RADIO TEST REPORT

Applicant : Premier Image Technology(China) Ltd.

Address : No.32,East Chang Hong Road,Chancheng
District,Foshan,Guang Dong,China

Equipment : Wireless Module

Model No. : SKI.WB800D.3

Trade Name : N/A

FCC ID : 2A7WHSKIWB800D3

I HEREBY CERTIFY THAT :

The sample was received on Jul. 06,2022 and the testing was completed on Jul. 25,2022 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.	Issued Date	Description
22070019-TRFCC01	Aug. 06, 2022	Original



1. Summary of Test Procedure and Test Results

1.1 Applicable Standards

ANSI C63.10:2013

FCC Rules and Regulations Part 15 Subpart C §15.247

FCC Rule	Description of Test	Result
15.203	. Antenna Requirement	PASS
15.247(a)(1)	.Pseudorandom Frequency Hopping Sequence	PASS
15.207	. AC Power Line Conducted Emission	PASS
15.209 15.205	. Radiated Spurious Emission	PASS
15.247(d)	. Conducted Spurious Emission	PASS
15.247(a)(1)	. Channel Carrier Frequencies Separation	PASS
15.247(a)(1)	. 20dB Bandwidth	PASS
15.247(a)(1)	. Dwell Time	PASS
15.247(b)	. Number of Hopping Channels	PASS
15.247(b)	. Peak Output Power Measurement Data	PASS
2.1091	. Radio Frequency Exposure	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.



2. Test Configuration of Equipment under Test

2.1 Feature of Equipment under Test

Operation Frequency Range	2.4GHz~2.4835GHz /5.150~5.850GHz
Center Frequency Range	BT / BLE: 2402MHz-2480MHz 802.11b/g/n/ax: 2412MHz-2462MHz 802.11a/n/ac/ax: 5180-5240MHz, 5260-5320MHz, 5500-5700MHz, 5745-5825MHz
Modulation Type	BT: GFSK, $\pi/4$ -DQPSK, 8DPSK BLE: GFSK WLAN: 2.4GHz: 802.11b: CCK, DQPSK, DBPSK 802.11g/n: BPSK, QPSK, 16QAM, 64QAM, 256QAM 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM 5GHz: 802.11n/a: BPSK, QPSK, 16QAM, 64QAM 802.11ac: BPSK, QPSK, 16QAM, 64QAM, 256QAM 802.11ax: BPSK, QPSK, 16QAM, 64QAM, 256QAM, 1024QAM
Modulation Technology	DSSS, OFDM, FHSS, DTS, OFDMA(for ax)
Data Rate	BT: GFSK: 1Mbps, $\pi/4$ -DQPSK: 2Mbps, 8DPSK: 3Mbps BLE: GFSK: 1Mbps, 2Mbps, 125kbps, 500kbps WLAN: 2.4GHz: 802.11b: 1, 2, 5.5, 11Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS7, HT20/40 802.11ax: MCS0 – MCS9, HE20/40 5GHz: 802.11a: 6, 9, 12, 18, 24, 36, 48, 54Mbps 802.11n: MCS0 – MCS7, HT20/40 802.11ac: MCS0 – MCS9, VHT20/40 802.11ax: MCS0 – MCS9, HE20/40
Antenna Type	Dipole Antenna
Antenna Gain.	For BT/BLE: 2400~2500MHz: ANT B:3.19dBi For Wlan 2400~2500MHz: ANT A:3.19dBi 5150MHz - 5850MHz: ANT A:3.09dBi
Working Temperature	0°C to +40°C
Storage Temperature	-40°C to +85°C
Firmware	aicloadfw(ver. 0.55)

Note:

1. EUT support TPC Function.
2. EUT support Client mode without radar detection.
3. The serial number of the EUT is E0276CD253A7.
4. For more details, please refer to the User's manual of the EUT.



2.2 Carrier Frequency of Channes

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
*00	2402	20	2422	40	2442	60	2462
01	2403	21	2423	41	2443	61	2463
02	2404	22	2424	42	2444	62	2464
03	2405	23	2425	43	2445	63	2465
04	2406	24	2426	44	2446	64	2466
05	2407	25	2427	45	2447	65	2467
06	2408	26	2428	46	2448	66	2468
07	2409	27	2429	47	2449	67	2469
08	2410	28	2430	48	2450	68	2470
09	2411	29	2431	49	2451	69	2471
10	2412	30	2432	50	2452	70	2472
11	2413	31	2433	51	2453	71	2473
12	2414	32	2434	52	2454	72	2474
13	2415	33	2435	53	2455	73	2475
14	2416	34	2436	54	2456	74	2476
15	2417	35	2437	55	2457	75	2477
16	2418	36	2438	56	2458	76	2478
17	2419	37	2439	57	2459	77	2479
18	2420	38	2440	58	2460	*78	2480
19	2421	*39	2441	59	2461	---	---

Note: Channels remarked * are selected to perform test.



2.3 Test Mode & Test Software

- During testing, the interface cables and equipment positions were varied according to ANSI C63.10
- The complete test system included Notebook and EUT for RF test.
- An executive program, "SecureCRT.exe(ver. 6.2.3.313)" under Windows 7 system was executed to transmit and receive data via Bluetooth.
- The following test modes were performed for the test:

Conducted Emissions from the AC mains power ports	
Test Mode	Operating Description
1	GFSK (1Mbps), from System (120V/60Hz)
2	$\pi/4$ -DQPSK (2Mbps), from System (120V/60Hz)
3	8DPSK (3Mbps), from System (120V/60Hz)
4	GFSK (1Mbps), from System (240V/60Hz)
caused "Test Mode 1" generated the worst case, it was reported as the final data.	
Radiation Emissions (30MHz ~ 1GHz)	
Test Mode	Operating Description
1	GFSK (1Mbps), from System (120V/60Hz)
2	$\pi/4$ -DQPSK (2Mbps), from System (120V/60Hz)
3	8DPSK (3Mbps), from System (120V/60Hz)
caused "Test Mode 1" generated the worst case, they were reported as the final data.	
Radiation Emissions (1GHz ~ 25GHz)	
Test Mode	Operating Description
1	GFSK (1Mbps), from System (120V/60Hz)
2	$\pi/4$ -DQPSK (2Mbps), from System (120V/60Hz)
3	8DPSK (3Mbps), from System (120V/60Hz)
caused "Test Mode 1,3" generated the worst case, they were reported as the final data.	

Modulation Type	TX CONFIGURATION
GFSK	1TX
$\pi/4$ -DQPSK	1TX
8DPSK	1TX



2.4 Description of Test System

AC Power Line Conducted Emission					
Equipment	Brand	Model	Serial No	Length/Type	Power cord/Length/Type
Notebook	ASUS	P2430U	GBNXCV13 M064467	N/A	Adapter / 1.8m / NS
testfixture	CVTE	TEST BF Tool. 1	N/A	N/A	N/A
USB Cable	UGREEN	US132	N/A	0.3m / NS	N/A
Radiated Emissions (Below 1G) / Radiated Emissions (Above 1G) / RF Conducted					
Equipment	Brand	Model	Serial No	Length/Type	Power cord/Length/Type
Notebook	ASUS	P2430U	GBNXCV13 M064467	N/A	Adapter / 1.8m / NS
testfixture	CVTE	TEST BF Tool. 1	N/A	N/A	N/A
USB Cable	UGREEN	US132	N/A	0.3m / NS	N/A
USB Cable (A to B)	BENEVO	E210567AWM	N/A	1m / NS	N/A
USB Cable (A to B)	BENEVO	BUSB0301AMFB	N/A	0.8m / NS	N/A



2.5 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
	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 25,000MHz	
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	2022/07/07	24℃ / 53%	Dian Chen
Radiated Emissions	3M02-NK	2022/07/18~2022/7/25	24~25℃ / 51~52%	Dian Chen
AC Power Line Conducted Emission	CON01-NK	2022/07/23	23℃ / 51%	Dian Chen



2.6 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))

Measurement Item	Uncertainty
AC Power Line Conduction(150K~30MHz)	$\pm 3.12\text{dB}$
Radiated Spurious Emission(9KHz~30MHz)	$\pm 3.4\text{dB}$
Radiated Spurious Emission(30MHz~1GHz)	$\pm 5.7\text{dB}$
Radiated Spurious Emission(1GHz~25GHz)	$\pm 6.8\text{dB}$
Conducted Spurious Emission	$\pm 1.8\text{dB}$
6dB Bandwidth	$\pm 4.4\%$
20dB Bandwidth	$\pm 4.4\%$
Occupied Bandwidth	$\pm 4.4\%$
Peak Output Power(Conducted Power Meter)	$\pm 1.1\text{dB}$
Dwell Time / Deactivation Time	$\pm 1.2\%$
Power Spectral Density	$\pm 1.8\text{dB}$
Duty Cycle	$\pm 1.2\%$



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	275	2021/11/05	2022/11/04
Active Loop Antenna	EMCO	6507	40855	2022/05/25	2023/05/24
Horn Antenna	EMCO	3115	31601	2021/10/14	2022/10/13
Horn Antenna	EMCO	3116	31974	2021/10/04	2022/10/03
EMI Receiver	ROHDE & SCHWARZ	ESR 7	101906	2022/05/17	2023/05/16
Spectrum Analyzer	ROHDE & SCHWARZ	FSV 40-N	102151	2021/08/06	2022/08/05
Preamplifier	EM Electronics corp.	EM330	60658	2021/10/13	2022/10/12
Preamplifier	Agilent	8449B	3008A01954	2022/03/17	2023/03/16
Preamplifier	EMC INSTRUMENTS	EMC184045	980065	2021/11/16	2022/11/15
Cable-3in1(30M-1G)	HARBOUR INDUSTRIES	LL142	CCE1315	2022/03/21	2023/03/20
Cable-0.5m(1G-18G)	EMEC	EM104-SMSM-0.5M	CCE1354	2022/05/26	2023/05/25
Cable-0.5m(1G-40G)	HUBER SUHNER	SUCOFLEX 102	MY4569/2	2021/09/03	2022/09/02
Cable-1m(1G-40G)	HUBER SUHNER	SUCOFLEX 102	MY5739/2	2021/09/03	2022/09/02
Cable-0.5m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805443/4	2022/01/11	2023/01/10
Cable-3m(1G-40G)	HUBER SUHNER	SUCOFLEX 104	805796/4	2022/01/11	2023/01/10
Cable-8m(1G-26.5G)	WOKEN	WCBA-WCA203SM	CCE1374	2022/04/25	2023/04/24
Cable-6m(9k~300M)	NA	EMC5D-BM-BM-6	130606	2022/03/21	2023/03/20
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
EXA Signal Analyzer	KEYSIGHT	N9010A	MY54200207	2022/4/19	2023/4/18
Attenuator	KEYSIGHT	8491B	MY39250703	2022/4/12	2023/4/11
Cable-0.5m(1G-26.5G)	HUBER SUHNER	SUCOFLEX 102	28422/2	2022/4/9	2023/4/8
Power Meter	Anritsu	ML2495A	1224005	2022/4/12	2023/4/11
Power Sensor	Anritsu	MA2411B	1207295	2022/4/12	2023/4/11
Switch Box	Theda	1-4	TW5451159	NA	NA

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	101200	2021/08/30	2022/08/29
Line Impedance Stabilization Network	Schwarzbeck	NSLK 8127	8127-516	2021/10/05	2022/10/04
Pulse Limiter	ROHDE & SCHWARZ	ESH3-Z2	101933	2021/09/15	2022/09/14
Cable-6m(9k~300M)	NA	EMC5D-BM-BM-6	130605	2021/09/22	2022/09/21
E3	AUDIX	v8.2014-8-6	RK-000531	NA	NA



4. Antenna Requirements

4.1 Standard Applicable

For intentional device, according to FCC 47 CFR Section 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device.

And according to FCC 47 CFR Section 15.247 (b), if transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6dBi.

4.2 Antenna Construction and Directional Gain

Antenna Type	Dipole Antenna
Antenna connector type	IPX
Antenna Gain	2400~2500MHz: ANT B:3.19dBi



5. Frequency Hopping System Requirements

5.1 Frequency Hopping Requirement

According to FCC Part 15.247(a)(1), The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

(g) Frequency hopping spread spectrum systems are not required to employ all available hopping channels during each transmission. However, the system, consisting of both the transmitter and the receiver, must be designed to comply with all of the regulations in this section should the transmitter be presented with a continuous data (or information) stream. In addition, a system employing short transmission bursts must comply with the definition of a frequency hopping system and must distribute its transmissions over the minimum number of hopping channels specified in this section.

(h) The incorporation of intelligence within a frequency hopping spread spectrum system that permits the system to recognize other users within the spectrum band so that it individually and independently chooses and adapts its hopsets to avoid hopping on occupied channels is permitted. The coordination of frequency hopping systems in any other manner for the express purpose of avoiding the simultaneous occupancy of individual hopping frequencies by multiple transmitters is not permitted.



5.2 EUT Hopping System

This transmitter device is frequency hopping device, and complies with FCC part 15.247 rule.

This device uses Bluetooth radio which operates in 2400-2483.5 MHz band. Bluetooth uses a radio technology called frequency-hopping spread spectrum, which chops up the data being sent and transmits chunks of it on up to 79 bands (1 MHz each; centred from 2402 to 2480MHz) in the range 2,400-2,483.5 MHz. The transmitter switches hop frequencies 1,600 times per second to assure a high degree of data security. All Bluetooth devices participating in a given piconet are synchronized to the frequency-hopping channel for the piconet. The frequency hopping sequence is determined by the master's device address and the phase of the hopping sequence (the frequency to hop at a specific time) is determined by the master's internal clock. Therefore, all slaves in a piconet must know the master's device address and must synchronize their clocks with the master's clock.

Adaptive Frequency Hopping (AFH) was introduced in the Bluetooth specification to provide an effective way for a Bluetooth radio to counteract normal interference. AFH identifies "bad" channels, where either other wireless devices are interfering with the Bluetooth signal or the Bluetooth signal is interfering with another device. The AFH-enabled Bluetooth device will then communicate with other devices within its piconet to share details of any identified bad channels. The devices will then switch to alternative available "good" channels, away from the areas of interference, thus having no impact on the bandwidth used.



6. Test of AC Power Line Conducted Emission

6.1 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

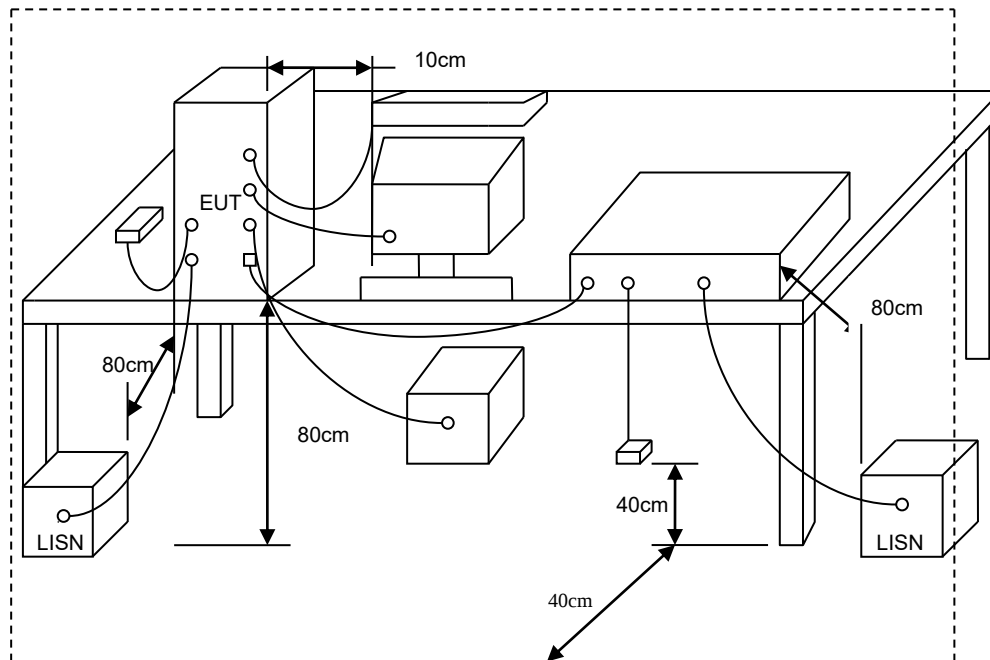
*Decreases with the logarithm of the frequency.

6.2 Test Procedures

- 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.
- Connect EUT to the power mains through a line impedance stabilization network (LISN).
- All the support units are connecting to the other LISN.
- The LISN provides 50 ohm coupling impedance for the measuring instrument.
- The FCC states that a 50 ohm, 50 micro-Henry LISN should be used.
- Both sides of AC line were checked for maximum conducted interference.
- The frequency range from 150 kHz to 30 MHz was searched.
- Set the test-receiver system to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.



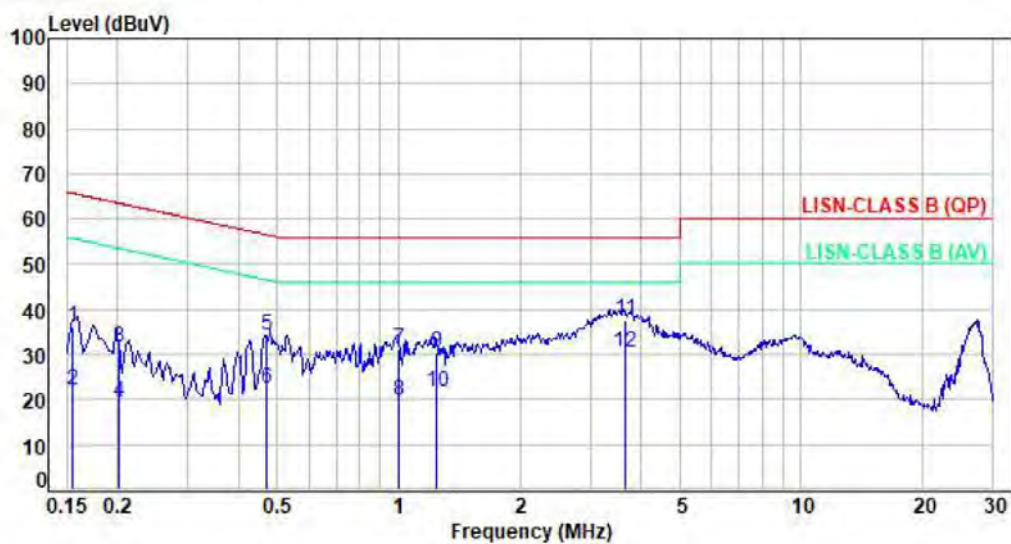
6.3 Typical Test Setup





6.4 Test Result and Data

Power	:	From System (AC120V/60Hz)	Pol/Phase	:	LINE
Test Mode	:	Mode 1		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.16	9.96	26.12	36.08	65.72	-29.64	QP	P
2	0.16	9.96	11.95	21.91	55.72	-33.81	Average	P
3	0.20	9.95	21.72	31.67	63.57	-31.90	QP	P
4	0.20	9.95	9.53	19.48	53.57	-34.09	Average	P
5	0.47	9.96	24.09	34.05	56.52	-22.47	QP	P
6	0.47	9.96	12.44	22.40	46.52	-24.12	Average	P
7	1.00	10.00	21.07	31.07	56.00	-24.93	QP	P
8	1.00	10.00	9.84	19.84	46.00	-26.16	Average	P
9	1.24	10.02	20.30	30.32	56.00	-25.68	QP	P
10	1.24	10.02	11.75	21.77	46.00	-24.23	Average	P
11	3.64	10.20	27.30	37.50	56.00	-18.50	QP	P
12	3.64	10.20	20.04	30.24	46.00	-15.76	Average	P

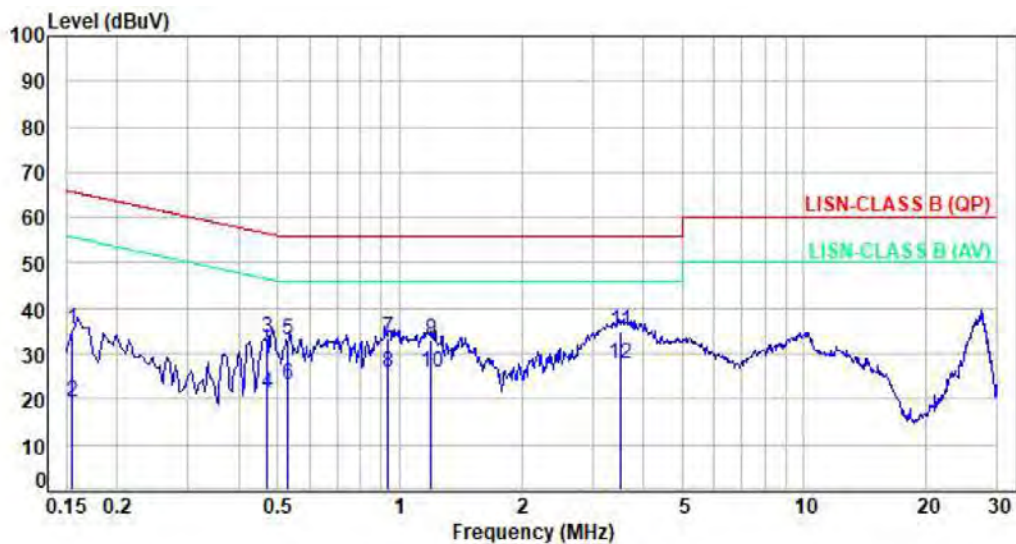
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	NEUTRAL
Test Mode	:	Mode 1		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.16	9.94	25.23	35.17	65.72	-30.55	QP	P
2	0.16	9.94	9.55	19.49	55.72	-36.23	Average	P
3	0.47	9.94	23.70	33.64	56.51	-22.87	QP	P
4	0.47	9.94	11.54	21.48	46.51	-25.03	Average	P
5	0.53	9.94	23.09	33.03	56.00	-22.97	QP	P
6	0.53	9.94	13.27	23.21	46.00	-22.79	Average	P
7	0.93	9.97	23.52	33.49	56.00	-22.51	QP	P
8	0.93	9.97	16.01	25.98	46.00	-20.02	Average	P
9	1.20	9.99	23.11	33.10	56.00	-22.90	QP	P
10	1.20	9.99	15.76	25.75	46.00	-20.25	Average	P
11	3.50	10.11	24.93	35.04	56.00	-20.96	QP	P
12	3.50	10.11	17.66	27.77	46.00	-18.23	Average	P

Note: Level=Reading+Factor

Margin=Level-Limit

Factor=(LISN or ISN or Current Probe)Factor + Cable Loss



7. Test of Radiated Spurious Emission

7.1 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



7.2 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.

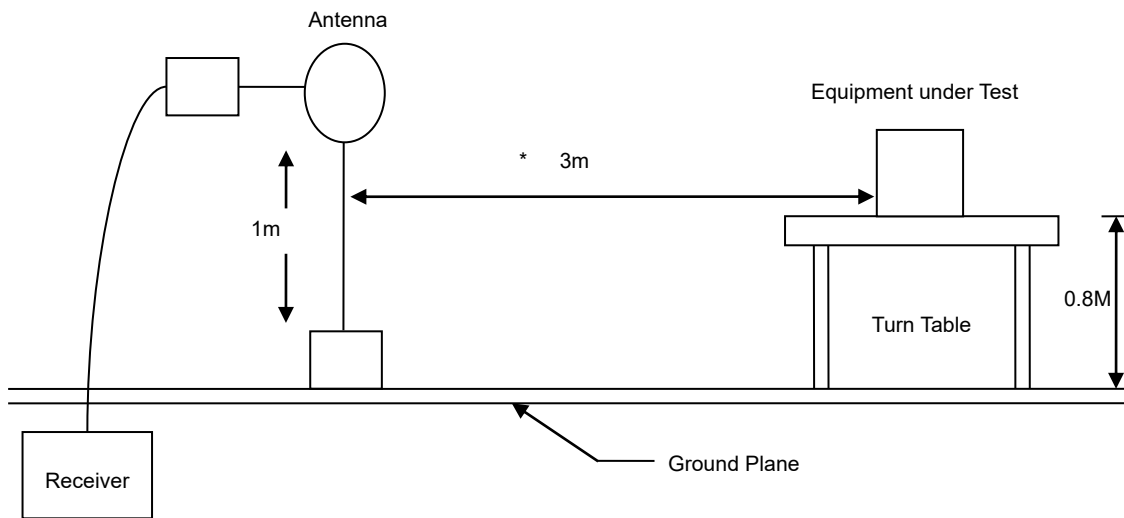
Note:

1. The supporting fixture shall permit orientation of the EUT in each of three orthogonal axis positions such that emissions from the EUT are maximized.
(X AXIS is the worst.)

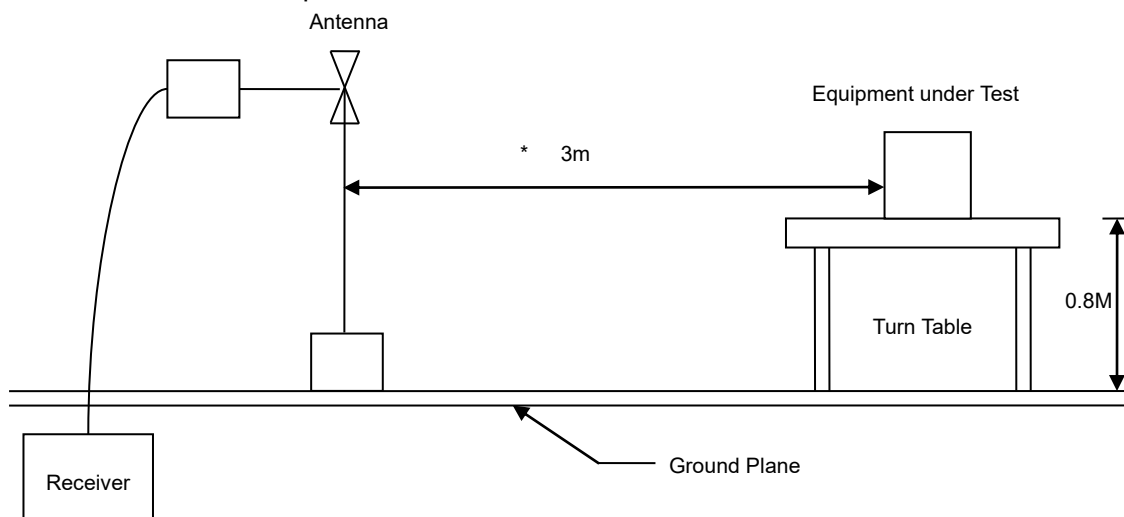


7.3 Typical Test Setup

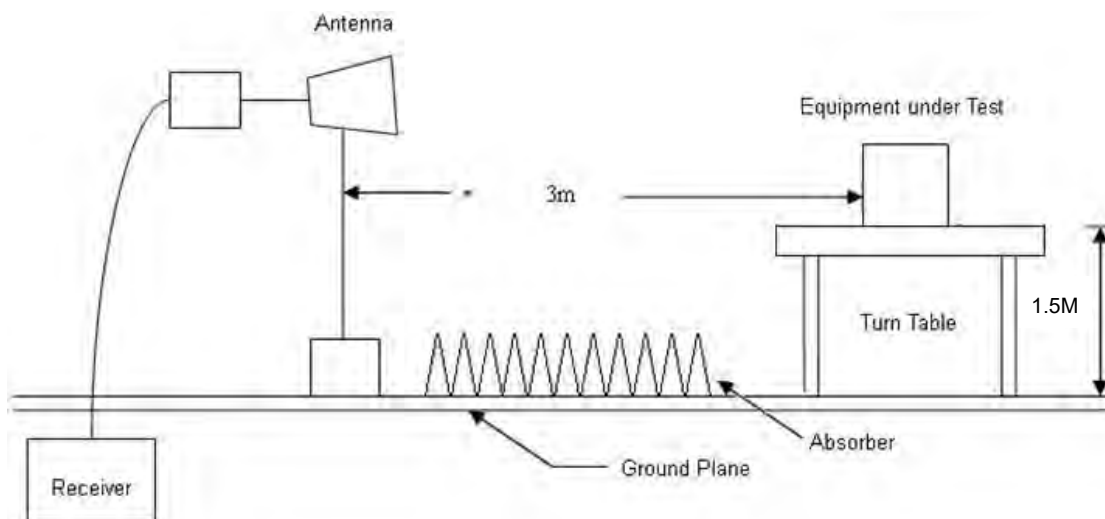
Below 30MHz test setup



30MHz- 1GHz Test Setup



Above 1GHz Test Setup



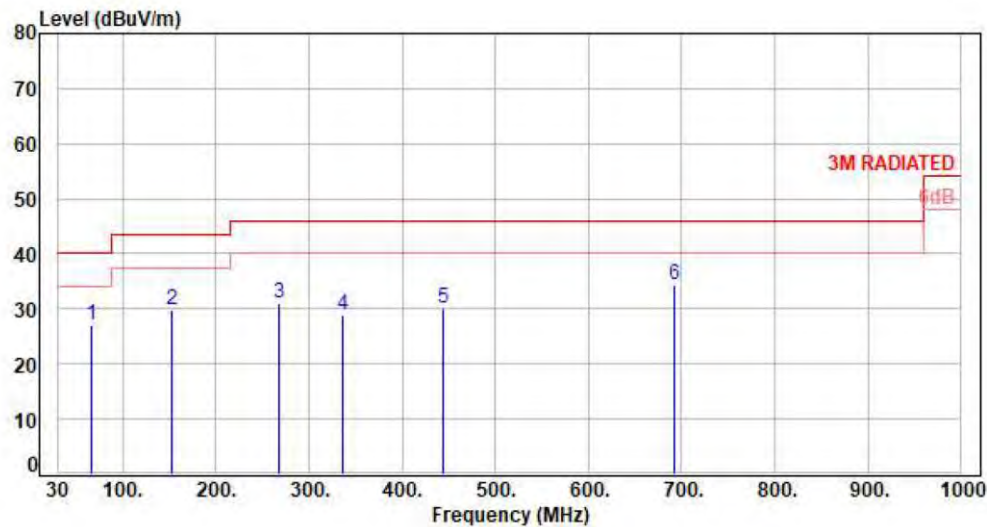


7.4 Test Result and Data (9kHz ~ 30MHz)

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

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

Power	:	From System (AC120V/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	66.86	-12.88	39.91	27.03	40.00	-12.97	Peak	100	124	P
2	153.19	-11.46	41.17	29.71	43.50	-13.79	Peak	100	188	P
3	268.62	-10.91	42.09	31.18	46.00	-14.82	Peak	100	185	P
4	336.52	-9.34	38.10	28.76	46.00	-17.24	Peak	100	41	P
5	443.22	-6.39	36.49	30.10	46.00	-15.90	Peak	100	140	P
6	691.54	-1.45	35.68	34.23	46.00	-11.77	Peak	100	152	P

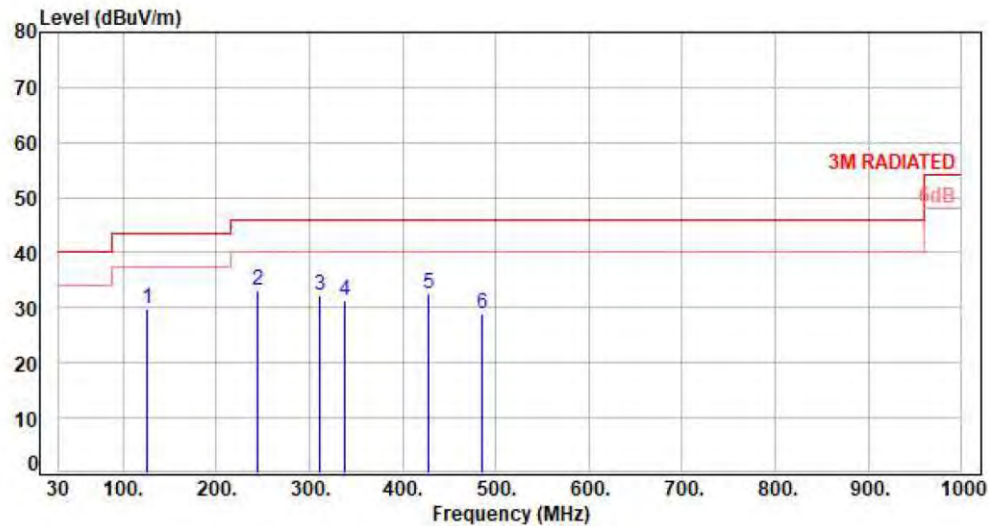
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1		:	



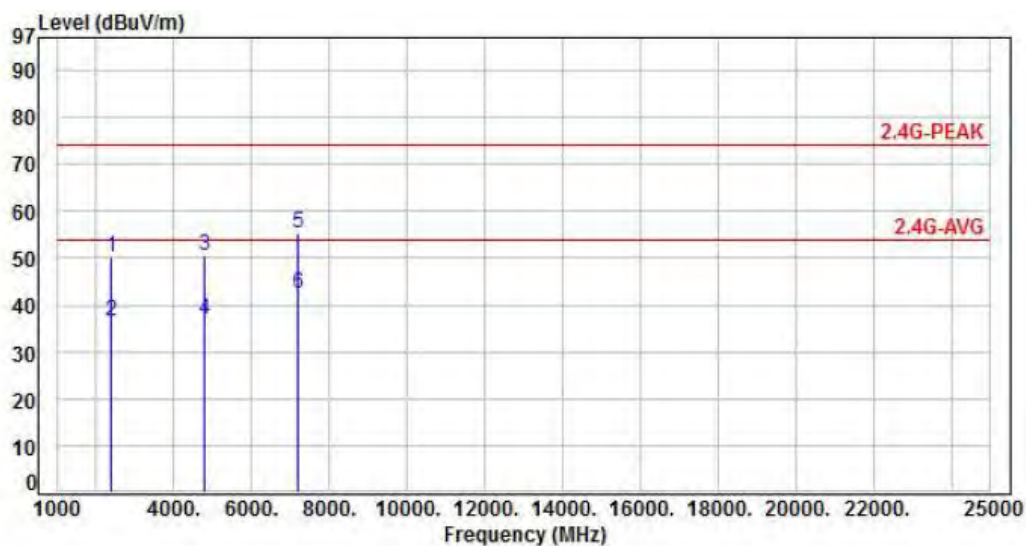
No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	125.06	-13.41	43.14	29.73	43.50	-13.77	Peak	100	252	P
2	244.37	-12.17	45.30	33.13	46.00	-12.87	Peak	100	53	P
3	311.30	-9.77	41.94	32.17	46.00	-13.83	Peak	100	114	P
4	338.46	-9.32	40.50	31.18	46.00	-14.82	Peak	100	145	P
5	427.70	-6.61	39.19	32.58	46.00	-13.42	Peak	100	158	P
6	485.90	-5.49	34.43	28.94	46.00	-17.06	Peak	100	180	P

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



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

Power	:	From System (AC120V/60Hz)	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH00		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-2.64	52.81	50.17	74.00	-23.83	Peak	100	180	P
2	2390.00	-2.64	39.05	36.41	54.00	-17.59	Average	100	180	P
3	4804.00	4.96	45.45	50.41	74.00	-23.59	Peak	100	113	P
4	4804.00	4.96	31.83	36.79	54.00	-17.21	Average	100	113	P
5	7206.00	9.57	45.58	55.15	74.00	-18.85	Peak	100	75	P
6	7206.00	9.57	32.89	42.46	54.00	-11.54	Average	100	75	P

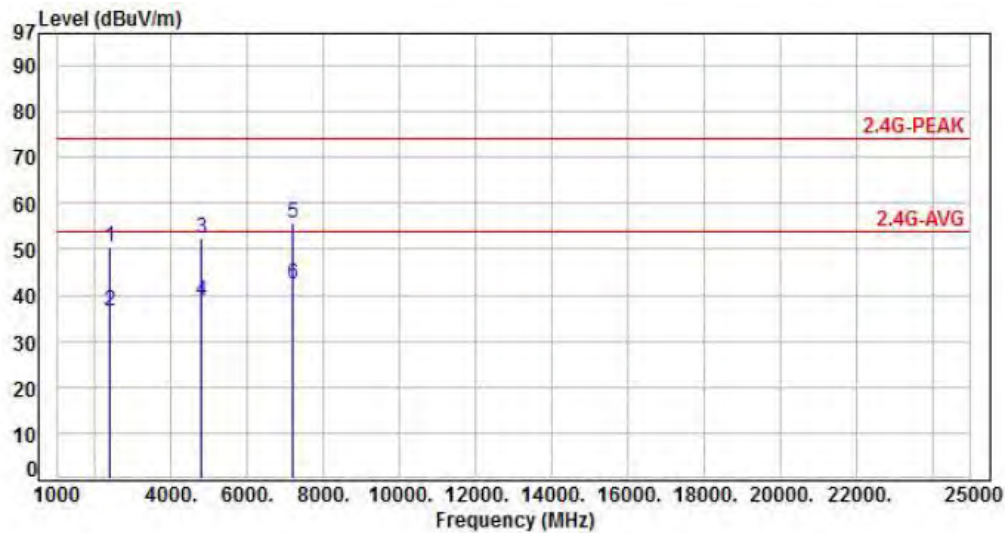
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH00		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-2.64	53.34	50.70	74.00	-23.30	Peak	100	181	P
2	2390.00	-2.64	39.22	36.58	54.00	-17.42	Average	100	181	P
3	4804.00	4.96	47.42	52.38	74.00	-21.62	Peak	100	111	P
4	4804.00	4.96	33.78	38.74	54.00	-15.26	Average	100	111	P
5	7206.00	9.57	46.27	55.84	74.00	-18.16	Peak	100	122	P
6	7206.00	9.57	32.84	42.41	54.00	-11.59	Average	100	122	P

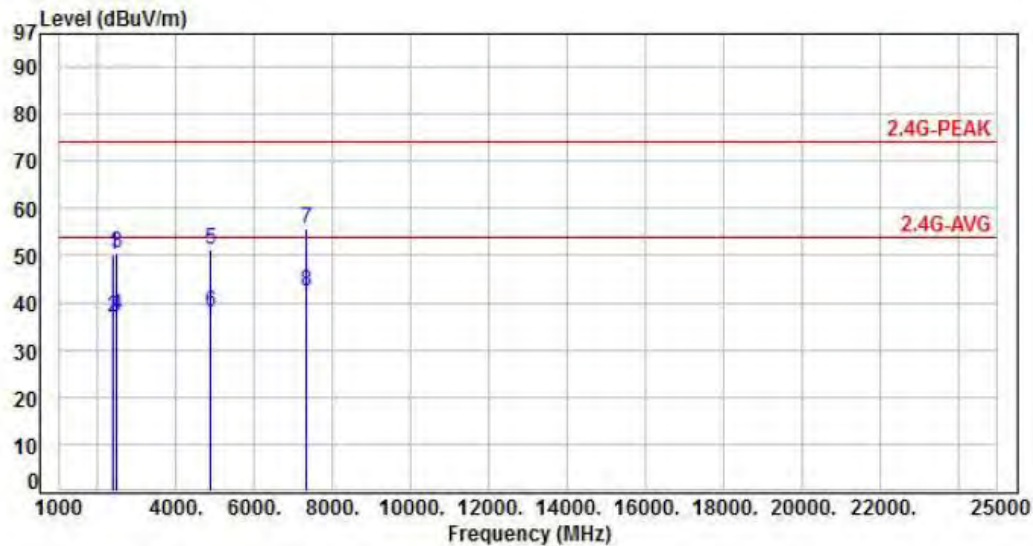
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH39		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-2.64	52.88	50.24	74.00	-23.76	Peak	100	173	P
2	2390.00	-2.64	39.66	37.02	54.00	-16.98	Average	100	173	P
3	2483.50	-2.39	52.76	50.37	74.00	-23.63	Peak	100	178	P
4	2483.50	-2.39	39.78	37.39	54.00	-16.61	Average	100	178	P
5	4882.00	5.21	46.04	51.25	74.00	-22.75	Peak	100	154	P
6	4882.00	5.21	32.96	38.17	54.00	-15.83	Average	100	154	P
7	7323.00	10.13	45.44	55.57	74.00	-18.43	Peak	100	229	P
8	7323.00	10.13	32.11	42.24	54.00	-11.76	Average	100	229	P

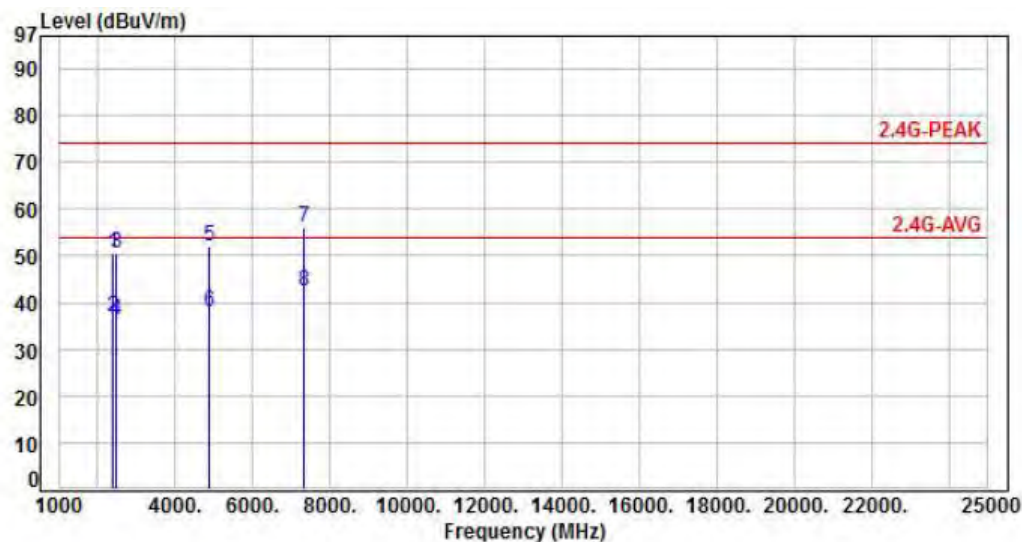
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH39		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-2.64	53.31	50.67	74.00	-23.33	Peak	100	252	P
2	2390.00	-2.64	39.42	36.78	54.00	-17.22	Average	100	252	P
3	2483.50	-2.39	52.77	50.38	74.00	-23.62	Peak	100	205	P
4	2483.50	-2.39	38.60	36.21	54.00	-17.79	Average	100	205	P
5	4882.00	5.21	46.84	52.05	74.00	-21.95	Peak	100	199	P
6	4882.00	5.21	32.93	38.14	54.00	-15.86	Average	100	199	P
7	7323.00	10.13	46.05	56.18	74.00	-17.82	Peak	100	115	P
8	7323.00	10.13	32.39	42.52	54.00	-11.48	Average	100	115	P

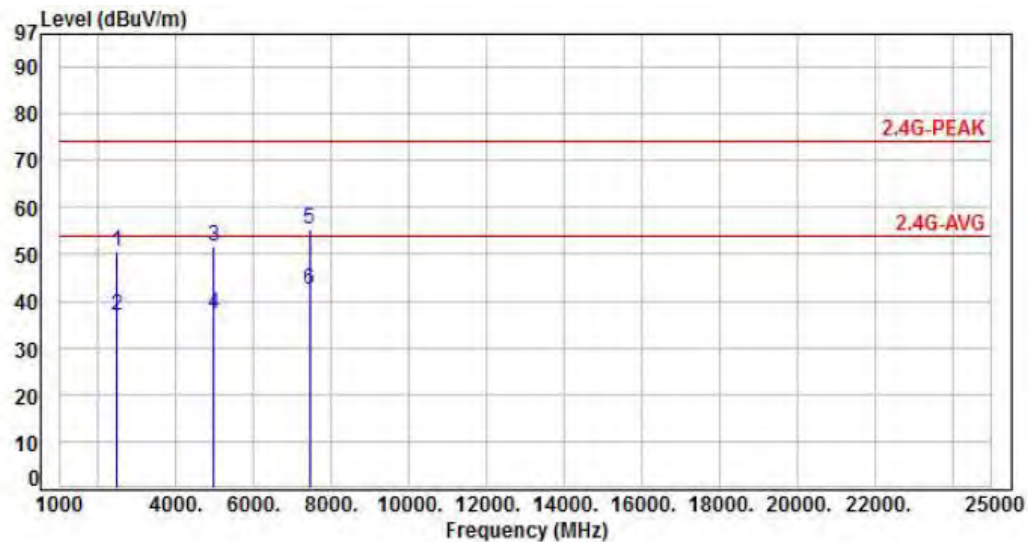
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 1, CH78		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-2.39	52.80	50.41	74.00	-23.59	Peak	100	152	P
2	2483.50	-2.39	39.24	36.85	54.00	-17.15	Average	100	207	P
3	4960.00	5.54	46.03	51.57	74.00	-22.43	Peak	100	208	P
4	4960.00	5.54	31.71	37.25	54.00	-16.75	Average	100	208	P
5	7440.00	10.32	45.10	55.42	74.00	-18.58	Peak	100	202	P
6	7440.00	10.32	32.14	42.46	54.00	-11.54	Average	100	202	P

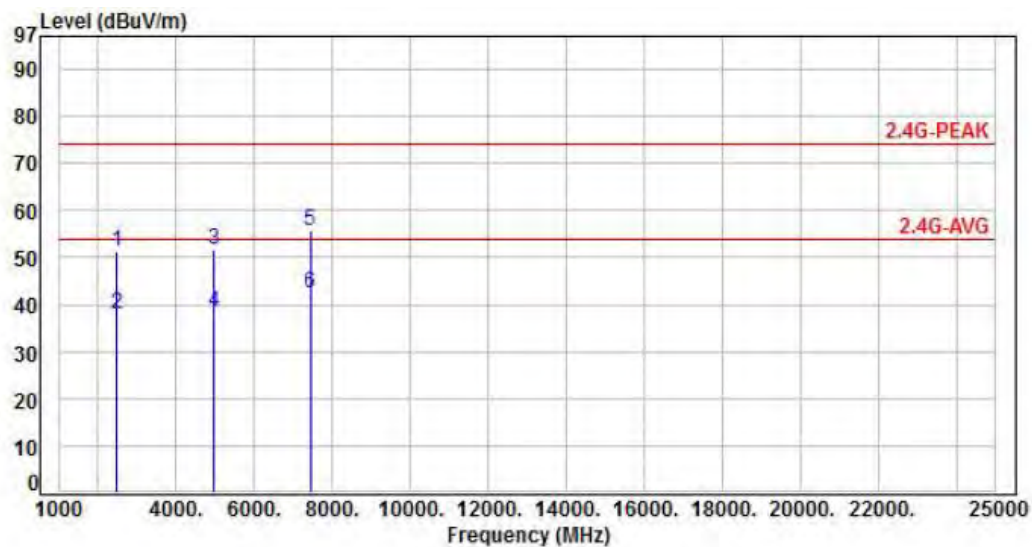
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 1, CH78		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-2.39	53.81	51.42	74.00	-22.58	Peak	100	228	P
2	2483.50	-2.39	40.35	37.96	54.00	-16.04	Average	100	228	P
3	4960.00	5.54	46.20	51.74	74.00	-22.26	Peak	100	208	P
4	4960.00	5.54	32.81	38.35	54.00	-15.65	Average	100	208	P
5	7440.00	10.32	45.40	55.72	74.00	-18.28	Peak	100	221	P
6	7440.00	10.32	32.13	42.45	54.00	-11.55	Average	100	221	P

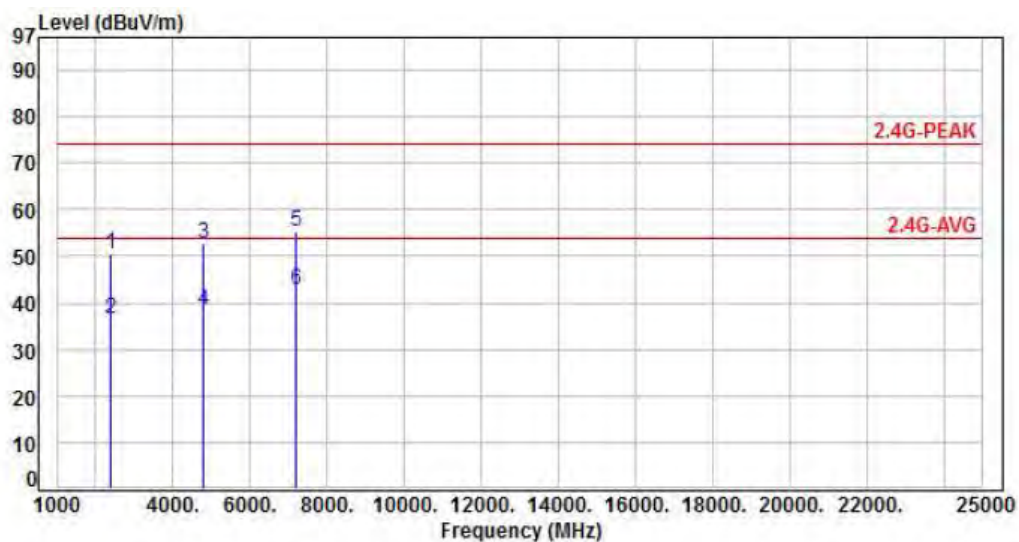
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH00		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-2.64	53.16	50.52	74.00	-23.48	Peak	100	229	P
2	2390.00	-2.64	39.11	36.47	54.00	-17.53	Average	100	229	P
3	4804.00	4.96	47.62	52.58	74.00	-21.42	Peak	100	211	P
4	4804.00	4.96	33.39	38.35	54.00	-15.65	Average	100	211	P
5	7206.00	9.57	45.89	55.46	74.00	-18.54	Peak	100	123	P
6	7206.00	9.57	33.10	42.67	54.00	-11.33	Average	100	123	P

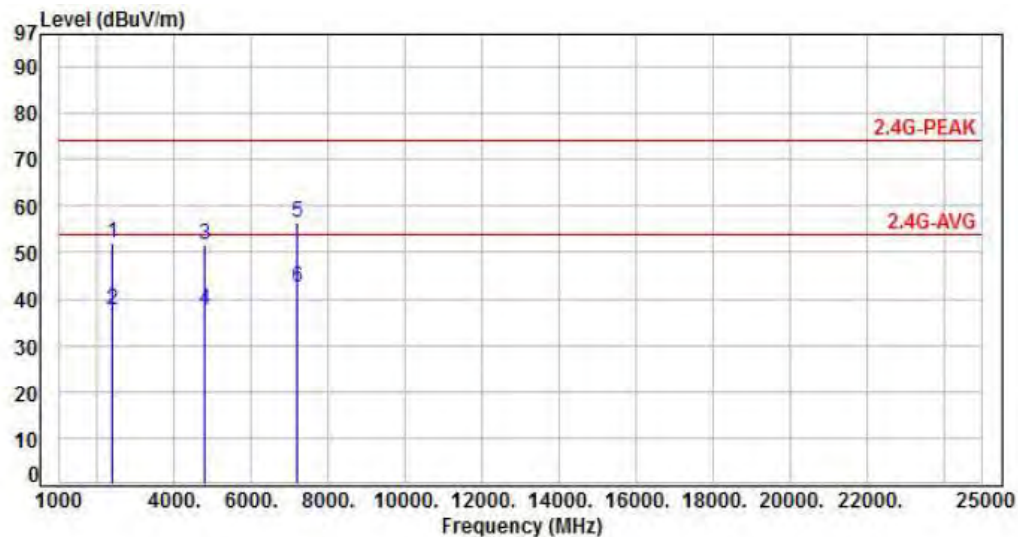
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH00		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-2.64	54.51	51.87	74.00	-22.13	Peak	100	105	P
2	2390.00	-2.64	40.26	37.62	54.00	-16.38	Average	100	105	P
3	4804.00	4.96	46.69	51.65	74.00	-22.35	Peak	100	161	P
4	4804.00	4.96	32.69	37.65	54.00	-16.35	Average	100	161	P
5	7206.00	9.57	46.87	56.44	74.00	-17.56	Peak	100	232	P
6	7206.00	9.57	32.92	42.49	54.00	-11.51	Average	100	232	P

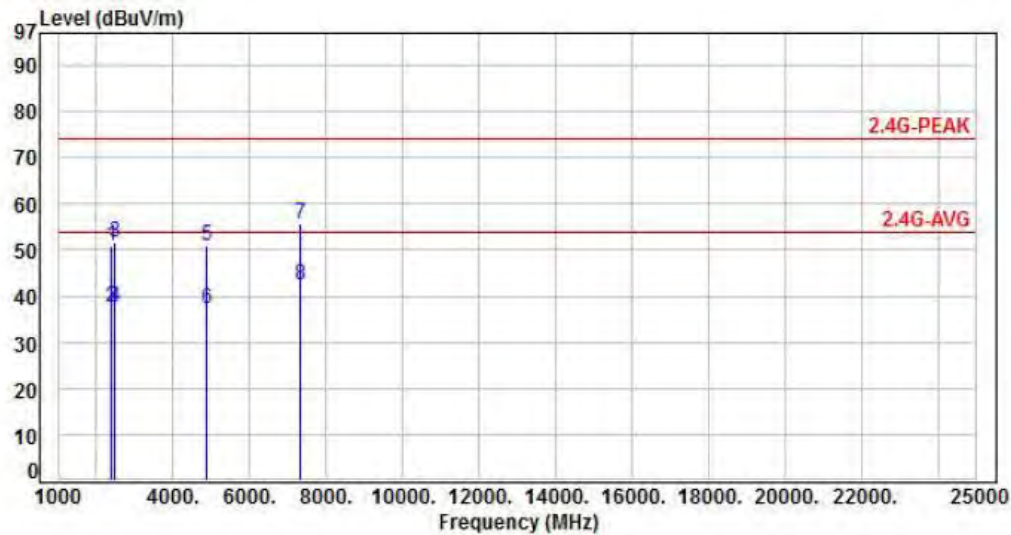
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH39		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-2.64	53.69	51.05	74.00	-22.95	Peak	100	133	P
2	2390.00	-2.64	40.15	37.51	54.00	-16.49	Average	100	133	P
3	2483.50	-2.39	53.85	51.46	74.00	-22.54	Peak	100	174	P
4	2483.50	-2.39	39.92	37.53	54.00	-16.47	Average	100	174	P
5	4882.00	5.21	45.52	50.73	74.00	-23.27	Peak	100	105	P
6	4882.00	5.21	32.04	37.25	54.00	-16.75	Average	100	105	P
7	7323.00	10.13	45.51	55.64	74.00	-18.36	Peak	100	163	P
8	7323.00	10.13	32.36	42.49	54.00	-11.51	Average	100	163	P

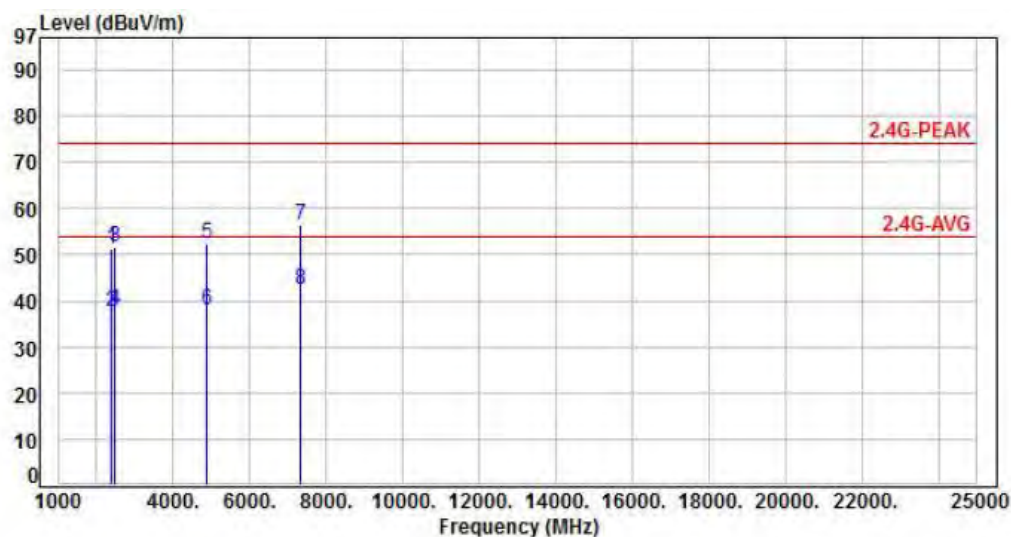
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH39		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2390.00	-2.64	53.76	51.12	74.00	-22.88	Peak	100	133	P
2	2390.00	-2.64	40.32	37.68	54.00	-16.32	Average	100	133	P
3	2483.50	-2.39	53.90	51.51	74.00	-22.49	Peak	100	112	P
4	2483.50	-2.39	40.20	37.81	54.00	-16.19	Average	100	112	P
5	4882.00	5.21	47.22	52.43	74.00	-21.57	Peak	100	239	P
6	4882.00	5.21	32.64	37.85	54.00	-16.15	Average	100	239	P
7	7323.00	10.13	46.21	56.34	74.00	-17.66	Peak	100	223	P
8	7323.00	10.13	32.25	42.38	54.00	-11.62	Average	100	223	P

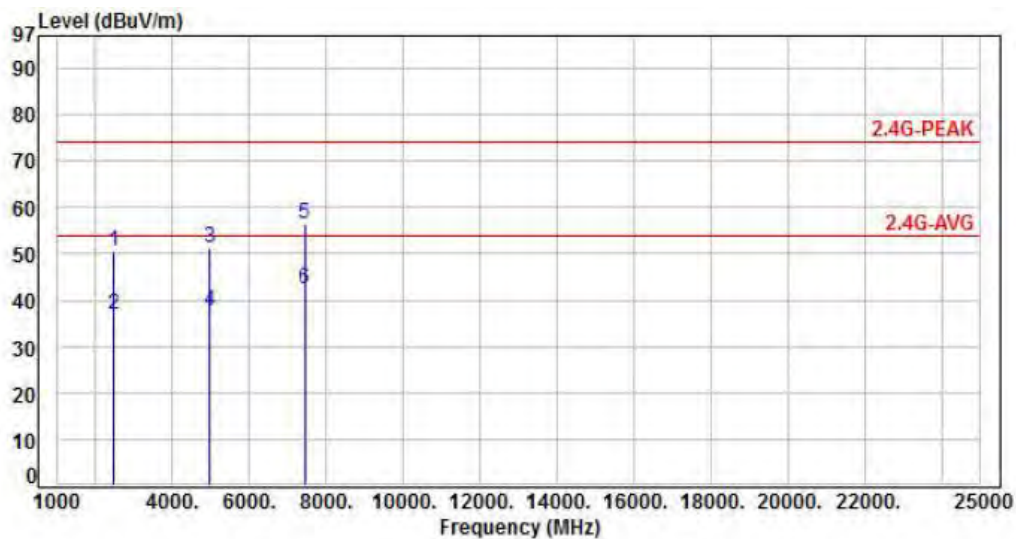
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	VERTICAL
Test Mode	:	Mode 3, CH78		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-2.39	52.92	50.53	74.00	-23.47	Peak	100	128	P
2	2483.50	-2.39	39.26	36.87	54.00	-17.13	Average	100	128	P
3	4960.00	5.54	45.87	51.41	74.00	-22.59	Peak	100	187	P
4	4960.00	5.54	32.00	37.54	54.00	-16.46	Average	100	187	P
5	7440.00	10.32	46.09	56.41	74.00	-17.59	Peak	100	225	P
6	7440.00	10.32	32.24	42.56	54.00	-11.44	Average	100	225	P

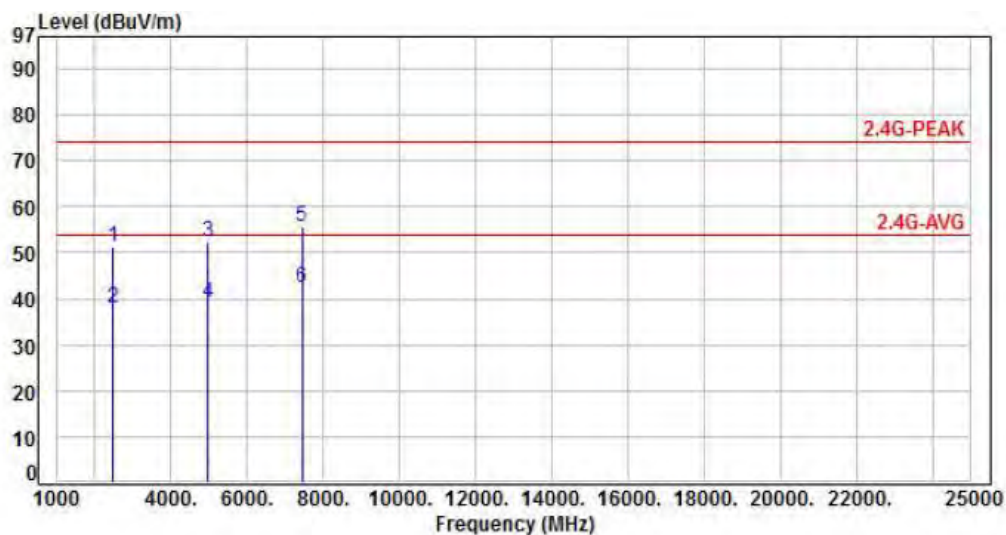
Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



Power	:	From System (AC120V/60Hz)	Pol/Phase	:	HORIZONTAL
Test Mode	:	Mode 3, CH78		:	



No.	Frequency (MHz)	Factor (dB)	Reading (dBuV)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	Height (cm)	Azimuth (deg)	P/F
1	2483.50	-2.39	53.59	51.20	74.00	-22.80	Peak	100	218	P
2	2483.50	-2.39	40.41	38.02	54.00	-15.98	Average	100	218	P
3	4960.00	5.54	46.89	52.43	74.00	-21.57	Peak	100	117	P
4	4960.00	5.54	33.67	39.21	54.00	-14.79	Average	100	117	P
5	7440.00	10.32	45.33	55.65	74.00	-18.35	Peak	100	188	P
6	7440.00	10.32	32.02	42.34	54.00	-11.66	Average	100	188	P

Note: Level=Reading+Factor

Margin=Level-Limit

Factor=Antenna Factor + cable loss - Amplifier Factor



7.7 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



8. Test of Conducted Spurious Emission

8.1 Test Limit

According to the methods defined in ANSI C63.10-2013 Section 7.8.8

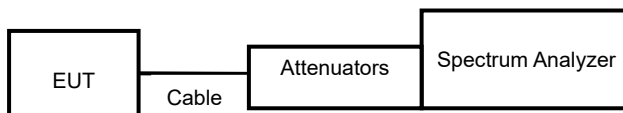
Below -20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

8.2 Test Procedure

According to the methods defined in ANSI C63.10-2013

- The transmitter output was connected to the spectrum analyzer via a low loss cable.
- 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.
- The band edges was measured and recorded.

8.3 Test Setup Layout

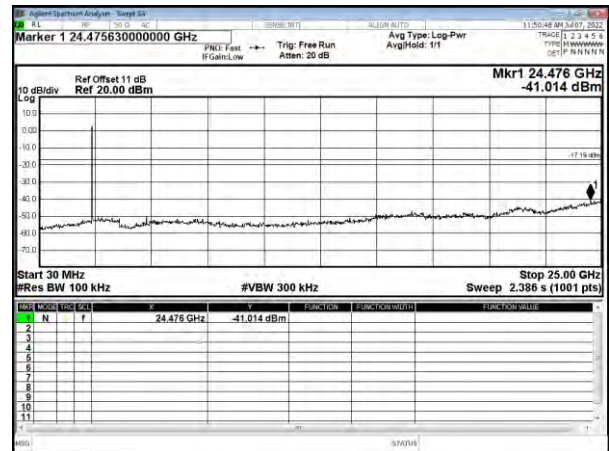
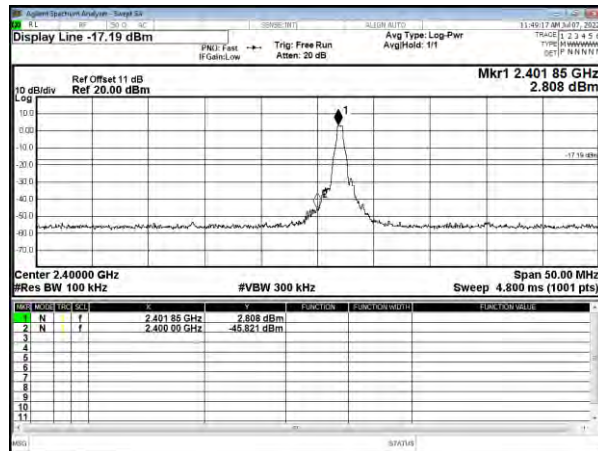


8.4 Test Result and Data

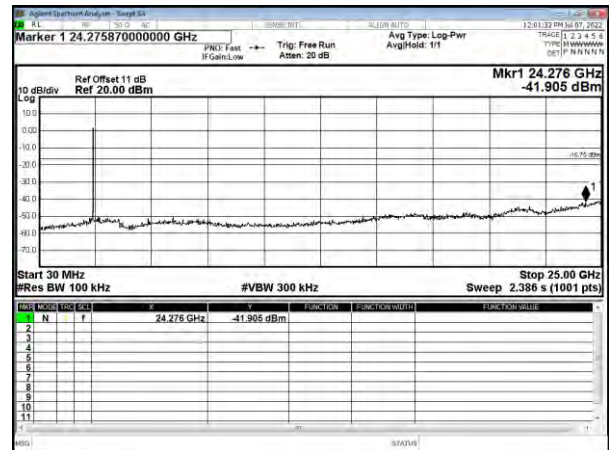
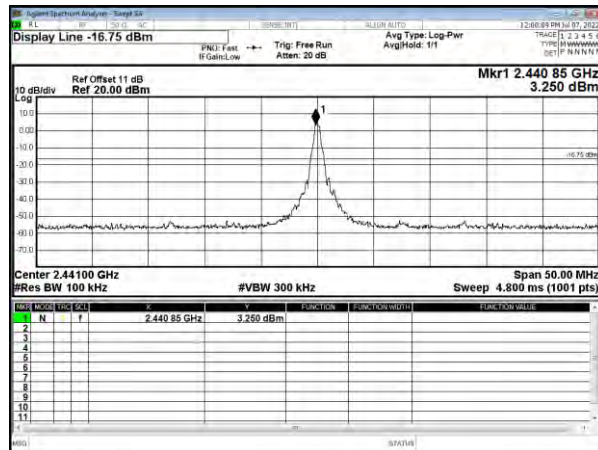
Note: Test plots refer to the following pages.



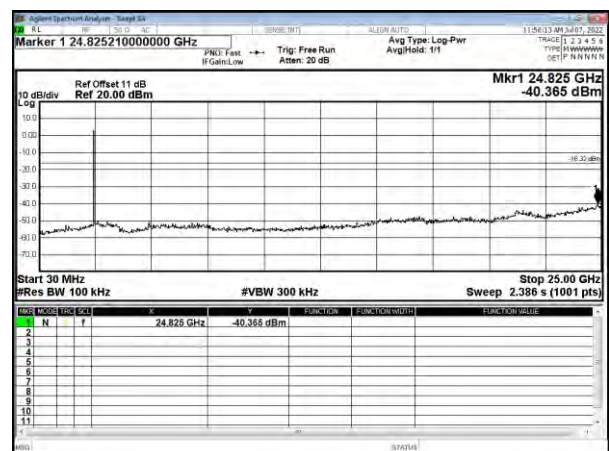
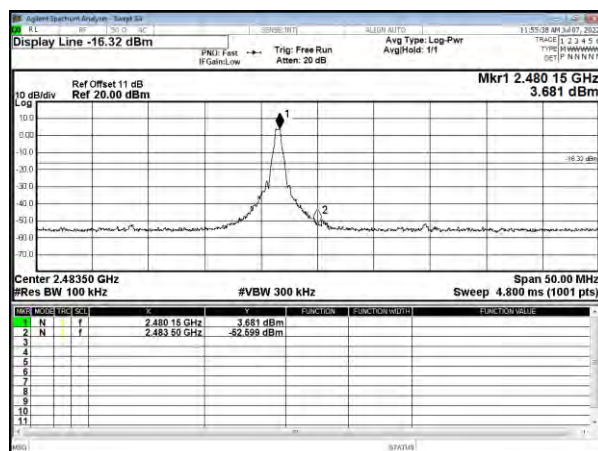
Modulation Type: GFSK (1Mbps)
Channel: 00



Modulation Type: GFSK (1Mbps)
Channel: 39

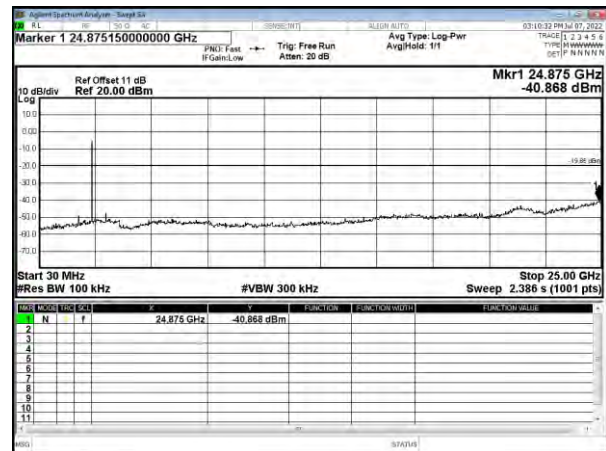
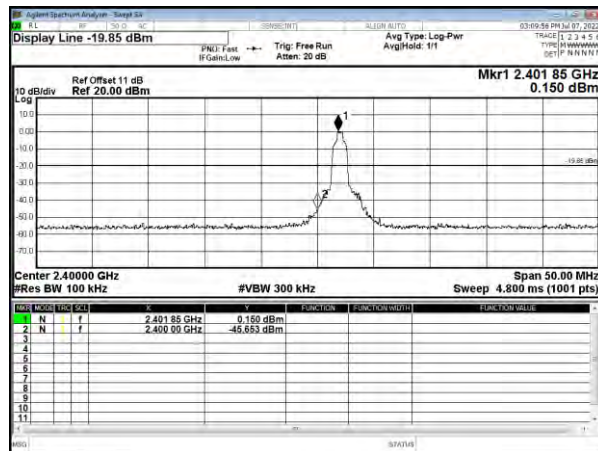


Modulation Type: GFSK (1Mbps)
Channel: 78

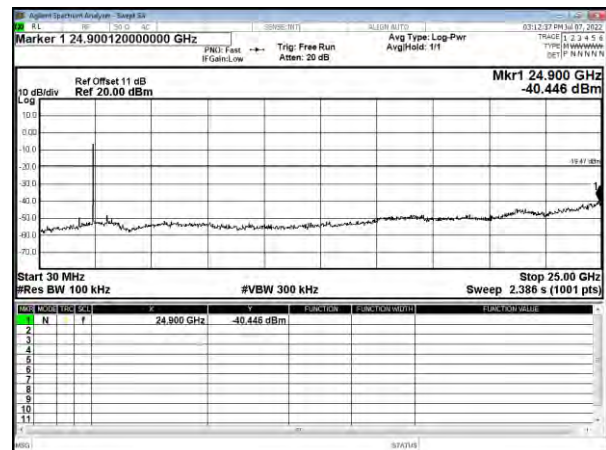
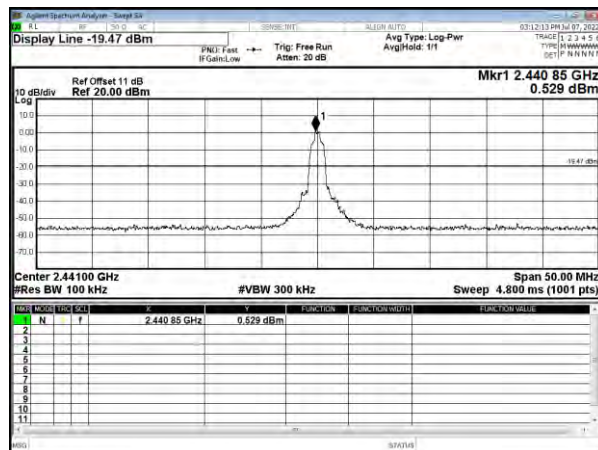




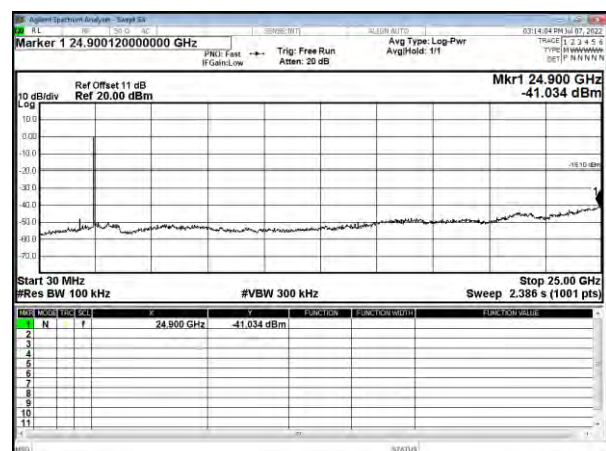
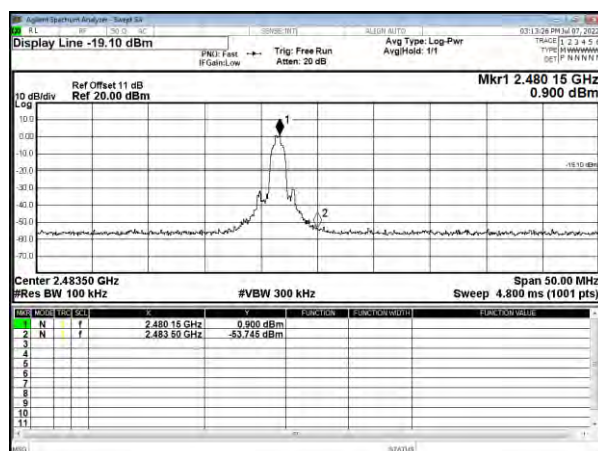
Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 00



Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 39

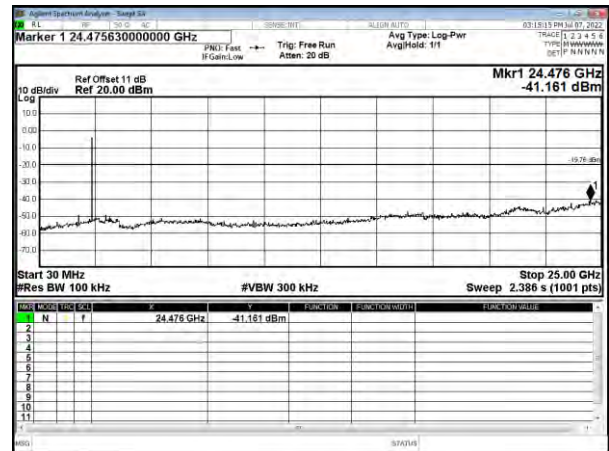
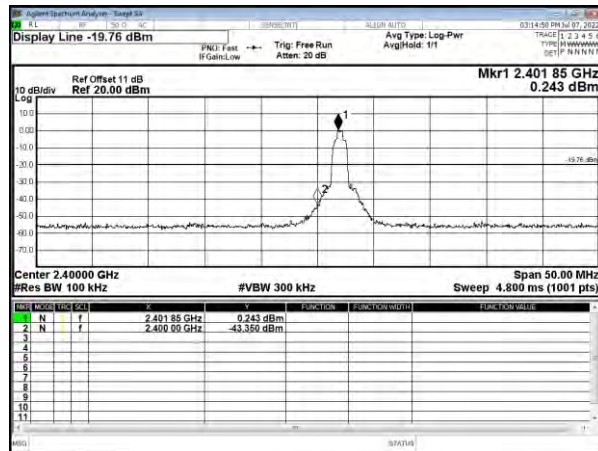


Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 78

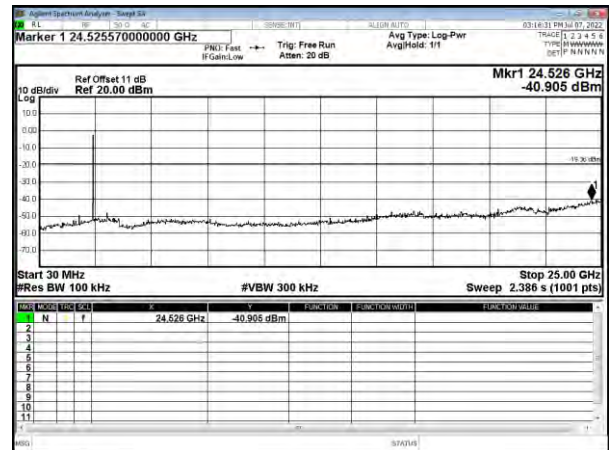
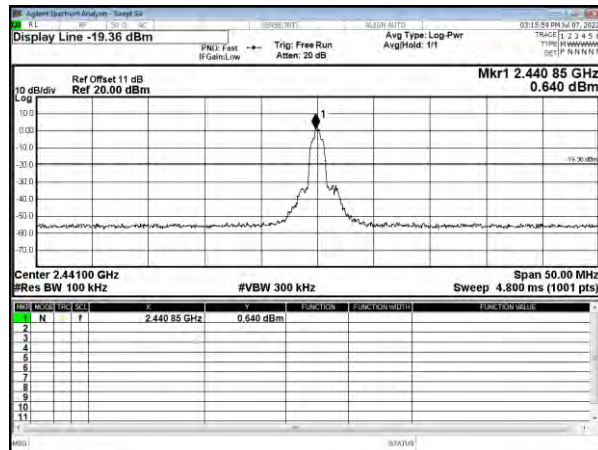




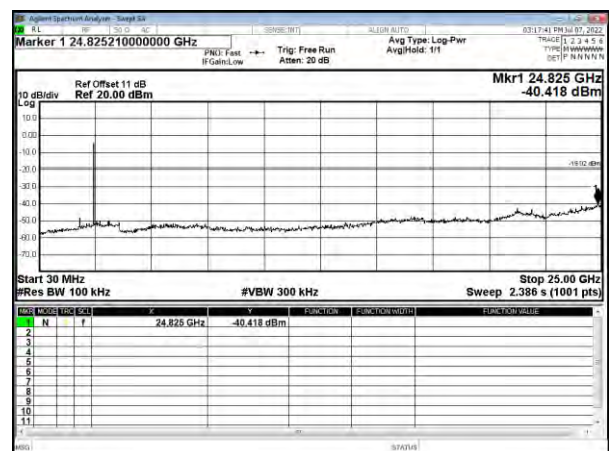
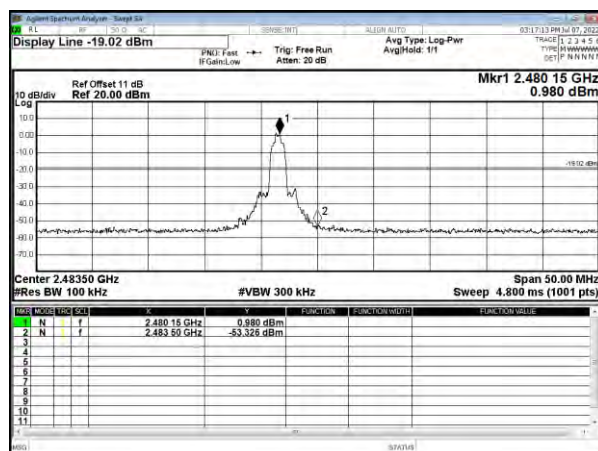
Modulation Type: 8DPSK (3Mbps)
Channel: 00



Modulation Type: 8DPSK (3Mbps)
Channel: 39

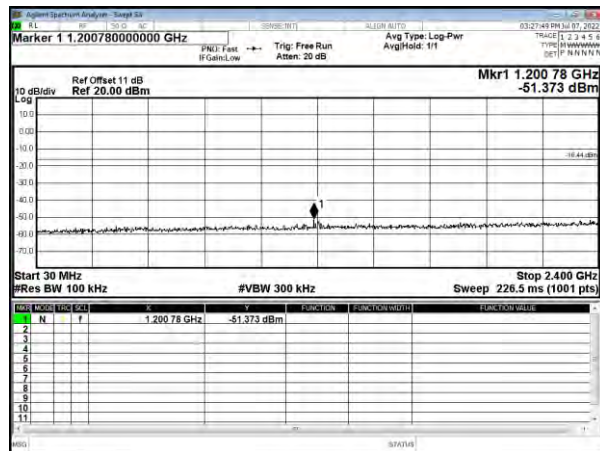


Modulation Type: 8DPSK (3Mbps)
Channel: 78

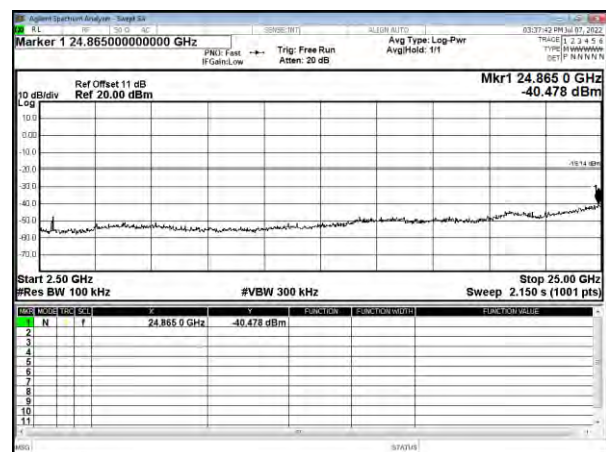
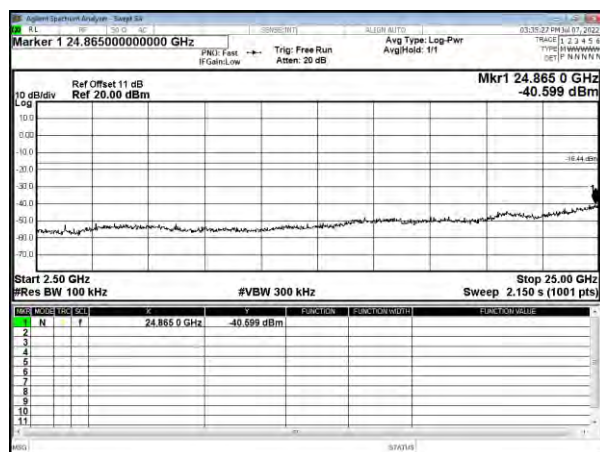
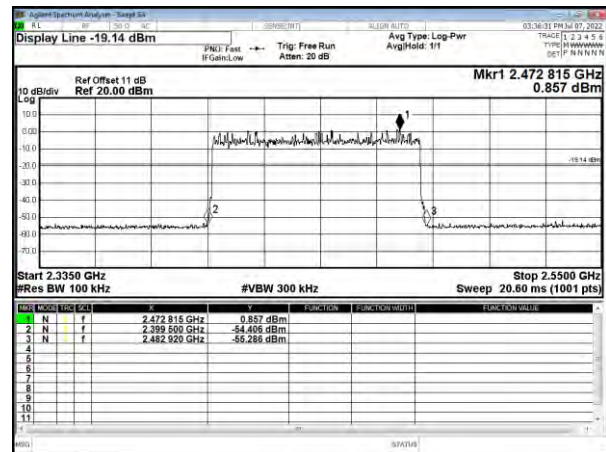
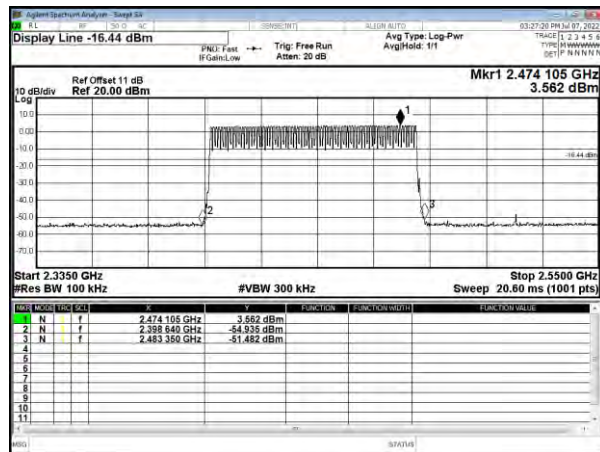
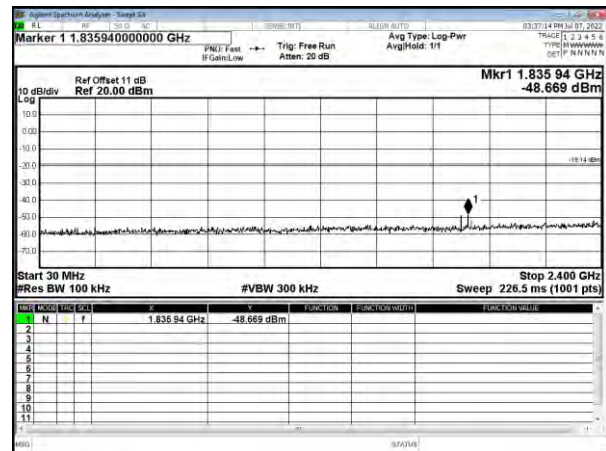




Hopping Mode: Modulation Type: GFSK

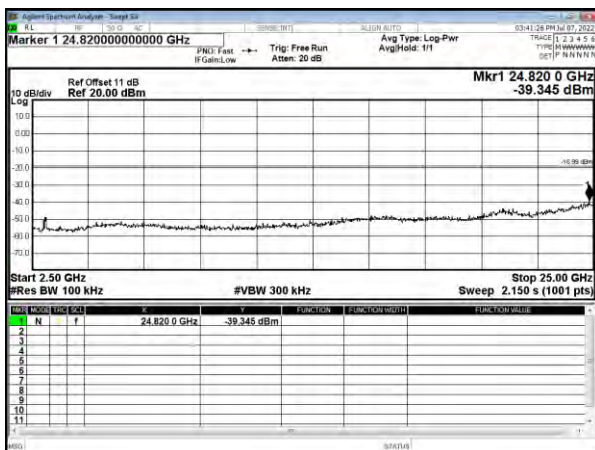
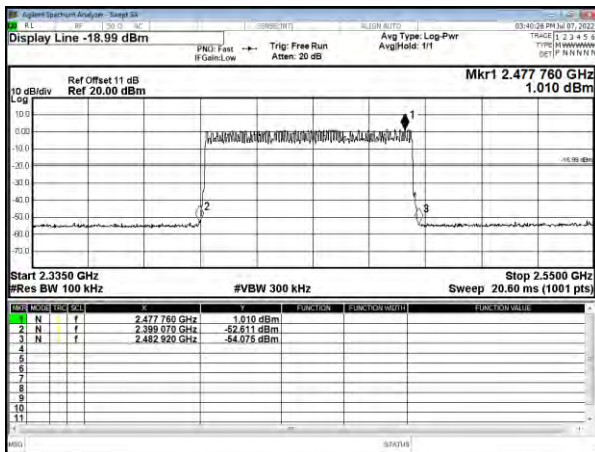
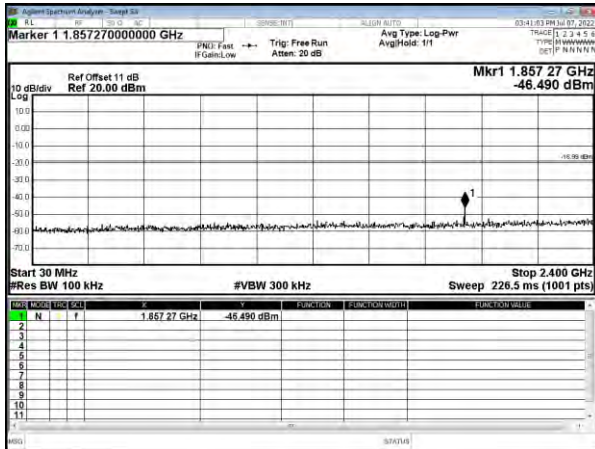


Modulation Type: $\pi/4$ -DQPSK





Modulation Type: 8DPSK





9. 20dB Bandwidth Measurement Data

9.1 Test Limit

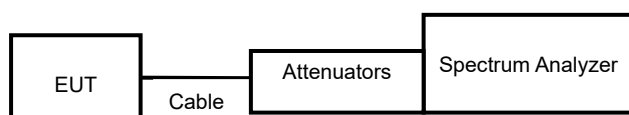
For reference data.

9.2 Test Procedures

According to the methods defined in ANSI C63.10-2013 Section 6.9

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 1~5% of the 20dB bandwidth and VBW to approximately three time RBW..
- The 20 dB bandwidth is defined as the total spectrum the power of which is higher than peak power minus 20 dB.

9.3 Test Setup Layout

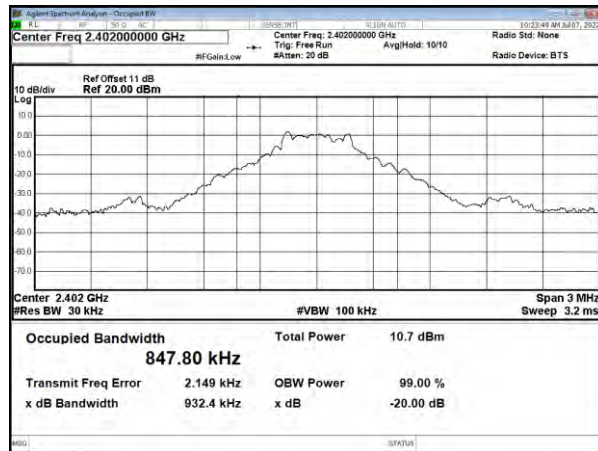


9.4 Test Result and Data

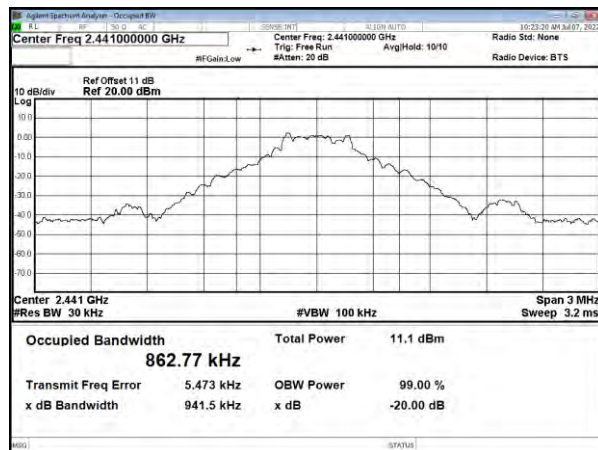
Modulation Type	Channel	Frequency (MHz)	20dB Bandwidth (MHz)	2/3 20dB Bandwidth (MHz)
GFSK	0	2402	0.932	0.622
	39	2441	0.942	0.628
	78	2480	0.929	0.620
$\pi/4$ -DQPSK	0	2402	1.248	0.832
	39	2441	1.247	0.831
	78	2480	1.237	0.825
8DPSK	0	2402	1.251	0.834
	39	2441	1.257	0.838
	78	2480	1.249	0.833



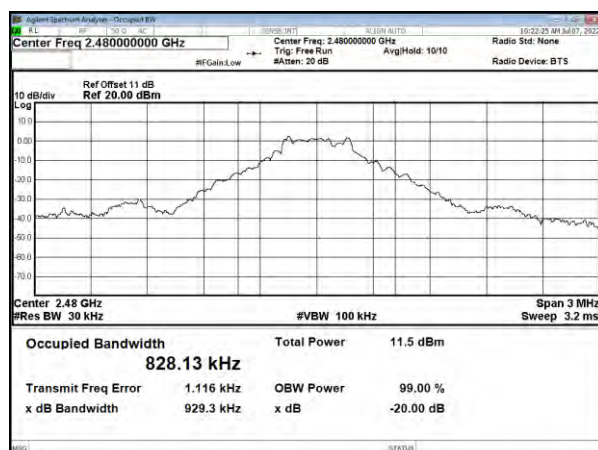
Modulation Type: GFSK (1Mbps)
Channel: 00



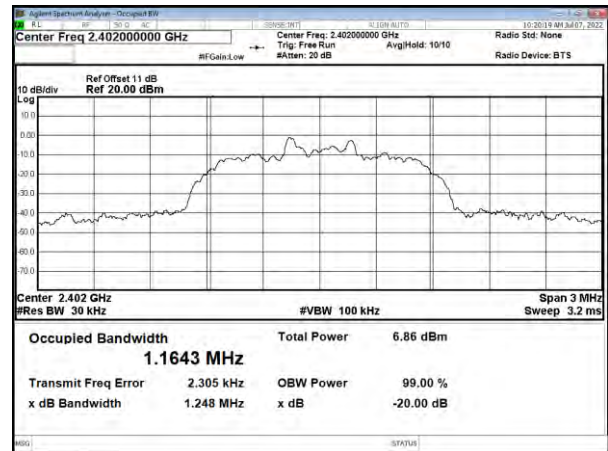
CH39



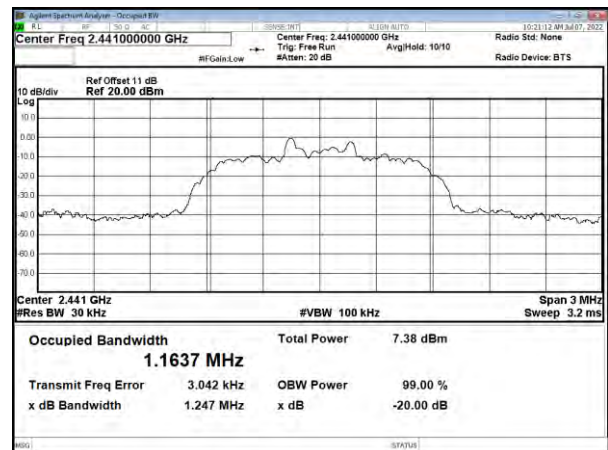
CH78



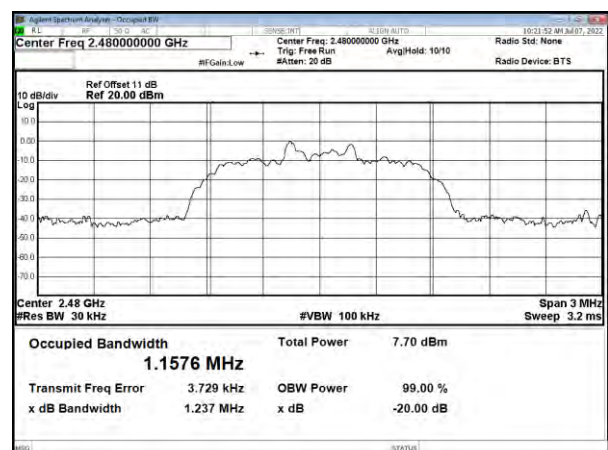
Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 00



CH39

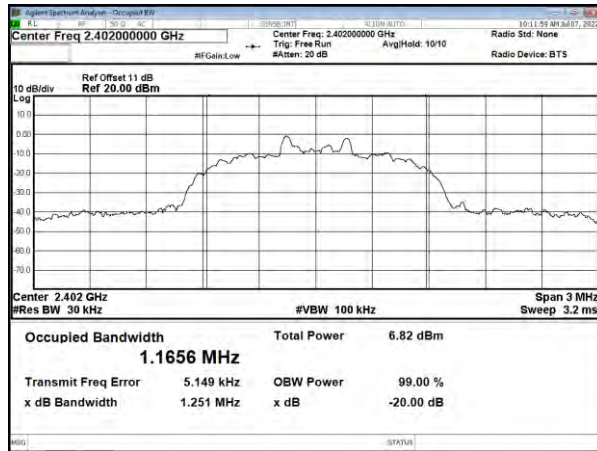


CH78

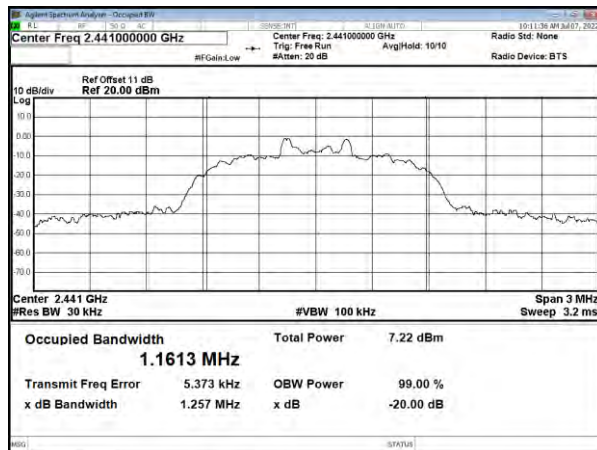




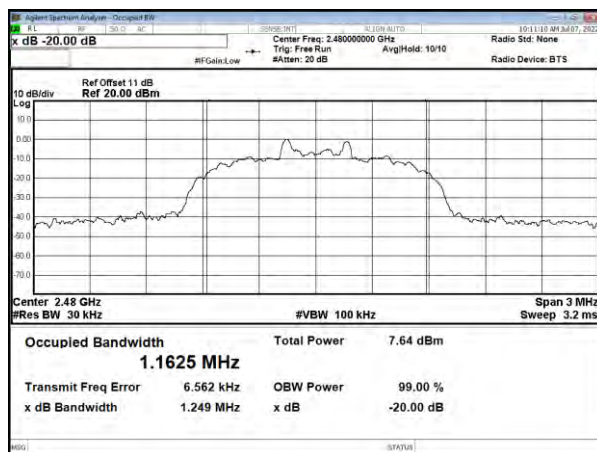
Modulation Type: 8DPSK (3Mbps)
Channel: 00



CH39



CH78





10. Carrier Frequency Separation

10.1 Test Limit

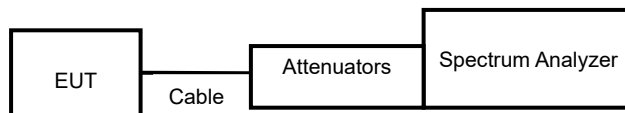
Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400–2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW.

10.2 Test Procedures

According to the methods defined in ANSI C63.10-2013 Section 7.8.2

- The transmitter output was connected to the spectrum analyzer.
- Set RBW of spectrum analyzer to 30 KHz and VBW to 100 KHz.
- By using the MaxHold function record the separation of two adjacent channels.
- Measure the frequency difference of these two adjacent channels.

10.3 Test Setup Layout



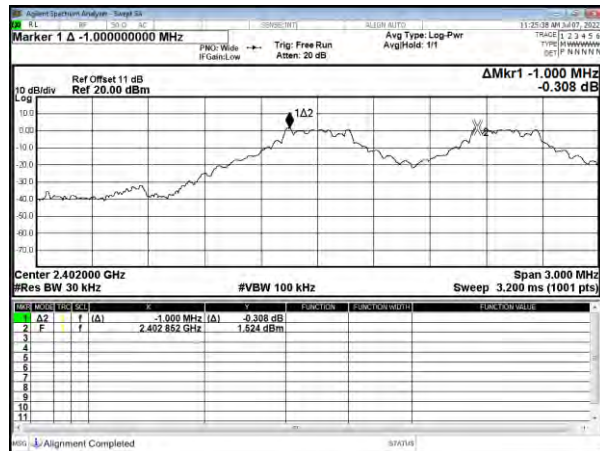


10.4 Test Result and Data

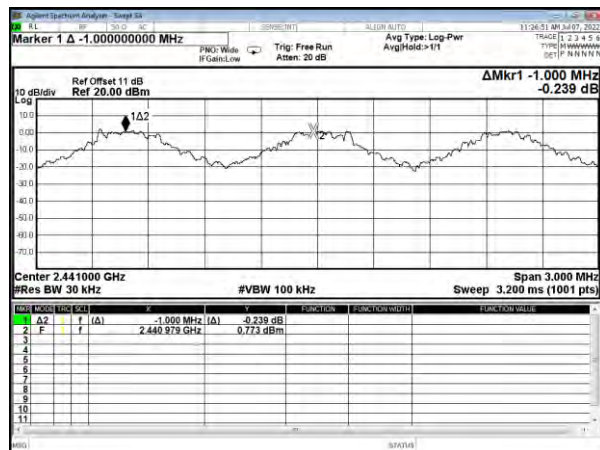
Modulation Type	Channel	Frequency (MHz)	Channel Separation (MHz)	Limit (MHz)
GFSK	00	2402	1.000	0.622
	39	2441	1.000	0.628
	78	2480	1.000	0.620
$\pi/4$ -DQPSK	00	2402	1.000	0.832
	39	2441	1.000	0.831
	78	2480	1.000	0.825
8DPSK	00	2402	1.000	0.834
	39	2441	1.000	0.838
	78	2480	1.000	0.833



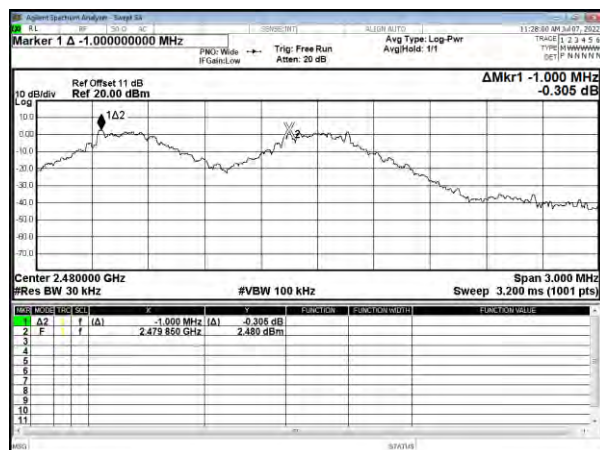
Modulation Type: GFSK (1Mbps)
Channel: 00



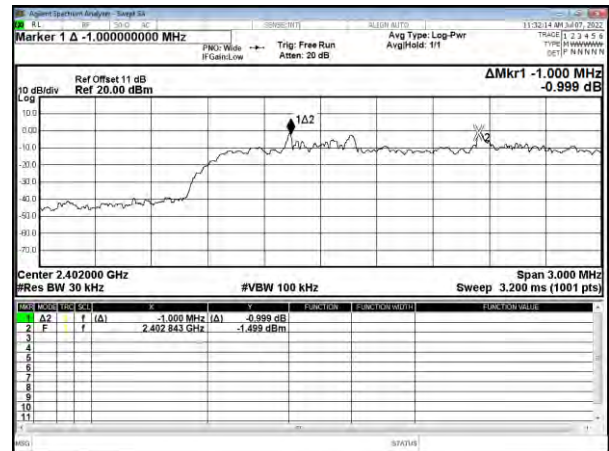
CH39



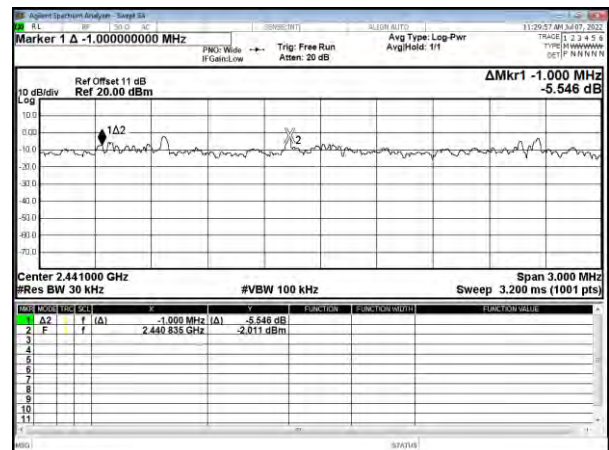
CH78



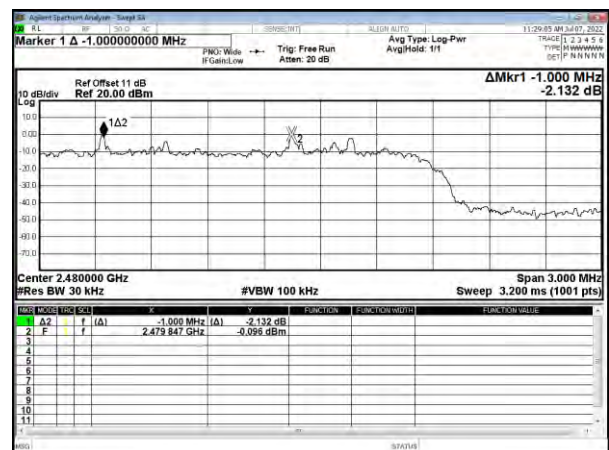
Modulation Type: $\pi/4$ -DQPSK (2Mbps)
Channel: 00



CH39

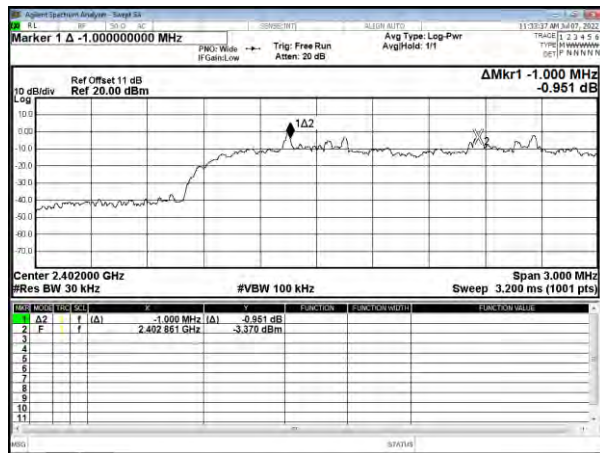


CH78

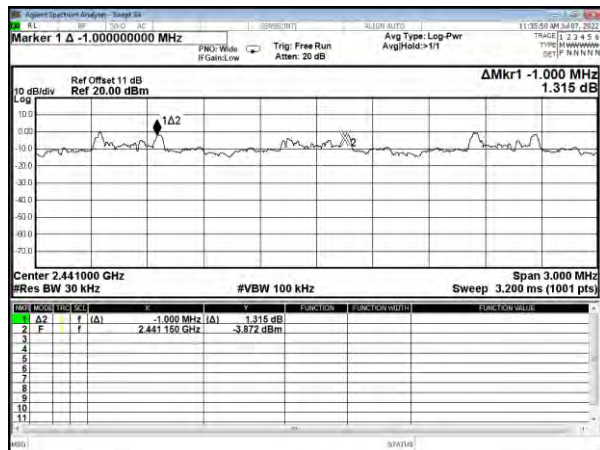




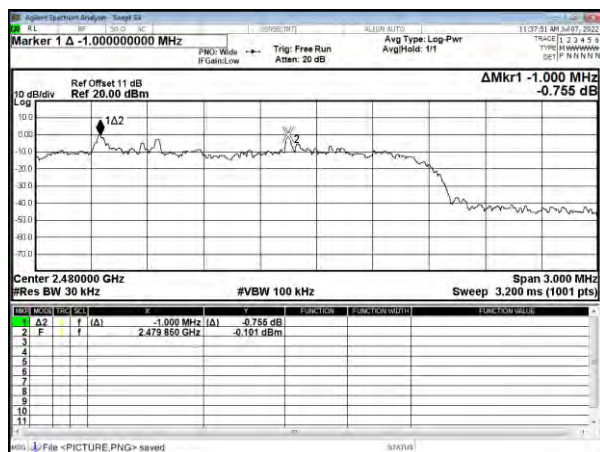
Modulation Type: 8DPSK (3Mbps)
Channel: 00



CH39



CH78





11. Dwell Time on each channel

11.1 Test Limit

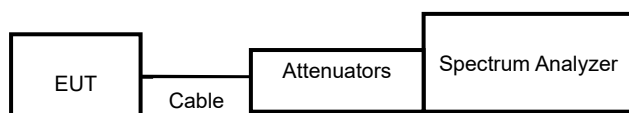
The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed.

11.2 Test Procedures

According to the methods defined in ANSI C63.10-2013 Section 7.8.4

1. The transmitter output was connected to the spectrum analyzer.
2. Adjust the center frequency to measure frequency, then set zero span mode.
3. Set RBW of spectrum analyzer to 1 MHz and VBW to 1 MHz.
4. Measure the time duration of one transmission on the measured frequency.

11.3 Test Setup Layout



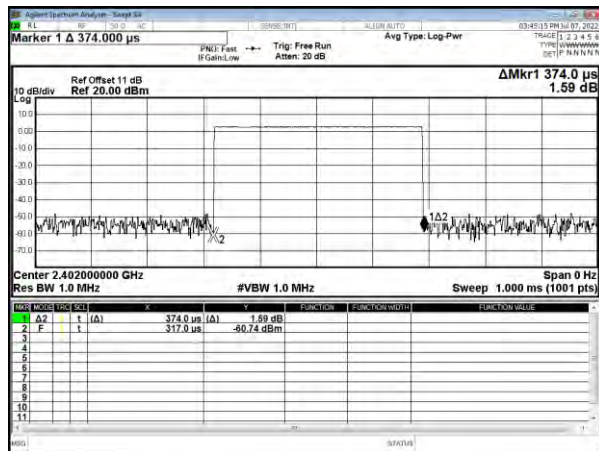
11.4 Test Result and Data

Channel	Frequency (MHz)	Length of transmission time (ms)	Number of transmission in a 31.6 (79 Hopping*0.4)	Dwell Time (ms)	Limit (ms)
GFSK-DH1	2402	0.374	320.00	119.68	400
GFSK-DH3	2402	1.635	160.00	261.60	400
GFSK-DH5	2402	2.885	106.67	307.73	400
$\pi/4$ -DQPSK-DH1	2402	0.383	320.00	122.56	400
$\pi/4$ -DQPSK-DH3	2402	1.641	160.00	262.56	400
$\pi/4$ -DQPSK-DH5	2402	2.890	106.67	308.27	400
8DPSK-DH1	2402	0.382	320.00	122.24	400
8DPSK-DH3	2402	1.638	160.00	262.08	400
8DPSK-DH5	2402	2.895	106.67	308.80	400

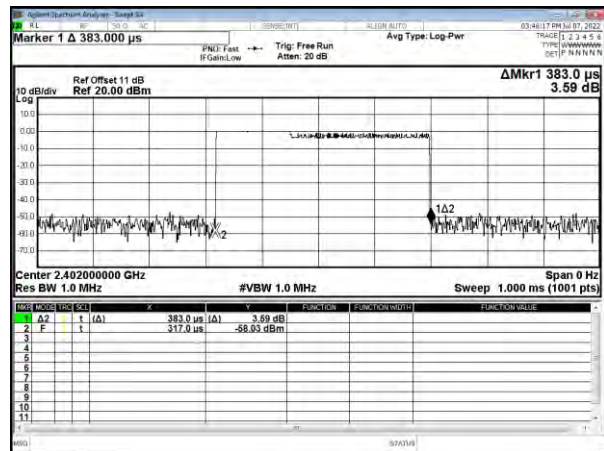
Channel	Frequency (MHz)	Length of transmission time (ms)	Number of transmission in a 8 (20 Hopping*0.4)	Dwell Time (ms)	Limit (ms)
AFH-DH1	2402-2421	0.392	160.00	62.72	400
AFH-DH3	2402-2421	1.650	80.00	132.00	400
AFH-DH5	2402-2421	2.900	53.33	154.66	400



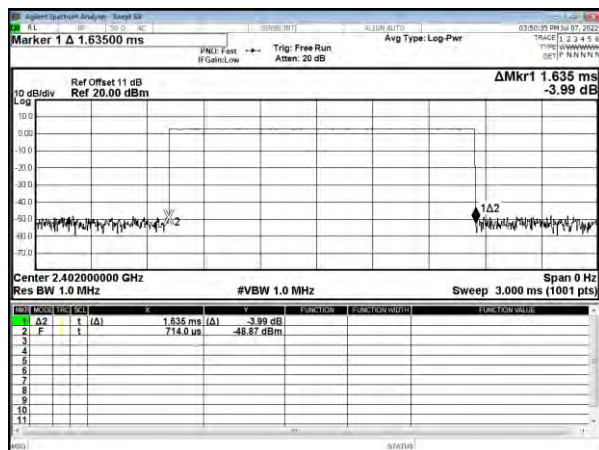
Modulation Type: GFSK-DH1
Channel: 00



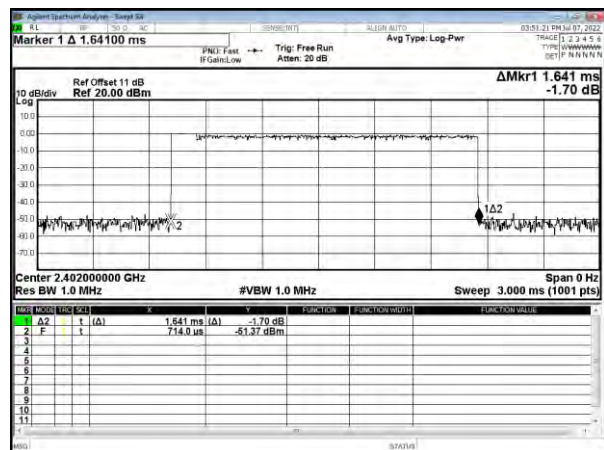
Modulation Type: $\pi/4$ -DQPSK-DH1
Channel: 00



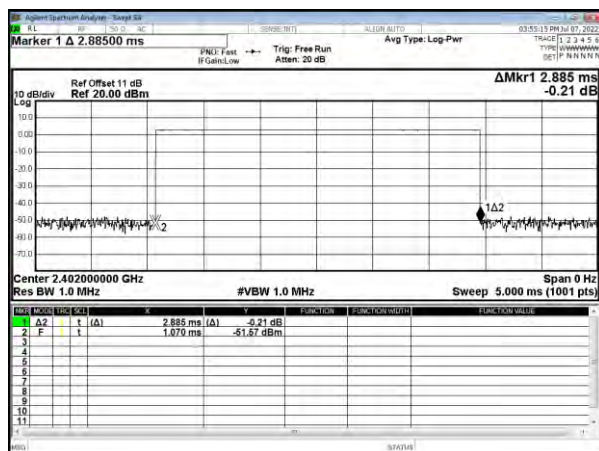
Modulation Type: GFSK-DH3
Channel: 00



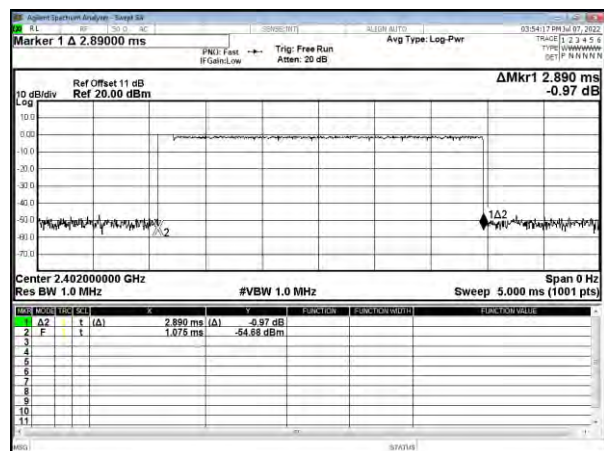
Modulation Type: $\pi/4$ -DQPSK-DH3
Channel: 00



Modulation Type: GFSK-DH5
Channel: 00

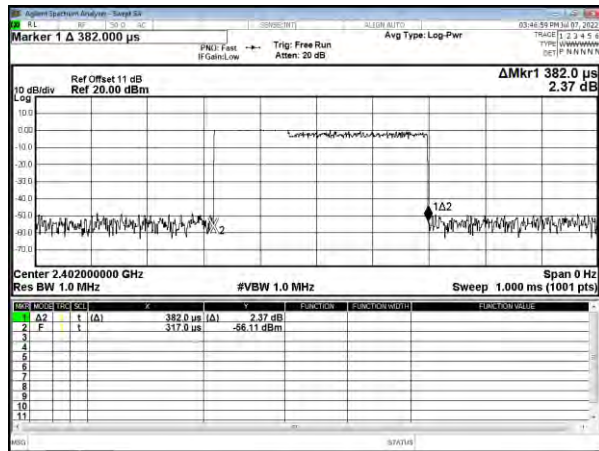


Modulation Type: $\pi/4$ -DQPSK-DH5
Channel: 00

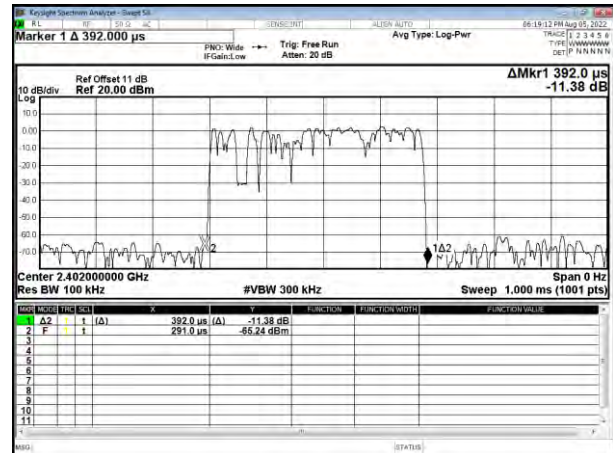




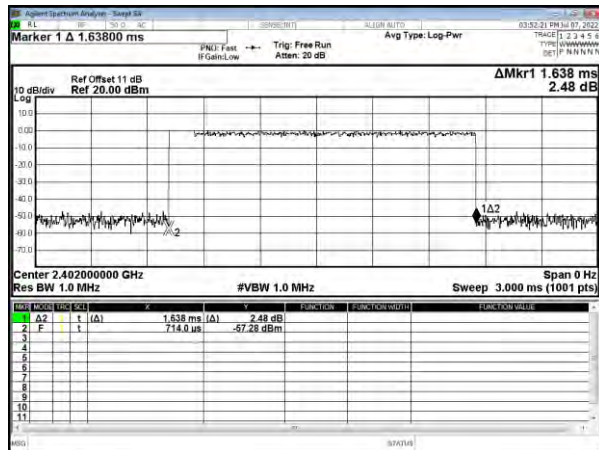
Modulation Type: 8DPSK-DH1
Channel: 00



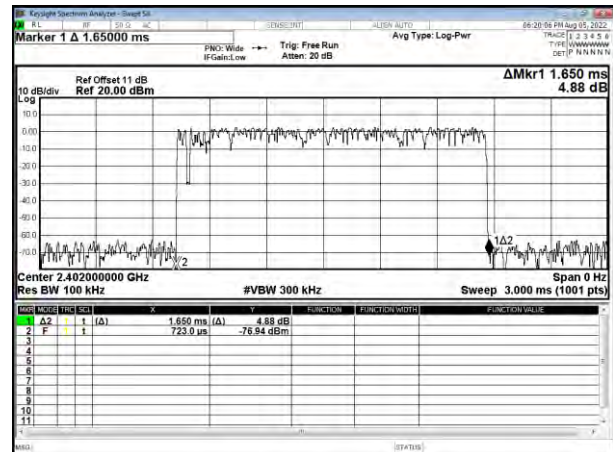
Modulation Type: AFH (DH1)



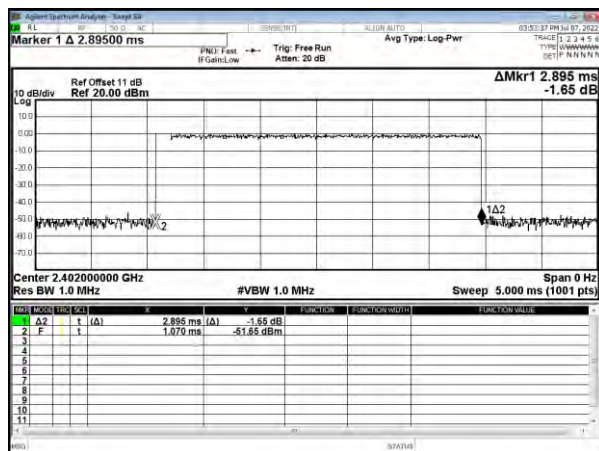
Modulation Type: 8DPSK-DH3
Channel: 00



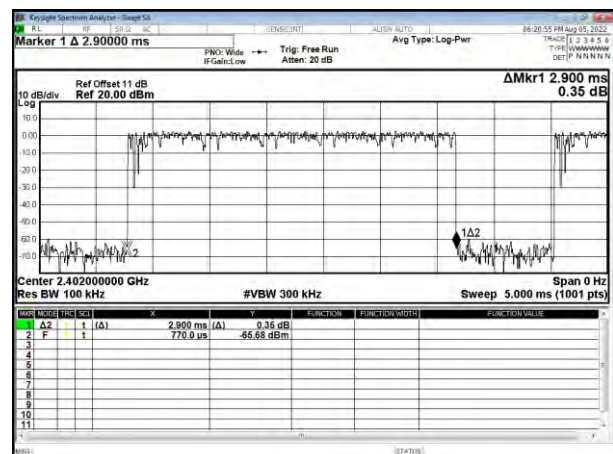
Modulation Type: AFH (DH3)



Modulation Type: 8DPSK-DH5
Channel: 00



Modulation Type: AFH (DH5)





12. Number of Hopping Channels

12.1 Test Limit

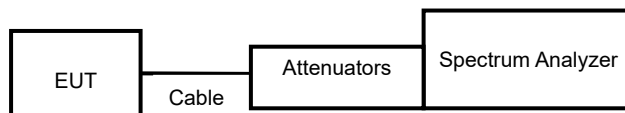
Frequency hopping systems in the 2400 ~ 2483.5 MHz band shall use at least 15 channels.

12.2 Test Procedures

According to the methods defined in ANSI C63.10-2013 Section 7.8.3

- a. The transmitter output was connected to the spectrum analyzer.
- b. 2. Set RBW of spectrum analyzer to 300 KHz and VBW to 300 KHz.
- c. 3. Set the MaxHold function, and then keep the EUT in hopping mode. Record all the signals from each channel until each one has been record.

12.3 Test Setup Layout

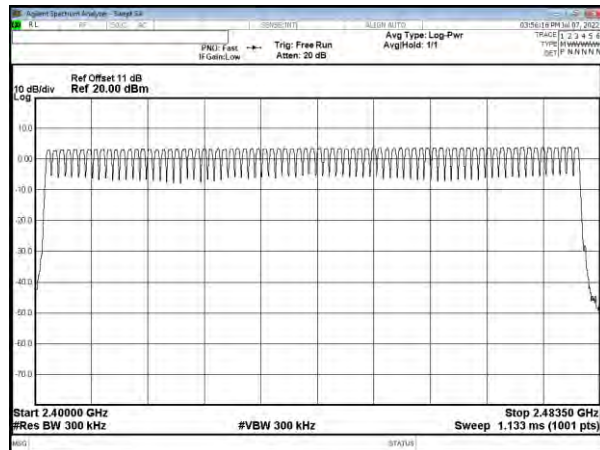


12.4 Test Result and Data

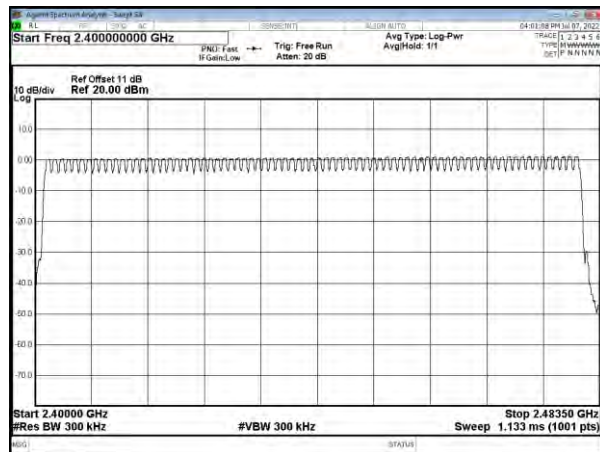
Modulation Type	Hopping Channels
GFSK	79
$\pi/4$ -DQPSK	79
8DPSK	79



Modulation Type: GFSK (1Mbps)



Modulation Type: $\pi/4$ -DQPSK (2Mbps)



Modulation Type: 8DPSK (3Mbps)

