FCC Test Report

FCC ID	:	**TLZ-CU277B**
Equipment	:	**IEEE 802.11 b/g/n + Bluetooth 4.0 HS Smart Energy Module**
Model No.	:	**AW-CU277B**
Brand Name	:	**AzureWave**
Applicant	:	**AzureWave Technologies, Inc.**
Address	:	**8 F., No. 94, Baozhong Rd., Xindian,Taiwan 231**
Standard	:	**47 CFR FCC Part 15.247**
Received Date	:	**May 03, 2016**
Tested Date	:	**May 10 ~ May 27, 2016**

We, International Certification Corp., would like to declare that the tested sample has been evaluated and in compliance with the requirement of the above standards. The test results contained in this report refer exclusively to the product. It may be duplicated completely for legal use with the approval of the applicant. It shall not be reproduced except in full without the written approval of our laboratory.

Approved & Reviewed by:

Gary Chang / Manager

Testing Laboratory
2732

Table of Contents

Release Record

Report No.	Version	Description	Issued Date
FR531203-01AE	Rev. 01	Initial issue	Jun. 08, 2016
FR531203-01AE	Rev. 02	Revised connector of antenna (page 5.)	Jun. 14, 2016

Summary of Test Results

FCC Rules	Test Items	Measured	Result
15.207	AC Power Line Conducted Emissions	[dBuV]: 0.361MHz 38.82(Margin -9.89dB) - AV	Pass
15.247(d) 15.209	Radiated Emissions	[dBuV/m at 3m]: 7440.00MHz 51.48 (Margin -2.52dB) - AV	Pass
15.247(b)(3)	Maximum Output Power	Power [dBm]: 9.75	Pass
15.247(a)(2)	6dB Bandwidth	Meet the requirement of limit	Pass
15.247(e)	Power Spectral Density	Meet the requirement of limit	Pass
15.203	Antenna Requirement	Meet the requirement of limit	Pass

1 General Description

1.1 Information

1.1.1 Specification of the Equipment under Test (EUT)

RF General Information				
Frequency Range (MHz)	**Bluetooth Mode**	**Ch. Freq. (MHz)**	**Channel Number**	**Data Rate**
2400-2483.5	V4.0 LE	2402-2480	0-39 [40]	1 Mbps
Note 1: Bluetooth LE (Low energy) uses GFSK modulation.				

1.1.2 Antenna Details

Ant. No.	Model	Type	Connector	Antenna Gain (dBi)
1	ANT3216	Chip	N/A	3.29
2	FXP73.07.0100A	Monopole	UFL	3
3	NanoBlue	Monopole	UFL	2
4	PC11.07.0100A	Dipole	UFL	3
5	GW.17.07.0250E	Dipole	UFL	2.7
6	EDA-1313-2G4C1-A16	Dipole	UFL	2.39
7	DQ60CQA1200	Dipole	UFL	2.84
8	FXP74.07.0100A	PIFA	UFL	4
9	MSA-4008-25GC1-A1	PIFA	UFL	2.98
10	PC17.07.0070A	PIFA	UFL	0.9
11	T-543-80A1077-1	PIFA	UFL	0.55
Note: The antennas with highest gain of each type were selected for final testing in this test report.				

1.1.3 Power Supply Type of Equipment under Test (EUT)

Power Supply Type	3.3Vdc from host.

1.1.4 Accessories

N/A

1.1.5 Channel List

Frequency band (MHz)				2400~2483.5			
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
37	2402	9	2422	18	2442	28	2462
0	2404	10	2424	19	2444	29	2464
1	2406	38	2426	20	2446	30	2466
2	2408	11	2428	21	2448	31	2468
3	2410	12	2430	22	2450	32	2470
4	2412	13	2432	23	2452	33	2472
5	2414	14	2434	24	2454	34	2474
6	2416	15	2436	25	2456	35	2476
7	2418	16	2438	26	2458	36	2478
8	2420	17	2440	27	2460	39	2480

1.1.6 Test Tool and Duty Cycle

Test tool	MfgTool, ver. 1.0.7.49
Duty cycle of test signal (%)	64.98%
Duty Factor (dB)	1.87

1.1.7 Power Setting

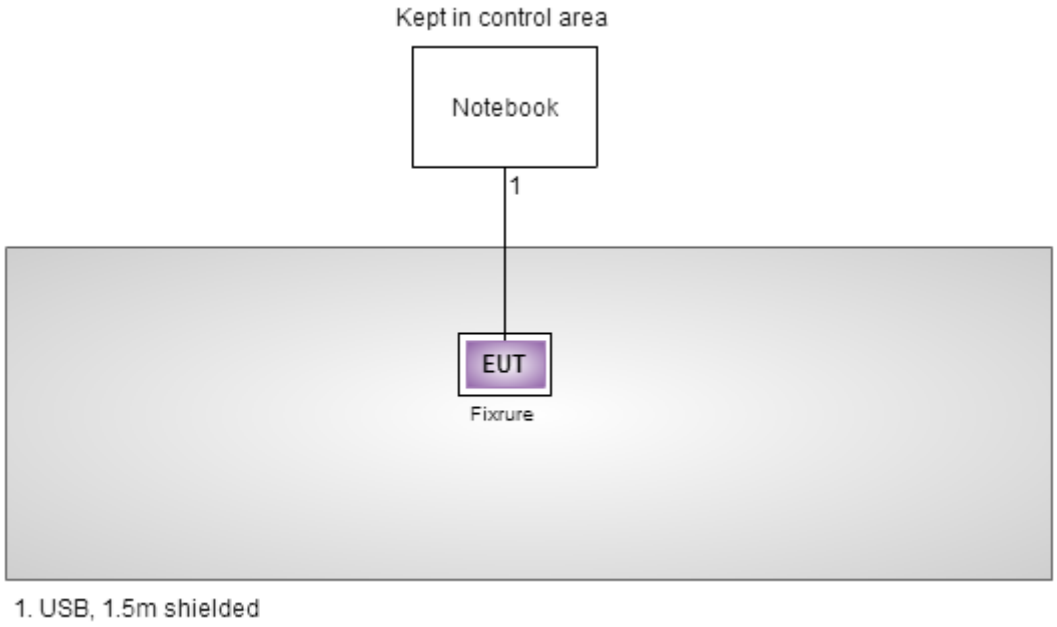
Modulation Mode	Test Frequency (MHz)		
	2402	2440	2480
GFSK/1Mbps	13	13	13

1.2 Local Support Equipment List

Support Equipment List					
No.	**Equipment**	**Brand**	**Model**	**FCC ID**	**Signal cable / Length (m)**
1	Notebook	DELL	Latitude E6440	DoC	USB, 1.5m shielded.

1.3 Test Setup Chart

Test Setup Diagram



1.4 Test Equipment List and Calibration Data

Test Item	Conducted Emission				
Test Site	Conduction room 1 / (CO01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
EMC Receiver	R&S	ESCS 30	100169	Oct. 21, 2015	Oct. 20, 2016
LISN	SCHWARZBECK	Schwarzbeck 8127	8127-667	Nov. 13, 2015	Nov. 12, 2016
RF Cable-CON	EMC	EMCCFD300-BM-BM-6000	50821	Dec. 21, 2015	Dec. 20, 2016
Measurement Software	AUDIX	e3	6.120210k	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	Radiated Emission				
Test Site	966 chamber 3 / (03CH03-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	Agilent	N9010A	MY53400091	Sep. 14, 2015	Sep. 13, 2016
Receiver	Agilent	N9038A	MY53290044	Oct. 14, 2015	Oct. 13, 2016
Bilog Antenna	SCHWARZBECK	VULB9168	VULB9168-685	Apr. 26, 2016	Apr. 25, 2017
Horn Antenna 1G-18G	SCHWARZBECK	BBHA 9120 D	BBHA 9120 D 1206	Feb. 24, 2016	Feb. 23, 2017
Horn Antenna 18G-40G	SCHWARZBECK	BBHA 9170	BBHA 9170517	Nov. 04, 2015	Nov. 03, 2016
Loop Antenna	R&S	HFH2-Z2	11900	Nov. 16, 2015	Nov. 15, 2016
Loop Antenna Cable	KOAX KABEL	101354-BW	101354-BW	Dec. 10, 2015	Dec. 09, 2016
Preamplifier	EMC	EMC02325	980187	Sep. 21, 2015	Sep. 20, 2016
Preamplifier	Agilent	83017A	MY53270014	Sep. 07, 2015	Sep. 06, 2016
Preamplifier	EMC	EMC184045B	980192	Sep. 01, 2015	Aug. 31, 2016
RF cable-3M	HUBER+SUHNER	SUCOFLEX104	MY22620/4	Feb. 05, 2016	Feb. 04, 2017
RF cable-8M	HUBER+SUHNER	SUCOFLEX104	MY22600/4	Feb. 05, 2016	Feb. 04, 2017
RF cable-1M	HUBER+SUHNER	SUCOFLEX104	MY22624/4	Feb. 05, 2016	Feb. 04, 2017
LF cable-0.8M	EMC	EMC8D-NM-NM-800	EMC8D-NM-NM-800-001	Feb. 05, 2016	Feb. 04, 2017
LF cable-3M	EMC	EMC8D-NM-NM-3000	131103	Feb. 05, 2016	Feb. 04, 2017
LF cable-13M	EMC	EMC8D-NM-NM-13000	131104	Feb. 05, 2016	Feb. 04, 2017
Measurement Software	AUDIX	e3	6.120210g	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

Test Item	RF Conducted				
Test Site	(TH01-WS)				
Instrument	**Manufacturer**	**Model No.**	**Serial No.**	**Calibration Date**	**Calibration Until**
Spectrum Analyzer	R&S	FSV40	101063	Feb. 17, 2016	Feb. 16, 2017
Power Meter	Anritsu	ML2495A	1241002	Sep. 21, 2015	Sep. 20, 2016
Power Sensor	Anritsu	MA2411B	1207366	Sep. 21, 2015	Sep. 20, 2016
DC POWER SOURCE	GW INSTEK	GPC-3060D	EM884797	Oct. 20, 2015	Oct. 19, 2016
AC POWER SOURCE	APC	AFC-500W	F312060012	Oct. 26, 2015	Oct. 25, 2016
Measurement Software	Sporton	Sporton_1	1.3.30	NA	NA
Note: Calibration Interval of instruments listed above is one year.					

1.5 Test Standards

According to the specification of EUT, the EUT must comply with following standards and KDB documents.

47 CFR FCC Part 15.247
ANSI C63.10-2013
FCC KDB 558074 D01 DTS Meas Guidance v03r05

1.6 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 Uncertainty	
Parameters	**Uncertainty**
Bandwidth	±34.134 Hz
Conducted power	±0.808 dB
Power density	±0.463 dB
Conducted emission	±2.670 dB
AC conducted emission	±2.90 dB
Radiated emission ≤ 1GHz	±3.66 dB
Radiated emission > 1GHz	±5.37 dB

2 Test Configuration

2.1 Testing Condition

Test Item	Test Site	Ambient Condition	Tested By
AC Conduction	CO01-WS	22°C / 62%	Howard Huang
Radiated Emissions	03CH03-WS	22-23°C / 61-62%	Vincent Yeh Anderson Hung
RF Conducted	TH01-WS	24°C / 64%	Alex Huang

- FCC site registration No.: 207696
- IC site registration No.: 10807C-1

2.2 The Worst Test Modes and Channel Details

Test item	Mode	Test Frequency (MHz)	Data Rate	Test Configuration
AC Power Line Conducted Emissions	BT LE	2480	1Mbps	1, 2, 3, 4
Radiated Emissions ≤ 1GHz	BT LE	2480	1Mbps	1, 2, 3, 4
Radiated Emissions > 1GHz	BT LE	2402, 2440, 2480	1Mbps	1, 2, 3, 4
Maximum Output Power	BT LE	2402, 2440, 2480	1Mbps	4
6dB bandwidth				
Power spectral density				

NOTE:

1. The EUT was pretested with 3 orientations placed on the table for the radiated emission measurement – X, Y, and Z-plane. The worst cases were shown in this report as below listed.
2. 4 types antenna are used for this device, highest gain antenna of each type is selected to perform related tests as below test configuration.
   1) Configuration 1 : Chip antenna with 3.29dBi gain , X-plane
   2) Configuration 2 : Monopole antenna with 3dBi gain , X-plane
   3) Configuration 3 : Dipole antenna with 3dBi gain, Z-plane
   4) Configuration 4 : PIFA antenna with 4dBi gain, X-plane

3 Transmitter Test Results

3.1 Conducted Emissions

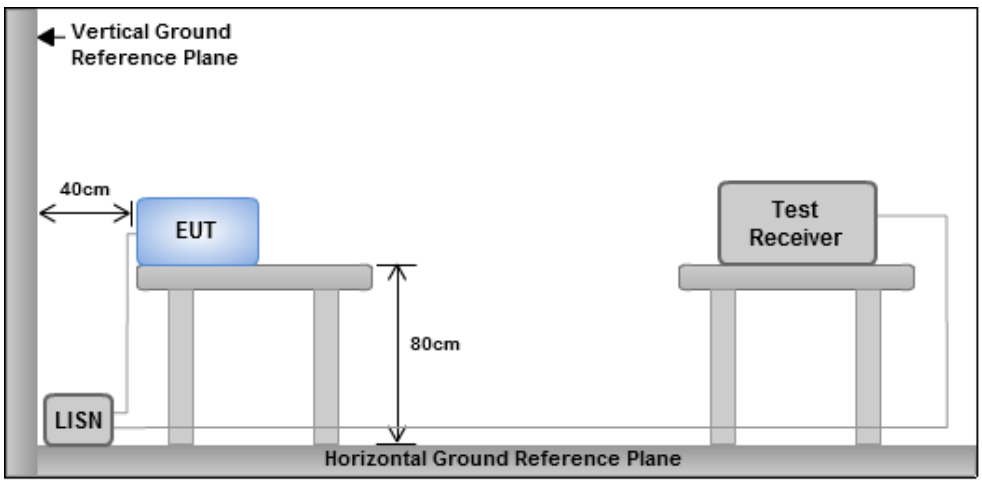
3.1.1 Limit of Conducted Emissions

Conducted Emissions Limit		
Frequency Emission (MHz)	**Quasi-Peak**	**Average**
0.15-0.5	66 - 56 *	56 - 46 *
0.5-5	56	46
5-30	60	50
Note 1: * Decreases with the logarithm of the frequency.		

3.1.2 Test Procedures

1. The device is placed on a test table, raised 80 cm above the reference ground plane. The vertical conducting plane is located 40 cm to the rear of the device.
2. The device is connected to line impedance stabilization network (LISN) and other accessories are connected to other LISN. Measured levels of AC power line conducted emission are across the 50 Ω LISN port.
3. AC conducted emission measurements is made over frequency range from 150 kHz to 30 MHz.
4. This measurement was performed with AC 120V/60Hz

3.1.3 Test Setup

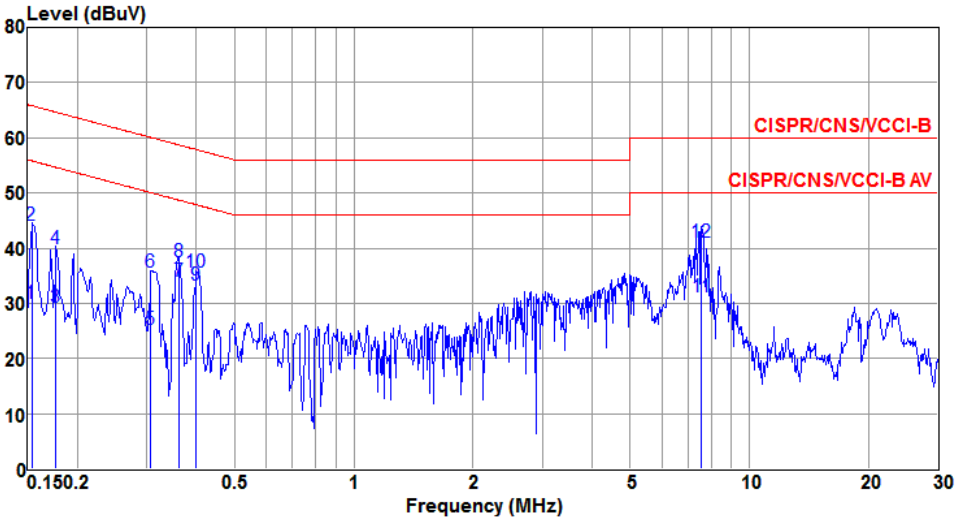


Note: 1. Support units were connected to second LISN.

2. Both of LISNs (AMN) are 80 cm from EUT and at least 80 cm from other units and other metal planes

3.1.4 Test Result of Conducted Emissions

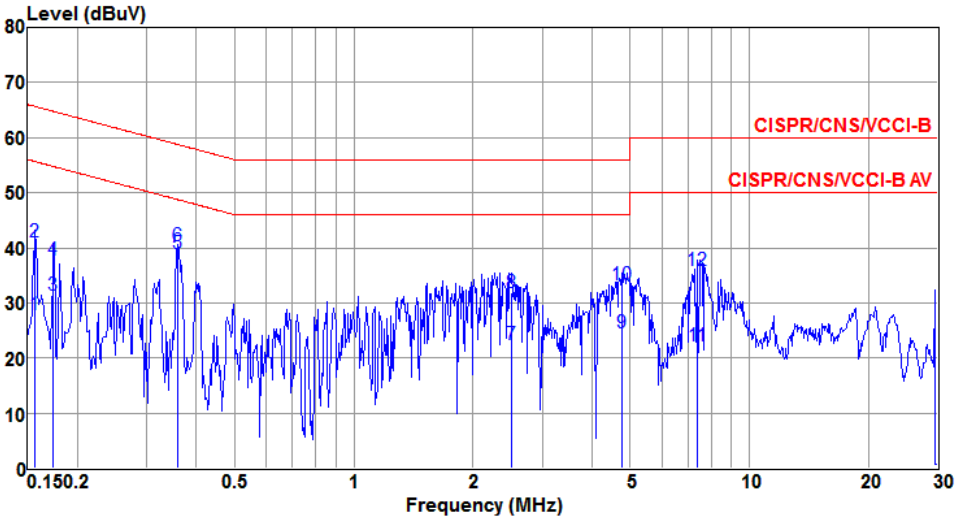
Modulation Mode	GFSK	Test Freq. (MHz)	2480
Power Phase	Line	Test Configuration	1



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.153	29.92	55.82	-25.90	29.79	0.11	0.02	Average
2	0.153	44.20	65.82	-21.62	44.07	0.11	0.02	QP
3	0.177	29.32	54.64	-25.32	29.19	0.11	0.02	Average
4	0.177	39.84	64.64	-24.80	39.71	0.11	0.02	QP
5	0.307	25.30	50.06	-24.76	25.15	0.12	0.03	Average
6	0.307	35.53	60.06	-24.53	35.38	0.12	0.03	QP
7	0.361	34.00	48.69	-14.69	33.84	0.13	0.03	Average
8	0.361	37.56	58.69	-21.13	37.40	0.13	0.03	QP
9@	0.400	33.25	47.86	-14.61	33.09	0.13	0.03	Average
10	0.400	35.64	57.86	-22.22	35.48	0.13	0.03	QP
11	7.566	31.16	50.00	-18.84	30.79	0.22	0.15	Average
12	7.566	40.97	60.00	-19.03	40.60	0.22	0.15	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

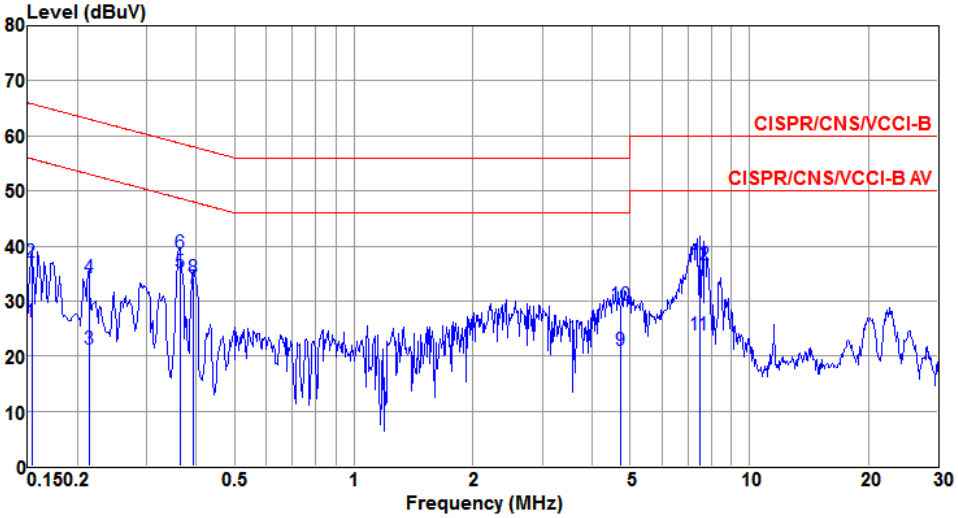
Modulation Mode	GFSK	Test Freq. (MHz)	2480
Power Phase	Neutral	Test Configuration	1



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.156	27.85	55.65	-27.80	27.70	0.13	0.02	Average
2	0.156	41.10	65.65	-24.55	40.95	0.13	0.02	QP
3	0.174	31.48	54.77	-23.29	31.35	0.11	0.02	Average
4	0.174	37.76	64.77	-27.01	37.63	0.11	0.02	QP
5@	0.358	38.83	48.78	-9.95	38.67	0.13	0.03	Average
6	0.358	40.32	58.78	-18.46	40.16	0.13	0.03	QP
7	2.513	22.54	46.00	-23.46	22.28	0.17	0.09	Average
8	2.513	31.87	56.00	-24.13	31.61	0.17	0.09	QP
9	4.746	24.45	46.00	-21.55	24.13	0.19	0.13	Average
10	4.746	33.33	56.00	-22.67	33.01	0.19	0.13	QP
11	7.407	22.19	50.00	-27.81	21.80	0.24	0.15	Average
12	7.407	35.92	60.00	-24.08	35.53	0.24	0.15	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

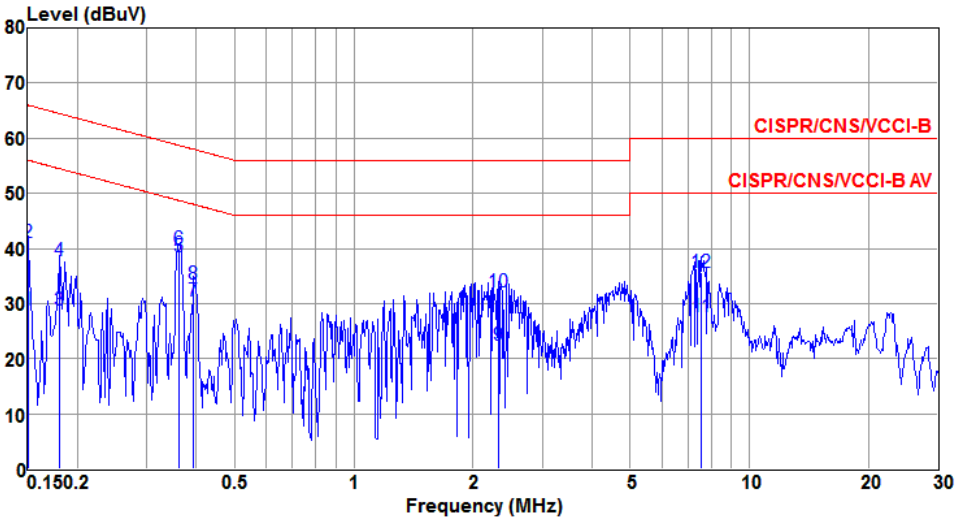
Modulation Mode	GFSK	Test Freq. (MHz)	2480
Power Phase	Line	Test Configuration	2



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.153	26.27	55.82	-29.55	26.14	0.11	0.02	Average
2	0.153	37.07	65.82	-28.75	36.94	0.11	0.02	QP
3	0.214	21.17	53.05	-31.88	21.04	0.11	0.02	Average
4	0.214	34.11	63.05	-28.94	33.98	0.11	0.02	QP
5@	0.363	35.08	48.65	-13.57	34.92	0.13	0.03	Average
6	0.363	38.80	58.65	-19.85	38.64	0.13	0.03	QP
7	0.391	32.40	48.03	-15.63	32.24	0.13	0.03	Average
8	0.391	34.16	58.03	-23.87	34.00	0.13	0.03	QP
9	4.721	20.90	46.00	-25.10	20.57	0.20	0.13	Average
10	4.721	29.24	56.00	-26.76	28.91	0.20	0.13	QP
11	7.486	23.84	50.00	-26.16	23.47	0.22	0.15	Average
12	7.486	36.57	60.00	-23.43	36.20	0.22	0.15	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

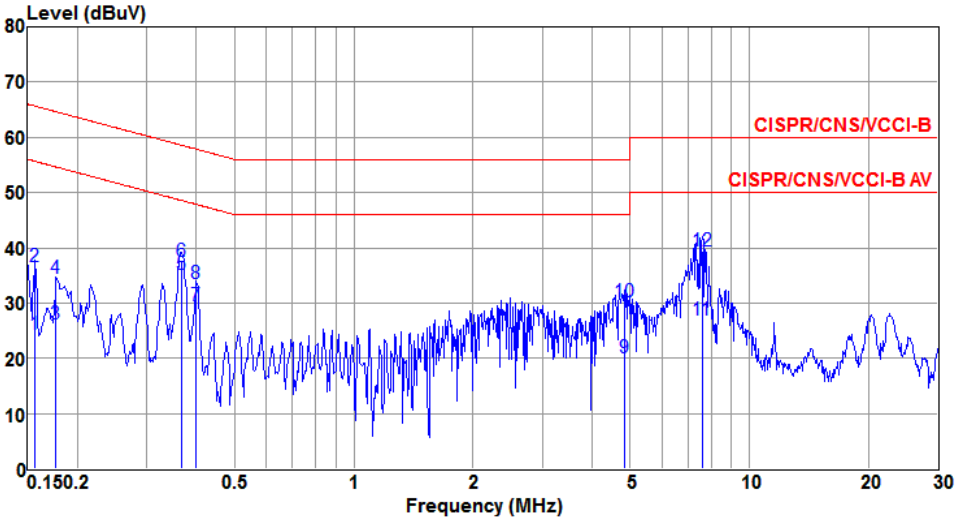
Modulation Mode	GFSK	Test Freq. (MHz)	2480
Power Phase	Neutral	Test Configuration	2



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.150	28.87	56.00	-27.13	28.72	0.13	0.02	Average
2	0.150	41.10	66.00	-24.90	40.95	0.13	0.02	QP
3	0.181	28.73	54.46	-25.73	28.60	0.11	0.02	Average
4	0.181	37.72	64.46	-26.74	37.59	0.11	0.02	QP
5@	0.362	38.59	48.68	-10.09	38.43	0.13	0.03	Average
6	0.362	39.86	58.68	-18.82	39.70	0.13	0.03	QP
7	0.393	30.35	47.99	-17.64	30.18	0.14	0.03	Average
8	0.393	33.61	57.99	-24.38	33.44	0.14	0.03	QP
9	2.321	22.50	46.00	-23.50	22.24	0.17	0.09	Average
10	2.321	32.05	56.00	-23.95	31.79	0.17	0.09	QP
11	7.566	27.56	50.00	-22.44	27.17	0.24	0.15	Average
12	7.566	35.66	60.00	-24.34	35.27	0.24	0.15	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

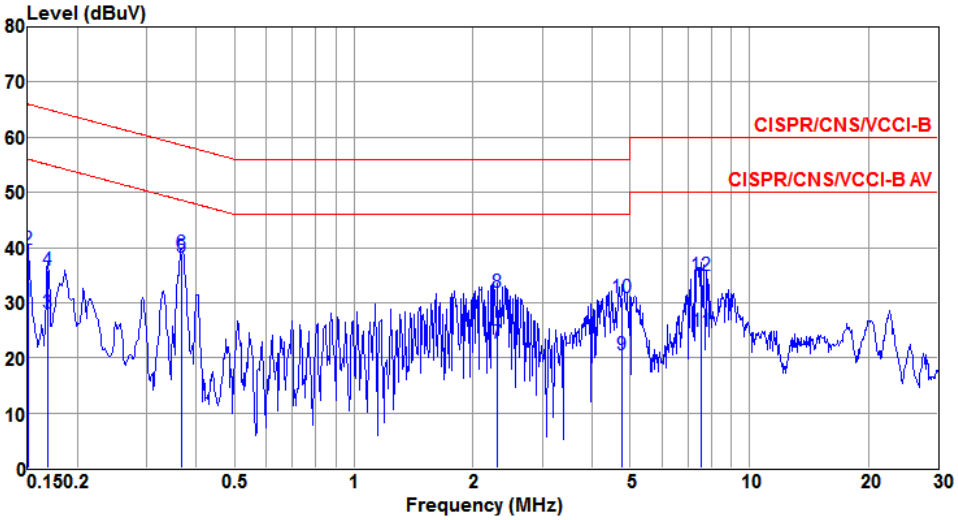
Modulation Mode	GFSK	Test Freq. (MHz)	2480
Power Phase	Line	Test Configuration	3



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.156	24.42	55.65	-31.23	24.29	0.11	0.02	Average
2	0.156	36.68	65.65	-28.97	36.55	0.11	0.02	QP
3	0.177	26.18	54.64	-28.46	26.05	0.11	0.02	Average
4	0.177	34.56	64.64	-30.08	34.43	0.11	0.02	QP
5@	0.367	35.06	48.56	-13.50	34.90	0.13	0.03	Average
6	0.367	37.65	58.56	-20.91	37.49	0.13	0.03	QP
7	0.400	29.62	47.86	-18.24	29.46	0.13	0.03	Average
8	0.400	33.57	57.86	-24.29	33.41	0.13	0.03	QP
9	4.822	20.05	46.00	-25.95	19.72	0.20	0.13	Average
10	4.822	30.27	56.00	-25.73	29.94	0.20	0.13	QP
11	7.606	26.96	50.00	-23.04	26.59	0.22	0.15	Average
12	7.606	39.34	60.00	-20.66	38.97	0.22	0.15	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

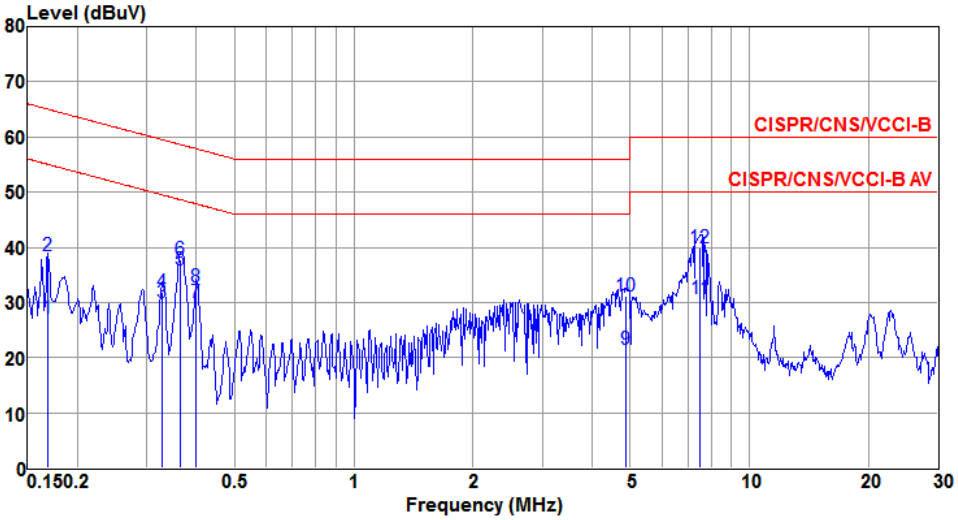
Modulation Mode	GFSK	Test Freq. (MHz)	2480
Power Phase	Neutral	Test Configuration	3



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.150	30.18	56.00	-25.82	30.03	0.13	0.02	Average
2	0.150	39.68	66.00	-26.32	39.53	0.13	0.02	QP
3	0.169	28.18	55.03	-26.85	28.04	0.12	0.02	Average
4	0.169	35.83	65.03	-29.20	35.69	0.12	0.02	QP
5@	0.367	38.27	48.56	-10.29	38.11	0.13	0.03	Average
6	0.367	38.88	58.56	-19.68	38.72	0.13	0.03	QP
7	2.309	22.68	46.00	-23.32	22.42	0.17	0.09	Average
8	2.309	31.96	56.00	-24.04	31.70	0.17	0.09	QP
9	4.772	20.47	46.00	-25.53	20.15	0.19	0.13	Average
10	4.772	30.93	56.00	-25.07	30.61	0.19	0.13	QP
11	7.566	24.74	50.00	-25.26	24.35	0.24	0.15	Average
12	7.566	34.89	60.00	-25.11	34.50	0.24	0.15	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

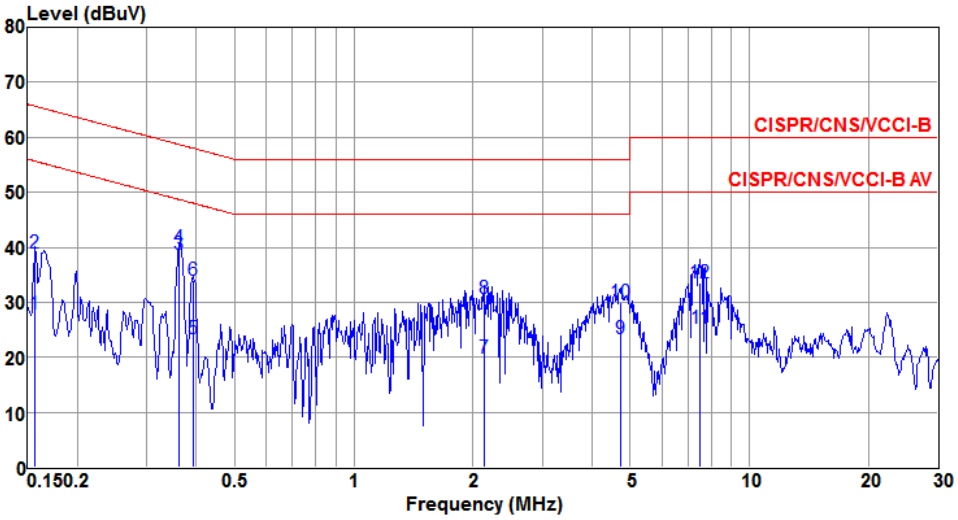
Modulation Mode	GFSK	Test Freq. (MHz)	2480
Power Phase	Line	Test Configuration	4



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.169	27.25	55.03	-27.78	27.12	0.11	0.02	Average
2	0.169	38.37	65.03	-26.66	38.24	0.11	0.02	QP
3	0.327	30.03	49.53	-19.50	29.88	0.12	0.03	Average
4	0.327	31.98	59.53	-27.55	31.83	0.12	0.03	QP
5@	0.363	35.92	48.65	-12.73	35.76	0.13	0.03	Average
6	0.363	37.78	58.65	-20.87	37.62	0.13	0.03	QP
7	0.400	30.03	47.86	-17.83	29.87	0.13	0.03	Average
8	0.400	32.71	57.86	-25.15	32.55	0.13	0.03	QP
9	4.874	21.48	46.00	-24.52	21.15	0.20	0.13	Average
10	4.874	31.11	56.00	-24.89	30.78	0.20	0.13	QP
11	7.526	30.78	50.00	-19.22	30.41	0.22	0.15	Average
12	7.526	39.95	60.00	-20.05	39.58	0.22	0.15	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

Modulation Mode	GFSK	Test Freq. (MHz)	2480
Power Phase	Neutral	Test Configuration	4



	Freq	Level	Limit Line	Over Limit	Read Level	LISN factor	cable loss	Remark
	MHz	dBuV	dBuV	dB	dBuV	dB	dB	
1	0.156	27.95	55.65	-27.70	27.80	0.13	0.02	Average
2	0.156	39.03	65.65	-26.62	38.88	0.13	0.02	QP
3@	0.361	38.82	48.71	-9.89	38.66	0.13	0.03	Average
4	0.361	39.94	58.71	-18.77	39.78	0.13	0.03	QP
5	0.391	23.26	48.03	-24.77	23.09	0.14	0.03	Average
6	0.391	33.95	58.03	-24.08	33.78	0.14	0.03	QP
7	2.133	19.94	46.00	-26.06	19.69	0.17	0.08	Average
8	2.133	30.72	56.00	-25.28	30.47	0.17	0.08	QP
9	4.721	23.33	46.00	-22.67	23.01	0.19	0.13	Average
10	4.721	29.98	56.00	-26.02	29.66	0.19	0.13	QP
11	7.526	25.19	50.00	-24.81	24.80	0.24	0.15	Average
12	7.526	33.50	60.00	-26.50	33.11	0.24	0.15	QP

Note 1: Level (dBuV) = Read Level (dBuV) + LISN Factor (dB) + Cable Loss (dB).
2: Over Limit (dB) = Level (dBuV) – Limit Line (dBuV).

3.2 6dB and Occupied Bandwidth

3.2.1 Limit of 6dB Bandwidth

The minimum 6dB bandwidth shall be at least 500 kHz.

3.2.2 Test Procedures

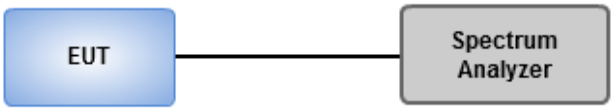
6dB Bandwidth

1. Set resolution bandwidth (RBW) = 100 kHz, Video bandwidth = 300 kHz.
2. Detector = Peak, Trace mode = max hold.
3. Sweep = auto couple, Allow the trace to stabilize.
4. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower) that are attenuated by 6dB relative to the maximum level measured in the fundamental emission.

Occupied Bandwidth

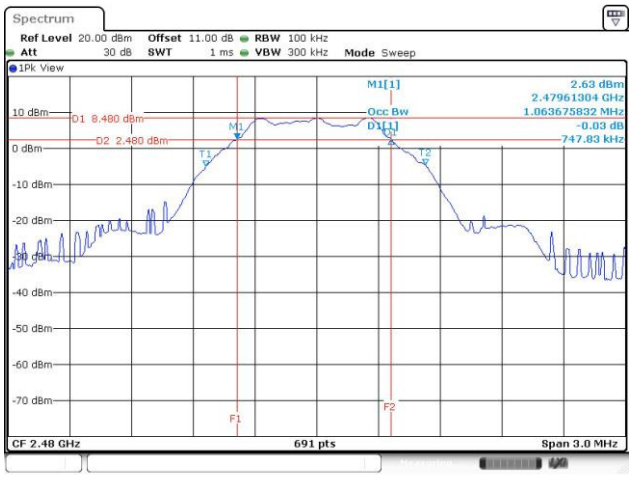
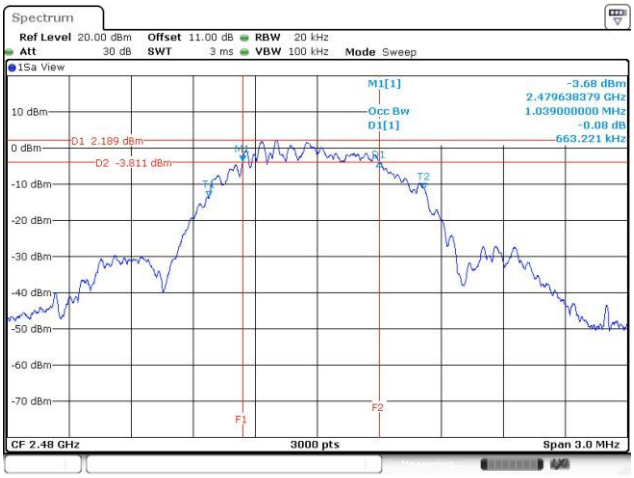
1. Set resolution bandwidth (RBW) = 30 kHz, Video bandwidth = 100 kHz.
2. Detector = Sample, Trace mode = max hold.
3 Sweep = auto couple, Allow the trace to stabilize.
4. Use the OBW measurement function of spectrum analyzer to measure the occupied bandwidth.

3.2.3 Test Setup



3.2.4 Test Result of 6dB and Occupied Bandwidth

Mode	Freq. (MHz)	6dB Bandwidth (MHz)	99% Occupied Bandwidth (MHz)	Limit of 6dB Bandwidth (kHz)
BT LE	2402	0.748	1.04	500
BT LE	2440	0.752	1.04	500
BT LE	2480	0.748	1.04	500

Worst Plots	
6dB Bandwidth	99% Occupied Bandwidth
	

3.3 RF Output Power

3.3.1 Limit of RF Output Power

Conducted power shall not exceed 1Watt.

☒ Antenna gain <= 6dBi, no any corresponding reduction is in output power limit.

☐ Antenna gain > 6dBi

☐ Non Fixed, point to point operations.
The conducted output power from the intentional radiator shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dB

☐ Fixed, point to point operations
Systems operating in the 2400–2483.5 MHz band that are used exclusively for fixed, point-to-point Operations, maximum peak output power of the intentional radiator is reduced by 1 dB for every 3 dB that the directional gain of the antenna exceeds 6 dBi.

Systems operating in the 5725–5850 MHz band that are used exclusively for fixed, point-to-point operations ,no any corresponding reduction is in transmitter peak output power

3.3.2 Test Procedures

☒ Maximum Peak Conducted Output Power

☐ **Spectrum analyzer**

1. Set RBW = 1MHz, VBW = 3MHz, Detector = Peak.
2. Sweep time = auto, Trace mode = max hold, Allow trace to fully stabilize.
3. Use the spectrum analyzer channel power measurement function with the band limits set equal to the DTS bandwidth edges.

☒ **Power meter**

1. A broadband Peak RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

☒ Maximum Conducted Average Output Power (For reference only)

☒ **Power meter**

1. A broadband Average RF power meter is used for output power measurement. The video bandwidth of power meter is greater than DTS bandwidth of EUT. If duty cycle of test signal is not 100 %, trigger and gating function of power meter will be enabled to capture transmission burst for measuring output power.

3.3.3 Test Setup

3.3.4 Test Result of Maximum Output Power

Mode	Freq. (MHz)	Peak Power			Antenna gain (dBi)	EIRP (dBm)	EIRP Limit (dBm)
		Power (mW)	Power (dBm)	Limit (dBm)			
BT LE	2402	8.110	9.09	30	4	13.09	36
BT LE	2440	8.810	9.45	30	4	13.45	36
BT LE	2480	9.441	**9.75**	30	4	13.75	36

Mode	Freq. (MHz)	AV Power (mW)	AV Power (dBm)	Limit (dBm)
BT LE	2402	7.656	8.84	---
BT LE	2440	8.375	9.23	---
BT LE	2480	8.872	**9.48**	---

Note: Average power is for reference only

3.4 Power Spectral Density

3.4.1 Limit of Power Spectral Density

Power spectral density shall not be greater than 8 dBm in any 3 kHz band.

3.4.2 Test Procedures

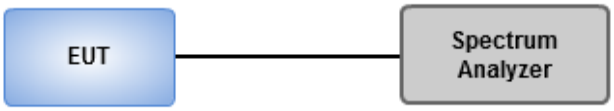
☒ Maximum peak conducted output power was used to demonstrate compliance to the fundamental output power limit.

1. Set the RBW = 3kHz, VBW = 10kHz.
2. Detector = Peak, Sweep time = auto couple.
3. Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

☐ Maximum (average) conducted output power was used to demonstrate compliance to the fundamental output power limit.

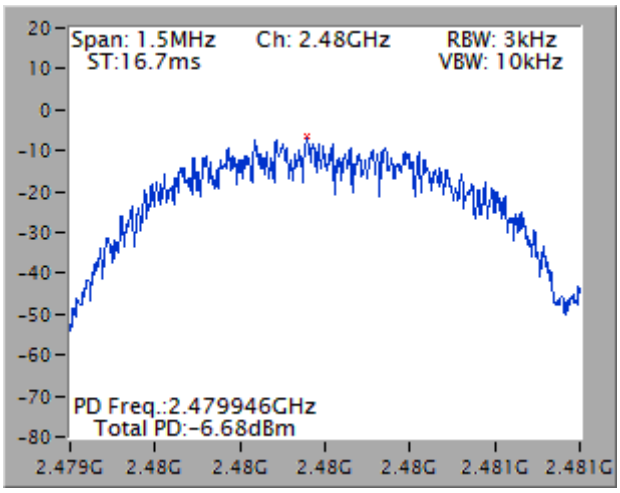
1. Set the RBW = 100kHz, VBW = 300 kHz.
2. Detector = RMS, Sweep time = auto couple.
3. Perform the measurement over a single sweep.
4. Use the peak marker function to determine the maximum amplitude level.

3.4.3 Test Setup



3.4.4 Test Result of Power Spectral Density

Mode	Freq. (MHz)	Total Power Spectral Density (dBm/3kHz)	Limit (dBm/3kHz)
BT LE	2402	-7.38	8
BT LE	2440	-7.04	8
BT LE	2480	-6.68	8

Worst Plot


3.5 Emissions in Restricted Frequency Bands

3.5.1 Limit of Emissions in Restricted Frequency Bands

Restricted Band Emissions Limit			
Frequency Range (MHz)	**Field Strength (uV/m)**	**Field Strength (dBuV/m)**	**Measure Distance (m)**
0.009~0.490	2400/F(kHz)	48.5 - 13.8	300
0.490~1.705	24000/F(kHz)	33.8 - 23	30
1.705~30.0	30	29	30
30~88	100	40	3
88~216	150	43.5	3
216~960	200	46	3
Above 960	500	54	3

Note 1:
Qusai-Peak value is measured for frequency below 1GHz except for 9–90 kHz, 110–490 kHz frequency band. Peak and average value are measured for frequency above 1GHz. The limit on average radio frequency emission is as above table. The limit on peak radio frequency emissions is 20 dB above the maximum permitted average emission limit
Note 2:
Measurements may be performed at a distance other than what is specified provided. When performing measurements at a distance other than that specified, the results shall be extrapolated to the specified distance using an extrapolation factor as below, Frequency at or above 30 MHz: 20 dB/decade Frequency below 30 MHz: 40 dB/decade.

3.5.2 Test Procedures

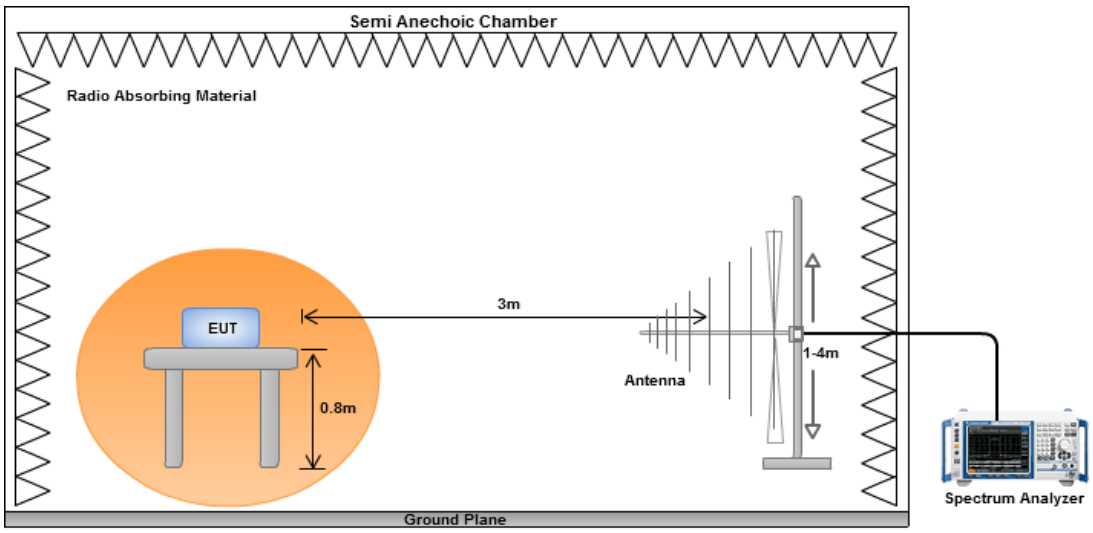
1. Measurement is made at a semi-anechoic chamber that incorporates a turntable allowing a EUT rotation of 360°. A continuously-rotating, remotely-controlled turntable is installed at the test site to support the EUT and facilitate determination of the direction of maximum radiation for each EUT emission frequency. The EUT is placed at test table. For emissions testing at or below 1 GHz, the table height is 80 cm above the reference ground plane. For emission measurements above 1 GHz, the table height is 1.5 m
2. Measurement is made with the antenna positioned in both the horizontal and vertical planes of polarization. The measurement antenna is varied in height (1m ~ 4m) above the reference ground plane to obtain the maximum signal strength. Distance between EUT and antenna is 3 m.
3. This investigation is performed with the EUT rotated 360°, the antenna height scanned between 1 m and 4 m, and the antenna rotated to repeat the measurements for both the horizontal and vertical antenna polarizations.

Note:

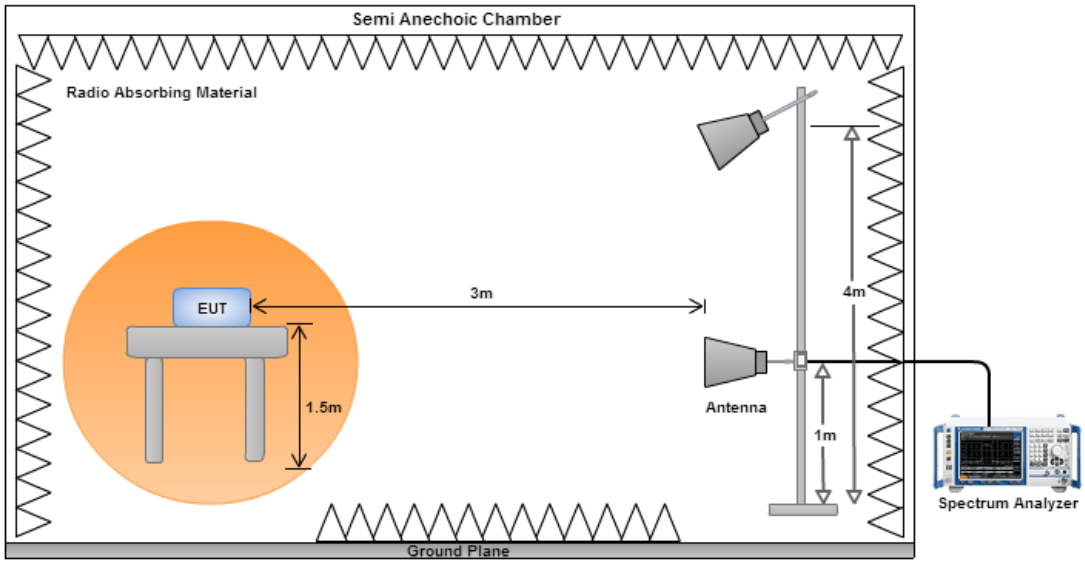
1. 120kHz measurement bandwidth of test receiver and Quasi-peak detector is for radiated emission below 1GHz.
2. RBW=1MHz, VBW=3MHz and Peak detector is for peak measured value of radiated emission above 1GHz.
3. RBW=1MHz, VBW=1/T and Peak detector is for average measured value of radiated emission above 1GHz.

3.5.3 Test Setup

Radiated Emissions below 1 GHz

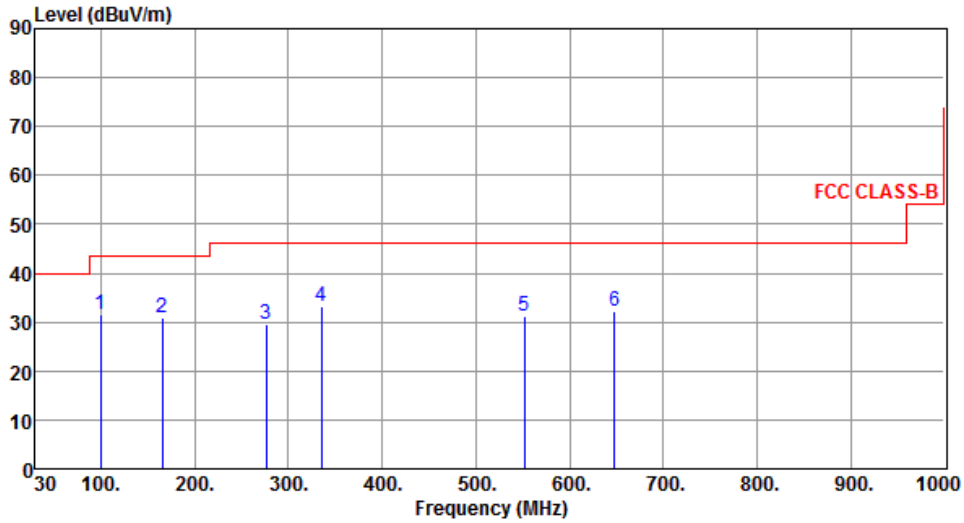


Radiated Emissions above 1 GHz



3.5.4 Transmitter Radiated Unwanted Emissions (Below 1GHz)

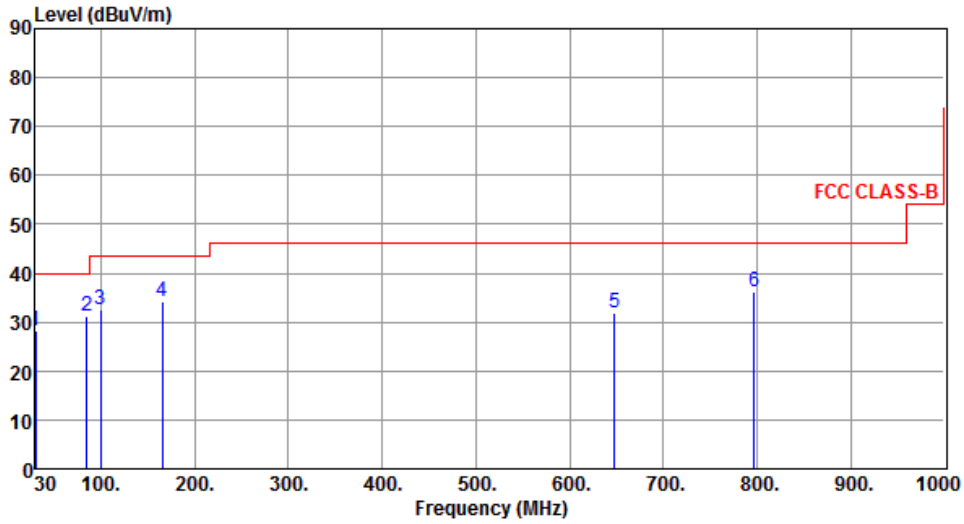
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	99.84	31.65	43.50	-11.85	44.92	-13.27	Peak	---	---
2	165.80	31.00	43.50	-12.50	39.22	-8.22	Peak	---	---
3	276.38	29.49	46.00	-16.51	37.81	-8.32	Peak	---	---
4	335.55	33.22	46.00	-12.78	39.97	-6.75	Peak	---	---
5	551.86	31.31	46.00	-14.69	33.27	-1.96	Peak	---	---
6	647.89	32.32	46.00	-13.68	32.47	-0.15	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

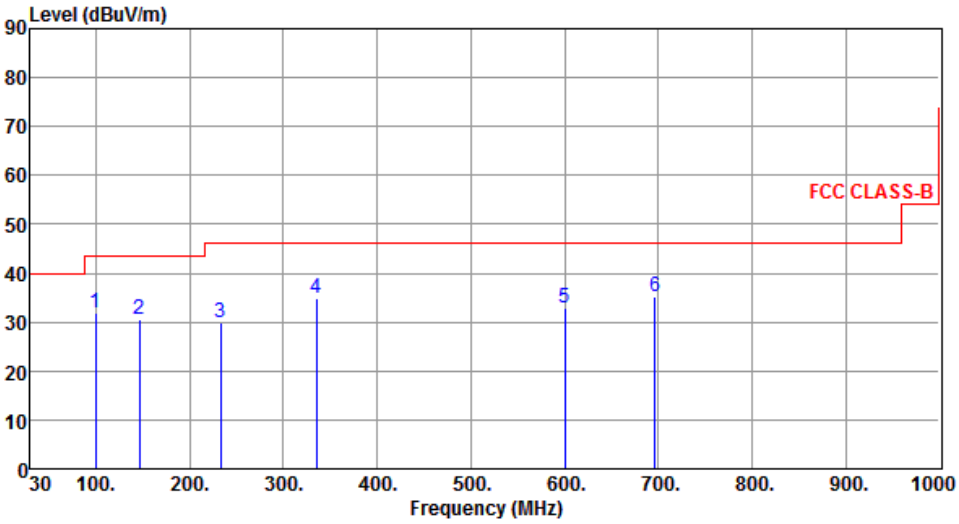
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	30.00	28.15	40.00	-11.85	37.35	-9.20	Peak	---	---
2	85.29	31.32	40.00	-8.68	44.93	-13.61	Peak	---	---
3	99.84	32.55	43.50	-10.95	45.82	-13.27	Peak	---	---
4	165.80	34.08	43.50	-9.42	42.30	-8.22	Peak	---	---
5	647.89	31.72	46.00	-14.28	31.87	-0.15	Peak	---	---
6	797.27	36.05	46.00	-9.95	33.51	2.54	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

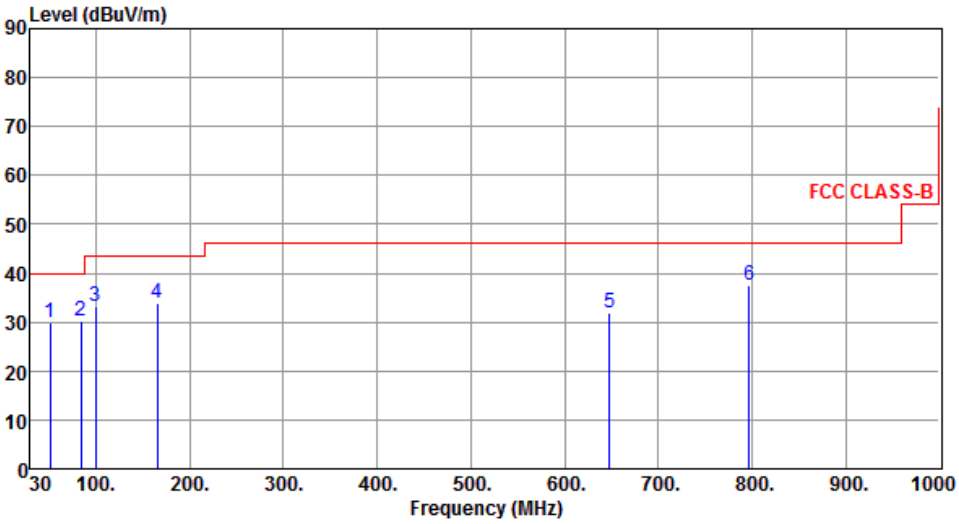
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	99.84	31.80	43.50	-11.70	45.07	-13.27	Peak	---	---
2	146.40	30.54	43.50	-12.96	38.79	-8.25	Peak	---	---
3	232.73	30.01	46.00	-15.99	40.07	-10.06	Peak	---	---
4	335.55	34.83	46.00	-11.17	41.58	-6.75	Peak	---	---
5	600.36	32.90	46.00	-13.10	33.59	-0.69	Peak	---	---
6	696.39	35.31	46.00	-10.69	34.69	0.62	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

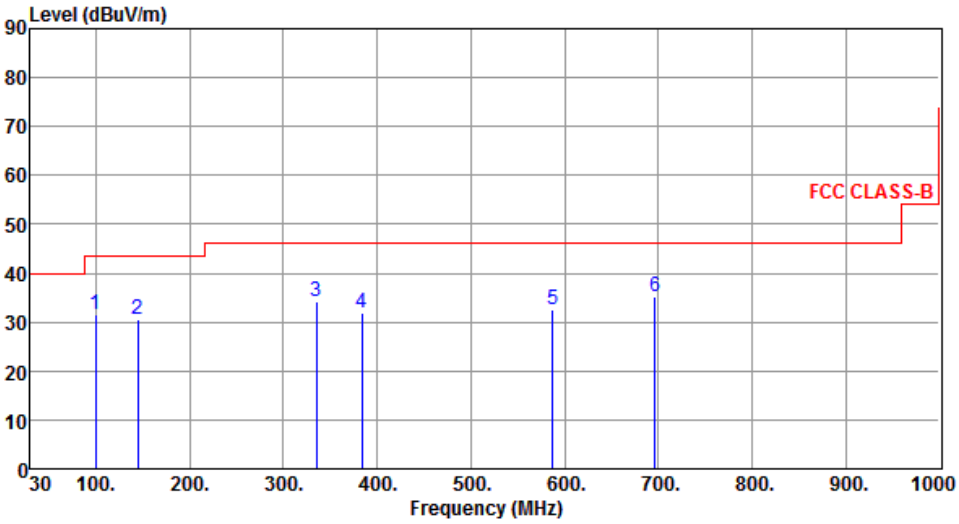
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	51.34	29.93	40.00	-10.07	37.80	-7.87	Peak	---	---
2	84.32	30.19	40.00	-9.81	43.67	-13.48	Peak	---	---
3	99.84	33.29	43.50	-10.21	46.56	-13.27	Peak	---	---
4	165.80	33.72	43.50	-9.78	41.94	-8.22	Peak	---	---
5	647.89	31.99	46.00	-14.01	32.14	-0.15	Peak	---	---
6	797.27	37.57	46.00	-8.43	35.03	2.54	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

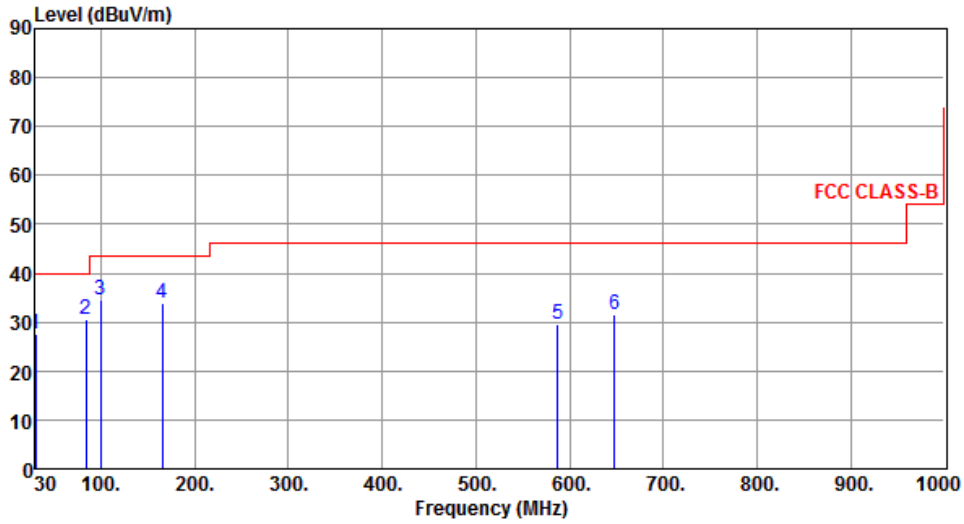
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	99.84	31.47	43.50	-12.03	44.74	-13.27	Peak	---	---
2	144.46	30.68	43.50	-12.82	39.00	-8.32	Peak	---	---
3	335.55	34.18	46.00	-11.82	40.93	-6.75	Peak	---	---
4	384.05	31.94	46.00	-14.06	37.36	-5.42	Peak	---	---
5	587.75	32.46	46.00	-13.54	33.46	-1.00	Peak	---	---
6	696.39	35.21	46.00	-10.79	34.59	0.62	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

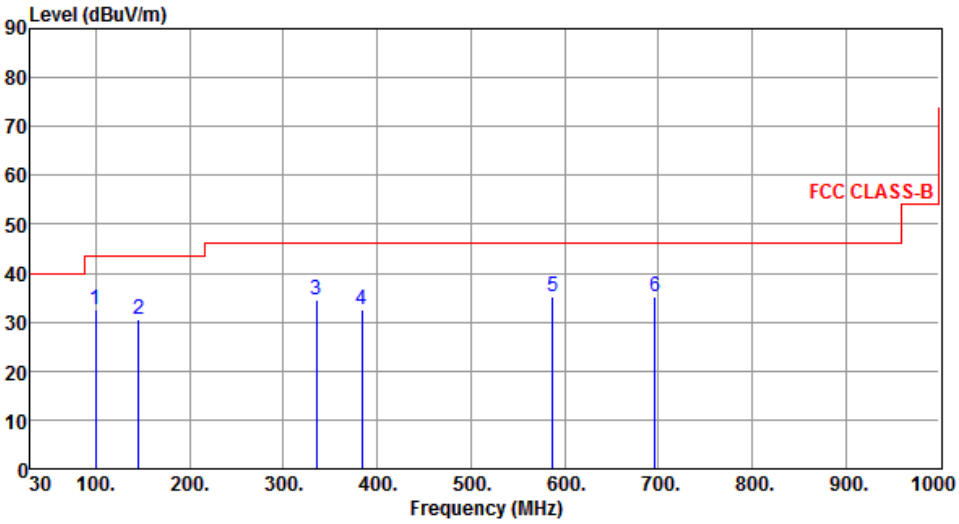
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	30.00	27.51	40.00	-12.49	36.71	-9.20	Peak	---	---
2	84.32	30.50	40.00	-9.50	43.98	-13.48	Peak	---	---
3	99.84	34.58	43.50	-8.92	47.85	-13.27	Peak	---	---
4	165.80	33.73	43.50	-9.77	41.95	-8.22	Peak	---	---
5	587.75	29.71	46.00	-16.29	30.71	-1.00	Peak	---	---
6	647.89	31.69	46.00	-14.31	31.84	-0.15	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

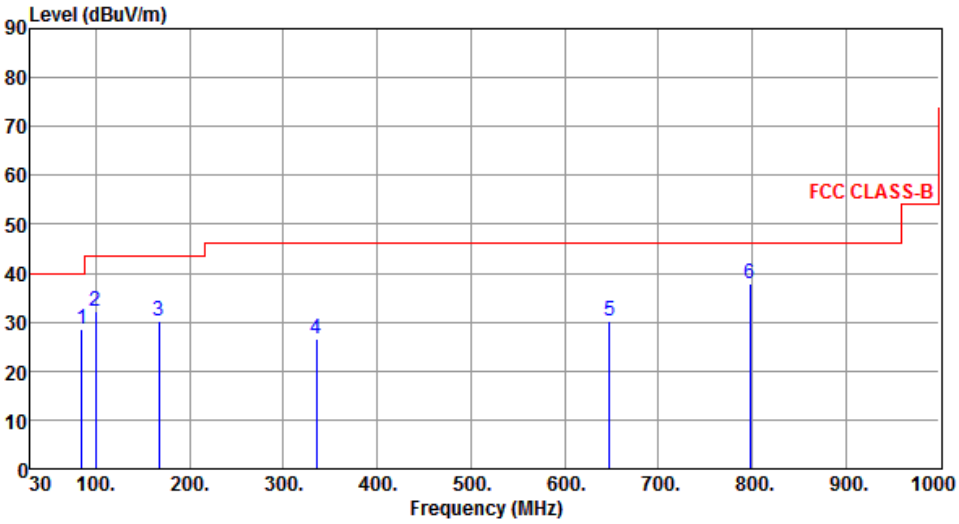
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	99.84	32.70	43.50	-10.80	45.97	-13.27	Peak	---	---
2	145.43	30.70	43.50	-12.80	38.99	-8.29	Peak	---	---
3	335.55	34.60	46.00	-11.40	41.35	-6.75	Peak	---	---
4	384.05	32.48	46.00	-13.52	37.90	-5.42	Peak	---	---
5	587.75	35.18	46.00	-10.82	36.18	-1.00	Peak	---	---
6	696.39	35.14	46.00	-10.86	34.52	0.62	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	4

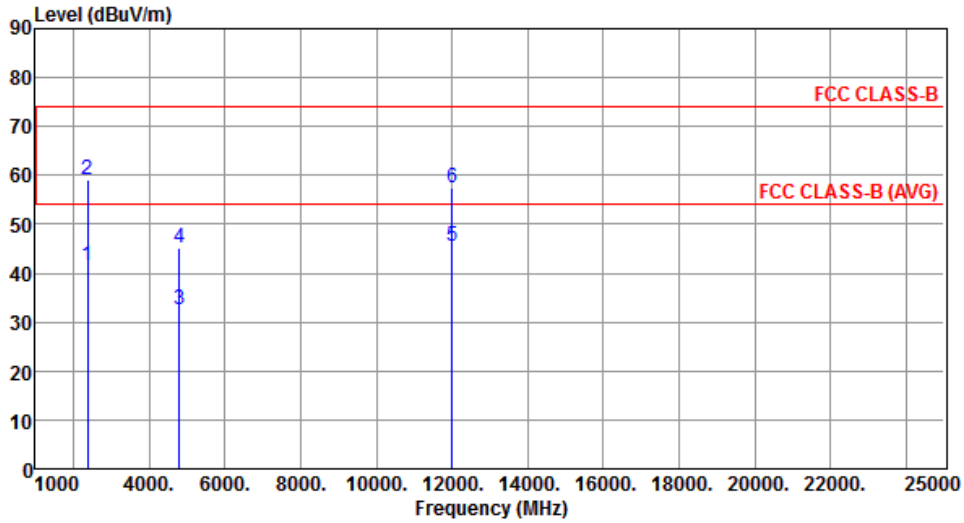


	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	85.29	28.68	40.00	-11.32	42.29	-13.61	Peak	---	---
2	99.84	32.16	43.50	-11.34	45.43	-13.27	Peak	---	---
3	166.77	30.22	43.50	-13.28	38.48	-8.26	Peak	---	---
4	335.55	26.63	46.00	-19.37	33.38	-6.75	Peak	---	---
5	647.89	30.13	46.00	-15.87	30.28	-0.15	Peak	---	---
6	798.24	37.76	46.00	-8.24	35.20	2.56	Peak	---	---

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).
Note 3: All spurious emissions below 30MHz are more than 20 dB below the limit.

3.5.5 Transmitter Radiated Unwanted Emissions (Above 1GHz) for GFSK

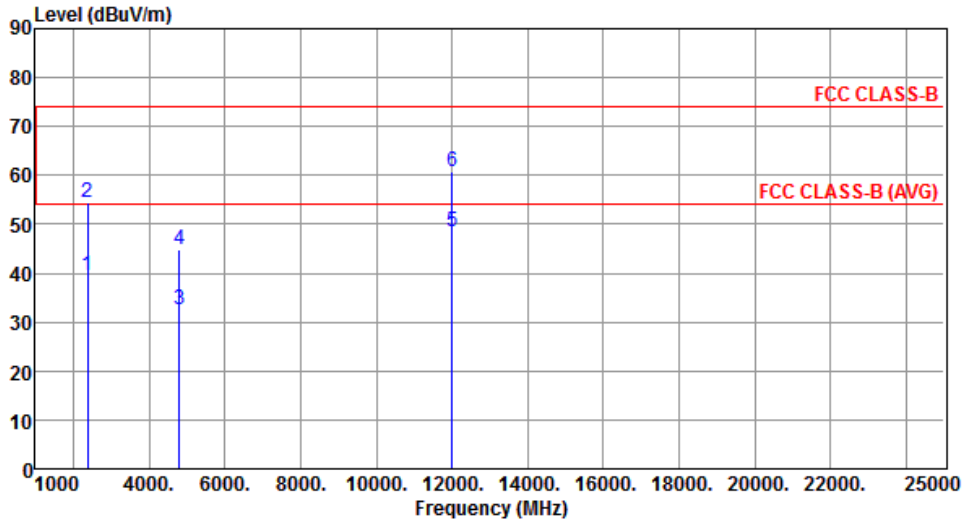
Modulation	GFSK	**Test Freq. (MHz)**	2402
Polarization	Horizontal	**Test Configuration**	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	41.49	54.00	-12.51	42.59	-1.10	Average	191	140
2	2390.00	59.12	74.00	-14.88	60.22	-1.10	Peak	191	140
3	4804.00	32.48	54.00	-21.52	27.23	5.25	Average	186	152
4	4804.00	45.08	74.00	-28.92	39.83	5.25	Peak	186	152
5	12010.00	45.33	54.00	-8.67	30.26	15.07	Average	296	309
6	12010.00	57.53	74.00	-16.47	42.46	15.07	Peak	296	309

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

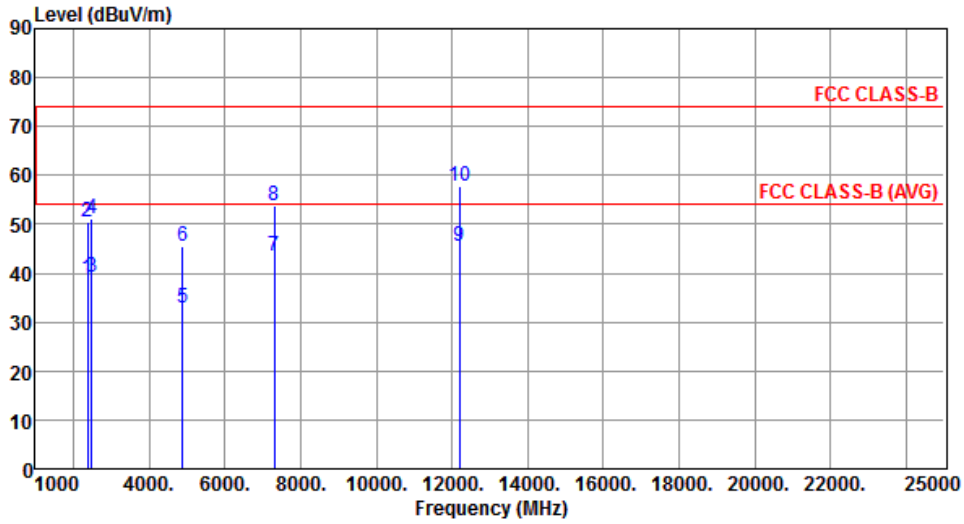
Modulation	GFSK	**Test Freq. (MHz)**	2402
Polarization	Vertical	**Test Configuration**	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	39.50	54.00	-14.50	40.60	-1.10	Average	283	41
2	2390.00	54.58	74.00	-19.42	55.68	-1.10	Peak	283	41
3	4804.00	32.69	54.00	-21.31	27.44	5.25	Average	229	314
4	4804.00	44.76	74.00	-29.24	39.51	5.25	Peak	229	314
5	12010.00	48.62	54.00	-5.38	33.55	15.07	Average	213	323
6	12010.00	60.78	74.00	-13.22	45.71	15.07	Peak	213	323

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

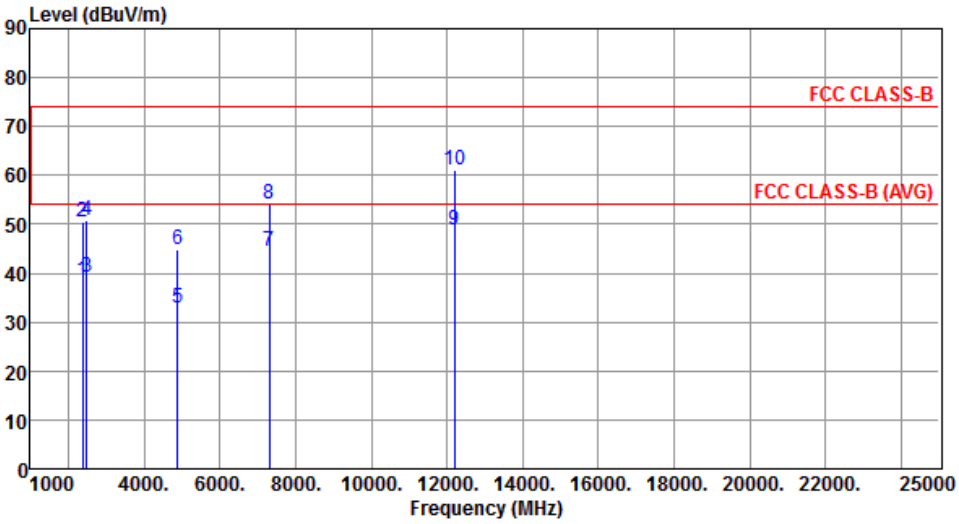
Modulation	GFSK	Test Freq. (MHz)	2440
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.89	54.00	-15.11	39.99	-1.10	Average	185	142
2	2390.00	50.55	74.00	-23.45	51.65	-1.10	Peak	185	142
3	2483.50	39.23	54.00	-14.77	39.84	-0.61	Average	185	142
4	2483.50	51.23	74.00	-22.77	51.84	-0.61	Peak	185	142
5	4880.00	32.84	54.00	-21.16	27.41	5.43	Average	188	156
6	4880.00	45.35	74.00	-28.65	39.92	5.43	Peak	188	156
7	7320.00	43.42	54.00	-10.58	33.15	10.27	Average	229	316
8	7320.00	53.68	74.00	-20.32	43.41	10.27	Peak	229	316
9	12200.00	45.64	54.00	-8.36	30.71	14.93	Average	293	304
10	12200.00	57.72	74.00	-16.28	42.79	14.93	Peak	293	304

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

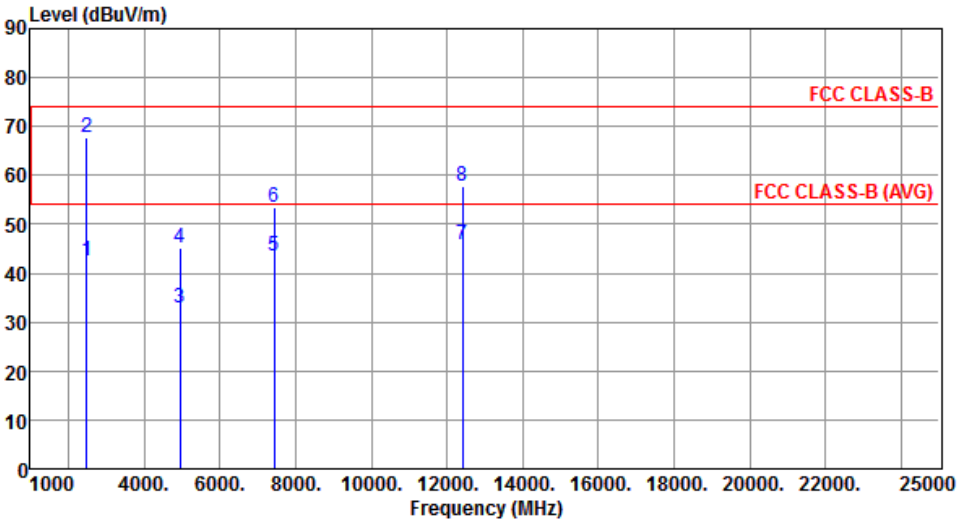
Modulation	GFSK	Test Freq. (MHz)	2440
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.56	54.00	-15.44	39.66	-1.10	Average	239	90
2	2390.00	50.47	74.00	-23.53	51.57	-1.10	Peak	239	90
3	2483.50	39.12	54.00	-14.88	39.73	-0.61	Average	239	90
4	2483.50	50.77	74.00	-23.23	51.38	-0.61	Peak	239	90
5	4880.00	32.88	54.00	-21.12	27.45	5.43	Average	225	317
6	4880.00	44.90	74.00	-29.10	39.47	5.43	Peak	225	317
7	7320.00	44.48	54.00	-9.52	34.21	10.27	Average	287	63
8	7320.00	54.27	74.00	-19.73	44.00	10.27	Peak	287	63
9	12200.00	48.92	54.00	-5.08	33.99	14.93	Average	219	321
10	12200.00	61.03	74.00	-12.97	46.10	14.93	Peak	219	321

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

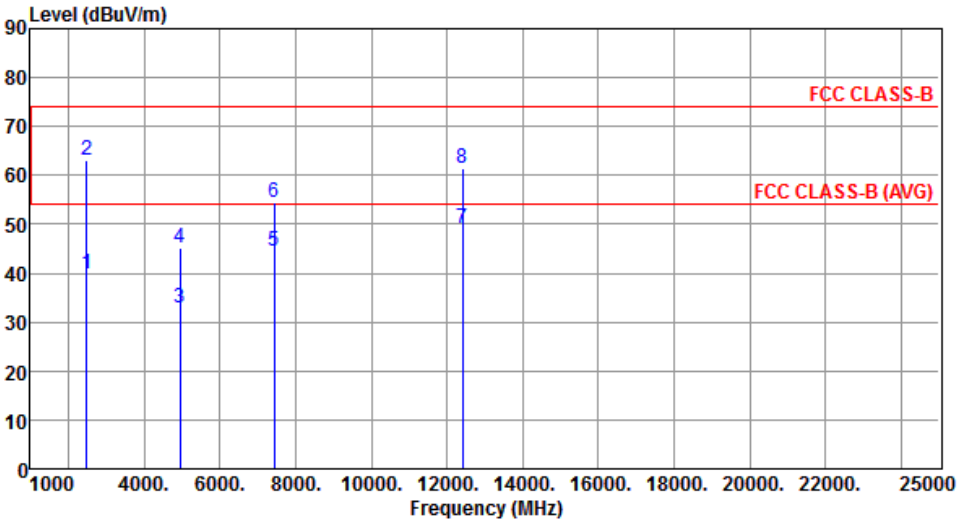
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	42.67	54.00	-11.33	43.28	-0.61	Average	177	142
2	2483.50	67.59	74.00	-6.41	68.20	-0.61	Peak	177	142
3	4960.00	32.72	54.00	-21.28	27.10	5.62	Average	182	156
4	4960.00	45.22	74.00	-28.78	39.60	5.62	Peak	182	156
5	7440.00	43.61	54.00	-10.39	33.05	10.56	Average	225	311
6	7440.00	53.39	74.00	-20.61	42.83	10.56	Peak	225	311
7	12400.00	45.96	54.00	-8.04	31.17	14.79	Average	291	300
8	12400.00	57.89	74.00	-16.11	43.10	14.79	Peak	291	300

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

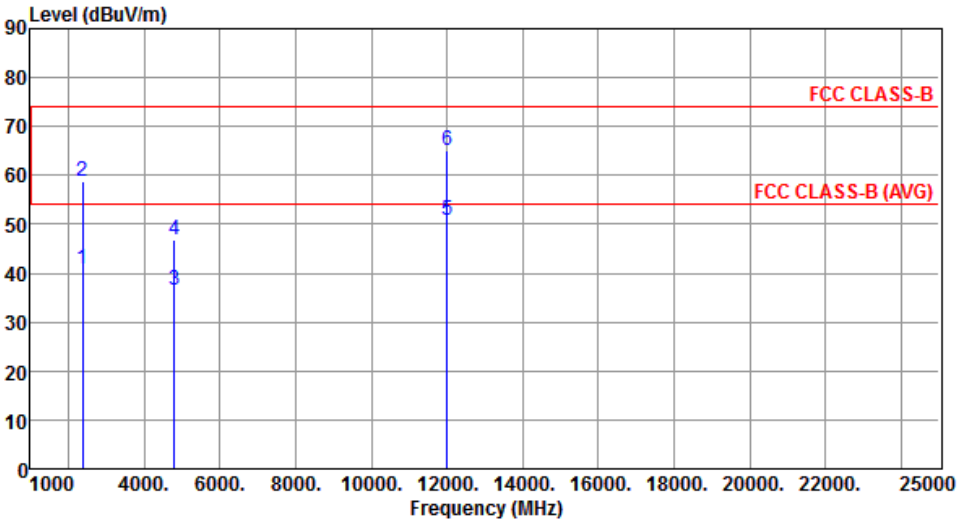
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	1



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	39.94	54.00	-14.06	40.55	-0.61	Average	373	83
2	2483.50	62.97	74.00	-11.03	63.58	-0.61	Peak	373	83
3	4960.00	33.03	54.00	-20.97	27.41	5.62	Average	224	319
4	4960.00	45.18	74.00	-28.82	39.56	5.62	Peak	224	319
5	7440.00	44.62	54.00	-9.38	34.06	10.56	Average	281	69
6	7440.00	54.55	74.00	-19.45	43.99	10.56	Peak	281	69
7	12400.00	49.18	54.00	-4.82	34.39	14.79	Average	215	313
8	12400.00	61.35	74.00	-12.65	46.56	14.79	Peak	215	313

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

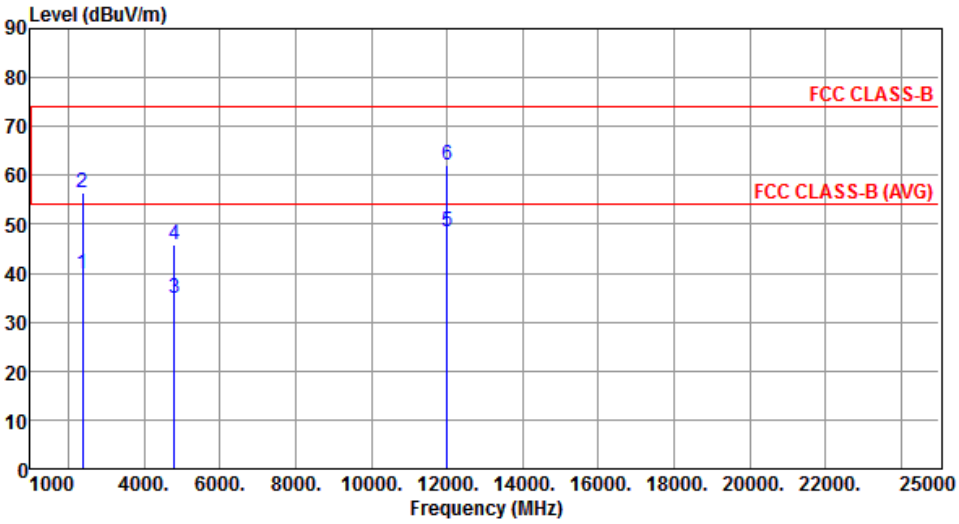
Modulation	GFSK	**Test Freq. (MHz)**	2402
Polarization	Horizontal	**Test Configuration**	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	40.90	54.00	-13.10	42.00	-1.10	Average	121	339
2	2390.00	58.88	74.00	-15.12	59.98	-1.10	Peak	121	339
3	4804.00	36.57	54.00	-17.43	31.32	5.25	Average	281	200
4	4804.00	46.75	74.00	-27.25	41.50	5.25	Peak	281	200
5	12010.00	50.73	54.00	-3.27	35.66	15.07	Average	225	288
6	12010.00	65.04	74.00	-8.96	49.97	15.07	Peak	225	288

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

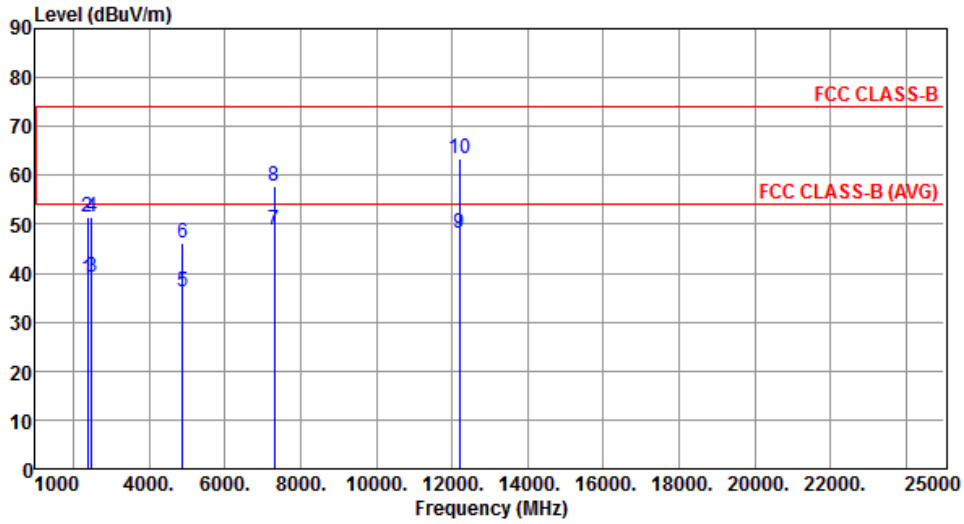
Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Vertical	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	39.69	54.00	-14.31	40.79	-1.10	Average	360	207
2	2390.00	56.53	74.00	-17.47	57.63	-1.10	Peak	360	207
3	4804.00	34.86	54.00	-19.14	29.61	5.25	Average	318	195
4	4804.00	45.67	74.00	-28.33	40.42	5.25	Peak	318	195
5	12010.00	48.38	54.00	-5.62	33.31	15.07	Average	263	200
6	12010.00	62.19	74.00	-11.81	47.12	15.07	Peak	263	200

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

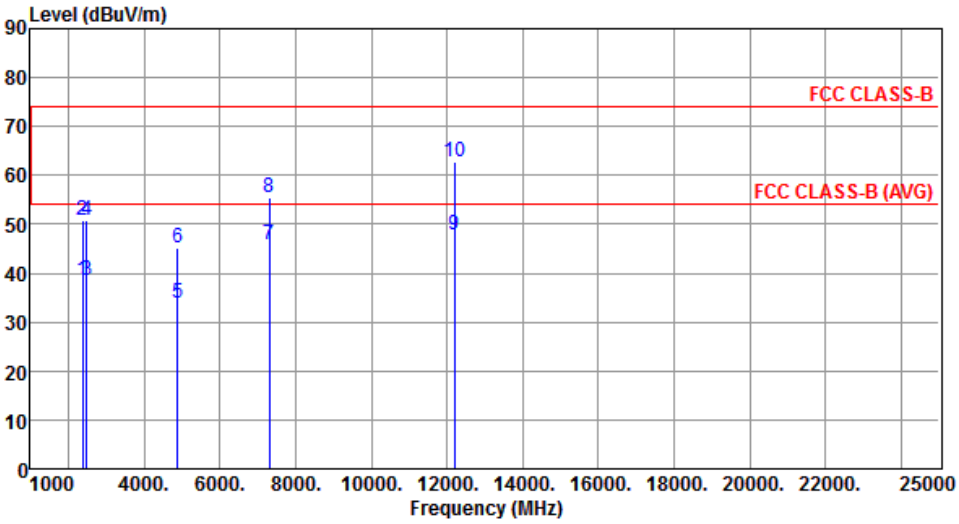
Modulation	GFSK	Test Freq. (MHz)	2440
Polarization	Horizontal	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.95	54.00	-15.05	40.05	-1.10	Average	105	341
2	2390.00	51.37	74.00	-22.63	52.47	-1.10	Peak	105	341
3	2483.50	39.28	54.00	-14.72	39.89	-0.61	Average	105	341
4	2483.50	51.44	74.00	-22.56	52.05	-0.61	Peak	105	341
5	4880.00	36.35	54.00	-17.65	30.92	5.43	Average	309	279
6	4880.00	46.20	74.00	-27.80	40.77	5.43	Peak	309	279
7	7320.00	48.66	54.00	-5.34	38.39	10.27	Average	223	42
8	7320.00	57.92	74.00	-16.08	47.65	10.27	Peak	223	42
9	12200.00	48.08	54.00	-5.92	33.15	14.93	Average	223	285
10	12200.00	63.49	74.00	-10.51	48.56	14.93	Peak	223	285

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

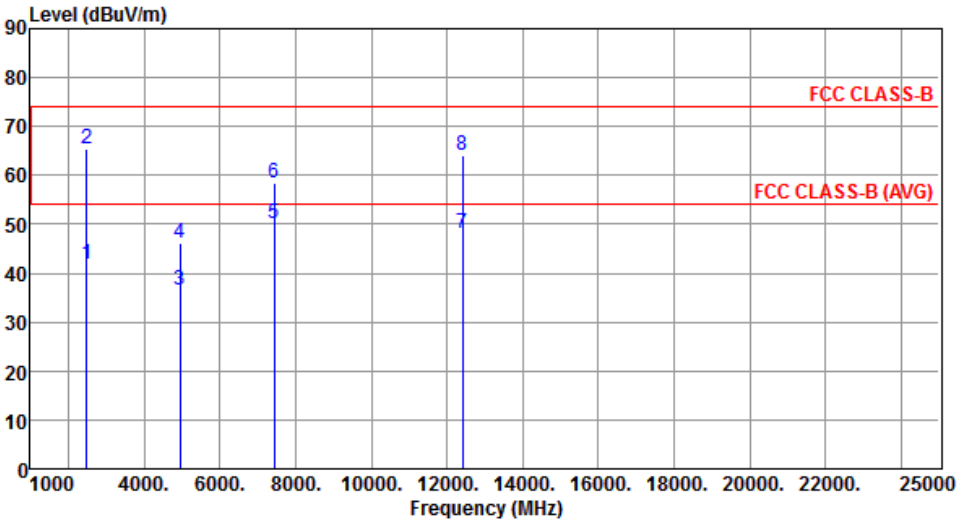
Modulation	GFSK	Test Freq. (MHz)	2440
Polarization	Vertical	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.58	54.00	-15.42	39.68	-1.10	Average	350	337
2	2390.00	50.70	74.00	-23.30	51.80	-1.10	Peak	350	337
3	2483.50	38.53	54.00	-15.47	39.14	-0.61	Average	350	337
4	2483.50	50.85	74.00	-23.15	51.46	-0.61	Peak	350	337
5	4880.00	33.97	54.00	-20.03	28.54	5.43	Average	134	152
6	4880.00	45.20	74.00	-28.80	39.77	5.43	Peak	134	152
7	7320.00	45.92	54.00	-8.08	35.65	10.27	Average	330	308
8	7320.00	55.43	74.00	-18.57	45.16	10.27	Peak	330	308
9	12200.00	47.72	54.00	-6.28	32.79	14.93	Average	315	157
10	12200.00	62.88	74.00	-11.12	47.95	14.93	Peak	315	157

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

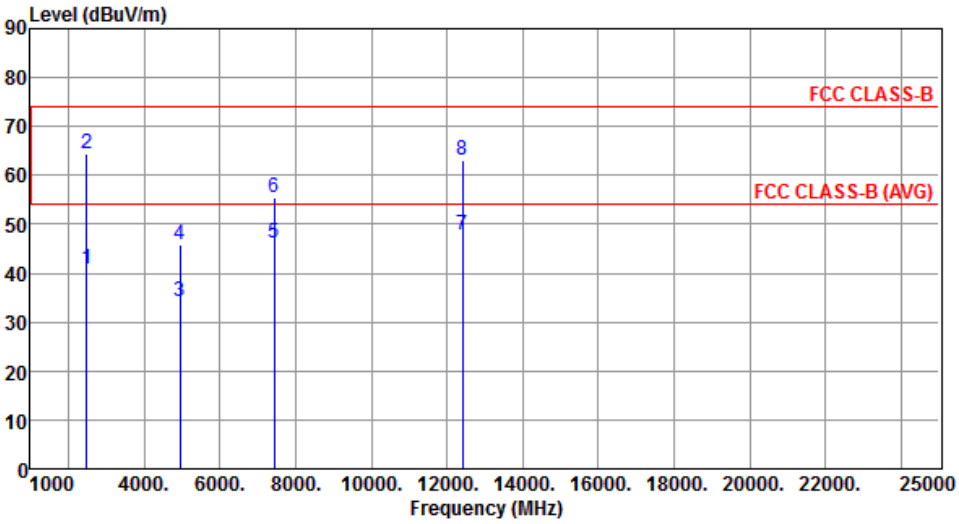
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	41.92	54.00	-12.08	42.53	-0.61	Average	196	262
2	2483.50	65.44	74.00	-8.56	66.05	-0.61	Peak	196	262
3	4960.00	36.56	54.00	-17.44	30.94	5.62	Average	287	281
4	4960.00	46.30	74.00	-27.70	40.68	5.62	Peak	287	281
5	7440.00	50.01	54.00	-3.99	39.45	10.56	Average	100	36
6	7440.00	58.61	74.00	-15.39	48.05	10.56	Peak	100	36
7	12400.00	48.13	54.00	-5.87	33.34	14.79	Average	222	299
8	12400.00	64.17	74.00	-9.83	49.38	14.79	Peak	222	299

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

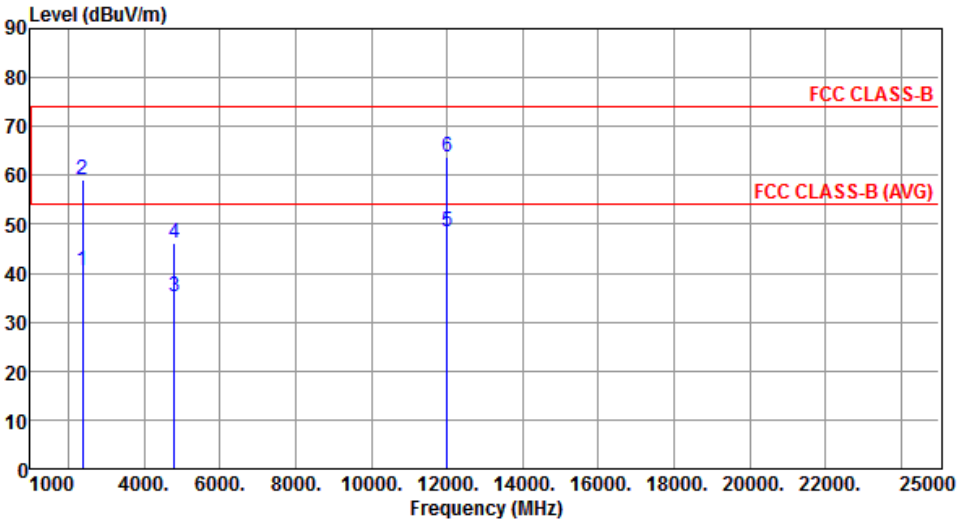
Modulation	GFSK	**Test Freq. (MHz)**	2480
Polarization	Vertical	**Test Configuration**	2



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	40.77	54.00	-13.23	41.38	-0.61	Average	375	2
2	2483.50	64.55	74.00	-9.45	65.16	-0.61	Peak	375	2
3	4960.00	34.12	54.00	-19.88	28.50	5.62	Average	138	155
4	4960.00	45.72	74.00	-28.28	40.10	5.62	Peak	138	155
5	7440.00	46.23	54.00	-7.77	35.67	10.56	Average	322	302
6	7440.00	55.34	74.00	-18.66	44.78	10.56	Peak	322	302
7	12400.00	47.85	54.00	-6.15	33.06	14.79	Average	312	152
8	12400.00	62.94	74.00	-11.06	48.15	14.79	Peak	312	152

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

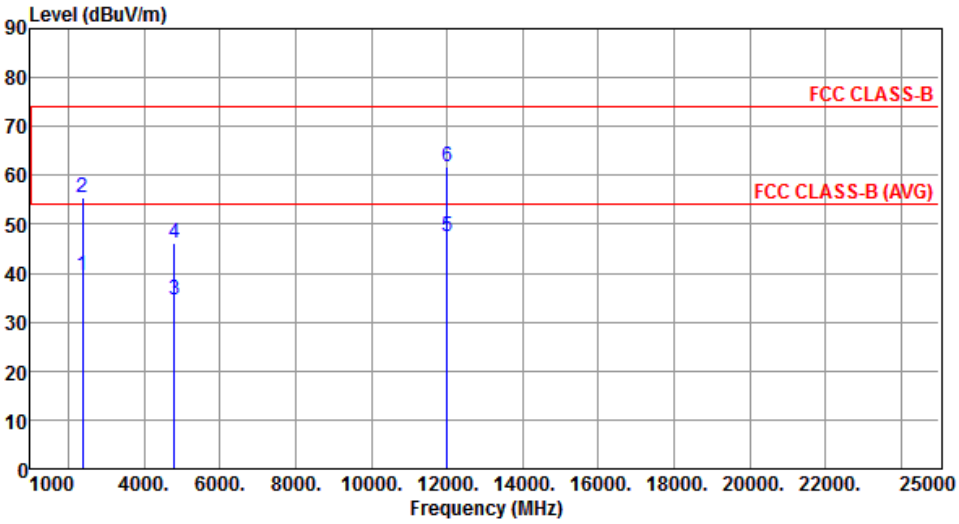
Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Horizontal	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	40.51	54.00	-13.49	41.61	-1.10	Average	315	247
2	2390.00	59.08	74.00	-14.92	60.18	-1.10	Peak	315	247
3	4804.00	35.24	54.00	-18.76	29.99	5.25	Average	285	281
4	4804.00	46.32	74.00	-27.68	41.07	5.25	Peak	285	281
5	12010.00	48.53	54.00	-5.47	33.46	15.07	Average	218	274
6	12010.00	63.61	74.00	-10.39	48.54	15.07	Peak	218	274

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

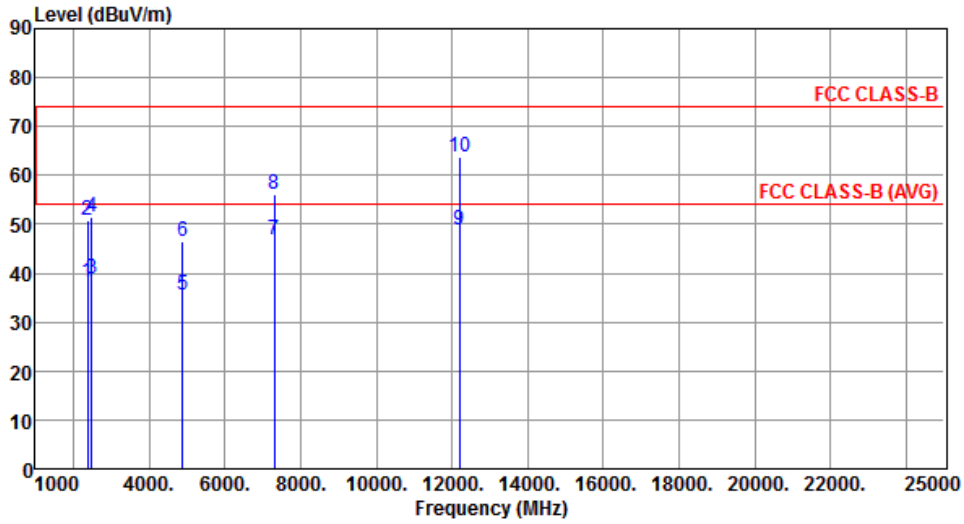
Modulation	GFSK	**Test Freq. (MHz)**	2402
Polarization	Vertical	**Test Configuration**	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	39.55	54.00	-14.45	40.65	-1.10	Average	340	201
2	2390.00	55.56	74.00	-18.44	56.66	-1.10	Peak	340	201
3	4804.00	34.57	54.00	-19.43	29.32	5.25	Average	243	165
4	4804.00	46.32	74.00	-27.68	41.07	5.25	Peak	243	165
5	12010.00	47.42	54.00	-6.58	32.35	15.07	Average	243	316
6	12010.00	61.86	74.00	-12.14	46.79	15.07	Peak	243	316

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

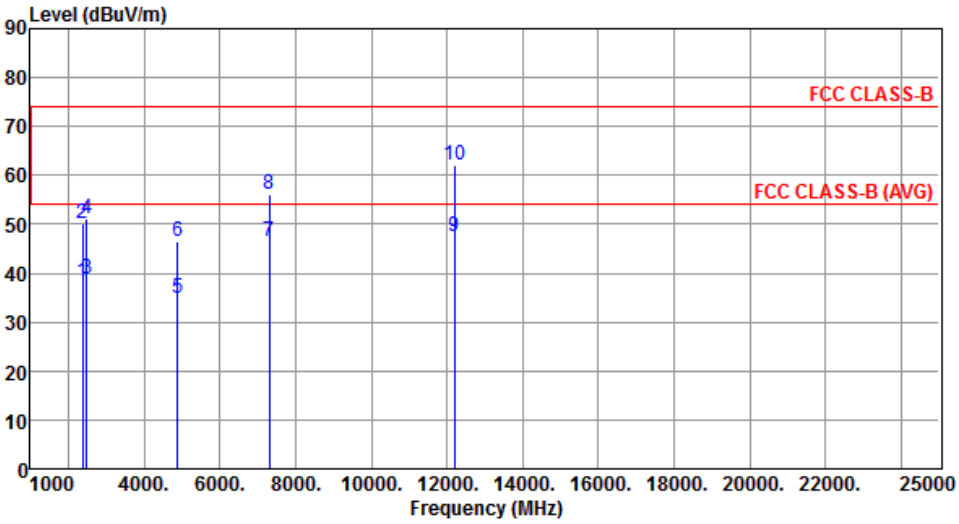
Modulation	GFSK	Test Freq. (MHz)	2440
Polarization	Horizontal	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.35	54.00	-15.65	39.45	-1.10	Average	209	236
2	2390.00	50.77	74.00	-23.23	51.87	-1.10	Peak	209	236
3	2483.50	38.98	54.00	-15.02	39.59	-0.61	Average	209	236
4	2483.50	51.46	74.00	-22.54	52.07	-0.61	Peak	209	236
5	4880.00	35.43	54.00	-18.57	30.00	5.43	Average	288	283
6	4880.00	46.58	74.00	-27.42	41.15	5.43	Peak	288	283
7	7320.00	46.75	54.00	-7.25	36.48	10.27	Average	367	112
8	7320.00	56.12	74.00	-17.88	45.85	10.27	Peak	367	112
9	12200.00	48.71	54.00	-5.29	33.78	14.93	Average	213	276
10	12200.00	63.85	74.00	-10.15	48.92	14.93	Peak	213	276

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

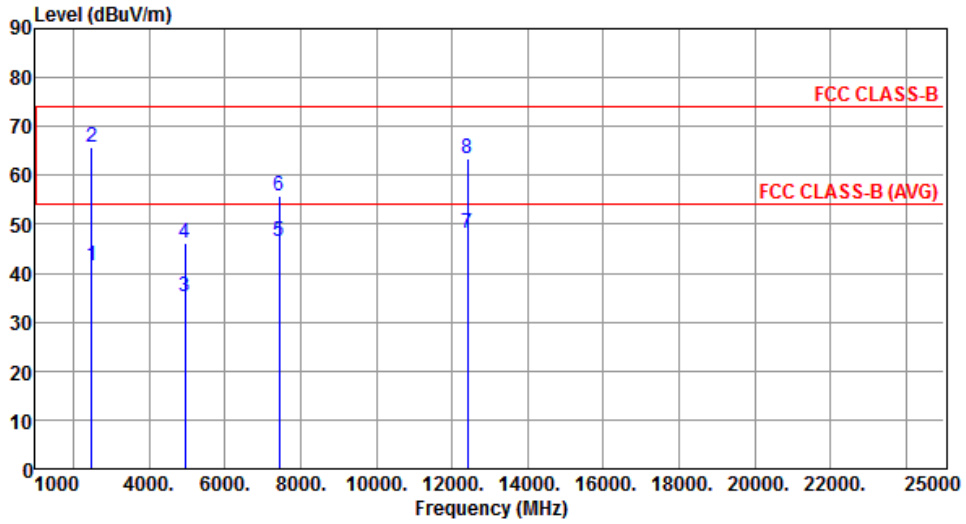
Modulation	GFSK	Test Freq. (MHz)	2440
Polarization	Vertical	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.24	54.00	-15.76	39.34	-1.10	Average	275	200
2	2390.00	50.30	74.00	-23.70	51.40	-1.10	Peak	275	200
3	2483.50	38.70	54.00	-15.30	39.31	-0.61	Average	275	200
4	2483.50	51.04	74.00	-22.96	51.65	-0.61	Peak	275	200
5	4880.00	34.72	54.00	-19.28	29.29	5.43	Average	245	181
6	4880.00	46.55	74.00	-27.45	41.12	5.43	Peak	245	181
7	7320.00	46.65	54.00	-7.35	36.38	10.27	Average	311	306
8	7320.00	56.08	74.00	-17.92	45.81	10.27	Peak	311	306
9	12200.00	47.50	54.00	-6.50	32.57	14.93	Average	246	311
10	12200.00	62.02	74.00	-11.98	47.09	14.93	Peak	246	311

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

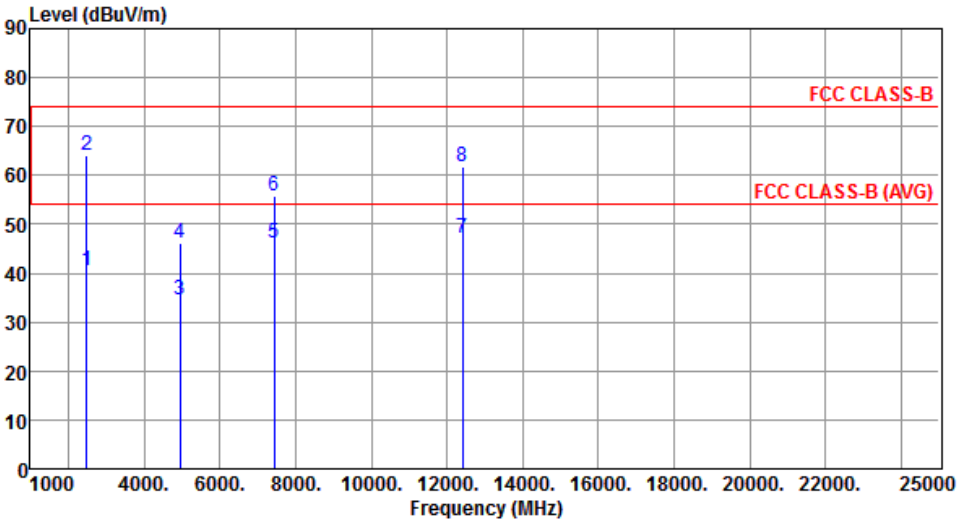
Modulation	GFSK	**Test Freq. (MHz)**	2480
Polarization	Horizontal	**Test Configuration**	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	41.43	54.00	-12.57	42.04	-0.61	Average	329	239
2	2483.50	65.68	74.00	-8.32	66.29	-0.61	Peak	329	239
3	4960.00	35.18	54.00	-18.82	29.56	5.62	Average	281	290
4	4960.00	46.18	74.00	-27.82	40.56	5.62	Peak	281	290
5	7440.00	46.45	54.00	-7.55	35.89	10.56	Average	380	115
6	7440.00	55.80	74.00	-18.20	45.24	10.56	Peak	380	115
7	12400.00	48.23	54.00	-5.77	33.44	14.79	Average	218	279
8	12400.00	63.57	74.00	-10.43	48.78	14.79	Peak	218	279

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

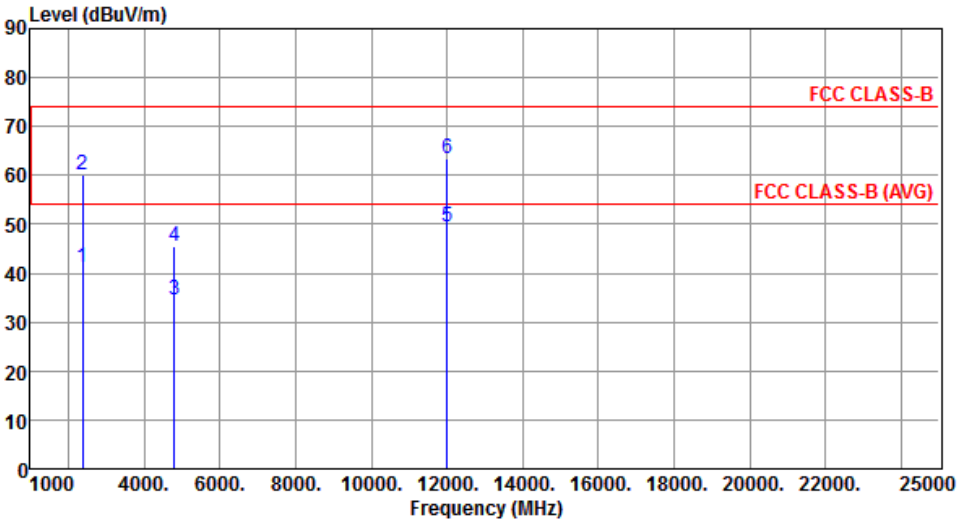
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	3



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	40.50	54.00	-13.50	41.11	-0.61	Average	298	188
2	2483.50	64.21	74.00	-9.79	64.82	-0.61	Peak	298	188
3	4960.00	34.42	54.00	-19.58	28.80	5.62	Average	249	170
4	4960.00	46.24	74.00	-27.76	40.62	5.62	Peak	249	170
5	7440.00	46.31	54.00	-7.69	35.75	10.56	Average	321	302
6	7440.00	55.93	74.00	-18.07	45.37	10.56	Peak	321	302
7	12400.00	47.04	54.00	-6.96	32.25	14.79	Average	243	316
8	12400.00	61.78	74.00	-12.22	46.99	14.79	Peak	243	316

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

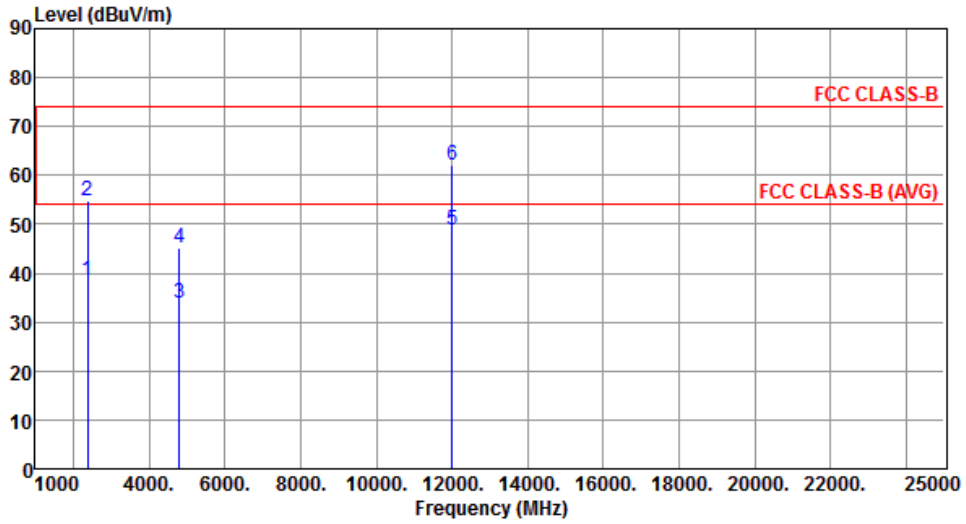
Modulation	GFSK	Test Freq. (MHz)	2402
Polarization	Horizontal	Test Configuration	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	41.24	54.00	-12.76	42.34	-1.10	Average	144	88
2	2390.00	60.15	74.00	-13.85	61.25	-1.10	Peak	144	88
3	4804.00	34.57	54.00	-19.43	29.32	5.25	Average	266	213
4	4804.00	45.53	74.00	-28.47	40.28	5.25	Peak	266	213
5	12010.00	49.38	54.00	-4.62	34.31	15.07	Average	234	292
6	12010.00	63.28	74.00	-10.72	48.21	15.07	Peak	234	292

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

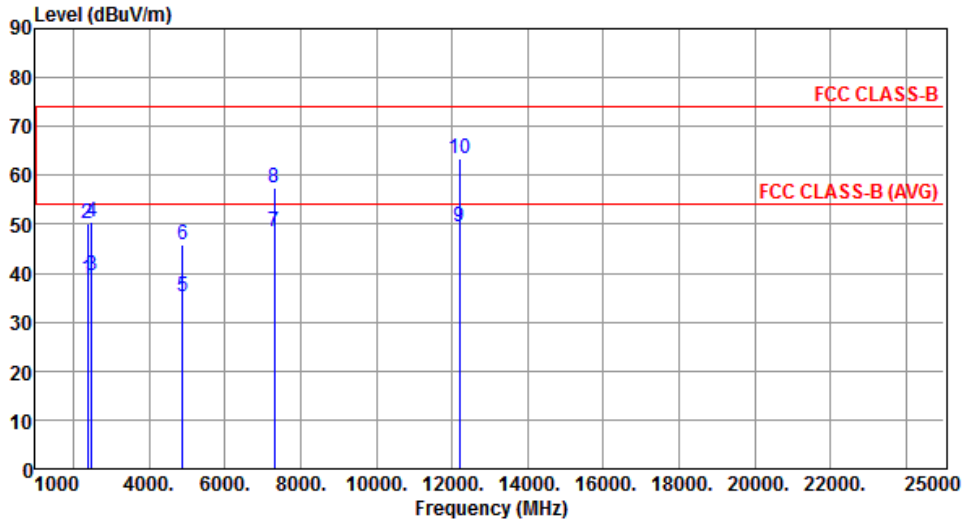
Modulation	GFSK	**Test Freq. (MHz)**	2402
Polarization	Vertical	**Test Configuration**	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.59	54.00	-15.41	39.69	-1.10	Average	133	83
2	2390.00	54.71	74.00	-19.29	55.81	-1.10	Peak	133	83
3	4804.00	33.71	54.00	-20.29	28.46	5.25	Average	353	188
4	4804.00	45.25	74.00	-28.75	40.00	5.25	Peak	353	188
5	12010.00	48.74	54.00	-5.26	33.67	15.07	Average	297	324
6	12010.00	62.24	74.00	-11.76	47.17	15.07	Peak	297	324

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

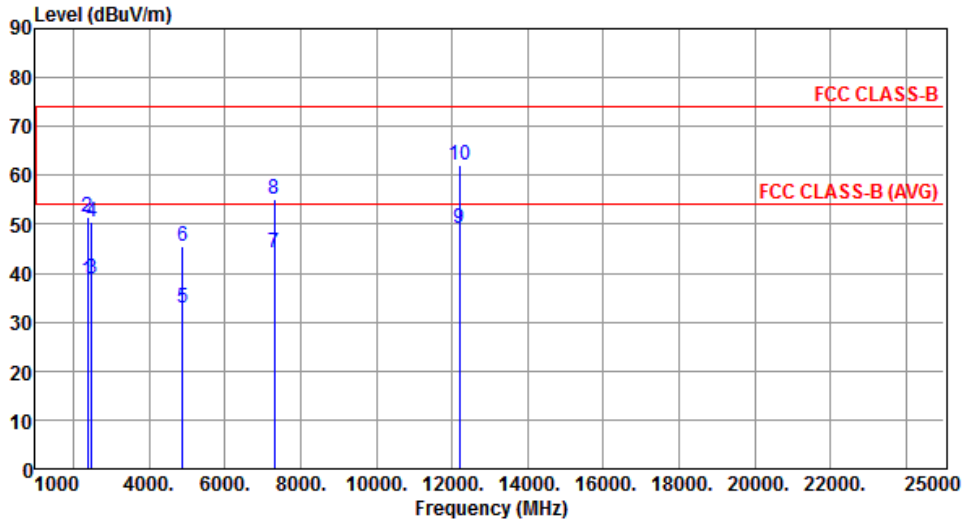
Modulation	GFSK	**Test Freq. (MHz)**	2440
Polarization	Horizontal	**Test Configuration**	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.95	54.00	-15.05	40.05	-1.10	Average	142	87
2	2390.00	50.22	74.00	-23.78	51.32	-1.10	Peak	142	87
3	2483.50	39.64	54.00	-14.36	40.25	-0.61	Average	142	87
4	2483.50	50.56	74.00	-23.44	51.17	-0.61	Peak	142	87
5	4880.00	35.25	54.00	-18.75	29.82	5.43	Average	105	215
6	4880.00	46.00	74.00	-28.00	40.57	5.43	Peak	105	215
7	7320.00	48.60	54.00	-5.40	38.33	10.27	Average	325	40
8	7320.00	57.33	74.00	-16.67	47.06	10.27	Peak	325	40
9	12200.00	49.54	54.00	-4.46	34.61	14.93	Average	227	291
10	12200.00	63.29	74.00	-10.71	48.36	14.93	Peak	227	291

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

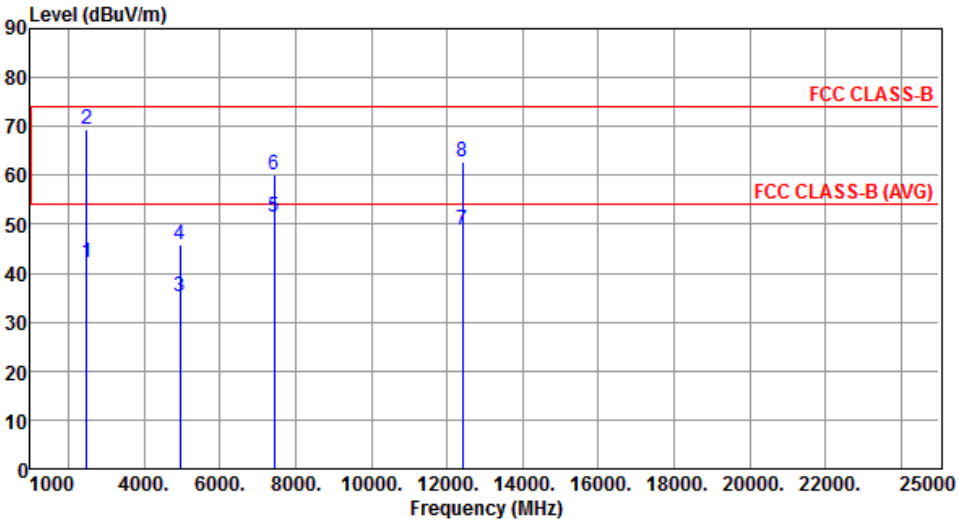
Modulation	GFSK	Test Freq. (MHz)	2440
Polarization	Vertical	Test Configuration	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2390.00	38.55	54.00	-15.45	39.65	-1.10	Average	119	82
2	2390.00	51.36	74.00	-22.64	52.46	-1.10	Peak	119	82
3	2483.50	38.75	54.00	-15.25	39.36	-0.61	Average	119	82
4	2483.50	50.60	74.00	-23.40	51.21	-0.61	Peak	119	82
5	4880.00	32.93	54.00	-21.07	27.50	5.43	Average	255	246
6	4880.00	45.41	74.00	-28.59	39.98	5.43	Peak	255	246
7	7320.00	44.12	54.00	-9.88	33.85	10.27	Average	351	351
8	7320.00	55.19	74.00	-18.81	44.92	10.27	Peak	351	351
9	12200.00	49.08	54.00	-4.92	34.15	14.93	Average	238	203
10	12200.00	62.12	74.00	-11.88	47.19	14.93	Peak	238	203

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

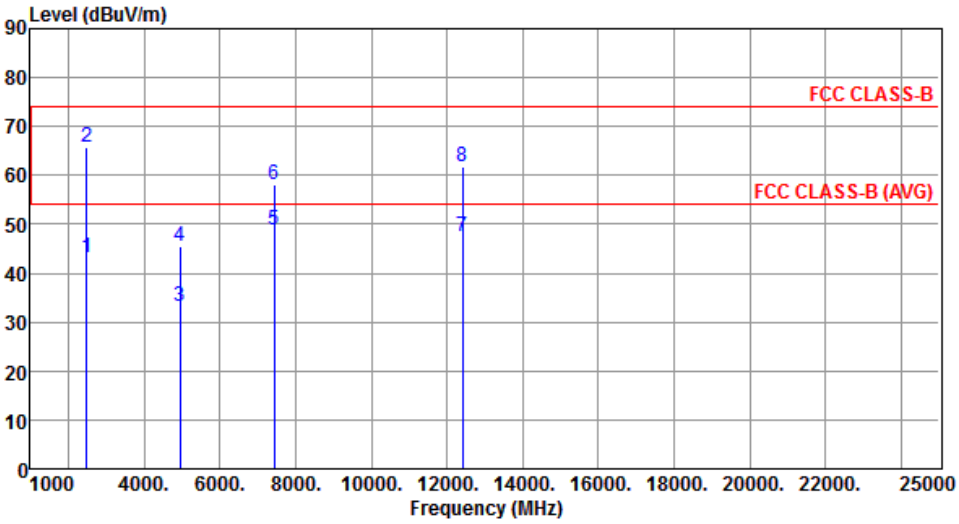
Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Horizontal	Test Configuration	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	42.11	54.00	-11.89	42.72	-0.61	Average	222	97
2	2483.50	69.56	74.00	-4.44	70.17	-0.61	Peak	222	97
3	4960.00	35.07	54.00	-18.93	29.45	5.62	Average	100	204
4	4960.00	45.92	74.00	-28.08	40.30	5.62	Peak	100	204
5	7440.00	51.48	54.00	-2.52	40.92	10.56	Average	287	36
6	7440.00	60.21	74.00	-13.79	49.65	10.56	Peak	287	36
7	12400.00	48.95	54.00	-5.05	34.16	14.79	Average	100	211
8	12400.00	62.68	74.00	-11.32	47.89	14.79	Peak	100	211

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

Modulation	GFSK	Test Freq. (MHz)	2480
Polarization	Vertical	Test Configuration	4



	Freq. MHz	Emission level dBuV/m	Limit dBuV/m	Margin dB	SA reading dBuV	Factor dB	Remark	ANT High cm	Turn Table deg
1	2483.50	43.18	54.00	-10.82	43.79	-0.61	Average	118	70
2	2483.50	65.63	74.00	-8.37	66.24	-0.61	Peak	118	70
3	4960.00	33.10	54.00	-20.90	27.48	5.62	Average	183	23
4	4960.00	45.53	74.00	-28.47	39.91	5.62	Peak	183	23
5	7440.00	48.93	54.00	-5.07	38.37	10.56	Average	355	350
6	7440.00	58.10	74.00	-15.90	47.54	10.56	Peak	355	350
7	12400.00	47.63	54.00	-6.37	32.84	14.79	Average	315	136
8	12400.00	61.63	74.00	-12.37	46.84	14.79	Peak	315	136

Note 1: Emission Level (dBuV/m) = SA Reading (dBuV/m) + Factor* (dB)
*Factor includes antenna factor , cable loss and amplifier gain
Note 2: Margin (dB) = Emission level (dBuV/m) – Limit (dBuV/m).

3.6 Emissions in non-restricted Frequency Bands

3.6.1 Emissions in non-restricted frequency bands limit

The peak output power measured in any 100 kHz bandwidth outside of the authorized frequency band shall be attenuated by at least 20 dB relative to the maximum in-band peak PSD level in 100 kHz.

3.6.2 Test Procedures

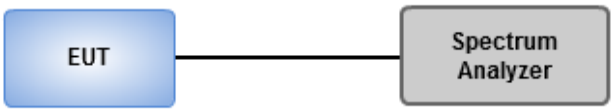
Reference Level Measurement

1. Set the RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Set Sweep time = auto couple, Trace mode = max hold.
3. Allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

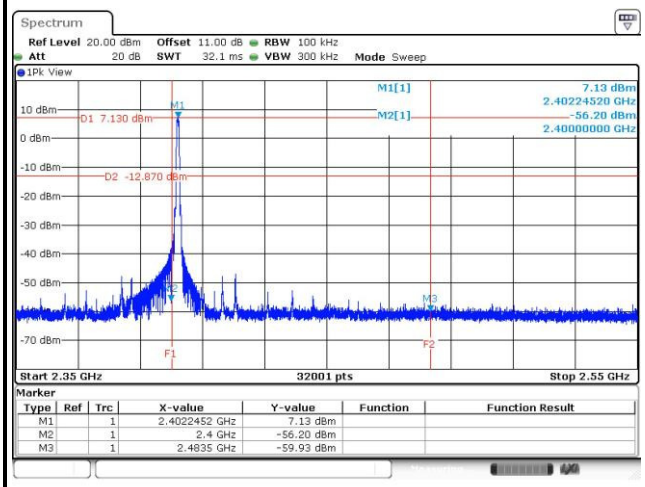
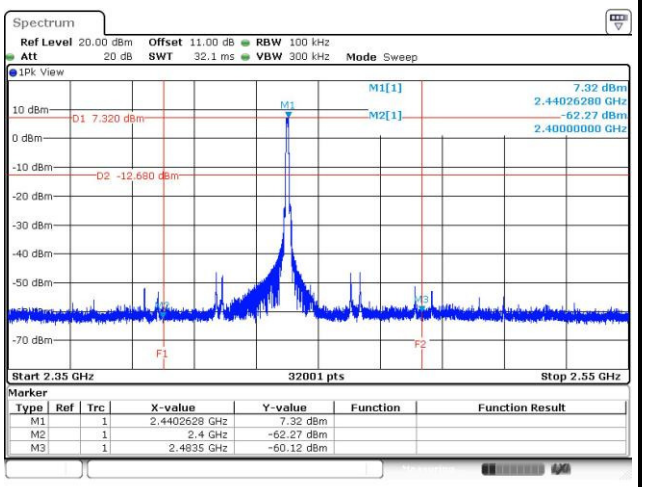
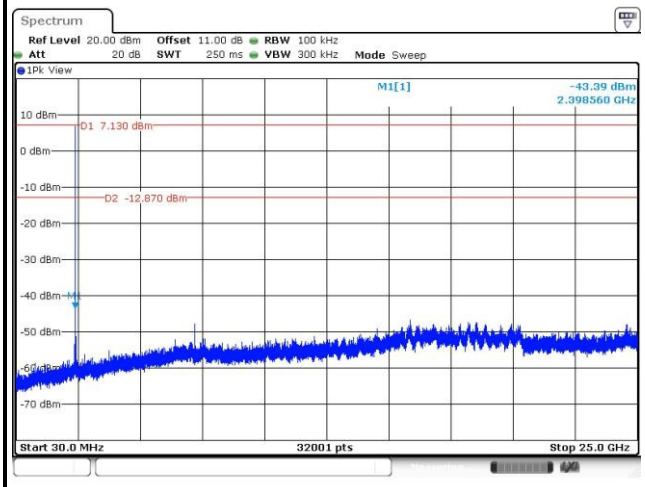
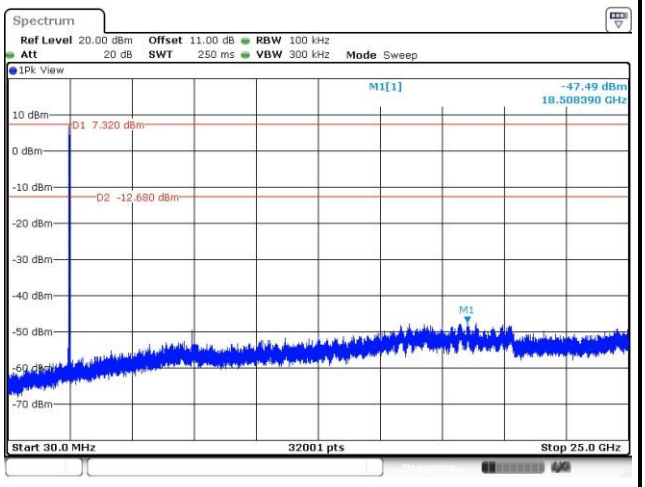
Unwanted Emissions Level Measurement

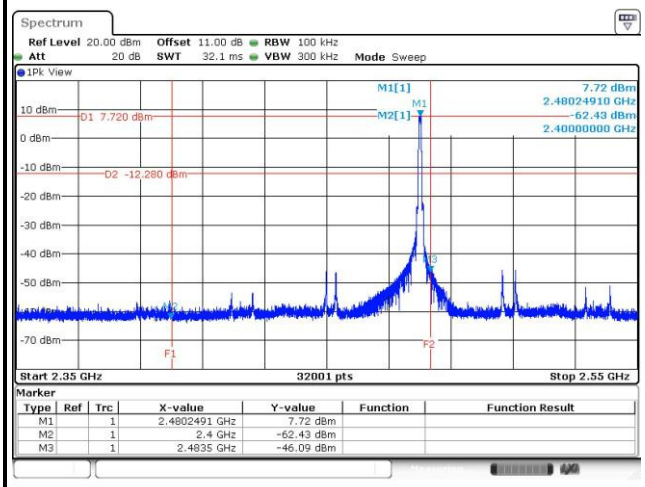
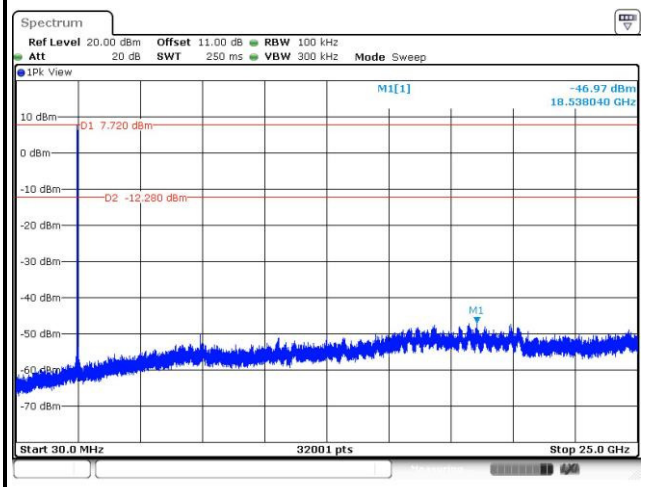
1. Set RBW = 100 kHz, VBW = 300 kHz, Detector = peak.
2. Trace Mode = max hold, Sweep = auto couple.
3. Allow the trace to stabilize.
4. Use peak marker function to determine maximum amplitude of all unwanted emissions within any 100 kHz bandwidth.

3.6.3 Test Setup



3.6.4 Test Result of Emissions in non-restricted Frequency Bands

TX Freq 2402MHz / 30MHz~25GHz (down 20dBc)	TX Freq 2440MHz / 30MHz~25GHz (down 20dBc)
	
	

TX Freq 2480MHz / 30MHz~25GHz (down 20dBc)	---
	---
	---

4 Test laboratory information

Established in 2012, ICC provides foremost EMC & RF Testing and advisory consultation services by our skilled engineers and technicians. Our services employ a wide variety of advanced edge test equipment and one of the widest certification extents in the business.

International Certification Corp, it is our definitive objective is to institute long term, trust-based associations with our clients. The expectation we set up with our clients is based on outstanding service, practical expertise and devotion to a certified value structure. Our passion is to grant our clients with best EMC / RF services by oriented knowledgeable and accommodating staff.

Our Test sites are located at Linkou District and Kwei Shan Hsiang. Location map can be found on our website http://www.icertifi.com.tw.

Linkou	**Kwei Shan**	**Kwei Shan Site II**
Tel: 886-2-2601-1640	Tel: 886-3-271-8666	Tel: 886-3-271-8640
No. 30-2, Ding Fwu Tsuen, Lin Kou District, New Taipei City, Taiwan, R.O.C.	No. 3-1, Lane 6, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.	No. 14-1, Lane 19, Wen San 3rd St., Kwei Shan Hsiang, Tao Yuan Hsien 333, Taiwan, R.O.C.

If you have any suggestion, please feel free to contact us as below information

Tel: 886-3-271-8666
Fax: 886-3-318-0155
Email: ICC_Service@icertifi.com.tw

==END==