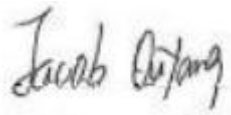
FCC ID TEST REPORT

Prepared for	:	REL Acoustics Ltd.
Address	:	North Road, Bridgend Industrial Estate Bridgend CF31 3TP United Kingdom
Trade Name	:	REL
E.U.T	:	SEND
Model Number	:	AirShip Direct
Prepared by	:	Keyway Testing Technology(Guangdong) Co., Ltd.
Address	:	21st Floor, Building 6, Dongyi Intelligent Equipment New Energy Vehicle Park, No.30 of Tangxia District, Dongshen Road, Tangxia Town, Dongguan City, Guangdong province, China Tel: 86-769-87182258 Fax: 86-769-87181058
Report No.	:	2025062726300472
Date of Test:	:	Jun. 27~Aug. 20, 2025
Date of Report	:	Aug. 21, 2025

Applicant:	REL Acoustics Ltd.
Address:	North Road, Bridgend Industrial Estate Bridgend CF31 3TP United Kingdom
Manufacturer:	REL Acoustics Ltd.
Address:	North Road, Bridgend Industrial Estate Bridgend CF31 3TP United Kingdom
E.U.T:	SEND
Model Number:	AirShip Direct
Trade Name:	REL
Date of Receipt:	Jun. 27, 2025
Date of Test:	Jun. 27~Aug. 20, 2025
Test Specification :	FCC CFR Title 47 Part 15 Subpart C Section 15.407 ANSI C63.10:2013
Test Result:	The equipment under test was found to be compliance with the requirements of the standards applied. **Issue Date: Aug. 21, 2025**

Tested by:	Reviewed by:	Authorized by:
		
Jacob Ouyang/Engineer	Billy Zeng / Supervisor	Cherry Chen / Manager

Abbreviations: OK/P=passed fail/F=failed N/A=not applicable E.U.T=equipment under tested

This device described above has been tested by Keyway, and the test results show that the equipment under test (EUT) is in compliance with the FCC requirements. And it is applicable only to the tested sample identified in the report.
This report shall not be reproduced except in full, without the written approval of Keyway, this document may be altered or revised by Keyway, personal only, and shall be noted in the revision of the document.

Revision Record				
Version	Chapter	Date	Modifier	Remark
00		Aug. 21, 2025		Original

TABLE OF CONTENTS

Page

1 Test Summary

Test Items	Test Requirement	Result
FCC part 15.203	Antenna requirement	PASS
FCC part 15.207	AC Power Line Conducted Emission	PASS
FCC part 15.407 (a)	Conducted Peak Output Power	PASS
FCC part 15.407 (e)	6dB Bandwidth& 99% OCB	PASS
FCC part 15.407 (a)	Power Spectral Density	PASS
FCC part 15.407(b)	Conducted Bandedge	PASS
FCC part 15.407(b)/15.209	Radiated Emission and Restricted Bands	PASS
FCC part 15.203	Antenna requirement	PASS

Remark:

"N/A" denotes test is not applicable in this Test Report.

2 GENERAL PRODUCT INFORMATION

2.1 Description of Device (EUT)

Product Name:	Send
Trademark	REL
Test Model No.:	AirShip Direct
Sample ID:	33000248543
Model No.:	N/A
Model Difference:	N/A
Operation Frequency:	5727-5848MHz
Number of Channel:	62 channels
Type of Modulation:	FSK
Antenna installation:	Internal Antenna
Antenna Gain:	0.26dBi
Power supply:	DC 5V/0.5A from adapter
Adapter Information:	Manufacturer:Shenzhen Merryking Electronics Co., Ltd. Model:MKC-0500500DEXD Input:100-240V~50/60Hz 0.4A Output:5.0V/0.5A 2.5W

Remark:The information in this section is provided by the applicant or manufacturer, Kayway is not liable to the accuracy, suitability, reliability or/and integrity of the information.

2.2 Channel List

Frequency and Channel list :

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5727	20	5765	38	5801
2	5729	21	5767	39	5803
3	5731	22	5769	40	5805
4	5733	23	5787	41	5807
5	5735	24	5773	42	5809
6	5737	25	5775	43	5811
7	5739	26	5777	51	5813
8	5741	27	5780	52	5815
9	5743	28	5781	53	5817
10	5745	29	5783	54	5819
11	5747	30	5785	55	5821
12	5749	31	5787	56	5823
13	5751	32	5789	57	5825
14	5753	33	5791	58	5827
15	5755	34	5793	59	5829
16	5757	35	5795	60	5831
17	5759	36	5787	61	5833
18	5761	37	5799	62	5835
19	5763				

2.3 DESCRIPTION OF TEST MODES

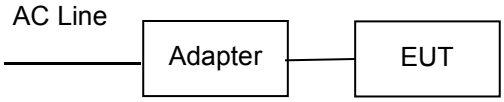
To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description	
Mode 1	CH01	FSK
Mode 2	CH31	
Mode 3	CH62	
For Conducted & Radiated Emission		
Final Test Mode	Description	
Mode 1	CH01	FSK
Mode 2	CH31	
Mode 3	CH62	

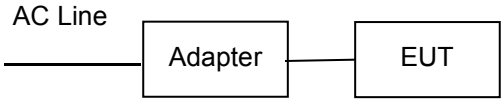
Note: The measurements are performed at the highest, middle, lowest available channels.

2.4 Test Setup Configuration

Conducted Emission



Radiated Emission



Conducted Spurious

2.5 Test Mode

Transmitting mode	Keep the EUT in continuously transmitting mode.
Remark: During the test, the test voltage was tuned from 85% to 115% of the nominal rated supply voltage, and found that the worst case was under the nominal rated supply condition. So the report just shows that condition's data.	

Test Software	EMI_Tool_V23_EverestekInc_2021_1116.exe
Power level setup	0dBm

3 TEST SITES

3.1 Test Facilities

Site Description

EMC Lab. : Certificated by Nemko
Registration No.: ELA 814
Date of registration: September 25, 2024

Certificated by CMA China
Registration No.: 202319016955
Date of registration: July 23, 2024

Certificated by A2LA
Certificate Number: 7404.01
Valid To: March 31, 2027

Name of Firm : Keyway Testing Technology (Guangdong) Co., Ltd.

Site Location : 21st Floor, Building 6, Dongyi Intelligent Equipment New , Energy Vehicle Park, No.30 of Tangxia, District, Dongshen Road, Tangxia Town, Dongguan City, Guangdong province, China

3.2 Measurement Uncertainty

The reported uncertainty of measurement **y** ± **U**,where expended uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**,providing a level of confidence of approximately **95** %。

Parameter	**Uncertainty**
RF output power, conducted	±1.0dB
Power Spectral Density, conducted	±2.2dB
Radio Frequency	± 1 x 10^{-6}
Bandwidth	± 1.5 x 10^{-6}
Duty Cycle	±2%
Spurious emissions,conducted	±0.21dB
Temperature	±1°C
Humidity	±5%
DC and low frequency voltages	±3%
Conducted Emissions (150kHz~30MHz)	±3.64dB
Radiated Emission(9KHz~30MHz)	±4.51dB
Radiated Emission(30MHz~1GHz)	±5.03dB
Radiated Emission(1GHz~25GHz)	±4.74dB
Radiated Emission(25GHz~40GHz)	±3.38dB

3.3 List of Test and Measurement Instruments

Equipment	Manufacturer	Model No.	Serial No.	Date of Cal.	Valid until
For conducted emission at the mains terminals and signal port test 944 Shielded Room					
Test Software	FARAD	EZ-EMC Ver.FARAD-3A1+	KWET-089	/	/
EMI Test Receiver	Rohde&Schwarz	ESCI	101156	Apr 14, 25	Apr 13, 26
ArtificialMains Network	Rohde&Schwarz	ENV216	101314	Mar 05, 25	Mar 04, 26
RF Cable	FUJIKURA	3D-2W	KWET-030	Apr 14, 25	Apr 13, 26
Socket	Gongniu	KWET-003A1	KWET-003A1	Feb 21, 25	Feb 20, 26
For radiated emission test (30MHz-1GHz)966 Chamber 2					
Test Software	FARAD	EZ-EMC Ver.FARAD-3A1+	KWET-087	/	/
EMI Test Receiver	Rohde&Schwarz	ESCI	101178	Apr 14, 25	Apr 13, 26
TRILOG Broadband Antenna	Schwarzbeck	VULB 9168	00829	May 10, 25	May 09, 26
3m Semi-anechoic Chamber	YIHENDIANZI	966	YH-KW-966-02	Mar 07, 26	Mar 06, 29
RF Cable	EMC Instruments	EMCCFD400-NM-NM-2000	240307	Apr 14, 25	Apr 13, 26
RF Cable	EMC Instruments	EMCCFD400-NM-NM-9000	240309	Apr 14, 25	Apr 13, 26
For radiated emission test (Above 1GHz)966 Chamber 2					
Test Software	FARAD	EZ-EMC Ver.FARAD-3A1+	KWET-087	/	/
EMI Test Receiver	Rohde&Schwarz	ESCI	101178	Apr 14, 25	Apr 13, 26
Spectrum Analyzer	Agilent	N9020A	MY56070279	Apr 14, 25	Apr 13, 26
Spectrum analyzer	R&S	FSV 40	101059	Nov 06, 25	Nov 05, 26
Horn Antenna	DAZE	ZN30701	11003	Jul 27, 25	Jul 26, 26
SHF-EHF Horn Antenna	SCHWARZBECK	BBHA 9170	1368	May 16, 25	May 15, 26
Signal Amplifier	WCS Technology	DLNA-18000-40000	KWET-138	Apr 19, 25	Apr 18, 26
3m anechoic Chamber	YIHENDIANZI	966	YH-KW-966-02	Mar 07, 25	Mar 06, 29
RF Cable(1G-18GHz)	EMC Instruments	EMC105-SM-SM-1000	240301	Apr 14, 25	Apr 13, 26
RF Cable(1G-18GHz)	EMC Instruments	EMC105-SM-SM-2000	240302	Apr 14, 25	Apr 13, 26
RF Cable(1G-18GHz)	EMC Instruments	EMC105-SM-SM-9000	240303	Apr 14, 25	Apr 13, 26
RF Cable(18G-40GHz)	WCS Technology	CA360P-29M29M-1M	W2415130001	Apr 14, 25	Apr 13, 26
RF Cable(18G-40GHz)	WCS Technology	CA360P-29M29M-9M	W2415110001	Apr 14, 25	Apr 13, 26
For conducted emission test（RF）					
MXG Signal Analyzer	Agilent	N9020A	MY56070279	Apr 14, 25	Apr 13, 26

RF SWITCH BOX	CSKJ	SMU-1003	KWET-047	Apr 14, 25	Apr 13, 26
Attenuator	R&S	ESH3-Z2	102696	Apr 14, 25	Apr 13, 26
Power Meter	Agilent	E4418B	MY41294414	May 15, 25	May 14, 26
RF sma cable	Keysight	ULC-1m-SMSM+	1623	May 15, 25	May 14, 26
RF sma cable	Keysight	ULC-1m-SMSM+	1623	May 15, 25	May 14, 26
RF sma cable	Keysight	ULC-1.5FT-SMSM+	1623	May 15, 25	May 14, 26
RF sma cable	Keysight	ULC-1.5FT-SMSM+	1623	May 15, 25	May 14, 26
Coupler	Keysight	ZHDC-10-63-S+	SF331801603	May 15, 25	May 14, 26
Test Software	CSKJ	CS-305X	KWET-149	/	/

3.4 Description of Support Units

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Series No.	Note
E-1	SEND	REL	AirShip Direct	N/A	EUT
E-2	Notebook	lenovo	B40-80	MP07F6JD	Auxiliary

Note:
(1) The support equipment was authorized by Declaration of Confirmation.
(2) For detachable type I/O cable should be specified the length in cm in『Length』column.

4 Conducted Emission

Test Requirement:	:	FCC CFR 47 Part 15 Section 15.207
Test Method	:	ANSI C63.10: 2013
Test Result	:	PASS
Frequency Range	:	150kHz to 30MHz
Class/Severity	:	Class B

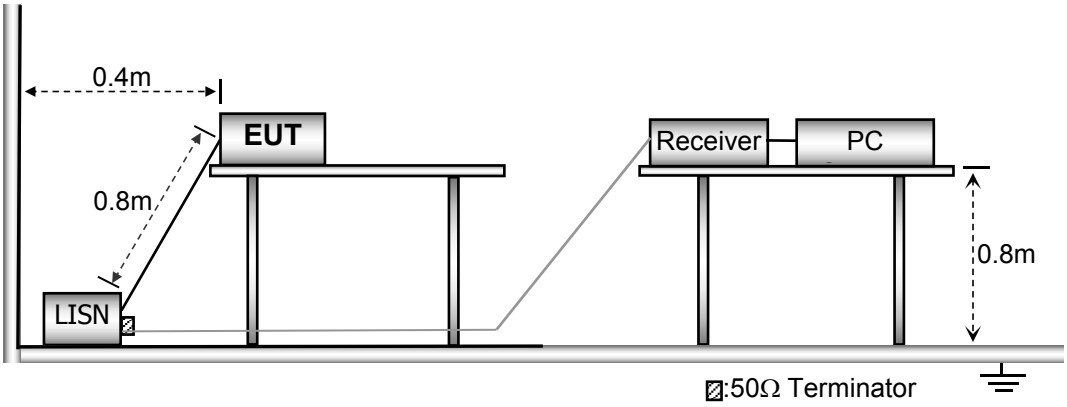
4.1 E.U.T. Operation

Operating Environment **:**

Temperature	:	23.5
Humidity	:	54
Atmospheric Pressure	:	1015

4.2 EUT Setup

The conducted emission tests were performed using the setup accordance with the ANSI C63.10:2013.



4.3 Measurement Procedure

1. The EUT was placed on a table, which is 0.8m above ground plane.
2. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
3. Repeat above procedures until all frequency measured was complete.

4.4 Conducted Emission Limit

Conducted Emission

Frequency(MHz)	Quasi-peak	Average
0.15-0.5	66-56	56-46
0.5-5.0	56	46
5.0-30.0	60	50

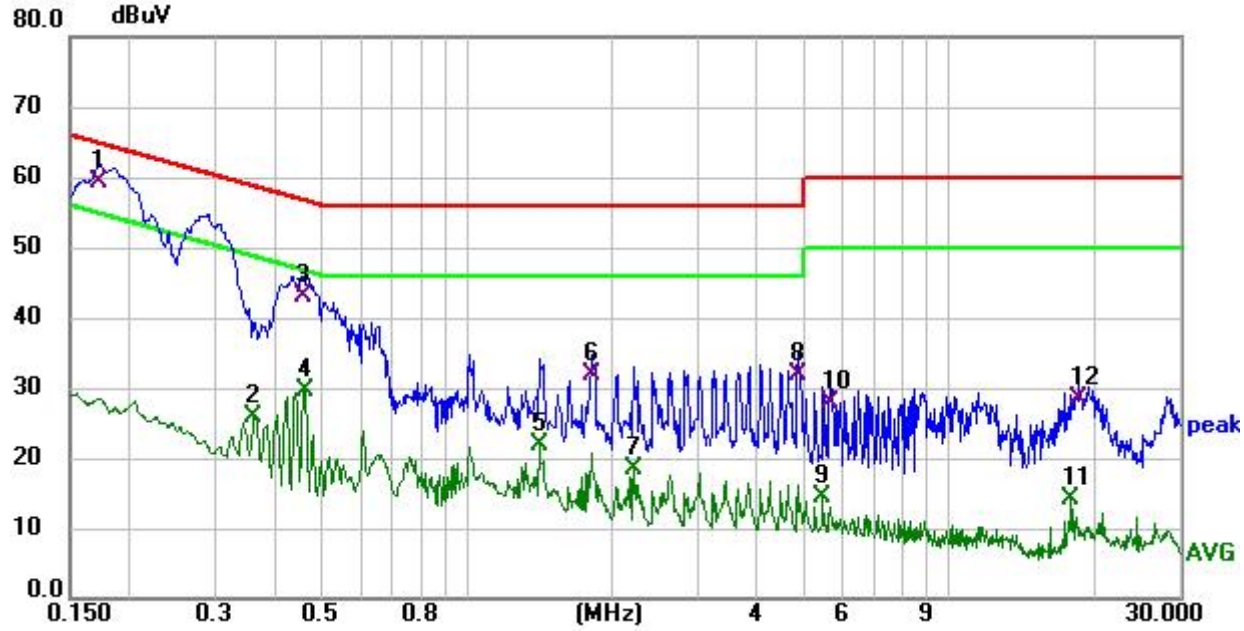
Note:
1. The lower limit shall apply at the transition frequencies
2.The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.5 Measurement Description

The maximised peak emissions from the EUT was scanned and measured for both the Live and Neutral Lines. Quasi-peak & average measurements were performed if peak emissions were within 6dB of the average limit line.

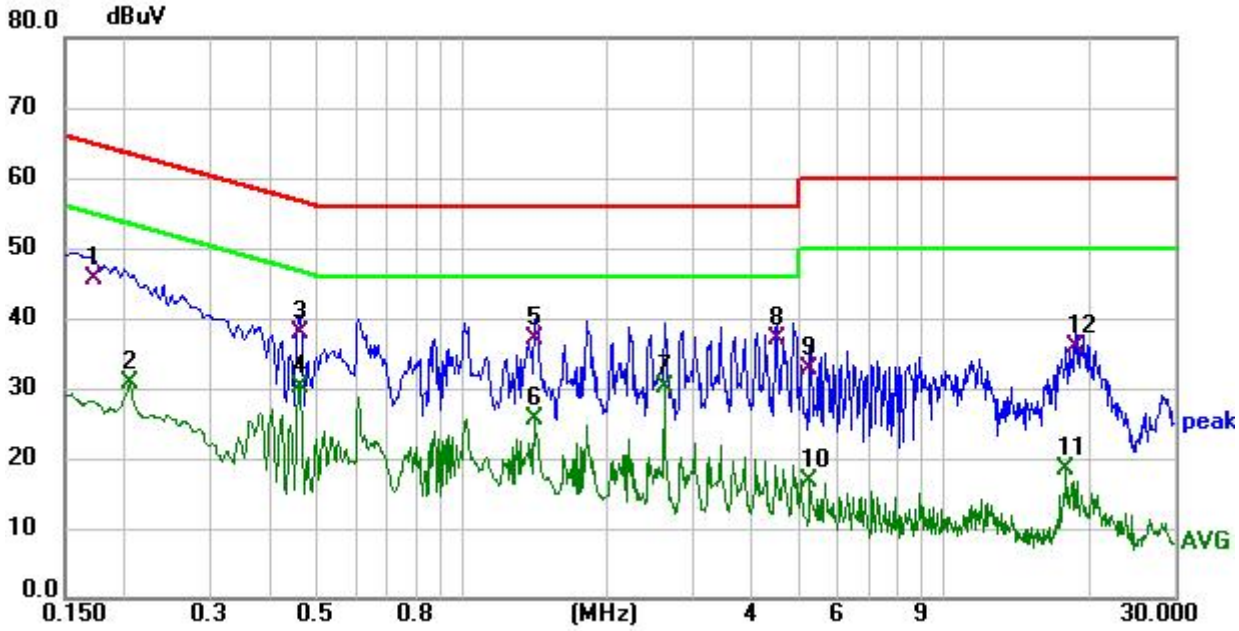
4.6 Conducted Emission Test Result

Channel:	Low	Phase :	L
Model:	AirShip Direct		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1 *	0.172	48.65	10.67	59.32	64.86	-5.54	QP	P
2	0.361	15.60	10.36	25.96	48.71	-22.75	AVG	P
3	0.456	32.46	10.45	42.91	56.77	-13.86	QP	P
4	0.461	19.24	10.46	29.70	46.67	-16.97	AVG	P
5	1.414	11.58	10.40	21.98	46.00	-24.02	AVG	P
6	1.819	21.48	10.37	31.85	56.00	-24.15	QP	P
7	2.233	8.20	10.34	18.54	46.00	-27.46	AVG	P
8	4.870	21.67	10.23	31.90	56.00	-24.10	QP	P
9	5.450	4.20	10.24	14.44	50.00	-35.56	AVG	P
10	5.675	17.65	10.25	27.90	60.00	-32.10	QP	P
11	17.925	3.66	10.52	14.18	50.00	-35.82	AVG	P
12	18.600	17.87	10.52	28.39	60.00	-31.61	QP	P

Channel:	Low	Phase :	N
Model:	AirShip Direct		



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.172	35.10	10.59	45.69	64.86	-19.17	QP	P
2	0.204	20.40	10.33	30.73	53.45	-22.72	AVG	P
3	0.461	27.46	10.39	37.85	56.67	-18.82	QP	P
4	0.461	19.80	10.39	30.19	46.67	-16.48	AVG	P
5	1.414	26.52	10.37	36.89	56.00	-19.11	QP	P
6	1.414	15.14	10.37	25.51	46.00	-20.49	AVG	P
7 *	2.629	20.03	10.25	30.28	46.00	-15.72	AVG	P
8	4.501	26.78	10.17	36.95	56.00	-19.05	QP	P
9	5.275	22.59	10.16	32.75	60.00	-27.25	QP	P
10	5.275	6.53	10.16	16.69	50.00	-33.31	AVG	P
11	17.925	8.07	10.48	18.55	50.00	-31.45	AVG	P
12	18.700	25.35	10.49	35.84	60.00	-24.16	QP	P

Notes:
1.An initial pre-scan was performed on the line and neutral lines with peak detector.
2.Quasi-Peak and Average measurement were performed at the frequencies with maximized peak emission.
3.Mesurement Level = Reading level + Correct Factor

5 Radiated Spurious Emissions

Test Requirement : FCC part 15.407(b)/15.209

Test Method : ANSI C63.10:2013

Test Result : PASS

Measurement Distance : 3m

Limit : See the follow table

Frequency (MHz)	Field Strength		Field Strength Limit at 3m Measurement Dist	
	uV/m	Distance (m)	uV/m	dBuV/m
0.009 ~ 0.490	2400/F(kHz)	300	10000 * 2400/F(kHz)	$20\log^{(2400/F(kHz))} + 80$
0.490 ~ 1.705	24000/F(kHz)	30	100 * 24000/F(kHz)	$20\log^{(24000/F(kHz))} + 40$
1.705 ~ 30	30	30	100 * 30	$20\log^{(30)} + 40$
30 ~ 88	100	3	100	$20\log^{(100)}$
88 ~ 216	150	3	150	$20\log^{(150)}$
216 ~ 960	200	3	200	$20\log^{(200)}$
Above 960	500	3	500	$20\log^{(500)}$

5.1 EUT Operation

Operating Environment **:**

Temperature: : 23

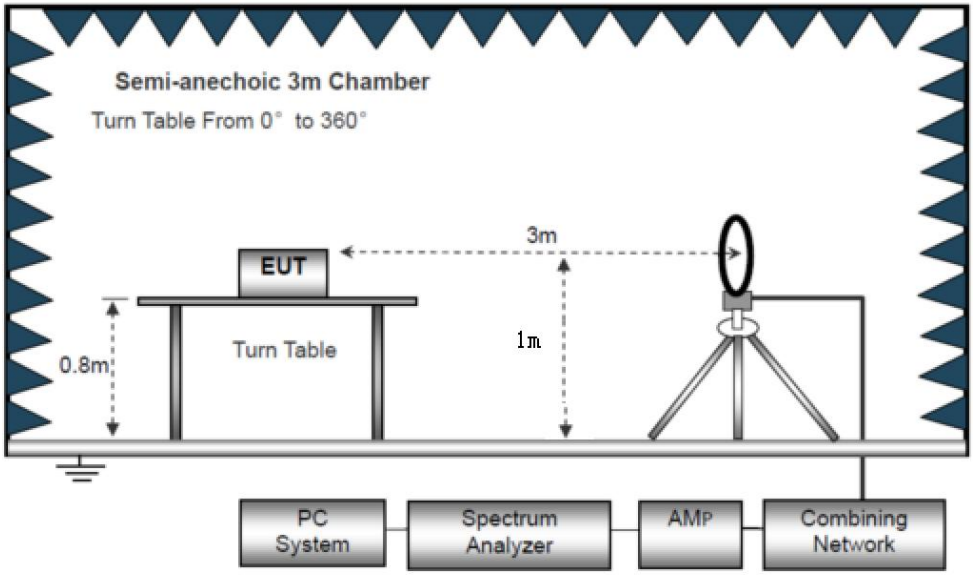
Humidity: : 54

Atmospheric Pressure: : 1015

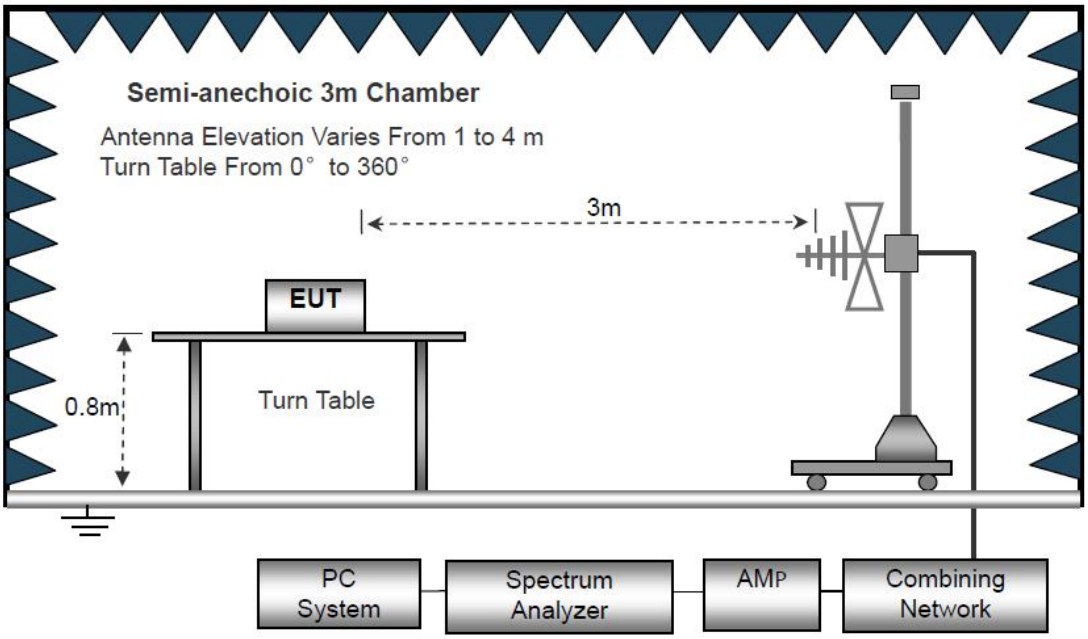
5.2 Test Setup

The radiated emission tests were performed in the 3m Semi- Anechoic Chamber test site

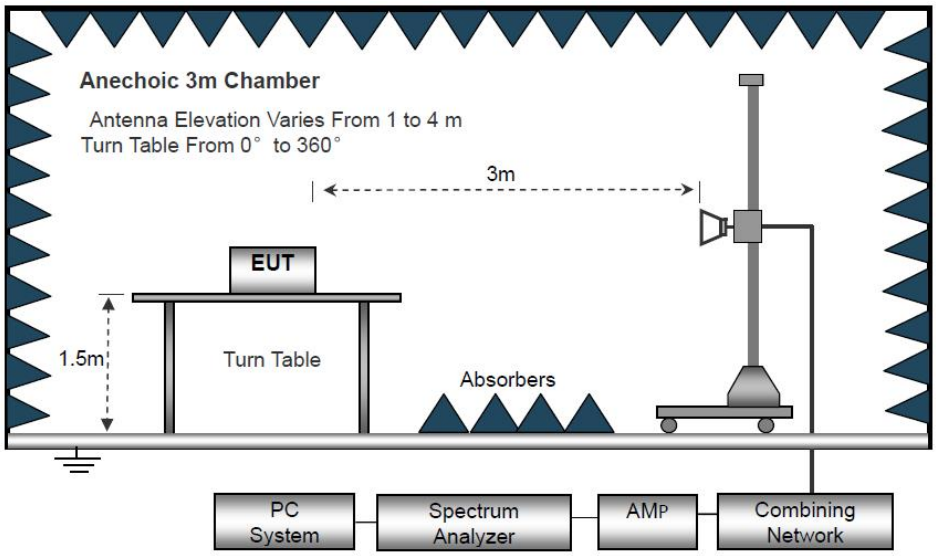
The test setup for emission measurement below 30MHz



The test setup for emission measurement from 30 MHz to 1 GHz.



The test setup for emission measurement above 1 GHz



5.3 Spectrum Analyzer Setup

Below 30MHz			
IF Bandwidth	:	10kHz	
Resolution Bandwidth	:	10kHz	
Video Bandwidth	:	10kHz	
30MHz ~ 1GHz			
Detector	:	PK	QP
Resolution Bandwidth	:	100kHz	120kHz
Video Bandwidth	:	300kHz	300kHz
Above 1GHz			
Detector	:	PK	AV
Resolution Bandwidth	:	1MHz	1MHz
Video Bandwidth	:	3MHz	10Hz

5.4 Test Procedure

1. Below 1000MHz, The EUT was placed on a turn table which is 0.8m above ground plane, And above 1000MHz, The EUT was placed on a styrofoam table which is 1.5m above ground plane.

2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.

3. EUT is set 3m away from the receiving antenna, which is moved from 1m to 4m to find out the maximum emissions. The spectrum was investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.

5. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

6. Repeat above procedures until the measurements for all frequencies are complete.

7. The radiation measurements are tested under 3-axes(X,Y,Z) position(X denotes lying on the table, Y denotes side stand and Z denotes vertical stand), After pre-test, It was found that the worse radiation emission was get at the X position. So the data shown was the X position only.

8. The test above 1GHz must be use the fully anechoic room, and the test below 1GHz use the half anechoic room

5.5 Summary of Test Results

Test Frequency: 9KHz-30MHz

Freq. (MHz)	Ant.Pol. H/V	Emission Level (dBuV/m)	Limit 3m (dBuV/m)	Over (dB)
--	--	--	--	>20

Note:

The amplitude of spurious emission that is attenuated by more than 20dB below the permissible limit has no need to be reported.

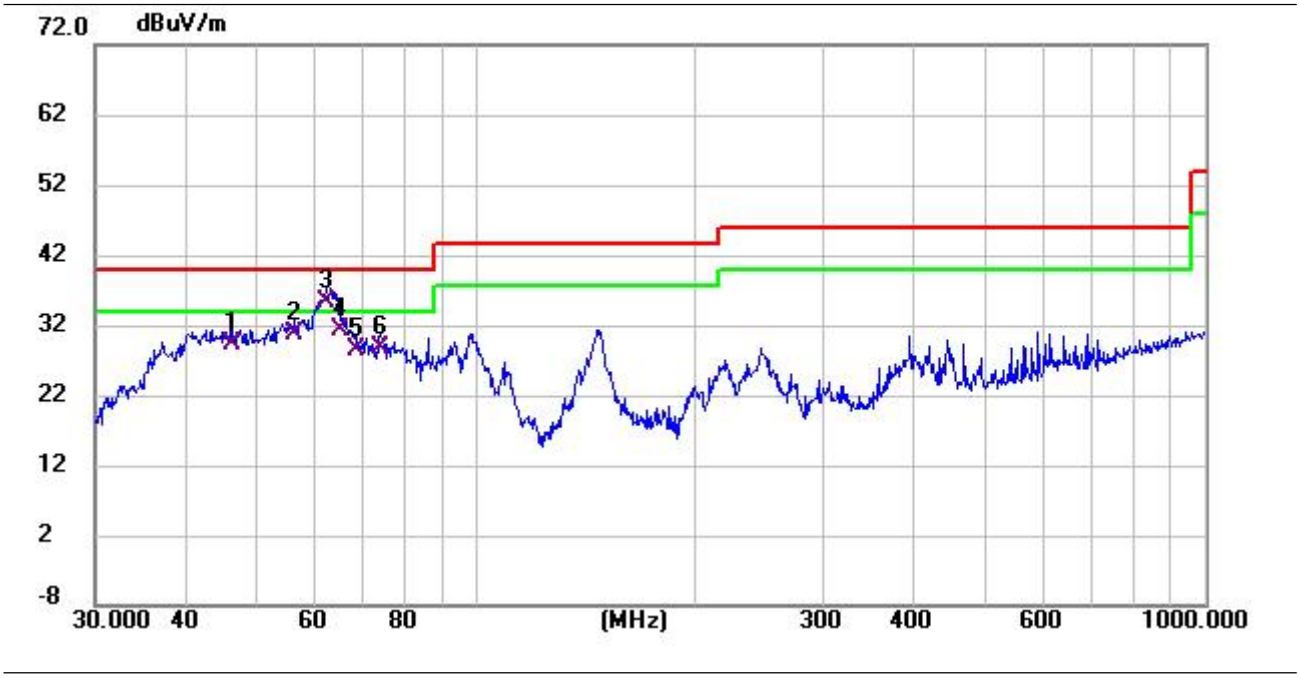
Distance extrapolation factor =40log(Specific distance/ test distance)(dB);
Limit line=Specific limits(dBuV) + distance extrapolation factor.

Test Frequency: 30MHz ~ 1GHz

All the modulation modes were tested the data of the worst mode (TX FSK Low Channel) are recorded in the following pages and the others modulation methods do not exceed the limits.

Please refer to the following test plots:

M/N	:	AirShip Direct
Operation Mode	:	TX FSK Low Channel
Test Voltage	:	AC 120V/60Hz
Test Specification	:	Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	46.340	15.24	14.11	29.35	40.00	-10.65	QP
2	56.395	16.45	14.31	30.76	40.00	-9.24	QP
3 *	62.213	22.21	13.05	35.26	40.00	-4.74	QP
4	65.343	19.36	12.06	31.42	40.00	-8.58	QP
5	68.391	17.27	11.09	28.36	40.00	-11.64	QP
6	73.876	18.79	9.86	28.65	40.00	-11.35	QP

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamp Factor

M/N	:	AirShip Direct
Operation Mode	:	TX FSK Low Channel
Test Voltage	:	AC 120V/60Hz
Test Specification	:	Horizontal

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	52.760	14.11	13.27	27.38	40.00	-12.62	QP
2 *	63.536	18.32	11.24	29.56	40.00	-10.44	QP
3	72.338	18.38	9.15	27.53	40.00	-12.47	QP
4	75.446	18.84	8.57	27.41	40.00	-12.59	QP
5	96.436	17.51	11.08	28.59	43.50	-14.91	QP
6	222.170	19.13	12.52	31.65	46.00	-14.35	QP

Remark:

Emission Level=Reading+Factor

Factor=Cable Loss+ANT Factor-Preamp Factor

Test Frequency: From 1GHz to 25GHz

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
operation frequency:5727									
V	11454	56.85	30.55	5.77	24.66	56.73	74	-17.27	PK
V	11454	45.32	30.55	5.77	24.66	45.2	54	-8.8	AV
V	17181	55.36	30.33	6.32	24.55	55.9	74	-18.1	PK
V	17181	44.63	30.33	6.32	24.55	45.17	54	-8.83	AV
V	22908	49.23	30.85	7.45	24.69	50.52	74	-23.48	PK
H	11454	56.24	30.55	5.77	24.66	56.12	74	-17.88	PK
H	11454	45.85	30.55	5.77	24.66	45.73	54	-8.27	AV
H	17181	54.36	30.33	6.32	24.55	54.9	74	-19.1	PK
H	17181	43.65	30.33	6.32	24.55	44.19	54	-9.81	AV
H	22908	50.32	30.85	7.45	24.69	51.61	74	-22.39	PK
operation frequency:5787									
V	11574	55.36	30.55	5.77	24.66	55.24	74	-18.76	PK
V	11574	45.24	30.55	5.77	24.66	45.12	54	-8.88	AV
V	17361	43.62	30.33	6.32	24.55	44.16	74	-29.84	PK
V	17361	44.85	30.33	6.32	24.55	45.39	54	-8.61	AV
V	23148	50.12	30.85	7.45	24.69	51.41	74	-22.59	PK
H	11574	55.69	30.55	5.77	24.66	55.57	74	-18.43	PK
H	11574	45.32	30.55	5.77	24.66	45.2	54	-8.8	AV
H	17361	54.21	30.33	6.32	24.55	54.75	74	-19.25	PK
H	17361	44.69	30.33	6.32	24.55	45.23	54	-8.77	AV
H	23148	49.52	30.85	7.45	24.69	50.81	74	-23.19	PK
operation frequency:5848									

V	11696	55.23	30.55	5.77	24.66	55.11	74	-18.89	PK
V	11696	45.2	30.55	5.77	24.66	45.08	54	-8.92	AV
V	17544	54.21	30.33	6.32	24.55	54.75	74	-19.25	PK
V	17544	43.26	30.33	6.32	24.55	43.8	54	-10.2	AV
V	23392	50.26	30.85	7.45	24.69	51.55	74	-22.45	PK
H	11696	55.41	30.55	5.77	24.66	55.29	74	-18.71	PK
H	11696	46.23	30.55	5.77	24.66	46.11	54	-7.89	AV
H	17544	53.24	30.33	6.32	24.55	53.78	74	-20.22	PK
H	17544	44.16	30.33	6.32	24.55	44.7	54	-9.3	AV
H	23392	50.63	30.85	7.45	24.69	51.92	74	-22.08	PK

Remark:
1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,
Margin= Emission Level - Limit
2. If peak below the average limit, the average emission was no test.
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Radiated Band Emission Measuremen:

Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-amplifier (dB)	Cable Loss (dB)	Antenna Factor (dB/m)	Emission Level (dBuV/m)	Emission Level (dBm)	Limits (dBm)	Detector Type
V	5650	53.62	30.09	4.8	23.9	52.23	-42.97	-27	PK
V	5700	53.01	30.18	4.82	23.94	51.59	-43.61	10	PK
V	5720	52.23	30.2	4.85	23.98	50.86	-44.34	15.6	PK
V	5725	52.41	30.22	4.85	23.98	51.02	-44.18	27	PK
V	5850	52.36	30.22	4.85	23.98	50.97	-44.23	27	PK
V	5855	53.21	30.22	4.85	23.98	51.82	-43.38	15.6	PK
V	5875	52.14	30.24	4.86	24.01	50.77	-44.43	10	PK
V	5925	53.23	30.28	4.88	24.09	51.92	-43.28	-27	PK
H	5650	52.14	30.09	4.8	23.9	50.75	-44.45	-27	PK
H	5700	53.21	30.18	4.82	23.94	51.79	-43.41	10	PK
H	5720	52.32	30.2	4.85	23.98	50.95	-44.25	15.6	PK
H	5725	52.63	30.22	4.85	23.98	51.24	-43.96	27	PK
H	5850	53.24	30.22	4.85	23.98	51.85	-43.35	27	PK
H	5855	52.63	30.22	4.85	23.98	51.24	-43.96	15.6	PK
H	5875	53.41	30.24	4.86	24.01	52.04	-43.16	10	PK
H	5925	53.26	30.28	4.88	24.09	51.95	-43.25	-27	PK

Remark:

1. Emission Level = Meter Reading + Antenna Factor + Cable Loss – Pre-amplifier,

Margin= Emission Level - Limit

2. If peak below the average limit, the average emission was no test.

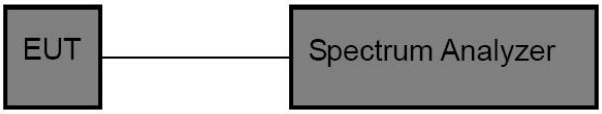
3. The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

6 Conduct Band Edge

Applicable Standard

FCC: For the band 5725-5825 MHz, All emissions shall be limited to a level of −27 dBm/MHz at 75 MHz or more above or below the band edge increasing linearly to 10 dBm/MHz at 25 MHz above or below the band edge, and from 25 MHz above or below the band edge increasing linearly to a level of 15.6 dBm/MHz at 5 MHz above or below the band edge, and from 5 MHz above or below the band edge increasing linearly to a level of 27 dBm/MHz at the band edge.

6.1 Test Setup



6.2 Test Procedure

Using the following spectrum analyzer setting:

A) Set the RBW = 1MHz.

B) Set the VBW = 3MHz.

C) Sweep time = auto couple.

D) Detector function = peak.

E) Trace mode = max hold.

F) Allow trace to fully stabilize.

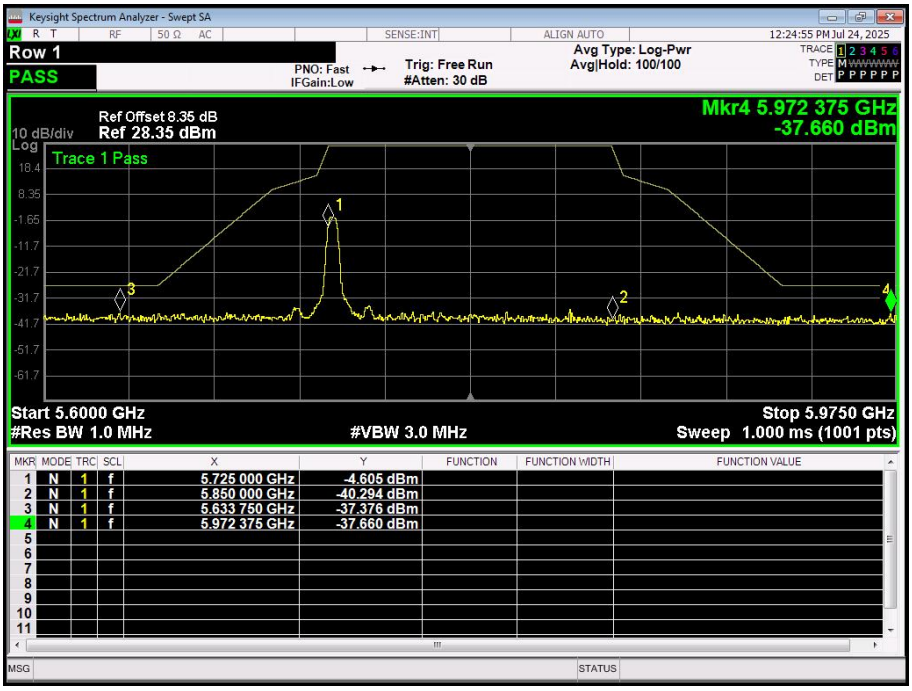
Note: Antenna gain has been added to the spectrum at the time of testing and is considered during testing.

6.3 EUT OPERATION CONDITIONS

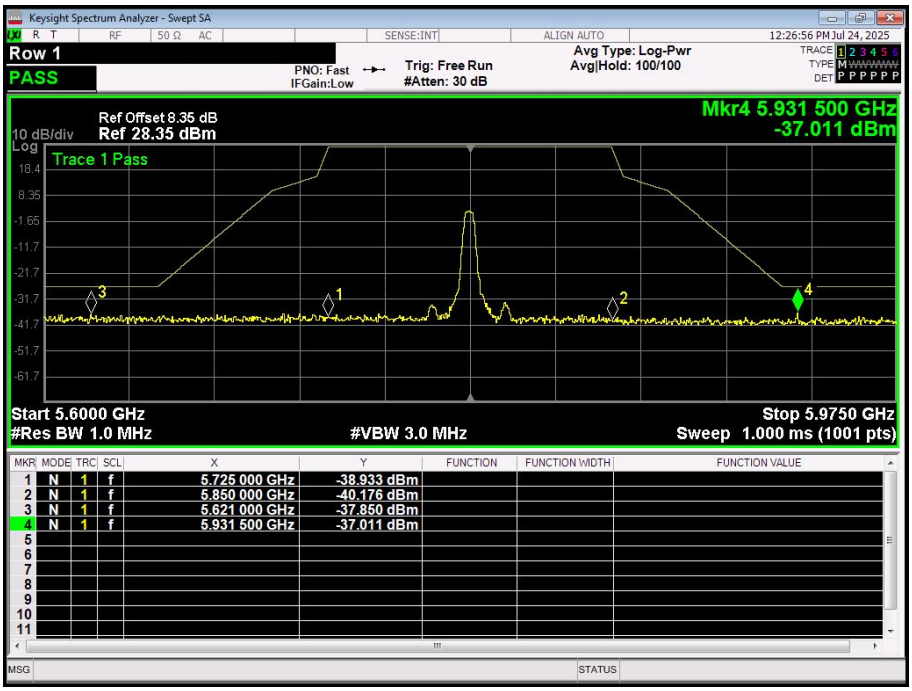
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

6.4 Test Result

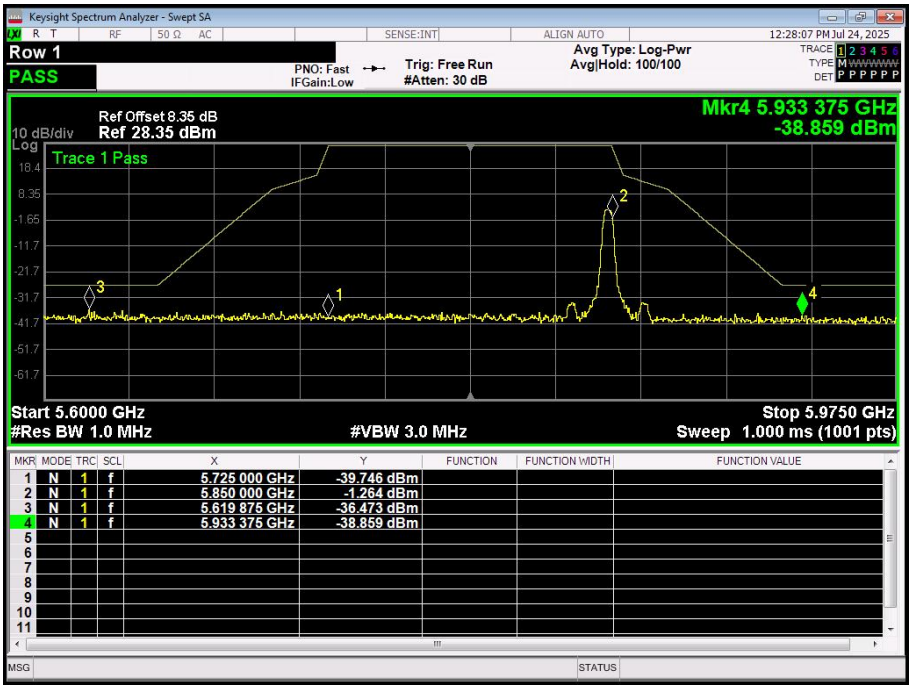
5727MHz



5787MHz



5848MHz


Keysight Spectrum Analyzer - Swept SA
Row 1
PASS
PNO: Fast
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
12:28:07 PM Jul 24, 2025
Ref Offset 8.35 dB
10 dB/div
Log
Ref 28.35 dBm
Mkr4 5.933 375 GHz
-38.859 dBm
Trace 1 Pass
Start 5.6000 GHz
#Res BW 1.0 MHz
#VBW 3.0 MHz
Stop 5.9750 GHz
Sweep 1.000 ms (1001 pts)
1 N 1 f 5.725 000 GHz -39.746 dBm
2 N 1 f 5.850 000 GHz -1.264 dBm
3 N 1 f 5.619 875 GHz -36.473 dBm
4 N 1 f 5.933 375 GHz -38.859 dBm

7 Channel Bandwidth

Applied procedures / limit

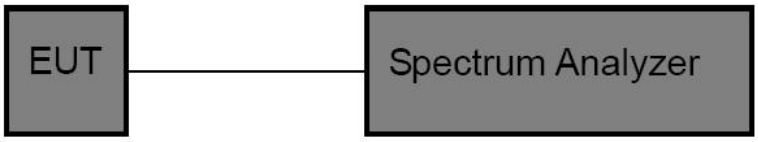
The bandwidth at 6 dB down from the highest in-band spectral density is measured with a spectrum analyzer connected to the antenna terminal while the EUT is operating at its maximum power control level, as defined in KDB 789033, at the appropriate frequencies.

The occupied bandwidth or the “99% emission bandwidth” is defined as the frequency range between two points, one above and the other below the carrier frequency, within which 99% of the total transmitted power of the fundamental transmitted emission is contained. The occupied bandwidth shall be reported for all equipment in addition to the specified bandwidth required in the applicable RSSs.

In some cases, the “x dB bandwidth” is required, which is defined as the frequency range between two points, one at the lowest frequency below and one at the highest frequency above the carrier frequency, at which the maximum power level of the transmitted emission is attenuated x dB below the maximum in-band power level of the modulated signal, where the two points are on the outskirts of the in-band emission.

For the 99% emission bandwidth, the trace data points are recovered and directly summed in linear power level terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached, and that frequency recorded. The process is repeated for the highest frequency data points (starting at the highest frequency, at the right side of the span, and going down in frequency). This frequency is then recorded. The difference between the two recorded frequencies is the occupied bandwidth (or the 99% emission bandwidth).

7.1 Test Setup



7.2 Test Procedure

1. Occupied Bandwidth (OBW)

a) Set RBW = 1% to 5% of the actual occupied.

b) Set the VBW ≥ 3 × RBW.

c) Detector = Peak.

d) Trace mode = max hold.

2. Minimum Emission Bandwidth for the band 5.725-5.85 GHz

Section 15.407(e) specifies the minimum 6 dB emission bandwidth of at least 500 KHz for the band

5.725-5.85 GHz and 5.850-5.895 GHz bands. The following procedure shall be used for measuring this bandwidth:

a) Set RBW = 100 kHz.

b) Set the video bandwidth (VBW) ≥ 3 × RBW.

c) Detector = Peak.

d) Trace mode = max hold.

e) Sweep = auto couple.

f) Allow the trace to stabilize.

g) Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.

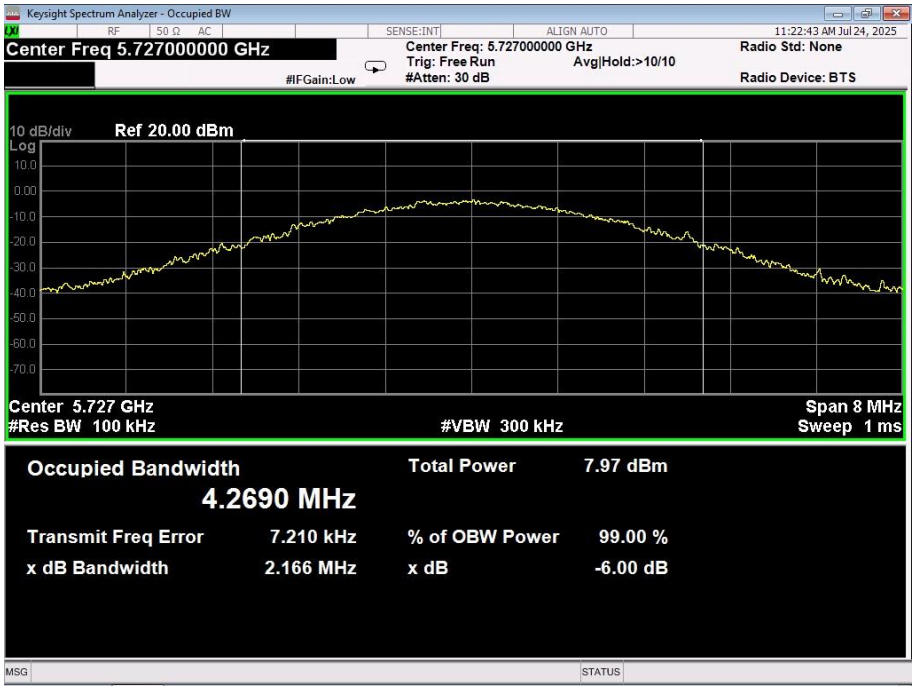
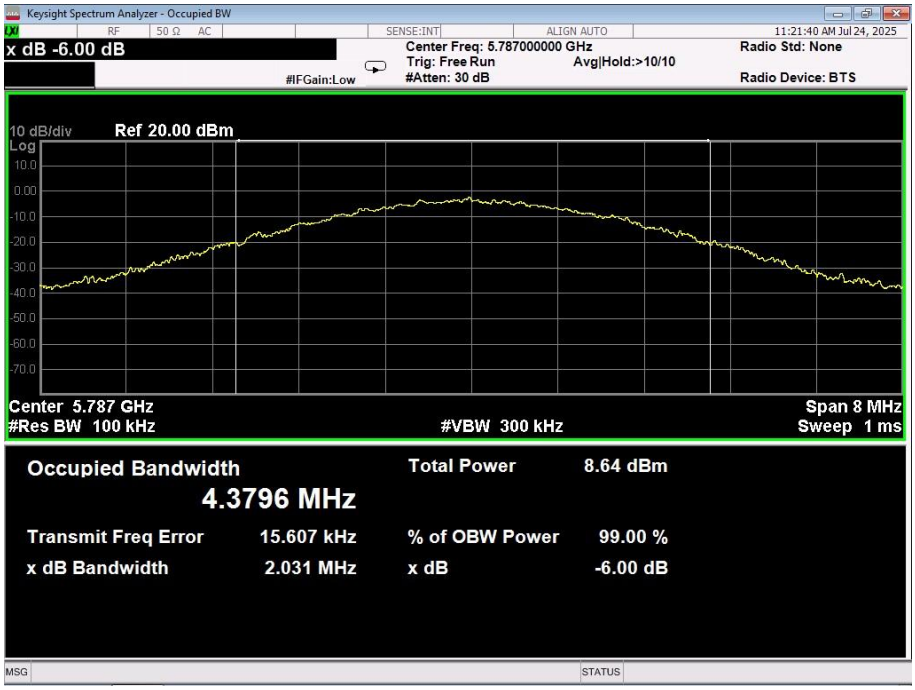
7.3 EUT OPERATION CONDITIONS

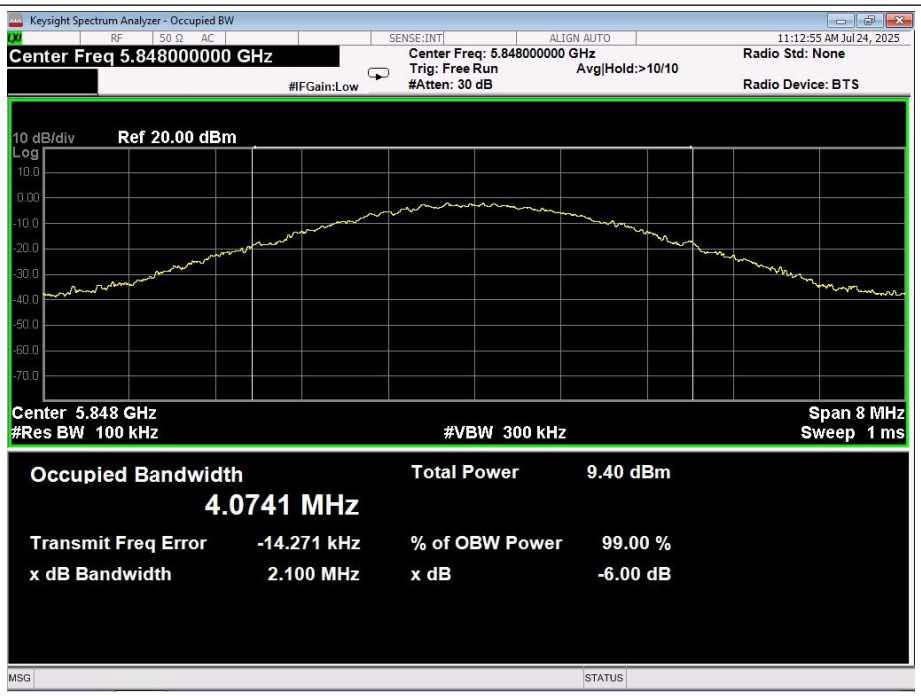
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

7.4 Test Result

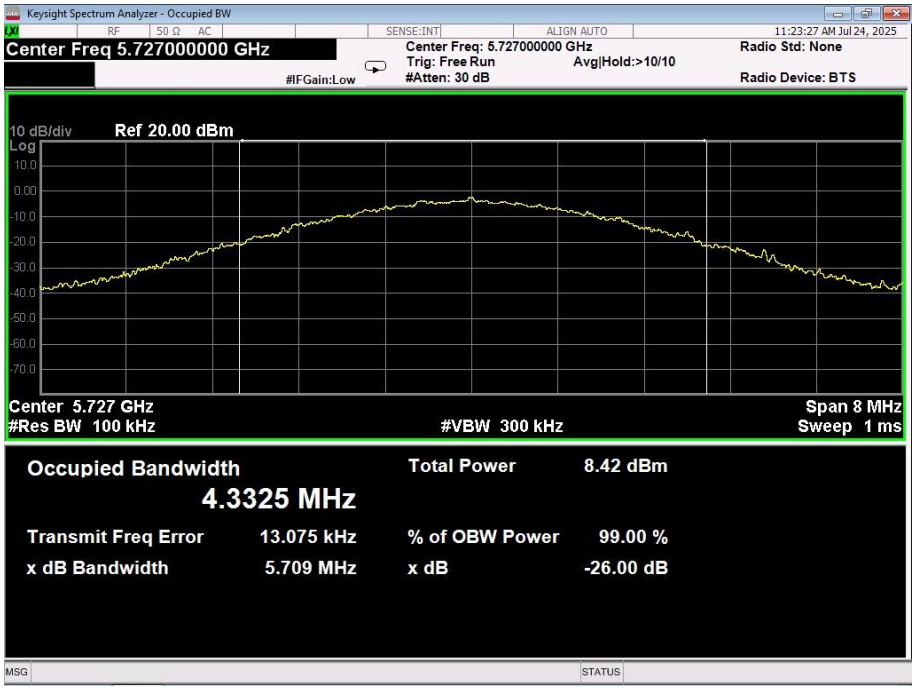
Temperature：	26℃	Relative Humidity：	54%
Test Mode ：	FSK	Test Voltage ：	AC 120V/60Hz

Test channel	6dB Bandwidth (MHz)	6dB Bandwidth Limit(KHz)	99% Occupied bandwidth(MHz)	Result
Lowest	2.166	>500	4.3325	Pass
Middle	2.031		4.3089	
Highest	2.100		4.0495	

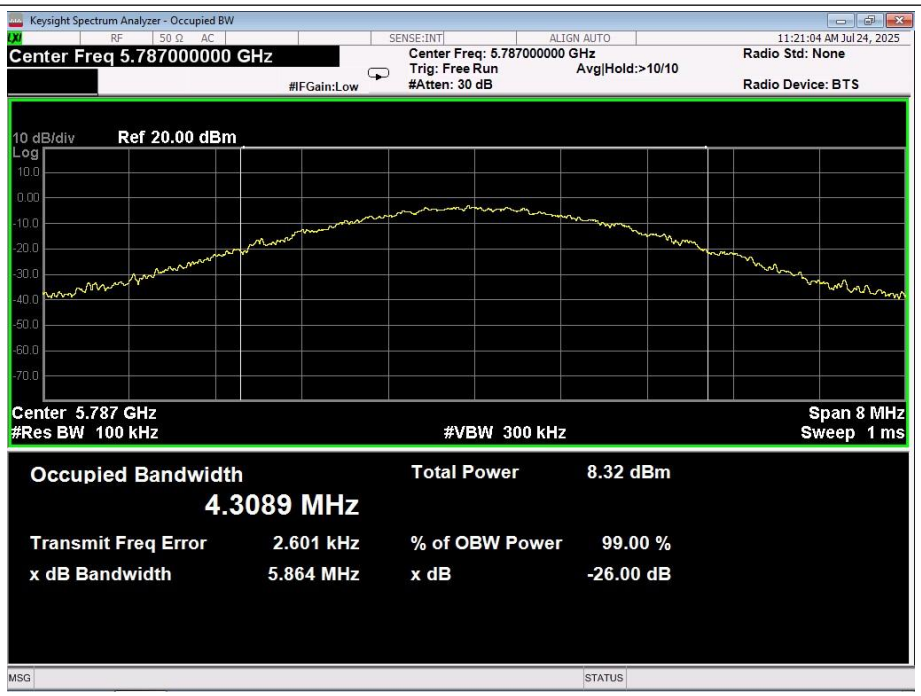
6dB Bandwidth
CH01

CH31

CH62



99% Bandwidth
CH01



CH16


Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
11:21:04 AM Jul 24, 2025
Center Freq 5.787000000 GHz
Center Freq: 5.787000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 5.787 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 8 MHz
Sweep 1 ms
Occupied Bandwidth
4.3089 MHz
Total Power 8.32 dBm
Transmit Freq Error 2.601 kHz
% of OBW Power 99.00 %
x dB Bandwidth 5.864 MHz
x dB -26.00 dB
MSG
STATUS

CH32


Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
11:15:28 AM Jul 24, 2025
Center Freq 5.848000000 GHz
Center Freq: 5.848000000 GHz
Trig: Free Run
Avg|Hold:>10/10
#IFGain:Low
#Atten: 30 dB
Radio Std: None
Radio Device: BTS
10 dB/div
Log
Ref 20.00 dBm
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
-70.0
Center 5.848 GHz
#Res BW 100 kHz
#VBW 300 kHz
Span 8 MHz
Sweep 1 ms
Occupied Bandwidth
4.0495 MHz
Total Power 9.15 dBm
Transmit Freq Error -10.903 kHz
% of OBW Power 99.00 %
x dB Bandwidth 5.659 MHz
x dB -26.00 dB
MSG
STATUS

8 Maximum Peak Output Power

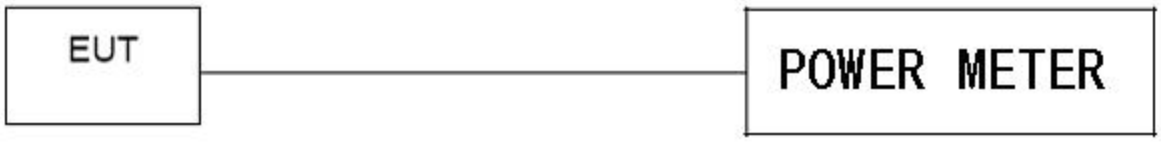
Test Requirement : FCC Part15 C Section 15.407(a)

Test Method : KDB 789033 D02 General UNII Test Procedures New Rules v02r01

8.1 Applied procedures / limit

FCC Part15 (15.407) , Subpart C,				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.407(a)	Peak Output Power	1 watt or 30dBm	5725-5850	PASS

8.2 Test Setup



8.3 Test Procedure

The EUT was directly connected to the Power meter.

8.4 EUT OPERATION CONDITIONS

The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.

8.5 Test Result

Temperature：	26℃	Relative Humidity：	54%
Test Mode ：	FSK	Test Voltage ：	AC 120V/60Hz

Test channel	Peak Output Power (dBm)	Limit(dBm)	Result
Lowest	1.554	30.00	Pass
Middle	1.422		
Highest	1.224		

9 Power Spectral density

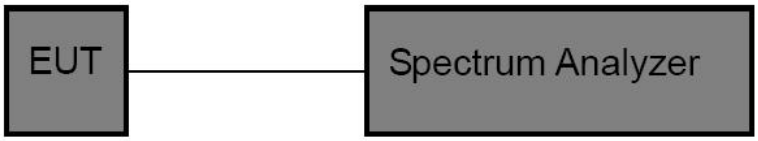
Test Requirement : FCC Part15 C Section 15.407 (e)

Test Method : KDB 789033 D02 General UNII Test Procedures New Rules v02r01

9.1 Applied procedures / limit

FCC Part15 (15.407) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.407 (e)	Power Spectral Density	30dBm/500kHz	5725-5850	PASS

9.2 Test Setup



9.3 Test Procedure

Methods refer to FCC KDB 789033

a) Set RBW ≥ 1/T, where T is defined in II.B.I.a).

b) Set VBW ≥ 3 RBW.

c) If measurement bandwidth of Maximum PSD is specified in 500 kHz, add 10 log (500 kHz/RBW) to the measured result, whereas RBW (＜500 kHz) is the reduced resolution bandwidth of the spectrum analyzer set during measurement.

d) If measurement bandwidth of Maximum PSD is specified in 1 MHz, add 10 log (1MHz/RBW) to the measured result, whereas RBW(＜1 MHz) is the reduced resolution bandwidth of spectrum analyzer set during measurement.

Care must be taken to ensure that the measurements are performed during a period of continuous transmission or are corrected upward for duty cycle.

9.4 EUT OPERATION CONDITIONS

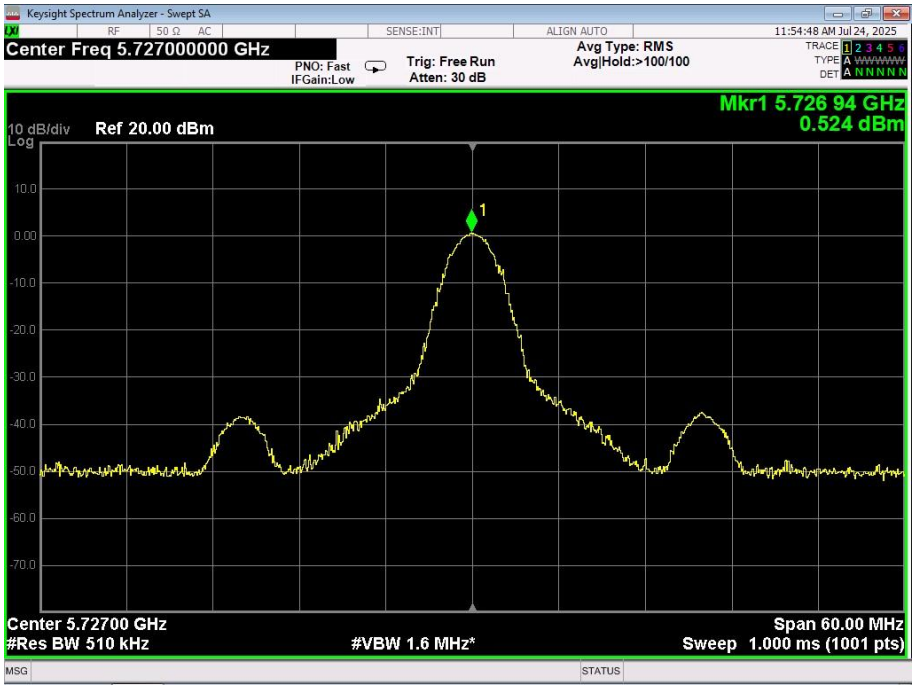
The EUT tested system was configured as the statements of 2.1 Unless otherwise a special operating condition is specified in the follows during the testing.

9.5 Test Result

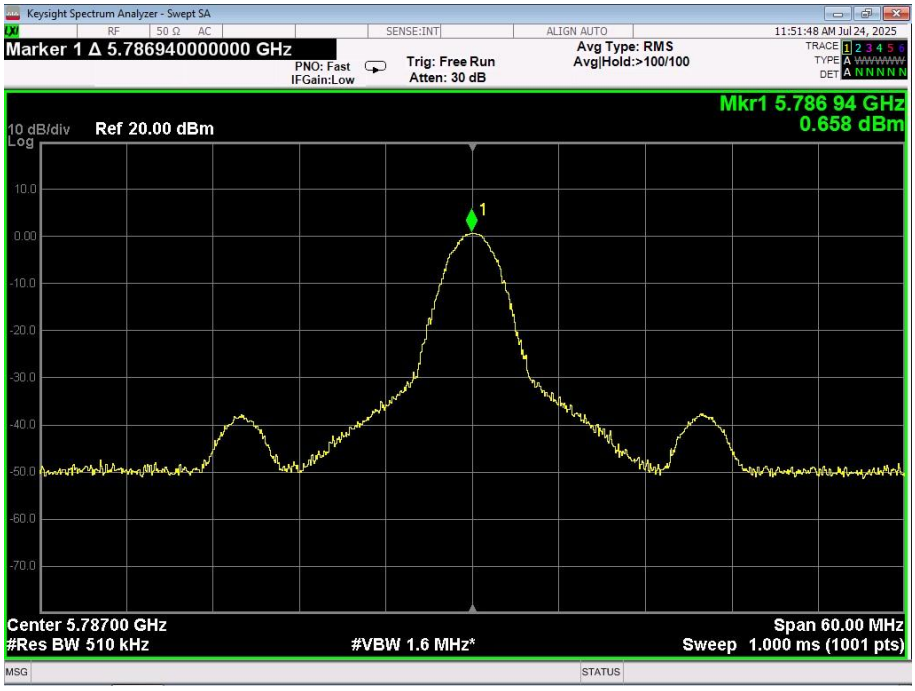
Temperature：	26℃	Relative Humidity：	54%
Test Mode ：	FSK	Test Voltage ：	AC 120V/60Hz

Frequency	Power Spectral Density (dBm/500kHZ)	Duty Cycle Factor (db)	Report Power Spectral Density (dBm/500kHZ)	Limit (dBm/500kHz)	Result
5727 MHz	0.524	1.64	2.164	30.00	PASS
5787 MHz	0.658	1.64	2.298	30.00	PASS
5848 MHz	1.065	1.64	2.705	30.00	PASS

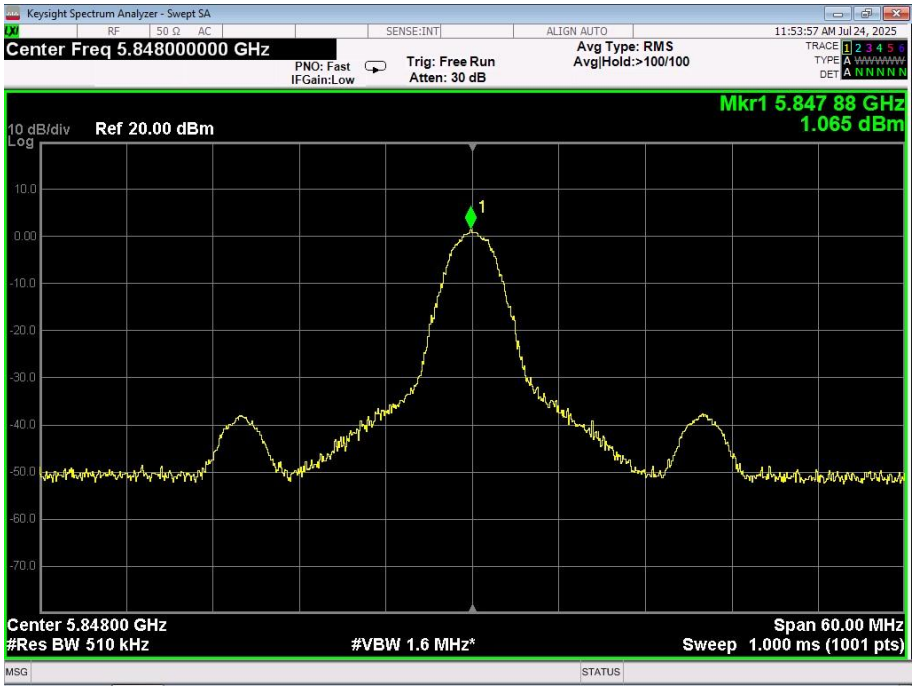
CH01



CH31


Keysight Spectrum Analyzer - Swept SA
Marker 1 Δ 5.786940000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
11:51:48 AM Jul 24, 2025
Mkr1 5.786 94 GHz
0.658 dBm
10 dB/div
Log
Ref 20.00 dBm
Center 5.78700 GHz
#Res BW 510 kHz
#VBW 1.6 MHz*
Span 60.00 MHz
Sweep 1.000 ms (1001 pts)

CH62


Keysight Spectrum Analyzer - Swept SA
Center Freq 5.848000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: RMS
Avg|Hold:>100/100
11:53:57 AM Jul 24, 2025
Mkr1 5.847 88 GHz
1.065 dBm
10 dB/div
Log
Ref 20.00 dBm
Center 5.84800 GHz
#Res BW 510 kHz
#VBW 1.6 MHz*
Span 60.00 MHz
Sweep 1.000 ms (1001 pts)

10 On Time and Duty Cycle

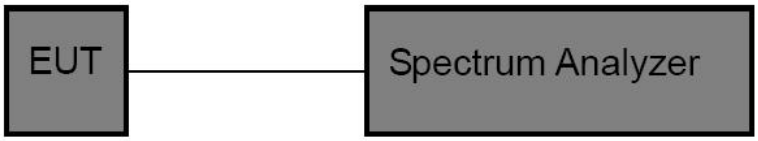
10.1 Standard Applicable

None: for reporting purpose only.

10.2 Measuring Instruments and Setting

Please refer to equipment's list in this report. The following table is the setting of the spectrum analyzer.

10.3 Test Setup



10.4 Test Procedures

1. Set the centre frequency of the spectrum analyzer to the transmitting frequency;

2. Set the span=0MHz, RBW=8MHz, VBW=8MHz, Sweep time=1001pts;

3. Detector = RMS;

4. Trace mode = Single hold.

10.5 EUT Operation during Test

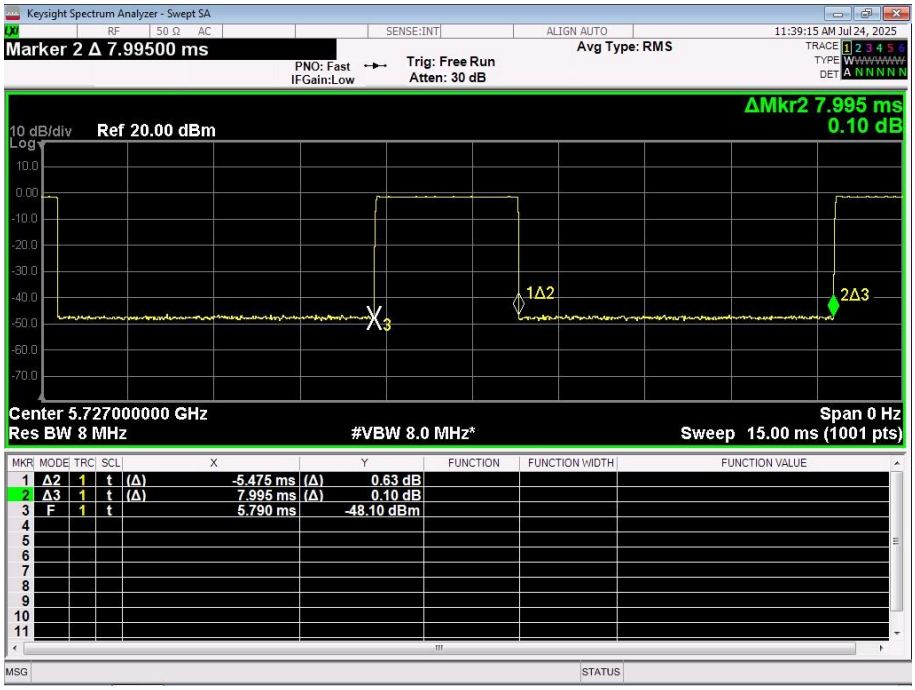
The EUT was programmed to be in continuously transmitting mode.

10.6 Test result

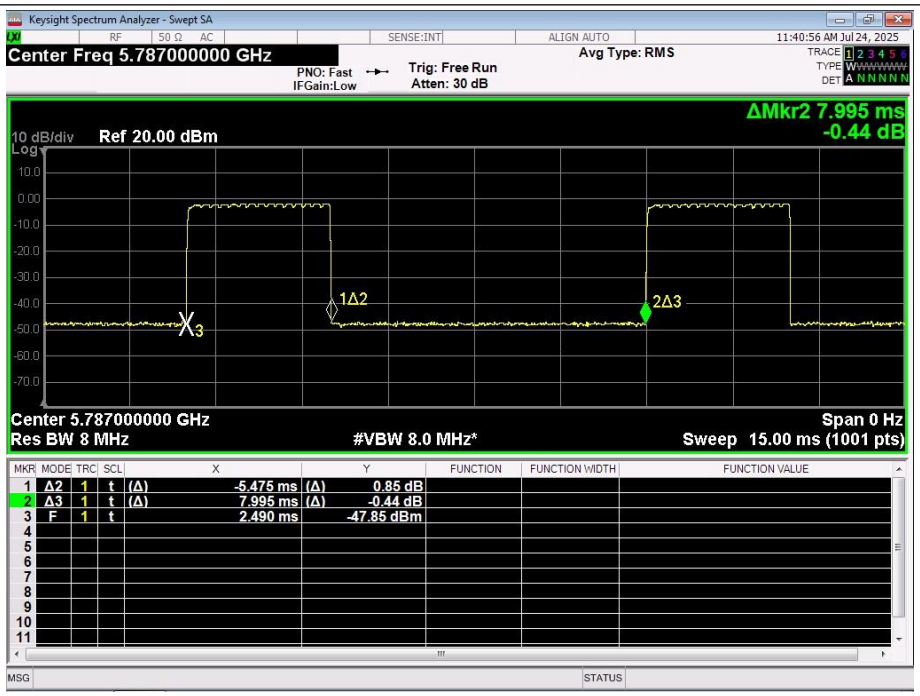
Mode	Channel	On Time (ms)	Period (ms)	Duty Cycle (%)	Duty Cycle (linear)	Duty Cycle Factor (dB)
FSK	01	5.475	7.995	68.48	0.6848	1.644
	31	5.475	7.995	68.48	0.6848	1.644
	62	5.475	7.995	68.48	0.6848	1.644

Test Graphs

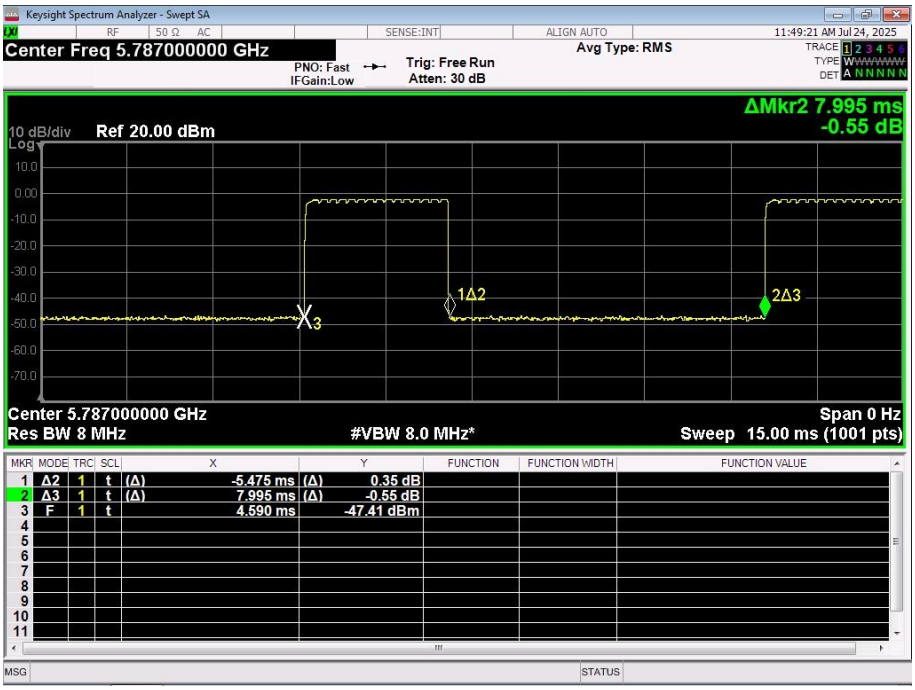
CH01



CH31


Keysight Spectrum Analyzer - Swept SA
Center Freq 5.787000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: RMS
11:40:56 AM Jul 24, 2025
ΔMkr2 7.995 ms
-0.44 dB
10 dB/div
Ref 20.00 dBm
Log
1Δ2
2Δ3
Center 5.787000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz*
Span 0 Hz
Sweep 15.00 ms (1001 pts)
1 Δ2 1 t (Δ) -5.475 ms (Δ) 0.85 dB
2 Δ3 1 t (Δ) 7.995 ms (Δ) -0.44 dB
3 F 1 t 2.490 ms -47.85 dBm

CH62


Keysight Spectrum Analyzer - Swept SA
Center Freq 5.787000000 GHz
PNO: Fast
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: RMS
11:49:21 AM Jul 24, 2025
ΔMkr2 7.995 ms
-0.55 dB
10 dB/div
Ref 20.00 dBm
Log
1Δ2
2Δ3
Center 5.787000000 GHz
Res BW 8 MHz
#VBW 8.0 MHz*
Span 0 Hz
Sweep 15.00 ms (1001 pts)
1 Δ2 1 t (Δ) -5.475 ms (Δ) 0.35 dB
2 Δ3 1 t (Δ) 7.995 ms (Δ) -0.55 dB
3 F 1 t 4.590 ms -47.41 dBm

11 Antenna Application

11.1 Antenna Requirement

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.

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. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator, the manufacturer may design the unit so that a broken antenna can be replaced by the user, but the use of a standard antenna jack or electrical connector is prohibited.

11.2 Result

The EUT'S antenna, permanent attached antenna, is Internal Antenna. The antenna's gain is 0.26dBi, and meets the requirement.

12 Test Setup and EUT Photos

Reference to the attachment for details.

******THE END REPORT******