



FCC Part 15C Test Report

FCC ID: 2BPQ8-IMB306

Applicant: Sheng Sheng Yi (Beijing) Technology Company Limited

Address: Room 238 Jian Jin Zhong Xin Number A-1 Qing He Yong Tai Yuan Haidian District Beijing 100085 China

Manufacturer: Sheng Sheng Yi (Beijing) Technology Company Limited

Address: Room 238 Jian Jin Zhong Xin Number A-1 Qing He Yong Tai Yuan Haidian District Beijing 100085 China

Product: Cryostorage Monitoring System

Trade Mark: CryoTrioTM

Model No.: IMB-306
IMB-406

Date of Receipt: Apr. 29, 2025

Test Date: Apr. 29, 2025 - May. 16, 2025

Date of Report: May. 16, 2025

Prepared By: Shenzhen DL Testing Technology Co., Ltd.

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Applicable Standards: FCC PART 15 C 15.247
ANSI C63.10:2013

Test Result: Pass

Report Number: DLE-250429027R

Prepared (Test Engineer): Alisa Song

Reviewer (Supervisor): Jack Bu

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This test report is based on a single evaluation of one sample of above mentioned products. It is not permitted to be duplicated in extracts without written approval of Shenzhen DL Testing Technology Co., Ltd.



Table of Contents	Page
1. . SUMMARY OF TEST RESULTS	4
1.1. MEASUREMENT UNCERTAINTY	4
2. . GENERAL INFORMATION	5
2.1. GENERAL DESCRIPTION OF EUT	5
2.2. DESCRIPTION OF TEST MODES	7
2.3. BLOCK DIGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED	7
2.4. DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)	8
2.5. TABLE OF PARAMETERS OF TEST SOFTWARE SETTING	8
2.6. EQUIPMENTS LIST FOR ALL TEST ITEMS	9
3. . EMC EMISSION TEST	10
3.1. CONDUCTED EMISSION MEASUREMENT	10
3.1.1. POWER LINE CONDUCTED EMISSION LIMITS	10
3.1.2. TEST PROCEDURE	10
3.1.3. DEVIATION FROM TEST STANDARD	10
3.1.4. TEST SETUP	11
3.1.5. EUT OPERATING CONDITIONS	11
3.1.6. TEST RESULTS	11
3.2. RADIATED EMISSION MEASUREMENT	12
3.2.1. RADIATED EMISSION LIMITS	12
3.2.2. TEST PROCEDURE	13
3.2.3. DEVIATION FROM TEST STANDARD	13
3.2.4. TEST SETUP	13
3.2.5. EUT OPERATING CONDITIONS	14
3.2.6. TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)	15
3.2.7. TEST RESULTS (BETWEEN 30MHZ – 1GHZ)	16
3.2.8. TEST RESULTS (1GHZ~10GHZ)	18
3.3 BAND EDGE AND RF COUNDUCTED SPURIOUS EMISSIONS	19
3.3.1 TEST REQUIREMENT:	19
3.3.2 LIMITS:	19
3.3.2 TEST PROCEDURE	19
3.3.3 DEVIATION FROM TEST STANDARD	19
3.3.4 TEST SETUP	19
3.3.5 EUT OPERATING CONDITIONS	19
3.3.6 TEST RESULT	20
4. . PEAK OUTPUT POWER	22
4.1. TEST RESULTS	22
5. . 20DB OCCUPIED BANDWIDTH	24



Table of Contents	Page
5.1. APPLIED PROCEDURES / LIMIT	24
5.1.1. TEST PROCEDURE	24
5.1.2. DEVIATION FROM STANDARD	24
5.1.3. TEST SETUP	24
5.1.4. EUT OPERATION CONDITIONS	24
5.1.5. TEST RESULTS	25
6. . NUMBER OF HOPPING CHANNEL	26
6.1. APPLIED PROCEDURES / LIMIT	26
6.1.1. TEST PROCEDURE	26
6.1.2. DEVIATION FROM STANDARD	26
6.1.3. TEST SETUP	26
6.1.4. EUT OPERATION CONDITIONS	26
6.1.5. TEST RESULTS	27
7. . HOPPING CHANNEL SEPARATION MEASUREMENT	28
7.1. APPLIED PROCEDURES / LIMIT	28
7.1.1. TEST PROCEDURE	28
7.1.2. DEVIATION FROM STANDARD	28
7.1.3. TEST SETUP	28
7.1.4. EUT OPERATION CONDITIONS	28
7.1.5. TEST RESULTS	28
8. . DWELL TIME OF OCCUPANCY	30
8.1. APPLIED PROCEDURES / LIMIT	30
8.1.1. TEST PROCEDURE	30
8.1.2. DEVIATION FROM STANDARD	30
8.1.3. TEST SETUP	30
8.1.4. EUT OPERATION CONDITIONS	30
8.1.5. TEST RESULTS	31
9. . ANTENNA REQUIREMENT	32
9.1. STANDARD REQUIREMENT	32
9.2. EUT ANTENNA	32
10. . TEST SEUUP PHOTO	32
11. . EUT PHOTO	32



1.. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

FCC Part15 (15.247) , Subpart C			
Standard Section	Test Item	Judgment	Remark
15.207	Conducted Emission	N/A	
15.205, 15.209, 15.247(d)	Radiated Spurious Emission	PASS	
15.205, 15.247(d)	Band Edge Emission& Conducted Spurious Emissions	PASS	
15.247(b)	Peak Output Power	PASS	
15.247(a)(1)(i)	20dB Occupied Bandwidth	PASS	
15.203	Antenna Requirement	PASS	
15.247 (a)(i)	Hopping Channel Number	PASS	
15.247 (a)(1)	Dwell Time	PASS	
15.247 (a)(1)	Carrier Frequencies Separation	PASS	

NOTE:

(1)" N/A" denotes test is not applicable in this Test Report

Test lab: Shenzhen DL Testing Technology Co., Ltd.

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FCC Test Firm Registration Number: 854456

Designation Number: CN1307

IC Registered No.: 27485

CAB ID.: CN0118

1.1. MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement $y \pm U$, 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 %.

No.	Item	Uncertainty
1	Conducted Emission Test	$\pm 2.56\text{dB}$
2	RF power,conducted	$\pm 0.42\text{dB}$
3	Spurious emissions,conducted	$\pm 2.76\text{dB}$
4	All emissions,radiated(<1G)	$\pm 3.65\text{dB}$
5	All emissions,radiated(>1G)	$\pm 4.89\text{dB}$
6	Temperature	$\pm 0.5^{\circ}\text{C}$
7	Humidity	$\pm 2\%$
8	20dB Bandwidth	$\pm 0.2\%$
9	Dwell Time	$\pm 0.4\text{ms}$



2.. GENERAL INFORMATION

2.1. GENERAL DESCRIPTION OF EUT

Product Name:	Cryostorage Monitoring System
Trademark	CryoTrioTM
Model No.:	IMB-306 IMB-406
Model Difference	All models are same as the samples except model name and appearance color, they have the same structure and circuit.
Operation Frequency:	902MHz~928MHz
Channel numbers:	128
Modulation technology:	LoRa
Antenna Type:	External Antenna
Antenna gain:	2.5dBi
Power supply:	DC 3.6V

Note:

- 1.For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual.
- 2.The EUT's all information provided by client.
3. LoRa non-hybrid system.



3. Channel List

Operation Frequency each of channel							
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	902.3	33	908.7	65	915.1	97	921.5
2	902.5	34	908.9	66	915.3	98	921.7
3	902.7	35	909.1	67	915.5	99	921.9
4	902.9	36	909.3	68	915.7	100	922.1
~							
29	907.9	61	914.3	93	920.7	125	927.1
30	908.1	62	914.5	94	920.9	126	927.3
31	908.3	63	914.7	95	921.1	127	927.5
32	908.5	64	914.9	96	921.3	128	927.7

Channel	Frequency(125KHz)
The lowest channel	902.30MHz
The middle channel	915.10MHz
The Highest channel	927.70MHz



2.2. DESCRIPTION OF TEST MODES

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

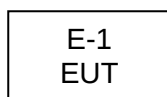
Pretest Mode	Description
Mode 1	CH1/ CH65/ CH128
Mode 2	Link Mode
For Conducted Emission	
Final Test Mode	Description
Mode 2	Link Mode
For Radiated Emission	
Final Test Mode	Description
Mode 1	CH1/ CH65/ CH128
Mode 2	Link Mode

Note: 1. The measurements are performed at the highest, middle, lowest available channels.

2. During the test, the duty cycle >98%, 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.

2.3. BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED

Radiated Spurious Emission Test





2.4. DESCRIPTION OF SUPPORT UNITS(CONDUCTED MODE)

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	Model/Type No.	Series No.	Note
E-1	Cryostorage Monitoring System	IMB-306	N/A	EUT

Item	Shielded Type	Ferrite Core	Length	Note

Note:

- (1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

2.5. TABLE OF PARAMETERS OF TEST SOFTWARE SETTING

During testing, channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level. The RF output power selection is for the setting of RF output power expected by the customer and is going to be fixed on the end product.

Max output power Setting	
Test software Version	Test program: AS_DS_2.2.89



2.6. EQUIPMENTS LIST FOR ALL TEST ITEMS

Radiation test, Band-edge test and 6db bandwidth test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	Agilent	E4408B	MY50140780	Nov. 01, 2024	Oct. 31, 2025
2	Test Receiver (9kHz-7GHz)	R&S	ESRP7	101393	Nov. 01, 2024	Oct. 31, 2025
3	Bilog Antenna (30MHz-1GHz)	R&S	VULB9162	00306	Nov. 01, 2024	Oct. 31, 2025
4	Horn Antenna (1GHz-18GHz)	Schwarzbeck	BBHA9120D	02139	Nov. 01, 2024	Oct. 31, 2025
5	Horn Antenna (18GHz-40GHz)	A.H. Systems	SAS-574	588	Nov. 01, 2024	Oct. 31, 2025
6	Amplifier (9KHz-6GHz)	Schwarzbeck	BBV9743B	00153	Nov. 01, 2024	Oct. 31, 2025
7	Amplifier (1GHz-18GHz)	EMEC	EM01G8GA	00270	Nov. 01, 2024	Oct. 31, 2025
8	Amplifier (18GHz-40GHz)	Quanjuda	DLE-161	97	Nov. 01, 2024	Oct. 31, 2025
9	Loop Antenna (9KHz-30MHz)	Schwarzbeck	FMZB1519B	00014	Nov. 01, 2024	Oct. 31, 2025
10	RF cables1 (9kHz-1GHz)	ChengYu	966	004	Nov. 01, 2024	Oct. 31, 2025
11	RF cables2 (1GHz-40GHz)	ChengYu	966	003	Nov. 01, 2024	Oct. 31, 2025
12	Antenna connector	Florida RF Labs	N/A	RF 01#	Nov. 01, 2024	Oct. 31, 2025
13	Power probe	KEYSIGHT	U2021XA	MY55210018	Nov. 01, 2024	Oct. 31, 2025
14	Signal Analyzer 9kHz-26.5GHz	Agilent	N9020A	MY55370280	Nov. 01, 2024	Oct. 31, 2025
15	Test Receiver 20kHz-40GHz	R&S	ESU 40	100376	Nov. 01, 2024	Oct. 31, 2025
16	D.C. Power Supply	LongWei	PS-305D	010964729	Nov. 01, 2024	Oct. 31, 2025

Conduction Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Last calibration	Calibrated until
1	843 Shielded Room	ChengYu	843 Room	843	Nov. 05, 2023	Nov. 04, 2026
2	EMI Receiver	R&S	ESR	101421	Nov. 01, 2024	Oct. 31, 2025
3	LISN	R&S	ENV216	102417	Nov. 01, 2024	Oct. 31, 2025
4	843 Cable 1#	ChengYu	CE Cable	001	Nov. 01, 2024	Oct. 31, 2025

Other

Item	Name	Manufacturer	Model	Software version
1	EMC Conduction Test System	FALA	EZ_EMCC	EMC-CON 3A1.1
2	EMC radiation test system	FALA	EZ_EMCC	FA-03A2
3	RF test system	MAIWEI	MTS8310	2.0.0.0
4	RF communication test system	MAIWEI	MTS8200	2.0.0.0



3.. EMC EMISSION TEST

3.1. CONDUCTED EMISSION MEASUREMENT

3.1.1. POWER LINE CONDUCTED EMISSION Limits (Frequency Range 150KHz-30MHz)

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.50	66 - 56 *	56 - 46 *	FCC
0.50 -5.0	56.00	46.00	FCC
5.0 -30.0	60.00	50.00	FCC

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

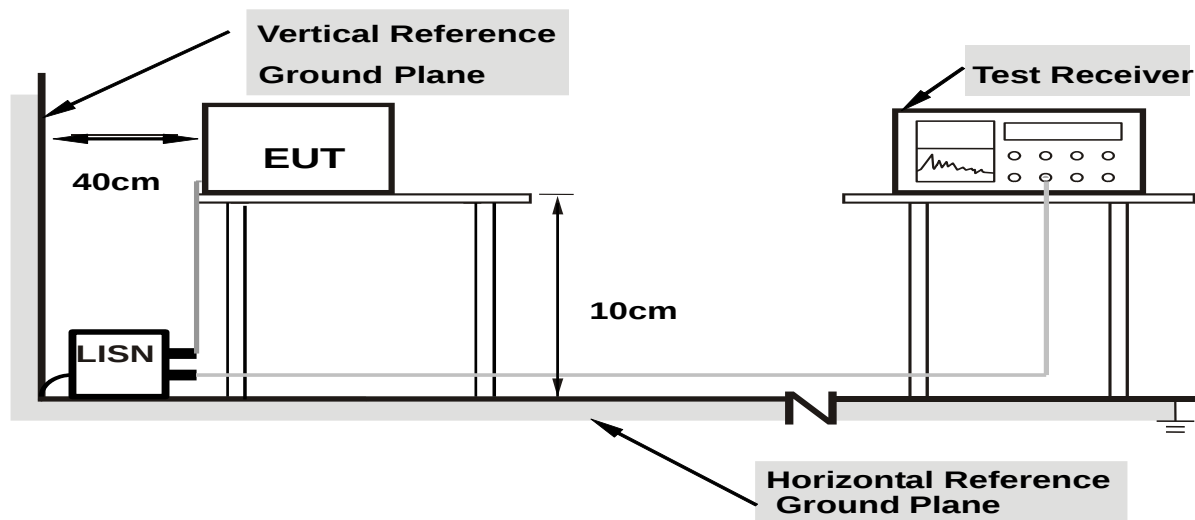
3.1.2. TEST PROCEDURE

- a. The EUT was placed 0.1 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
- c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
- d. LISN at least 80 cm from nearest part of EUT chassis.
- e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

3.1.3. DEVIATION FROM TEST STANDARD

No deviation

3.1.4. 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 from other units and other metal planes

3.1.5. EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

We pretest AC 120V and AC 230V, the worst voltage was AC 120V and the data recording in the report.

3.1.6. TEST RESULTS

The EUT is powered by DC, no requirements for this item.



3.2. RADIATED EMISSION MEASUREMENT

3.2.1. RADIATED EMISSION LIMITS (Frequency Range 9kHz-1000MHz)

In case the emission fall within the restricted band specified on 15.205(a), then the 15.209(a) limit in the table below has to be followed.

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

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	Limit (dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

- (1) The limit for radiated test was performed according to FCC PART 15C.
- (2) The tighter limit applies at the band edges.
- (3) Emission level (dBuV/m)=20log Emission level (uV/m).

Spectrum Parameter	Setting
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	25GHz
RB / VB (emission in restricted band)	1 MHz / 1 MHz for Peak, 1 MHz / 10Hz for Average

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~150kHz / RB 200Hz for QP
Start ~ Stop Frequency	150kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP



3.2.2. TEST PROCEDURE

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.1 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Above 1GHz test procedure as below:

- Different between above is the test site, change from Semi- Anechoic Chamber to fully Anechoic Chamber and change form table 0.1 metre to 1.5 metre.
- Test the EUT in the lowest channel, the middle channel, the Highest channel

Note:

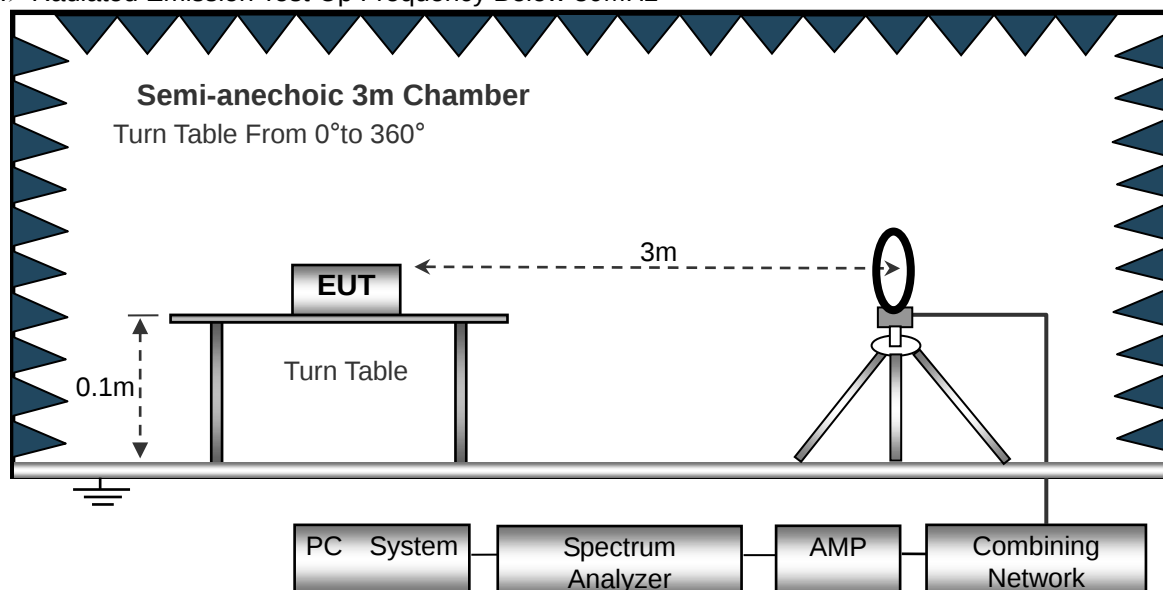
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.2.3. DEVIATION FROM TEST STANDARD

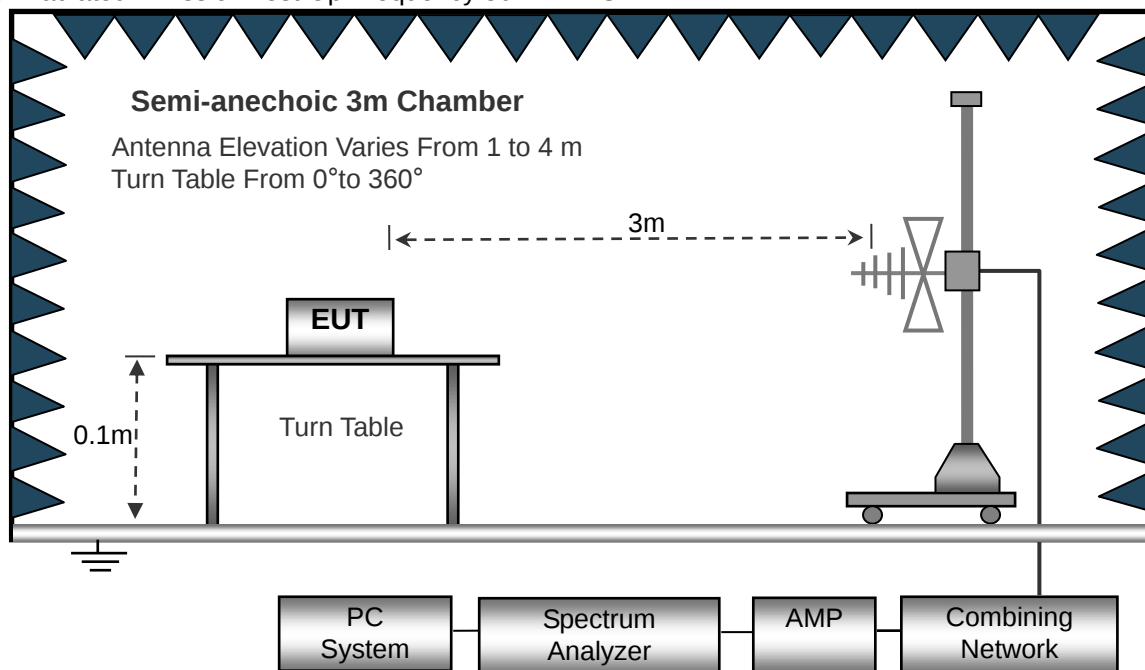
No deviation

3.2.4. TEST SETUP

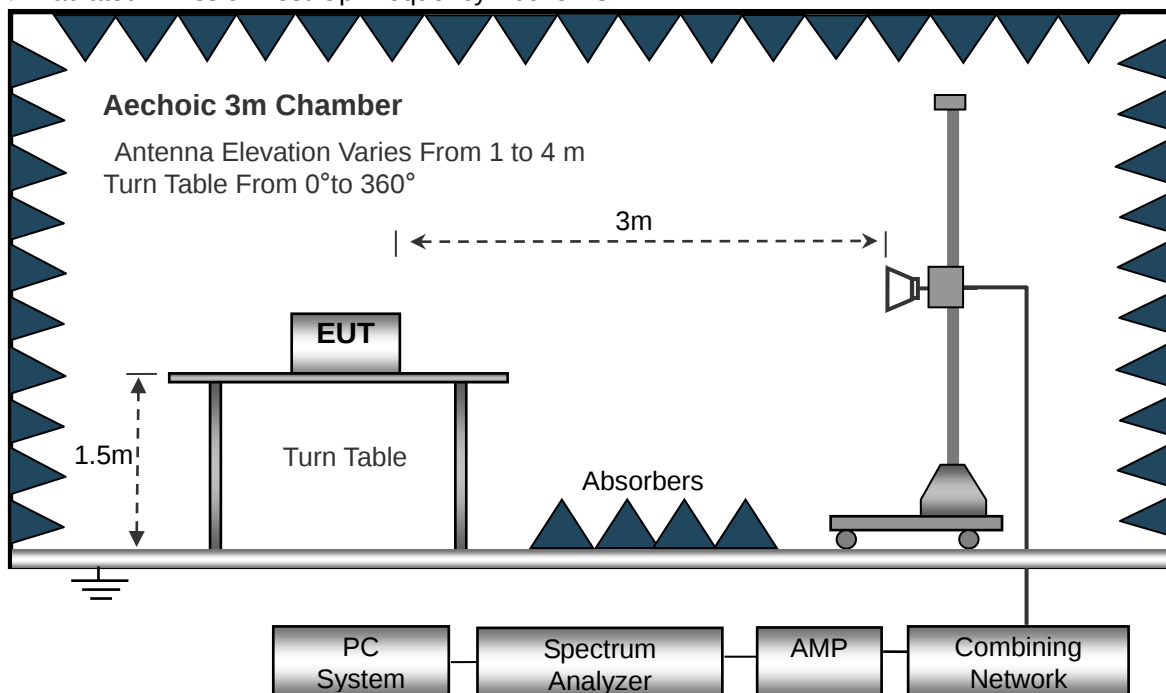
(A) Radiated Emission Test-Up Frequency Below 30MHz



(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



(C) Radiated Emission Test-Up Frequency Above 1GHz



3.2.5. EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

**3.2.6. TEST RESULTS (BETWEEN 9KHZ – 30 MHZ)**

Temperature:	20℃	Relative Humidity:	48%
Pressure:	1010 hPa	Test Voltage :	DC 3.6V
Test Mode :	Mode 2	Polarization :	--

Freq.	Reading	Limit	Margin	State
(MHz)	(dBuV/m)	(dBuV/m)	(dB)	P/F
--	--	--	--	PASS
--	--	--	--	PASS

NOTE:

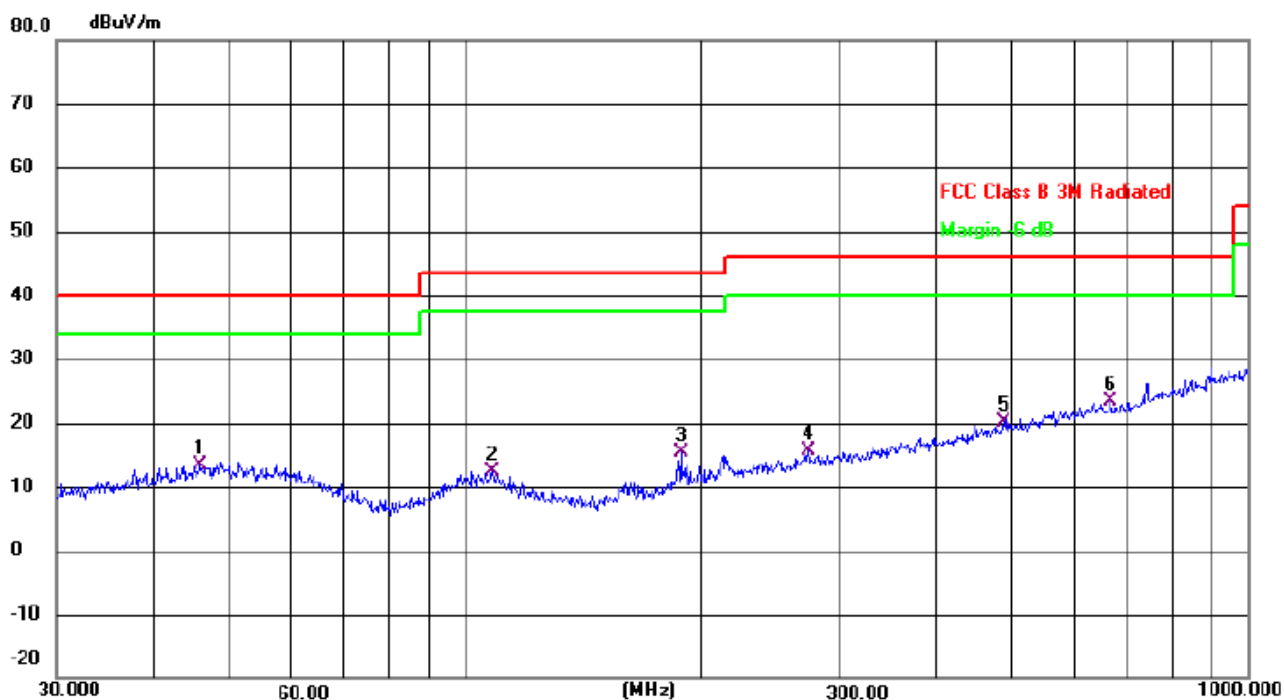
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor = $40 \log (\text{specific distance}/\text{test distance})$ (dB);

Limit line = specific limits(dBuv) + distance extrapolation factor.

**3.2.7. TEST RESULTS (BETWEEN 30MHZ – 1GHZ)**

Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Horizontal
Test Voltage :	DC 3.6V		
Test Mode :	Mode 2		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		45.8553	25.98	-12.63	13.35	40.00	-26.65	QP
2		108.2667	27.35	-14.85	12.50	43.50	-31.00	QP
3		188.4125	30.71	-15.37	15.34	43.50	-28.16	QP
4		274.1939	28.22	-12.64	15.58	46.00	-30.42	QP
5		487.3151	27.48	-7.47	20.01	46.00	-25.99	QP
6	*	668.1423	27.78	-4.40	23.38	46.00	-22.62	QP

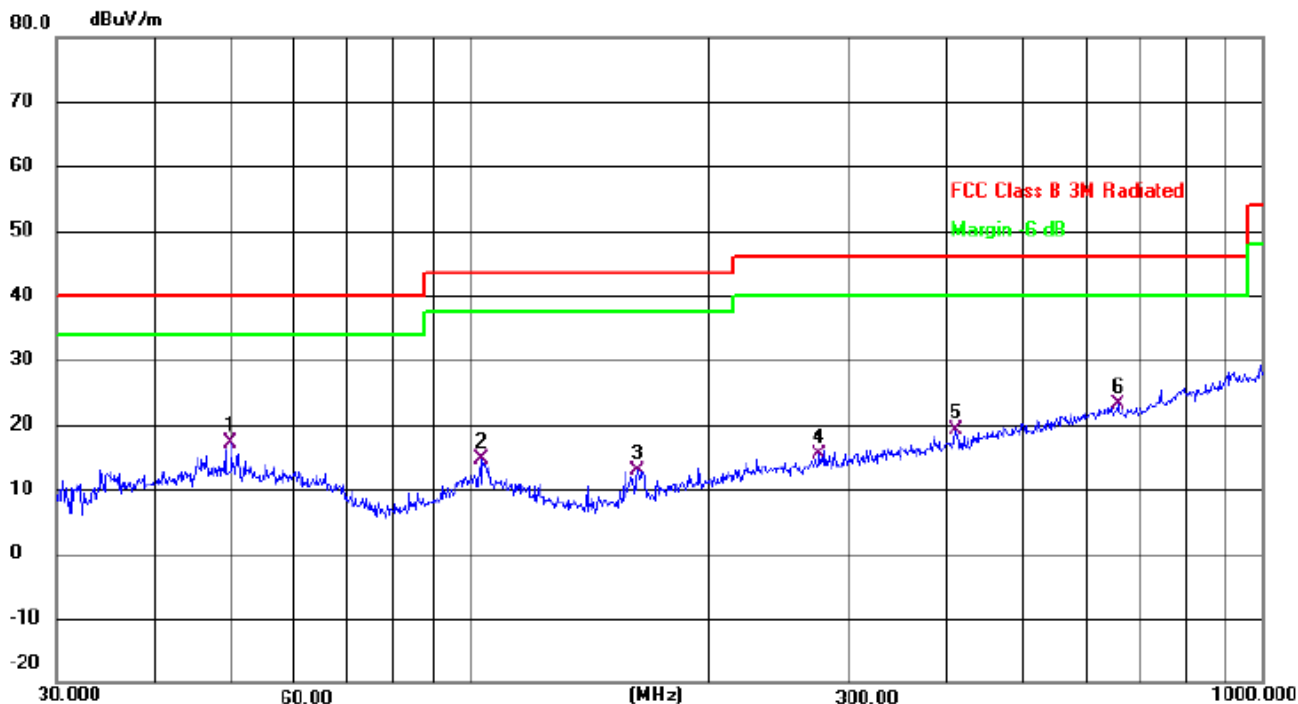
Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;



Temperature:	26℃	Relative Humidity:	54%
Pressure:	1010 hPa	Polarization :	Vertical
Test Voltage :	DC 3.6V		
Test Mode :	Mode 2		



No.	Mk.	Freq.	Reading Level	Correct Factor	Measurement	Limit	Margin	
		MHz	dBuV	dB	dBuV/m	dB/m	dB	Detector
1		49.8814	29.99	-12.84	17.15	40.00	-22.85	QP
2		103.4421	29.37	-14.67	14.70	43.50	-28.80	QP
3		162.6106	30.28	-17.50	12.78	43.50	-30.72	QP
4		276.1235	27.92	-12.57	15.35	46.00	-30.65	QP
5		410.3825	28.63	-9.43	19.20	46.00	-26.80	QP
6	*	656.5300	27.56	-4.36	23.20	46.00	-22.80	QP

Remark:

Correct Factor = Cable loss + Antenna factor – Preamplifier;

Level = Reading Level + Correct Factor; Margin = Level - Limit;

**3.2.8. TEST RESULTS (1GHZ~10GHZ)**

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: 902.30MHz									
V	1804.60	67.25	50.65	6.88	31.29	54.77	74	-19.23	PK
V	1804.60	55.84	50.65	6.88	31.29	43.36	54	-10.64	AV
V	2706.90	66.85	49.98	7.16	36.63	60.66	74	-13.34	PK
V	2706.90	46.61	49.98	7.16	36.63	40.42	54	-13.58	AV
V	9087.00	48.96	51.53	11.34	41.52	50.29	74	-23.71	PK
H	1804.60	66.85	50.65	6.88	31.29	54.37	74	-19.63	PK
H	1804.60	55.21	50.65	6.88	31.29	42.73	54	-11.27	AV
H	2706.90	69.23	49.98	7.16	36.63	63.04	74	-10.96	PK
H	2706.90	45.96	49.98	7.16	36.63	39.77	54	-14.23	AV
H	9087.00	48.41	51.53	11.34	41.52	49.74	74	-24.26	PK
operation frequency: 915.10MHz									
V	1830.20	67.23	50.67	6.89	31.38	54.83	74	-19.17	PK
V	1830.20	55.34	50.67	6.89	31.38	42.94	54	-11.06	AV
V	2745.30	69.47	50.02	7.24	36.63	63.32	74	-10.68	PK
V	2745.30	46.66	50.02	7.24	36.63	40.51	54	-13.49	AV
V	9083.00	48.21	51.53	11.34	41.52	49.54	74	-24.46	PK
H	1830.20	66.46	50.67	6.89	31.38	54.06	74	-19.94	PK
H	1830.20	55.74	50.67	6.89	31.38	43.34	54	-10.66	AV
H	2745.30	69.83	50.02	7.24	36.63	63.68	74	-10.32	PK
H	2745.30	47.55	50.02	7.24	36.63	41.4	54	-12.6	AV
H	9083.00	48.64	51.53	11.34	41.52	49.97	74	-24.03	PK
operation frequency: 927.70MHz									
V	1855.40	67.63	50.67	6.89	31.38	55.23	74	-18.77	PK
V	1855.40	55.38	50.67	6.89	31.38	42.98	54	-11.02	AV
V	2783.10	69.74	50.02	7.24	36.63	63.59	74	-10.41	PK
V	2783.10	46.38	50.02	7.24	36.63	40.23	54	-13.77	AV
V	9085.00	48.56	51.53	11.34	41.52	49.89	74	-24.11	PK
H	1855.40	66.54	50.67	6.89	31.38	54.14	74	-19.86	PK
H	1855.40	55.61	50.67	6.89	31.38	43.21	54	-10.79	AV
H	2783.10	69.63	50.02	7.24	36.63	63.48	74	-10.52	PK
H	2783.10	47.41	50.02	7.24	36.63	41.26	54	-12.74	AV
H	9085.00	48.65	51.53	11.34	41.52	49.98	74	-24.02	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.



3.3 BAND EDGE AND RF CONDUCTED SPURIOUS EMISSIONS

3.3.1 TEST REQUIREMENT:

47 CFR Part 15 Subpart C Section 15.247(d)/15.205(a)

3.3.2 LIMITS:

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

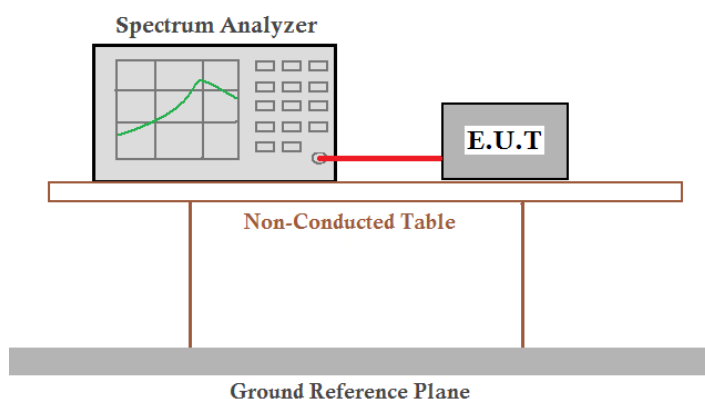
3.3.2 TEST PROCEDURE

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer:
RBW=100 kHz
VBW $\geq$ RBW
Sweep =auto
Detector function = peak
Trace = max hold
Allow the trace to stabilize

3.3.3 DEVIATION FROM TEST STANDARD

No deviation

3.3.4 TEST SETUP



3.3.5 EUT OPERATING CONDITIONS

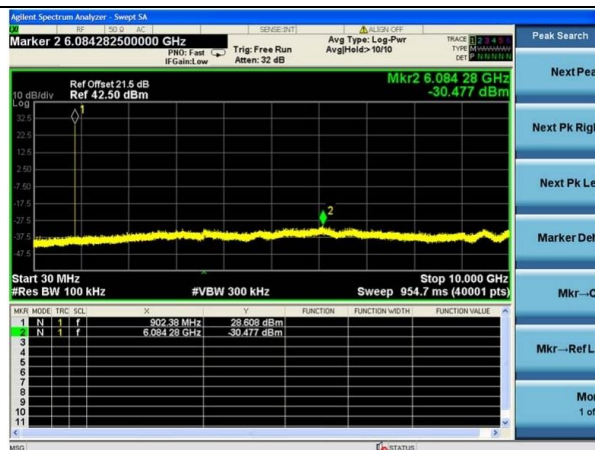
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.



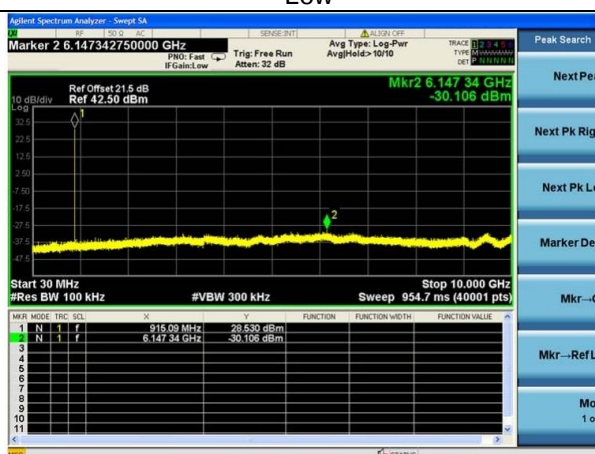
3.3.6 TEST RESULT

For Conducted(30MHz-10GHz):

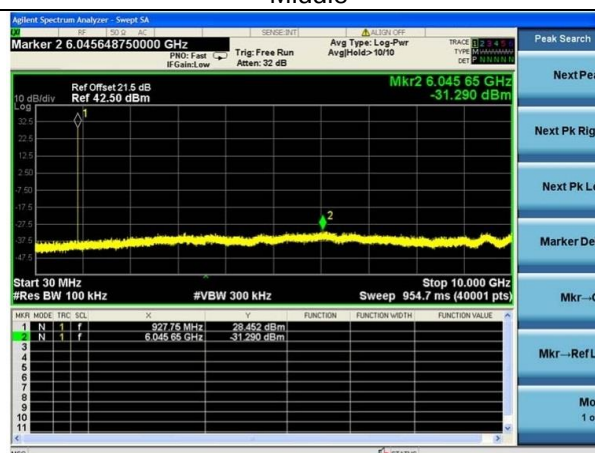
Frequency(MHz)	Measured Max. Out of Band Emission (dBm)	Limit (dBm)		Verdict
		Carrier Level	Calculated -20dBc Limit	
902.30	-30.48	28.61	8.61	PASS
915.10	-30.11	28.52	8.52	PASS
927.70	-31.29	28.45	8.45	PASS



Low



Middle

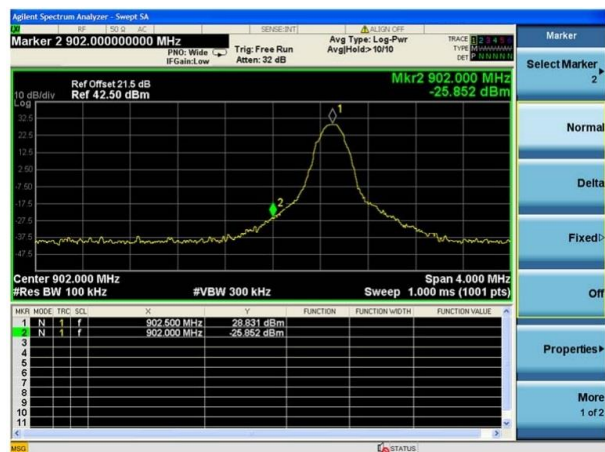


High

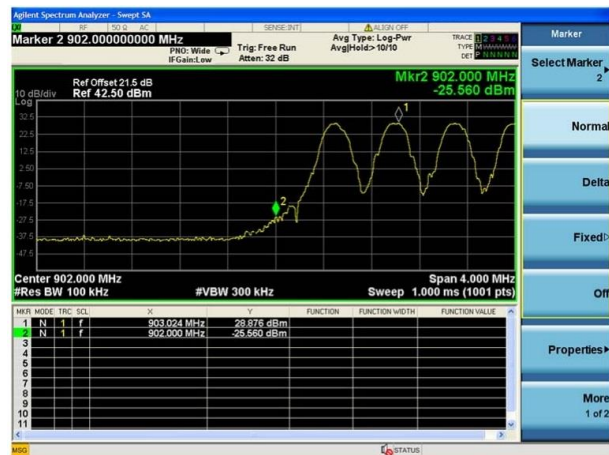


For Conducted:

Test channel: low channel

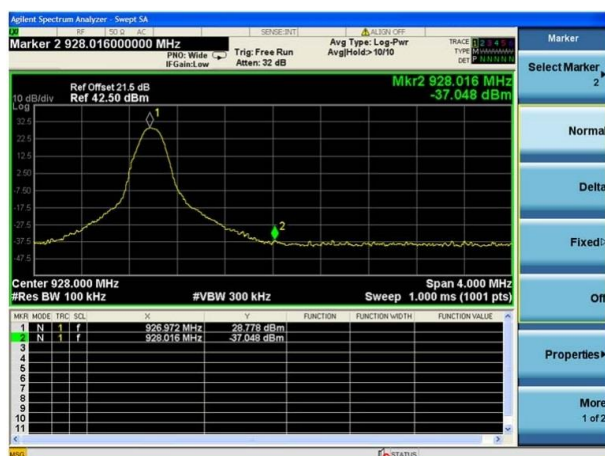


No-hopping mode

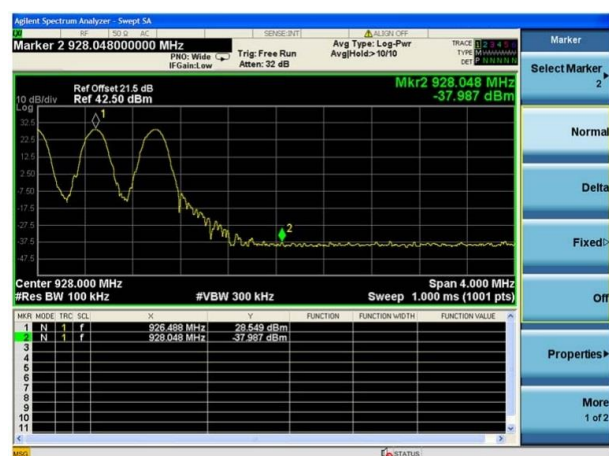


Hopping mode

Test channel: high channel



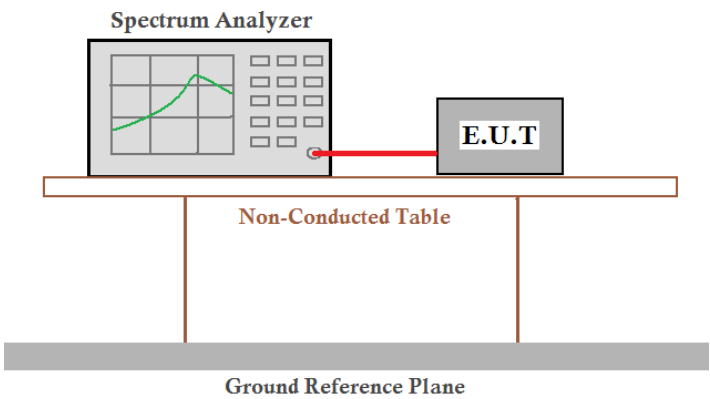
No-hopping mode



Hopping mode

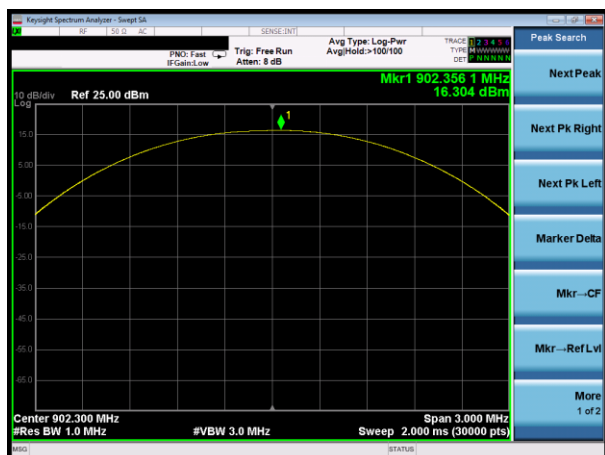


4.. PEAK OUTPUT POWER

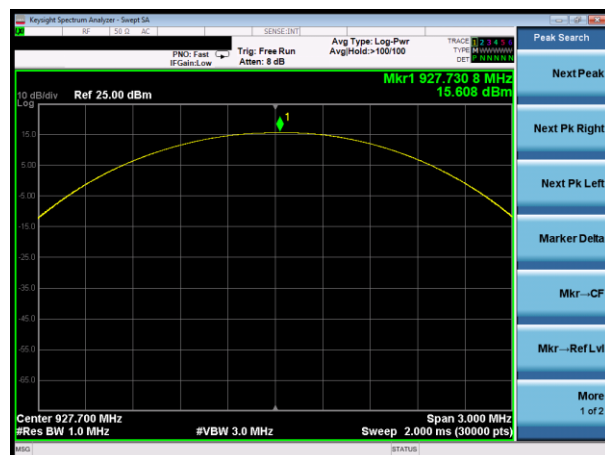
Test Requirement:	FCC Part15 C Section 15.247 (b)(2)
Test Method:	ANSI C63.10:2013
Limit:	30dBm
Test setup:	
Test results:	Pass

4.1. TEST RESULTS

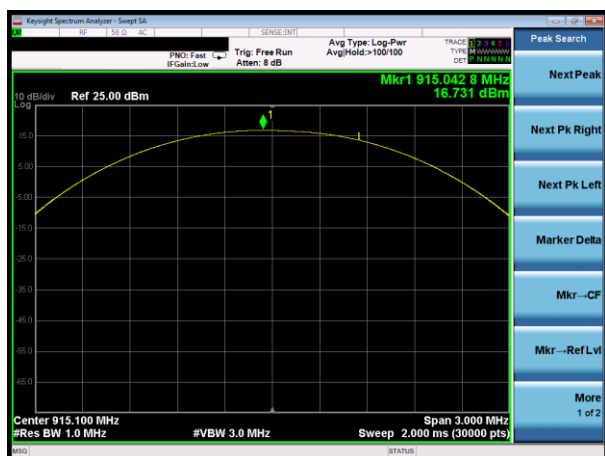
Mode	Test Channel	Peak Output Power (dBm)	LIMIT (dBm)
125KHz Bandwidth	Low	16.304	30.00
	Middle	16.731	30.00
	High	15.608	30.00



Low



High



Middle

**5.. 20DB OCCUPIED BANDWIDTH****5.1. APPLIED PROCEDURES / LIMIT**

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range(MHz)	Result
15.247(a)(1)(i)	Bandwidth	$\leq 500\text{KHz}$ (20dB bandwidth)	920-928	PASS

5.1.1. TEST PROCEDURE

1. Set RBW = 3 kHz.
2. Set the video bandwidth (VBW) $\geq$ RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. 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 20 dB relative to the maximum level measured in the fundamental emission.

5.1.2. DEVIATION FROM STANDARD

No deviation.

5.1.3. TEST SETUP**5.1.4. EUT OPERATION CONDITIONS**

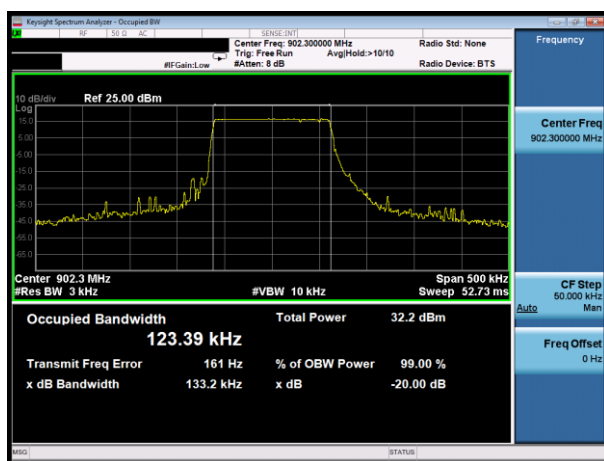
The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

**5.1.5. TEST RESULTS**

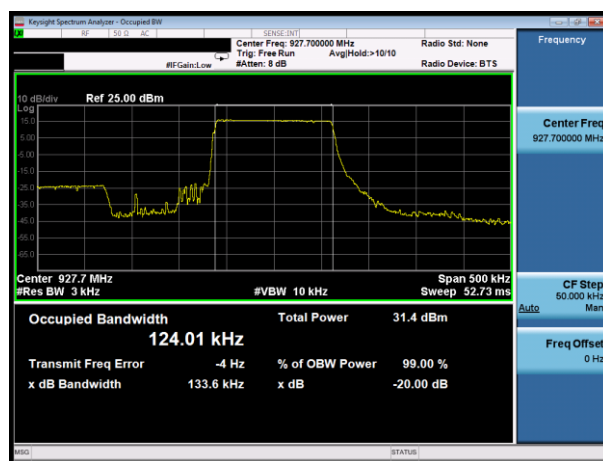
Mode	Test Channel	20dB Bandwidth (kHz)	Limit (kHz)	Result
125kHz	Low	133.2	500	Pass
	Middle	133.1	500	Pass
	High	133.6	500	Pass

125KHz:

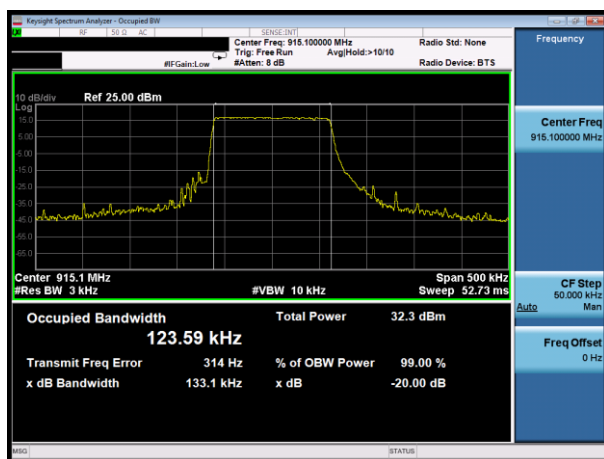
Test plot as follows:



Low



High



Middle



6.. NUMBER OF HOPPING CHANNEL

6.1. APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(i)	Number of Hopping Channel	≥50	902-928	PASS

Spectrum Parameters	Setting
Attenuation	Auto
Span Frequency	= the frequency band of operation
RB	$RBW \geq 1\%$ of the span
VB	$VBW \geq RBW$
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

6.1.1. TEST PROCEDURE

- The EUT was directly connected to the spectrum analyzer and antenna output port as show in the block diagram below,
- Spectrum Setting : RBW= 100KHz, VBW=300KHz, Sweep time = Auto.

6.1.2. DEVIATION FROM STANDARD

No deviation.

6.1.3. TEST SETUP



6.1.4. EUT OPERATION CONDITIONS

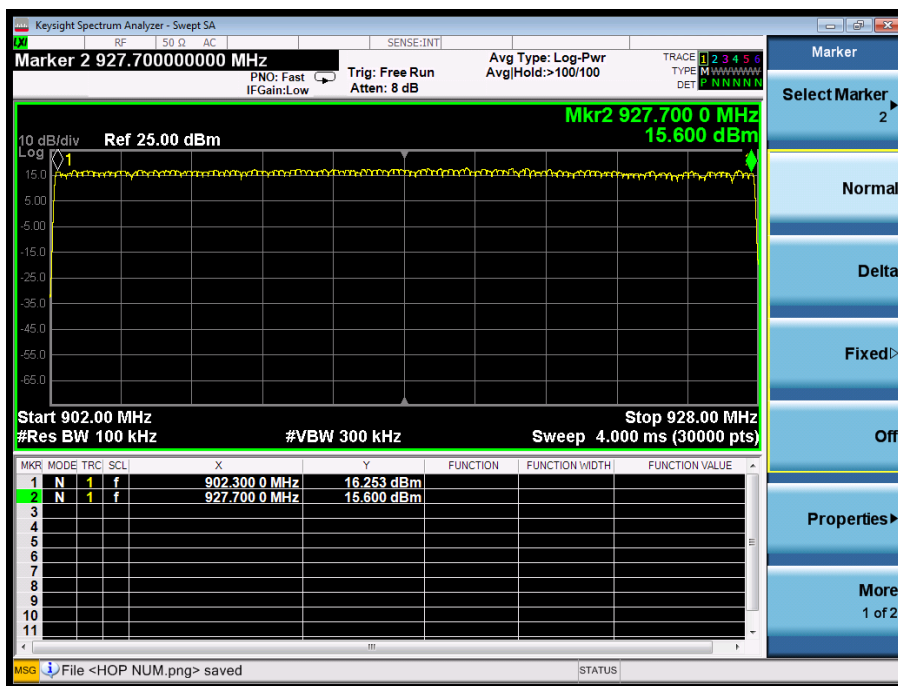
The EUT tested system was configured as the statements of 2.4 Unless otherwise a special operating condition is specified in the follows during the testing.



6.1.5. TEST RESULTS

Test Mode :	Hopping Mode
Number of Hopping Channel	128

125KHz Bandwidth





7.. HOPPING CHANNEL SEPARATION MEASUREMENT

7.1. APPLIED PROCEDURES / LIMIT

Frequency hopping systems operating in the 902-928 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

Spectrum Parameter	Setting
Attenuation	Auto
Span Frequency	> Measurement Bandwidth or Channel Separation
RB	100 kHz (Channel Separation)
VB	300 kHz (Channel Separation)
Detector	Peak
Trace	Max Hold
Sweep Time	Auto

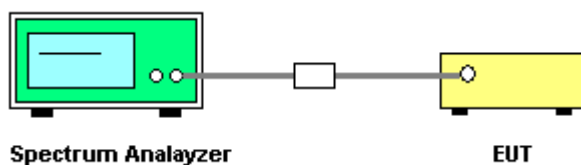
7.1.1. TEST PROCEDURE

- The transmitter output (antenna port) was connected to the spectrum analyser in peak hold mode.
- The resolution bandwidth of 100 kHz and the video bandwidth of 300 kHz were utilised for channel separation measurement.

7.1.2. DEVIATION FROM STANDARD

No deviation.

7.1.3. TEST SETUP



7.1.4. EUT OPERATION CONDITIONS

The EUT was programmed to be in continuously transmitting mode.

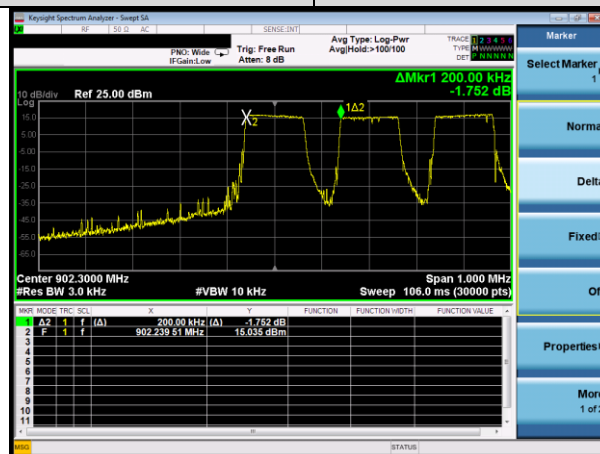
7.1.5. TEST RESULTS

Test Mode	Ch. Separation (KHz)	Limit (KHz)	Result
125KHz Bandwidth	200.0	25KHz or 20dB Bandwidth	Complies
	200.0		
	200.0		

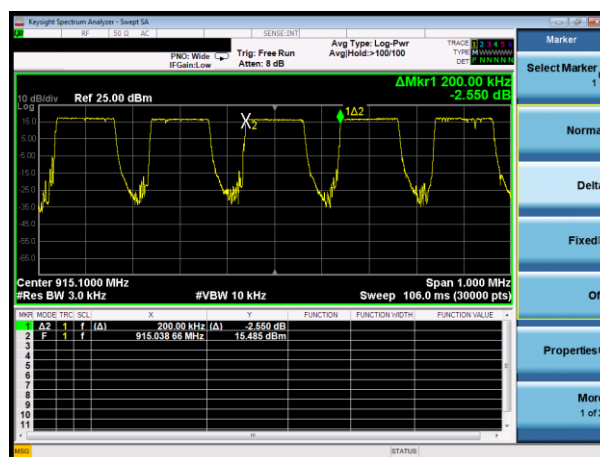
Test plot as follows:

Modulation mode:

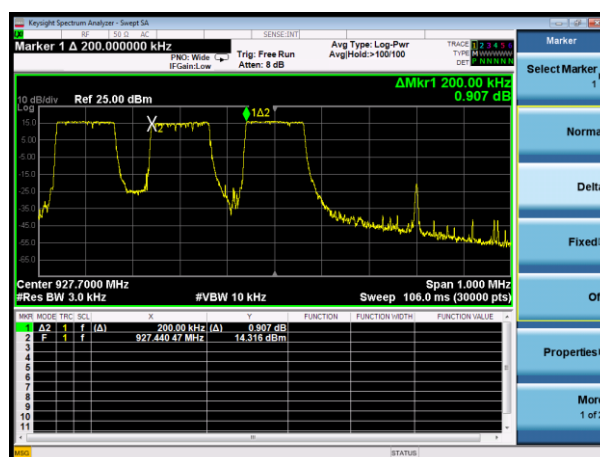
125KHz Bandwidth



Lowest channel



Middle channel





8.. DWELL TIME OF OCCUPANCY

8.1. APPLIED PROCEDURES / LIMIT

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247 (a)(1)(iii)	Average Time of Occupancy	0.4sec	902-928	PASS

8.1.1. TEST PROCEDURE

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

- Span: Zero span, centered on a hopping channel.
- RBW shall be $\leq$ channel spacing and where possible RBW should be set $\geq 1 / T$, where T is the expected dwell time per channel.
- Sweep: As necessary to capture the entire dwell time per hopping channel; where possible use a video trigger and trigger delay so that the transmitted signal starts a little to the right of the start of the plot. The trigger level might need slight adjustment to prevent triggering when the system hops on an adjacent channel; a second plot might be needed with a longer sweep time to show two successive hops on a channel.
- Detector function: Peak.
- Trace: Max hold.

8.1.2. DEVIATION FROM STANDARD

No deviation.

8.1.3. TEST SETUP



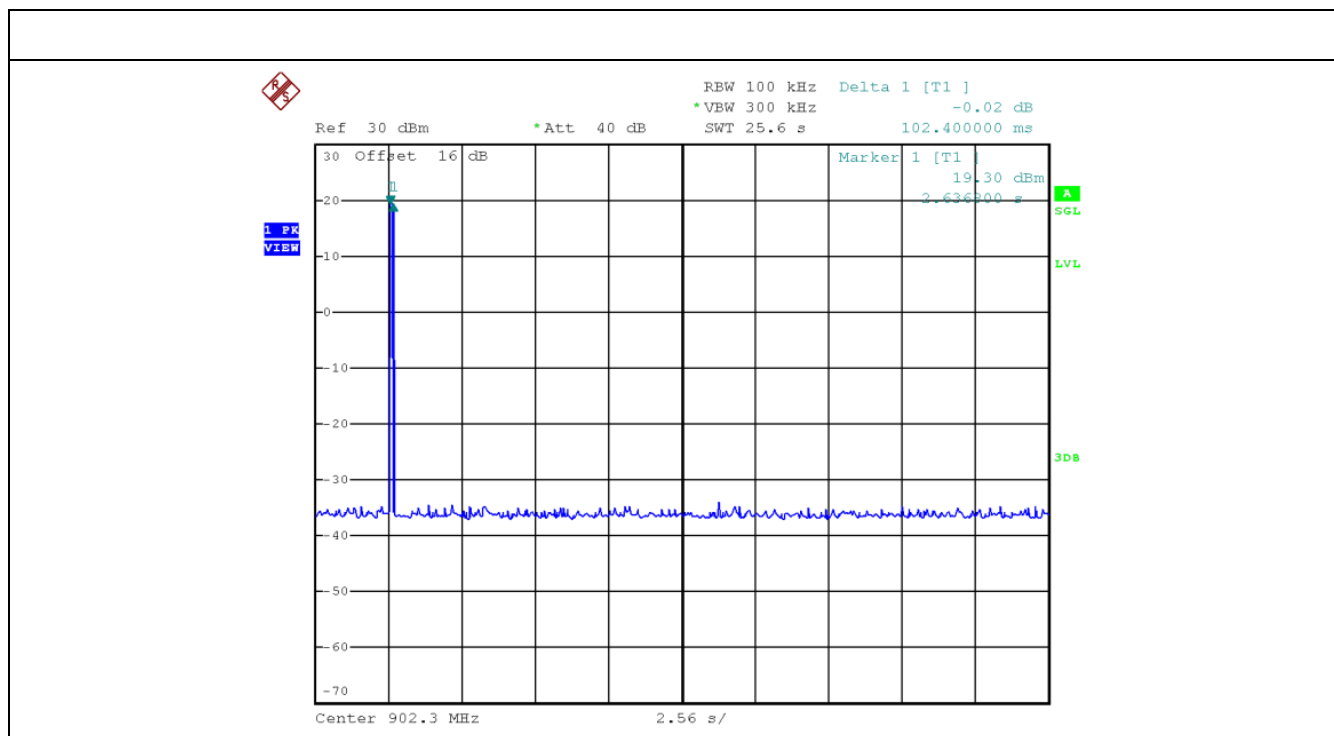
8.1.4. EUT OPERATION CONDITIONS

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.



8.1.5. TEST RESULTS

Mode	Dwell time(ms)	Limit(ms)	Result
125KHz Bandwidth	102.4	400	Pass





9.. ANTENNA REQUIREMENT

9.1. STANDARD REQUIREMENT

15.203 requirement: For intentional device, according to 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.

9.2. EUT ANTENNA

The EUT antenna is EUT equipped a Reverse-SMA connector, It comply with the standard requirement.

10.. TEST SEUUP PHOTO

Reference to the appendix I for details.

11.. EUT PHOTO

Reference to the appendix II for details.

******* END OF REPORT *******