



FCC TEST REPORT

FCC ID:2A4UH-NERO-WRSKII

Report Number.....: **ZKT-24102313707E**

Date of Test..... Oct. 23, 2024 to Oct. 31, 2024

Date of issue.....: Oct. 31, 2024

Total number of pages..... 35

Test Result: PASS

Testing Laboratory.....: Shenzhen ZKT Technology Co., Ltd.

Address: 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

Applicant's name: Santos Electronics

Address: 775 Columbia street, Brea, CA92821

Manufacturer's name: Shanghai Liansheng Technology Development Co.,Ltd

Address: Room#2131,No.5 Building,No.397 Jiaozhou Road,Jingan District,Shanghai

Test specification:

Standard.....: FCC CFR Title 47 Part 15 Subpart C Section 15.249
ANSI C63.10:2013

Test procedure.....: /

Non-standard test method: N/A

Test Report Form No.....: /

Test Report Form(s) Originator.....: ZKT Testing

Master TRF: Dated: 2020-01-06

This device described above has been tested by ZKT, 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 ZKT, this document may be altered or revised by ZKT, personal only, and shall be noted in the revision of the document.

Product name.....: Transmitter

Trademark: OSD AUDIO

Model/Type reference.....: NERO WRSKII

Ratings.....: Input:DC 9V1.3A From AC adapter AC 100-240V,50/60Hz, 0.3A



Testing procedure and testing location:

Testing Laboratory.....: **Shenzhen ZKT Technology Co., Ltd.**

Address.....: 1/F, No. 101, Building B, No. 6, Tangwei Community
Industrial Avenue, Fuhai Street, Bao'an District,
Shenzhen, China

Tested by (name + signature).....: Jim Liu

Jim Liu

Reviewer (name + signature).....: Jackson Fang

Jackson Fang

Approved (name + signature).....: Lake Xie





Table of Contents

	Page
1. VERSION	4
2. TEST SUMMARY	5
2.1 TEST FACILITY	6
2.2 MEASUREMENT UNCERTAINTY	6
3.1 GENERAL DESCRIPTION OF EUT	7
3.2 Test Setup Configuration	9
3.3 Support Equipment	9
4. EMC EMISSION TEST	13
4.1 Conducted emissions	13
4.1.1 POWER LINE CONDUCTED EMISSION Limits	13
4.1.2 TEST PROCEDURE	13
4.1.3 DEVIATION FROM TEST STANDARD	13
4.1.4 TEST SETUP	14
4.1.5 EUT OPERATING CONDITIONS	14
4.1.6 Test Result	15
4.2 Radiated emissions	17
4.2.1 Radiated Emission Limits	17
4.2.2 TEST PROCEDURE	18
4.2.3 DEVIATION FROM TEST STANDARD	18
4.2.4 TEST SETUP	18
4.2.5 EUT OPERATING CONDITIONS	19
4.2.6 TEST RESULTS	19
5. RADIATED BAND EMISSION MEASUREMENT	25
5.1 Test Requirement:	25
5.2 TEST PROCEDURE	25
5.3 DEVIATION FROM TEST STANDARD	26
5.4 TEST SETUP	26
5.5 EUT OPERATING CONDITIONS	26
5.6 TEST RESULT	27
6. 20DB BANDWIDTH	31
6.1 Test Setup	31
6.2 Limit	31
6.3 Test procedure	31
6.4 DEVIATION FROM STANDARD	31
6.5 Test Result	31
7. ANTENNA REQUIREMENT	34
8. TEST SETUP PHOTO	35
9. EUT CONSTRUCTIONAL DETAILS	35



1. VERSION

Report No.	Version	Description	Approved
ZKT-24102313707E	Rev.01	Initial issue of report	Oct. 31, 2024



2. TEST SUMMARY

Test procedures according to the technical standards:

FCC Part15 (15.249) , Subpart C			
Standard Section	Test Item	Result	Remark
15.203	Antenna Requirement	PASS	
15.207	AC Power Line Conducted Emission	PASS	
15.215 (c)	20dB Occupied Bandwidth	PASS	
15.209/15.249	Radiated Emission and Fundamental	PASS	
15.205/15.209	Restricted Band	PASS	

NOTE:

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



2.1 TEST FACILITY

Shenzhen ZKT Technology Co., Ltd.

Add. : 1/F, No. 101, Building B, No. 6, Tangwei Community Industrial Avenue, Fuhai Street, Bao'an District, Shenzhen, China

FCC Test Firm Registration Number: 692225

Designation Number: CN1299

IC Registered No.: 27033

CAB identifier: CN0110

2.2 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	3m chamber Radiated spurious emission(9KHz-30MHz)	U=4.5dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-6GHz)	U=4.9dB
4	3m chamber Radiated spurious emission(6GHz-40GHz)	U=5.0dB
5	Conducted disturbance	U=3.2dB
6	RF Band Edge	U=1.68dB
7	RF Occupied Bandwidth	U=1.8MHz
8	humidity uncertainty	U=5.3%
9	Temperature uncertainty	U=0.59℃



3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Product Name:	Transmitter
Model No.:	NERO WRSKII
Model Different.:	N/A
Serial No.:	N/A
Sample(s) Status:	Engineer sample
Channel numbers:	61
Operation Frequency:	5729MHz~5848MHz
Modulation technology:	GFSK
Antenna Type:	PCB antenna
Antenna gain:	0.26dBi
Power supply:	Input:DC 9V1.3A
AC/DC Adapter:	Input: 100-240V~, 50/60Hz. 0.3A Output: 9V $\overline{\text{---}}$ 1.3A
AC/DC Adapter Mode:	RKP=UL0901300IP20-1F



Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	5729	27	5781	53	5833				
2	5731	28	5783	54	5835				
3	5733	29	5785	55	5837				
4	5735	30	5787	56	5839				
5	5737	31	5789	57	5841				
6	5739	32	5791	58	5843				
7	5741	33	5793	59	5845				
8	5743	34	5795	60	5847				
9	5745	35	5797	61	5848				
10	5747	36	5799						
11	5749	37	5801						
12	5751	38	5803						
13	5753	39	5805						
14	5755	40	5807						
15	5757	41	5809						
16	5759	42	5811						
17	5761	43	5813						
18	5763	44	5815						
19	5765	45	5817						
20	5767	46	5819						
21	5769	47	5821						
22	5771	48	5823						
23	5773	49	5825						
24	5775	50	5827						
25	5777	51	5829						
26	5780	52	5831						

Note:

In section 15.31(m), regards to the operating frequency range over 10 MHz, the Lowest frequency, the middle frequency, and the highest frequency of channel were selected to perform the test, and the selected channel see below:

Test channel	Frequency
The lowest channel	5729MHz
The middle channel	5789MHz
The Highest channel	5848MHz

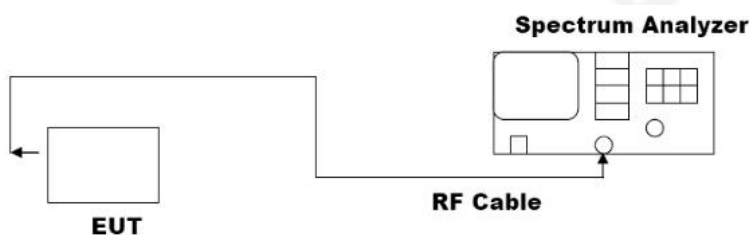


3.2 Test Setup Configuration

Operation of EUT during Conducted and Radiation testing:



Operation of EUT during RF Conducted testing:



3.3 Support Equipment

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	Transmitter	OSD AUDIO	NERO WRSKII	N/A	EUT
A-1	Adapter	N/A	RKP=UL0901300IP20-1F	N/A	Auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C1	NO	NO	1.0M	Car Charger

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.



3.4 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	Secure CRT Portable
Power level setup	<0dBm



3.5 EQUIPMENTS LIST FOR ALL TEST ITEMS

Conducted emissions Test

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	LISN	R&S	ENV216	101471	N/A	Nov. 14, 2023	Nov. 13, 2024
2	LISN	CYBERTEK	EM5040A	E1850400149	N/A	Nov. 02, 2023	Nov. 01, 2024
3	Test Cable	N/A	C-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
4	Test Cable	N/A	C-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
5	Test Cable	N/A	C-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
6	EMI Test Receiver	R&S	ESCI3	101393	4.42 SP3	Nov. 02, 2023	Nov. 01, 2024
7	Triple-Loop Antenna	N/A	RF300	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
8	Absorbing Clamp	DZ	ZN23201	15034	N/A	Nov. 07, 2023	Nov. 06, 2024
9	EMC Software	Frad	EZ-EMC	Ver.EMC-CON 3A1.1	N/A	\	\



Radiation emissions & Radio Test equipment

Item	Equipment	Manufacturer	Type No.	Serial No.	Firmware Version	Last calibration	Calibrated until
1	Spectrum Analyzer (9kHz-26.5GHz)	KEYSIGHT	9020A	MY55370835	A.17.05	Nov. 02, 2023	Nov. 01, 2024
2	Spectrum Analyzer (10kHz-39.9GHz)	R&S	FSV40-N	100363	1.71 SP2	Nov. 02, 2023	Nov. 01, 2024
3	EMI Test Receiver (9kHz-7GHz)	R&S	ESCI7	100969	4.32	Nov. 02, 2023	Nov. 01, 2024
4	Bilog Antenna (30MHz-1500MHz)	Schwarzbeck	VULB9168	N/A	N/A	Nov. 13, 2023	Nov. 12, 2024
5	Horn Antenna (1GHz-18GHz)	Agilent	AH-118	071145	N/A	Nov. 13, 2023	Nov. 12, 2024
6	Horn Antenna (15GHz-40GHz)	A.H.System	SAS-574	588	N/A	Nov. 13, 2023	Nov. 12, 2024
7	Loop Antenna	TESEQ	HLA6121	58357	N/A	Nov. 16, 2023	Nov. 15, 2024
8	Amplifier (30-1000MHz)	EM Electronics	EM330 Amplifier	60747	N/A	Nov. 02, 2023	Nov. 01, 2024
9	Amplifier (1GHz-26.5GHz)	HuiPu	8449B	3008A00315	N/A	Nov. 02, 2023	Nov. 01, 2024
10	Amplifier (500MHz-40GHz)	QuanJuDa	DLE-161	097	N/A	Nov. 02, 2023	Nov. 01, 2024
11	Test Cable	N/A	R-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
12	Test Cable	N/A	R-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
13	Test Cable	N/A	R-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
14	Test Cable	N/A	RF-01	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
15	Test Cable	N/A	RF-02	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
16	Test Cable	N/A	RF-03	N/A	N/A	Nov. 02, 2023	Nov. 01, 2024
17	ESG Signal Generator	Agilent	E4421B	N/A	B.03.84	Nov. 02, 2023	Nov. 01, 2024
18	Signal Generator	Agilent	N5182A	N/A	A.01.87	Nov. 02, 2023	Nov. 01, 2024
19	Magnetic Field Probe Tester	Narda	ELT-400	0-0344	N/A	Nov. 16, 2023	Nov. 15, 2024
20	Wideband Radio Communication Test	R&S	CMW500	106504	V 3.7.22	Nov. 02, 2023	Nov. 01, 2024
21	Power Meter	KEYSIGHT	N1912A P	N/A	A.05.00	Nov. 02, 2023	Nov. 01, 2024
22	D.C. Power Supply	LongWei	TPR-6405D	N/A	N/A	\	\
23	EMC Software	Frad	EZ-EMC	Ver.EMC-CO N 3A1.1	N/A	\	\
24	RF Software	MW	MTS8310	V2.0.0.0	N/A	\	\
25	Turntable	MF	MF-7802BS	N/A	N/A	\	\
26	Antenna tower	MF	MF-7802BS	N/A	N/A	\	\



4. EMC EMISSION TEST

4.1 Conducted emissions

Test Requirement:	FCC Part15 C Section 15.207
Test Method:	ANSI C63.10:2013
Test Frequency Range:	150KHz to 30MHz
Receiver setup:	RBW=9KHz, VBW=30KHz, Sweep time=auto

4.1.1 POWER LINE CONDUCTED EMISSION Limits

FREQUENCY (MHz)	Limit (dBuV)		Standard
	Quasi-peak	Average	
0.15 -0.5	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) *Decreases with the logarithm of the frequency.

4.1.2 TEST PROCEDURE

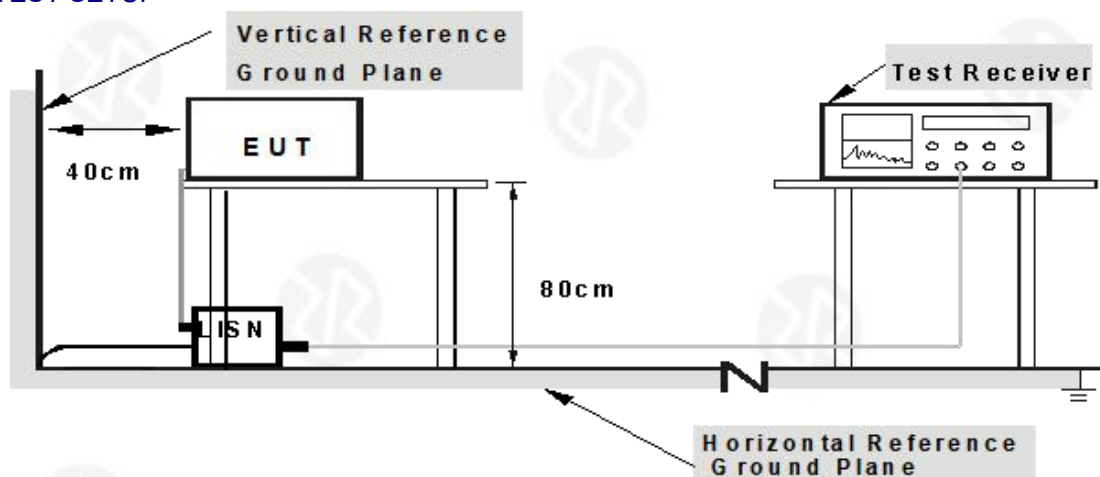
- The EUT was placed 0.8 meters from the horizontal ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
- 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.
- 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.
- LISN at least 80 cm from nearest part of EUT chassis.
- For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.3 DEVIATION FROM TEST STANDARD

No deviation



4.1.4 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

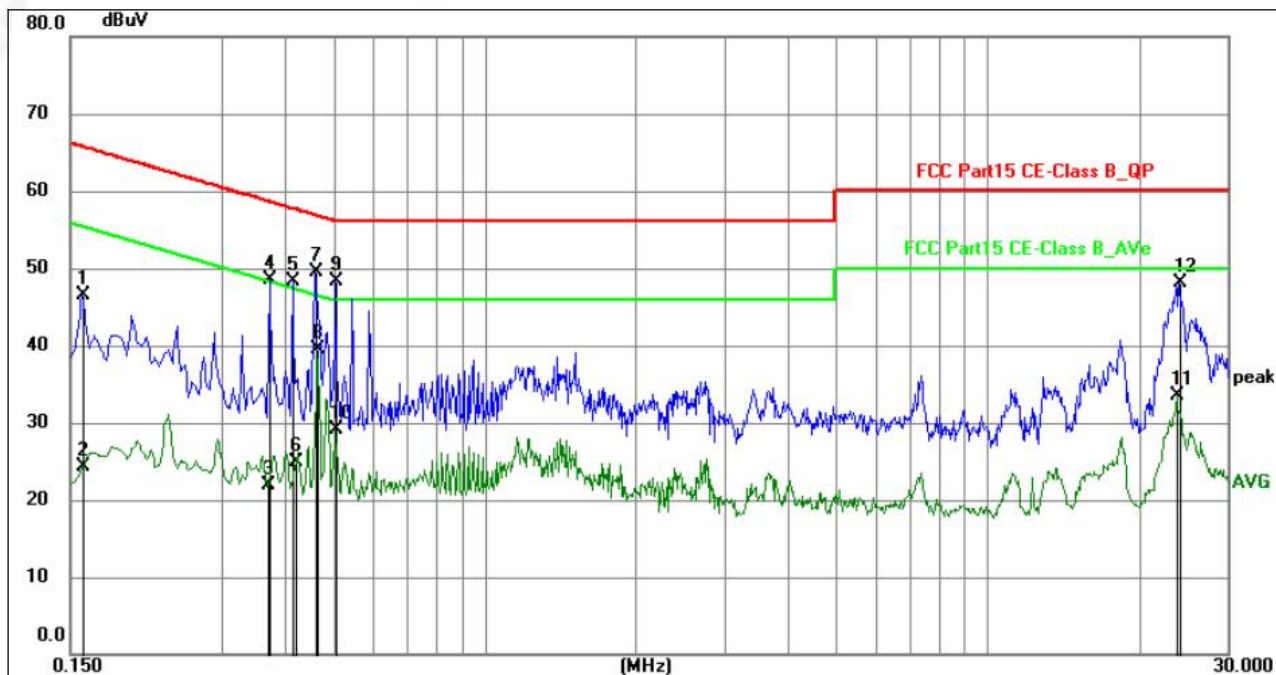
4.1.5 EUT OPERATING CONDITIONS

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.



4.1.6 Test Result

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	L
Test Voltage :	AC 120V/60Hz	Test Channel :	5729MHz



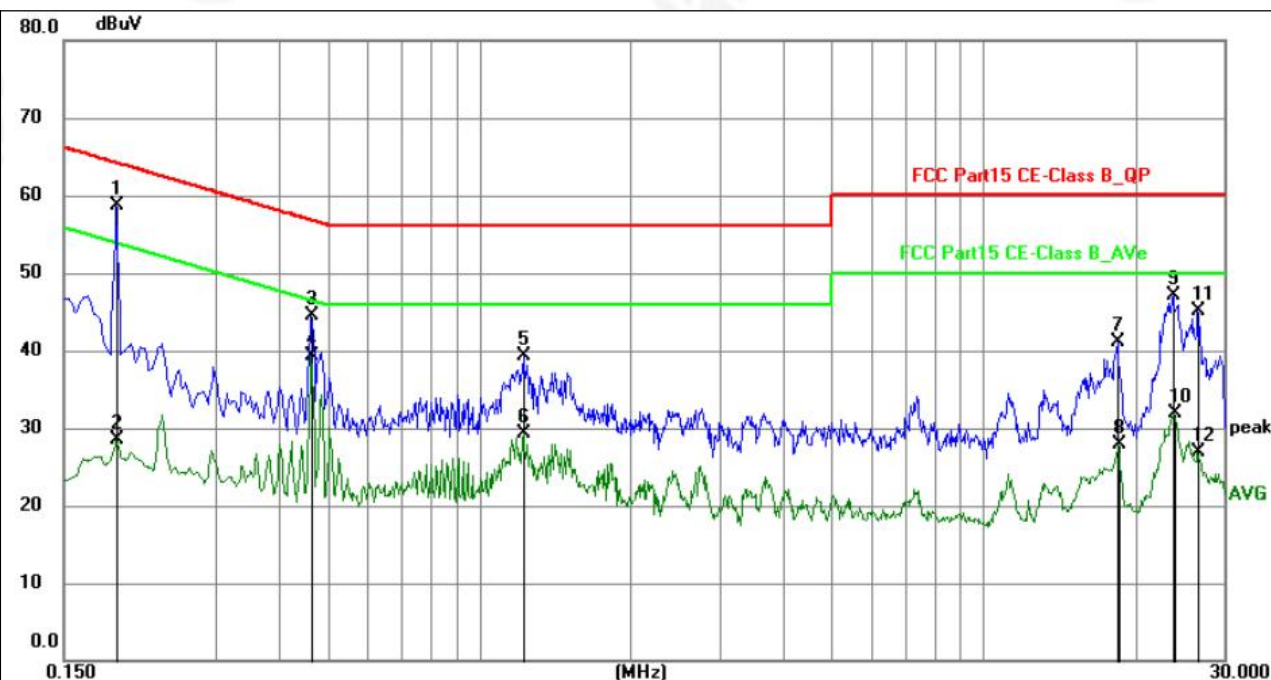
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1590	26.10	20.44	46.54	65.52	-18.98	QP	P	
2	0.1590	3.87	20.44	24.31	55.52	-31.21	AVG	P	
3	0.3711	1.32	20.59	21.91	48.48	-26.57	AVG	P	
4	0.3750	27.96	20.59	48.55	58.39	-9.84	QP	P	
5	0.4155	27.63	20.58	48.21	57.54	-9.33	QP	P	
6	0.4214	4.23	20.58	24.81	47.42	-22.61	AVG	P	
7	0.4605	28.93	20.57	49.50	56.68	-7.18	QP	P	
8	0.4650	18.88	20.57	39.45	46.60	-7.15	AVG	P	
9	0.5055	27.66	20.56	48.22	56.00	-7.78	QP	P	
10	0.5055	8.55	20.56	29.11	46.00	-16.89	AVG	P	
11	23.8110	9.28	24.17	33.45	50.00	-16.55	AVG	P	
12	24.1395	23.80	24.24	48.04	60.00	-11.96	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. Measurement Level = Reading level + Correct Factor
4. The test data shows only the worst case GFSK 5729MHz mode



Temperature:	26℃	Relative Humidity:	54%
Pressure:	101kPa	Phase :	N
Test Voltage :	AC 120V/60Hz	Test Channel :	5729MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F	Remark
1	0.1905	38.10	20.56	58.66	64.01	-5.35	QP	P	
2	0.1905	7.91	20.56	28.47	54.01	-25.54	AVG	P	
3	0.4650	23.86	20.55	44.41	56.60	-12.19	QP	P	
4	0.4650	18.74	20.55	39.29	46.60	-7.31	AVG	P	
5	1.2254	18.72	20.58	39.30	56.00	-16.70	QP	P	
6	1.2254	8.81	20.58	29.39	46.00	-16.61	AVG	P	
7	18.4695	17.94	23.08	41.02	60.00	-18.98	QP	P	
8	18.5595	4.81	23.10	27.91	50.00	-22.09	AVG	P	
9	23.7750	23.02	24.09	47.11	60.00	-12.89	QP	P	
10	23.9685	7.71	24.13	31.84	50.00	-18.16	AVG	P	
11	26.5875	20.53	24.63	45.16	60.00	-14.84	QP	P	
12	26.5875	2.24	24.63	26.87	50.00	-23.13	AVG	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.Measurement Level = Reading level + Correct Factor
- 4.The test data shows only the worst case GFSK 5729MHz mode



4.2 Radiated emissions

Test Requirement:	FCC Part15 C Section 15.209/15.249				
Test Method:	ANSI C63.10:2013				
Test Frequency Range:	9kHz to 25GHz				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	9KHz-150KHz	Quasi-peak	200Hz	MX5Hz	Quasi-peak
	150KHz-30MHz	Quasi-peak	9KHz	30KHz	Quasi-peak
	30MHz-1GHz	Quasi-peak	100KHz	300KHz	Quasi-peak
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Peak	1MHz	10Hz	Average

4.2.1 Radiated Emission Limits

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

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).

LIMITS OF RADIATED EMISSION MEASUREMENT

Fundamental Frequency	Field Strength of Fundamental @3m (millivolts/meter)	Average Limit @3m (dBuV/m)	Peak Limit @3m (dBuV/m)
900-928MHz	50	94	114
2400-2483.5MHz	50	94	114
5725-5875MHz	50	94	114
24.0-24.25GHz	250	108	128

Note :

1. Average Limit (dBuV/m)=20×log[1000×Field Strength (mV/m)].
2. Peak Limit (dBuV/m)= Average Limit (dBuV/m)+20dB



4.2.2 TEST PROCEDURE

Below 1GHz test procedure as below:

- The EUT was placed on the top of a rotating table 0.8 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 0.8 metre to 1.5 metre(Above 18GHz the distance is 1 meter and table is 1.5 metre).
- Test the EUT in the lowest channel ,the middle channel ,the Highest channel

Note:

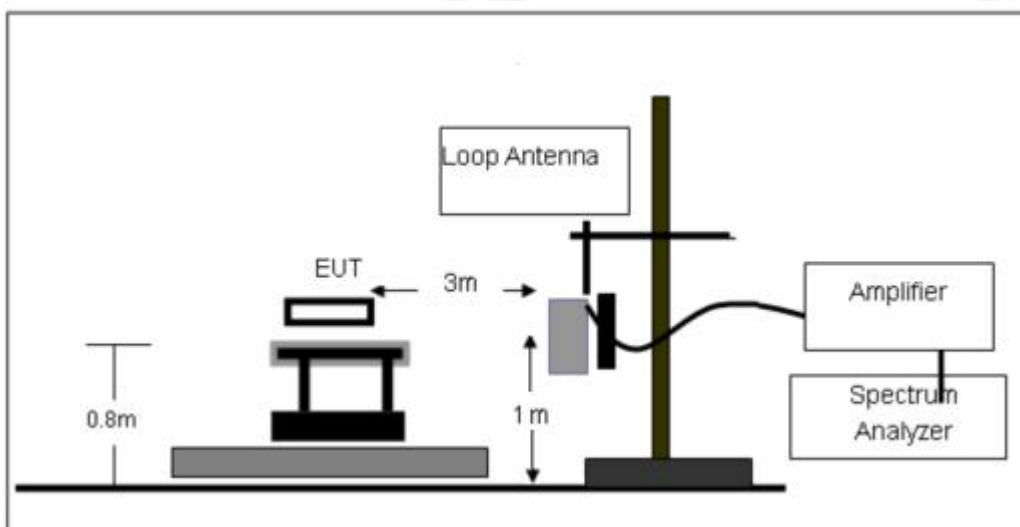
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

4.2.3 DEVIATION FROM TEST STANDARD

No deviation

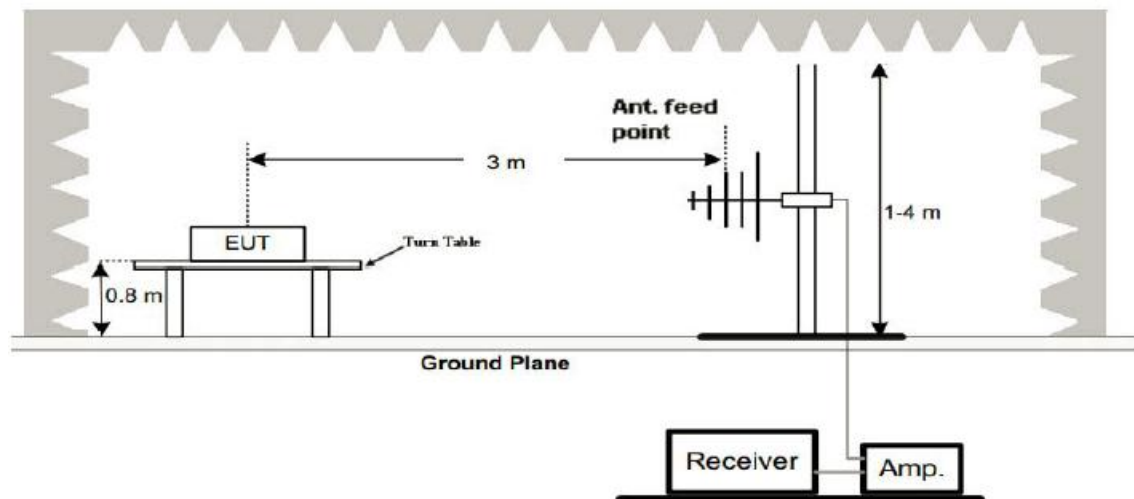
4.2.4 TEST SETUP

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

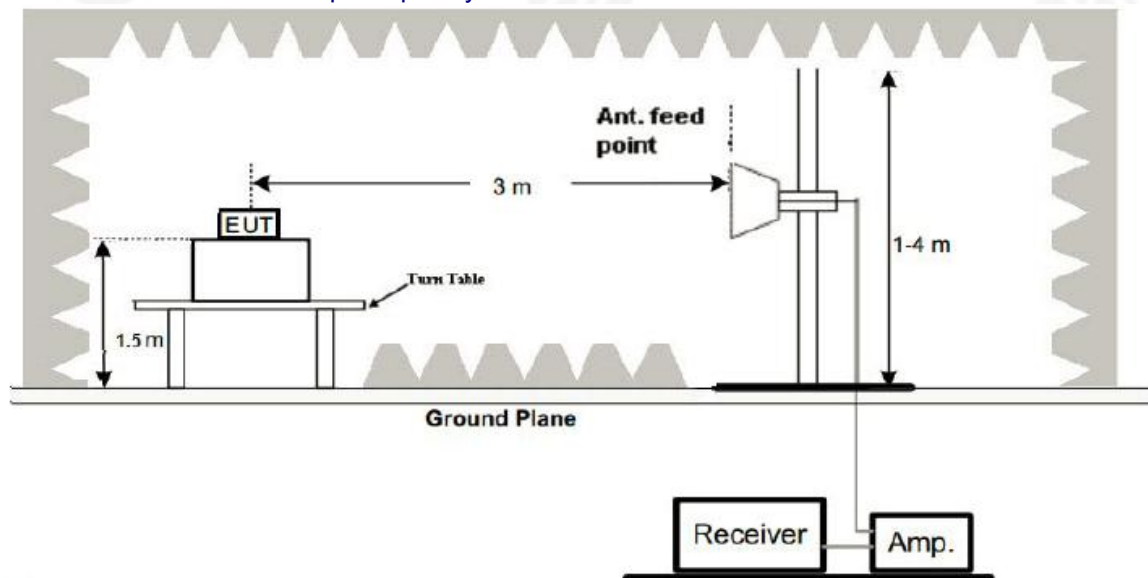




(B) Radiated Emission Test-Up Frequency 30MHz~1GHz



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



4.2.5 EUT OPERATING 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.

4.2.6 TEST RESULTS

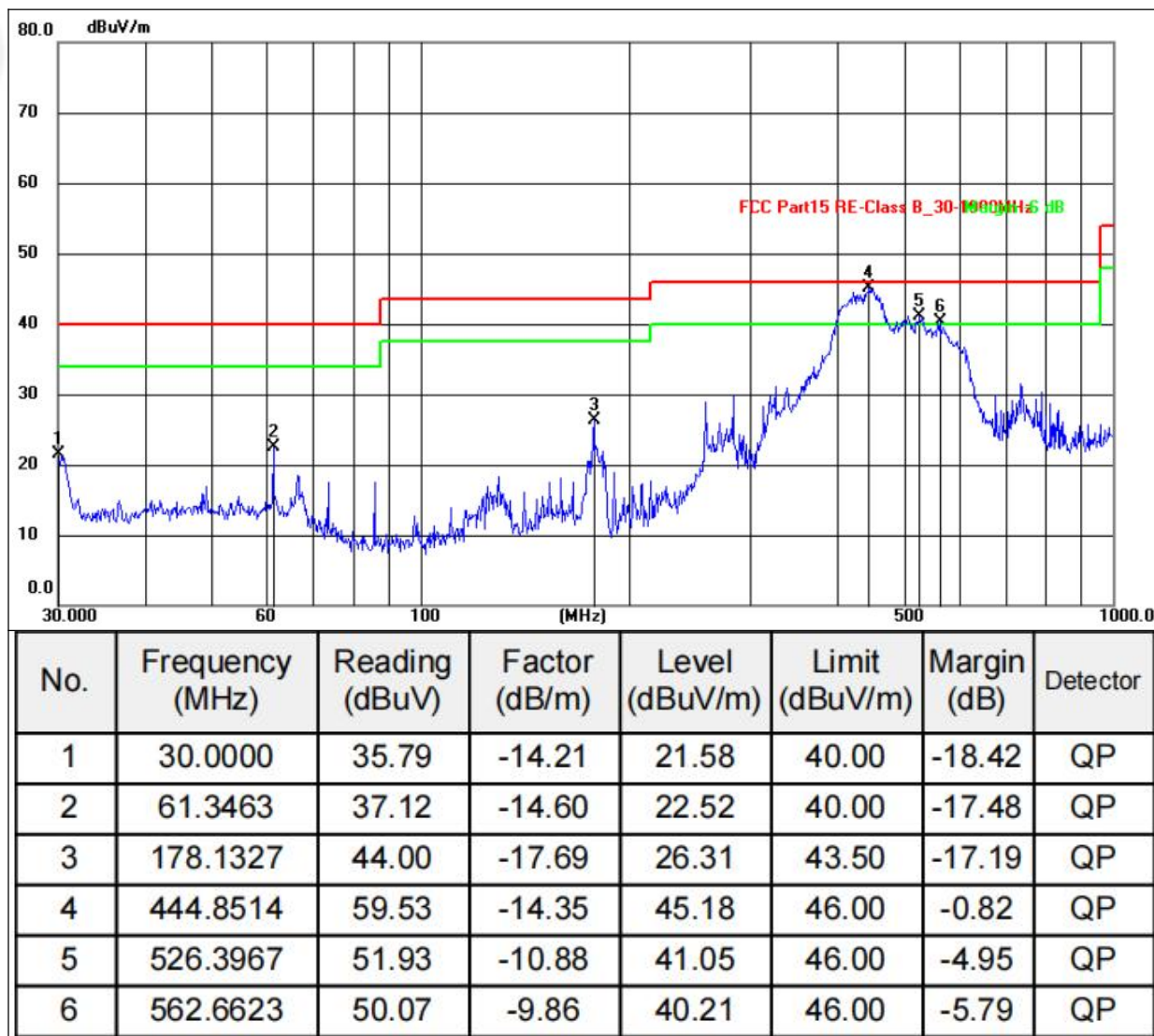
Between 9KHz – 30MHz

The emission from 9 kHz to 30MHz was pre-tested and found the result was 20dB lower than the limit, and according to 15.31(o) & RSS-Gen 6.13, the test result no need to reported.



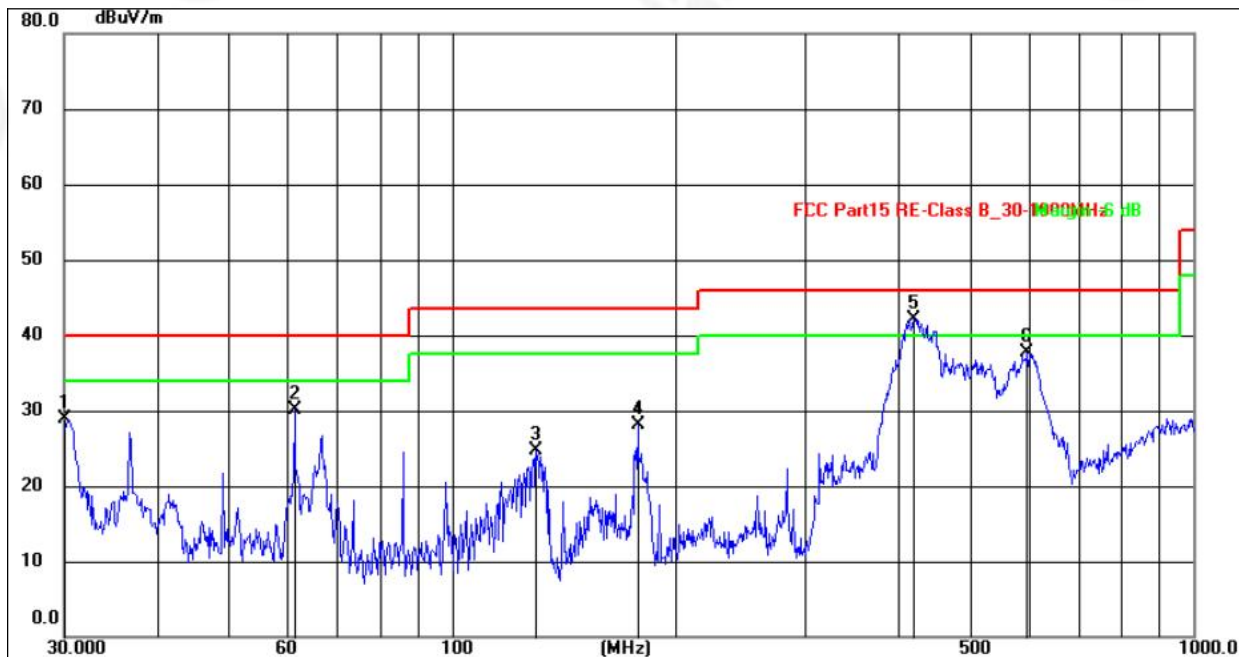
Between 30MHz – 1GHz

Temperature:	26℃	Relative Humidity:	54%
Pressure:	101 kPa	Polarization:	Horizontal
Test Voltage:	DC 9V	Test Channel :	5729MHz





Temperature:	26°C	Relative Humidity:	54%
Pressure:	101kPa	Polarization:	Vertical
Test Voltage:	DC 9V	Test Channel :	5729MHz



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	30.0000	47.28	-18.44	28.84	40.00	-11.16	QP
2	61.3463	48.51	-18.46	30.05	40.00	-9.95	QP
3	129.9225	45.86	-21.15	24.71	43.50	-18.79	QP
4	178.1327	47.94	-19.88	28.06	43.50	-15.44	QP
5	419.1081	56.56	-14.38	42.18	46.00	-3.82	QP
6	597.2234	45.53	-7.86	37.67	46.00	-8.33	QP

Remarks:

- 1.Final Level =Receiver Read level + Antenna Factor + Cable Loss – Preamplifier Factor
- 2.The emission levels of other frequencies are very lower than the limit and not show in test report.
- 3.The test data shows only the worst case 5729MHz.



1GHz~25GHz

Polar (H/V)	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Low Channel:5729MHz									
V	5729	80.41	30.64	5.26	24.22	79.25	114.00	-34.75	PK
V	5729	82.25	30.64	5.26	24.22	81.09	94.00	-12.91	AV
V	11454	53.58	30.55	5.77	24.66	53.46	74.00	-20.54	PK
V	11454	48.45	30.55	5.77	24.66	48.33	54.00	-5.67	AV
V	17181	47.02	30.33	6.32	24.55	47.56	74.00	-26.44	PK
V	17181	51.12	30.33	6.32	24.55	51.66	54.00	-2.34	AV
V	22908	48.33	30.85	7.45	24.69	49.62	74.00	-24.38	PK
V	22908	50.82	30.85	7.45	24.69	52.11	54.00	-1.89	AV
H	5729	84.76	30.64	5.26	24.22	83.60	114.00	-30.40	PK
H	5729	83.17	30.64	5.26	24.22	82.01	94.00	-11.99	AV
H	11454	51.87	30.55	5.77	24.66	51.75	74.00	-22.25	PK
H	11454	48.34	30.55	5.77	24.66	48.22	54.00	-5.78	AV
H	17181	51.39	30.33	6.32	24.55	51.93	74.00	-22.07	PK
H	17181	51.50	30.33	6.32	24.55	52.04	54.00	-1.96	AV
H	22908	51.50	30.85	7.45	24.69	52.79	74.00	-21.21	PK
H	22908	49.76	30.85	7.45	24.69	51.05	54.00	-2.95	AV



Polar (H/V)	Frequency	Meter Reading	Pre-ampli fier	Cable Loss	Antenna Factor	Emission Level	Limits	Margin	Detector Type
	(MHz)	(dBuV)	(dB)	(dB)	(dB)	(dBuV/m)	(dBuV/m)	(dB)	
Middle Channel:5787MHz									
V	5787	84.10	30.64	5.26	24.22	82.94	114.00	-31.06	PK
V	5787	81.31	30.64	5.26	24.22	80.15	94.00	-13.85	AV
V	11574	53.93	30.55	5.77	24.66	53.81	74.00	-20.19	PK
V	11574	49.82	30.55	5.77	24.66	49.70	54.00	-4.30	AV
V	17361	51.74	30.33	6.32	24.55	52.28	74.00	-21.72	PK
V	17361	49.22	30.33	6.32	24.55	49.76	54.00	-4.24	AV
V	23148	49.66	30.85	7.45	24.69	50.95	74.00	-23.05	PK
V	23148	48.05	30.85	7.45	24.69	49.34	54.00	-4.66	AV
H	5787	81.50	30.64	5.26	24.22	80.34	114.00	-33.66	PK
H	5787	82.10	30.64	5.26	24.22	80.94	94.00	-13.06	AV
H	11574	51.50	30.55	5.77	24.66	51.38	74.00	-22.62	PK
H	11574	51.58	30.55	5.77	24.66	51.46	54.00	-2.54	AV
H	17361	48.79	30.33	6.32	24.55	49.33	74.00	-24.67	PK
H	17361	48.39	30.33	6.32	24.55	48.93	54.00	-5.07	AV
H	23148	49.71	30.85	7.45	24.69	51.00	74.00	-23.00	PK
H	23148	47.84	30.85	7.45	24.69	49.13	54.00	-4.87	AV



Polar (H/V)	Frequency (MHz)	Meter Reading (dBuV)	Pre-ampli fier (dB)	Cable Loss (dB)	Antenna Factor (dB)	Emission Level (dBuV/m)	Limits (dBuV/m)	Margin (dB)	Detector Type
High Channel:5848MHz									
V	5848	81.16	30.64	5.26	24.22	80.00	114.00	-34.00	PK
V	5848	83.34	30.64	5.26	24.22	82.18	94.00	-11.82	AV
V	11696	52.22	30.55	5.77	24.66	52.10	74.00	-21.90	PK
V	11696	50.43	30.55	5.77	24.66	50.31	54.00	-3.69	AV
V	17544	51.86	30.33	6.32	24.55	52.40	74.00	-21.60	PK
V	17544	47.62	30.33	6.32	24.55	48.16	54.00	-5.84	AV
V	23392	50.73	30.85	7.45	24.69	52.02	74.00	-21.98	PK
V	23392	47.28	30.85	7.45	24.69	48.57	54.00	-5.43	AV
H	5848	84.77	30.64	5.26	24.22	83.61	114.00	-30.39	PK
H	5848	84.74	30.64	5.26	24.22	83.58	94.00	-10.42	AV
H	11696	52.83	30.55	5.77	24.66	52.71	74.00	-21.29	PK
H	11696	48.41	30.55	5.77	24.66	48.29	54.00	-5.71	AV
H	17544	49.72	30.33	6.32	24.55	50.26	74.00	-23.74	PK
H	17544	49.14	30.33	6.32	24.55	49.68	54.00	-4.32	AV
H	23392	48.89	30.85	7.45	24.69	50.18	74.00	-23.82	PK
H	23392	50.86	30.85	7.45	24.69	52.15	54.00	-1.85	AV

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.



5. RADIATED BAND EMISSION MEASUREMENT

5.1 Test Requirement:

Test Requirement:	FCC Part15 C Section 15.205 and 15.209				
Test Method:	ANSI C63.10: 2013				
Test Frequency Range:	All of the restrict bands were tested, only the worst band's (outside of 5725-5875 MHz) data was showed.				
Test site:	Measurement Distance: 3m				
Receiver setup:	Frequency	Detector	RBW	VBW	Value
	Above 1GHz	Peak	1MHz	3MHz	Peak
		Average	1MHz	3MHz	Average

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	5725MHz
Stop Frequency	5875MHz
RB / VB (emission in restricted band)	1 MHz / 3 MHz for Peak, 1 MHz / 3MHz for Average

5.2 TEST PROCEDURE

Above 1GHz test procedure as below:

- a. 1. The EUT was placed on the top of a rotating table 0.8meters above the ground at a 3 meter camber. The table was rotated 360 degrees to determine the position of the highest radiation.
- b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- c. 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.
- d. 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 and the rota table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. 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.
- g. Test the EUT in the lowest 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

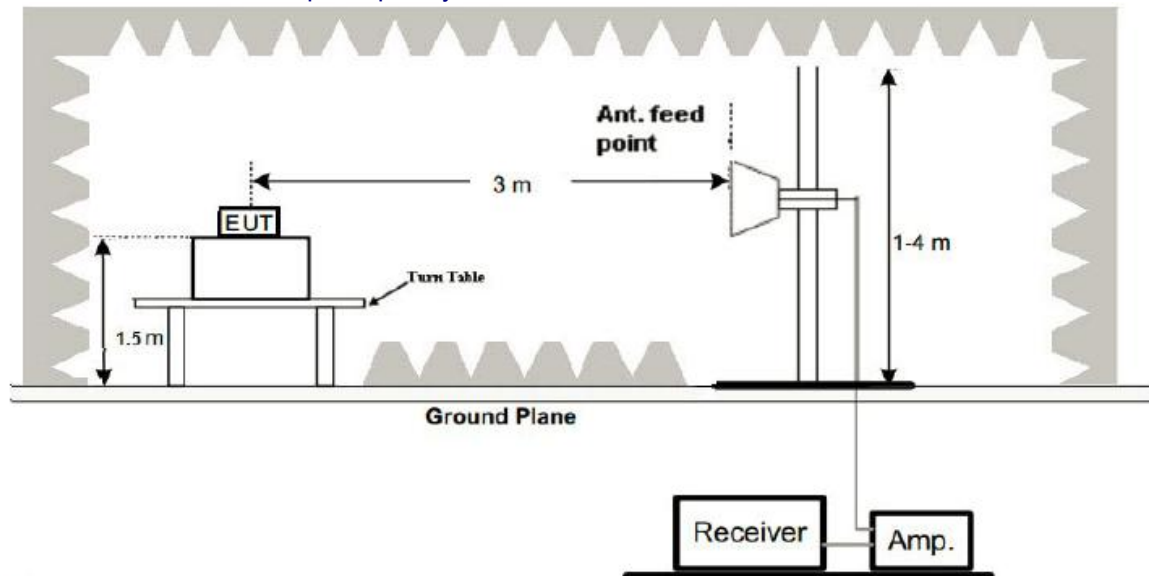


5.3 DEVIATION FROM TEST STANDARD

No deviation

5.4 TEST SETUP

Radiated Emission Test-Up Frequency Above 1GHz



5.5 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.



5.6 TEST RESULT

Temperature	26°C	Relative Humidity:	54%
Pressure	101kPa	Test Voltage	DC 9V
Test Mode	5729MHz	Polarization	Horizontal

Peak Value



Average Value



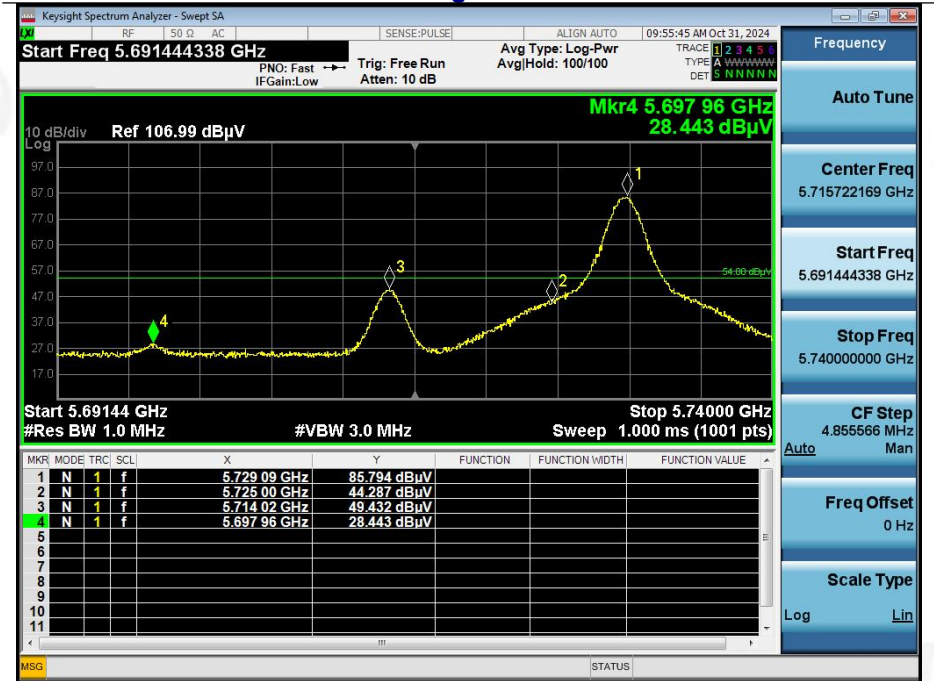


Temperature	26°C	Relative Humidity:	54%
Pressure	101kPa	Test Voltage	DC 9V
Test Mode	5729MHz	Polarization	Vertical

Peak Value



Average Value



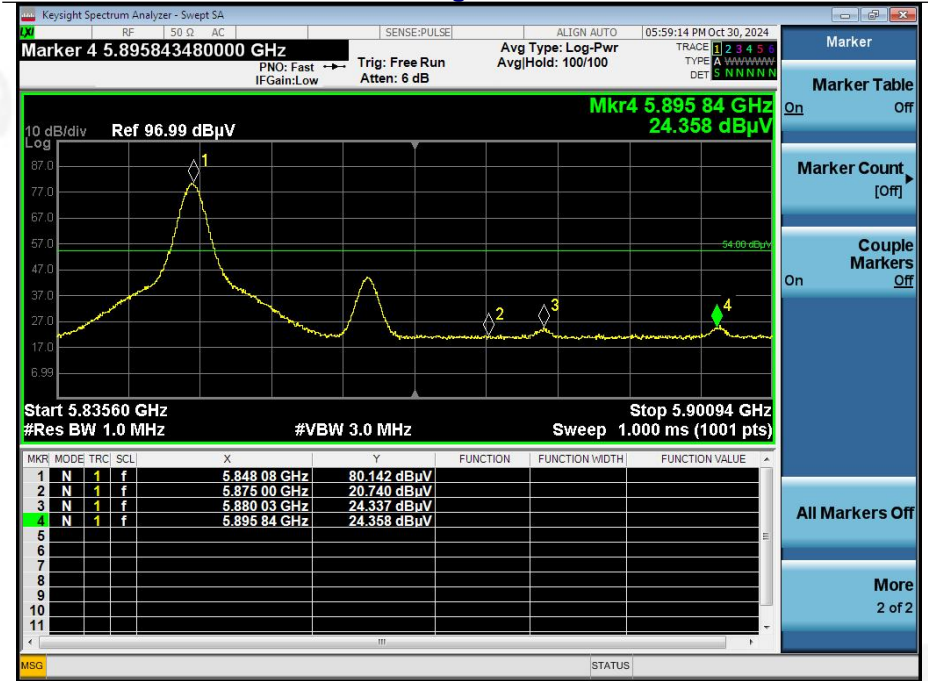


Temperature	26°C	Relative Humidity:	54%
Pressure	101kPa	Test Voltage	DC 9V
Test Mode	5848MHz	Polarization	Horizontal

Peak Value



Average Value



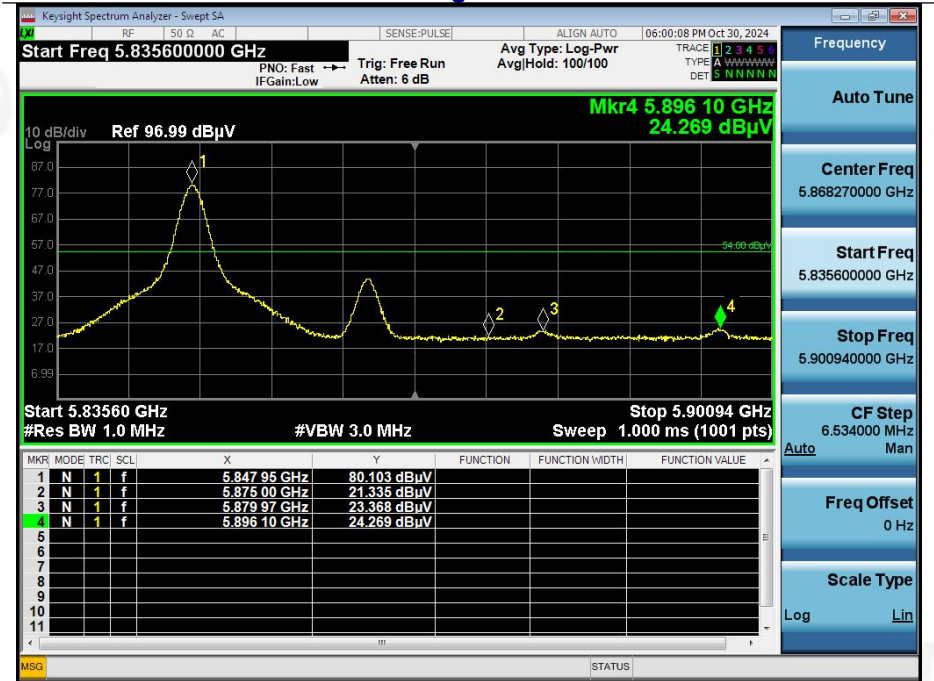


Temperature	21.8°C	Relative Humidity	58%
Pressure	101kPa	Test Voltage	DC 9V
Test Mode	5848MHz	Polarization	Vertical

Peak Value



Average Value

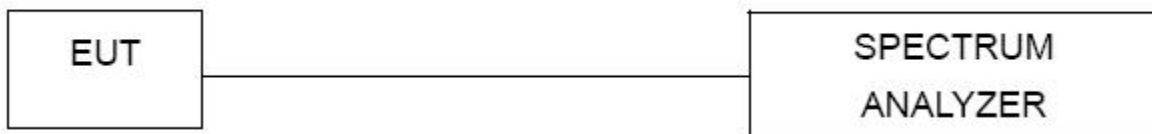




6. 20DB BANDWIDTH

Test Requirement:	FCC Part15 C Section 15.215
Test Method:	ANSI C63.10:2013

6.1 Test Setup



6.2 Limit

FCC Part15 (15.249) , Subpart C			
Section	Test Item	Frequency Range (MHz)	Result
15.249(c)	Bandwidth	5725-5875	PASS

6.3 Test procedure

1. Set resolution bandwidth (RBW) = 1~5% of 20dB BW
2. Set the video bandwidth (VBW) $\geq 3 \times$ 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 6 dB relative to the maximum level measured in the fundamental emission.

6.4 DEVIATION FROM STANDARD

No deviation.

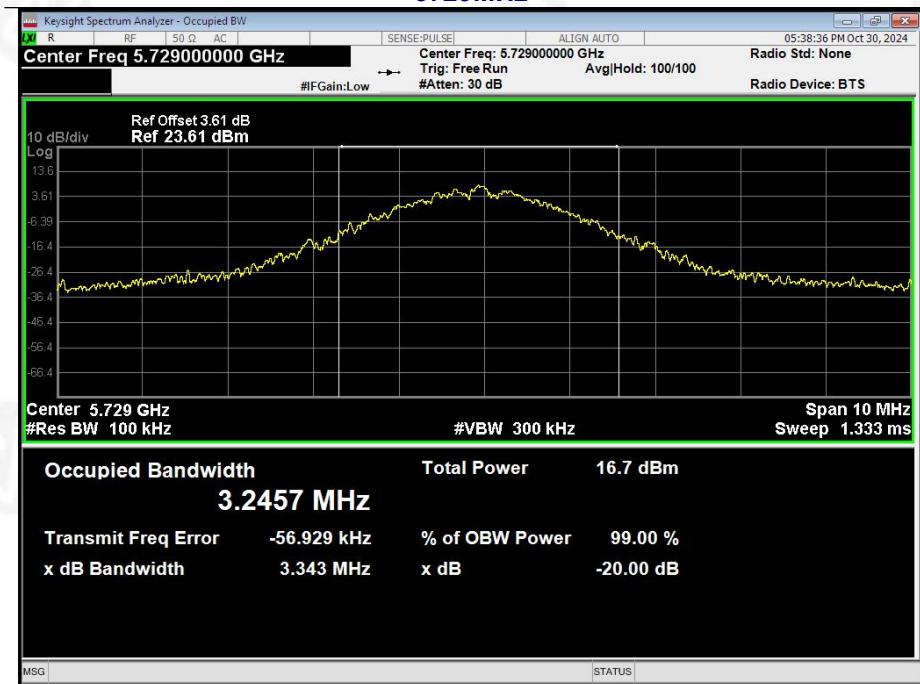
6.5 Test Result

Mode	Test channel	20dB Emission Bandwidth (MHz)	Result
FHSS	Lowest	3.343	Pass
	Middle	3.277	
	Highest	3.214	

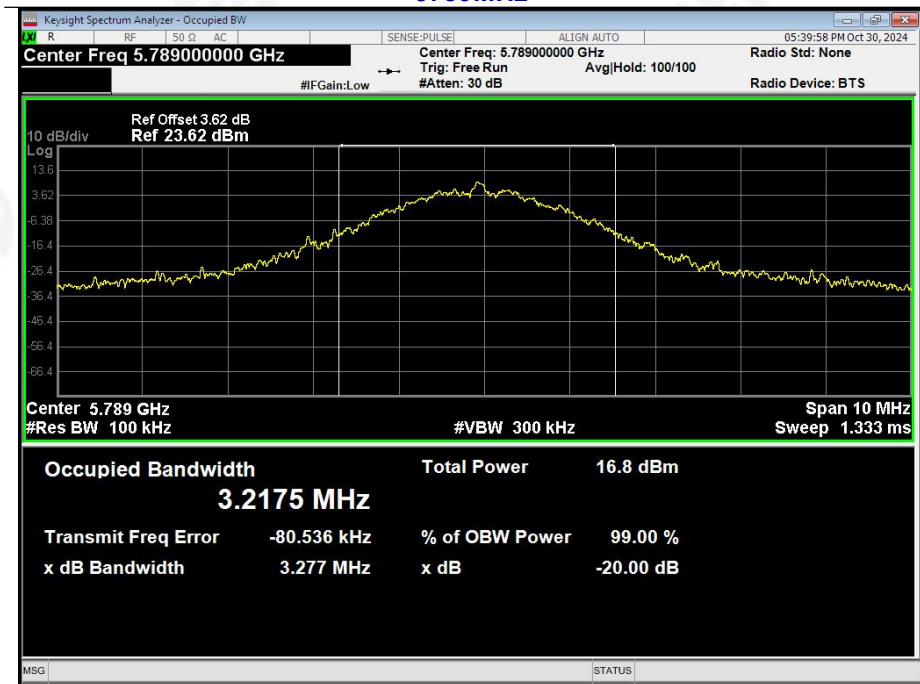


Test plots

5729MHz

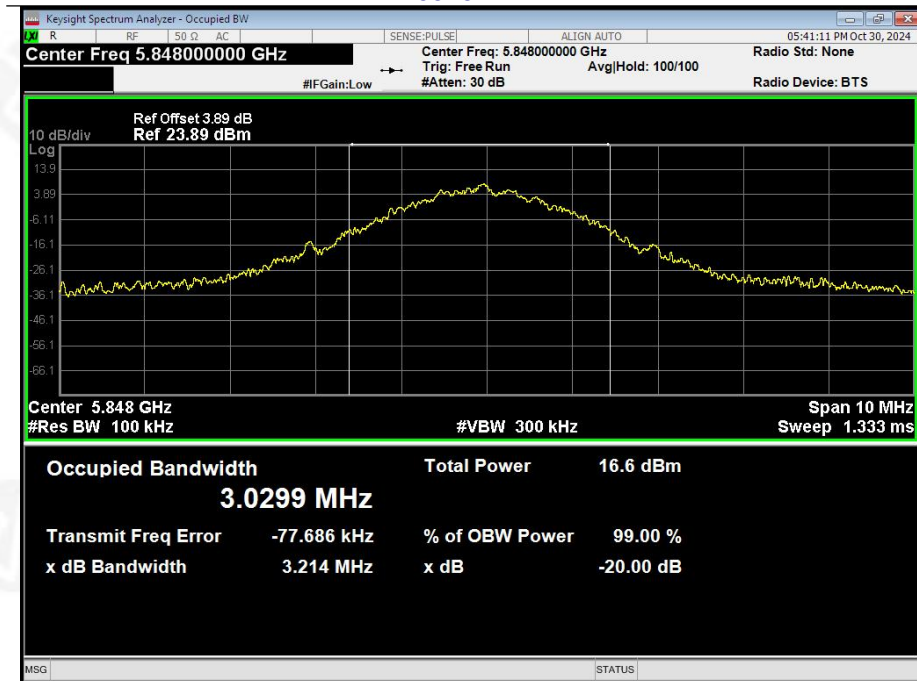


5789MHz





5848MHz





7. Antenna Requirement

Standard requirement:	FCC Part15 C Section 15.203
15.203 requirement: 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.	
EUT Antenna:	
The antenna is PCB Antenna, the best case gain of the antennas is 0.26dBi, reference to the appendix II for details	



8. Test Setup Photo

Reference to the appendix I for details.

9. EUT Constructional Details

Reference to the appendix II for details.

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