TEST REPORT

Report No.:	BCTC2606560842-2E
Applicant:	SHENZHEN MINEWSEMI CO., LTD
Product Name:	LoRa Module
Test Model:	ME25LS01
Tested Date:	2026-06-08 to 2026-06-25
Issued Date:	2026-07-10

Shenzhen BCTC Technology Co., Ltd.

FCC ID: 2BDJ6-ME25LS01

Product Name:	LoRa Module
Trademark:	MINEWSEMI
Model/Type Ref.:	ME25LS01,ME25LS0
Prepared For:	SHENZHEN MINEWSEMI CO., LTD
Address:	Room 402,Building C,Business Center, Gangzhilong Science Park,No. 8 QingLong Road, Qinghua Community,Longhua District, Shenzhen China
Manufacturer:	SHENZHEN MINEWSEMI CO., LTD
Address:	Room 402,Building C,Business Center, Gangzhilong Science Park,No. 8 QingLong Road, Qinghua Community,Longhua District, Shenzhen China
Prepared By:	Shenzhen BCTC Technology Co., Ltd.
Address:	Room 101M, Unit 1, Building1, Pengyuan, No.18, Lilang Road, Shanglilang, Nanwan Subdistrict, Longgang District, Shenzhen, Guangdong, China.
Sample Received Date:	2026-06-08
Sample tested Date:	2026-06-08 to 2026-06-25
Report No.:	BCTC2606560842-2E
Test Standards:	47 CFR Part 15 Subpart C (clause 15.247) ANSI C63.10-2020
Test Results:	PASS
Remark:	This is Bluetooth BLE radio test report.

Prepared by :	Reviewer by :	Approved by:
Mike Zheng	Louis Zeng	Sewen Guo

The test report is effective only with both signature and specialized stamp.This result(s) shown in this report refer only to the sample(s) tested. Without written approval of Shenzhen BCTC Technology Co., Ltd, this report can't be reproduced except in full.The tested sample(s) and the sample information are provided by the client.

Table of Content

1. Version

Report No.	Issue Date	Description	Approved
BCTC2606560842-2E	2026-07-10	Original	Valid

2. Test Summary

The Product has been tested according to the following specifications:

No.	Test Parameter	Clause No.	Results
1	Conducted Emission	15.207	PASS*
2	6dB Bandwidth	15.247 (a)(2)	PASS*
3	Peak Output Power	15.247 (b)	PASS*
4	Radiated Spurious Emission	15.247 (d), 15.205	PASS*
5	Power Spectral Density	15.247 (e)	PASS*
6	Restricted Band of Operation	15.205	PASS*
7	Band Edge (Out of Band Emissions)	15.247(d)	PASS*
8	Antenna Requirement	15.203	PASS

NOTE1: N/A (Not Applicable)
NOTE2: According to FCC OET KDB 558074, the report use radiated measurements in the restricted frequency bands. In addition, the radiated test is also performed to ensure the emissions emanating from the device cabinet also comply with the applicable limits.
Note 3: "*" indicates that the test results are determined base on 47 CFR Part 15 Subpart C (clause 15.247). And the test results are took into account measurement uncertainty(see section 3 for measurement uncertainty information)

3. Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the Product as specified in CISPR 16-4-2:2011/AMD2:2018. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

No.	Item	Uncertainty
1	3m chamber Radiated spurious emission(9kHz-30MHz)	U=3.7dB
2	3m chamber Radiated spurious emission(30MHz-1GHz)	U=4.8dB
3	3m chamber Radiated spurious emission(1GHz-18GHz)	U=5.5dB
4	3m chamber Radiated spurious emission(18GHz-40GHz)	U=5.0dB
5	Conducted Emission(150kHz-30MHz)	U=3.0dB
6	Power Spectral Density	U=3.46dB
7	Peak Power	U=0.31dB
8	Occupied Bandwidth/Frequency Range	U=3.46%
9	Conducted output power uncertainty	U=0.55dB
10	Frequency Error	U= 53.50 Hz
11	Frequency Drift	U=0.64 KHz
12	Temperature	U= 0.59 ℃
13	Humidity	U= 5.3 %

4. Product Information And Test Setup

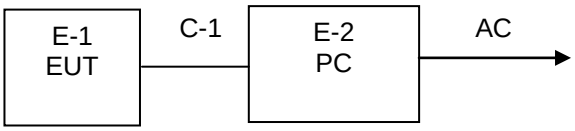
4.1 Product Information

Model/Type reference:	ME25LS01,ME25LS0
Model differences:	The following models of units we produce are identical in electrical, mechanical and physical structure; The difference is only in the model name, we finally have ME25LS01 as test model.
Bluetooth Version::	N/A
Hardware Version:	N/A
Software Version:	N/A
Operation Frequency:	903.125-924.125MHz
Type of Modulation:	LoRa
Number Of Channel:	22channel
Antenna installation:	Glue stick antenna
Antenna Gain:	2.73dBi
	Remark: ☒The antenna gain of the product comes from the antenna report provided by the customer, and the test data is affected by the customer information. Antenna gain information is provided by the client and the laboratory is not responsible for its authenticity ☐The antenna gain of the product is provided by the customer, and the test data is affected by the customer information. Antenna gain information is provided by the client and the laboratory is not responsible for its authenticity
Power Rating	DC 3.3V

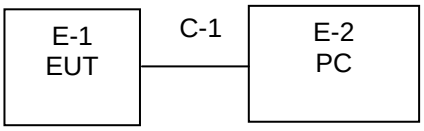
4.2 Test Setup Configuration

See test photographs attached in eut test setup photographs for the actual connections between product and support equipment.

Conducted Emission:



Radiated Spurious Emission:



4.3 Support Equipment

No.	Device Type	Brand	Model	Series No.	Note
E-1	LoRa Module	N/A	ME25LS01	N/A	EUT
E-2	PC	N/A	N/A	N/A	auxiliary

Item	Shielded Type	Ferrite Core	Length	Note
C-1	Serial port board	N/A	N/A	auxiliary

Notes:
1. All the equipment/cables were placed in the worst-case configuration to maximize the emission during the test.
2. Grounding was established in accordance with the manufacturer's requirements and conditions for the intended use.

4.4 Channel List

Channel List					
Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
00	903.125	08	911.125	16	919.125
01	904.125	09	912.125	17	920.125
02	905.125	10	913.125	18	921.125
03	906.125	11	914.125	19	922.125
04	907.125	12	915.125	20	923.125
05	908.125	13	916.125	21	924.125
06	909.125	14	917.125		
07	910.125	15	918.125		

4.5 Test Mode

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.

For All Mode	Description	Modulation Type
Mode 1	CH00	LoRa
Mode 2	CH11	
Mode 3	CH21	
Mode 4	Transmit mode (Conducted emission & Radiated emission)	

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

4.6 Table Of Parameters Of Text 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 firmware of the final end product power parameters

RF Function	Mode Or Modulation type	Power Class	Software For Testing
LoRa	LoRa	20	SSCOM V5.13.1

5. Test Facility And Test Instrument Used

5.1 Test Facility

All measurement facilities used to collect the measurement data are located at
Shenzhen BCTC Technology Co., Ltd.
Address: Room 101M, Unit 1, Building1, Pengyuan, No.18, Lilang Road, Shanglilang, Nanwan Subdistrict, Longgang District, Shenzhen, Guangdong, China.
The site and apparatus are constructed in conformance with the requirements of ANSI C63.4a-2017 and CISPR 16-1-1:2019 other equivalent standards.
FCC Test Firm Registration Number: 754702
ANAB certificate registration number is: CN3479

5.2 Test Instrument Used

Conducted emissions Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Receiver	R&S	ESCI	101421	2025.08.30	2026.08.29
AMN	SCHWHRZBECK	NSLK8128	05152	2026.01.22	2027.01.21
AMN	SCHWHRZBECK	NSLK8127	8127739	2025.09.16	2026.09.15
Pulse Limiter	SCHWHRZBECK	VTSD 9561-F-N	00547	2025.08.30	2026.08.29
Temperature & Humidity	Wetest	HTC-1	/	2025.09.01	2026.08.31
Software	EZ-EMC	Ver.EMC-CON 3A1	/	/	/

Radiated disturbance 1#					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Shielded room	CRT	9*6*6	/	2023.08.02	2026.08.01
Broadband antenna	Schwarzbeck	VULB9160	3369	2026.05.16	2027.05.15
Receiver	R&S	ESPI	101396	2025.08.30	2026.08.29
Preamplifier	Schwarzbeck	BBV9744	00342	2025.08.30	2026.08.29
Loop Antenna	Schwarzbeck	FMZB1519B	00014	2026.01.05	2027.01.04
RF cable 5# (9kHz-6GHz)	Yunyi	3M	/	2025.08.30	2026.08.29
RF cable 8# (9kHz-1GHz)	Yunyi	7M	/	2025.10.28	2026.10.27

Temperature & Humidity	Wetest	HTC-1	/	2025.09.01	2026.08.31
Software	EZ-EMC	Ver.FA-03A2	/	/	/

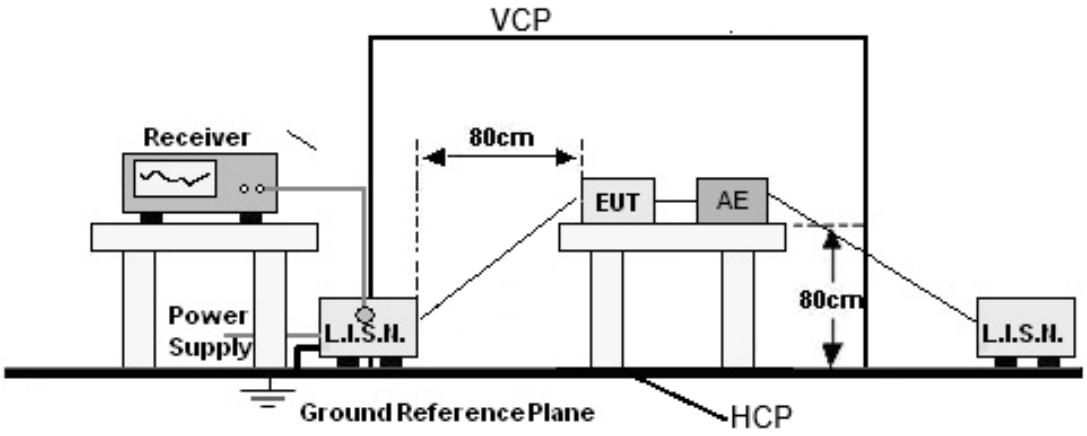
Radiated disturbance 2#					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Shielded room	ChengYu	9*6*6	/	2023.09.25	2026.09.24
Loop Antenna	Schwarzbeck	FMZB1519B	00014	2026.01.05	2027.01.04
Broadband antenna	SCHWHRZBECK	VULB9168	01620	2025.08.29	2026.08.28
Horn antenna(1 GHz -18GHz)	SCHWARZBECK	BBHA 9120 D	2792	2025.08.29	2026.08.28
Horn antenna (18 GHz -40GHz)	SCHWARZBECK	BBHA9170	00822	2025.12.29	2026.12.28
Receiver	R&S	ESR	1316	2025.08.30	2026.08.29
Spectrum Analyzer	R&S	FSV40	101328	2026.01.22	2027.01.21
Amplifier	SCHWHRZBECK	BBV9744	568	2025.08.30	2026.08.29
Amplifier	EMC INSTRUMENTS CORPORATION	EMC0518A45SEE	EMT-SZ2233	2025.08.30	2026.08.29
Amplifier (18GHz-40GHz)	MITEQ	TTA1840-35-HG	2034381	2026.05.09	2027.05.08
RF cable 3# (9kHz-6GHz)	Yunyi	10M	/	2025.08.30	2026.08.29
RF cable 9# (9kHz-1GHz)	Yunyi	2M	/	2025.10.28	2026.10.27
RF cable 5# (1GHz -18GHz)	SKET	9M	18038626	2025.08.30	2026.08.29
RF cable 6# (1GHz -18GHz)	SKET	5M	#10	2025.09.05	2026.09.04
RF cable 10# (18GHz-40GHz)	/	2M	2M	2026.05.09	2027.05.08
RF cable 11# (18GHz-40GHz)	/	2.5M	2.5M	2026.05.09	2027.05.08
Temperature & Humidity	Wetest	HTC-1	/	2025.09.05	2026.09.04
Software	EZ-EMC	Ver.FA-03A2	/	/	/

RF Conducted Test					
Equipment	**Manufacturer**	**Model#**	**Serial#**	**Last Cal.**	**Next Cal.**
Spectrum Analyzer	Keysight	N9020A	MY51287403	2025.08.30	2026.08.29
Signal Generator	Keysight	N5182A	MY50144088	2025.08.30	2026.08.29
Power Sensor	Keysight	U2001	MY51250006	2025.10.28	2026.10.27

Temperature & Humidity	Wetest	HTC-1	/	2025.09.01	2026.08.31
Communication test set	R&S	CMW500	157483	2025.08.30	2026.08.29
Radio frequency control box	MWRFtest	MW100-RFCB	\	\	\
Software	MWRFtest	MTS 8310	V 3.0.0.0	\	\
D.C. Power Supply	Elektro-Automatik GmbH & Co.KG	D-41747 Viersen	6230316	2025.09.30	2026.08.29
Temperature and humidity test chamber	Auchno	OJN-9606-408L	19120183	2025.07.09	2026.07.08

6. Conducted Emissions

6.1 Block Diagram Of Test Setup



6.2 Limit

Frequency (MHz)	Limit (dBuV)	
	Quas-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00
Notes: 1. *Decreasing linearly with logarithm of frequency. 2. The lower limit shall apply at the transition frequencies.		

6.3 Test procedure

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

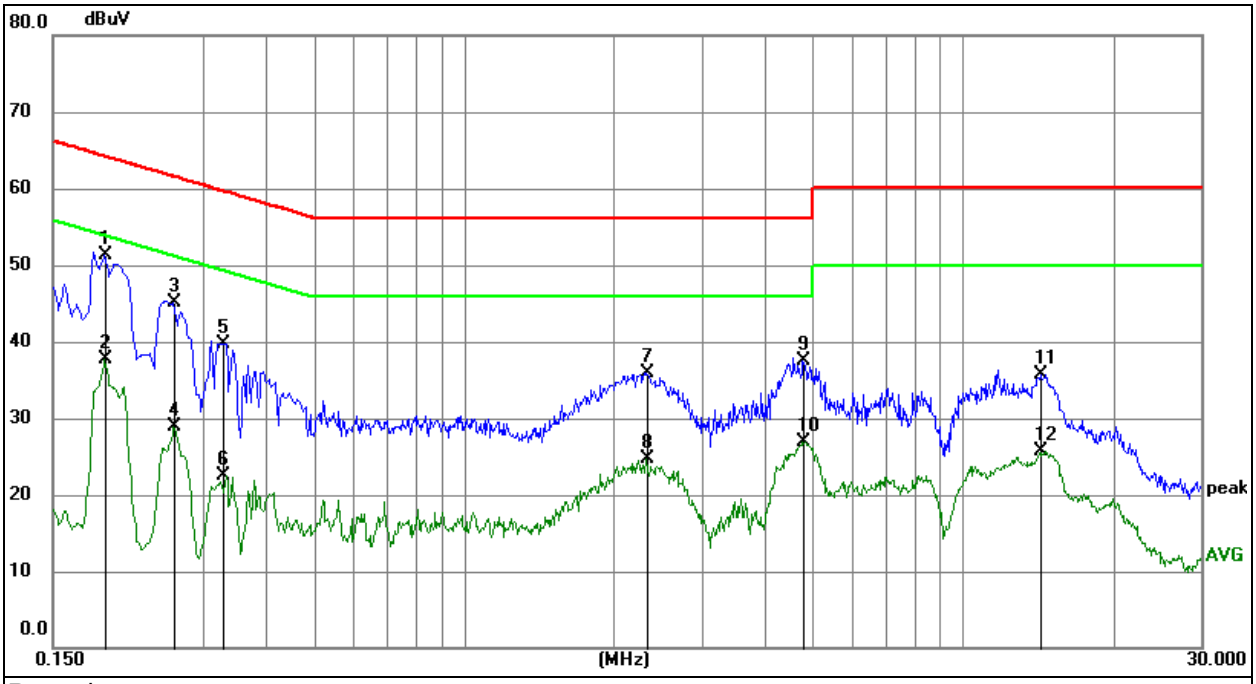
a. The Product was placed on a nonconductive table 0.8 m above the horizontal ground reference plane, and 0.4 m from the vertical ground reference plane, and connected to the main through Line Impedance Stability Network (L.I.S.N).
b. The RBW of the receiver was set at 9 kHz in 150 kHz ~ 30MHz with Peak and AVG detector in Max Hold mode. Run the receiver's pre-scan to record the maximum disturbance generated from Product in all power lines in the full band.
c. For each frequency whose maximum record was higher or close to limit, measure its QP and AVG values and record.

6.4 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.

6.5 Test Result

Temperature:	21.7 ℃	Relative Humidity:	53%
Pressure:	101KPa	Phase :	L
Test Mode:	Mode 4	Test Voltage :	AC 120V/60Hz

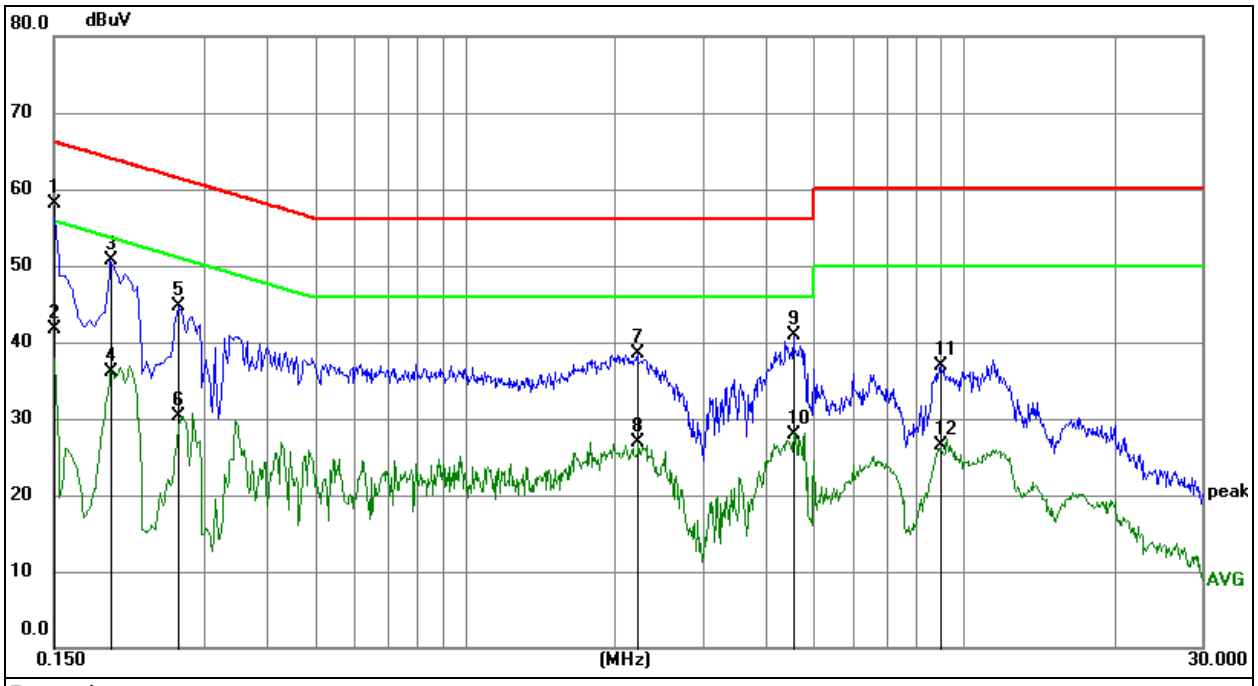


Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = LISN factor + Cable Loss+ Limiter (10dB).
3. Margin = (Reading+ Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1 *	0.1905	40.81	10.50	51.31	64.01	-12.70	QP
2	0.1905	27.14	10.50	37.64	54.01	-16.37	AVG
3	0.2625	34.61	10.51	45.12	61.35	-16.23	QP
4	0.2625	18.47	10.51	28.98	51.35	-22.37	AVG
5	0.3303	29.22	10.51	39.73	59.44	-19.71	QP
6	0.3303	12.03	10.51	22.54	49.44	-26.90	AVG
7	2.3235	25.33	10.55	35.88	56.00	-20.12	QP
8	2.3235	14.09	10.55	24.64	46.00	-21.36	AVG
9	4.7895	26.81	10.75	37.56	56.00	-18.44	QP
10	4.7895	16.10	10.75	26.85	46.00	-19.15	AVG
11	14.3475	24.27	11.42	35.69	60.00	-24.31	QP
12	14.3475	14.26	11.42	25.68	50.00	-24.32	AVG

* Indicates the worst data.

Temperature:	21.7 ℃	Relative Humidity:	53%
Pressure:	101KPa	Phase :	N
Test Mode:	Mode 4	Test Voltage :	AC 120V/60Hz



Remark:
1. All readings are Quasi-Peak and Average values.
2. Factor = LISN factor + Cable Loss+ Limiter (10dB).
3. Margin = (Reading+ Factor)–Limit

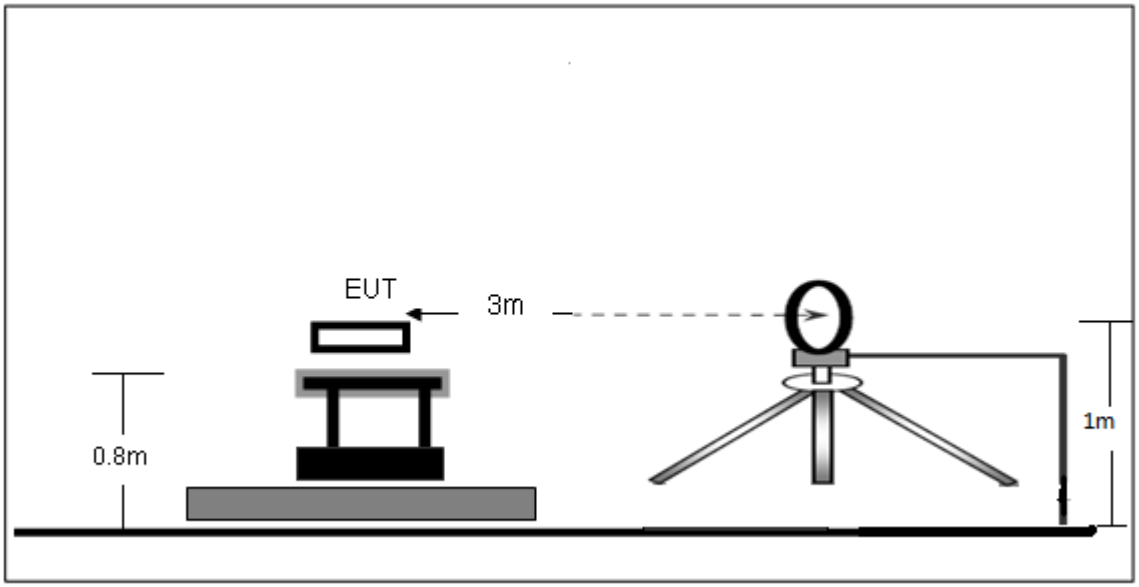
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector
1 *	0.1500	47.59	10.61	58.20	66.00	-7.80	QP
2	0.1500	31.12	10.61	41.73	56.00	-14.27	AVG
3	0.1949	40.18	10.51	50.69	63.83	-13.14	QP
4	0.1949	25.64	10.51	36.15	53.83	-17.68	AVG
5	0.2670	34.10	10.51	44.61	61.21	-16.60	QP
6	0.2670	19.70	10.51	30.21	51.21	-21.00	AVG
7	2.2244	27.90	10.55	38.45	56.00	-17.55	QP
8	2.2244	16.30	10.55	26.85	46.00	-19.15	AVG
9	4.5645	30.19	10.73	40.92	56.00	-15.08	QP
10	4.5645	17.27	10.73	28.00	46.00	-18.00	AVG
11	8.9745	25.79	11.07	36.86	60.00	-23.14	QP
12	8.9745	15.39	11.07	26.46	50.00	-23.54	AVG

* Indicates the worst data.

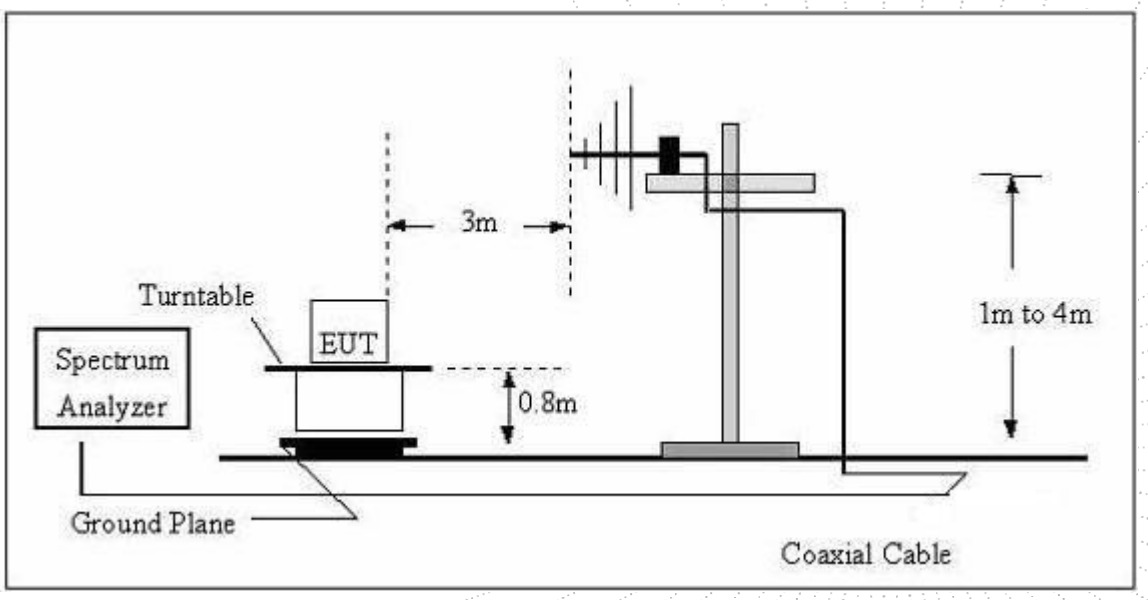
7. Radiated Emissions

7.1 Block Diagram Of Test Setup

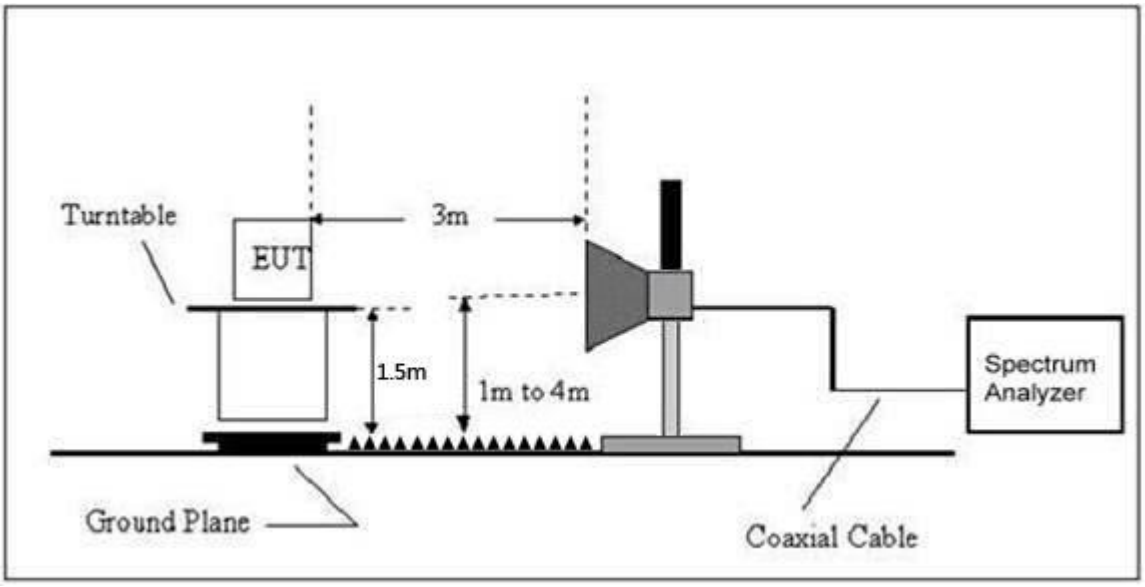
（A）Radiated Emission Test-Up Frequency Below 30MHz



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



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



7.2 Limit

20dBc in any 100 kHz bandwidth outside the operating frequency band. 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.

Frequency	Field Strength	Distance	Field Strength Limit at 3m Distance	
(MHz)	uV/m	(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	$20\log^{(500)}$

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).

(a) For an intentional radiator the spectrum shall be investigated from the lowest radio frequency signal generated in the device, without going below 9 kHz, up to at least the frequency shown in this paragraph:

(1) If the intentional radiator operates below 10 GHz: to the tenth harmonic of the highest fundamental frequency or to 40 GHz, whichever is lower.

(2) If the intentional radiator operates at or above 10 GHz and below 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 100 GHz, whichever is lower.

(3) If the intentional radiator operates at or above 30 GHz: to the fifth harmonic of the highest fundamental frequency or to 200 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.

(4) If the intentional radiator operates at or above 95 GHz: To the third harmonic of the highest fundamental frequency or to 750 GHz, whichever is lower, unless specified otherwise elsewhere in the rules.

(5) If the intentional radiator contains a digital device, regardless of whether this digital device controls the functions of the intentional radiator or the digital device is used for additional control or function purposes other than to enable the operation of the intentional radiator, the frequency range shall be investigated up to the range specified in paragraphs (a) (1)through (4) of this section or the range applicable to the digital device, as shown in paragraph (b)(1) of this section, whichever is the higher frequency range of investigation.

7.3 Test procedure

Receiver Parameter	Setting
Attenuation	Auto
9kHz~150kHz	RBW 200Hz for QP
150kHz~30MHz	RBW 9kHz for QP
30MHz~1000MHz	RBW 120kHz for QP

Spectrum Parameter	Setting
1-25GHz	RBW 1 MHz /VBW 1 MHz for Peak, RBW 1 MHz / VBW 10Hz for Average

Below 1GHz test procedure as below:
a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic 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 (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.
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.
Above 1GHz test procedure as below:
a.The EUT was placed on the top of a rotating table 1.5 meters 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 middlest 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.

7.4 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.

7.5 Test Result

Below 30MHz

Temperature:	24.6 ℃	Relative Humidity:	51%
Pressure:	101KPa	Test Voltage :	DC 3.3V
Test Mode:	Mode 4		

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

Note:

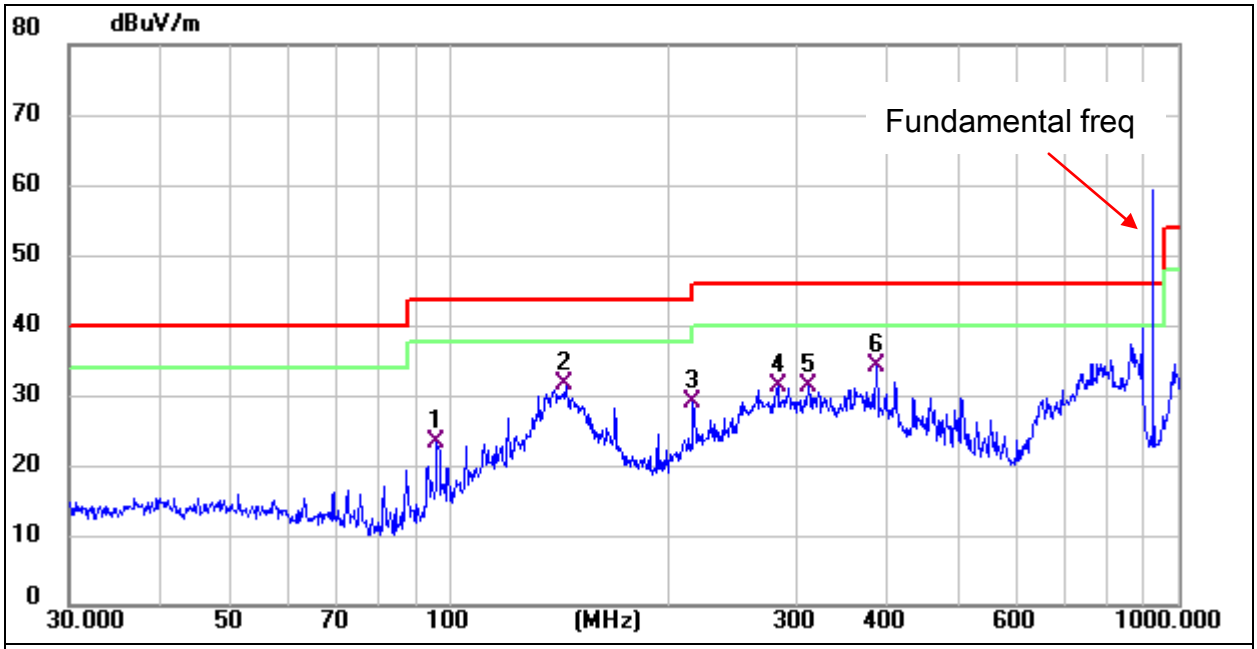
The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

Distance extrapolation factor =40 log (specific distance/test distance)(dB);

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

Between 30MHz – 1GHz

Temperature:	24.6 ℃	Relative Humidity:	51%
Pressure:	101KPa	Phase :	Horizontal
Test Mode:	Mode 4	Test Voltage :	DC 3.3V

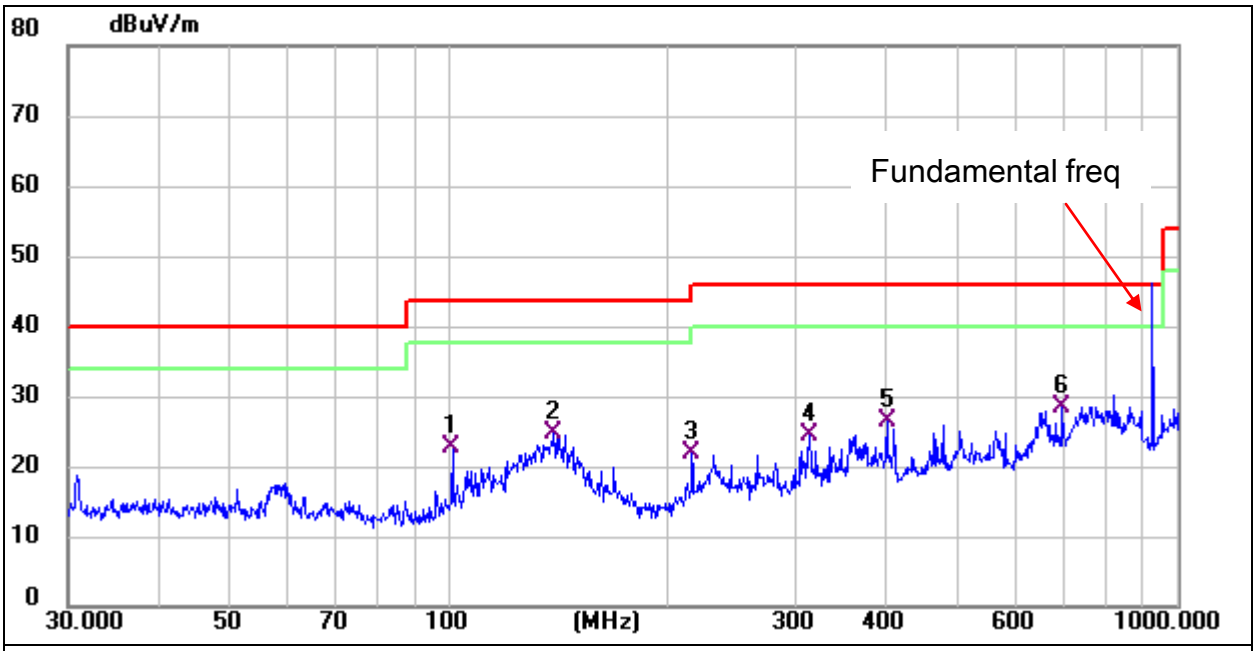


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	96.0088	37.94	-14.57	23.37	43.50	-20.13	QP
2	143.9641	42.23	-10.61	31.62	43.50	-11.88	QP
3	215.9987	41.96	-12.93	29.03	43.50	-14.47	QP
4	281.5006	42.59	-11.39	31.20	46.00	-14.80	QP
5	311.0139	41.93	-10.53	31.40	46.00	-14.60	QP
6 *	385.2805	42.91	-8.76	34.15	46.00	-11.85	QP

* Indicates the worst data.

Temperature:	24.6 ℃	Relative Humidity:	51%
Pressure:	101KPa	Phase :	Vertical
Test Mode:	Mode 4	Test Voltage :	DC 3.3V



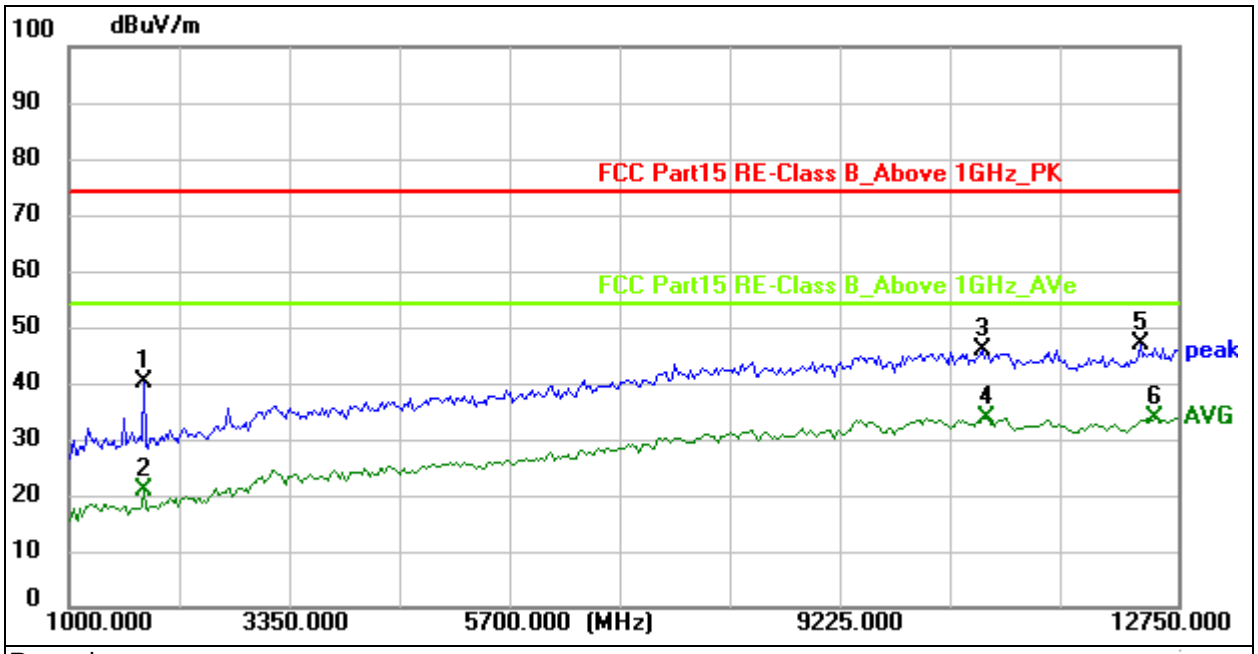
Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	101.2175	36.53	-13.78	22.75	43.50	-20.75	QP
2	139.1172	35.04	-10.43	24.61	43.50	-18.89	QP
3	215.9987	34.83	-12.93	21.90	43.50	-21.60	QP
4	312.1429	35.16	-10.62	24.54	46.00	-21.46	QP
5	399.3100	35.21	-8.77	26.44	46.00	-19.56	QP
6 *	695.3108	31.02	-2.50	28.52	46.00	-17.48	QP

* Indicates the worst data.

Between 1GHz – 12.75GHz

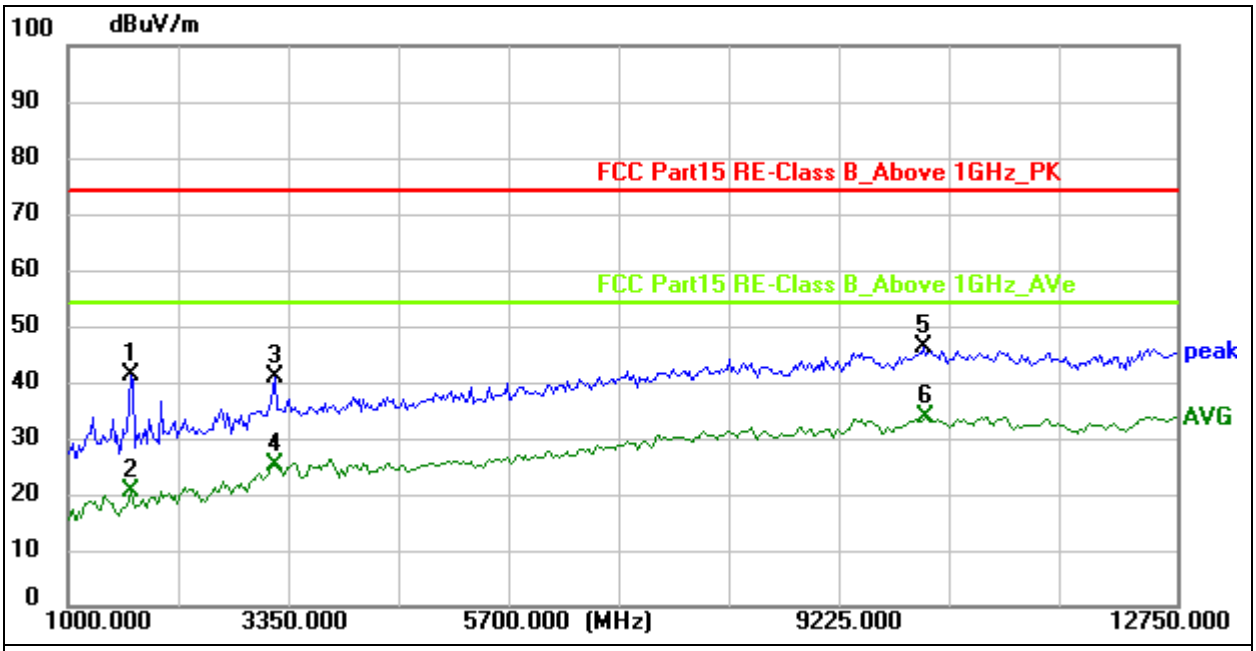
Temperature:	24.6 ℃	Relative Humidity:	51%
Pressure:	101KPa	Phase :	Horizontal
Test Mode:	Mode 1	Test Voltage :	DC 3.3V



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1799.0000	59.77	-19.57	40.20	74.00	-33.80	peak
2	1799.0000	40.35	-19.57	20.78	54.00	-33.22	AVG
3	10682.0000	45.63	0.10	45.73	74.00	-28.27	peak
4 *	10729.0000	33.69	0.00	33.69	54.00	-20.31	AVG
5	12350.5000	46.01	0.83	46.84	74.00	-27.16	peak
6	12515.0000	32.90	0.79	33.69	54.00	-20.31	AVG

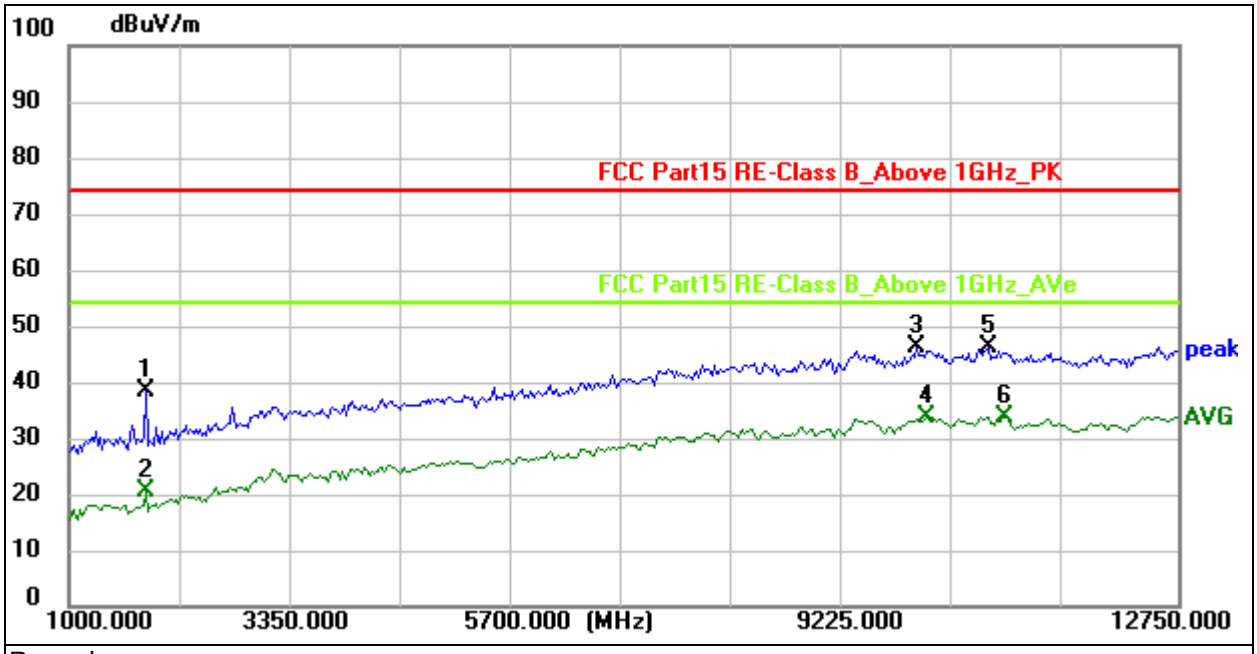
Temperature:	24.6 ℃	Relative Humidity:	51%
Pressure:	101KPa	Phase :	Vertical
Test Mode:	Mode 1	Test Voltage :	DC 3.3V



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1658.0000	62.17	-20.80	41.37	74.00	-32.63	peak
2	1658.0000	41.39	-20.80	20.59	54.00	-33.41	AVG
3	3185.5000	54.48	-13.43	41.05	74.00	-32.95	peak
4	3185.5000	38.63	-13.43	25.20	54.00	-28.80	AVG
5	10071.0000	46.49	-0.25	46.24	74.00	-27.76	peak
6 *	10094.5000	33.71	-0.11	33.60	54.00	-20.40	AVG

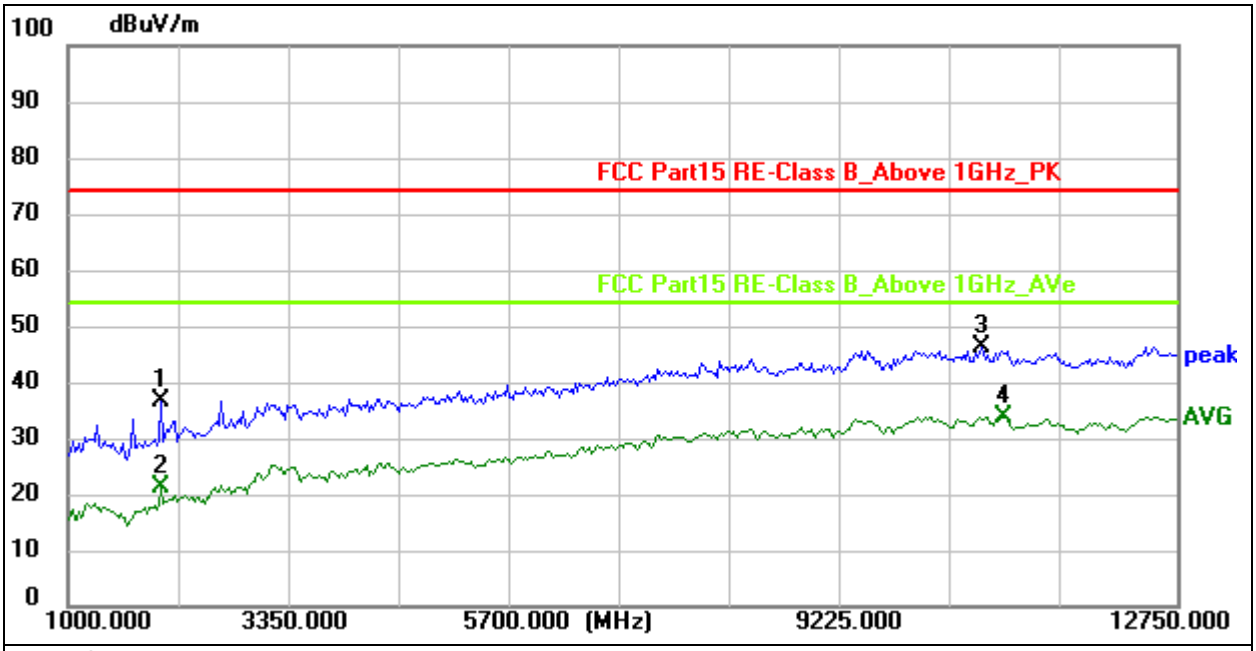
Temperature:	24.6 ℃	Relative Humidity:	51%
Pressure:	101KPa	Phase :	Horizontal
Test Mode:	Mode 2	Test Voltage :	DC 3.3V



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1822.5000	58.09	-19.86	38.23	74.00	-35.77	peak
2	1822.5000	40.33	-19.86	20.47	54.00	-33.53	AVG
3	9977.0000	46.80	-0.58	46.22	74.00	-27.78	peak
4	10094.5000	33.77	-0.11	33.66	54.00	-20.34	AVG
5	10752.5000	46.24	-0.10	46.14	74.00	-27.86	peak
6 *	10917.0000	34.21	-0.40	33.81	54.00	-20.19	AVG

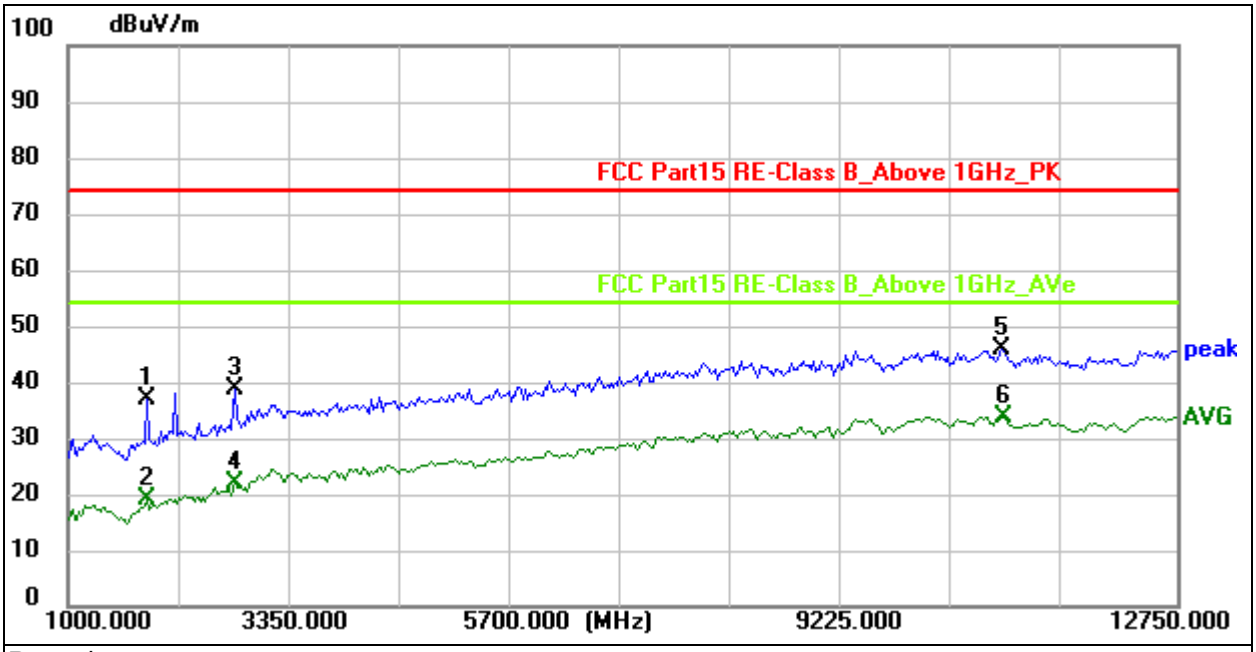
Temperature:	24.6 ℃	Relative Humidity:	51%
Pressure:	101KPa	Phase :	Vertical
Test Mode:	Mode 2	Test Voltage :	DC 3.3V



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1987.0000	55.78	-19.07	36.71	74.00	-37.29	peak
2	1987.0000	40.32	-19.07	21.25	54.00	-32.75	AVG
3	10682.0000	46.05	0.10	46.15	74.00	-27.85	peak
4 *	10917.0000	34.20	-0.40	33.80	54.00	-20.20	AVG

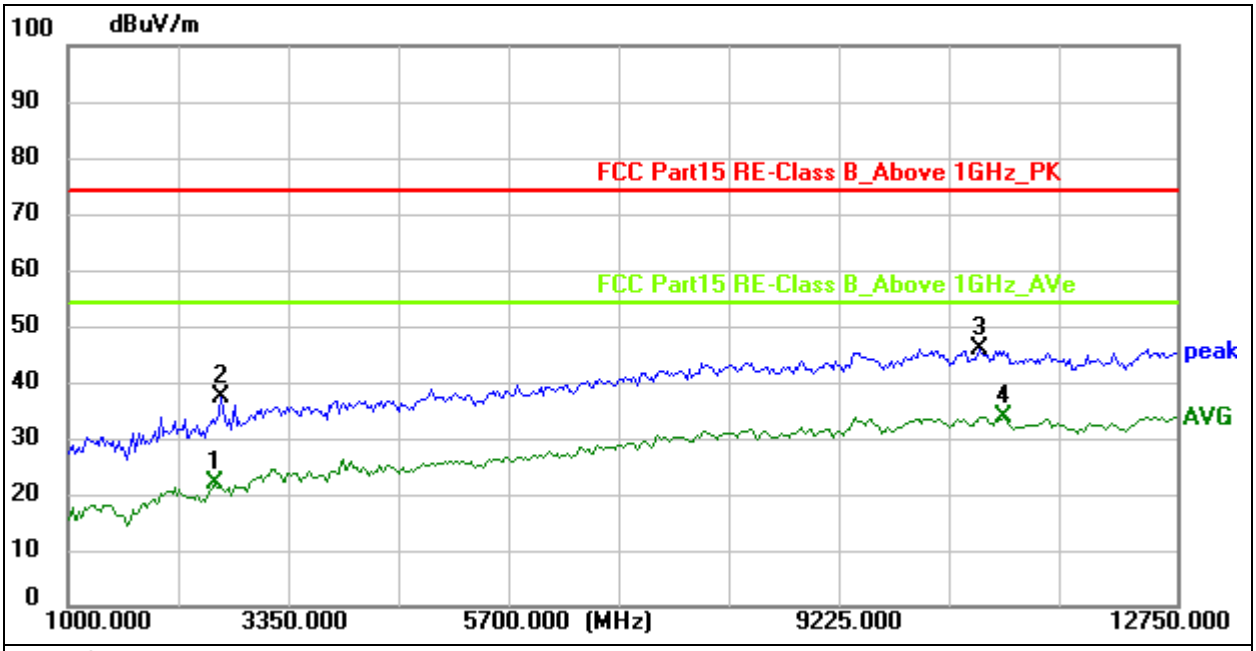
Temperature:	24.6 ℃	Relative Humidity:	51%
Pressure:	101KPa	Phase :	Horizontal
Test Mode:	Mode 3	Test Voltage :	DC 3.3V



Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	1846.0000	57.05	-20.17	36.88	74.00	-37.12	peak
2	1846.0000	39.43	-20.17	19.26	54.00	-34.74	AVG
3	2762.5000	54.12	-15.44	38.68	74.00	-35.32	peak
4	2762.5000	37.58	-15.44	22.14	54.00	-31.86	AVG
5	10893.5000	46.16	-0.39	45.77	74.00	-28.23	peak
6 *	10917.0000	34.31	-0.40	33.91	54.00	-20.09	AVG

Temperature:	24.6 ℃	Relative Humidity:	51%
Pressure:	101KPa	Phase :	Vertical
Test Mode:	Mode 3	Test Voltage :	DC 3.3V

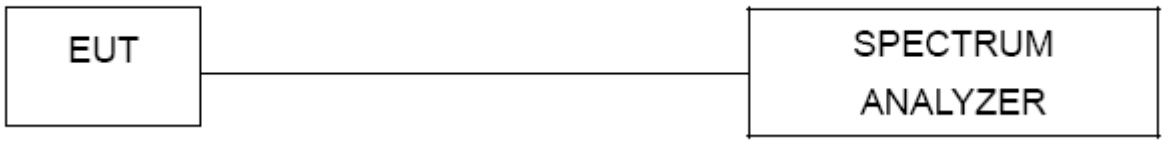


Remark:
Factor = Antenna Factor + Cable Loss – Pre-amplifier.
Margin = (Reading + Factor)–Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	2551.0000	37.93	-15.88	22.05	54.00	-31.95	AVG
2	2621.5000	53.32	-16.10	37.22	74.00	-36.78	peak
3	10658.5000	45.81	0.04	45.85	74.00	-28.15	peak
4 *	10917.0000	34.31	-0.40	33.91	54.00	-20.09	AVG

8. Power Spectral Density Test

8.1 Block Diagram Of Test Setup



8.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	Test Item	Limit	Frequency Range (MHz)	Result
15.247	Power Spectral Density	8 dBm (in any 3KHz)	902-928	PASS

Limits Of Radiated Emission Measurement (Above 1000MHz)

8.3 Test procedure

1. Set analyzer center frequency to DTS channel center frequency.
2. Set the span to 1.5 times the DTS bandwidth.
3. Set the RBW to: 3 kHz
4. Set the VBW ≥ 3 x RBW.
5. Detector = peak.
6. Sweep time = auto couple.
7. Trace mode = max hold.
8. Allow trace to fully stabilize.
9. Use the peak marker function to determine the maximum amplitude level within the RBW.
10. If measured value exceeds limit, reduce RBW (no less than 3 kHz) and repeat.

8.4 EUT Operating Conditions

The EUT tested system was configured as the statements of 4.6 Unless otherwise a special operating condition is specified in the follows during the testing.
Note: Power Spectral Density(dBm)=Reading+Cable Loss

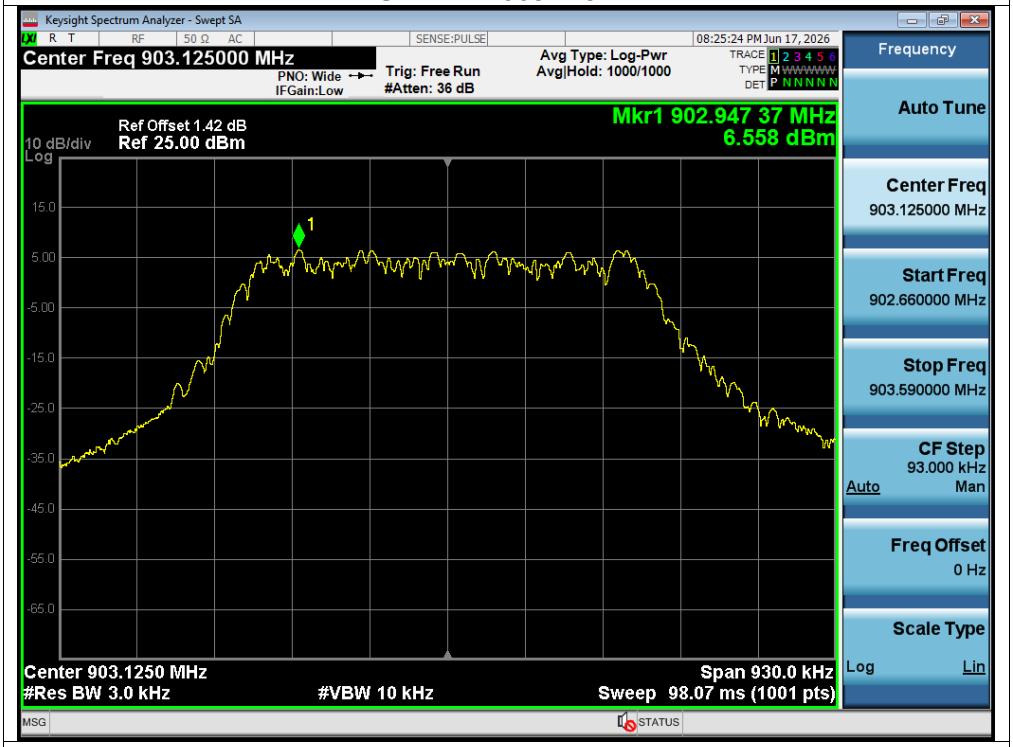
8.5 Test Result

Temperature:	21.4 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	DC 3.3V

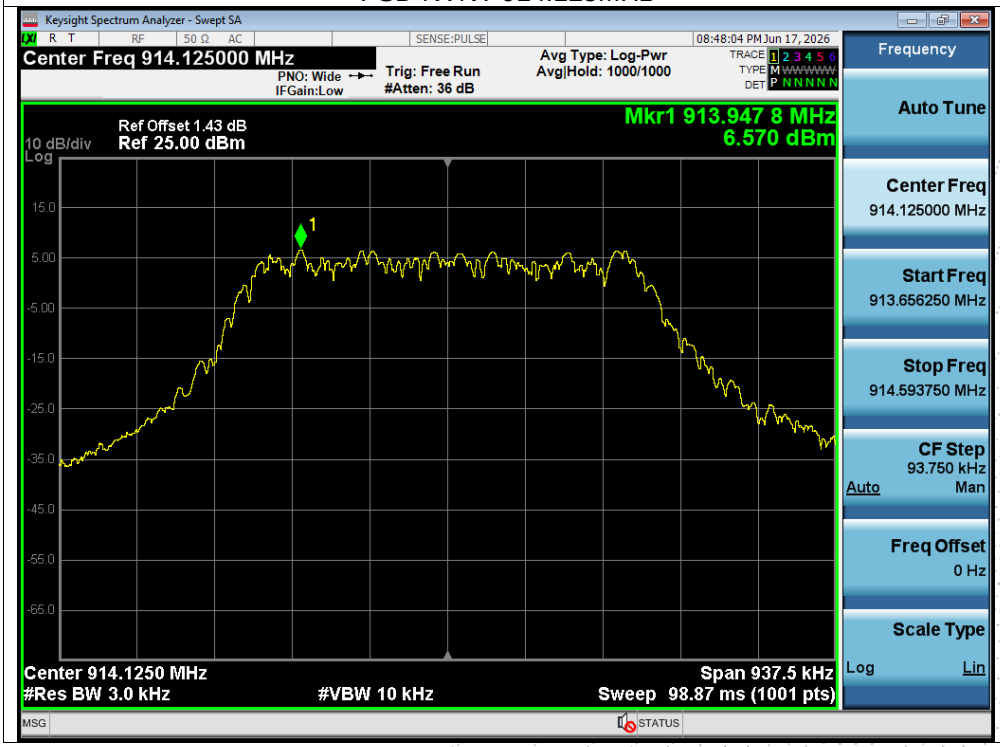
Frequency	Power Spectral Density(dBm/3kHz)	Limit (dBm/3kHz)	Result
903.125 MHz	6.56	8	PASS
914.125 MHz	6.57	8	PASS
924.125 MHz	6.61	8	PASS

Test Graphs

PSD NVNT 903.125MHz



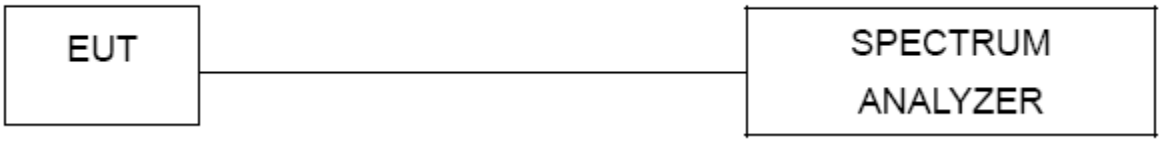
PSD NVNT 914.125MHz



PSD NVNT 924.125MHz

9. Bandwidth Test

9.1 Block Diagram Of Test Setup



9.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	**Test Item**	**Limit**	**Frequency Range (MHz)**	**Result**
15.247(a)(2)	Bandwidth	>= 500KHz (-6dB bandwidth)	902-928	PASS

9.3 Test procedure

1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 x 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.

9.4 EUT operating Conditions

The EUT tested system was configured as the statements of 4.6 Unless otherwise a special operating condition is specified in the follows during the testing.
Note: Power Spectral Density(dBm)=Reading+Cable Loss

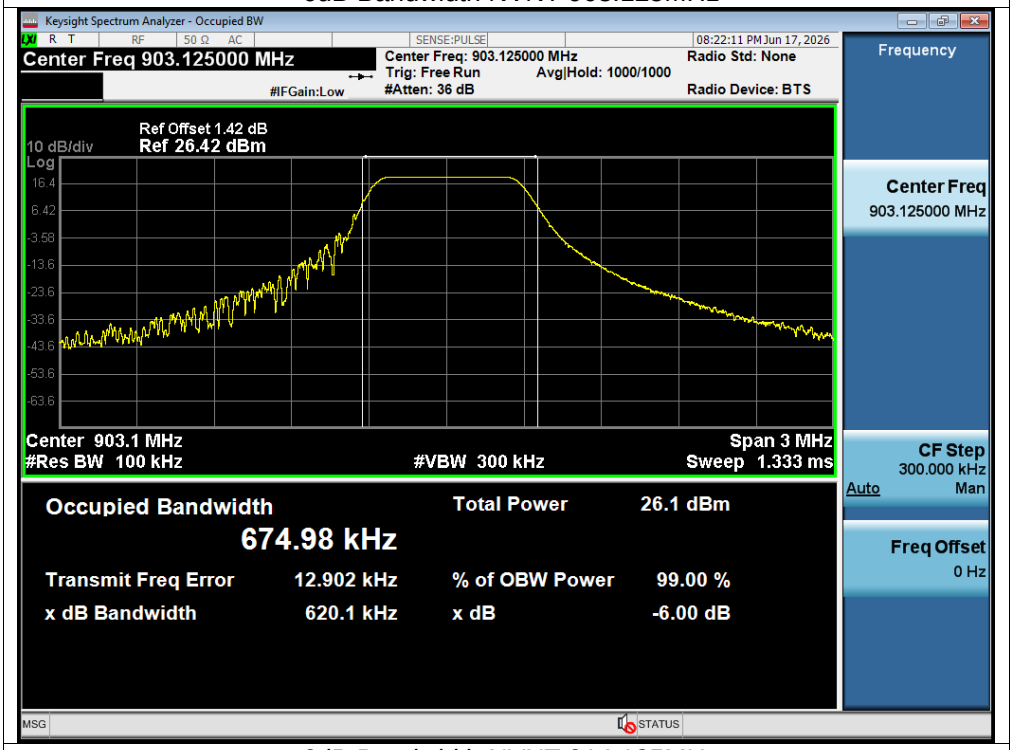
9.5 Test Result

Temperature:	21.4 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	DC 3.3V

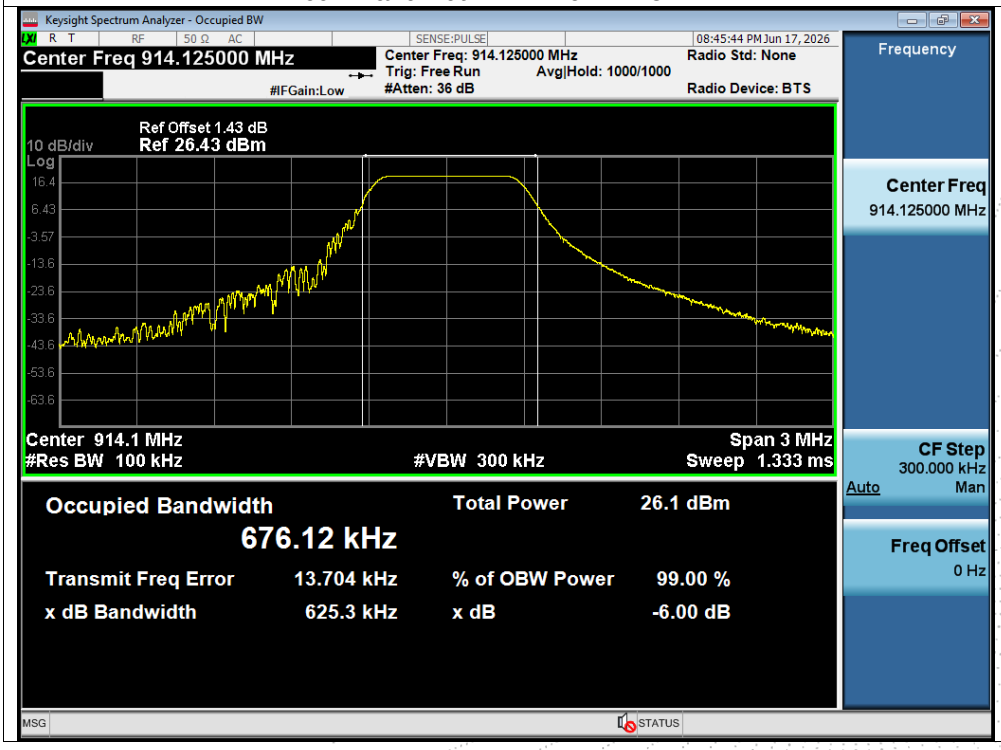
Frequency (MHz)	-6dB bandwidth (MHz)	Limit (MHz)	Result
903.125 MHz	0.620	0.5	Pass
914.125 MHz	0.625	0.5	Pass
924.125 MHz	0.623	0.5	Pass

Test Graphs

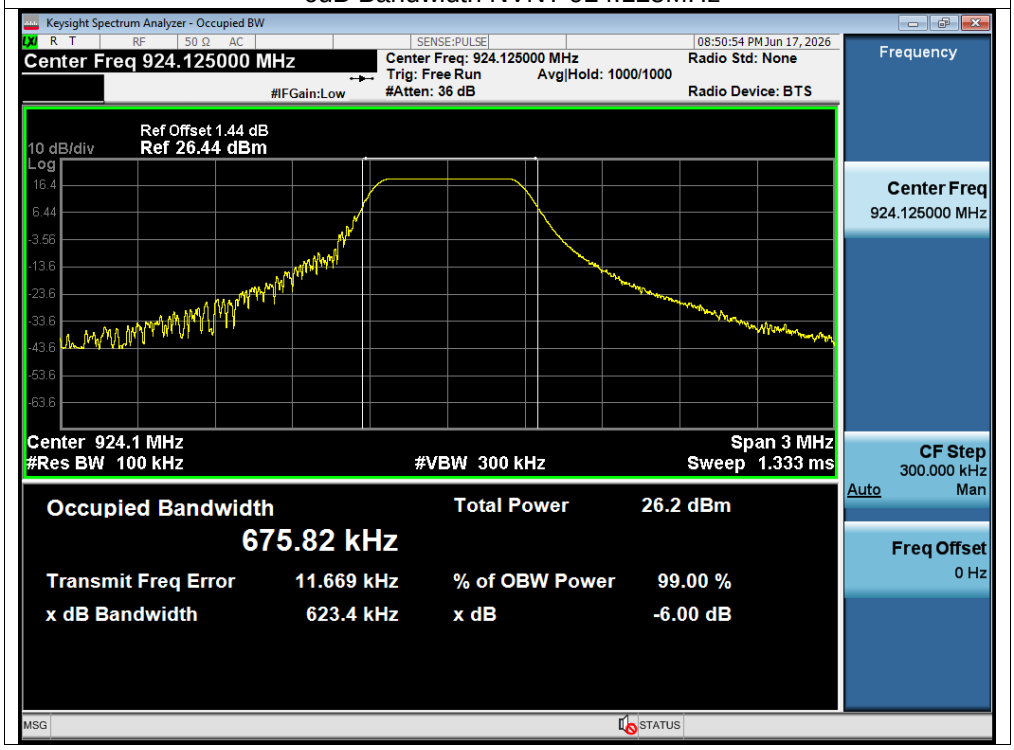
-6dB Bandwidth NVNT 903.125MHz



-6dB Bandwidth NVNT 914.125MHz

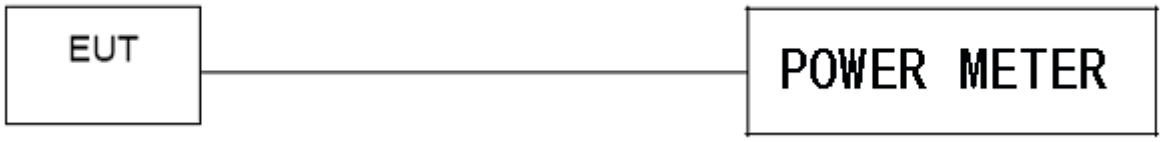


-6dB Bandwidth NVNT 924.125MHz



10. Peak Output Power Test

10.1 Block Diagram Of Test Setup



10.2 Limit

FCC Part15 (15.247) , Subpart C				
Section	**Test Item**	**Limit**	**Frequency Range (MHz)**	**Result**
15.247(b)(3)	Peak Output Power	1 watt or 30dBm	902-928	PASS

10.3 Test Procedure

a. The EUT was directly connected to the Power meter

10.4 EUT Operating Conditions

The EUT tested system was configured as the statements of 4.6 Unless otherwise a special operating condition is specified in the follows during the testing.
Note: Power Spectral Density(dBm)=Reading+Cable Loss

10.5 Test Result

Temperature:	21.4 ℃	Relative Humidity:	54%
Pressure:	101KPa	Test Voltage :	DC 3.3V

	Frequency(MHz)	Maximum Conducted Output Power(PK) (dBm)	Conducted Output Power Limit(dBm)
LoRa	903.125	18.69	30
	914.125	18.69	30
	924.125	18.74	30

11. 100 kHz Bandwidth Of Frequency Band Edge

11.1 Block Diagram Of Test Setup

11.2 Limit

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum 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 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement.

11.3 Test procedure

Using the following spectrum analyzer setting:
a) Set the RBW = 100KHz.
b) Set the VBW = 300KHz.
c) Sweep time = auto couple.
d) Detector function = peak.
e) Trace mode = max hold.
f) Allow trace to fully stabilize.

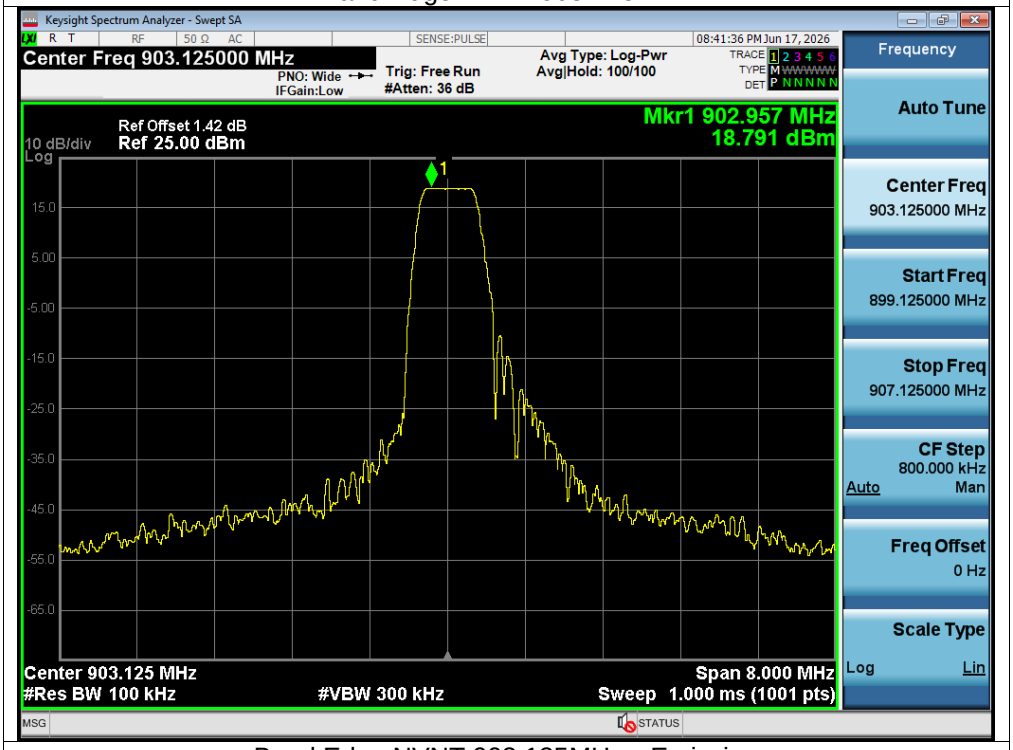
11.4 EUT operating Conditions

The EUT tested system was configured as the statements of 4.6 Unless otherwise a special operating condition is specified in the follows during the testing.
Note: Power Spectral Density(dBm)=Reading+Cable Loss

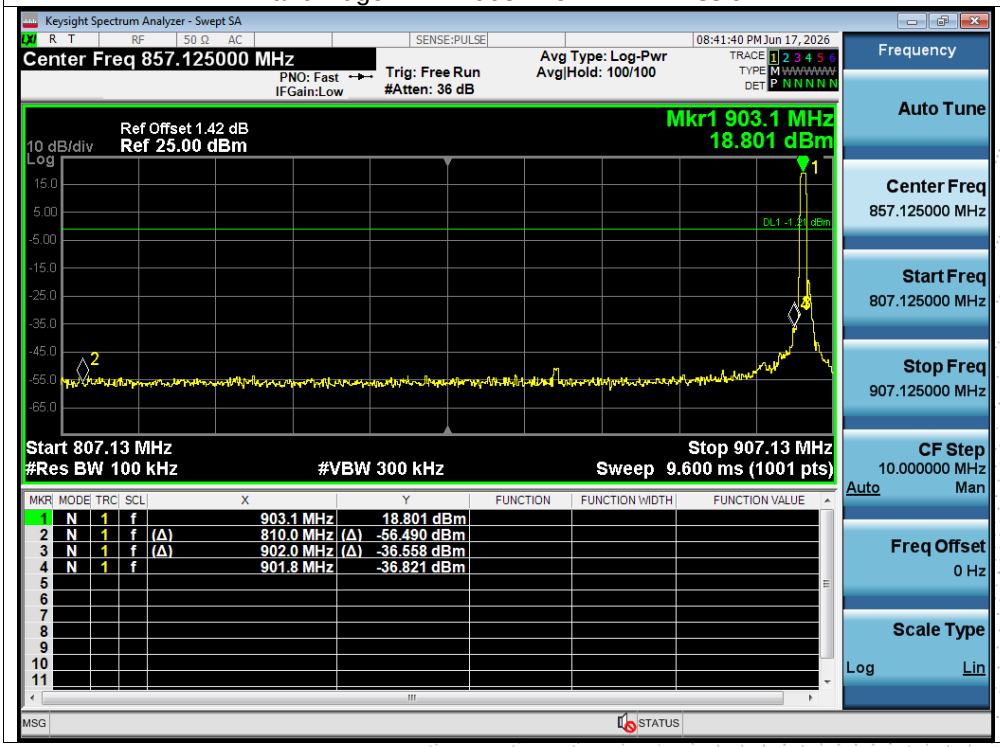
11.5 Test Result

Test Graphs

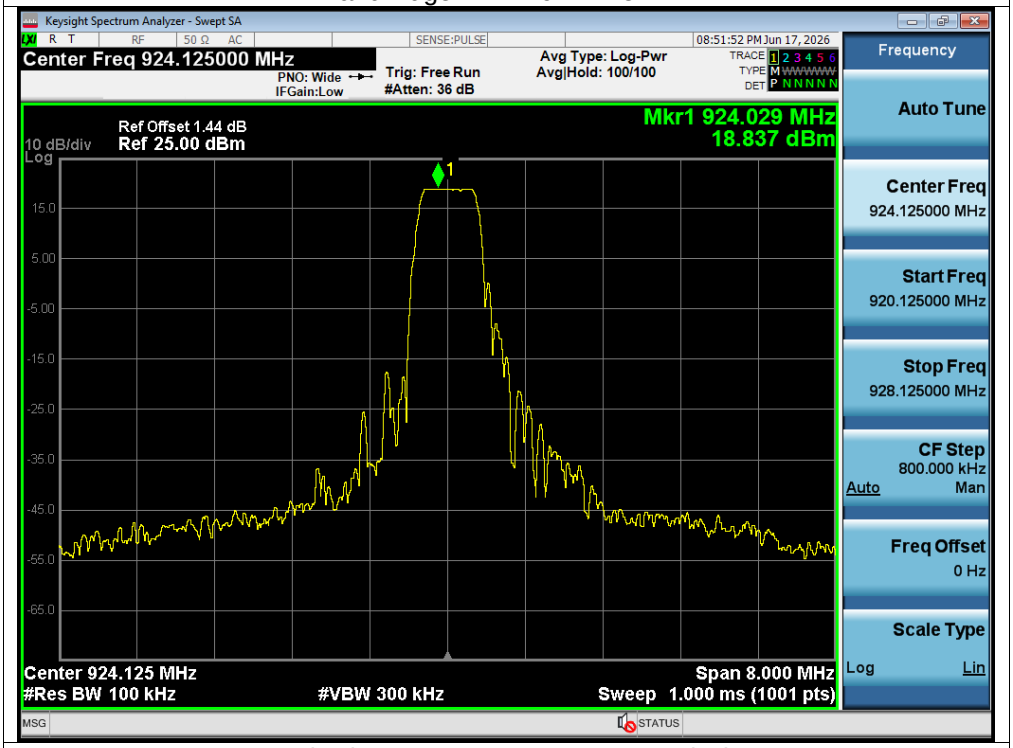
Band Edge NVNT 903.125MHz



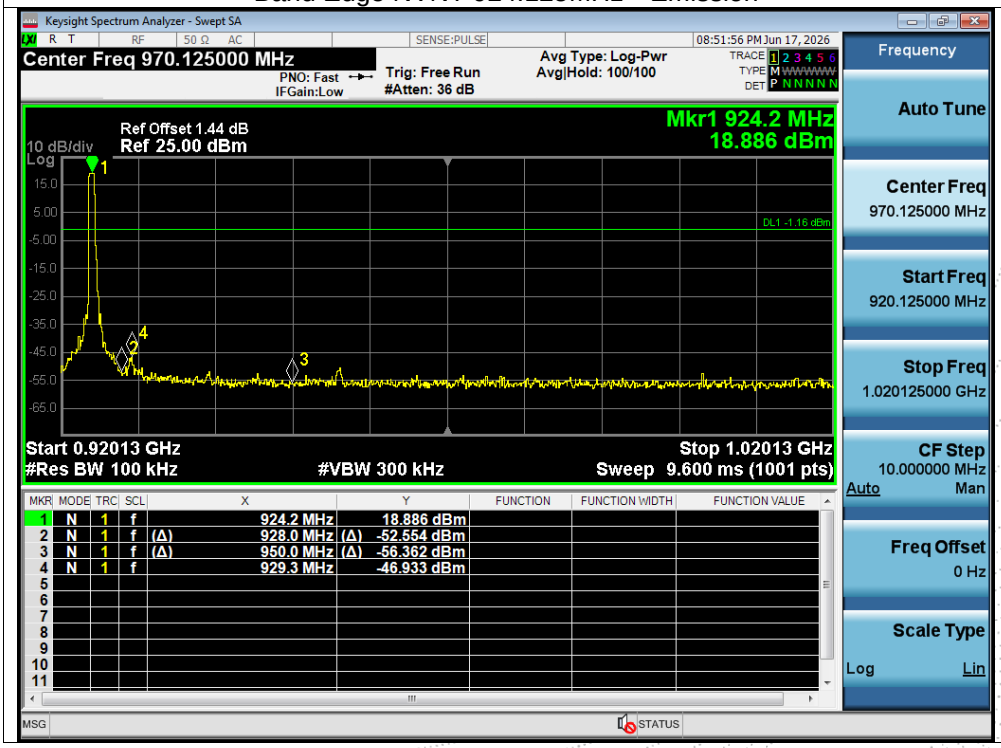
Band Edge NVNT 903.125MHz Emission



Band Edge NVNT 924.125MHz

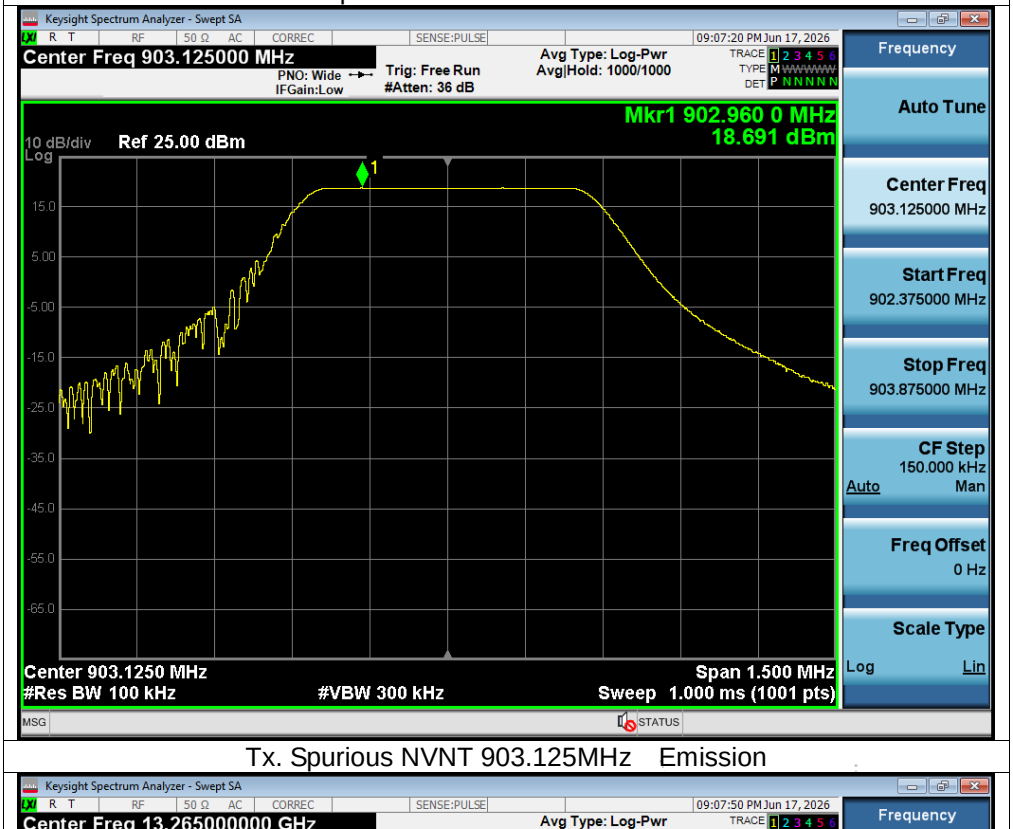


Band Edge NVNT 924.125MHz Emission

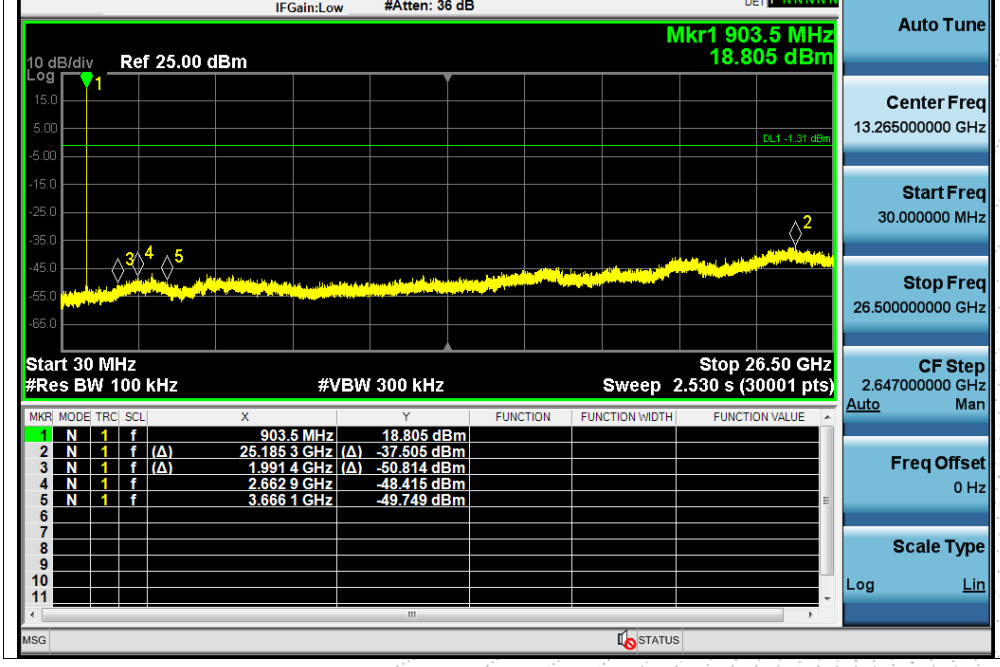


Conducted Emission Measurement

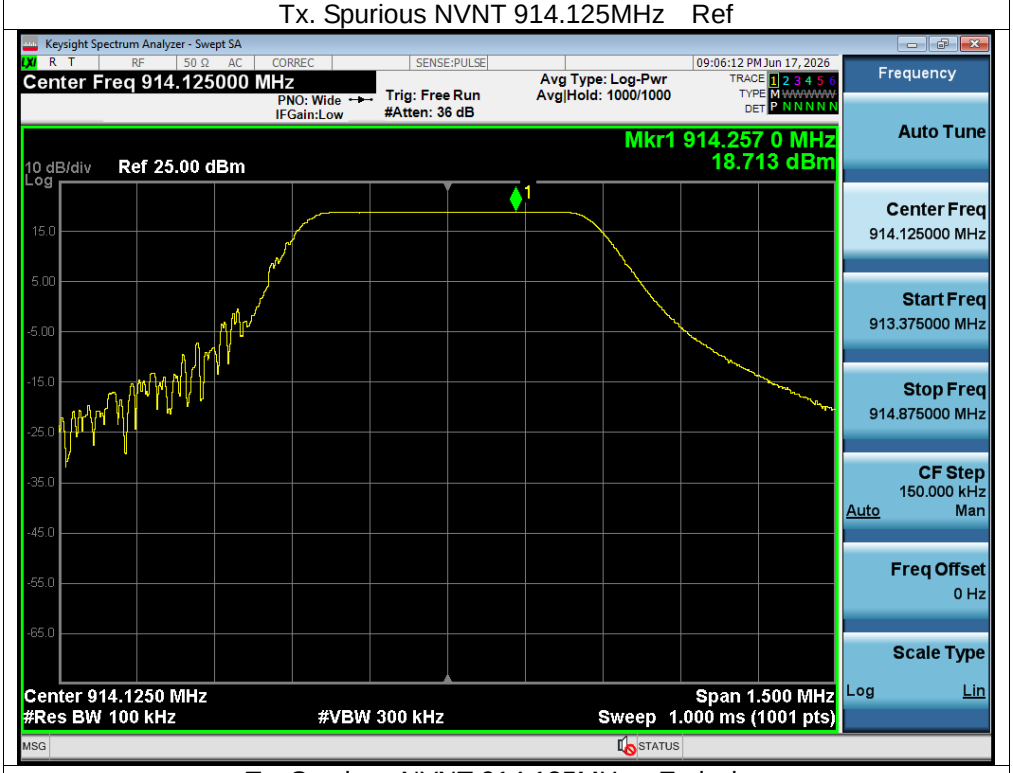
Test Graphs
Tx. Spurious NVNT 903.125MHz Ref



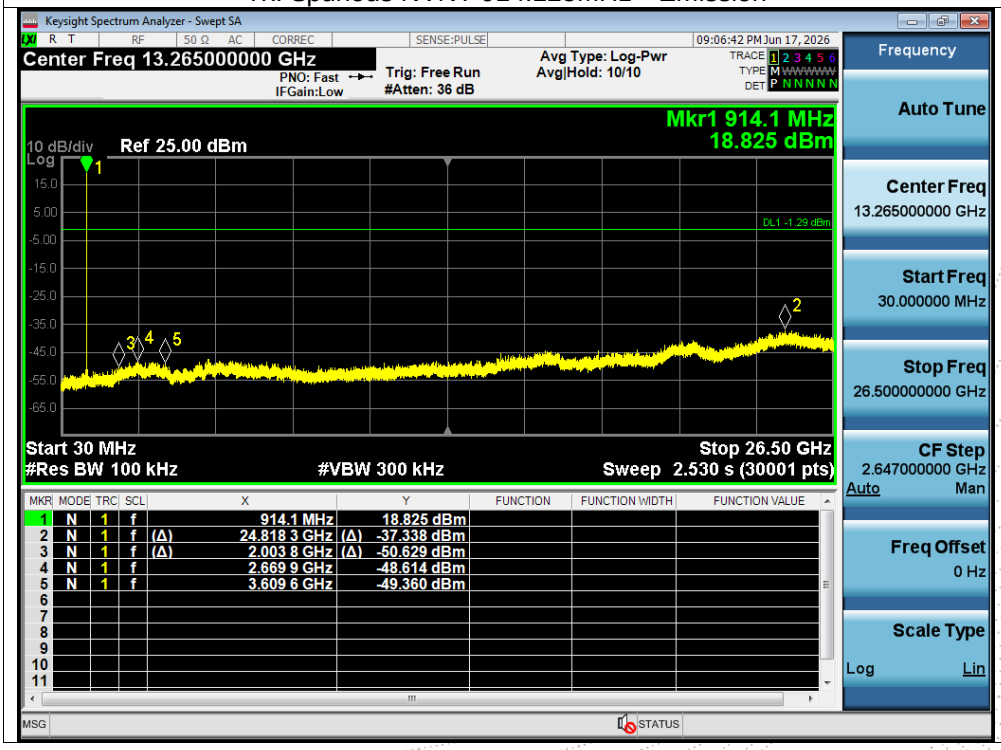
Tx. Spurious NVNT 903.125MHz Emission



Tx. Spurious NVNT 914.125MHz Ref

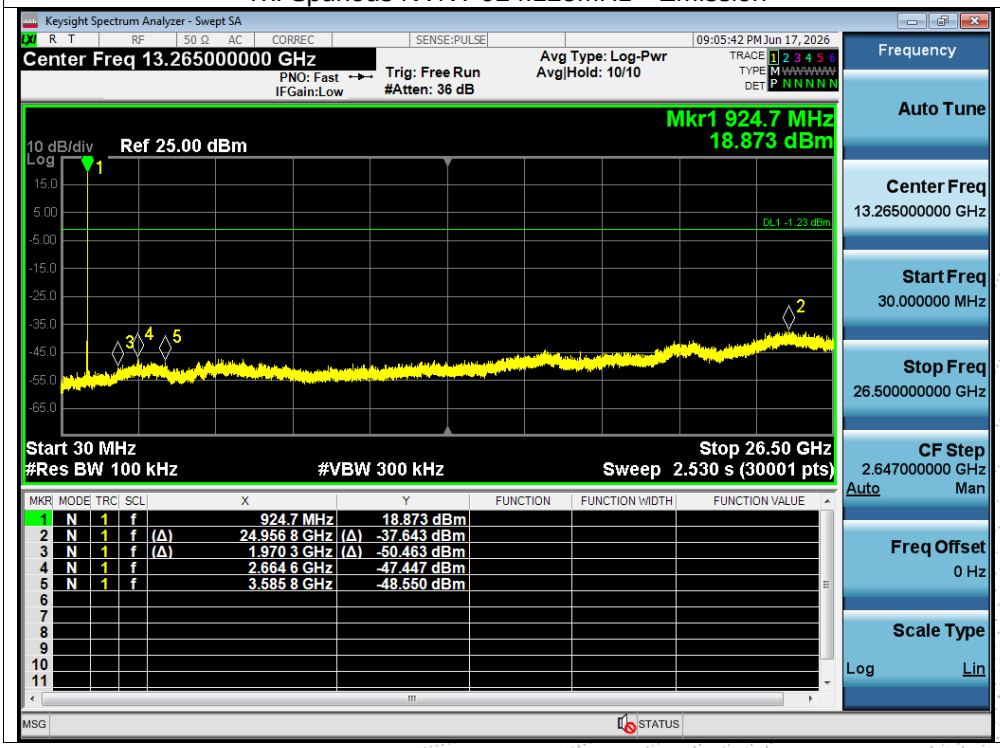


Tx. Spurious NVNT 914.125MHz Emission



Tx. Spurious NVNT 924.125MHz Ref

Tx. Spurious NVNT 924.125MHz Emission



12. Antenna Requirement

12.1 Limit

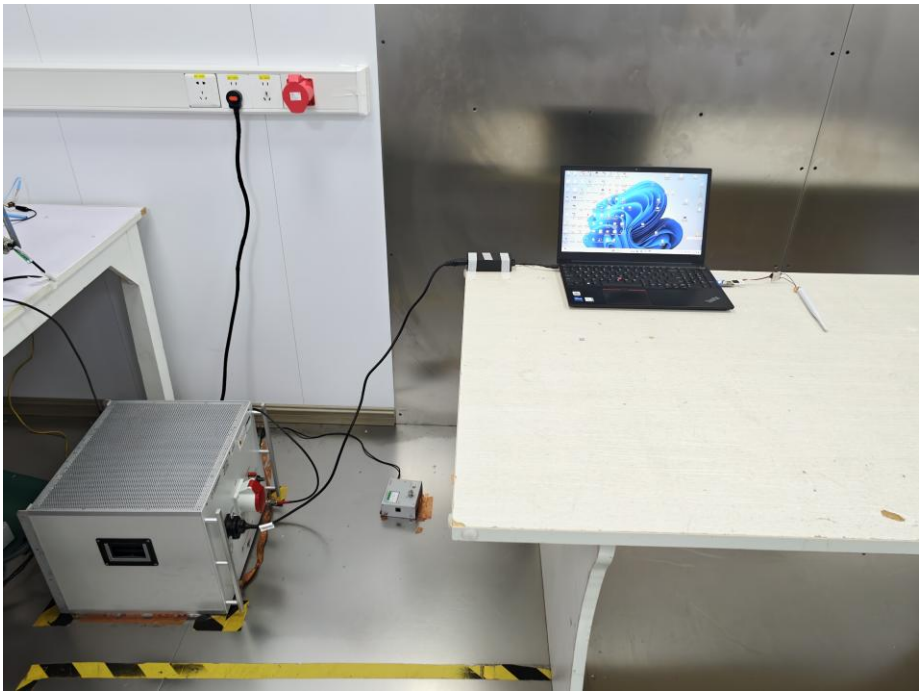
An intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. 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. This requirement does not apply to carrier current devices or to devices operated under the provisions of §§ 15.211, 15.213, 15.217, 15.219, 15.221, or § 15.236. Further, this requirement does not apply to intentional radiators that must be professionally installed, such as perimeter protection systems and some field disturbance sensors, or to other intentional radiators which, in accordance with § 15.31(d), must be measured at the installation site. However, the installer shall be responsible for ensuring that the proper antenna is employed so that the limits in this part are not exceeded.

12.2 Test Result

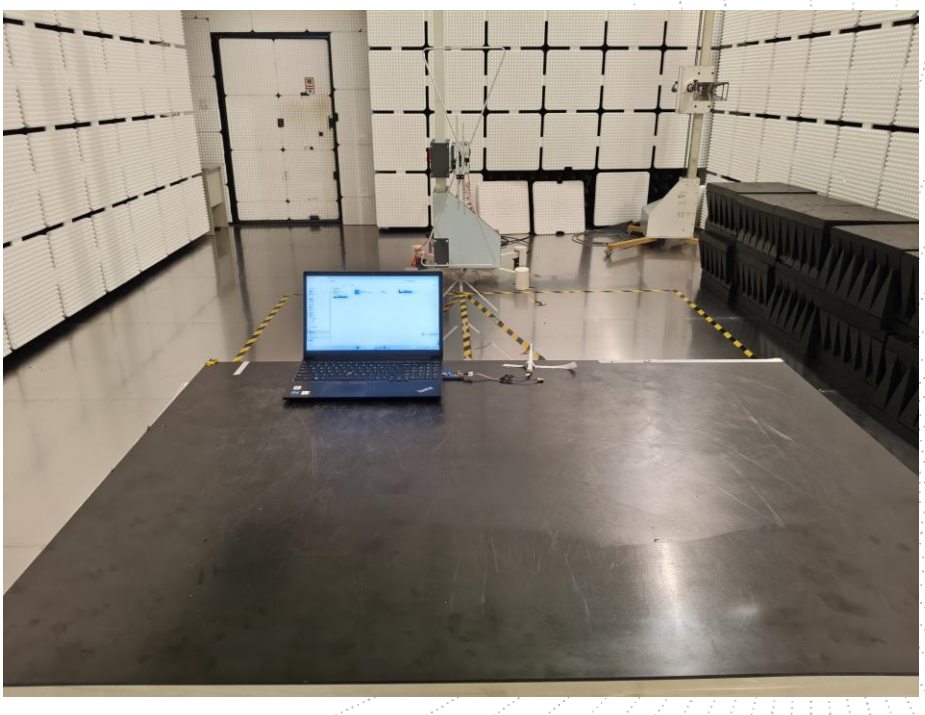
The EUT antenna is Internal antenna, fulfill the requirement of this section.

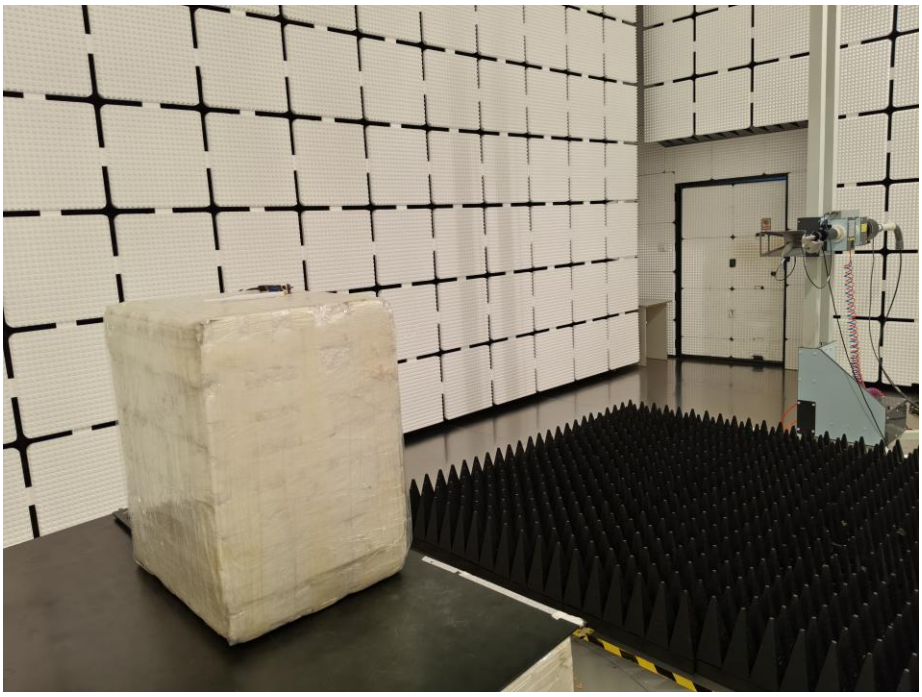
13. EUT Test Setup Photographs

Conducted Emission Measurement Photos



Radiated Measurement Photos





STATEMENT

1. The equipment lists are traceable to the International System of Units (SI)

2. The test report can not be partially copied unless prior written approval is issued from our lab.

3. The test report is invalid without the "special seal for inspection and testing".

4. The test report is invalid without the signature of the approver.

5. The test process and test result is only related to the Unit Under Test.

6. Sample information is provided by the client and the laboratory is not responsible for its authenticity.

7. The quality system of our laboratory is in accordance with ISO/IEC 17025:2017.

8. If there is any objection to this test report, the client should inform issuing laboratory within 15 days from the date of receiving test report.

Address:
Room 101M, Unit 1, Building1, Pengyuan, No.18, Lilang Road, Shanglilang, Nanwan Subdistrict, Longgang District, Shenzhen, Guangdong, China

TEL:400-788-9558

P.C.: 518116

FAX:0755-33229357

Website: http://www.chnbctc.com

Consultation E-mail: bctc@bctc-lab.com.cn

Complaint/Advice E-mail: advice@bctc-lab.com.cn

※※※※※ END ※※※※※