



FCC TEST REPORT

FCC ID: 2BPDB-DJGGD3-XJ801

On Behalf of

XJ Metering Co., Ltd

Data Concentration Unit

Model No.: DJGGD3-XJ801

Prepared for : XJ Metering Co., Ltd
Address : XJ Smart Power Grid Industrial Park, Xuchang, China

Prepared By : Shenzhen PSI Testing Co., Ltd.
1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West
Address : Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong,
China

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Version Number : V0

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TEST REPORT DECLARATION

Applicant : XJ Metering Co., Ltd
Address : XJ Smart Power Grid Industrial Park, Xuchang, China
Manufacturer : XJ Metering Co., Ltd
Address : XJ Smart Power Grid Industrial Park, Xuchang, China
EUT Description : Data Concentration Unit
(A) Model No. : DJGGD3-XJ801
(B) Trademark : XJ

Measurement Standard Used:

FCC Rules and Regulations Part 15 Subpart C Section 15.249

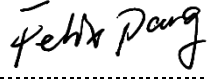
ANSI C63.10:2013

Test Result: PASS

The device described above is tested by Shenzhen PSI Testing Co., Ltd. to determine the maximum emission levels emanating from the device. The maximum emission levels are compared to the FCC Part 15 Subpart C limits both conducted and radiated emissions. The test results are contained in this test report and Shenzhen PSI Testing Co., Ltd. is assumed of full responsibility for the accuracy and completeness of these tests.

After the test, our opinion is that EUT compliance with the requirement of the above standards.

This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Shenzhen PSI Testing Co., Ltd.

Tested by (name + signature).....: Felix Pang
Test Engineer 

Approved by (name + signature).....: Simple Guan
Project Manager 

Date of issue.....: May 21, 2025

Revision History

Revision	Issue Date	Revisions	Revised By
V0	May 21, 2025	Initial released Issue	Felix Pang



1. General Information

1.1. Description of Device (EUT)

EUT Name : Data Concentration Unit
Model No./HVIN : DJGGD3-XJ801
DIFF. : N/A
Power supply : AC 480V(3x277V) Three-phase electricity.

Radio technology : SRD
Operation frequency : 917.4-919.8MHz
Modulation : GFSK
Channel No. : 5CH
Antenna Type : External antenna, max gain 5dBi

Software version : CSS-JI-VI-V3.0.0.42
Hardware version : CSS-JZ1-VI1.2/ CSS-JD1-VI1.2

Note : Antenna information is provided by applicant.
Testing lab is not responsible for the accuracy of the information.

1.2. Test Facility

Shenzhen PSI Testing Co., Ltd.

1-2/F., Building 5, Yudafu Industrial Park, No.10, Xingye West Road, Shajing Subdistrict, Bao'an District, Shenzhen, Guangdong, China

September 21, 2023 File on Federal Communication Commission

Registration Number: 916281

September 21, 2023 Certificated by IC

Registration Number: 31123

CAB identifier: CN0158



1.3. Equipment List

Item	Equipment	Manufacturer	Model No.	Serial No.	Firmware Version	Last Cal.	Cal. Interval
1.	9*6*6 anechoic chamber	SKET	9*6*6	N/A	/	2022.12.20	3 Year
2.	Test Receiver	Rohde&Schwarz	ESCI 7	101032/003	4.42 SP3	2024.12.18	1 Year
3.	L.I.S.N.#1	Rohde&Schwarz	ENV216	102282	/	2024.12.18	1 Year
4.	L.I.S.N.#2	Rohde&Schwarz	NSLK8126	8126-466	/	2024.12.18	1 Year
5.	Loop Antenna	Schwarz beck	FMZB 1519B	00128	/	2025.01.02	2 Year
6.	Bilog Antenna	Schwarz beck	VULB 9168	01448	/	2025.01.02	2 Year
7.	Spectrum Analyzer	Rohde&Schwarz	FSV-40N	101648	3.70	2024.12.18	1 Year
8.	Horn Antenna	Schwarz beck	BBHA 9120 D	02706	/	2025.01.02	2 Year
9.	Amplifier	SKET	LAPA_01G1 8G-45dB	SK20220329 01	/	2024.12.18	1 Year
10.	Horn Antenna	Schwarz beck	BBHA 9170	00946	/	2024.12.31	2 Year
11.	Amplifier	SKET	LNPA_0118 G-45	SK20200108 01	/	2024.12.18	1 Year
12.	RF Power Probe	Rohde&Schwarz	NRP-Z11	1138.3004.0 2-1111533-F Z	/	2024.12.18	1 Year
13.	RF Sensor Unit	Tachoy	TR1029-2	20220428P0 08	/	2024.12.18	1 Year
14.	Spectrum Analyzer	Agilent	N9020A	MY51281067	A.14.03	2024.12.18	1 Year
15.	Temp. & Humid Chamber	Auchno	9606	/	/	2024.12.18	1 Year
16.	Regulated DC Power Supply	Xinouhua	ADC120V10 A	2022112516 38	/	2024.12.18	1 Year
17.	Cable	SKET	Cable-RE-1	#02/#03	/	2024.12.18	1 Year
18.	Cable	SKET	Cable-RE-2	#01	/	2024.12.18	1 Year
19.	Cable	SKET	Cable-RE-3	#04	/	2024.12.18	1 Year
20.	Cable	SKET	Cable-CE-1	A-E-24	/	2024.12.18	1 Year
21.	6dB Attenuator	Schwarzbeck	DGA 9552N 6dB	CK4186	/	2024.12.18	1 Year

For Test Software Information

Item	Software Name	Manufacturer	Version
RE	EZ EMC	Farad	PSI-3A1
CE	EZ EMC	Farad	PSI-3A1
RF	RTS	TACHOY	V1.0.0

2. Summary Of Measurement

2.1. Summary of Test Result

EMISSION			
Description of Test Item	Test Requirement	Standard Paragraph	Results
Power Line Conducted Emission Test	FCC Part 15 RSS 210	Section 15.207 RSS-GEN(8.8)	P
Spurious Emission Test	FCC Part 15 RSS 210	Section 15.249&15.209 RSS-210 Annex B.10(a) & (b)	P
Occupied bandwidth	FCC Part 15 RSS 210	Section 15. 249 RSS-Gen §6.7	P
Band edge Requirement	FCC Part 15 RSS 210	Section 15.249&15.209 RSS-210 Annex B.10(a) & (b)	P
Antenna Requirement	FCC Part 15 RSS 210	Section 15.203 RSS-Gen §6.8	P
Note: 1. P is an abbreviation for Pass. 2. F is an abbreviation for Fail. 3. N/A is an abbreviation for Not Applicable. 4. The conclusion of this test report is judged by actual test data without considering measurement uncertainty.			

Note: The EUT has been tested as an independent unit. And continual transmitting in maximum power.

2.2. Test Connection



2.3. Assistant Equipment Used For Test

No.	Description	Manufacturer	Model	Serial Number	Certification
1	N/A	N/A	N/A	N/A	N/A

2.4. Test Mode

Mode	Channel	Frequency(MHz)
GFSK	CH-L	917.4000
	CH-M	918.6000
	CH-H	918.8000
Note: According exploratory test, EUT will have maximum output power in those data rate. So those data rate were used for all test.		

Channel List

Channel	Frequency(MHz)		
1	917.4000		
2	917.6000		
3	918.6000		
4	918.7000		
5	918.6000		

2.5. Software test version and power setting information

Mode	The client 's preset testing software is used to control the operation of EUT in continuous transmission mode and select the testing channel, wireless mode:		
Power level setup by client			
Mode	Channel	Frequency (MHz)	Soft Set
GFSK	CH-L	917.4000	TX level is set as
	CH-M	918.6000	TX level is set as
	CH-H	918.8000	TX level is set as

2.6. Test Conditions

Temperature range	21-25℃
Humidity range	40-75%
Pressure range	86-106kPa

2.7. Measurement Uncertainty (95% confidence levels, k=2)

Item	Uncertainty
Uncertainty for Power point Conducted Emissions Test	2.17dB
Uncertainty for Radiation Emission test in 3m chamber (below 30MHz)	3.5dB
Uncertainty for Radiation Emission test in 3m chamber (30MHz to 1GHz)	2.74dB(Polarize: V)
	2.76dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (1GHz to 18GHz)	4.29dB(Polarize: V)
	4.82dB(Polarize: H)
Uncertainty for Radiation Emission test in 3m chamber (18GHz to 40GHz)	4.31dB(Polarize: V)
	4.30dB(Polarize: H)
Uncertainty for radio frequency	48.24KHz
Uncertainty for conducted RF Power	0.41dB
Uncertainty for Power Spectral Density	0.39 dB
Uncertainty for OBW	928Hz

3. Radiated Emission and Band Edge

3.1. Radiated Emission Limits

FCC Part 15.209

Frequency MHz	Distance (Meters)	Field Strengths Limits	
		uV/m	dB uV/m
0.009 ~ 0.490	300	2400/F(kHz)	---
0.490 ~ 1.705	30	24000/F(kHz)	----
1.705 ~ 30	30	30	29.5
30 ~ 88	3	100(3nW)	40
88 ~ 216	3	150(6.8nW)	43.5
216 ~ 960	3	200(12nW)	46
Above 960	3	500(75nW)	54
Carrier frequency	3	50000(avg)	113.97(peak) 93.97(avg)

Notes:

1. Emission level = Read level + Antenna Factor - Preamp Factor + Cable Loss
2. The smaller limit shall apply at the cross point between two frequency bands.
3. Distance is the distance in meters between the measuring instrument, antenna and the closest point of any part of the device or system.
4. For frequencies above 1000 MHz, the field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

Radiated Spurious Emission					
Test Standard	RSS-Gen 8.9				
Test Limit	Frequency (MHz)	Field strength (microvolt/meter)	Limit (dBuV/m)	Remark	Measurement distance (m)
	0.009MHz~0.490MHz	6.37/F (F in kHz)	-	-	300
	0.490MHz~1.705MHz	63.7/F (F in kHz)	-	-	30
	1.705MHz~30MHz	0.08	-	-	30
	30MHz~88MHz	100	40.0	Quasi-peak	3
	88MHz~216MHz	150	43.5	Quasi-peak	3
	216MHz~960MHz	200	46.0	Quasi-peak	3
	Above 960MHz	500	54.0	Average	3
Remark:					
(1)The lower limit shall apply at the transition frequency.					
(2) Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.					
Transmitters with wanted and unwanted emissions that are within the general field strength limits					
Test Standard	RSS-210 Annex B.10, Table B2				

Test Limit	Frequency bands (MHz)	Field Strength (mV/m)		Measurement distance (m)
		Fundamental emissions	Harmonics emissions	
	902-928	50	0.5	3
	2400-2483.5	50	0.5	3
	5725-5875	50	0.5	3
	24000-24250	250	2.5	3

Remark:

- (1) The field strength shall be measured using an average detector, except for the fundamental emission in the frequency band 902-928 MHz, which is based on measurements using an International Special Committee on Radio Interference (CISPR) quasi-peak detector.
- (2) Emissions radiated outside of the specified frequency bands, except for harmonic emissions, shall be attenuated by at least 50 dB below the level of the fundamental emissions or to the general field strength limits listed in RSS-Gen, whichever is less stringent.

Spectrum Parameter	Setting
Detector	Peak
Attenuation	Auto
Start Frequency	1000 MHz
Stop Frequency	10th carrier harmonic
RB / VB (emission in restricted band)	1MHz/3MHz

Receiver Parameter	Setting
Attenuation	Auto
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

3.2. Test Procedure

- The measuring distance of 3m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Below 1GHz)
- The measuring distance of 3m shall used for measurements. The EUT was placed on the top of a rotating table 1.5 meter above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation(Above 1GHz)
- The height of the test antenna shall vary between 1m to 4m.Both horizontal and vertical polarization of the antenna are set to make the measurement.
- The initial step in collecting radiated emission data is a receive peak detector mode. Pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
- All readings are peak unless otherwise stated QP in column of Note. Peak denoted that the Peak reading compliance with the QP limits and then QP Mode measurement didn't perform

(Below 1GHz)

- f. All readings are Peak mode value unless otherwise stated AVG in column of Note. If the Peak mode measured value compliance with the Peak limits and lower than AVG Limits, the EUT shall be deemed to meet Peak & AVG limits and then only Peak mode was measured, but AVG mode didn't perform.(Above 1GHz)
- g. For the actual test configuration, please refer to the related Item –EUT Test Photos.

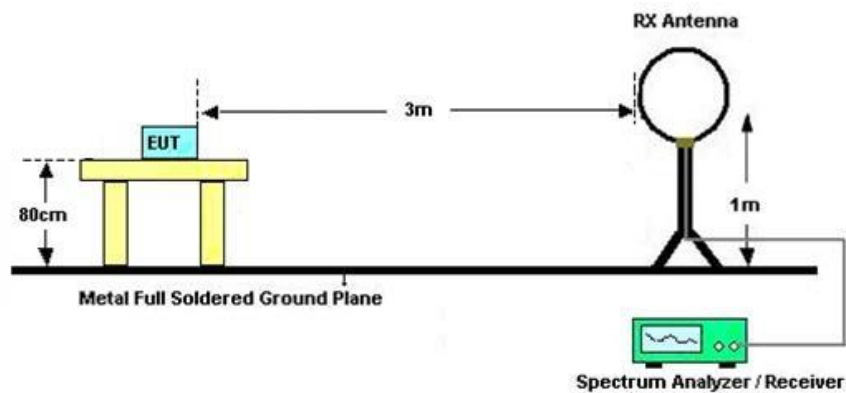
Note: Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported

3.3. Deviation From Test Standard

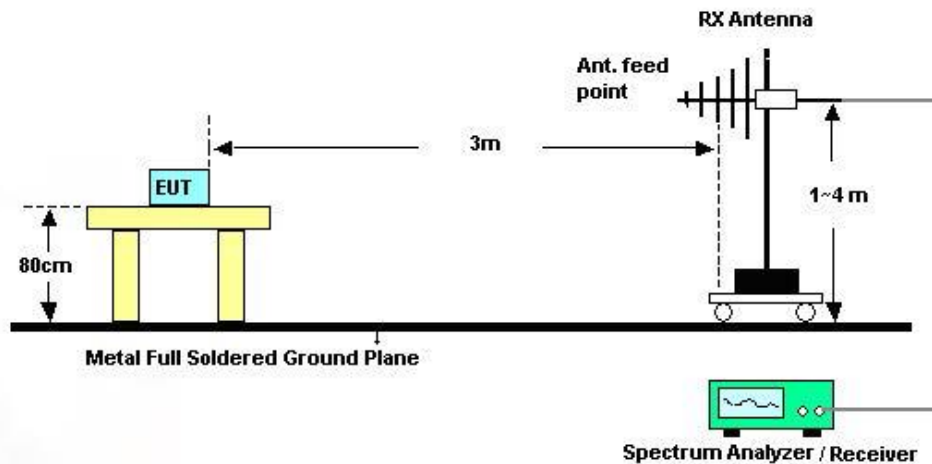
No deviation

3.4. Test Setup

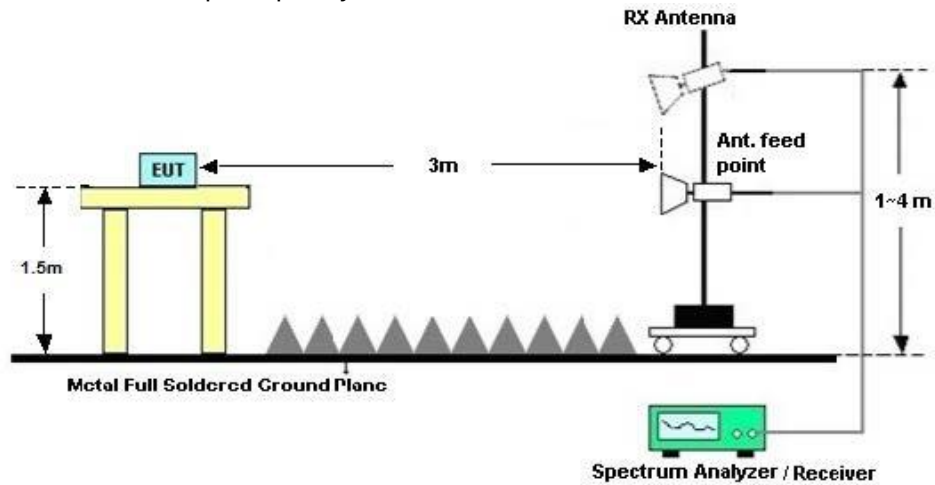
(A) Radiated Emission Test-Up Frequency Below 30MHz



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



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



3.5. 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.

3.6. Test Results

For the actual test, please refer to the ANSI C63.10, refer to section 7 for more detail

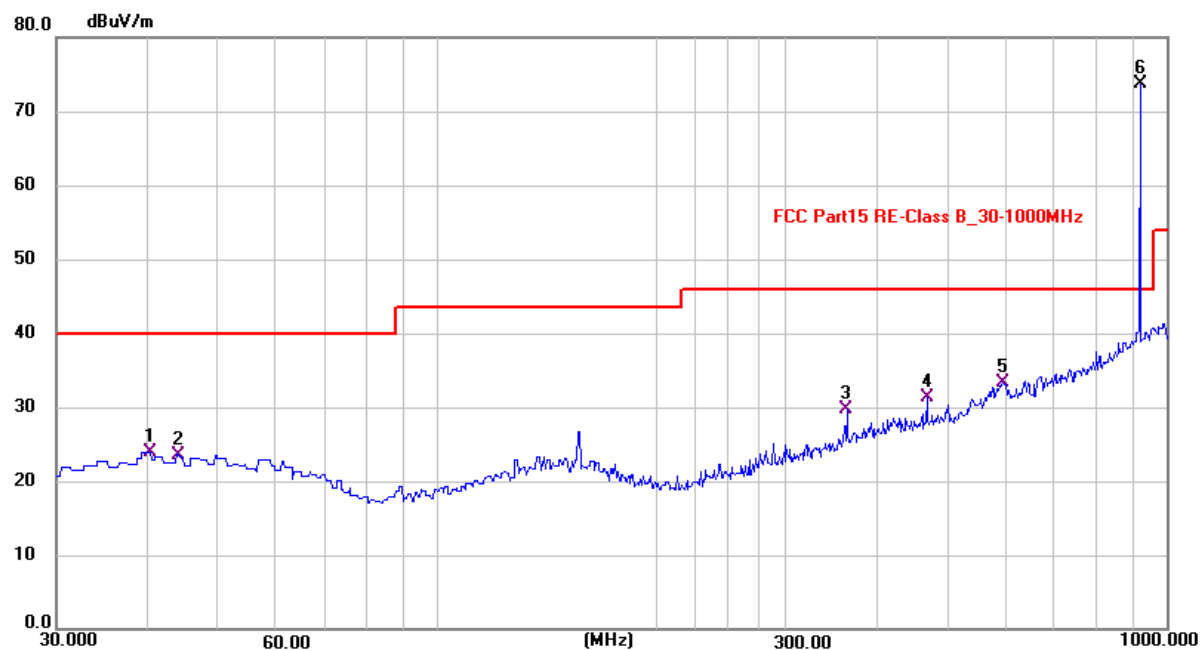
We have scanned from 9kHz to the 10th harmonic of the EUT's highest frequency.
Detailed information please see the following page.

From 9KHz to 30MHz:	
Test Date : 2025.05.16	Temperature : 26°C
Test Engineer : Felix Pang	Humidity : 54%
Test Mode : GFSK mode	
Test Results : PASS	
Note:	The amplitude of spurious emissions which are attenuated by more than 20dB below the permissible value has no need to be reported.

From 30MHz to 1000MHz:	
Test Date : 2025.05.16	Temperature : 26°C
Test Engineer : Felix Pang	Humidity : 54%
Test Mode : GFSK mode	
Test Results : PASS	
Note:	1. The test results are listed in next pages. 2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. 3. All modes have been tested, and only worst data of GFSK 5730MHz mode was listed in this report.

GFSK TX 917.4MHz

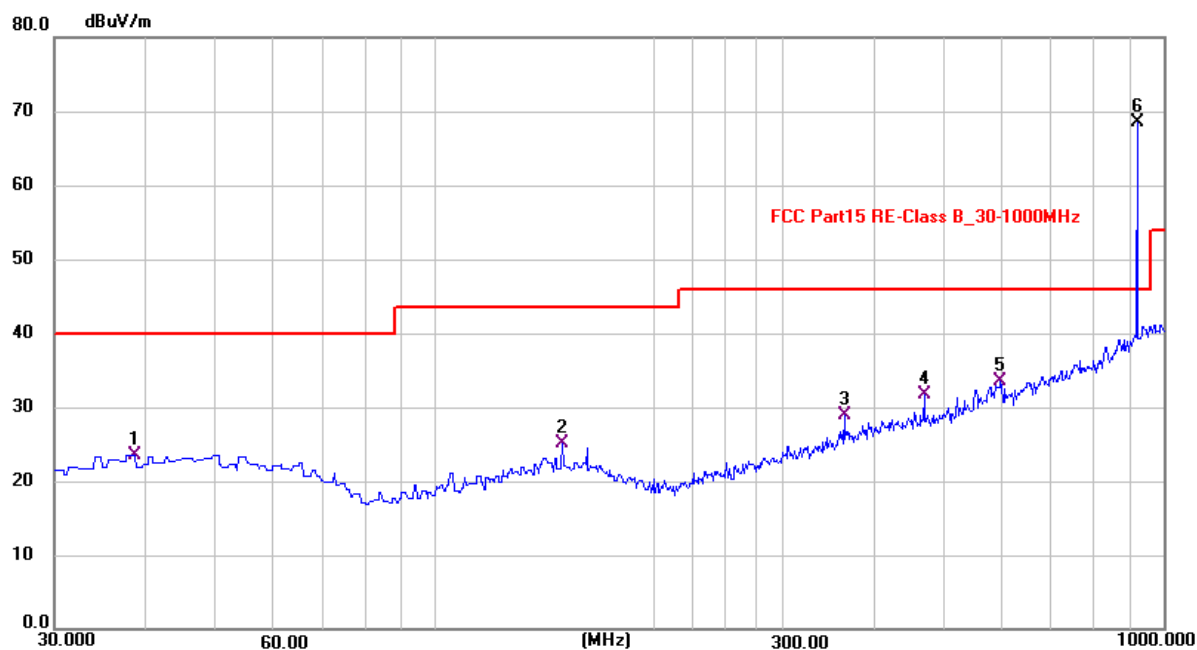
Polarization: Vertical



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	40.3818	9.34	14.55	23.89	40.00	-16.11	QP
2	44.0237	9.20	14.40	23.60	40.00	-16.40	QP
3	364.0999	13.03	16.71	29.74	46.00	-16.26	QP
4	468.0549	11.99	19.38	31.37	46.00	-14.63	QP
5	596.9617	10.42	22.80	33.22	46.00	-12.78	QP
6 *	917.4000	45.25	28.24	73.49	46.00	27.49	peak

Note: Level = Reading + Factor Margin = Level - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	917.4	45.25	28.24	73.49	94.00	-20.51	PK
2	917.4	44.94	28.24	73.18	94.00	-20.82	QP

Polarization: Horizontal

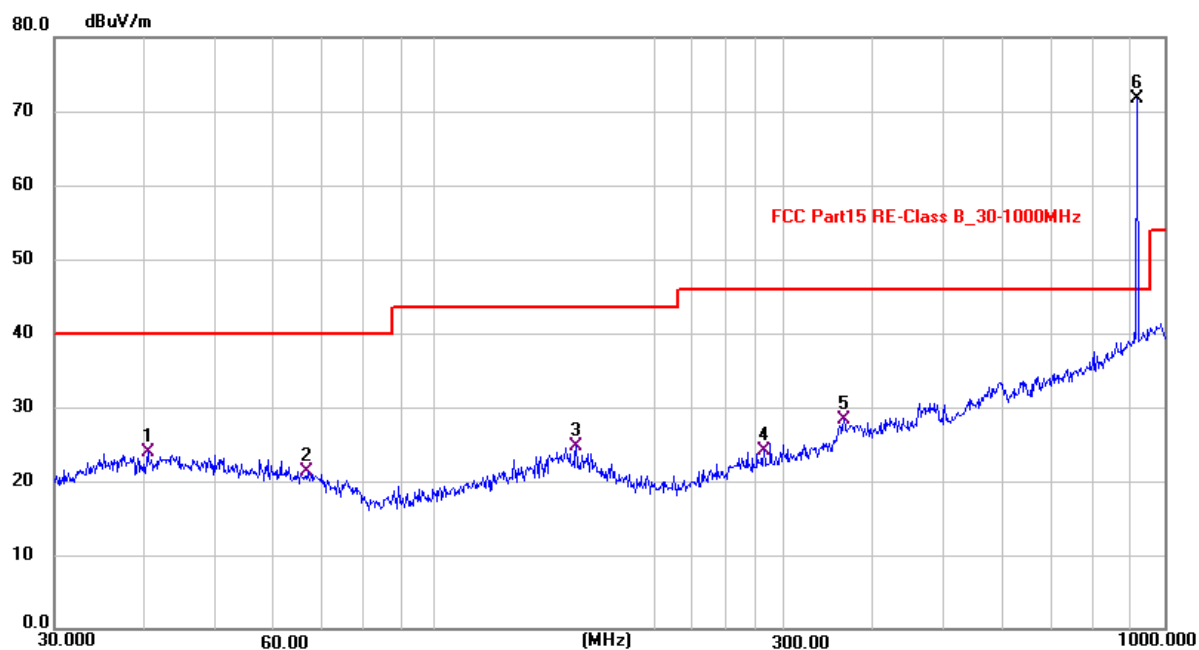
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	38.6669	9.15	14.37	23.52	40.00	-16.48	QP
2	149.4857	11.09	14.11	25.20	43.50	-18.30	QP
3	363.9403	12.17	16.70	28.87	46.00	-17.13	QP
4	468.0549	12.25	19.38	31.63	46.00	-14.37	QP
5	595.6548	10.77	22.77	33.54	46.00	-12.46	QP
6 *	917.4000	40.32	28.24	68.56	46.00	22.56	peak

Note: Level = Reading + Factor Margin = Level – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	917.4	40.32	28.24	68.56	94.00	-25.44	PK
2	917.4	39.89	28.24	68.13	94.00	-25.87	QP

GFSK TX 918.6MHz

Polarization: Vertical

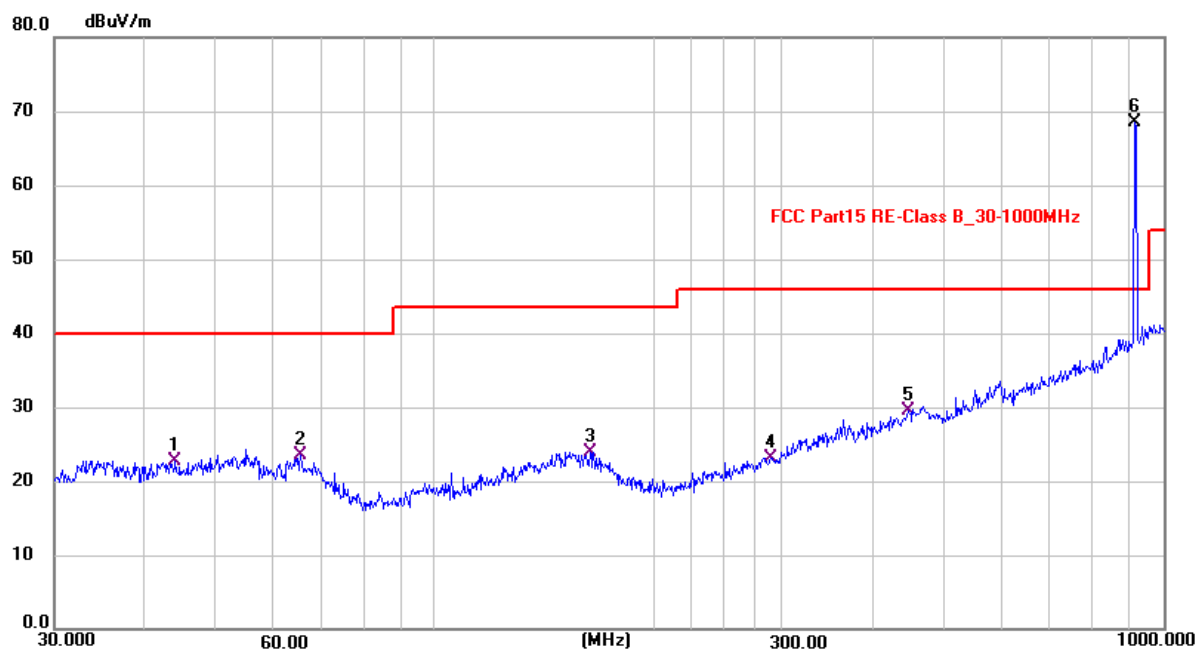


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	40.3817	9.34	14.55	23.89	40.00	-16.11	QP
2	66.8789	8.99	12.40	21.39	40.00	-18.61	QP
3	156.0466	10.40	14.26	24.66	43.50	-18.84	QP
4	281.9945	9.56	14.58	24.14	46.00	-21.86	QP
5	364.1000	11.53	16.71	28.24	46.00	-17.76	QP
6 *	918.6000	43.45	28.26	71.71	46.00	25.71	peak

Note: Level = Reading + Factor Margin = Level - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	918.6	43.45	28.26	71.71	94.00	-22.29	PK
2	918.6	43.03	28.26	71.29	94.00	-22.71	QP

Polarization: Horizontal



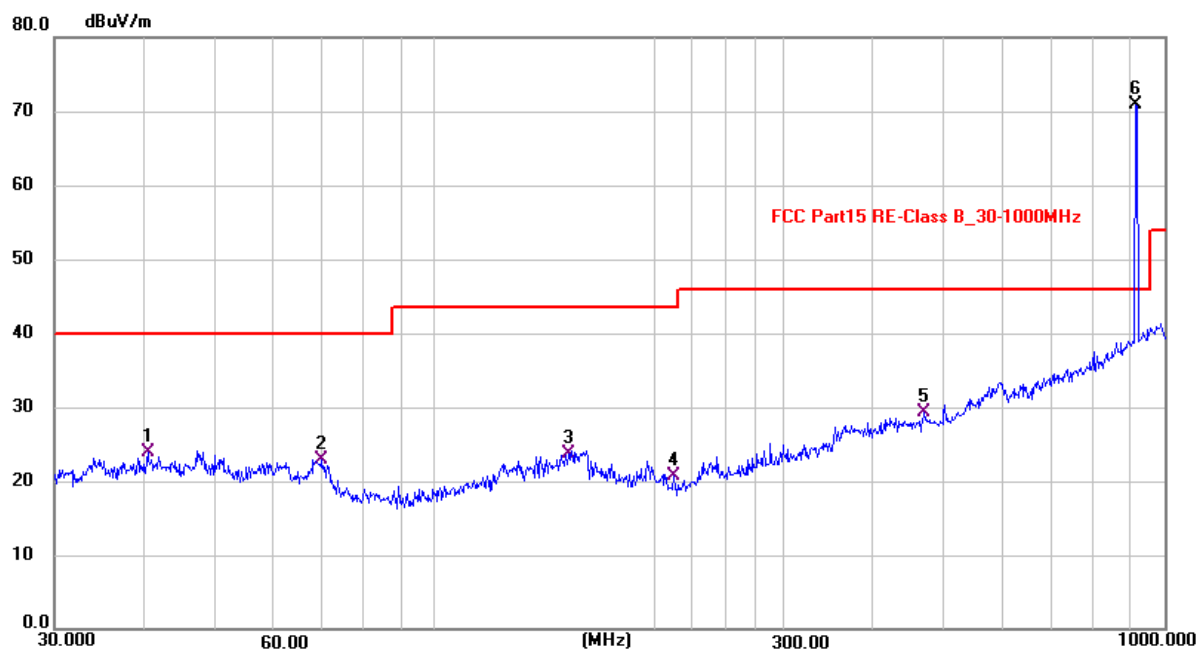
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	44.0814	8.32	14.40	22.72	40.00	-17.28	QP
2	65.5440	11.00	12.54	23.54	40.00	-16.46	QP
3	163.4680	9.89	14.01	23.90	43.50	-19.60	QP
4	289.5090	8.46	14.71	23.17	46.00	-22.83	QP
5	446.4140	10.60	18.86	29.46	46.00	-16.54	QP
6 *	918.6000	40.35	28.26	68.61	46.00	22.61	peak

Note: Level = Reading + Factor Margin = Level – Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	918.6	40.35	28.26	68.61	94.00	-25.39	PK
2	918.6	39.75	28.26	68.01	94.00	-25.99	QP

GFSK TX 918.8MHz

Polarization: Vertical

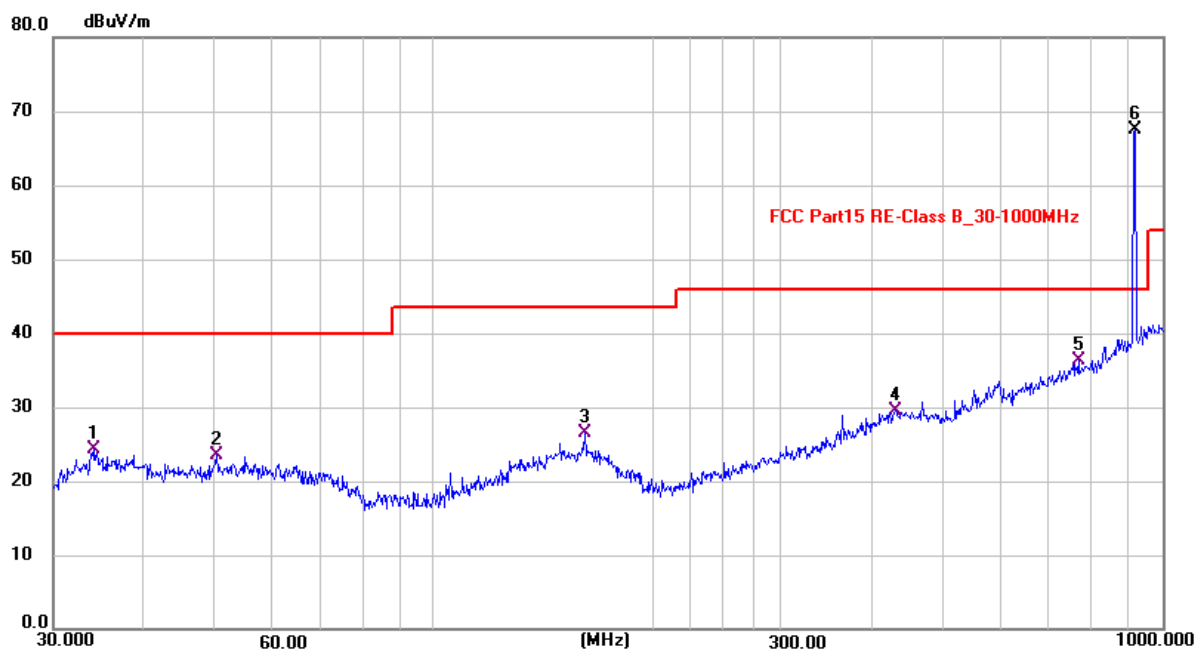


No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	40.3817	9.34	14.55	23.89	40.00	-16.11	QP
2	69.9368	10.87	12.10	22.97	40.00	-17.03	QP
3	152.3300	9.52	14.18	23.70	43.50	-19.80	QP
4	212.9216	9.00	11.63	20.63	43.50	-22.87	QP
5	468.0548	9.99	19.38	29.37	46.00	-16.63	QP
6 *	918.8000	42.60	28.29	70.89	46.00	24.89	peak

Note: Level = Reading + Factor Margin = Level - Limit

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	918.8	42.60	28.29	70.89	94.00	-23.11	PK
2	918.8	42.21	28.29	70.50	94.00	-23.50	QP

Polarization: Horizontal



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	34.2010	10.61	13.70	24.31	40.00	-15.69	QP
2	50.3646	9.31	14.11	23.42	40.00	-16.58	QP
3	161.2620	12.24	14.22	26.46	43.50	-17.04	QP
4	430.0880	11.08	18.46	29.54	46.00	-16.46	QP
5	768.0742	10.53	25.76	36.29	46.00	-9.71	QP
6 *	918.8000	39.32	28.29	67.61	46.00	21.61	peak

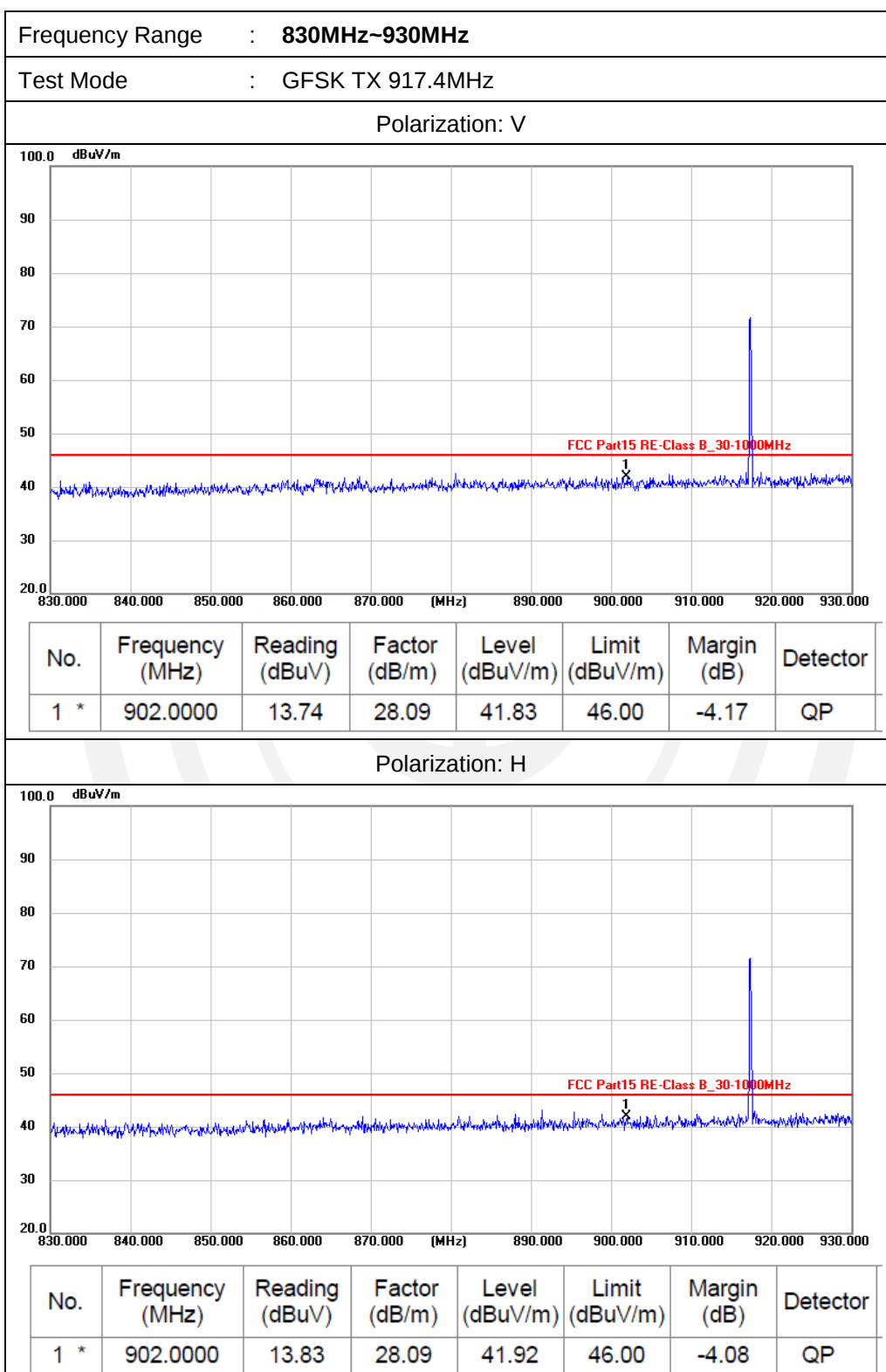
Note: Level = Reading + Factor Margin = Level – Limit

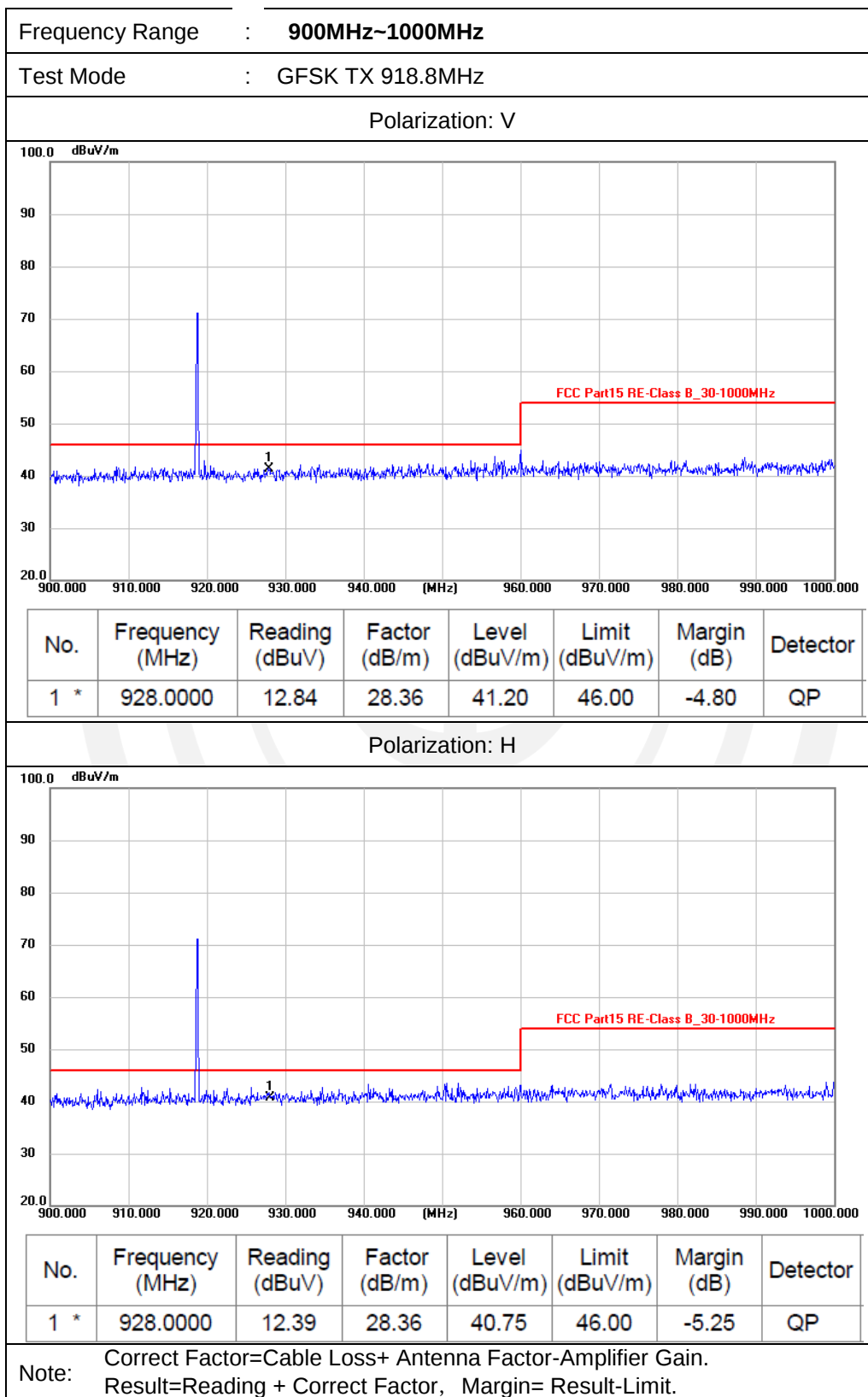
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Results (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector
1	918.8	39.92	28.29	68.21	94.00	-25.79	PK
2	918.8	39.44	28.29	67.73	94.00	-26.27	QP

From 1GHz to 25GHz:	
Test Date : 2025.05.16	Temperature : 26°C
Test Engineer : Felix Pang	Humidity : 54%
Test Mode : GFSK mode	
Test Results : PASS	
Note:	1. The test results are listed in next pages. 2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. 3. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.

Frequency range: 1GHz~25GHz

Test Mode : GFSK TX 917.4MHz								
No.	Freq MHz	Polarity	Reading (dBuV/m)	Correct Factor	Result (dBuV/m)	Limit (dBuV/m)	Margin	Remark
1	1834.8	H	67.35	-27.35	40.00	74	-34.00	Peak
2	1834.8	H	--	-27.35	40.00	54	-14.00	Avg
3	2752.2	H	64.91	-25.02	39.89	74	-34.11	Peak
4	2752.2	H	--	-25.02	39.89	54	-14.11	Avg
5	1834.8	V	64.62	-27.35	37.27	74	-36.73	Peak
6	1834.8	V	--	-27.35	37.27	54	-16.73	Avg
7	2752.2	V	65.86	-25.02	40.84	74	-33.16	Peak
8	2752.2	V	--	-25.02	40.84	54	-13.16	Avg
Test Mode : GFSK TX 918.6MHz								
1	1837.2	V	66.27	-27.35	38.92	74	-35.08	Peak
2	1837.2	V	--	-27.35	38.92	54	-15.08	Avg
3	2755.8	V	63.36	-25.02	38.34	74	-35.66	Peak
4	2755.8	V	--	-25.02	38.34	54	-15.66	Avg
5	1837.2	H	67.19	-27.35	39.84	74	-34.16	Peak
6	1837.2	H	--	-27.35	39.84	54	-14.16	Avg
7	2755.8	H	65.26	-25.02	40.24	74	-33.76	Peak
8	2755.8	H	--	-25.02	40.24	54	-13.76	Avg
Test Mode : GFSK TX 918.8MHz								
1	1837.6	V	67.18	-27.35	39.83	74	-34.17	Peak
2	1837.6	V	--	-27.35	39.83	54	-14.17	Avg
3	2756.4	V	65.82	-25.02	40.80	74	-33.20	Peak
4	2756.4	V	--	-25.02	40.80	54	-13.20	Avg
5	1837.6	H	66.84	-27.35	39.49	74	-34.51	Peak
6	1837.6	H	--	-27.35	39.49	54	-14.51	Avg
7	2756.4	H	65.35	-25.02	40.33	74	-33.67	Peak
8	2756.4	H	--	-25.02	40.33	54	-13.67	Avg
Note:	1. Means other frequency and mode comply with standard requirements and at least have 20dB margin. 2. Correct Factor=Cable Loss+ Antenna Factor-Amplifier Gain. Result=Reading + Correct Factor. Margin= Result-Limit.							





4. Power Line Conducted Emission

4.1. Test Limits

Frequency MHz	Limits dB(μV)	
	Quasi-peak Level	Average Level
0.15 -0.50	66 -56*	56 - 46*
0.50 -5.00	56	46
5.00 -30.00	60	50

Notes: 1. *Decreasing linearly with logarithm of frequency.

2. The lower limit shall apply at the transition frequencies.

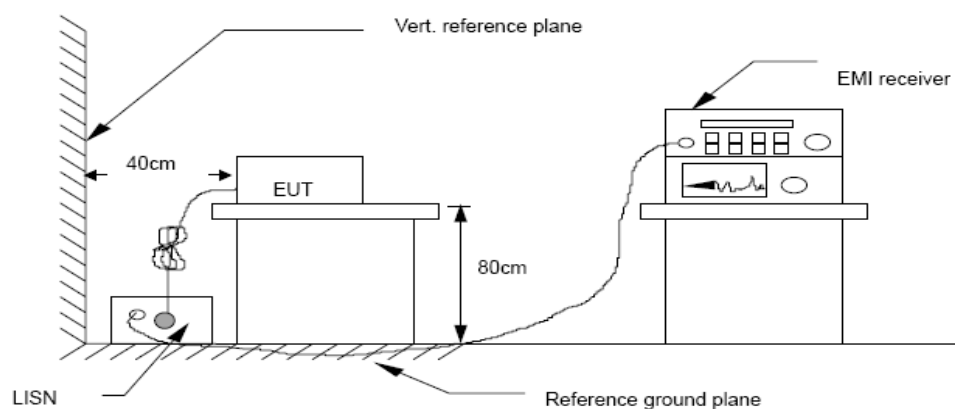
3. The limit decreases in line with the logarithm of the frequency in the range of 0.15 to 0.50MHz.

4.2. Test Procedure

The EUT is put on the plane 0.8m high above the ground by insulating support and is connected to the power mains through a line impedance stabilization network (L.I.S.N.). This provides a 50ohm coupling impedance for the EUT system. Please refer the block diagram of the test setup and photographs. Both sides of AC lines are checked to find out the maximum conducted emission. In order to find the maximum emission levels, the relative positions of equipment and all of the interface cables shall be changed according to ANSI C63.10:2013 on Conducted Emission Measurement.

The bandwidth of test receiver is set at 9 kHz.

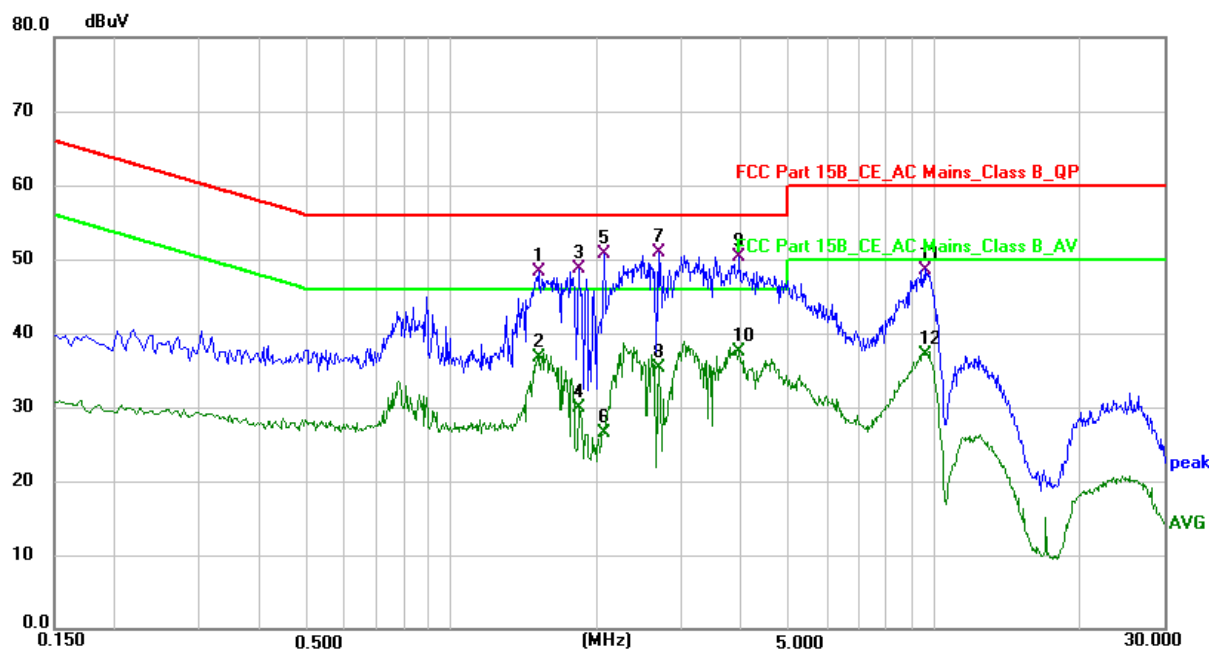
4.3. Test Setup



4.4. Test Results

Test Date	: 2025.05.13	Temperature	: 26℃
Test Engineer	: Felix Pang	Humidity	: 54%
Test Voltage	: AC 480V		
Test Mode	: GFSK Mode		
Test Results	: PASS		
Note:	1. The test results are listed in next pages. 2. If the limits for the measurement with the average detector are met when using a receiver with a peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector and quasi-peak detector need not be carried out. 3. If the limits for the measurement with the average detector are met when using a receiver with a quasi-peak detector, the test unit shall be deemed to meet both limits and the measurement with the average detector need not be carried out.		

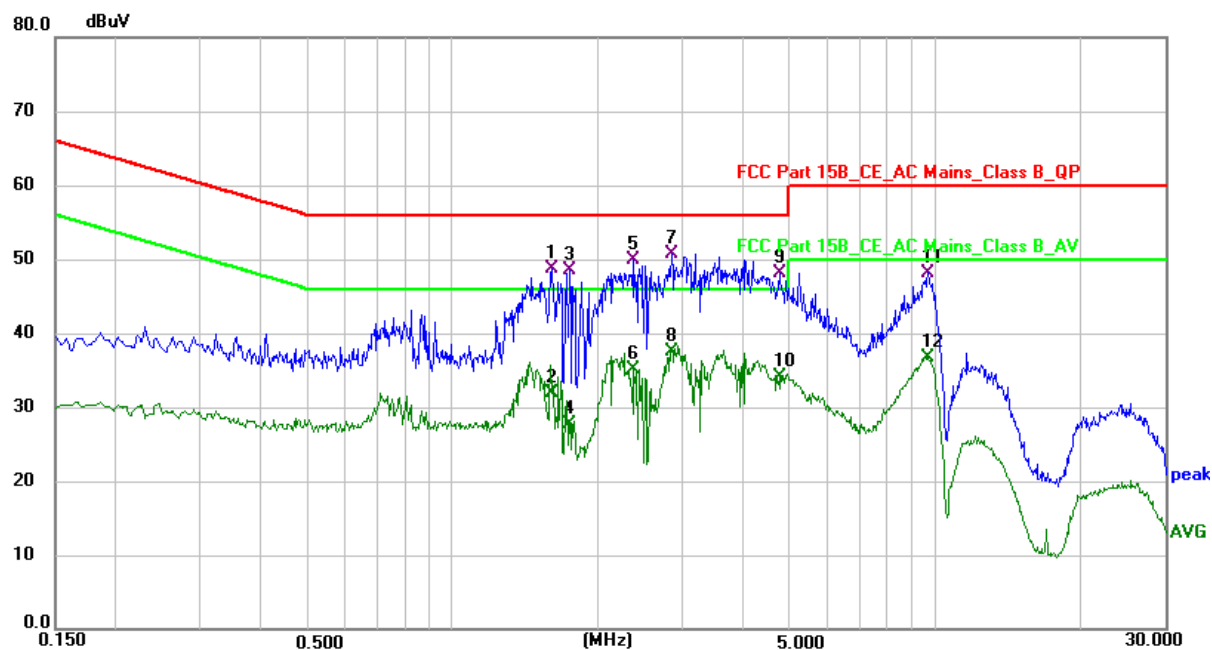
Polarization: L1



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	1.5180	38.89	9.40	48.29	56.00	-7.71	QP	P
2	1.5180	27.32	9.40	36.72	46.00	-9.28	AVG	P
3	1.8380	39.38	9.39	48.77	56.00	-7.23	QP	P
4	1.8380	20.54	9.39	29.93	46.00	-16.07	AVG	P
5	2.0660	41.23	9.39	50.62	56.00	-5.38	QP	P
6	2.0660	17.11	9.39	26.50	46.00	-19.50	AVG	P
7 *	2.6860	41.43	9.38	50.81	56.00	-5.19	QP	P
8	2.6860	25.84	9.38	35.22	46.00	-10.78	AVG	P
9	3.9500	40.85	9.39	50.24	56.00	-5.76	QP	P
10	3.9500	28.02	9.39	37.41	46.00	-8.59	AVG	P
11	9.5620	39.04	9.56	48.60	60.00	-11.40	QP	P
12	9.5620	27.56	9.56	37.12	50.00	-12.88	AVG	P

Result=Reading + Correct Factor. Margin= Result-Limit.

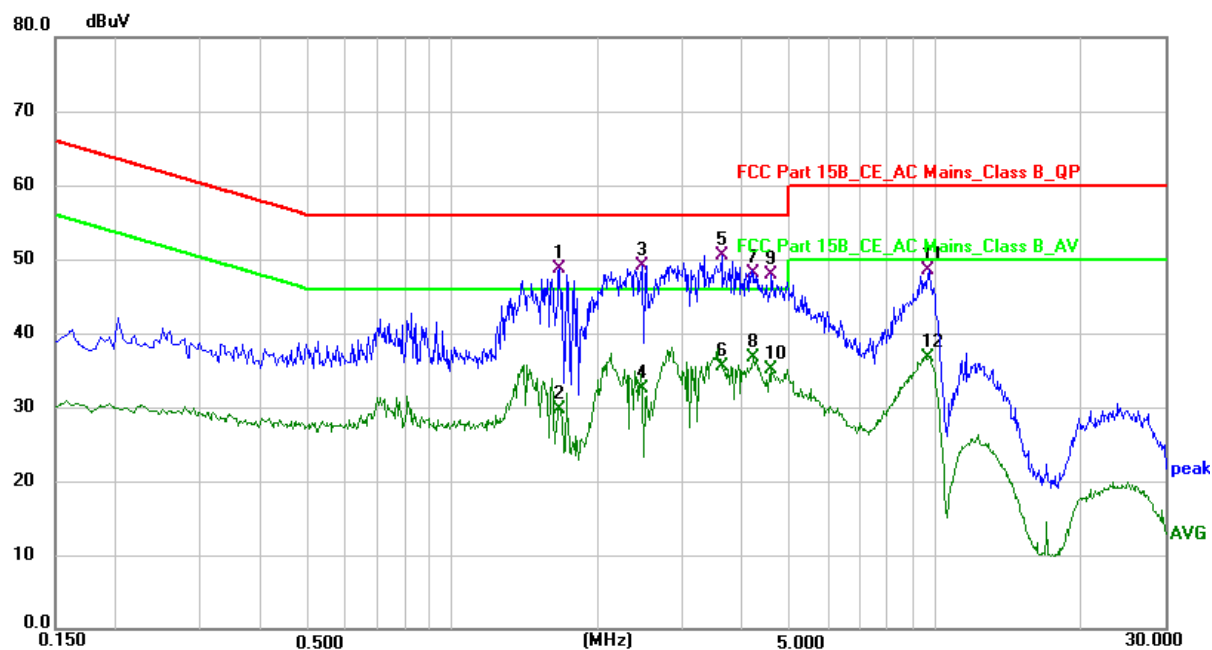
Polarization: L2



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	1.6100	39.33	9.36	48.69	56.00	-7.31	QP	P
2	1.6100	22.58	9.36	31.94	46.00	-14.06	AVG	P
3	1.7460	39.16	9.32	48.48	56.00	-7.52	QP	P
4	1.7460	18.46	9.32	27.78	46.00	-18.22	AVG	P
5	2.3820	40.56	9.37	49.93	56.00	-6.07	QP	P
6	2.3820	25.82	9.37	35.19	46.00	-10.81	AVG	P
7 *	2.8460	41.23	9.51	50.74	56.00	-5.26	QP	P
8	2.8460	27.93	9.51	37.44	46.00	-8.56	AVG	P
9	4.7660	38.46	9.55	48.01	56.00	-7.99	QP	P
10	4.7660	24.56	9.55	34.11	46.00	-11.89	AVG	P
11	9.6580	38.82	9.38	48.20	60.00	-11.80	QP	P
12	9.6580	27.37	9.38	36.75	50.00	-13.25	AVG	P

Result=Reading + Correct Factor. Margin= Result-Limit.

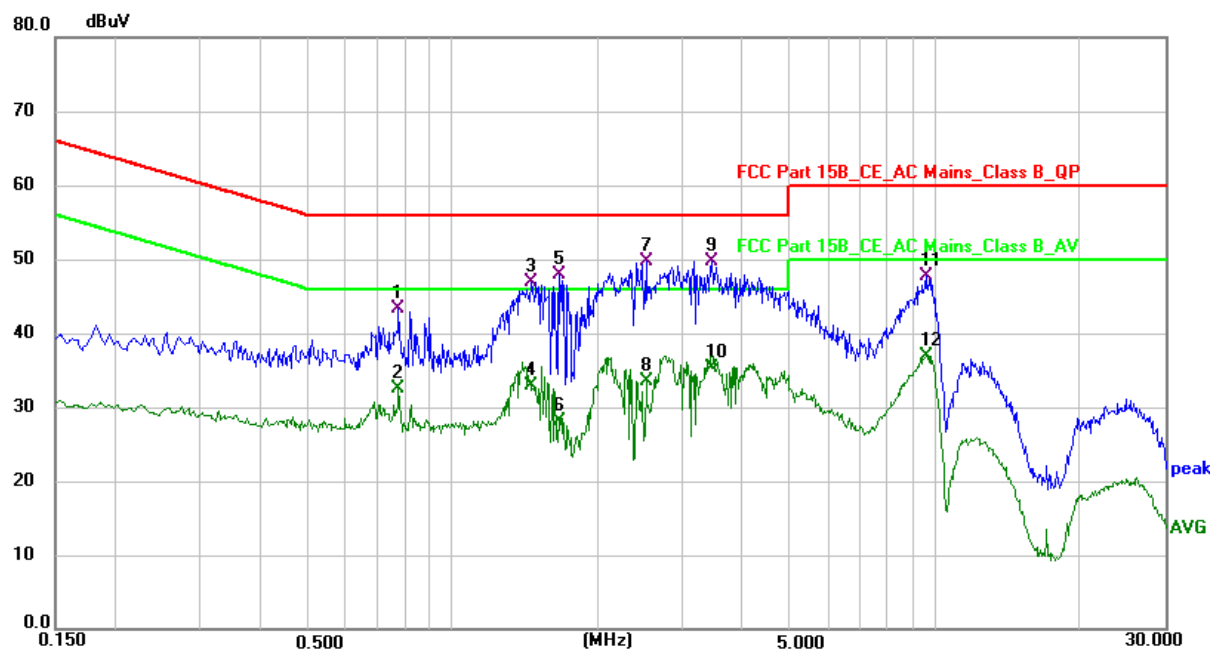
Polarization: L3



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	1.6660	39.35	9.34	48.69	56.00	-7.31	QP	P
2	1.6660	20.37	9.34	29.71	46.00	-16.29	AVG	P
3	2.4739	39.71	9.40	49.11	56.00	-6.89	QP	P
4	2.4739	23.07	9.40	32.47	46.00	-13.53	AVG	P
5 *	3.6060	40.96	9.56	50.52	56.00	-5.48	QP	P
6	3.6060	25.99	9.56	35.55	46.00	-10.45	AVG	P
7	4.2060	38.63	9.55	48.18	56.00	-7.82	QP	P
8	4.2060	27.07	9.55	36.62	46.00	-9.38	AVG	P
9	4.5900	38.31	9.55	47.86	56.00	-8.14	QP	P
10	4.5900	25.54	9.55	35.09	46.00	-10.91	AVG	P
11	9.7299	39.17	9.38	48.55	60.00	-11.45	QP	P
12	9.7299	27.29	9.38	36.67	50.00	-13.33	AVG	P

Result=Reading + Correct Factor. Margin= Result-Limit.

Polarization: N



No.	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Level (dBuV)	Limit (dBuV)	Margin (dB)	Detector	P/F
1	0.7740	33.82	9.42	43.24	56.00	-12.76	QP	P
2	0.7740	23.02	9.42	32.44	46.00	-13.56	AVG	P
3	1.4540	37.43	9.40	46.83	56.00	-9.17	QP	P
4	1.4540	23.56	9.40	32.96	46.00	-13.04	AVG	P
5	1.6700	38.45	9.40	47.85	56.00	-8.15	QP	P
6	1.6700	18.78	9.40	28.18	46.00	-17.82	AVG	P
7 *	2.5220	40.27	9.38	49.65	56.00	-6.35	QP	P
8	2.5220	24.17	9.38	33.55	46.00	-12.45	AVG	P
9	3.4500	40.22	9.39	49.61	56.00	-6.39	QP	P
10	3.4500	25.91	9.39	35.30	46.00	-10.70	AVG	P
11	9.6020	38.05	9.56	47.61	60.00	-12.39	QP	P
12	9.6020	27.36	9.56	36.92	50.00	-13.08	AVG	P

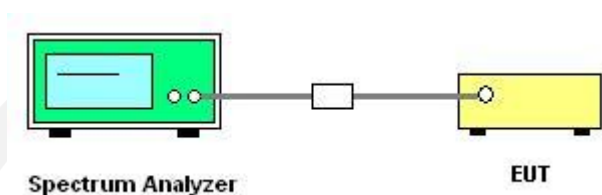
Result=Reading + Correct Factor. Margin= Result-Limit.

5. Bandwidth Test

5.1. Test Standard and Limit

Test Standard	RSS-Gen §6.7, FCC 15.249
Test Limit	N/A

5.2. Test Setup



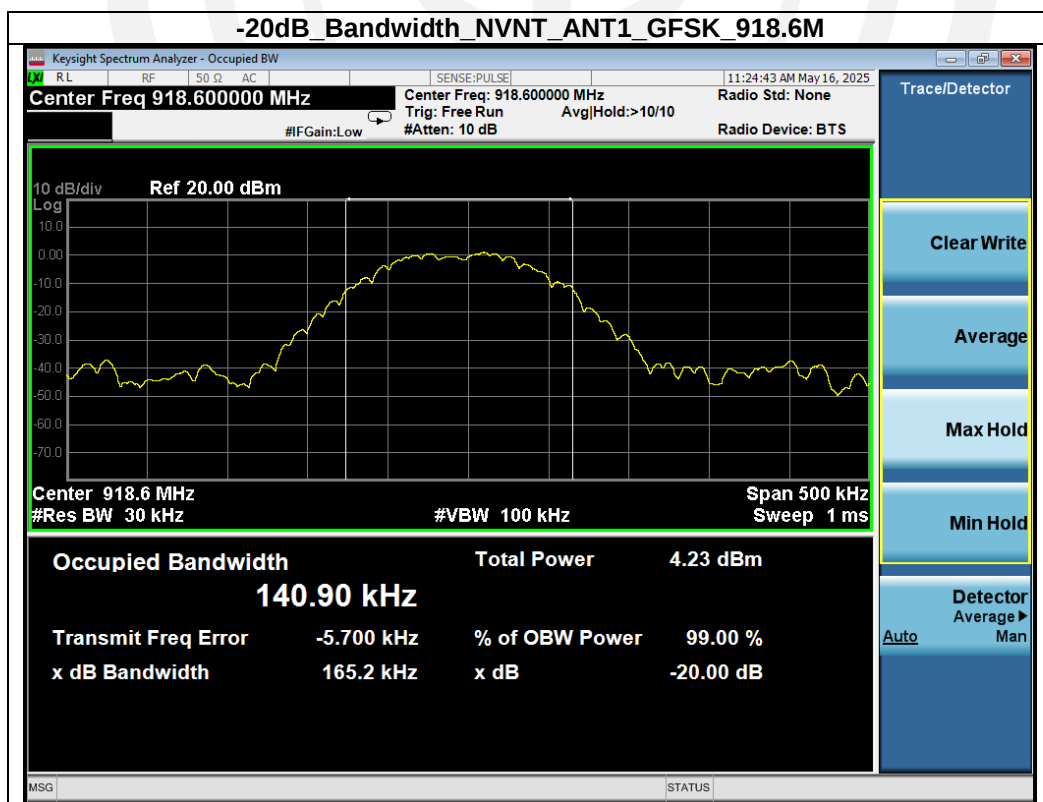
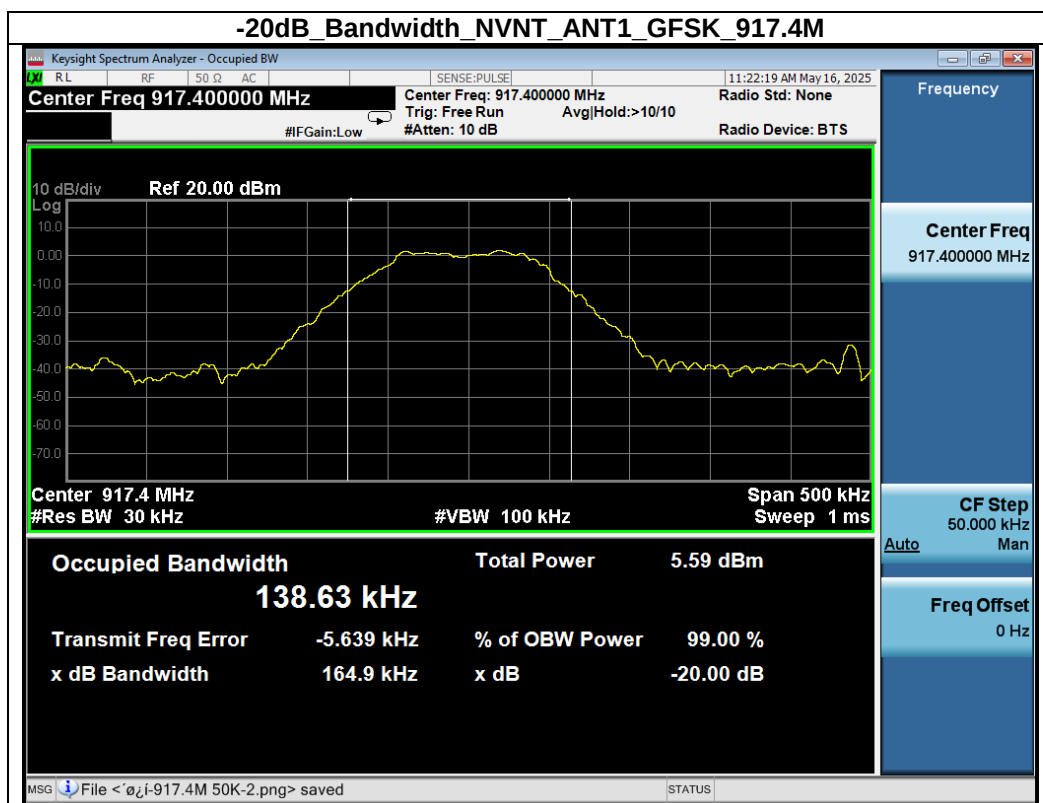
5.3. Test Procedure

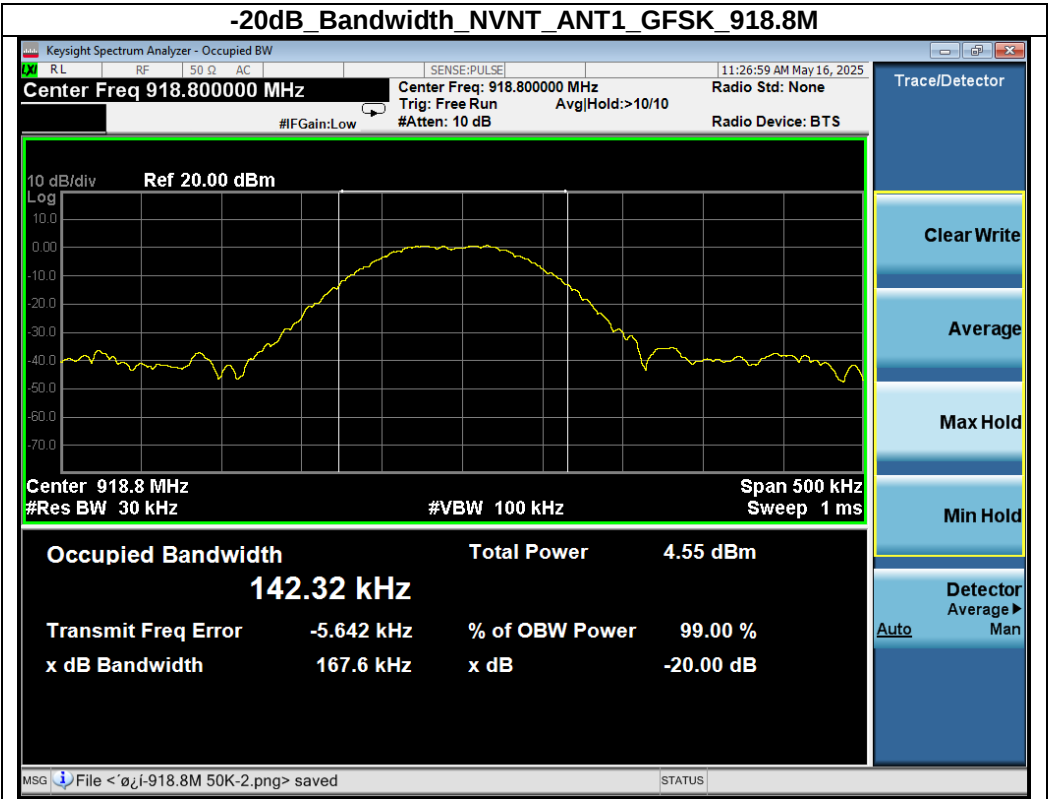
Using the following spectrum analyzer settings:

1. Span= approximately 2 to 3 times the 20dB bandwidth, centered on a hopping channel.
2. Set the RBW $\geq 1\%$ of the 20 dB bandwidth.
3. Set the VBW $\geq$ RBW
4. Sweep time = auto couple.
5. Detector function = peak.
6. Trace mode = max hold.
7. Allow trace to fully stabilize.
8. Measure the frequency difference of two frequencies that were attenuated 20dB from the reference level. Record the frequency difference as the emission bandwidth.
9. Measure the 99% Bandwidth use the function button of "Occupied Bandwidth".

5.4. Test Results

Mode	Antenna	Frequency (MHz)	-20dB BW(kHz)	99% BW(kHz)	limit(kHz)
GFSK	ANT1	917.4	164.9	138.63	/
GFSK	ANT1	918.6	165.2	140.90	/
GFSK	ANT1	918.8	167.6	142.32	/





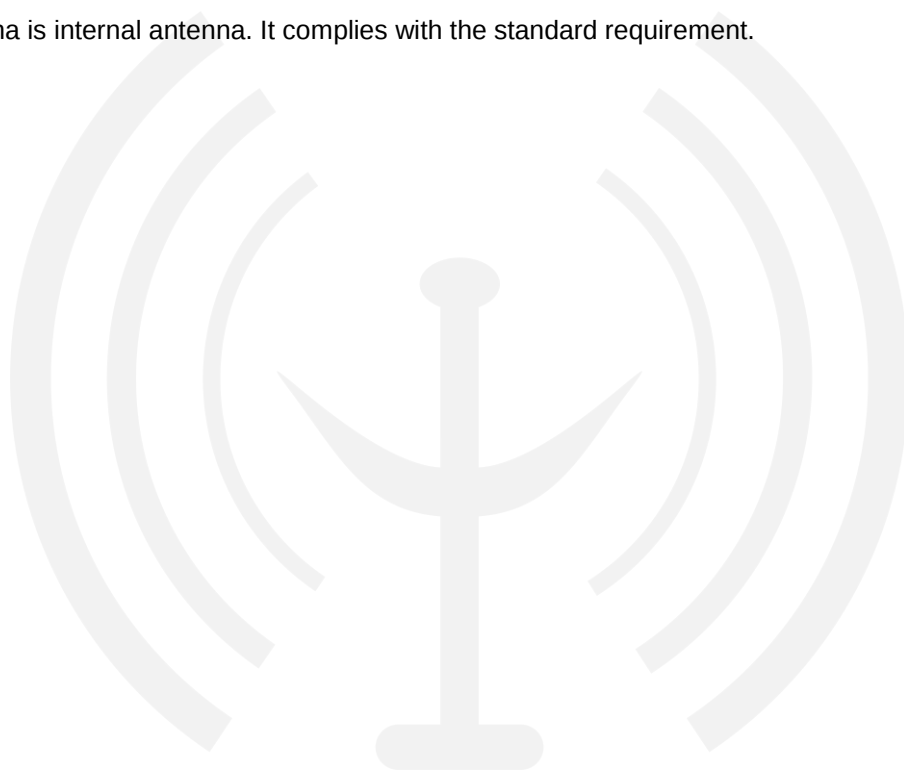
6. Antenna Requirement

6.1. Standard Requirement

According to the FCC Part 15 Paragraph 15.203& RSS-GEN(6.8), 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 to the intentional radiator shall be considered sufficient to comply with the provisions of this section. This product use a permanent ceramic printed antenna, fulfill the requirement of this section

6.2. EUT Antenna

The EUT antenna is internal antenna. It complies with the standard requirement.



7. Photos of test setup

Reference to the **appendix I Test Setup Photo** for details.

8. Photos of EUT

Reference to the **appendix II external photos** and **appendix III internal photos** for details.

----- END OF REPORT-----

