

Project No: TM-2607000369P
Report No.: TMWK2607003443KR

FCC ID: ELVNTRZB

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RADIO TEST REPORT

FCC 47 CFR PART 15 SUBPART C

Test Standard	FCC Part 15.247
Product name	Transceiver
Brand Name	EXCALIBUR
Model No.	1515
Test Result	Pass
Statements of Conformity	Determination of compliance is based on the results of the compliance measurement, not taking into account measurement instrumentation uncertainty.

The test Result was tested by Compliance Certification Services Inc. The test data, data evaluation, test procedures, and equipment configurations shown in this report were given in ANSI C63.10-2020 and compliance standards.

The test results of this report relate only to the tested sample (EUT) identified in this report.

The test Report of full or partial shall not copy. Without written approval of Compliance Certification Services Inc.(Wugu Laboratory)

Approved by:

Sehni, Hu

Sehni Hu
Supervisor

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for 90 days only.
除非另有說明，此報告結果僅對測試之樣品負責，同時此樣品僅保留90天。本報告未經本公司書面許可，不可部份複製。

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	October 13, 2026	Initial Issue	ALL	Peggy Tsai

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1. GENERAL INFORMATION

1.1 EUT INFORMATION

Applicant	Nutek Corporation No.167, Lane 235, Bauchiau Rd., Xindian District, New Taipei City, 23145, Taiwan
Manufacturer	Nutek Corporation No.167, Lane 235, Bauchiau Rd., Xindian District, New Taipei City, 23145, Taiwan
Equipment	Transceiver
Model No.	1515
Model Discrepancy	N/A
Brand Name	EXCALIBUR
Received Date	July 22, 2026
Date of Test	August 3 ~ October 1, 2026
Power Operation	1. Powered from Adapter (Not for sell) Brand / Model: Apple / A1385 2. Powered from Adapter (Not for sell) Brand / Model: SAMSUNG / ETA-U90JWS 3. Powered from DC 3.7V for Type-C 4. Powered from Battery Model: 352323 Rating: 3.7Vdc, 150mAh, 0.555Wh

Remark:

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.

1.2 EUT CHANNEL INFORMATION

Frequency Range	903.966 MHz - 917.196 MHz							
Modulation Type	GFSK							
Number of channels	50 Channels							
Channel List	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)	CH	Freq. (MHz)
	0	903.966	13	907.476	26	910.986	39	914.496
	1	904.236	14	907.746	27	911.256	40	914.766
	2	904.506	15	908.016	28	911.526	41	915.036
	3	904.776	16	908.286	29	911.796	42	915.306
	4	905.046	17	908.556	30	912.066	43	915.576
	5	905.316	18	908.826	31	912.336	44	915.846
	6	905.586	19	909.096	32	912.606	45	916.116
	7	905.856	20	909.366	33	912.876	46	916.386
	8	906.126	21	909.636	34	913.146	47	916.656
	9	906.396	22	909.906	35	913.416	48	916.926
	10	906.666	23	910.176	36	913.686	49	917.196
	11	906.936	24	910.446	37	913.956		
	12	907.206	25	910.716	38	914.226		

Remark:

Refer as ANSI C63.10-2020 for test channels.

Number of frequencies to be tested		
Frequency range in which device operates	Number of frequencies	Location in frequency range of operation
☐ 1 MHz or less	1	Middle
☐ 1 MHz to 10 MHz	2	1 near top and 1 near bottom
☒ More than 10 MHz	3	1 near top, 1 near middle, and 1 near bottom

1.3 ANTENNA INFORMATION

Antenna Type	☐ PIFA ☐ PCB ☐ Dipole ☒ Helical Antenna
Antenna Brand / Model	Brand: Nutek Corporation Model: EZ08
Antenna Gain	-3.45 dBi
Antenna Connector	N/A

Notes:

1. The antenna(s) of the EUT are permanently attached and there are no provisions for connection to an external antenna. So the EUT complies with the requirements of §15.203.

1.4 MEASUREMENT UNCERTAINTY

PARAMETER	UNCERTAINTY
AC Powerline Conducted Emission	±2.654dB
Channel Bandwidth	±0.216dB
RF output power (Spectrum)	±0.884dB
RF output power (Power Meter + Power sensor)	±0.442dB
Channel Separation	±0.484dB
Conducted Bandedge	±2.104dB
Conducted Spurious Emission	±2.104dB
Radiated Emission_9kHz-30MHz	±2.998dB
Radiated Emission_30MHz-200MHz	±3.308dB
Radiated Emission_200MHz-1GHz	±3.506dB
Radiated Emission_1GHz-6GHz	±4.068dB
Radiated Emission_6GHz-18GHz	±4.120dB
Radiated Emission_18GHz-26GHz	±3.411dB
Radiated Emission_26GHz-40GHz	±3.410dB

Remark:

1. This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2
2. ISO/IEC 17025 requires that an estimate of the measurement uncertainties associated with the emissions test results be included in the report.

1.5 FACILITIES AND TEST LOCATION

All measurement facilities used to collect the measurement data are located at

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

CAB identifier: TW1309

Test site	Test Engineer	Remark
AC Conduction Room	Ansel Wang	-
Radiation	Tony Chao	-
RF Conducted	Jerry Chang	-

Remark: The lab has been recognized as the FCC accredited lab. under the KDB 974614 D01 and is listed in the FCC public Access Link (PAL) database, FCC Registration No. :444940, the FCC Designation No.:TW1309

1.6 INSTRUMENT CALIBRATION

Conducted_FCC/IC/NCC (All)					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
PXA Signal Analyzer	Keysight	N9030B	MY62291089	2026-09-15	2027-09-14
Power Sensor	Anritsu	MA2411B	1911386	2026-06-23	2027-06-22
Power Meter	Anritsu	ML2496A	2136002	2026-06-23	2027-06-22
DC Blocks	Marvelous Microwave	MVE6411	MVE-001	2026-08-05	2027-08-04
Attenuator	Marvelous Microwave Inc	MVE2213-10	08	2025-11-06	2026-11-05
Software	N/A				

966A_Radiated					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
Signal Analyzer	Agilent	N9010A	MY52220817	2026-03-13	2027-03-12
Active Loop Antenna	COM-POWER	AL-130	121051	2026-02-04	2027-02-03
Thermo-Hygro Meter	HTC	HTC-1	HTC-D06	2026-05-19	2027-05-18
Bi-Log Antenna	Sunol Sciences	JB3	A030105&532	2026-06-18	2027-06-17
Preamplifier	EMEC	EM330	060609	2026-02-13	2027-02-12
Cable	Huber+Suhner	104PEA	20995+21000+182330	2025-08-06 2026-08-05	2026-08-05 2027-08-04
Horn Antenna	ETC	MCTD 1209	DRH13M02003	2025-12-19	2026-12-18
Preamplifier	HP	8449B	3008A00965	2025-12-17	2026-12-16
Cable	EMCI	EMC101G	150S0193+230206+24121740	2025-09-04 2026-09-03	2026-09-03 2027-09-02
Turn Table	CCS	CC-T-1F	N/A	N.C.R	N.C.R
Controller	CCS	CC-C-1F	N/A	N.C.R	N.C.R
Antenna Tower	CCS	CC-A-1F	N/A	N.C.R	N.C.R
Software	e3 V9-210616c				

Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

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AC Mains Conduction					
Name of Equipment	Manufacturer	Model	Serial Number	Calibration Date	Calibration Due
EMI Test Receiver	R&S	ESCI	100064	2026-05-21	2027-05-20
LISN	TESEQ	LN2-16N	22012	2026-02-04	2027-02-03
Cable	Woken	RFC-SMA-100-NMR-084SFL402	MFR-2Y194	2026-03-20	2027-03-19
Software	e3 V9-210616c				

Remark:

1. Each piece of equipment is scheduled for calibration once a year.
2. N.C.R. = No Calibration Required.

1.7 SUPPORT AND EUT ACCESSORIES EQUIPMENT

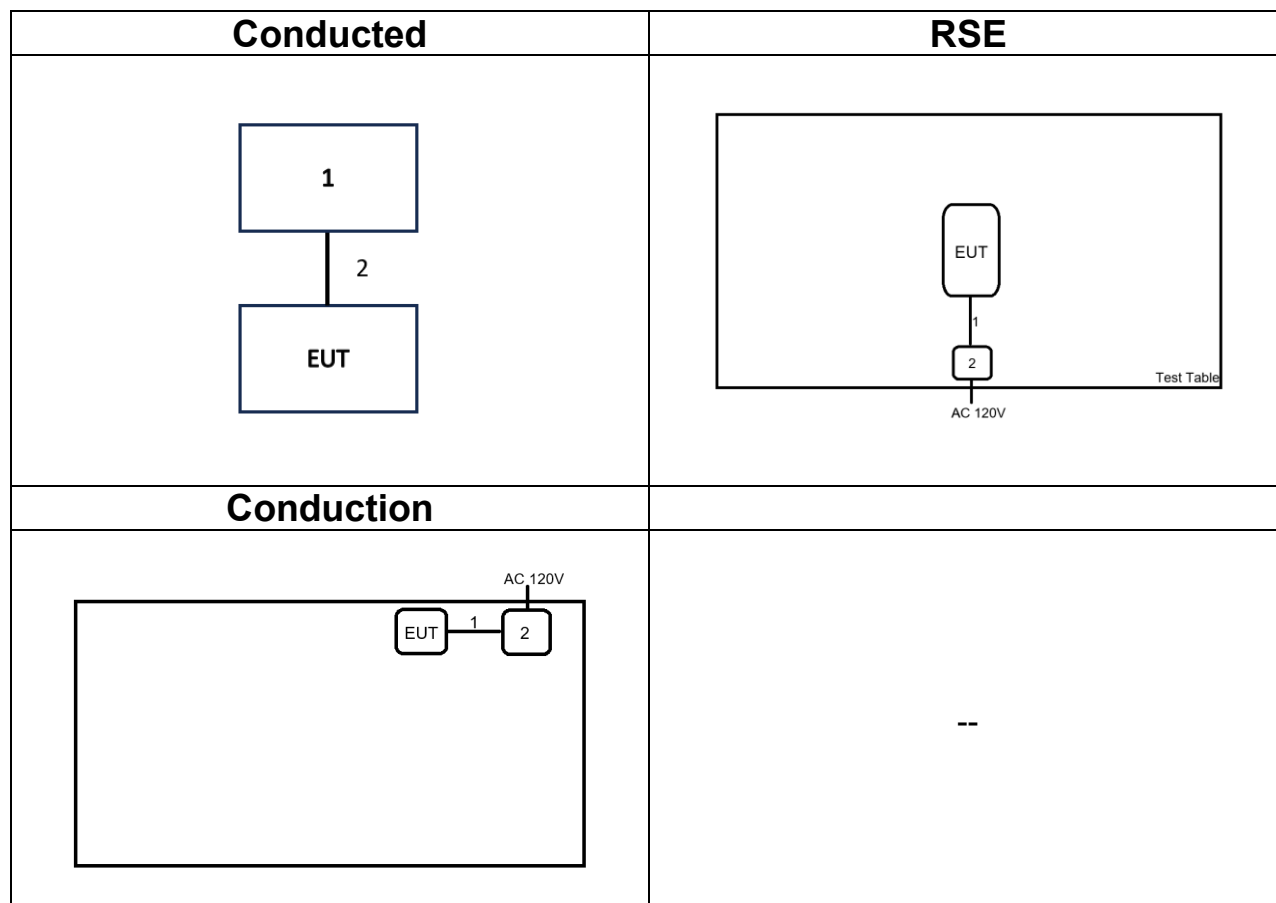
EUT Accessories Equipment					
No.	Equipment	Brand	Model	Series No.	FCC ID
	N/A				

Support Equipment (Conducted)					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	Adapter	Apple	A1385	N/A	N/A
2	USB-A to Type-C	Xiaomi	SJX10ZM	N/A	N/A

Support Equipment (Radiated)					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	Type-C Cable	Xiaomi	SJX10ZM	N/A	N/A
2	Adapter	Apple	A1385	N/A	N/A

Support Equipment (Conduction)					
No.	Equipment	Brand	Model	Series No.	FCC ID
1	Type-C Cable	Xiaomi	SJX10ZM	N/A	N/A
2	Adapter	SAMSUNG	ETA-U90JWS	N/A	N/A

1.8 TEST SET UP DIAGRAM



1.9 TEST METHODOLOGY AND APPLIED STANDARDS

The EUT connection corresponds to the surrounding fixture control board.
This EUT uses switches to set the frequency, modulation, and power to allow the sample to continuously transmit.

1.10 TEST METHODOLOGY AND APPLIED STANDARDS

The test methodology, setups and results comply with all requirements in accordance with ANSI C63.10-2020, FCC Part 2, FCC Part 15.247, KDB 558074 D01.

2. TEST SUMMERY

FCC Standard Section	Report Section	Test Item	Result
15.203	1.3	Antenna Requirement	Pass
15.207(a)	4.1	AC Conducted Emission	Pass
15.247(a)(1)	4.2	20 dB Bandwidth	Pass
-	4.2	Occupied Bandwidth (99%)	Pass
15.247(b)(2)	4.3	Output Power Measurement	Pass
15.247(a)(1)	4.4	Frequency Separation	Pass
15.247(b)(2)	4.5	Number of Hopping	Pass
15.247(d)	4.6	Conducted Band Edge	Pass
15.247(d)	4.6	Conducted Spurious Emission	Pass
15.247(a)(1)	4.7	Time of Occupancy	Pass
15.247(d), 15.205(a), 15.209(a)	4.8	Radiation Band Edge	Pass
15.247(d), 15.205(a), 15.209(a)	4.8	Radiation Spurious Emission	Pass

3. DESCRIPTION OF TEST MODES

3.1 THE WORST MODE OF OPERATING CONDITION

Operation mode	GFSK
Test Channel Frequencies	1.Lowest Channel: 903.966 MHz 2.Middle Channel: 910.446 MHz 3.Highest Channel: 917.196 MHz

3.2 THE WORST MODE OF MEASUREMENT

AC Power Line Conduction Emission	
Test Condition	AC Power line conduction emission for line and neutral
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3

Radiated Emission Measurement Above 1G	
Test Condition	Radiated Emission Above 1G
Power supply Mode	Mode 1: EUT power by Adapter
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4
Worst Position	☐ Placed in fixed position. ☐ Placed in fixed position at X-Plane (E2-Plane) ☐ Placed in fixed position at Y-Plane (E1-Plane) ☒ Placed in fixed position at Z-Plane (H-Plane)

Radiated Emission Measurement Below 1G	
Test Condition	Radiated Emission Below 1G
Power supply Mode	Mode 1: EUT power by Adapter Mode 2: EUT power by Battery
Worst Mode	☒ Mode 1 ☐ Mode 2 ☐ Mode 3 ☐ Mode 4

Remark:

1. The worst mode was record in this test report.
2. AC power line conducted emission were performed the EUT transmit at the highest output power channel as worse case.
3. The EUT was pre-scanned in three planes (H, E1, and E2) with two polarizations for radiated emission measurements. The worst-case condition was identified in the H-plane and recorded in this report.

3.3 EUT DUTY CYCLE

Temperature: 23.2 ~ 26°C

Test date:

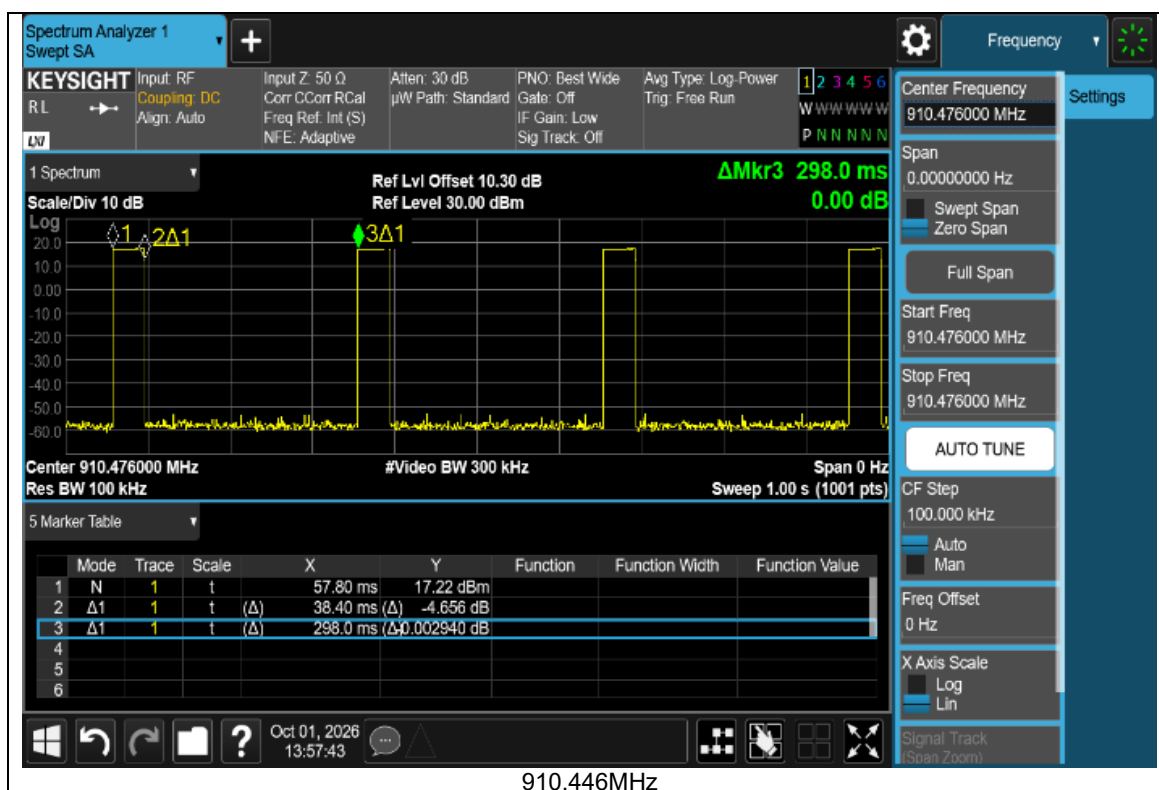
September 18 ~
October 1, 2026

Humidity: 53 ~ 61% RH

Tested by:

Jerry Chang

Mode	Duty Cycle (%) = Ton / (Ton+Toff)	Duty Factor (dB) =10*log (1/Duty Cycle)	1/T (kHz)	VBW setting (kHz)
GFSK	12.89	8.90	0.03	1.00



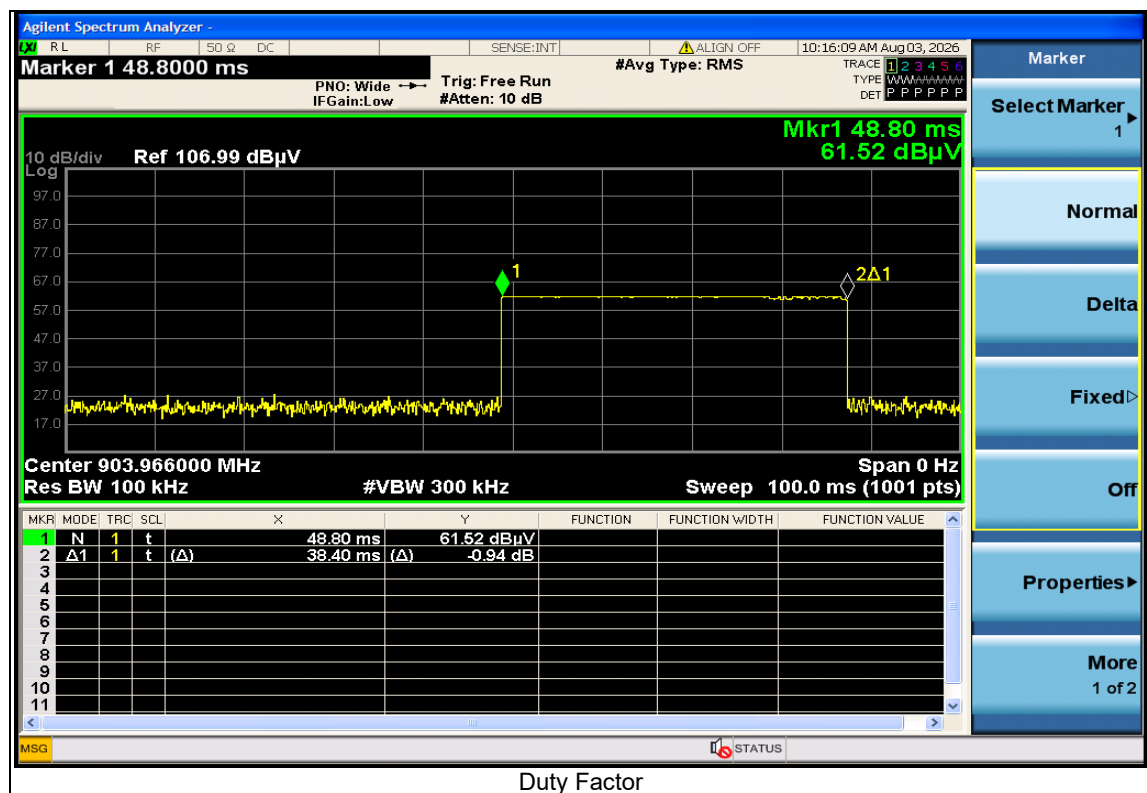
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Temperature: 22.4 ~ 25.5°C
Humidity: 53 ~ 64% RH

Test date: August 3 ~ September 30, 2026
Tested by: Tony Chao

20log(D)			
Time On(ms)	Time On+Off(ms)	Duty cycle	20log(D)
38.4	100	0.384	-8.31



4. TEST RESULT

4.1 AC POWER LINE CONDUCTED EMISSION

4.1.1 Test Limit

According to §15.207(a),

Frequency Range (MHz)	Limits(dBμV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56*	56 to 46*
0.50 to 5	56	46
5 to 30	60	50

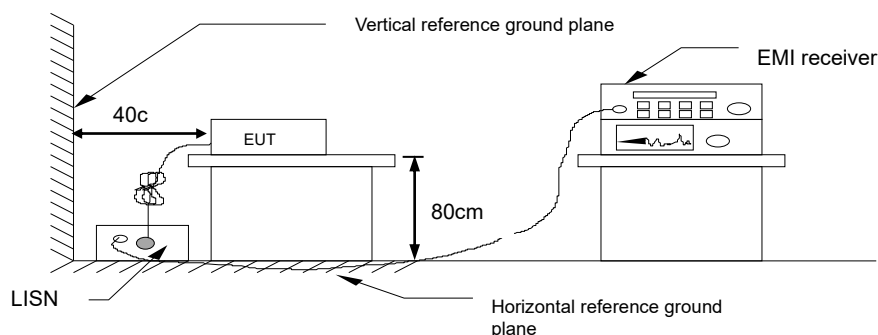
* Decreases with the logarithm of the frequency.

4.1.2 Test Procedure

Test method Refer as ANSI C63.10-2020,

1. The EUT was placed on a non-conducted table, which is 0.8m above horizontal ground plane and 0.4m above vertical ground plane.
2. EUT connected to the line impedance stabilization network (LISN)
3. Receiver set RBW of 9kHz and Detector Peak, and note as quasi-peak and average.
4. Maximum procedure was performed on the six highest emissions to ensure EUT compliance.
5. Recorded Line for Neutral and Line.

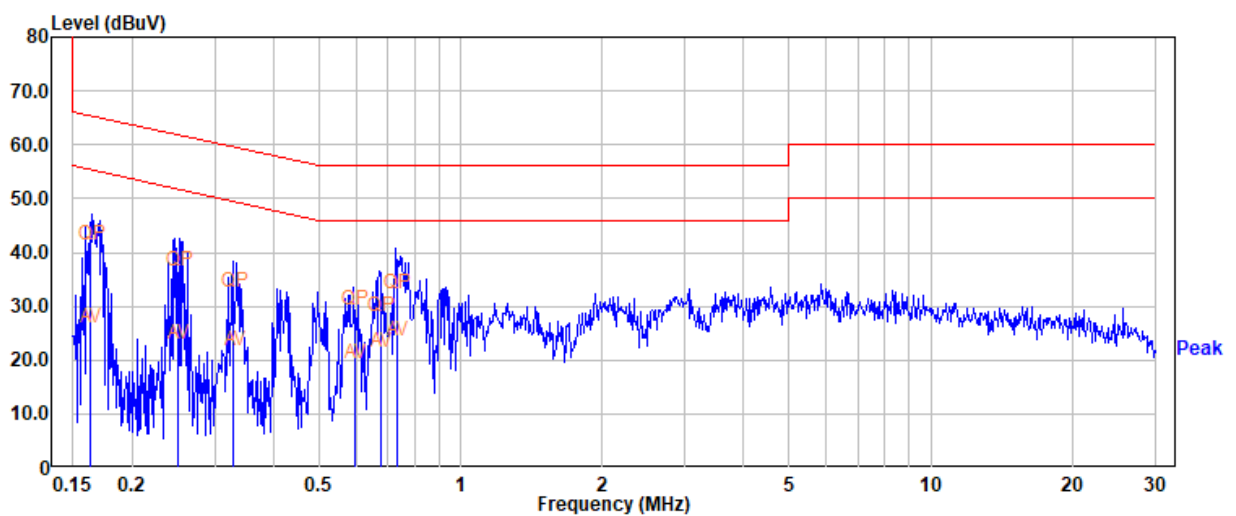
4.1.3 Test Setup



4.1.4 Test Result

Project No : TM-2607000369P
Operation Band : 900M
Test Chamber : Conduction
Probe : Line
Note :

Test Date : 2026-09-09
Temp./Humi. : 25°C / 65%
Engineer : Ansel Wang
Test Voltage : AC 120V/60Hz



Freq	Read Level	Factor	Actual FS	Limit	Margin	Detector Mode
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV	dBuV	dB	PK/QP/AV
0.163	41.34	0.10	41.44	65.29	-23.85	QP
0.163	25.87	0.10	25.97	55.29	-29.32	Average
0.251	36.52	0.09	36.61	61.72	-25.11	QP
0.251	22.79	0.09	22.88	51.72	-28.84	Average
0.329	32.62	0.08	32.70	59.46	-26.76	QP
0.329	21.64	0.08	21.72	49.46	-27.74	Average
0.596	29.10	0.08	29.18	56.00	-26.82	QP
0.596	19.13	0.08	19.21	46.00	-26.79	Average
0.675	28.12	0.08	28.20	56.00	-27.80	QP
0.675	21.25	0.08	21.33	46.00	-24.67	Average
0.731	32.34	0.09	32.43	56.00	-23.57	QP
0.731	23.43	0.09	23.52	46.00	-22.48	Average

Note: 1. Actual FS= Spectrum Read Level + Factor

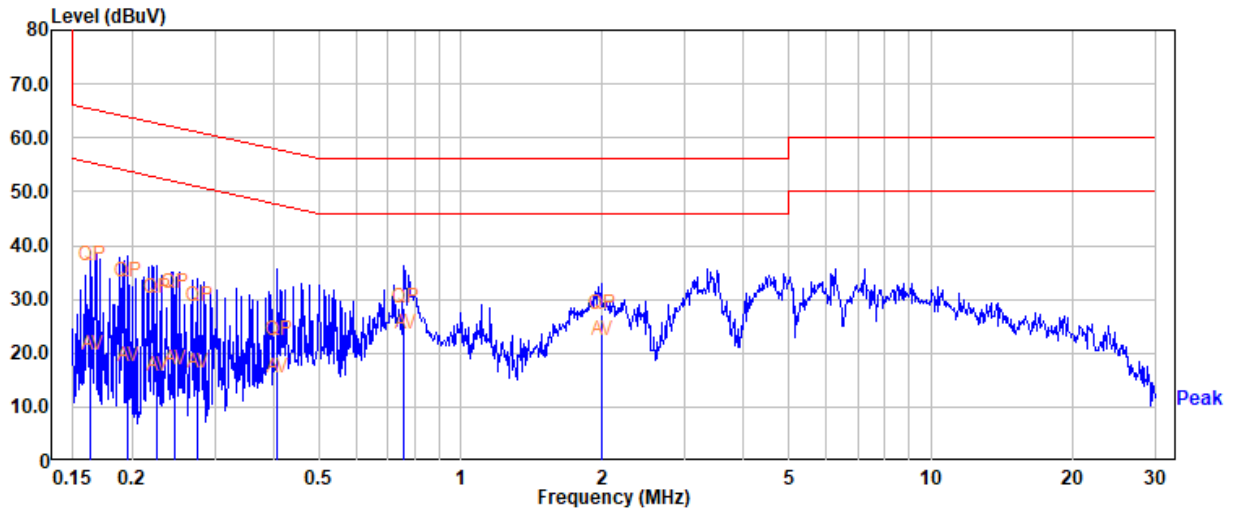
Note: 2. Margin= Actual FS - Limit

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Project No : TM-2607000369P
Operation Band : 900M
Test Chamber : Conduction
Probe : Line
Note :

Test Date : 2026-09-09
Temp./Humi. : 25°C / 65%
Engineer : Ansel Wang
Test Voltage : AC 230V/50Hz



Freq	Read Level	Factor	Actual FS	Limit	Margin	Detector Mode
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV	dBuV	dB	PK/QP/AV
0.164	36.24	0.10	36.34	65.28	-28.94	QP
0.164	19.41	0.10	19.51	55.28	-35.77	Average
0.196	33.18	0.09	33.27	63.80	-30.53	QP
0.196	17.29	0.09	17.38	53.80	-36.42	Average
0.226	30.16	0.09	30.25	62.60	-32.35	QP
0.226	15.64	0.09	15.73	52.60	-36.87	Average
0.246	31.01	0.09	31.10	61.88	-30.78	QP
0.246	16.92	0.09	17.01	51.88	-34.87	Average
0.276	28.46	0.09	28.55	60.94	-32.39	QP
0.276	16.13	0.09	16.22	50.94	-34.72	Average
0.408	22.33	0.08	22.41	57.70	-35.29	QP
0.408	15.46	0.08	15.54	47.70	-32.16	Average
0.759	28.39	0.09	28.48	56.00	-27.52	QP
0.759	23.56	0.09	23.65	46.00	-22.35	Average
1.994	27.07	0.12	27.19	56.00	-28.81	QP
1.994	22.30	0.12	22.42	46.00	-23.58	Average

Note: 1. Actual FS= Spectrum Read Level + Factor

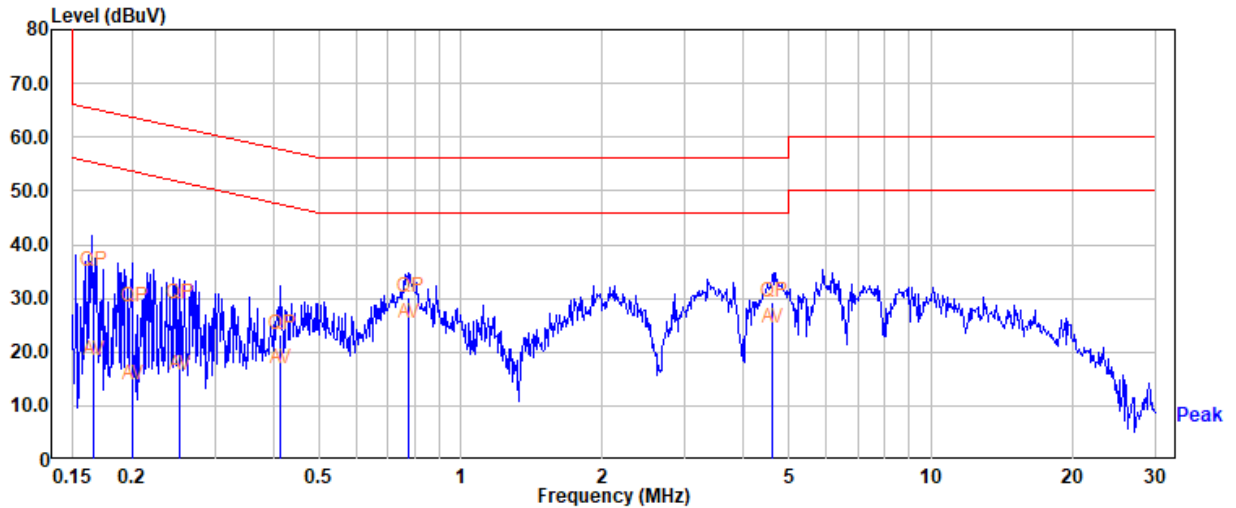
Note: 2. Margin= Actual FS - Limit

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Project No : TM-2607000369P
Operation Band : 900M
Test Chamber : Conduction
Probe : Neutral
Note :

Test Date : 2026-09-09
Temp./Humi. : 25°C / 65%
Engineer : Ansel Wang
Test Voltage : AC 230V/50Hz



Freq	Read Level	Factor	Actual FS	Limit	Margin	Detector Mode
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV	dBuV	dB	PK/QP/AV
0.166	35.01	0.12	35.13	65.18	-30.05	QP
0.166	18.19	0.12	18.31	55.18	-36.87	Average
0.201	28.37	0.11	28.48	63.58	-35.10	QP
0.201	13.63	0.11	13.74	53.58	-39.84	Average
0.253	28.83	0.11	28.94	61.67	-32.73	QP
0.253	15.51	0.11	15.62	51.67	-36.05	Average
0.414	23.08	0.10	23.18	57.56	-34.38	QP
0.414	16.74	0.10	16.84	47.56	-30.72	Average
0.777	30.15	0.11	30.26	56.00	-25.74	QP
0.777	25.33	0.11	25.44	46.00	-20.56	Average
4.605	29.22	0.18	29.40	56.00	-26.60	QP
4.605	24.13	0.18	24.31	46.00	-21.69	Average

Note: 1. Actual FS= Spectrum Read Level + Factor

Note: 2. Margin= Actual FS - Limit

4.2 20dB BANDWIDTH AND OCCUPIED BANDWIDTH (99%)

4.2.1 Test Limit

According to §15.247(a) (1),

20 dB Bandwidth : For reporting purposes only.

Occupied Bandwidth(99%) : For reporting purposes only.

4.2.2 Test Procedure

Test method Refer as ANSI C63.10-2020,

1. The EUT RF output connected to the spectrum analyzer by RF cable.
2. Setting maximum power transmit of EUT
3. SA set RBW = 1kHz, VBW = 3kHz and Detector = Peak, to measurement 20 dB Bandwidth and 99% Bandwidth.
4. Measure and record the result of 20 dB Bandwidth and 99% Bandwidth. in the test report.

4.2.3 Test Setup

Refer to section 1.8.

4.2.4 Test Result

Temperature: 23.2 ~ 26°C
Humidity: 53 ~ 61% RH

Test date: September 18 ~
October 1, 2026
Tested by: Jerry Chang

20dB BANDWIDTH

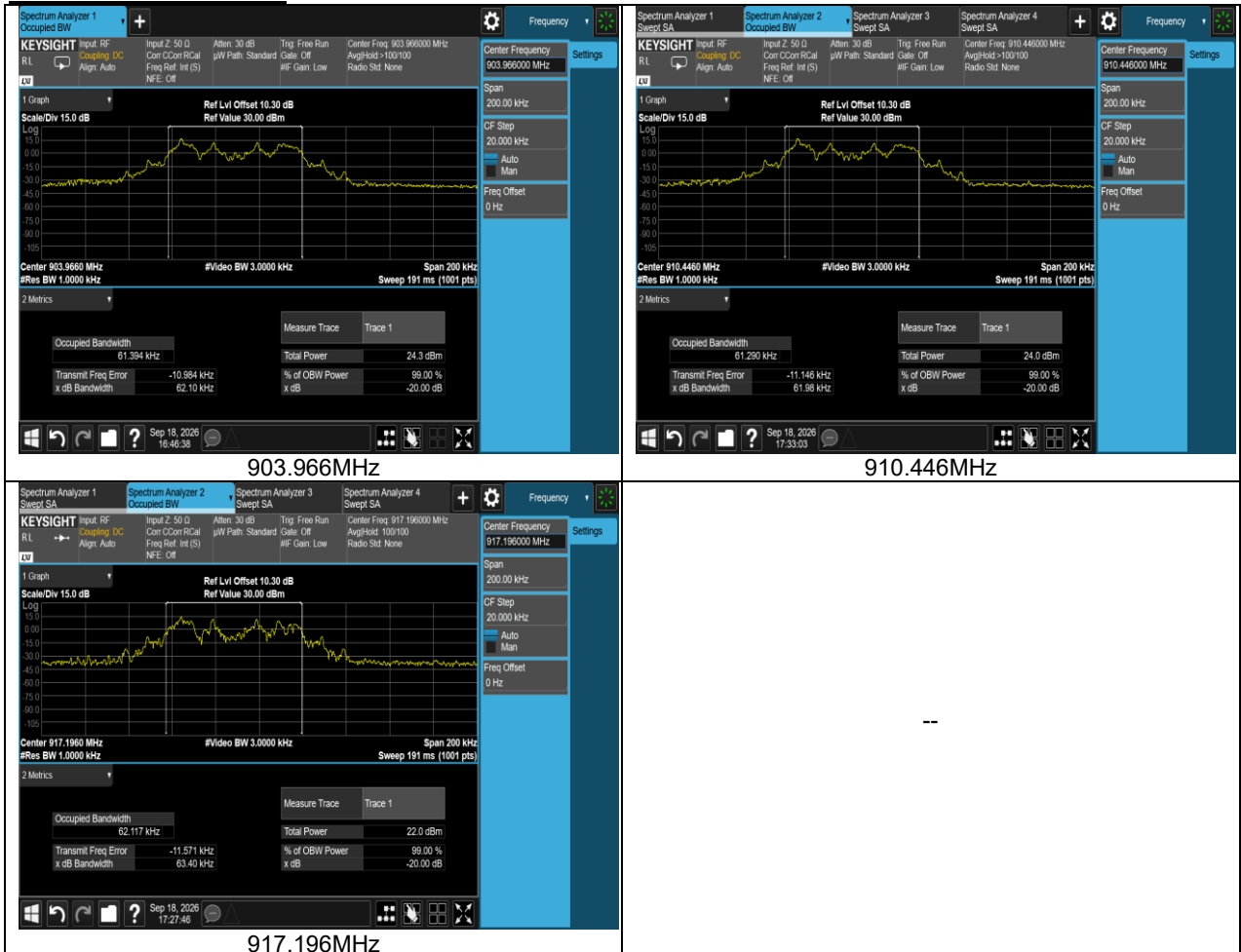
CH	20 dB BW (kHz)
0	62.10
24	61.98
49	63.40

BANDWIDTH 99%

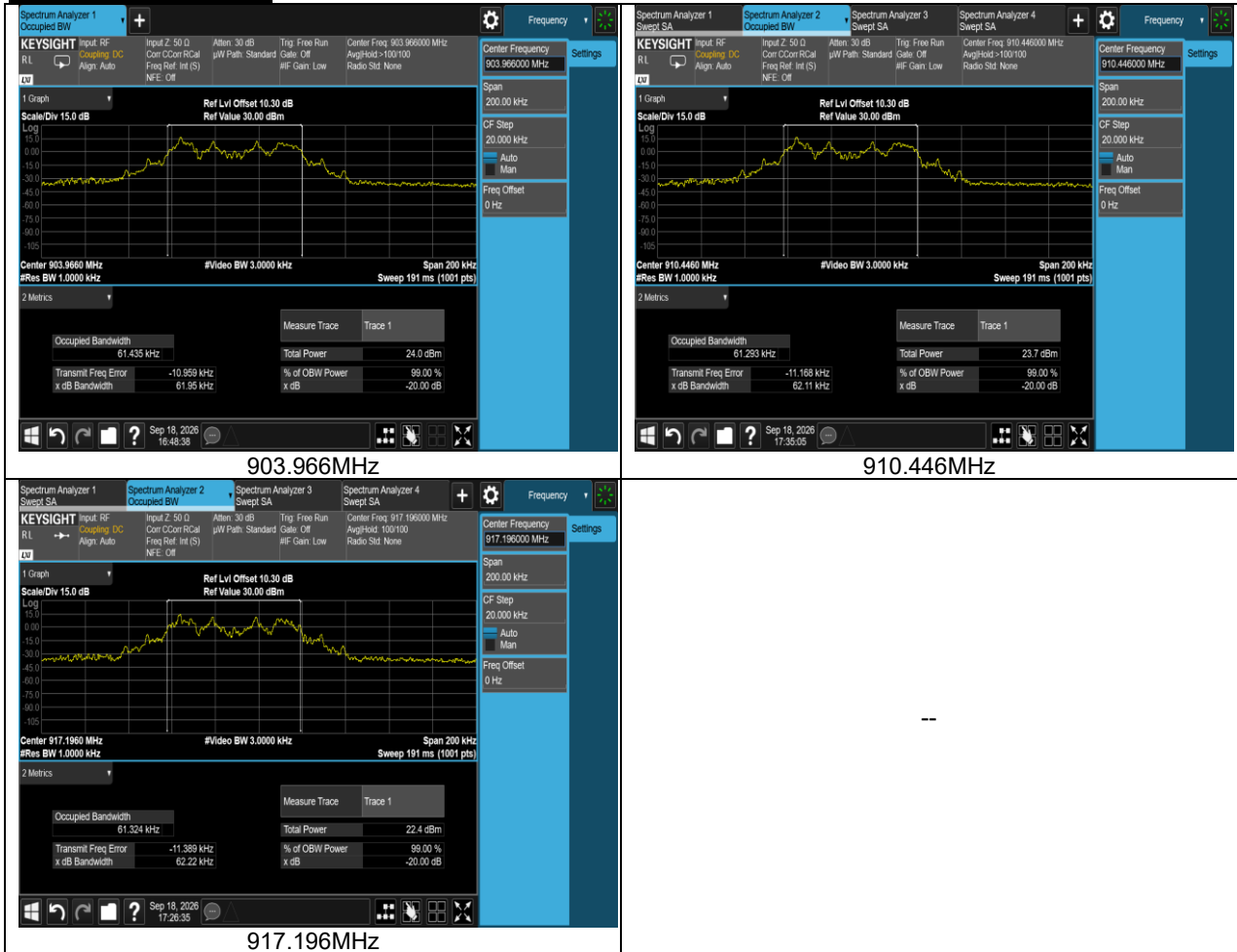
CH	99% BW (kHz)
0	61.435
24	61.293
49	61.324

Test Data

20dB BANDWIDTH



BANDWIDTH 99%



4.3 OUTPUT POWER MEASUREMENT

4.3.1 Test Limit

According to §15.247(b)(2),

For frequency hopping systems operating in the 902-928 MHz band: 1 watt.

4.3.2 Test Procedure

1. The EUT RF output connected to the power meter by RF cable.
2. Setting maximum power transmit of EUT.
3. The path loss was compensated to the results for each measurement.
4. Measure and record the result of Peak output power and Average output power. in the test report.

4.3.3 Test Setup

Refer to section 1.8.

4.3.4 Test Result

Temperature: 23.2 ~ 26°C
Humidity: 53 ~ 61% RH

Test date: September 18 ~
October 1, 2026
Tested by: Jerry Chang

Peak & Average output power :

GFSK mode (Peak):

Freq. (MHz)	Power Setting	Peak Output Power (dBm)	Output Power (mW)	Limit (mW)
903.966	default	17.15	51.880	1000
910.446	default	16.94	49.431	1000
917.196	default	16.71	46.881	1000

GFSK mode (Average):

Freq. (MHz)	Power Setting	Avg. Output Power (dBm)	Output Power (mW)	Limit (mW)
903.966	default	17.02	50.337	1000
910.446	default	16.81	47.961	1000
917.196	default	16.57	45.382	1000

**Note: Avg. output power has been calculated with duty factor.*

4.4 FREQUENCY SEPARATION

4.4.1 Test Limit

According to §15.247(a)(1),

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater.

Limit	> 20dB bandwidth
-------	------------------

4.4.2 Test Procedure

1. Place the EUT on the table and set it in transmitting mode.
2. EUT RF output port connected to the SA by RF cable.
3. Set the spectrum analyzer as RBW = 100kHz, VBW = 300kHz, Sweep = auto.
Max hold, mark 3 peaks of hopping channel and record the 3 peaks frequency.

4.4.3 Test Setup

Refer to section 1.8.

4.4.4 Test Result

Temperature: 23.2 ~ 26°C

Test date:

September 18 ~
October 1, 2026

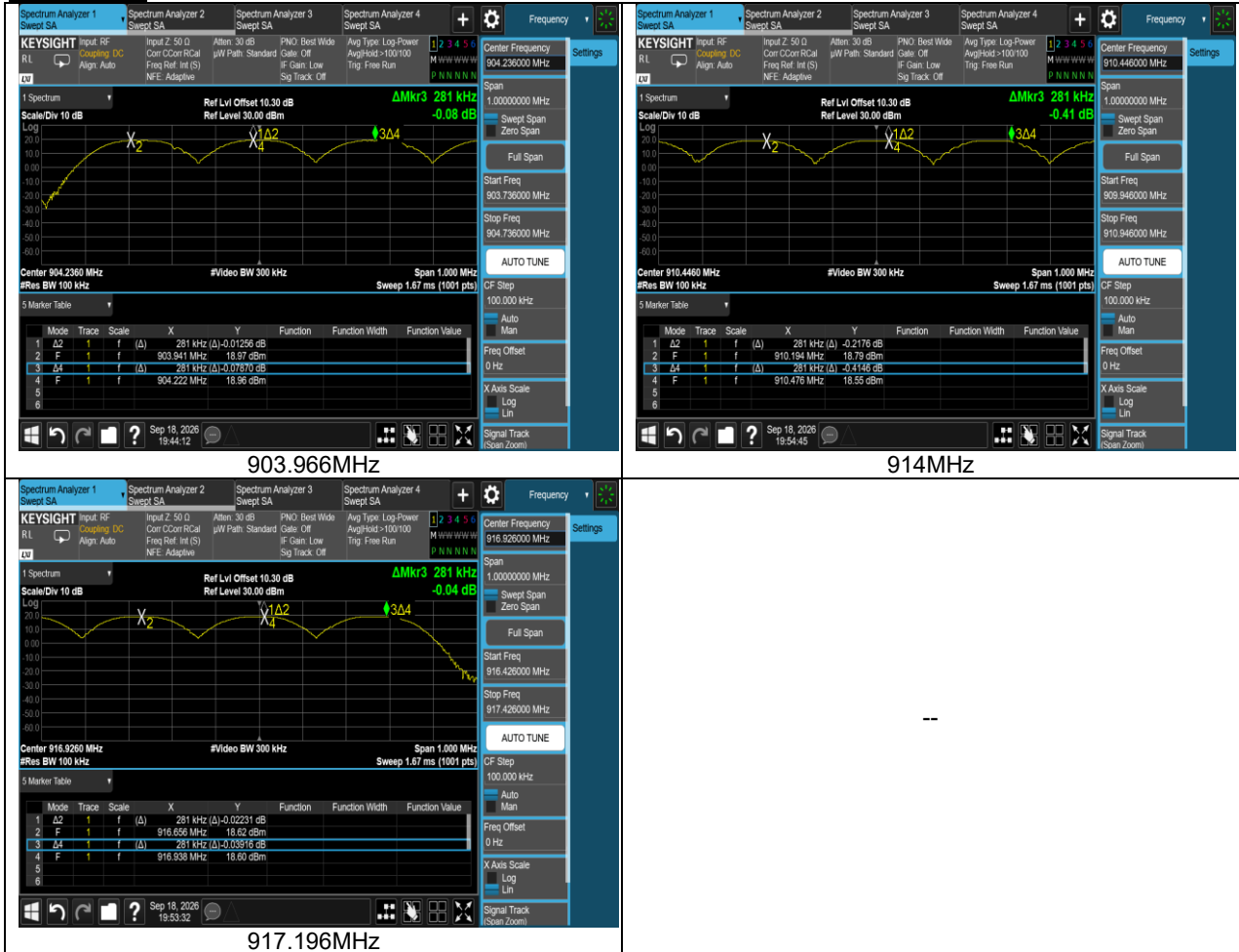
Humidity: 53 ~ 61% RH

Tested by:

Jerry Chang

Hopping Frequency Separation					
Mode	Low Channel (MHz)	High Channel (MHz)	Separation (kHz)	Min Separation Limit (kHz)	Pass/Fail
GFSK	903.941	904.222	281	63.4	Pass
	910.194	910.476	281	63.4	Pass
	916.656	916.938	281	63.4	Pass

Test Data



4.5 NUMBER OF HOPPING

4.5.1 Test Limit

According to §15.247(a)(1),
The system shall use at least 50 hopping channels.

4.5.2 Test Procedure

Test method Refer as ANSI C63.10-2020,

1. Place the EUT on the table and set it in transmitting mode.
2. EUT RF output port connected to the SA by RF cable.
3. Set spectrum analyzer Start Freq. = 895.45 MHz, Stop Freq. = 925.45 MHz, RBW=82KHz, VBW =300kHz.
4. Max hold, view and count how many channel in the band.

4.5.3 Test Setup

Refer to section 1.8.

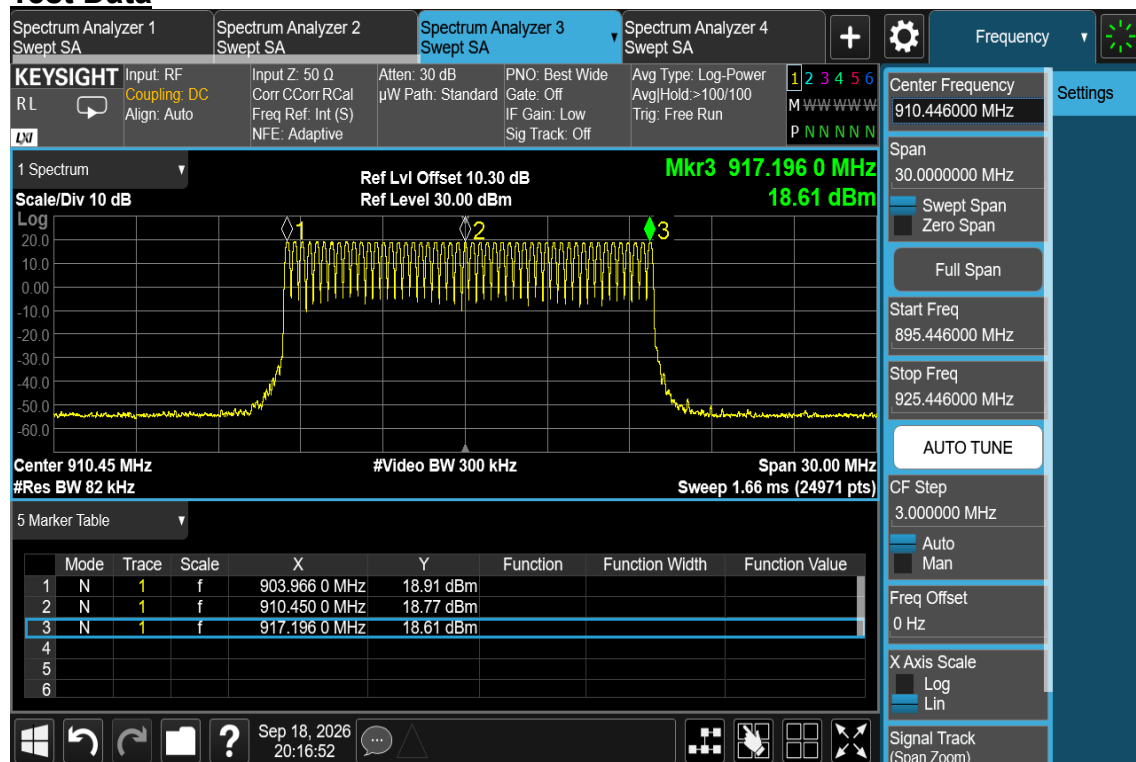
4.5.4 Test Result

Temperature: 23.2 ~ 26°C
Humidity: 53 ~ 61% RH

Test date: September 18 ~
October 1, 2026
Tested by: Jerry Chang

Number of Hopping				
Mode	Frequency (MHz)	Hopping Channel Number	Hopping Channel Number Limits	Result
GFSK	903.966-917.196	50	≥ 50	Pass

Test Data



4.6 CONDUCTED BANDEDGE AND SPURIOUS EMISSION

4.6.1 Test Limit

According to §15.247(d),

Limit	-20 dBc
-------	---------

4.6.2 Test Procedure

1. EUT RF output port connected to the SA by RF cable, and the path loss was compensated to result.
2. SA setting, RBW=100kHz, VBW=300kHz, Detector=Peak, Trace mode = max hold, SWT = Auto.
3. The Band Edge at 902MHz and 928MHz are investigated with both hopping “ON” and “OFF” modes “.

4.6.3 Test Setup

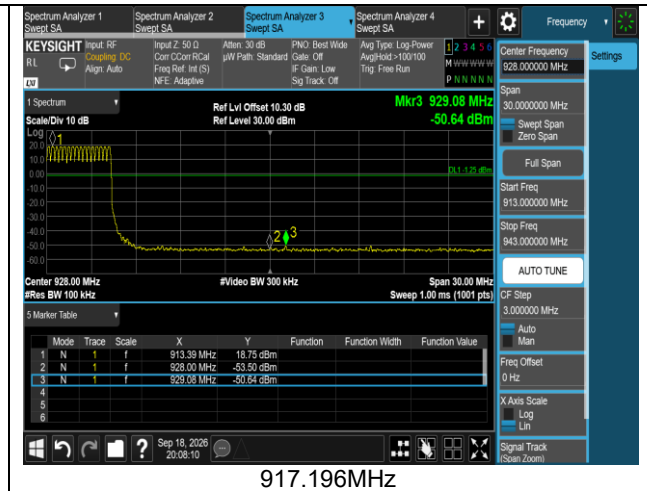
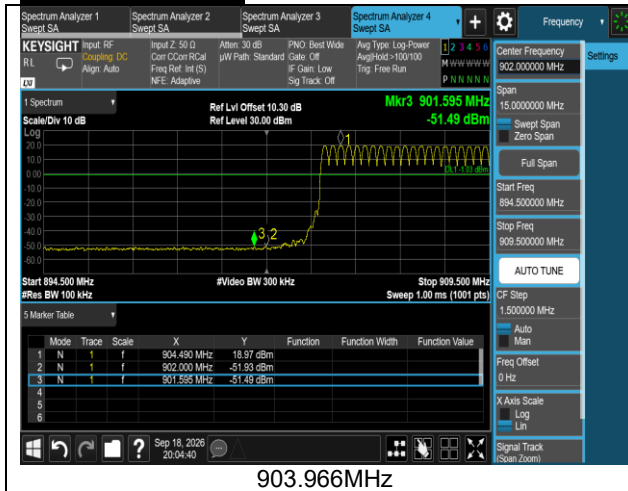
Refer to section 1.8.

4.6.4 Test Result

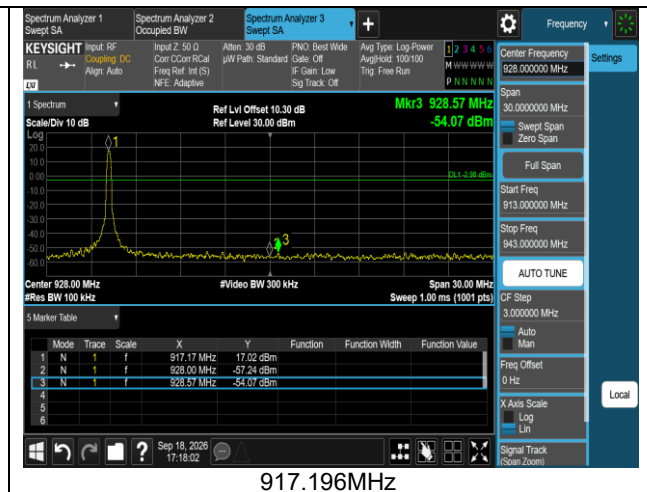
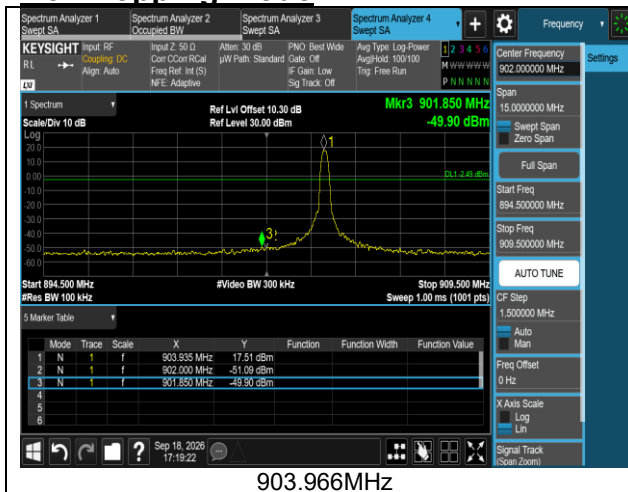
Temperature: 23.2 ~ 26°C
Humidity: 53 ~ 61% RH

Test date: September 18 ~
October 1, 2026
Tested by: Jerry Chang

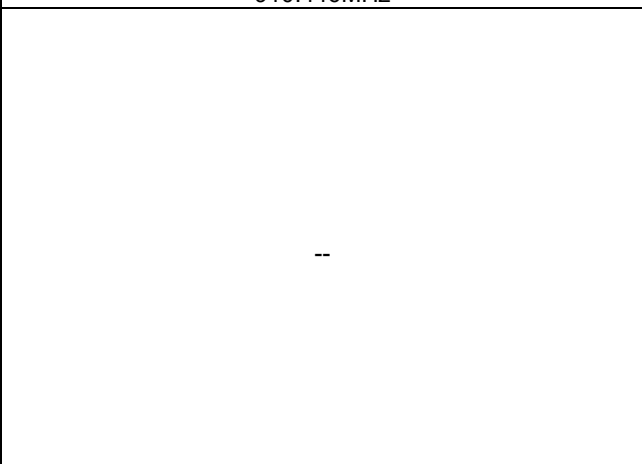
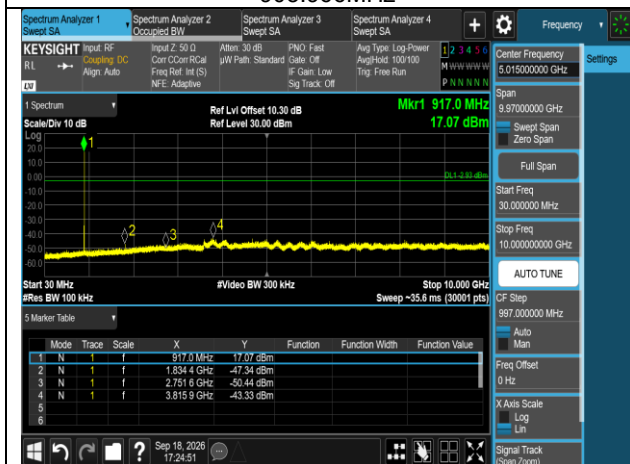
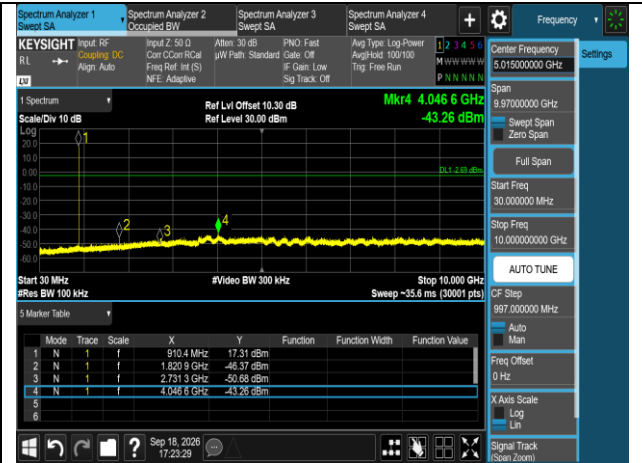
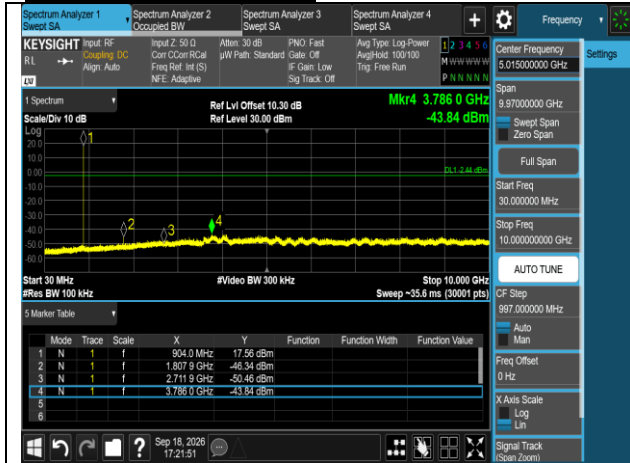
Test Data Hopping mode



Non-hopping mode



Spurious Emission



4.7 TIME OF OCCUPANCY (DWELL TIME)

4.7.1 Test Limit

According to §15.247 (a)(1),

The average time of occupancy on any channel shall not be greater than 0.4 s within a 20 s period.

4.7.2 Test Procedure

1. EUT RF output port connected to the SA by RF cable.
2. Set center frequency of spectrum analyzer = operating frequency.
3. Set the spectrum analyzer as RBW=100kHz, VBW=300kHz, Sweep = 20 s.

4.7.3 Test Setup

Refer to section 1.8.

4.7.4 Test Result

Temperature: 23.2 ~ 26°C
Humidity: 53 ~ 61% RH

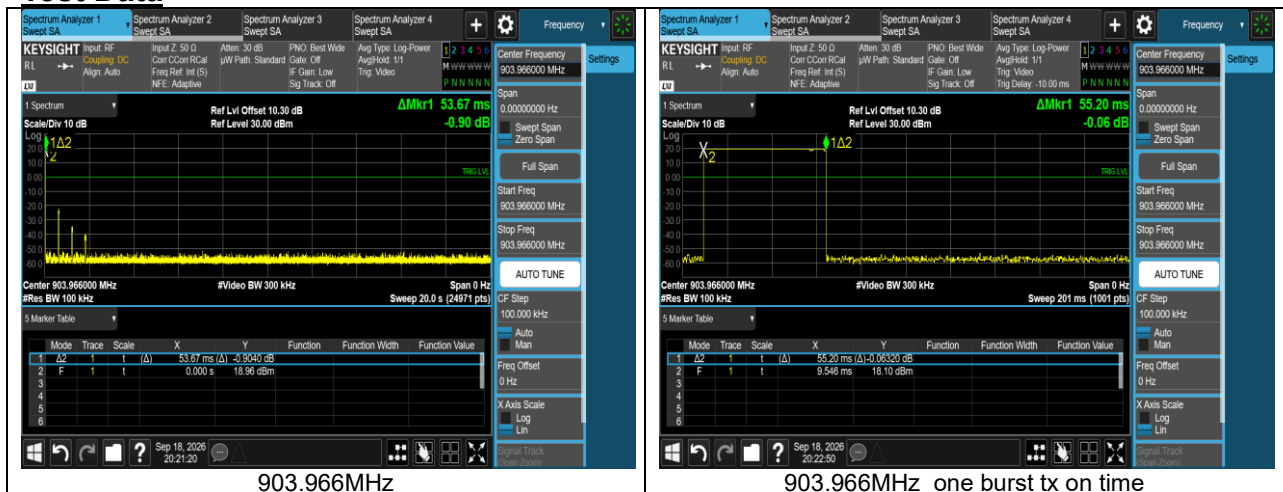
Test date: September 18 ~
October 1, 2026
Tested by: Jerry Chang

GFSK

Channel	PACKET TYPE	Dwell time of each pulse (ms)	Number of pulses within period	Total dwell time within period (ms)	Limit (ms)
50	GFSK	55.20	1	55.2	400

NOTE: Measurement Period is 20 s

Test Data



4.8 RADIATION BANDEDGE AND SPURIOUS EMISSION

4.8.1 Test Limit

FCC according to §15.247(d), §15.209(a) and §15.205(a),

In any 100 kHz bandwidth outside the authorized frequency band, all harmonic and spurious must be least 20 dB below the highest emission level with the authorized frequency band. Radiation emission which fall in the restricted bands must also follow the FCC section 15.209 as below limit in table.

Below 30 MHz

Frequency	Field Strength (microvolts/m)	Magnetic H-Field (microamperes/m)	Measurement Distance (metres)
9-490 kHz	2,400/F (F in kHz)	2,400/F (F in kHz)	300
490-1,705 kHz	24,000/F (F in kHz)	24,000/F (F in kHz)	30
1.705-30 MHz	30	N/A	30

Above 30 MHz

Frequency (MHz)	Field Strength microvolts/m at 3 metres (watts, e.i.r.p.)	
	Transmitters	Receivers
30-88	100 (3 nW)	100 (3 nW)
88-216	150 (6.8 nW)	150 (6.8 nW)
216-960	200 (12 nW)	200 (12 nW)
Above 960	500 (75 nW)	500 (75 nW)

Remark:

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30 m open area test site. Therefore sufficient tests were made to demonstrate that the alternative site produces results that correlate with the ones of tests made in an open field based on KDB 414788.

4.8.2 Test Procedure

1. The EUT is placed on a turntable, Above 1 GHz is 1.5m and below 1 GHz is 0.8m above ground plane. The EUT Configured un accordance with ANSI C63.10-2020 and the EUT set in a continuous mode.
2. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level. And EUT is set 3m away from the receiving antenna, which is scanned from 1m to 4m above the ground plane to find out the highest emissions. Measurement are made polarized in both the vertical and the horizontal positions with antenna.
3. Span shall wide enough to full capture the emission measured. The SA from 9kHz to 26.5GHz set to the low, Mid and High channels with the EUT transmit.
4. No emission found between lowest internal used/generated frequency to 30MHz (9KHz~30MHz).

Radiated emission below 30MHz is measured in a 9m*6m*6m semi-anechoic chamber, the measurements correspond to those obtained at an open-field test site. There is a comparison data of both open-field test site and semi-Anechoic chamber, and the result came out very similar.

5. The SA setting following :

(1) Peak:

(1.1) Below 30MHz :

(1.1.1) 9KHz-490KHz : RBW=200Hz / VBW=1kHz / Sweep=AUTO

(1.1.2) 490KHz-30MHz : RBW=10kHz / VBW=30kHz / Sweep=AUTO

(1.2) 30MHz to 1GHz : RBW = 100kHz, VBW $\geq$ 3*RBW, Sweep = Auto,

Detector = Peak, Trace = Max hold.

(1.3) Above 1GHz :

RBW = 1MHz, VBW $\geq$ 3 RBW, Sweep = Auto, Detector = Peak, Trace = Max hold.

(2) Average:

PK level -20LOG (tx on time/total time).

6. Data result

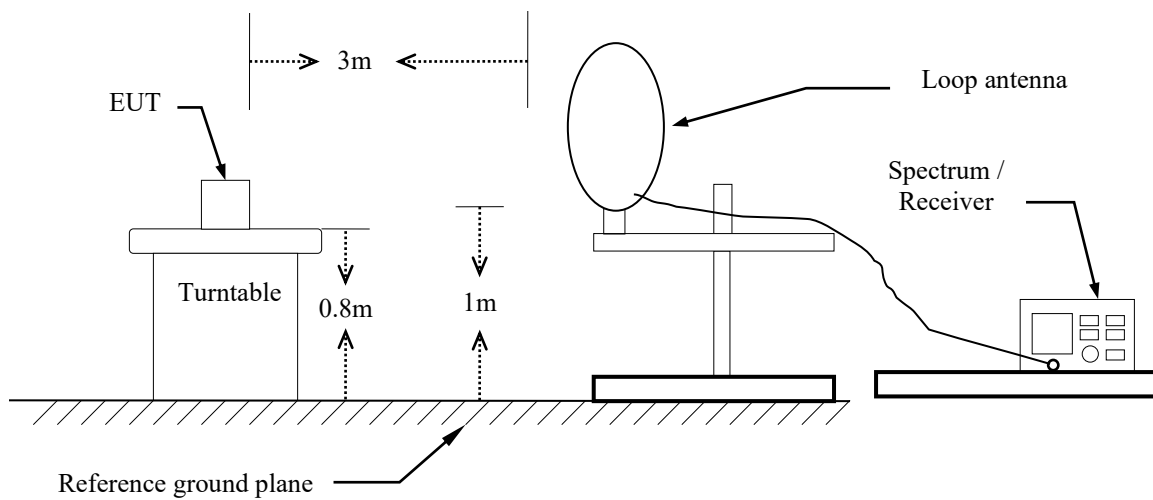
Actual FS=Spectrum Reading Level + Factor

Margin=Actual FS- Limit

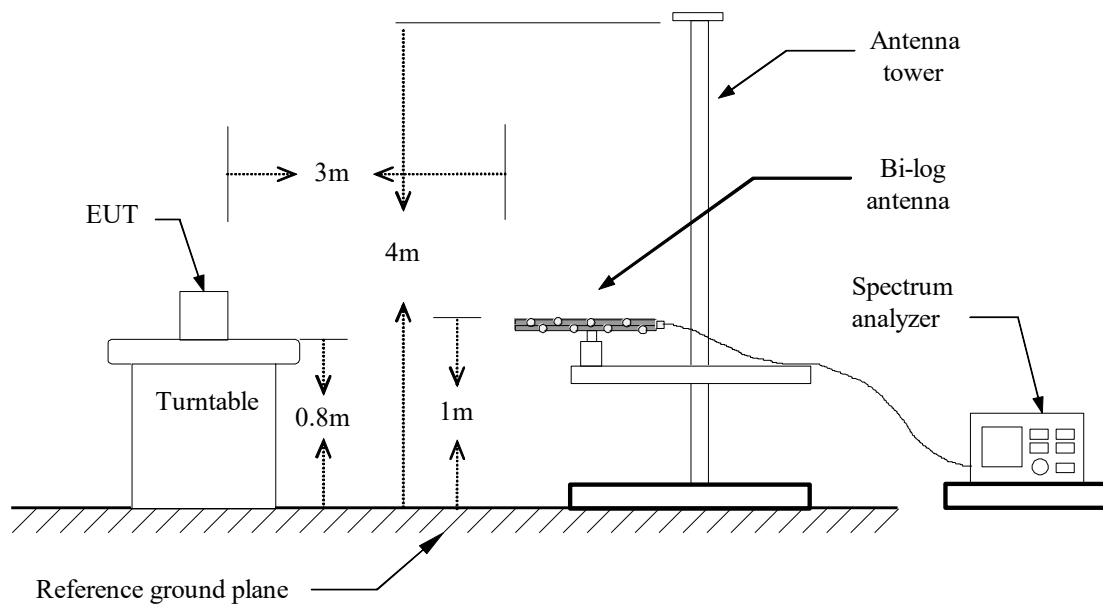
Factor = Antenna factor + Cable loss – Amp gain

4.8.3 Test Setup

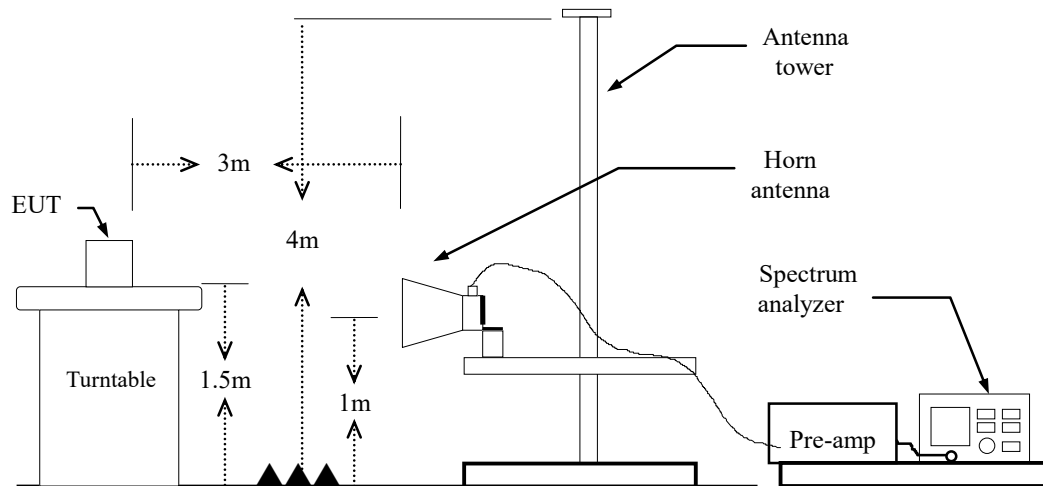
9kHz ~ 30MHz



30MHz ~ 1GHz



Above 1 GHz

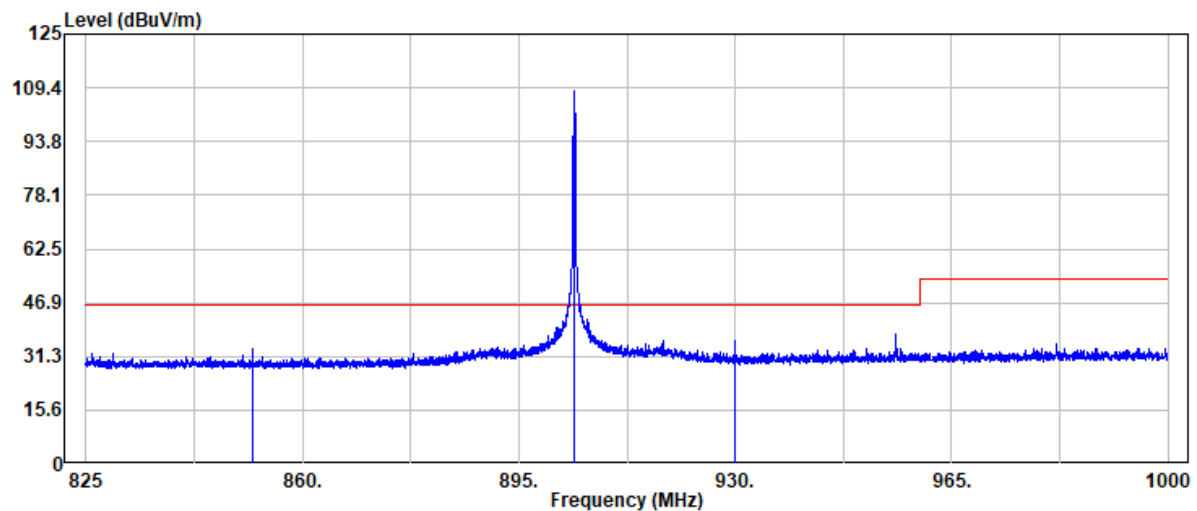


4.8.4 Test Result

Main Test Data

Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 903.966 MHz
Operation Mode : Main
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : VERTICAL
Engineer : Tony.Chao
Test Chamber : 966A



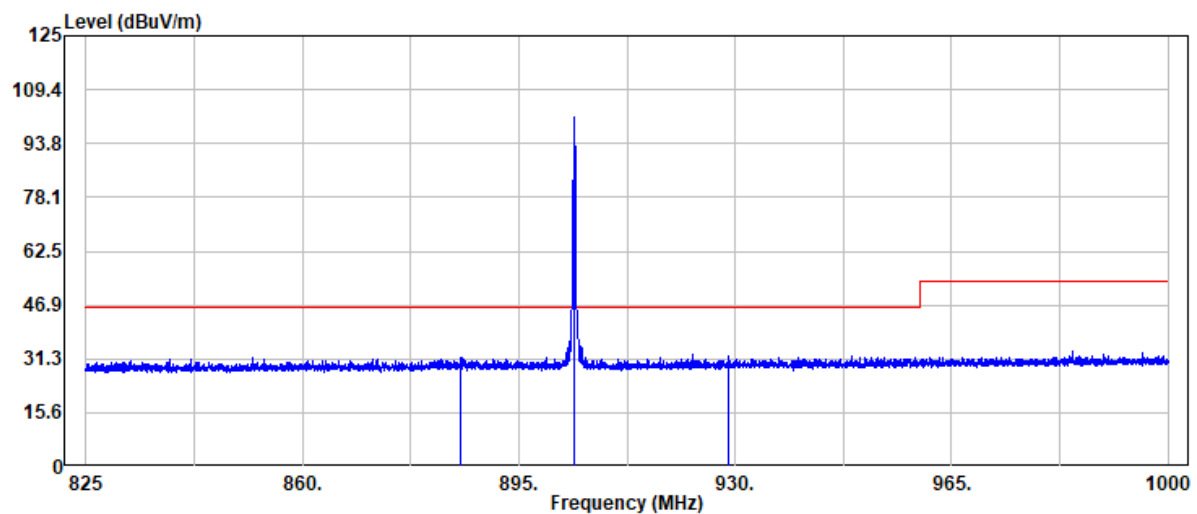
Freq	Read Level	Factor	Actual FS	Limit @3m	Margin	Detector Mode
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
851.97	32.43	0.99	33.42	46.00	-12.58	Peak
903.99	107.07	1.53	108.60	--	--	Peak
903.99	108.60	-8.31	100.29	--	--	Average
930.00	33.82	1.88	35.70	46.00	-10.30	Peak

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Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 903.966 MHz
Operation Mode : Main
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : HORIZONTAL
Engineer : Tony.Chao
Test Chamber : 966A



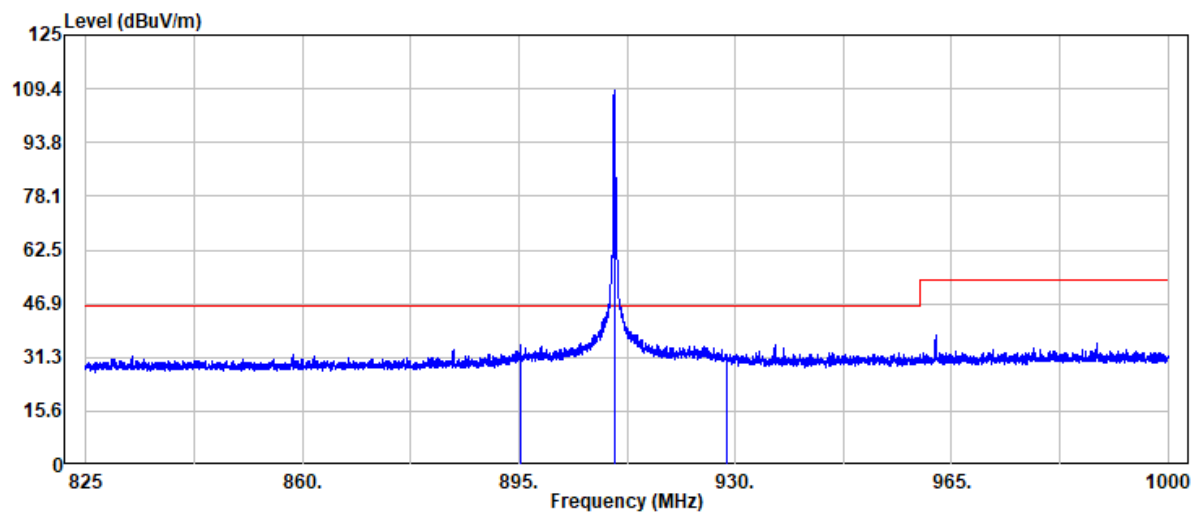
Freq	Read		Actual	Limit		Detector
MHz	Level	Factor	FS	@3m	Margin	Mode
	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
885.70	30.29	1.44	31.73	46.00	-14.27	Peak
903.97	99.85	1.53	101.38	--	--	Peak
903.97	101.38	-8.31	93.07	--	--	Average
928.93	30.24	1.88	32.12	46.00	-13.88	Peak

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Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 910.446 MHz
Operation Mode : Main
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : VERTICAL
Engineer : Tony.Chao
Test Chamber : 966A



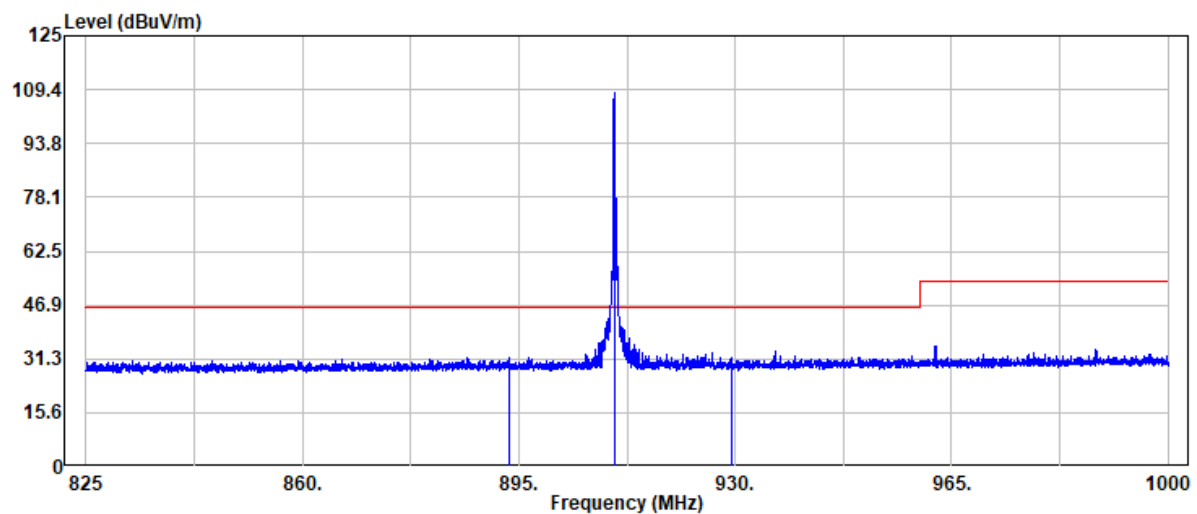
Freq	Read	Factor	Actual	Limit	Margin	Detector
-----	Level	-----	FS	@3m	-----	Mode
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
895.35	33.30	1.51	34.81	46.00	-11.19	Peak
910.44	107.48	1.53	109.01	--	--	Peak
910.44	109.01	-8.31	100.70	--	--	Average
928.67	30.28	1.86	32.14	46.00	-13.86	Peak

Project No: TM-2607000369P
Report No.: TMWK2607003443KR

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Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 910.446 MHz
Operation Mode : Main
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : HORIZONTAL
Engineer : Tony.Chao
Test Chamber : 966A



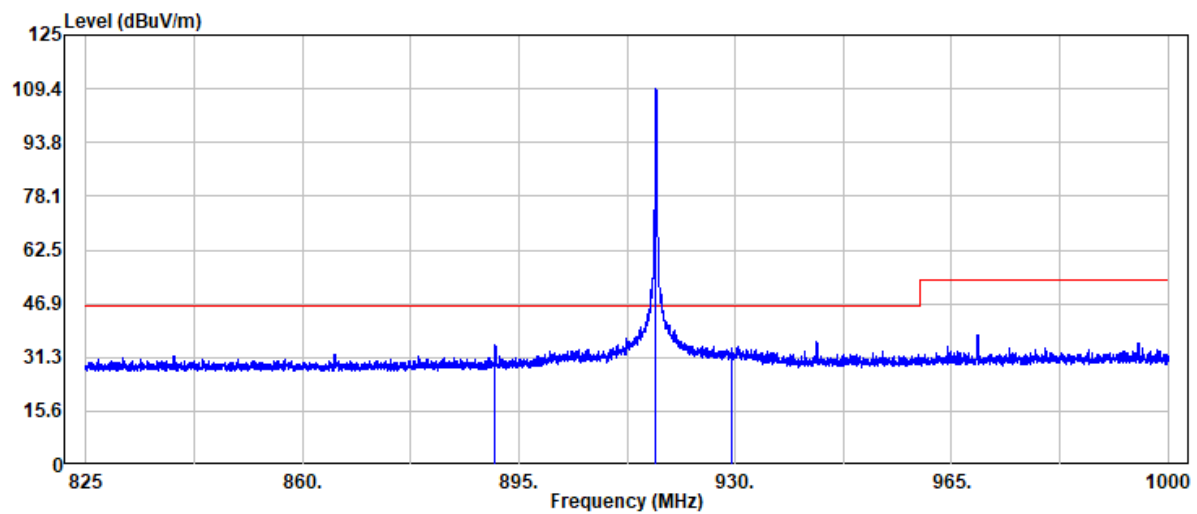
Freq	Read	Factor	Actual	Limit	Margin	Detector
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
893.49	30.18	1.48	31.66	46.00	-14.34	Peak
910.44	106.77	1.53	108.30	--	--	Peak
910.44	108.30	-8.31	99.99	--	--	Average
929.43	29.61	1.88	31.49	46.00	-14.51	Peak

Project No: TM-2607000369P
Report No.: TMWK2607003443KR

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Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 917.196 MHz
Operation Mode : Main
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : VERTICAL
Engineer : Tony.Chao
Test Chamber : 966A



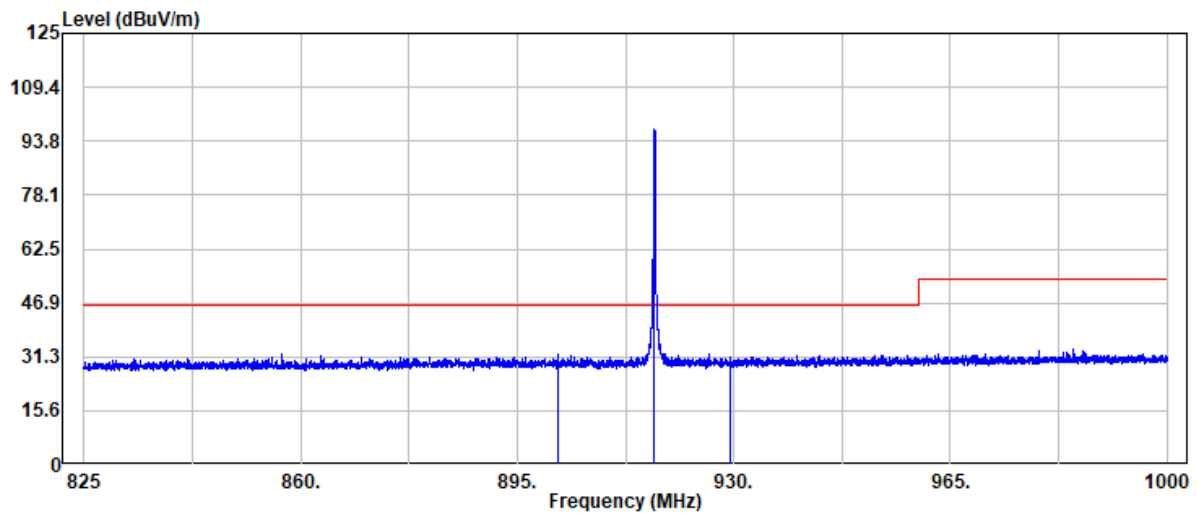
Freq	Read	Factor	Actual	Limit	Margin	Detector
-----	Level		FS	@3m		Mode
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
891.22	33.31	1.45	34.76	46.00	-11.24	Peak
917.20	107.57	1.66	109.23	--	--	Peak
917.20	109.23	-8.31	100.92	--	--	Average
929.37	31.95	1.88	33.83	46.00	-12.17	Peak

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Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 917.196 MHz
Operation Mode : Main
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : HORIZONTAL
Engineer : Tony.Chao
Test Chamber : 966A

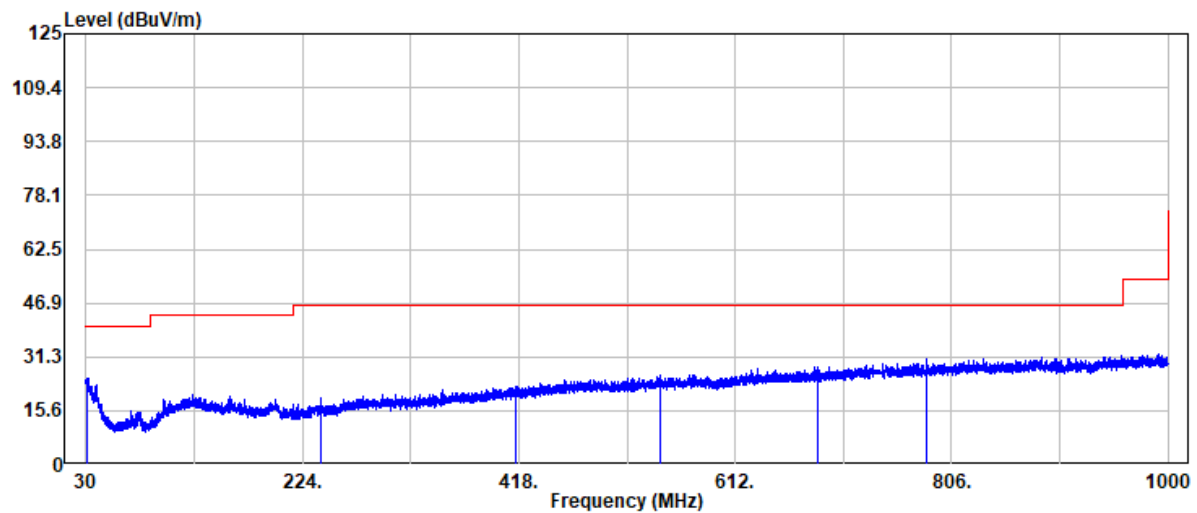


Freq	Read	Factor	Actual	Limit	Margin	Detector
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
901.67	30.34	1.54	31.88	46.00	-14.12	Peak
917.23	95.33	1.66	96.99	--	--	Peak
917.23	96.99	-8.31	88.68	--	--	Average
929.48	29.04	1.88	30.92	46.00	-15.08	Peak

TX Test Data

Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 910.446 MHz
Operation Mode : TX
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : VERTICAL
Engineer : Tony.Chao
Test Chamber : 966A



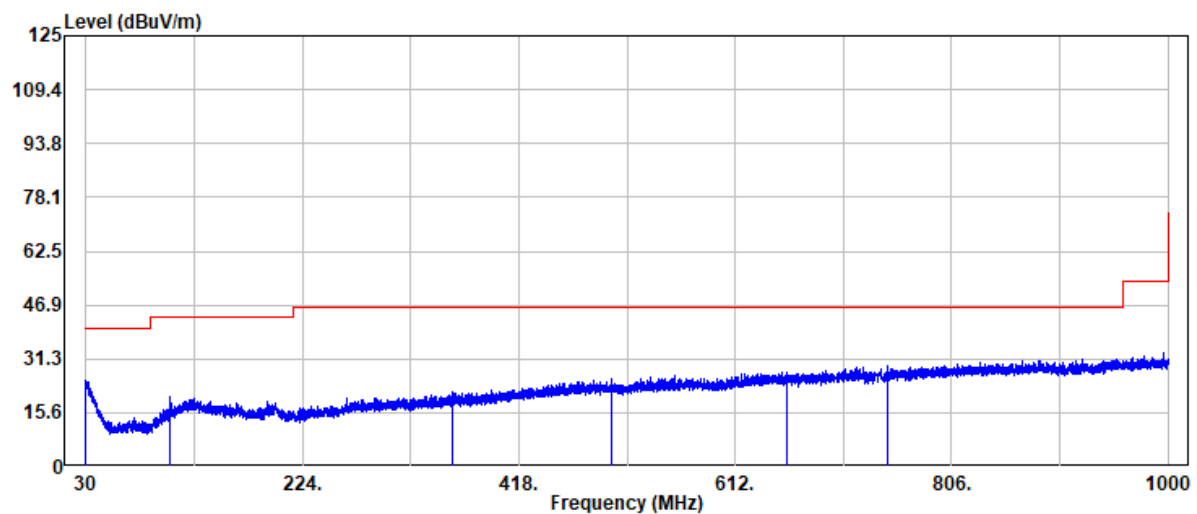
Freq	Read Level	Factor	Actual FS	Limit @3m	Margin	Detector Mode
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
30.90	28.43	-3.27	25.16	40.00	-14.84	Peak
240.00	30.87	-11.33	19.54	46.00	-26.46	Peak
414.80	29.06	-6.31	22.75	46.00	-23.25	Peak
544.30	29.54	-3.69	25.85	46.00	-20.15	Peak
685.70	29.84	-1.38	28.46	46.00	-17.54	Peak
783.90	30.42	0.13	30.55	46.00	-15.45	Peak

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Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 910.446 MHz
Operation Mode : TX
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : HORIZONTAL
Engineer : Tony.Chao
Test Chamber : 966A



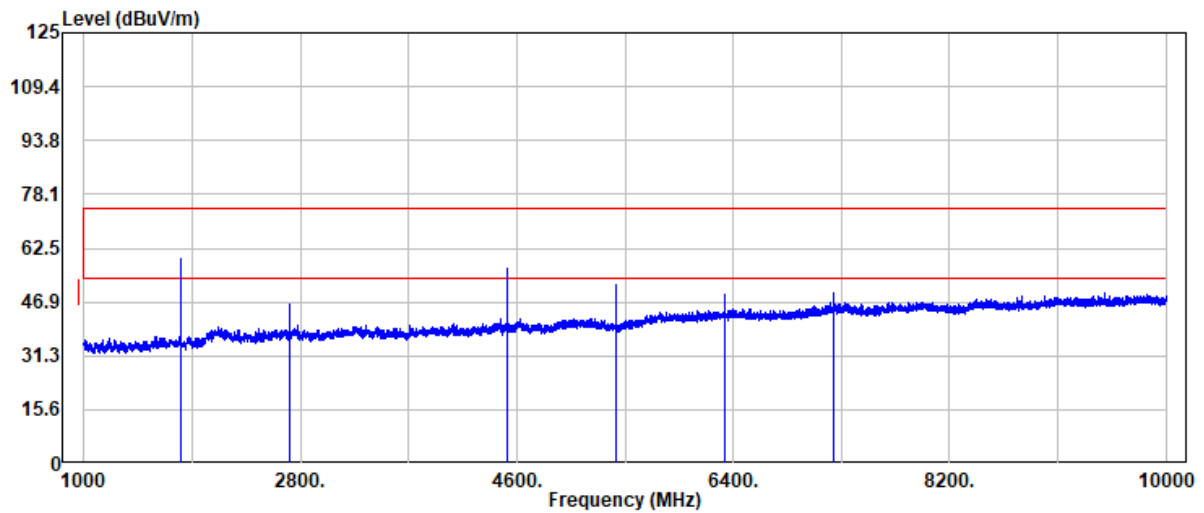
Freq	Read	Factor	Actual	Limit	Margin	Detector
MHz	Level		FS	@3m		Mode
	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
30.02	27.90	-2.74	25.16	40.00	-14.84	Peak
104.90	32.18	-11.89	20.29	43.50	-23.21	Peak
359.20	29.58	-7.79	21.79	46.00	-24.21	Peak
501.10	29.97	-4.41	25.56	46.00	-20.44	Peak
658.10	29.16	-1.59	27.57	46.00	-18.43	Peak
748.20	29.65	-0.44	29.21	46.00	-16.79	Peak

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Report No.: TMWK2607003443KR

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Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 903.996 MHz
Operation Mode : TX
EUT Pol : H
Setting :

Test Date : 2026-09-07
Temp./Humi. : 25.4/53
Antenna Pol. : VERTICAL
Engineer : Tony.Chao
Test Chamber : 966A



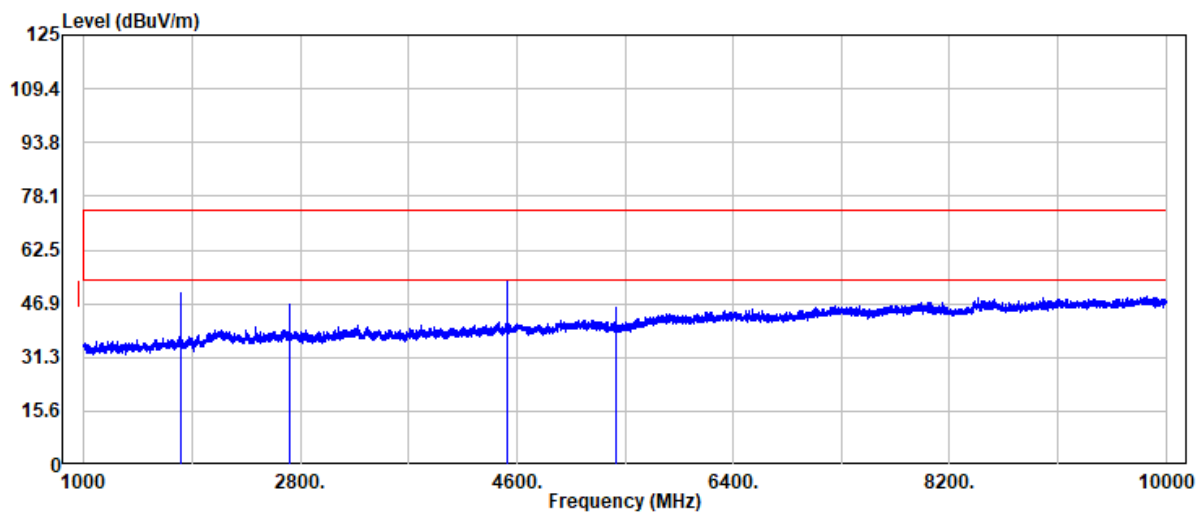
Freq	Read Level	Factor	Actual FS	Limit @3m	Margin	Detector Mode
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
1807.99	65.28	-5.92	59.36	74.00	-14.64	Peak
1807.99	59.36	-8.31	51.05	54.00	-2.95	Average
2711.99	48.36	-2.00	46.36	74.00	-27.64	Peak
2711.99	46.36	-8.31	38.05	54.00	-15.95	Average
4519.98	53.65	2.82	56.47	74.00	-17.53	Peak
4519.98	56.47	-8.31	48.16	54.00	-5.84	Average
5423.98	47.37	4.44	51.81	74.00	-22.19	Peak
5423.98	51.81	-8.31	43.50	54.00	-10.50	Average
6327.97	40.73	8.14	48.87	74.00	-25.13	Peak
6327.97	48.87	-8.31	40.56	54.00	-13.44	Average
7231.97	39.78	9.60	49.38	74.00	-24.62	Peak
7231.97	49.38	-8.31	41.07	54.00	-12.93	Average

Project No: TM-2607000369P
Report No.: TMWK2607003443KR

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Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 903.996 MHz
Operation Mode : TX
EUT Pol : H
Setting :

Test Date : 2026-09-07
Temp./Humi. : 25.4/53
Antenna Pol. : HORIZONTAL
Engineer : Tony.Chao
Test Chamber : 966A



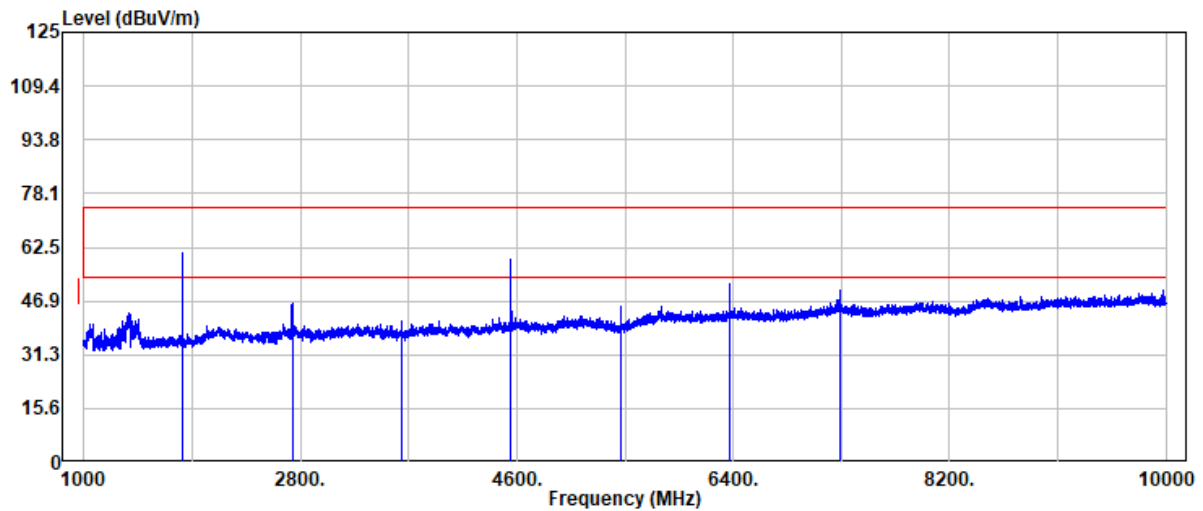
Freq	Read Level	Factor	Actual FS	Limit @3m	Margin	Detector Mode
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
1807.99	56.06	-5.92	50.14	74.00	-23.86	Peak
1807.99	50.14	-8.31	41.83	54.00	-12.17	Average
2711.99	48.47	-2.00	46.47	74.00	-27.53	Peak
2711.99	46.47	-8.31	38.16	54.00	-15.84	Average
4519.98	50.53	2.82	53.35	74.00	-20.65	Peak
4519.98	53.35	-8.31	45.04	54.00	-8.96	Average
5423.98	41.18	4.44	45.62	74.00	-28.38	Peak
5423.98	45.62	-8.31	37.31	54.00	-16.69	Average

Project No: TM-2607000369P
Report No.: TMWK2607003443KR

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Rev.: 00

Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 910.446 MHz
Operation Mode : TX
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : VERTICAL
Engineer : Tony.Chao
Test Chamber : 966A



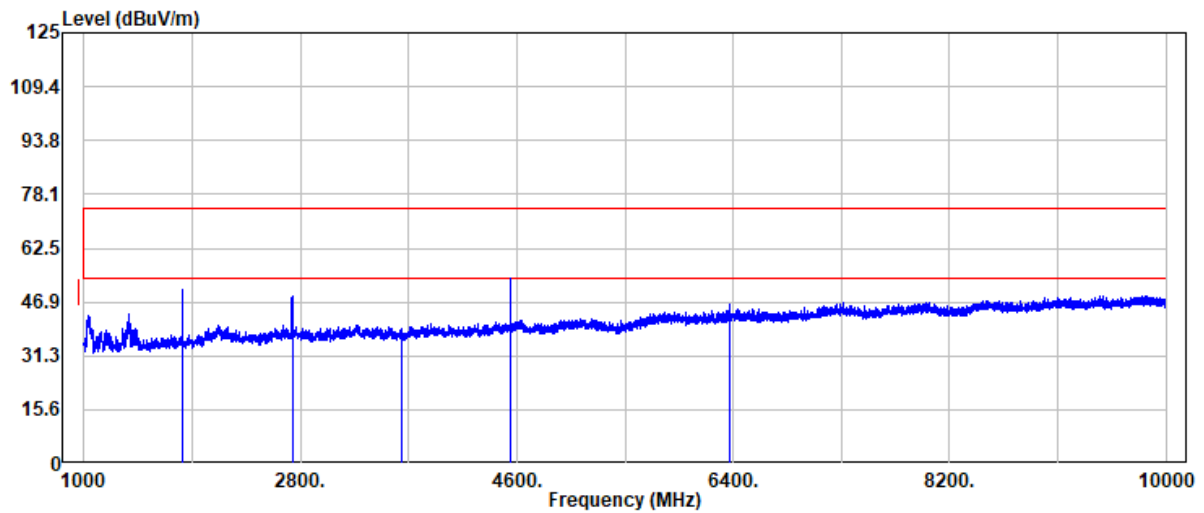
Freq	Read	Factor	Actual	Limit	Margin	Detector
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
1820.89	66.84	-5.80	61.04	74.00	-12.96	Peak
1820.89	61.04	-8.31	52.73	54.00	-1.27	Average
2731.34	47.99	-1.97	46.02	74.00	-27.98	Peak
2731.34	46.02	-8.31	37.71	54.00	-16.29	Average
3641.78	41.49	-0.45	41.04	74.00	-32.96	Peak
3641.78	41.04	-8.31	32.73	54.00	-21.27	Average
4552.23	55.77	3.02	58.79	74.00	-15.21	Peak
4552.23	58.79	-8.31	50.48	54.00	-3.52	Average
5462.68	40.84	4.56	45.40	74.00	-28.60	Peak
5462.68	45.40	-8.31	37.09	54.00	-16.91	Average
6373.12	43.57	8.18	51.75	74.00	-22.25	Peak
6373.12	51.75	-8.31	43.44	54.00	-10.56	Average
7283.57	40.35	9.67	50.02	74.00	-23.98	Peak
7283.57	50.02	-8.31	41.71	54.00	-12.29	Average

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Rev.: 00

Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 910.446 MHz
Operation Mode : TX
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : HORIZONTAL
Engineer : Tony.Chao
Test Chamber : 966A



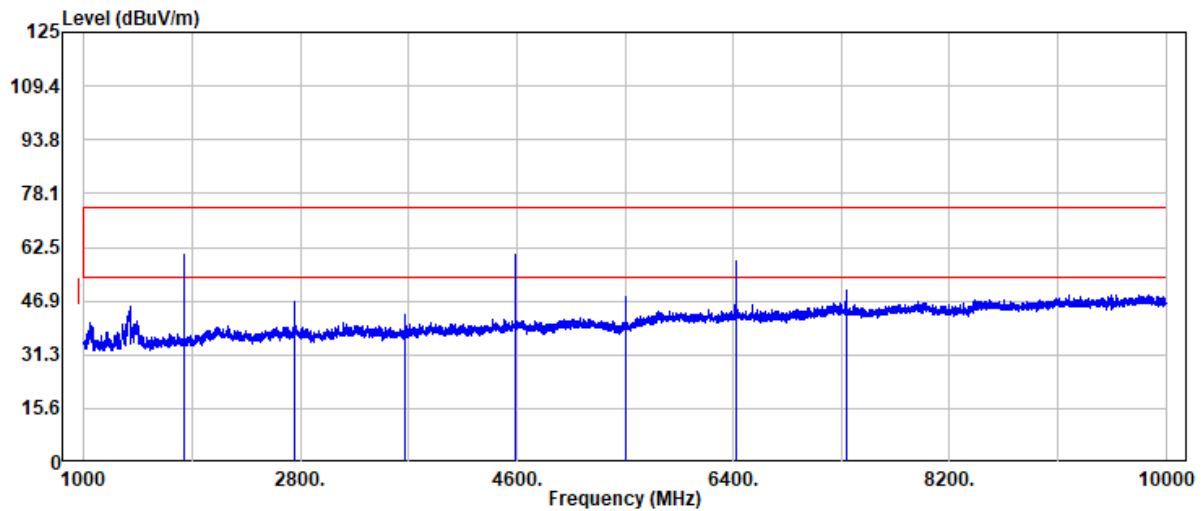
Freq	Read		Actual	Limit		Detector
MHz	Level	Factor	FS	@3m	Margin	Mode
	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
1820.89	56.04	-5.80	50.24	74.00	-23.76	Peak
1820.89	50.24	-8.31	41.93	54.00	-12.07	Average
2731.34	50.36	-1.97	48.39	74.00	-25.61	Peak
2731.34	48.39	-8.31	40.08	54.00	-13.92	Average
3641.78	39.79	-0.45	39.34	74.00	-34.66	Peak
3641.78	39.34	-8.31	31.03	54.00	-22.97	Average
4552.23	50.84	3.02	53.86	74.00	-20.14	Peak
4552.23	53.86	-8.31	45.55	54.00	-8.45	Average
6373.12	38.26	8.18	46.44	74.00	-27.56	Peak
6373.12	46.44	-8.31	38.13	54.00	-15.87	Average

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Report No.: TMWK2607003443KR

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Rev.: 00

Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 917.196 MHz
Operation Mode : TX
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : VERTICAL
Engineer : Tony.Chao
Test Chamber : 966A



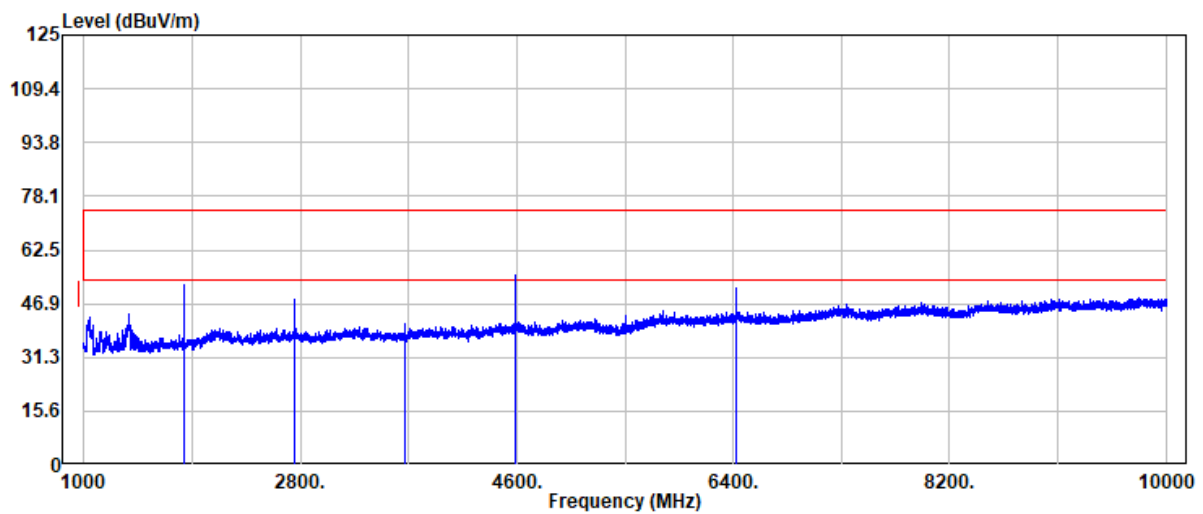
Freq	Read Level	Factor	Actual FS	Limit @3m	Margin	Detector Mode
----- MHz	----- dBuV	----- dB	----- dBuV/m	----- dBuV/m	----- dB	----- PK/QP/AV
1834.39	66.33	-5.78	60.55	74.00	-13.45	Peak
1834.39	60.55	-8.31	52.24	54.00	-1.76	Average
2751.59	48.65	-1.86	46.79	74.00	-27.21	Peak
2751.59	46.79	-8.31	38.48	54.00	-15.52	Average
3668.78	43.37	-0.26	43.11	74.00	-30.89	Peak
3668.78	43.11	-8.31	34.80	54.00	-19.20	Average
4585.98	57.12	3.13	60.25	74.00	-13.75	Peak
4585.98	60.25	-8.31	51.94	54.00	-2.06	Average
5503.18	43.58	4.67	48.25	74.00	-25.75	Peak
5503.18	48.25	-8.31	39.94	54.00	-14.06	Average
6420.37	50.21	8.22	58.43	74.00	-15.57	Peak
6420.37	58.43	-8.31	50.12	54.00	-3.88	Average
7337.57	40.42	9.60	50.02	74.00	-23.98	Peak
7337.57	50.02	-8.31	41.71	54.00	-12.29	Average

Project No: TM-2607000369P
Report No.: TMWK2607003443KR

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Rev.: 00

Project No : TM-2607000369P
Operation Band : 900 M
Frequency : 917.196 MHz
Operation Mode : TX
EUT Pol : H
Setting :

Test Date : 2026-09-09
Temp./Humi. : 25.5/54
Antenna Pol. : HORIZONTAL
Engineer : Tony.Chao
Test Chamber : 966A



Freq	Read Level	Factor	Actual FS	Limit @3m	Margin	Detector Mode
-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB	dBuV/m	dBuV/m	dB	PK/QP/AV
1834.39	58.06	-5.78	52.28	74.00	-21.72	Peak
1834.39	52.28	-8.31	43.97	54.00	-10.03	Average
2751.59	49.85	-1.86	47.99	74.00	-26.01	Peak
2751.59	47.99	-8.31	39.68	54.00	-14.32	Average
3668.78	41.12	-0.26	40.86	74.00	-33.14	Peak
3668.78	40.86	-8.31	32.55	54.00	-21.45	Average
4585.98	51.97	3.13	55.10	74.00	-18.90	Peak
4585.98	55.10	-8.31	46.79	54.00	-7.21	Average
6420.37	43.27	8.22	51.49	74.00	-22.51	Peak
6420.37	51.49	-8.31	43.18	54.00	-10.82	Average

- End of Test Report -