

RADIO TEST REPORT

Product : Tire Pressure Monitoring System

Model Name : AI SENSOR-315MHz

FCC ID : W55AIS0213B

Test Regulation : FCC 47 CFR Part 15 Subpart C (Section 15.231)

Received Date : 2026/3/17

Test Date : 2026/3/3

Issued Date : 2026/4/27

Applicant : Oro Technology Co., Ltd.
3F., No. 29, Gongyequ 21st Rd., Nantun Dist., Taichung City
408 , Taiwan

Issued By : Underwriters Laboratories Taiwan Co., Ltd.
Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd.,
Zhudong Township, Hsinchu County, Taiwan



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Doc No: Form-ULID-004737 (DCS:17-EM-F0876) / 7.0

Original Test Report No.: 4792141467-US-R0-V0

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Table of Contents

1. Attestation of Test Results	4
2. Summary of Test Results	5
3. Test Methodology and Reference Procedures.....	6
4. Facilities and Accreditation	6
5. Measurement Uncertainty	7
6. Equipment under Test.....	8
6.1. Description of EUT.....	8
6.2. Channel List.....	9
6.3. Test Condition.....	9
6.4. Description of Available Antennas	10
6.5. Test Mode Applicability and Tested Channel Detail.....	11
6.6. Duty Cycle of Test Signal.....	12
7. Test Equipment	13
8. Description of Test Setup.....	14
9. Test Results.....	16
9.1. Radiated Spurious Emission	16
9.2. 20dB Bandwidth Measurement.....	25
9.3. Deactivation Time Measurement.....	27

1. Attestation of Test Results

APPLICANT: Oro Technology Co., Ltd.
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Taiwan

MANUFACTURER: Oro Technology Co., Ltd.
3F., No. 29, Gongyequ 21st Rd., Nantun Dist., Taichung City 408 ,
Taiwan

EUT DESCRIPTION: Tire Pressure Monitoring System

BRAND: ORO

MODEL: AI SENSOR-315MHz

SAMPLE STAGE: Design Verification Test Sample

DATE of TESTED: 2026/03/31 ~ 2026/03/31

APPLICABLE STANDARDS	
STANDARD	Test Results
FCC 47 CFR PART 15 Subpart C (Section 15.231)	PASS

Underwriters Laboratories Taiwan Co., Ltd. tested the above equipment in accordance with the requirements set forth in the above standards. All indications of Pass/Fail in this report are opinions expressed by Underwriters Laboratories Taiwan Co., Ltd. based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.

Note: The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. This document may not be altered or revised in any way unless done so by Underwriters Laboratories Taiwan Co., Ltd. and all revisions are duly noted in the revisions section. Any alteration of this document not carried out by Underwriters Laboratories Taiwan Co., Ltd. will constitute fraud and shall nullify the document. This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, any agency of the Federal Government, or any agency of any government.

Prepared By:



Cindy Hsin
Project Handler

Date : 2026/4/15

Approved and Authorized By:



Eric Lee
Senior Laboratory Engineer

Date : 2026/4/15

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2. Summary of Test Results

Summary of Test Results		
FCC Clause	Test Items	Result
15.207	AC Power Conducted Emission	Note 1
15.209 / 15.231(e)	Radiated Emissions	PASS
15.231(c)	Emission Bandwidth Test	PASS
15.231(e)	De-activation	PASS

Note :

1. The EUT will not be directly or indirectly connected to the AC power network system in the actual application. Therefore, AC power conducted emission is not evaluated.

3. Test Methodology and Reference Procedures

The tests documented in this report were performed in accordance with 47 CFR FCC Part 2, KDB414788 D01 Radiated Test Site v01r01, ANSI C63.10-2020+Cor.1-2023.

4. Facilities and Accreditation

Test Location	Underwriters Laboratories Taiwan Co., Ltd.
Address	Building A, B and E, No. 372-7, Sec. 4, Zhongxing Rd., Zhudong Township, Hsinchu County, Taiwan
Accreditation Certificate	Underwriters Laboratories Taiwan Co., Ltd. is accredited by TAF, Laboratory Code 3398.

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5. Measurement Uncertainty

For statement of conformity, Simple acceptance (Section 3.1.4 of IEC Guide 115) was applied as decision rule for measurement in this test report.

The following uncertainties have been calculated to provide a confidence level of 95 % using a coverage factor $k=2$.

Determining compliance based on the results of the compliance measurement, not considering measurement instrumentation uncertainty.

Measurement	Frequency	Uncertainty
Conducted disturbance at mains terminals ports	150kHz ~ 30MHz	3.0 dB
RF Conducted	9 kHz - 40GHz	2.4 dB
Radiated disturbance below 30MHz	9 kHz - 30 MHz	1.9 dB
Radiated disturbance below 1 GHz	30MHz ~ 1GHz	5.6 dB
Radiated disturbance above 1 GHz	1GHz ~ 40GHz	4.6 dB

6. Equipment under Test

6.1. Description of EUT

Product	Tire Pressure Monitoring System
Brand Name	ORO
Model Name	AI SENSOR-315MHz
Normal Voltage	3Vdc from Battery

Operating Frequency	315MHz
Modulation	ASK
Maximum Field Strength	66.09 dBuV/m @ 3m
Sample ID	Radiated Test:9497485

Note:

1. The EUT contains following accessory devices:

Product	Brand	Model	Description
Valve	ORO	S02VA00014	-
Battery	MAXELL	CR2050HR	Output : 3V

2. EUT supports transmission mode only.

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer the manufacturer's or user's manual, the laboratory shall not be held responsible.

6.2. Channel List

1 channel is provided for Tx mode:

Channel	Frequency (MHz)
1	315

6.3. Test Condition

Test Item	Test Site No.	Environmental	Input Power	Test Date	Tested by
Radiated Spurious Emission	966-2	22°C/ 63%RH	3Vdc	2026/03/31	Rex Chen

Sample Calculation:

Antenna Port Conducted Measurement:

- Where relevant, the follow sample calculation is provided:
Result Value (dBm) = Reading Value (dBm) + Attenuator Factor (dB) + Cable Loss (dB).
Example: Result Value (10dBm) = Reading Value (-2dBm) + Attenuator Factor (10dB) + Cable Loss(2dB).
*Test plot only shown the “Result Value”.

Radiated Spurious Emission:

- Where relevant, the follow sample calculation is provided:
Result Value (dBuV/m) = Reading Value (dBuV) + Correction Factor (dB/m).
Correction Factor (dB/m) = Antenna Factor (dB/m) + Cable Loss (dB) - Preamp Factor (dB).
Example: Result Value (34.5dBuV/m) = Reading Value (40.1dBuV) + Antenna Factor (18.7dB/m) + Cable Loss (4.2dB) - Preamp Factor (28.5dB).

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6.4. Description of Available Antennas

Ant. No.	Transmitter Circuit	Frequency Range	Brand Name	Model Name	Maximum Gain (dBi)	Ant. Type	Connector Type
1	Chain0	315MHz	ORO	M02AN00004	-20.89	Monopole	N/A

Note: The above antenna information was provided from customer and for more detailed features description, please refer the manufacturer's specification or user's manual, the laboratory shall not be held responsible.

6.5. Test Mode Applicability and Tested Channel Detail

Test Item	Modulation Type	Available Channel	Test Channel
Radiated Emissions (Field Strength)	FSK	1	1
20dB Bandwidth	FSK	1	1
Radiated Emissions (Below 1GHz)	FSK	1	1

- The EUT was examined in three orthogonal axes (X-Y, Y-Z, X-Z), and the Y-Z plane was confirmed as the worst-case orientation. All final radiated emission tests were conducted with the EUT positioned accordingly.
- For below 30MHz testing, investigation was done on three antenna orientations (parallel, perpendicular, and ground-parallel), parallel and perpendicular are the worst orientations, therefore testing was performed on these two orientations only.

6.6. Duty Cycle of Test Signal

Mode	TX on (ms)	TX on+off (ms)	Duty Cycle (%)
315MHz	8.300	100.000	8.30%

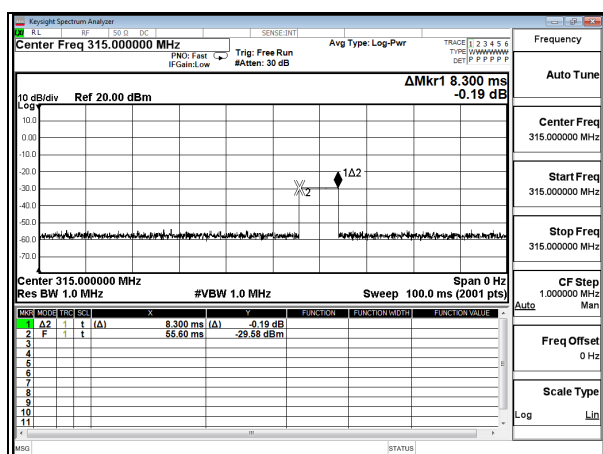
$$\text{Duty Cycle Correction Factor} = 20 \times \log \frac{T_{\text{on}}}{T_{\text{on}} + T_{\text{off}}} (\text{ms})$$

$$= 20 \times \log \frac{8.30}{100.00} = -21.62 \text{ dB}$$

Duty Cycle Correction Factor = -21.62 dB

AVG = Peak + Duty Cycle Correction Factor

AVG = Peak -21.62 dB



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7. Test Equipment

Test Equipment List					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Expired date
Radiated Spurious Emission					
Spectrum Analyzer	Keysight	N9010A	MY56070818	2026/2/9	2027/2/8
EMI Test Receiver	Rohde & Schwarz	ESR7	101754	2025/12/9	2026/12/8
Loop Antenna	ETS lindgren	6502	00213440	2025/11/14	2026/11/13
Trilog-Broadband Antenna with 5dB Attenuator	Schwarzbeck & EMCI	VULB 9168 & N-6-05	774 & AT-N0538	2025/12/23	2026/12/22
Horn Antenna (1-18 GHz)	Schwarzbeck	BBHA 9120 D	01690	2025/11/18	2026/11/17
Horn Antenna (18-40 GHz)	Schwarzbeck	BBHA 9170	781	2025/12/2	2026/12/1
Preamplifier (30-1000 MHz)	EMCI	EMC330E	980405	2025/5/12	2026/5/11
Preamplifier (1-18 GHz)	EMCI	EMC051835BE	980406	2025/12/26	2026/12/25
Preamplifier (18-40GHz)	EMCI	EMC184040SEE	980426	2026/3/24	2027/3/23
Cables (9k-18 GHz)	Hanyitek	K1K50-UP0264-K1K50-2500	170214-4 & 170425-2	2025/11/21	2026/11/20
Cables (18-40GHz)	Hanyitek	K1K50-UP0264-K1K50-2500	170214-1 & 170214-2	2025/11/21	2026/11/20

UL Software		
Description	Name	Version
AC power Line Conducted Emission	EZ_EMC	UL-3A1.2

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8. Description of Test Setup

Tx Mode

Support Equipment

ID	Equipment	Brand Name	Model Name	S/N	Remark
A	Battery	MAXELL	CR2050HR	N/A	Supplied by Client

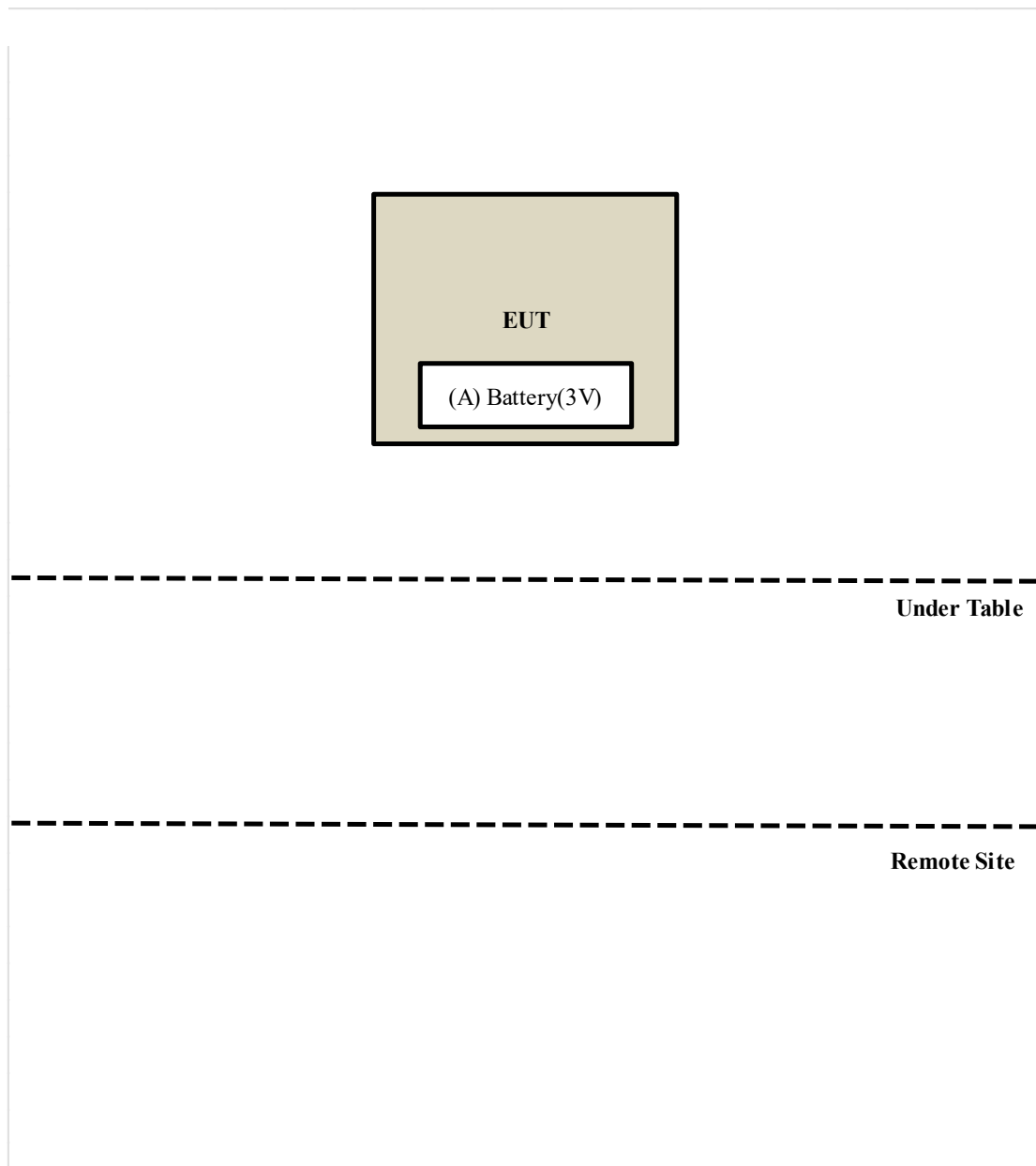
Test Setup

The EUT was worked in engineering mode to transmit signal.

The engineering mode has already been programmed into the chips. Therefore, once the EUT is powered on, it can directly enter transmission mode.

Setup Diagram for Test

Tx Mode



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9. Test Results

9.1. Radiated Spurious Emission

Requirements

Limits of Radiated Emission Measurement

Fundamental Frequency (MHz)	Field Strength of Fundamental		Field Strength of Spurious	
	uV/meter	dBuV/meter	uV/meter	dBuV/meter
40.66 ~ 40.70	1000	60	100	40
70 ~ 130	500	53.98	50	33.98
130 ~ 174	500 to 1,500	53.98 ~ 63.52	50 to 150	33.98 ~ 43.52
174 ~ 260	1,500	63.52	150	43.52
260 ~ 470	1,500 to 5,000	63.52 ~ 73.98	150 to 500	43.52 ~ 53.98
Above 470	5,000	73.98	5,00	53.98

Note:

1. Where F is the frequency in MHz, the formula for calculating the maximum permitted fundamental field strengths are as follows: for the band 130-174 MHz, uV/m at 3 meters = 22.72727 (F)- 2454.545; for the band 260-470 MHz, uV/m at 3 meters = 16.6667 (F)- 2833.3333. The maximum permitted unwanted emission level is 20 dB below the maximum permitted fundamental level.
2. The above field strength limits are specified at a distance of 3meters. The tighter limits apply at the band edges.

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Radiated emissions which fall in the restricted bands must comply with the radiated emission limits specified as below table. Other emissions shall be at least 20dB below the highest level of the desired power:

Frequency(MHz)	Field strength (microvolts/meter)	Measurement distance (meters)
0.009-0.490	2400/F(kHz)	300
0.490-1.705	24000/F(kHz)	30
1.705-30.0	30	30
30-88	100	3
88-216	150	3
216-960	200	3
Above 960	500	3

Note:

1. The lower limit shall apply at the transition frequencies.
2. Emission level (dBuV/m) = 20 log Emission level (uV/m).
3. For frequencies above 1000MHz, the field strength limits are based on average detector, however, the peak field strength of any emission shall not exceed the maximum permitted average limits, specified above by more than 20dB under any condition of modulation.

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Test Procedures

[For 9 kHz ~ 30 MHz]

- a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter chamber room. 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. Parallel, perpendicular, and ground-parallel orientations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 30MHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.

NOTE:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 9kHz at frequency below 30MHz.

[For above 30 MHz]

- a. The EUT was placed on the top of a rotating table 0.8 meters (for 30MHz ~ 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. 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 height of antenna 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 rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured. If the emission level of the EUT measured by the peak detector is lower than the applicable limit, the peak emission level will be reported. Otherwise, the emission measurement will be repeated using the quasi-peak detector and reported.
- f. The test-receiver system was set to peak and average detects function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

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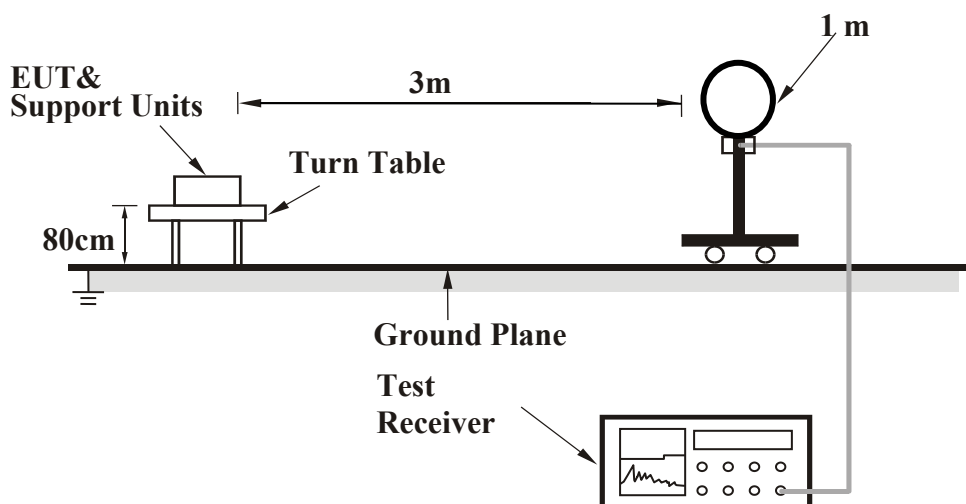
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Note:

- The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1 MHz and the video bandwidth is 3 MHz for Peak detection (PK) at frequency above 1GHz.
- The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is $\geq 1/T$ (Duty cycle $< 98\%$) or 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
- All modes of operation were investigated (includes all external accessories) and the worst-case emissions are reported, the other emission levels were low against the limit.
- Test data of Result value (dBuV/m) = Reading value (dBuV) + Correction Factor (dB/m).
- Test data of Margin(dB) = Result value (dBuV/m) - Limit value (dBuV/m).
- Test data of Correction Factor (dB/m) = Antenna Factor (dBuV/m) + Cable Loss (dB) - Preamp Factor (dB).
- Test data of Notation "@" = Fundamental Frequency
- Test data of Notation "*" = The peak result under 20 dB above and complies with AVG limit, AVG result is deemed to comply with AVG limit.

Test Setup

<Frequency Range 9 kHz ~ 30 MHz>



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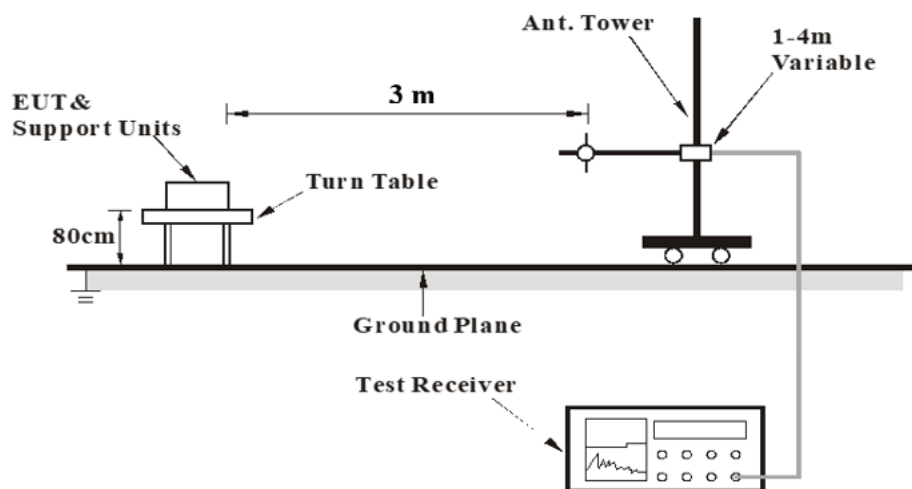
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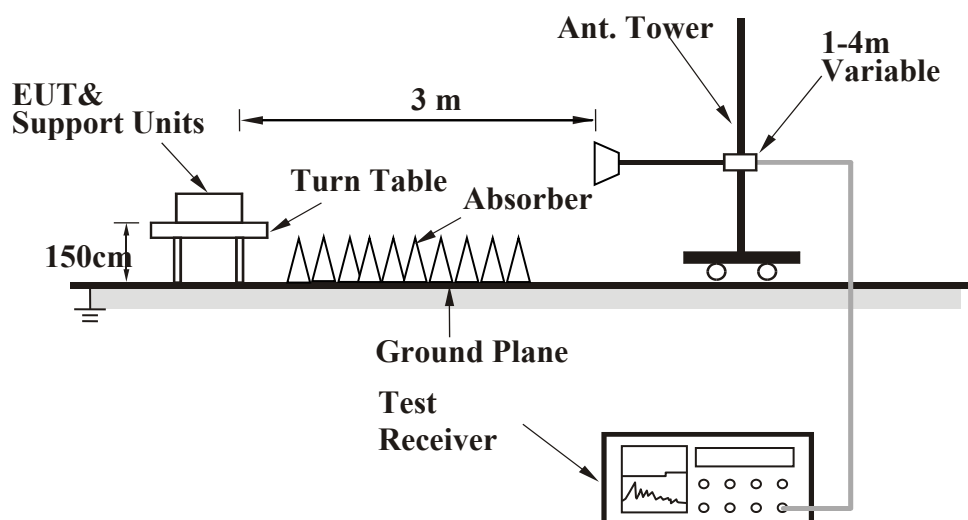
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<Frequency Range 30 MHz ~ 1 GHz >



<Frequency Range above 1 GHz>



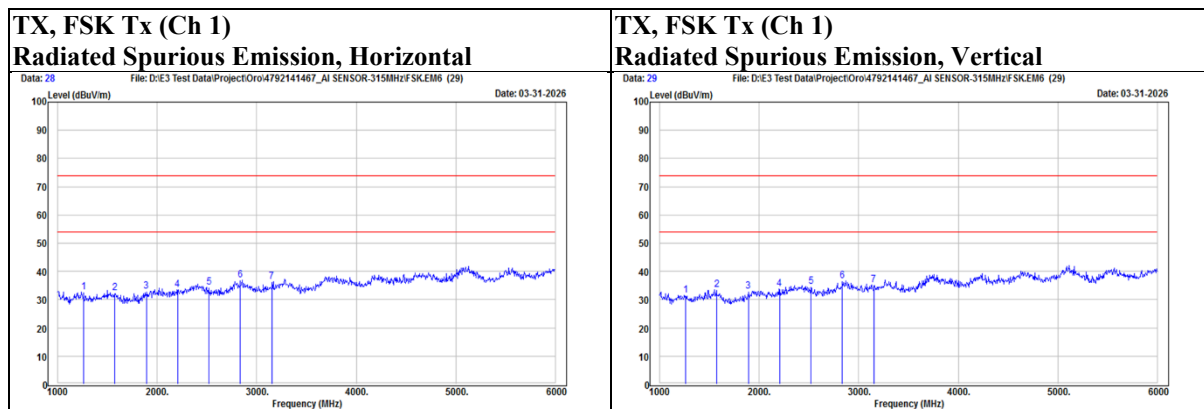
For the actual test configuration, please refer to the Setup Configurations.

Test Data

Above 1 GHz

Mode	FSK Tx	Channel	1
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Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	*	1260	39.91	-7.1	32.81	74	-41.19	PK
	*	1575	38.79	-6.31	32.48	74	-41.52	PK
	*	1890	37.76	-4.84	32.92	74	-41.08	PK
	*	2205	35.89	-2.42	33.47	74	-40.53	PK
	*	2520	36.54	-2.25	34.29	74	-39.71	PK
	*	2835	37.94	-0.95	36.99	74	-37.01	PK
	*	3150	35.81	0.48	36.29	74	-37.71	PK
Vertical	*	1260	38.53	-7.1	31.43	74	-42.57	PK
	*	1575	39.71	-6.31	33.4	74	-40.6	PK
	*	1890	37.85	-4.84	33.01	74	-40.99	PK
	*	2205	36.22	-2.42	33.8	74	-40.2	PK
	*	2520	37.03	-2.25	34.78	74	-39.22	PK
	*	2835	37.72	-0.95	36.77	74	-37.23	PK
	*	3150	34.68	0.48	35.16	74	-38.84	PK



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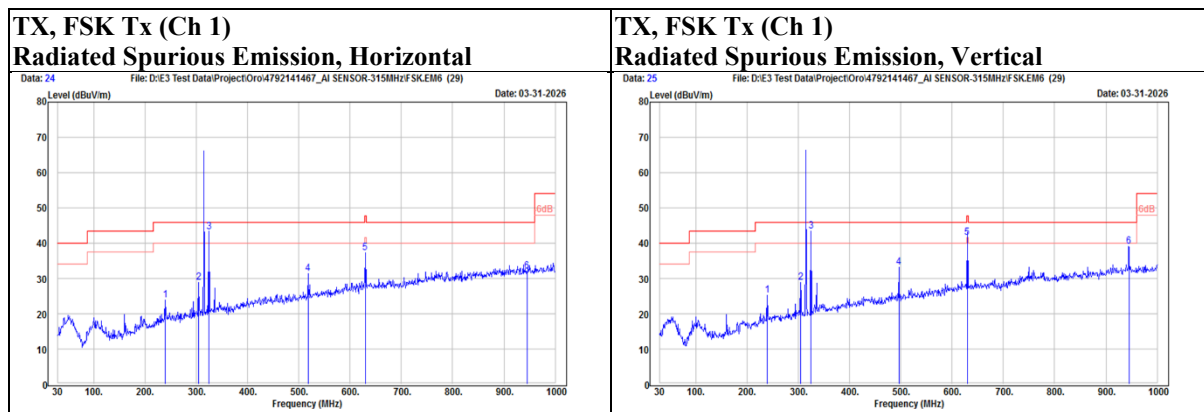
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Below 1 GHz

Mode	FSK Tx	Channel	1
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Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal		239.52	35.58	-11.67	23.91	46	-22.09	PK
		304.51	39.15	-10.3	28.85	46	-17.15	PK
		324.88	52.99	-9.77	43.22	46	-2.78	QP
		517.91	36.46	-5.02	31.44	46	-14.56	PK
	*	630	39.45	-2.23	37.22	47.66	-10.44	PK
	*	945	29.69	2.45	32.14	46	-13.86	PK
Vertical		239.52	36.8	-11.67	25.13	46	-20.87	PK
		304.51	39.11	-10.3	28.81	46	-17.19	PK
		324.88	53.09	-9.77	43.32	46	-2.68	QP
		496.57	38.42	-5.34	33.08	46	-12.92	PK
	*	630	43.8	-2.23	41.57	47.66	-6.09	QP
	*	945	36.7	2.45	39.15	46	-6.85	PK



Note:

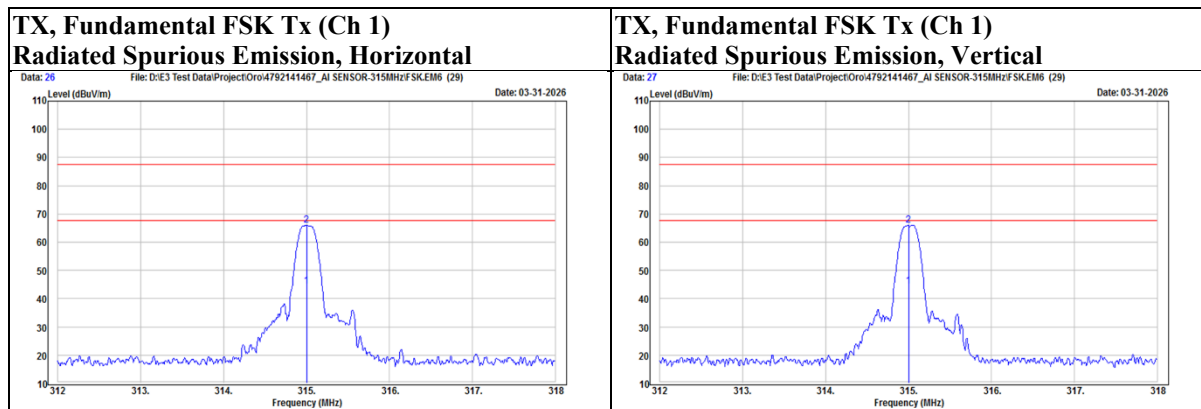
1. Fundamental exclusion from the radiated emissions limit. Please refer to the Fundamental Results for detailed information.
2. The field strength results of the spurious emission test comply with both the FCC 15.209 radiated emission limits and the 15.231(e) spurious emission limits. The report presents the results based on the more stringent of the two requirements.

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Mode	Fundamental FSK Tx	Channel	1
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Polarization	Notation	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
Horizontal	@	315	75.99	-10.11	65.88	87.66	-21.78	PK
	@	315	54.37	-10.11	44.26	67.66	-23.4	AVG
Vertical	@	315	76.2	-10.11	66.09	87.66	-21.57	PK
	@	315	54.58	-10.11	44.47	67.66	-23.19	AVG



Note: the AVG data indicates that the average reading is the result of the peak reading with duty cycle correction applied.

9 kHz ~ 30 MHz Data:

For 9 kHz to 30 MHz radiated emission have performed all modes of operation were investigated. The amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required to be report.

No non-compliance noted:

KDB 414788 D01 OATS and Chamber Correlation Justification

- Base on FCC 15.31 (f) (2): measurements may be performed at a distance closer than that specified in the regulations; however, an attempt should be made to avoid making measurements in the near field.

- OATs and chamber correlation testing had been performed and chamber measured test results is the worst case test result.

Although these tests were performed other than open area test site, adequate comparison measurements were confirmed against 30m 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.

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9.2. 20dB Bandwidth Measurement

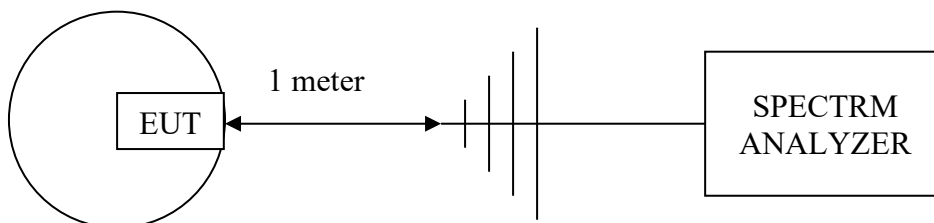
Requirements

Limits of 20dB Bandwidth Measurement

The bandwidth of the emission shall be no wider than 0.25% of the center frequency for device operating above 70 MHz and below 900 MHz.

Fundamental Frequency (MHz)	Limit of Emission Bandwidth (kHz)
315	787.5

Test Setup



Test Instruments

Refer to section 6 to get information of above instrument.

Test Procedure

- The EUT was placed on the turn table.
- The signal was coupled to the spectrum analyzer through an antenna.
- Set the resolution bandwidth in the range of 1% to 5% of the emission bandwidth and video bandwidth shall be approximately three-time RBW then select Peak function to scan the channel frequency.
- The emission bandwidth was measured and recorded.

Deviation from Test Standard

No deviation.

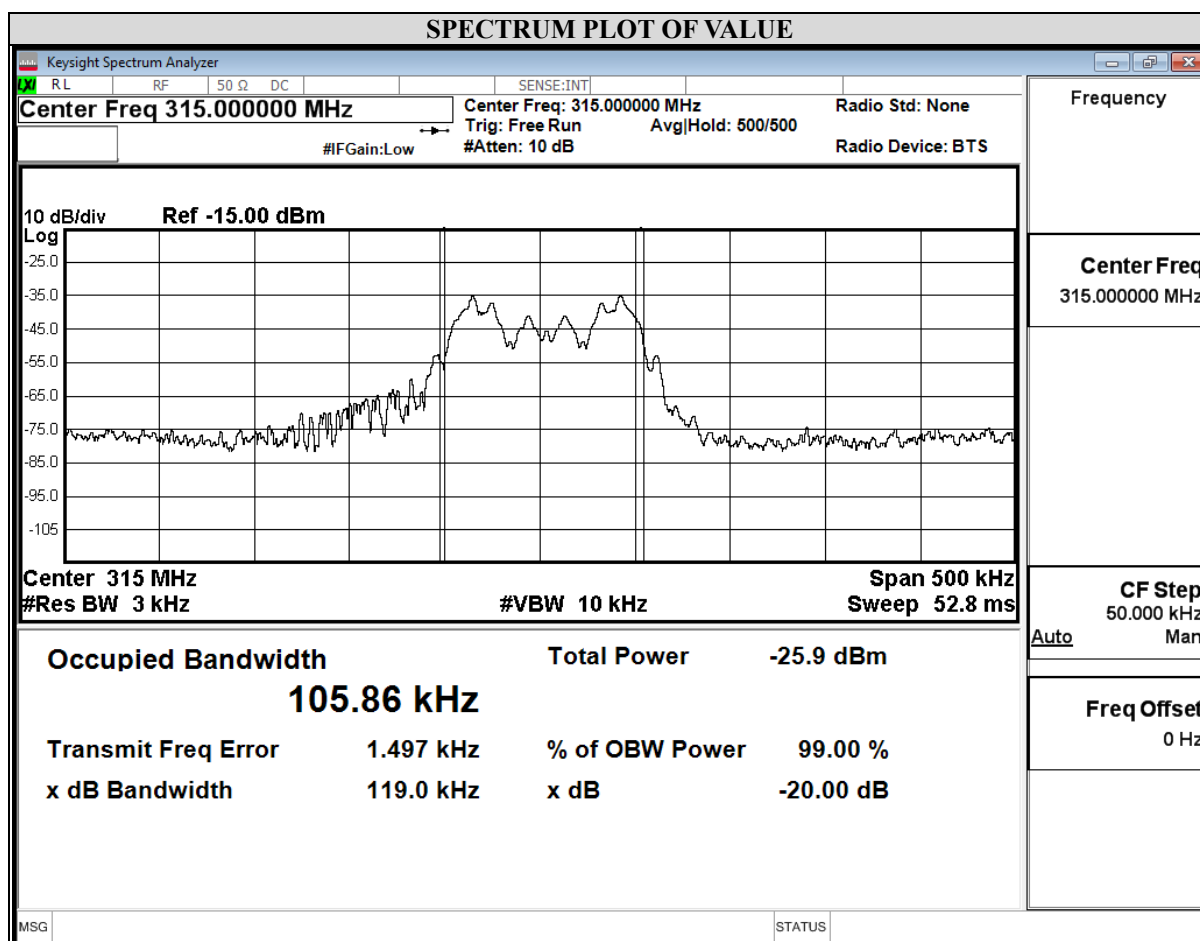
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Test Data

Channel	Frequency (MHz)	20dB Bandwidth (kHz)	Maximum Limit (kHz)	Pass / Fail
1	315	119.0	787.5	PASS



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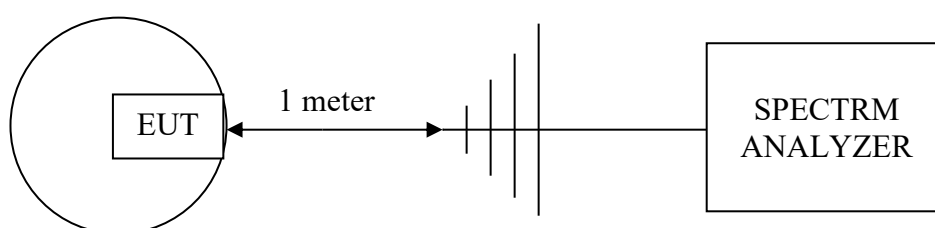
9.3. Deactivation Time Measurement

Requirements

Limits Of Deactivation Time Measurement

Devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

Test Setup



Test Instruments

Refer to section 6 to get information of above instrument.

Test Procedure

- The EUT was placed on the turning table.
- The signal was coupled to the spectrum analyzer through an antenna.
- Set the resolution bandwidth more than emission bandwidth and $VBW \geq RBW$. The spectrum analyzer was turned to the center frequency of the transmitters and the analyzer's marker function was used to determine the duration of transmission.
- The transmission duration was measured and recorded.

Deviation from Test Standard

No deviation.

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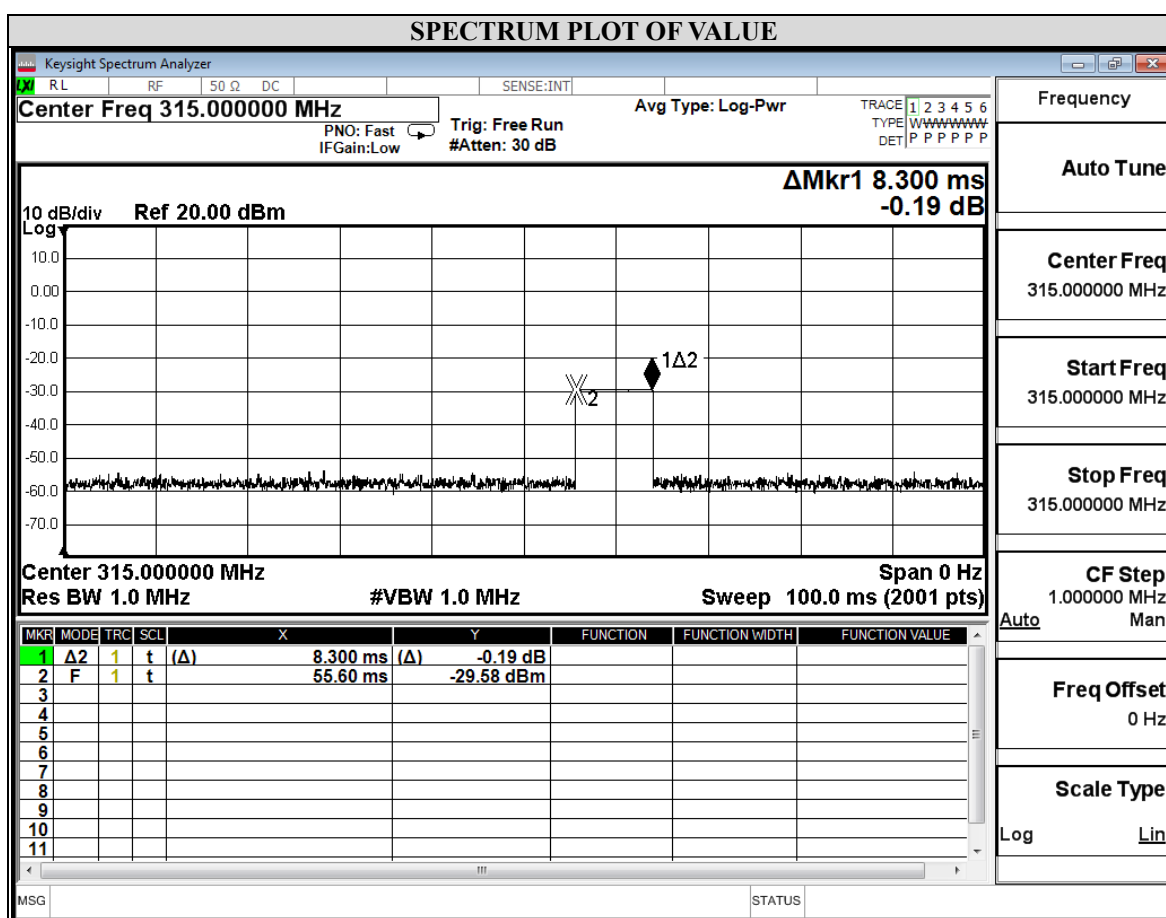
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Test Data

Push Button	Frequency (MHz)	Transmission Duration (Sec)	Maximum Limit (Sec)	Pass/Fail
Automatically	315	0.008	1	PASS

Push Button	Frequency (MHz)	Silent Period (Sec)	Minimum Limit (Sec)	Transmission Duration*30 (Sec)	Pass/Fail
Automatically	315	30.24	10	>0.24	PASS



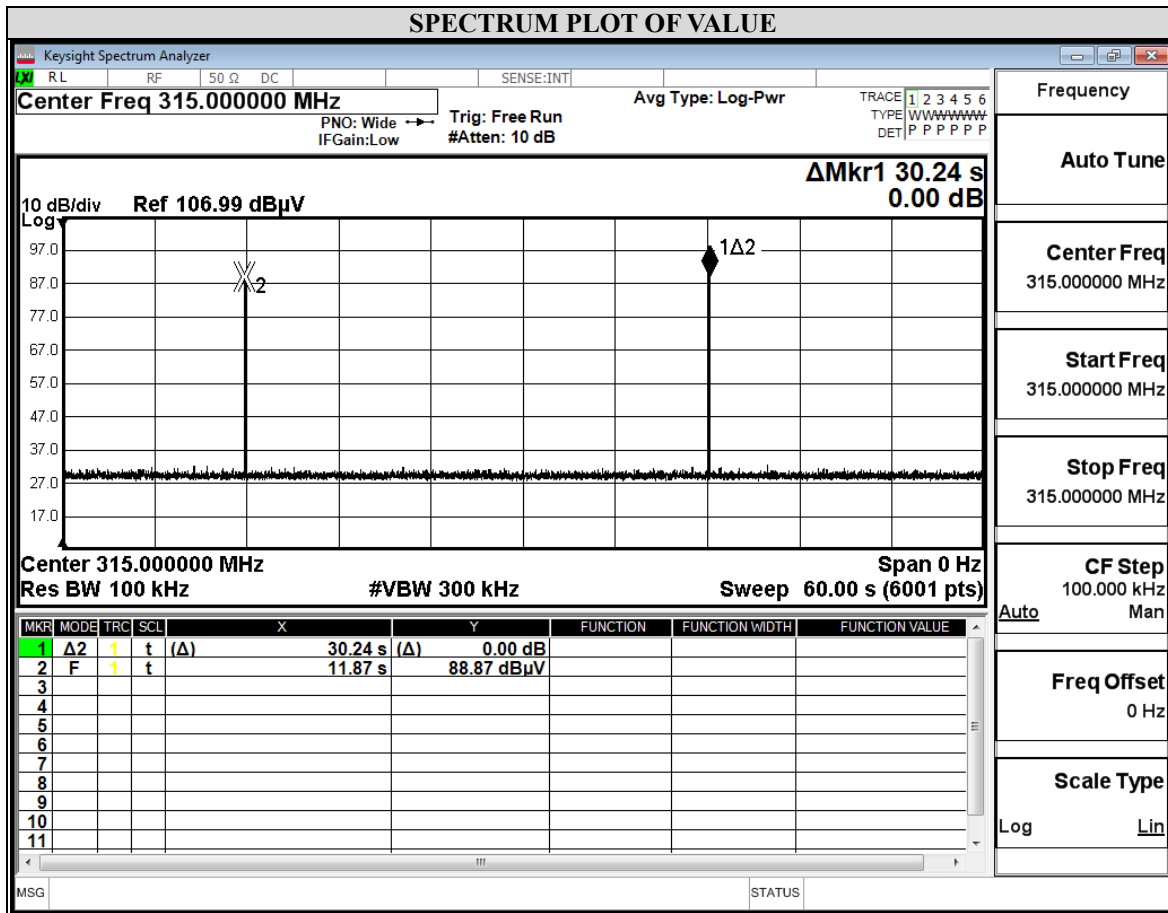
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END OF REPORT

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