

FCC TEST REPORT

(Part 15, Subpart C)

Applicant:	Continental Automotive Technologies GmbH
Address:	Siemensstrasse 12, 93055 Regensburg, Germany

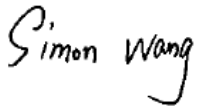
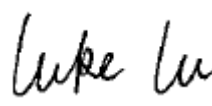
Manufacturer or Supplier:	Continental Automotive Technologies GmbH
Address:	Siemensstrasse 12, 93055 Regensburg, Germany
Product:	T26 SBR T26SBRNB84G
Brand Name:	Continental
Model Name:	T26SBRNB84G
FCC ID:	KR5-T26SBRNB84G
Date of tests:	May. 11, 2024 ~ Jun. 13, 2024

The tests have been carried out according to the requirements of the following standard:

☒ **FCC Part 15, Subpart C, Section 15.247**

☒ **ANSI C63.10-2020**

CONCLUSION: The submitted sample was found to COMPLY with the test requirement

Prepared by Simon Wang Engineer / Mobile Department	Approved by Luke Lu Manager / Mobile Department
 Date: Jun. 13, 2024	 Date: Jun. 13, 2024

This report is governed by, and incorporates by reference, the Conditions of Testing as posted at the date of issuance of this report at <http://www.bureauveritas.com/home/about-us/our-business/cps/about-us/terms-conditions/> and is intended for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. Measurement uncertainty is only provided upon request for accredited tests. Statements of conformity are based on simple acceptance criteria without taking measurement uncertainty into account, unless otherwise requested in writing. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence or if you require measurement uncertainty; provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents.



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Test Report No.: W7L-240423W001RF04

RELEASE CONTROL RECORD

ISSUE NO.	REASON FOR CHANGE	DATE ISSUED
W7L-240423W001RF04	Original release	Jun. 13, 2024



1 SUMMARY OF TEST RESULTS

The EUT has been tested according to the following specifications:

APPLIED STANDARD: FCC PART 15, SUBPART C (SECTION 15.247)		
STANDARD SECTION	TEST TYPE AND LIMIT	RESULT
15.207	AC Power Conducted Emission	Compliance
15.205 15.209	Radiated Emissions	Compliance
15.247(d)	Out of band Emission Measurement	Compliance
15.247(a)(2)	6dB bandwidth	Compliance
15.247(b)	Conducted Output power	Compliance
15.247(e)	Power Spectral Density	Compliance
15.203	Antenna Requirement	Compliance

Note : 1.Except RSE, other data please refer to Appendix (for WIFI-2.4G).



1.1 MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

MEASUREMENT	UNCERTAINTY
AC Power Conducted emissions	$\pm 2.70\text{dB}$
Radiated emissions (9KHz~30MHz)	$\pm 2.68\text{dB}$
Radiated emissions (30MHz~1GHz)	$\pm 4.98\text{dB}$
Radiated emissions (1GHz ~6GHz)	$\pm 4.70\text{dB}$
Radiated emissions (6GHz ~18GHz)	$\pm 4.60\text{dB}$
Radiated emissions (18GHz ~40GHz)	$\pm 4.12\text{dB}$
Conducted emissions	$\pm 4.01\text{dB}$
Occupied Channel Bandwidth	$\pm 43.58\text{KHz}$
Conducted Output power	$\pm 2.06\text{dB}$
Power Spectral Density	$\pm 0.85\text{ dB}$

This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of $k = 2$.



2 GENERAL INFORMATION

2.1 GENERAL DESCRIPTION OF EUT

PRODUCT	T26 SBR T26SBRNB84G
BRAND NAME	Continental
MODEL NAME	T26SBRNB84G
NOMINAL VOLTAGE	DC12V
MODULATION	DSSS, OFDM
TRANSMISSION RATE	802.11b: 11/ 5.5/ 2.0 / 1.0 Mbps 802.11g: 54/ 48/ 36 / 24 / 18 / 9/ 6 Mbps 802.11n(HT20): up to 144.4 Mbps
OPERATING FREQUENCY	2412-2462MHz for 11b/g/n(HT20)
MAX. OUTPUT POWER	WLAN: 178.65mW (Maximum)
ANTENNA TYPE	Stamped Antenna with 3.29dBi gain for WIFI
HW VERSION	P2
SW VERSION	SBR-IMX8-4G-1.4.0.23.51.1.00-DEVEL-SL
I/O PORTS	Refer to user's manual
CABLE SUPPLIED	N/A

NOTE:

- For a more detailed features description, please refer to the manufacturer's specifications or the user's manual.
- The EUT incorporates a SISO function. Physically, the EUT provides one transmitter and one receiver.

MODULATION MODE	TX/RX FUNCTION
802.11b	1TX /1RX
802.11g	1TX /1RX
802.11n(HT20)	1TX /1RX

- For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.
- Antenna gain and EUT conducted cable loss are provided by the customer, and the laboratory will record the results based on these items that involve these two parameters.



2.2 DESCRIPTION OF TEST MODES

11 channels are provided for 802.11b, 802.11g and 802.11n (HT20):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
1	2412 MHz	7	2442 MHz
2	2417 MHz	8	2447 MHz
3	2422 MHz	9	2452 MHz
4	2427 MHz	10	2457 MHz
5	2432 MHz	11	2462 MHz
6	2437 MHz		

7 channels are provided for 802.11n (HT40):

CHANNEL	FREQUENCY	CHANNEL	FREQUENCY
3	2422 MHz	7	2442 MHz
4	2427 MHz	8	2447 MHz
5	2432 MHz	9	2452 MHz
6	2437 MHz		



2.2.1 CONFIGURATION OF SYSTEM UNDER TEST

Please see section 4 photographs of the test configuration for reference.

2.2.2 TEST MODE APPLICABILITY AND TESTED CHANNEL DETAIL

Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates, XYZ axis and antenna ports.

The worst case was found when positioned on Y axis for radiated emission. Following test modes were selected for the final test, and the final worst case is marked in boldface and recorded in the report:

EUT CONFIGURE MODE	APPLICABLE TO				MODE
	RE<1G	RE≥1G	PLC	APCM	
-	√	√	√	√	-

Where **RE<1G**: Radiated Emission below 1GHz

RE≥1G: Radiated Emission above 1GHz

PLC: Power Line Conducted Emission

APCM: Antenna Port Conducted Measurement

NOTE: No need to concern of Conducted Emission due to the EUT is powered by battery.

RADIATED EMISSION TEST (BELOW 1GHz):

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT20	1 to 11	1	OFDM	MCS0

**RADIATED EMISSION TEST (ABOVE 1GHz):**

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0

POWER LINE CONDUCTED EMISSION TEST

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).

☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11n HT20	1 to 11	1	OFDM	MCS0

**BANDEDGE MEASUREMENT:**

- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0

ANTENNA PORT CONDUCTED MEASUREMENT:

- ☒ This item includes all test value of each mode, but only includes spectrum plot of worst value of each mode.
- ☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
- ☒ The following channel(s) was (were) selected for the final test as listed below.

MODE	AVAILABLE CHANNEL	TESTED CHANNEL	MODULATION	DATA RATE (Mbps)
802.11b	1 to 11	1, 6, 11	DSSS	1.0
802.11g	1 to 11	1, 6, 11	OFDM	6.0
802.11n HT20	1 to 11	1, 6, 11	OFDM	MCS0

TEST CONDITION:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	TEST VOLTAGE	TESTED BY
RE<1G	23deg. C, 70%RH	DC 12V	Jace Hu
RE≥1G	23deg. C, 70%RH	DC 12V	Jace Hu
PLC	25deg. C, 52%RH	DC 12V	Carl Xie
APCM	25deg. C, 60%RH	DC 12V	James Fu



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2.3 DUTY CYCLE OF TEST SIGNAL

Please Refer to Appendix Of this test report.

2.4 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C, Section 15.247

KDB 558074 D01 DTS Meas Guidance v05r02

ANSI C63.10-2020

Note :

1. All test items have been performed and recorded as per the above standards.
2. The EUT is also considered as a kind of computer peripheral, because the connection to computer is necessary for typical use. It has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (Certification). The test report has been issued separately.

2.5 DESCRIPTION OF SUPPORT UNITS

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

NO.	PRODUCT	BRAND	MODEL NO.	SERIAL NO.	FCC ID
1	Desktop	Lenovo	M73 SFF	PC04GRQV	N/A
2	Desktop	Lenovo	M73 SFF	PC06CS27	N/A
3	Laptop	Lenovo	Thinkpad T450	PC-049PT1	N/A

NO.	SIGNAL CABLE DESCRIPTION OF THE ABOVE SUPPORT UNITS
1	AC Line: Unshielded, Detachable 1.5m
2	AC Line: Unshielded, Detachable 1.5m
3	AC Line: Unshielded, Detachable 1.5m



3 TEST TYPES AND RESULTS

3.1 CONDUCTED EMISSION MEASUREMENT

3.1.1 LIMITS OF CONDUCTED EMISSION MEASUREMENT

FREQUENCY OF EMISSION (MHz)	CONDUCTED LIMIT (dB μ V)	
	Quasi-peak	Average
0.15 ~ 0.5	66 to 56	56 to 46
0.5 ~ 5	56	46
5 ~ 30	60	50

NOTE: 1.The lower limit shall apply at the transition frequencies.

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

3. All emanations from a class A/B digital device or system, including any network of conductors and apparatus connected thereto, shall not exceed the level of field strengths specified above.

3.1.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
EMI Test Receiver	Rohde&Schwarz	ESR3	101900	Feb. 14,24	Feb. 13,25
EMC32 test software	Rohde&Schwarz	EMC32	NA	NA	NA
LISN network	Rohde&Schwarz	ENV216	101922	Mar. 10,24	Mar. 09,25

NOTE:

1. The test was performed in CE shielded room.

2. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.



3.1.3 TEST PROCEDURES

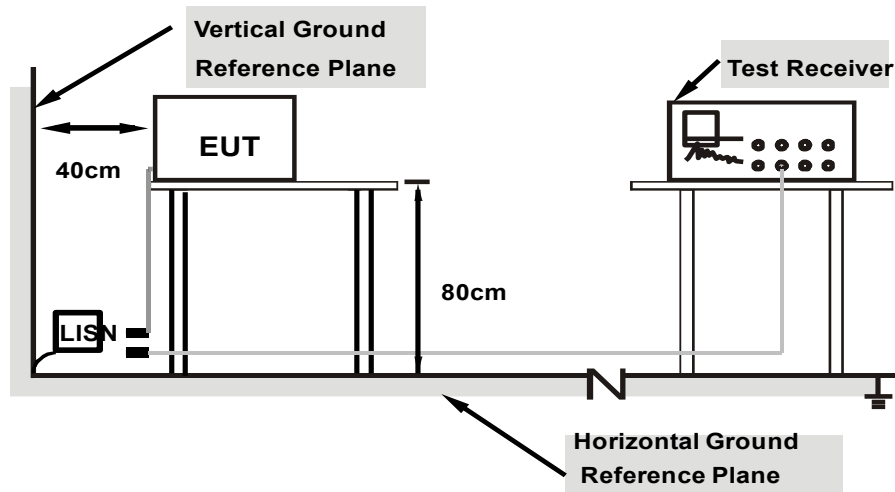
- a. The EUT was placed 0.4 meters from the conducting wall of the shielded room with EUT being connected to the power mains through a line impedance stabilization network (LISN). Other support units were connected to the power mains through another LISN. The two LISNs provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
- b. Both lines of the power mains connected to the EUT were checked for maximum conducted interference.
- c. The frequency range from 150kHz to 30MHz was searched. Emission levels under (Limit - 20dB) was not recorded.

NOTE: All modes of operation were investigated and the worst-case emissions are reported.

3.1.4 DEVIATION FROM TEST STANDARD

No deviation.

3.1.5 TEST SETUP



Note: 1.Support units were connected to second LISN.
2.Both of LISNs (AMN) are 80 cm from EUT and at least 80 from other units and other metal planes

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.1.6 EUT OPERATING CONDITIONS

- Turned on the power and connected of all equipment.
- EUT was operated according to the type used was description in manufacturer's specifications or the User's Manual.



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3.1.7 TEST RESULTS

CONDUCTED WORST-CASE DATA:

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	26deg. C, 51%RH
Tested By	Carl Xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	8.75	56.00	47.25	L1	ON	9.8
0.150000	26.91	---	66.00	39.09	L1	ON	9.8
3.384000	---	4.07	46.00	41.93	L1	ON	9.8
3.384000	6.19	---	56.00	49.81	L1	ON	9.8
5.564000	---	13.51	50.00	36.49	L1	ON	9.9
5.564000	19.72	---	60.00	40.28	L1	ON	9.9
6.132000	---	14.60	50.00	35.40	L1	ON	10.0
6.132000	21.24	---	60.00	38.76	L1	ON	10.0
17.488000	---	23.14	50.00	26.86	L1	ON	11.1
17.488000	27.36	---	60.00	32.64	L1	ON	11.1
23.084000	---	31.91	50.00	18.09	L1	ON	11.3
23.084000	33.59	---	60.00	26.41	L1	ON	11.3

REMARKS: 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.

2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.

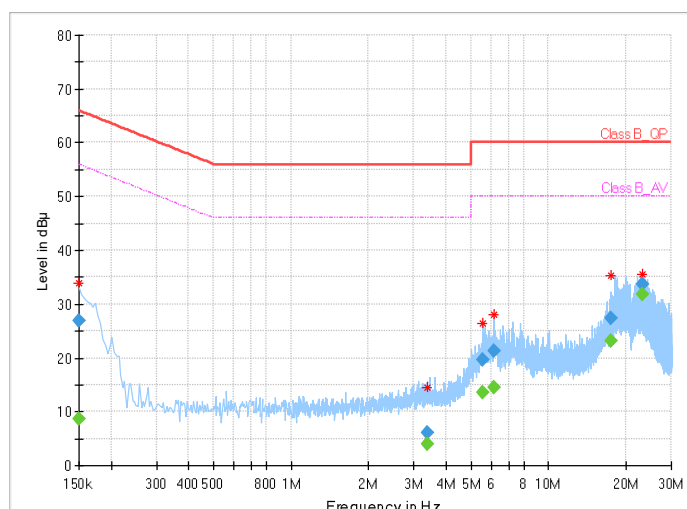
3. The emission levels of other frequencies were very low against the limit.

4. Margin value = Limit value -Emission level

5. Correction factor = Insertion loss + Cable loss

6. Emission Level = Correction Factor + Reading Value.

Full Spectrum





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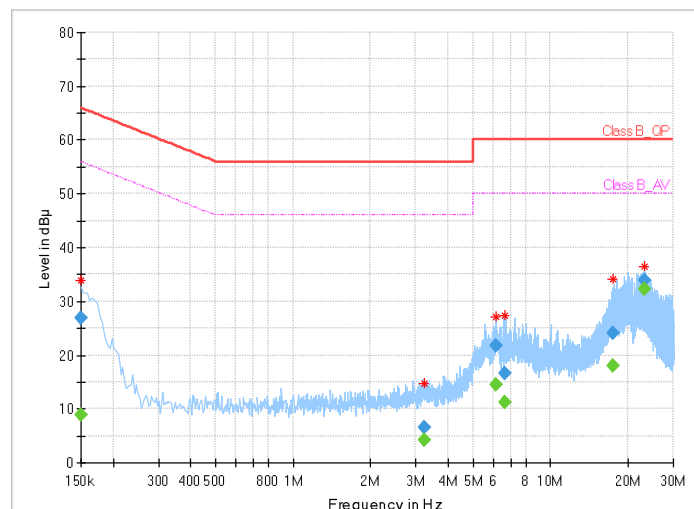
Test Report No.: W7L-240423W001RF04

Frequency Range	150KHz ~ 30MHz	Detector Function & Resolution Bandwidth	Quasi-Peak (QP) / Average (AV), 9 kHz
Input Power	120Vac, 60Hz	Environmental Conditions	26deg. C, 51%RH
Tested By	Carl Xie		

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Line	Filter	Corr. (dB)
0.150000	---	8.82	56.00	47.18	N	ON	9.7
0.150000	26.88	---	66.00	39.12	N	ON	9.7
3.220000	---	4.16	46.00	41.84	N	ON	9.8
3.220000	6.53	---	56.00	49.47	N	ON	9.8
6.128000	---	14.59	50.00	35.41	N	ON	9.9
6.128000	21.76	---	60.00	38.24	N	ON	9.9
6.652000	---	11.24	50.00	38.76	N	ON	10.0
6.652000	16.57	---	60.00	43.43	N	ON	10.0
17.468000	---	18.04	50.00	31.96	N	ON	11.2
17.468000	24.20	---	60.00	35.80	N	ON	11.2
23.084000	---	32.21	50.00	17.79	N	ON	11.4
23.084000	33.83	---	60.00	26.17	N	ON	11.4

- REMARKS:** 1. Q.P. and AV. are abbreviations of quasi-peak and average individually.
2. "-": The Quasi-peak reading value also meets average limit and measurement with the average detector is unnecessary.
3. The emission levels of other frequencies were very low against the limit.
4. Margin value = Limit value - Emission level
5. Correction factor = Insertion loss + Cable loss
6. Emission Level = Correction Factor + Reading Value.

Full Spectrum





3.2 RADIATED EMISSION MEASUREMENT

3.2.1 LIMITS OF RADIATED EMISSION MEASUREMENT

Radiated emissions which fall in the restricted bands, as defined in Section 15.205(a), must also comply with the radiated emission limits specified in Section 15.209(a).

FREQUENCIES (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. As shown in 15.35(b), 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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3.2.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
3m Semi-anechoic Chamber	ETS-LINDGREN	9m*6m*6m	Euroshieldpn-CT0001143-1216	Nov. 14,23	Nov. 13,26
Bilog Antenna	ETS-LINDGREN	3143B	00161965	Feb. 18,24	Feb. 17,25
Horn Antenna	ETS-LINDGREN	3117	00168692	Feb. 18,24	Feb. 17,25
Horn Antenna (18GHz-40GHz)	N/A	QWH-SL-18-40-K-SG/QMS-00361	15433	Sep.04, 23	Sep.03, 24
Test Software	E3	V 9.160323	N/A	N/A	N/A
Test Software	JS1120-3	3.2.06	N/A	N/A	N/A
10dB Attenuator	JFW/USA	50HF-010-SMA	N/A	May. 05,24	May. 04,25
MXE EMI Receiver	KEYSIGHT	N9038A-544	MY54450026	Mar. 28,24	Mar. 27,25
Signal Pre-Amplifier	EMSI	EMC 9135	980249	May. 05,24	May. 04,25
Signal Pre-Amplifier	EMSI	EMC 012645B	980257	May.10,24	May.09,25
Signal Pre-Amplifier	EMSI	EMC 184045B	980259	Feb. 17,24	Feb. 16,25
DC Source	Kikusui/JP	PMX18-5A	0000001	Aug. 12,23	Aug. 11,24
Power Meter	Anritsu	ML2495A	1506002	Feb. 14,24	Feb. 13,25
Power Sensor	Anritsu	MA2411B	1339352	Feb. 14,24	Feb. 13,25
Loop Antenna	Schwarzbeck	FMZB 1519B	00173	Sep.03,23	Sep.02,24

- NOTE:**
1. The calibration interval of the above test instruments is 12 months or 36 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
 2. The test was performed in 3m Chamber.
 3. The FCC Site Registration No. is 525120; The Designation No. is CN1171.



3.2.3 TEST PROCEDURES

- a. The EUT was placed on the top of a rotating table 0.8 meters (for below 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 antenna is a broadband antenna, and its height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
- d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
- e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- f. During the test, each emission was maximized by: having the EUT continuously working, investigated all operating modes, rotated about all 3 axis (X, Y & Z) and considered typical configuration to obtain worst position, manipulating interconnecting cables, For battery operated equipment, the equipment tests shall be perform using fresh batteries. The turntable was rotated to maximize the emission level.

Note:

1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. 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.
3. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 3MHz for RMS Average (Duty cycle < 98%) for Average detection (AV) at frequency above 1GHz, then the measurement results was added to a correction factor ($10 \log(1/\text{duty cycle})$).
4. The resolution bandwidth of test receiver/spectrum analyzer is 1MHz and the video bandwidth is 10Hz (Duty cycle $\geq 98\%$) for Average detection (AV) at frequency above 1GHz.
5. All modes of operation were investigated and the worst-case emissions are reported.

3.2.4 DEVIATION FROM TEST STANDARD

No deviation

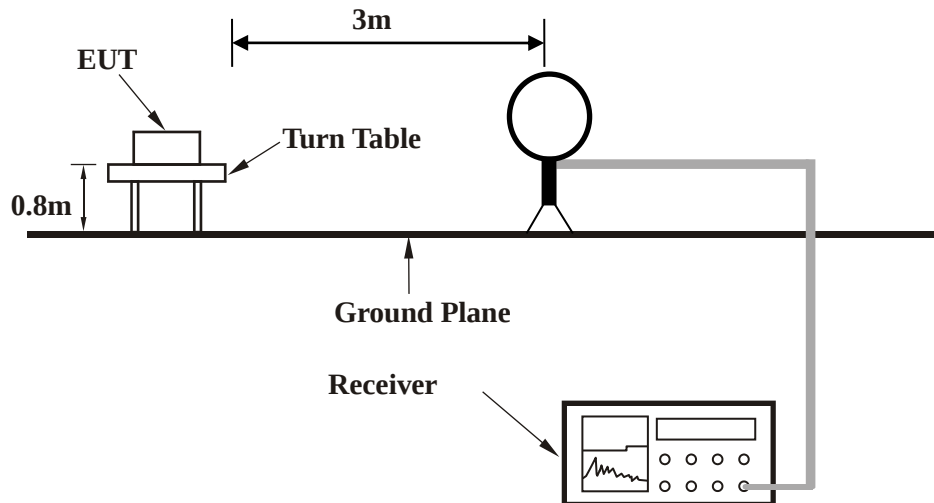


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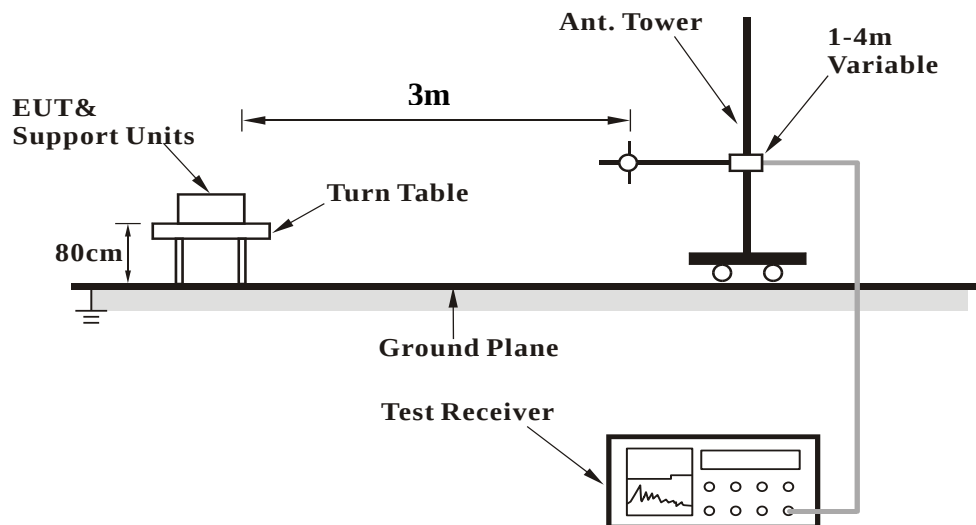
Test Report No.: W7L-240423W001RF04

3.2.5 TEST SETUP

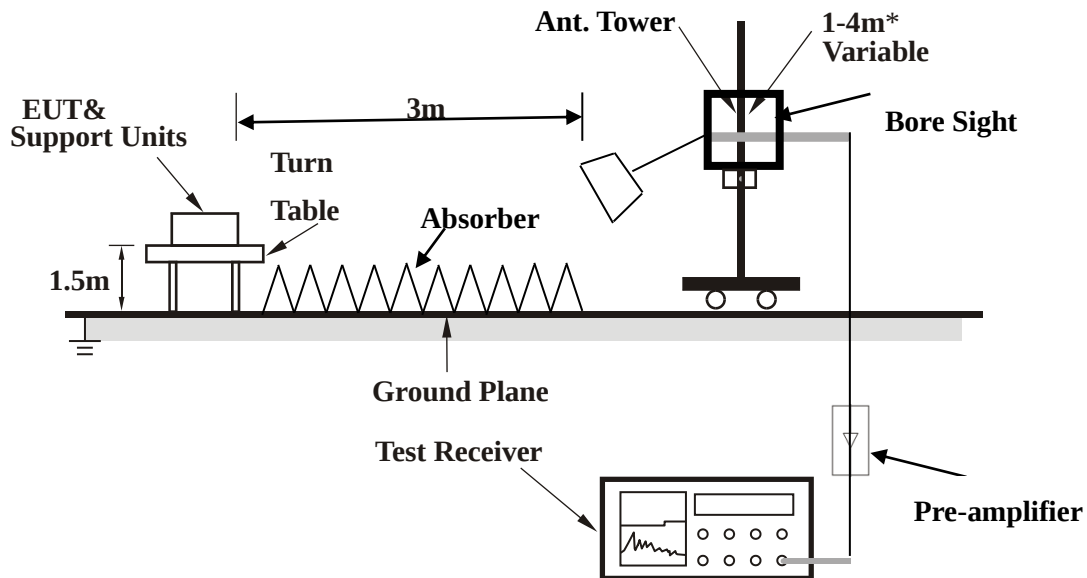
<Frequency Range 9KHz~30MHz >



< Frequency Range 30MHz~1GHz >



<Frequency Range above 1GHz>



Note: Above 1G is a directional antenna

Depends on the EUT height and the antenna 3dB beamwidth both, refer to section 7.3 of CISPR 16-2-3.

For the actual test configuration, please refer to the attached file (Test Setup Photo).

3.2.6 EUT OPERATING CONDITIONS

- Set the EUT under full load condition and placed them on a testing table.
- Set the transmitter part of EUT under transmission condition continuously at specific channel frequency.
- The necessary accessories enable the EUT in full functions.



3.2.7 TEST RESULTS

NOTE : The 9K~30MHz amplitude of spurious emissions attenuated more than 20 dB below the permissible value is not required in the report.

BELOW 1GHz WORST-CASE DATA:

30 MHz – 1GHz data:

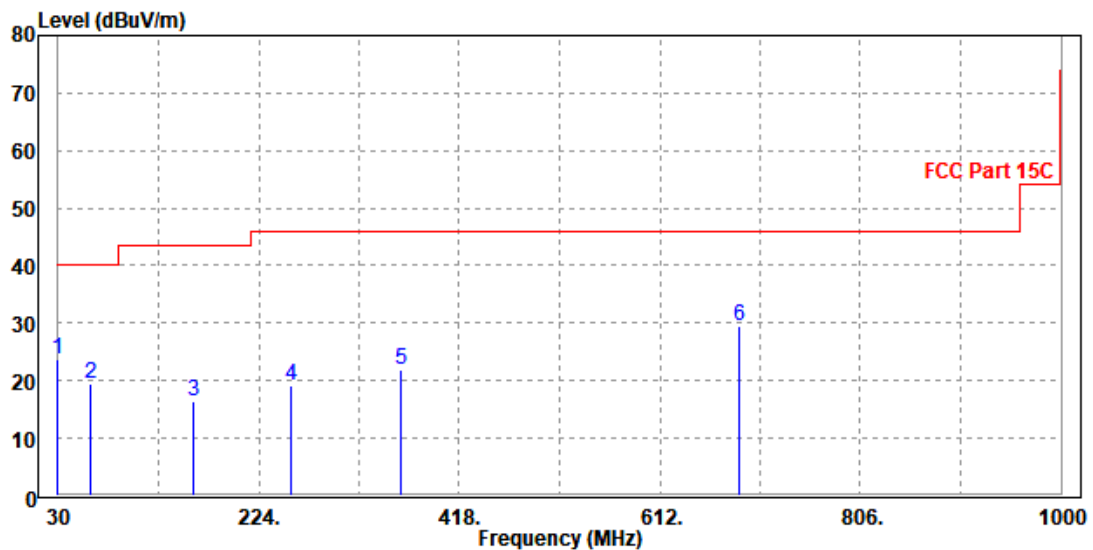
802.11n (20MHz):

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
30	23.77	34.61	40	-16.23	20.4	6.13	37.37	100	360	QP
61.04	19.61	43.23	40	-20.39	7.36	6.31	37.29	100	360	QP
159.98	16.51	33.92	43.5	-26.99	12.59	6.78	36.78	100	360	QP
255.04	19.27	35.04	46	-26.73	13.67	7.17	36.61	100	360	QP
361.74	21.92	35.36	46	-24.08	15.84	7.47	36.75	100	360	QP
689.24	29.4	35.68	46	-16.6	22.61	8.38	37.27	100	360	QP

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.





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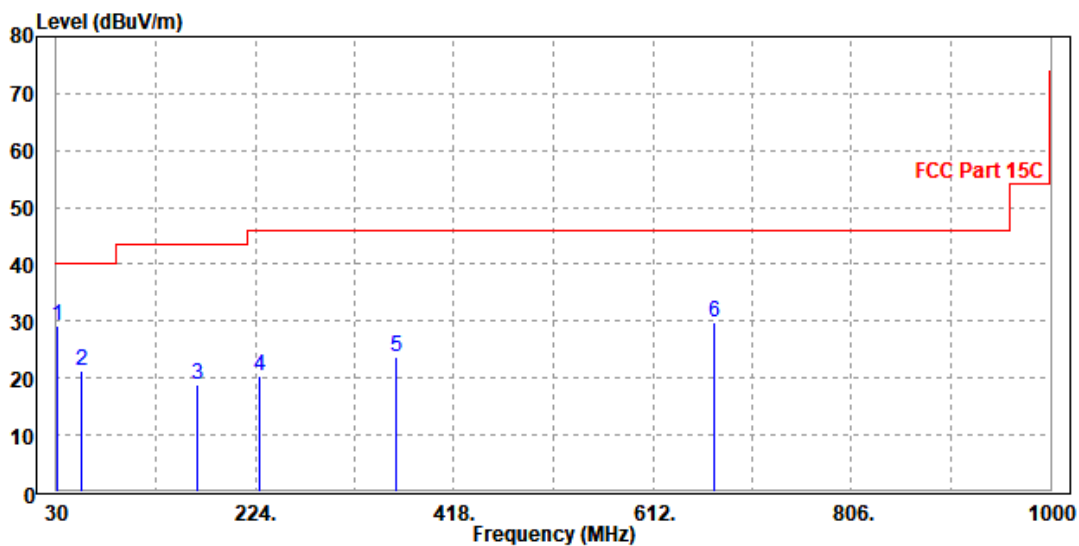
Test Report No.: W7L-240423W001RF04

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
30.97	29.23	40.22	40	-10.77	20.24	6.14	37.37	100	0	QP
55.22	21.18	44.26	40	-18.82	7.99	6.3	37.37	100	0	QP
166.77	18.92	34.76	43.5	-24.58	14.12	6.8	36.76	100	0	QP
228.85	20.41	36.49	46	-25.59	13.45	7.09	36.62	100	0	QP
361.74	23.71	36.54	46	-22.29	16.45	7.47	36.75	100	0	QP
672.14	29.7	36.15	46	-16.3	22.45	8.34	37.24	100	0	QP

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.





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Test Report No.: W7L-240423W001RF04

ABOVE 1GHz WORST-CASE DATA:

Note: 1. For radiated emissions testing , the full testing range of different modes have been scanned , only the worst case harmonic data is reported in the sheet.

2. All other emissions were greater than 20dB below the limit was not recorded

802.11b:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	50.45	57.14	74.00	-23.55	31.78	7.74	46.21	100	325	Peak
2390.000	44.74	51.43	54.00	-9.26	31.78	7.74	46.21	100	325	Average
2412.000	101.96	108.58	/	/	31.82	7.77	46.21	100	325	Peak
2412.000	100.14	106.76	/	/	31.82	7.77	46.21	100	325	Average
2483.500	50.47	56.81	74.00	-23.53	31.97	7.88	46.19	100	325	Peak
2483.500	43.08	49.42	54.00	-10.92	31.97	7.88	46.19	100	325	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	50.54	57.11	74.00	-23.46	31.90	7.74	46.21	135	200	Peak
2390.000	43.93	50.50	54.00	-10.07	31.90	7.74	46.21	135	200	Average
2412.000	102.00	108.50	/	/	31.94	7.77	46.21	135	200	Peak
2412.000	100.52	107.02	/	/	31.94	7.77	46.21	135	200	Average
2483.500	51.37	57.61	74.00	-22.63	32.07	7.88	46.19	135	200	Peak
2483.500	43.58	49.82	54.00	-10.42	32.07	7.88	46.19	135	200	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2412MHz: Fundamental frequency.



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Test Report No.: W7L-240423W001RF04

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	49.37	56.06	74.00	-24.63	31.78	7.74	46.21	100	325	Peak
2390.000	43.07	49.76	54.00	-10.93	31.78	7.74	46.21	100	325	Average
2437.000	105.41	111.93	/	/	31.87	7.81	46.20	100	325	Peak
2437.000	104.02	110.54	/	/	31.87	7.81	46.20	100	325	Average
2483.500	50.89	57.23	74.00	-23.11	31.97	7.88	46.19	100	325	Peak
2483.500	43.34	49.68	54.00	-10.66	31.97	7.88	46.19	100	325	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	51.35	57.92	74.00	-22.65	31.90	7.74	46.21	100	220	Peak
2390.000	43.44	50.01	54.00	-10.56	31.90	7.74	46.21	100	220	Average
2437.000	105.13	111.53	/	/	31.99	7.81	46.20	100	220	Peak
2437.000	103.48	109.88	/	/	31.99	7.81	46.20	100	220	Average
2483.500	51.61	57.85	74.00	-22.39	32.07	7.88	46.19	100	220	Peak
2483.500	44.18	50.42	54.00	-9.82	32.07	7.88	46.19	100	220	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2437MHz: Fundamental frequency.



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Test Report No.: W7L-240423W001RF04

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	50.68	57.37	74.00	-23.32	31.78	7.74	46.21	100	300	Peak
2390.000	42.96	49.65	54.00	-11.04	31.78	7.74	46.21	100	300	Average
2462.000	92.39	98.82	/	/	31.92	7.84	46.19	100	300	Peak
2462.000	90.95	97.38	/	/	31.92	7.84	46.19	100	300	Average
2483.500	51.77	58.11	74.00	-22.23	31.97	7.88	46.19	100	300	Peak
2483.500	44.49	50.83	54.00	-9.51	31.97	7.88	46.19	100	300	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	51.47	58.04	74.00	-22.53	31.90	7.74	46.21	140	205	Peak
2390.000	43.45	50.02	54.00	-10.55	31.90	7.74	46.21	140	205	Average
2462.000	93.94	100.26	/	/	32.03	7.84	46.19	140	205	Peak
2462.000	92.54	98.86	/	/	32.03	7.84	46.19	140	205	Average
2483.500	52.31	58.55	74.00	-21.69	32.07	7.88	46.19	140	205	Peak
2483.500	44.86	51.10	54.00	-9.14	32.07	7.88	46.19	140	205	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2462MHz: Fundamental frequency.



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Test Report No.: W7L-240423W001RF04

802.11g

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	52.92	59.61	74.00	-21.08	31.78	7.74	46.21	100	325	Peak
2390.000	46.26	52.95	54.00	-7.74	31.78	7.74	46.21	100	325	Average
2412.000	104.60	111.22	/	/	31.82	7.77	46.21	100	325	Peak
2412.000	96.94	103.56	/	/	31.82	7.77	46.21	100	325	Average
2483.500	51.63	57.97	74.00	-22.37	31.97	7.88	46.19	100	325	Peak
2483.500	43.83	50.17	54.00	-10.17	31.97	7.88	46.19	100	325	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	52.25	58.82	74.00	-21.75	31.90	7.74	46.21	100	20	Peak
2390.000	45.65	52.22	54.00	-8.35	31.90	7.74	46.21	100	20	Average
2412.000	102.89	109.39	/	/	31.94	7.77	46.21	100	20	Peak
2412.000	94.83	101.33	/	/	31.94	7.77	46.21	100	20	Average
2483.500	51.14	57.38	74.00	-22.86	32.07	7.88	46.19	100	20	Peak
2483.500	43.75	49.99	54.00	-10.25	32.07	7.88	46.19	100	20	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2412MHz: Fundamental frequency.



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Test Report No.: W7L-240423W001RF04

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	51.60	58.29	74.00	-22.40	31.78	7.74	46.21	100	325	Peak
2390.000	44.32	51.01	54.00	-9.68	31.78	7.74	46.21	100	325	Average
2437.000	107.55	114.07	/	/	31.87	7.81	46.20	100	325	Peak
2437.000	99.61	106.13	/	/	31.87	7.81	46.20	100	325	Average
2483.500	51.56	57.90	74.00	-22.44	31.97	7.88	46.19	100	325	Peak
2483.500	44.57	50.91	54.00	-9.43	31.97	7.88	46.19	100	325	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	50.90	57.47	74.00	-23.10	31.90	7.74	46.21	200	220	Peak
2390.000	43.65	50.22	54.00	-10.35	31.90	7.74	46.21	200	220	Average
2437.000	108.84	115.24	/	/	31.99	7.81	46.20	200	220	Peak
2437.000	100.77	107.17	/	/	31.99	7.81	46.20	200	220	Average
2483.500	52.80	59.04	74.00	-21.20	32.07	7.88	46.19	200	220	Peak
2483.500	44.99	51.23	54.00	-9.01	32.07	7.88	46.19	200	220	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2437MHz: Fundamental frequency.



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Test Report No.: W7L-240423W001RF04

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	51.53	58.22	74.00	-22.47	31.78	7.74	46.21	100	300	Peak
2390.000	43.39	50.08	54.00	-10.61	31.78	7.74	46.21	100	300	Average
2462.000	92.06	98.49	/	/	31.92	7.84	46.19	100	300	Peak
2462.000	83.78	90.21	/	/	31.92	7.84	46.19	100	300	Average
2483.500	52.90	59.24	74.00	-21.10	31.97	7.88	46.19	100	300	Peak
2483.500	44.94	51.28	54.00	-9.06	31.97	7.88	46.19	100	300	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	51.44	58.01	74.00	-22.56	31.90	7.74	46.21	100	205	Peak
2390.000	44.13	50.70	54.00	-9.87	31.90	7.74	46.21	100	205	Average
2462.000	92.40	98.72	/	/	32.03	7.84	46.19	100	205	Peak
2462.000	84.89	91.21	/	/	32.03	7.84	46.19	100	205	Average
2483.500	52.23	58.47	74.00	-21.77	32.07	7.88	46.19	100	205	Peak
2483.500	45.61	51.85	54.00	-8.39	32.07	7.88	46.19	100	205	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2462MHz: Fundamental frequency.



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Test Report No.: W7L-240423W001RF04

802.11n (20MHz)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	54.32	61.01	74.00	-19.68	31.78	7.74	46.21	100	325	Peak
2390.000	47.04	53.73	54.00	-6.96	31.78	7.74	46.21	100	325	Average
2412.000	104.80	111.42	/	/	31.82	7.77	46.21	100	325	Peak
2412.000	96.90	103.52	/	/	31.82	7.77	46.21	100	325	Average
2483.500	51.02	57.36	74.00	-22.98	31.97	7.88	46.19	100	325	Peak
2483.500	43.82	50.16	54.00	-10.18	31.97	7.88	46.19	100	325	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	53.60	60.17	74.00	-20.40	31.90	7.74	46.21	100	20	Peak
2390.000	45.82	52.39	54.00	-8.18	31.90	7.74	46.21	100	20	Average
2412.000	102.72	109.22	/	/	31.94	7.77	46.21	100	20	Peak
2412.000	95.17	101.67	/	/	31.94	7.77	46.21	100	20	Average
2483.500	51.59	57.83	74.00	-22.41	32.07	7.88	46.19	100	20	Peak
2483.500	43.82	50.06	54.00	-10.18	32.07	7.88	46.19	100	20	Average

REMARKS:

- Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
- 2412MHz: Fundamental frequency.



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Test Report No.: W7L-240423W001RF04

CHANNEL	TX Channel 6	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	51.07	57.76	74.00	-22.93	31.78	7.74	46.21	100	325	Peak
2390.000	43.88	50.57	54.00	-10.12	31.78	7.74	46.21	100	325	Average
2437.000	107.48	114.00	/	/	31.87	7.81	46.20	100	325	Peak
2437.000	99.78	106.30	/	/	31.87	7.81	46.20	100	325	Average
2483.500	51.73	58.07	74.00	-22.27	31.97	7.88	46.19	100	325	Peak
2483.500	43.94	50.28	54.00	-10.06	31.97	7.88	46.19	100	325	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	51.80	58.37	74.00	-22.20	31.90	7.74	46.21	200	220	Peak
2390.000	43.99	50.56	54.00	-10.01	31.90	7.74	46.21	200	220	Average
2437.000	109.03	115.43	/	/	31.99	7.81	46.20	200	220	Peak
2437.000	101.18	107.58	/	/	31.99	7.81	46.20	200	220	Average
2483.500	52.57	58.81	74.00	-21.43	32.07	7.88	46.19	200	220	Peak
2483.500	45.35	51.59	54.00	-8.65	32.07	7.88	46.19	200	220	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2437MHz: Fundamental frequency.



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Test Report No.: W7L-240423W001RF04

CHANNEL	TX Channel 11	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	50.34	57.03	74.00	-23.66	31.78	7.74	46.21	200	325	Peak
2390.000	43.65	50.34	54.00	-10.35	31.78	7.74	46.21	200	325	Average
2462.000	92.15	98.58	/	/	31.92	7.84	46.19	200	325	Peak
2462.000	84.11	90.54	/	/	31.92	7.84	46.19	200	325	Average
2483.500	52.61	58.95	74.00	-21.39	31.97	7.88	46.19	200	325	Peak
2483.500	44.43	50.77	54.00	-9.57	31.97	7.88	46.19	200	325	Average
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M										
FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	READ LEVEL (dBuV)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA FACTOR (dB /m)	CABLE LOSS (dB)	PREAMP FACTOR (dB)	ANTENNA HEIGHT (cm)	TABLE ANGLE (Degree)	REMARK
2390.000	50.63	57.20	74.00	-23.37	31.90	7.74	46.21	200	205	Peak
2390.000	43.93	50.50	54.00	-10.07	31.90	7.74	46.21	200	205	Average
2462.000	94.84	101.16	/	/	32.03	7.84	46.19	200	205	Peak
2462.000	87.56	93.88	/	/	32.03	7.84	46.19	200	205	Average
2483.500	53.35	59.59	74.00	-20.65	32.07	7.88	46.19	200	205	Peak
2483.500	46.79	53.03	54.00	-7.21	32.07	7.88	46.19	200	205	Average

REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2462MHz: Fundamental frequency.



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Test Report No.: W7L-240423W001RF04

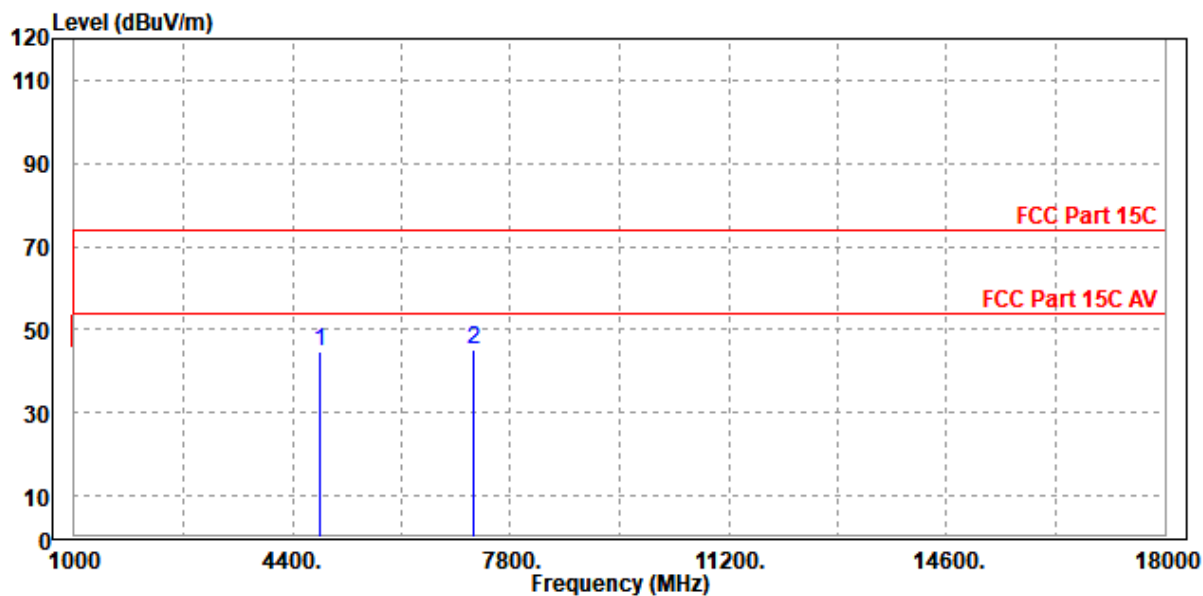
Worst case harmonic:

802.11n (20MHz)

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Peak (PK)
FREQUENCY RANGE	1GHz ~ 25GHz		Average (AV)

ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M

	Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
	MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	4828.000	44.64	46.56	74.00	-29.36	-1.92	Peak	Horizontal
2 PP	7236.000	45.15	43.28	74.00	-28.85	1.87	Peak	Horizontal



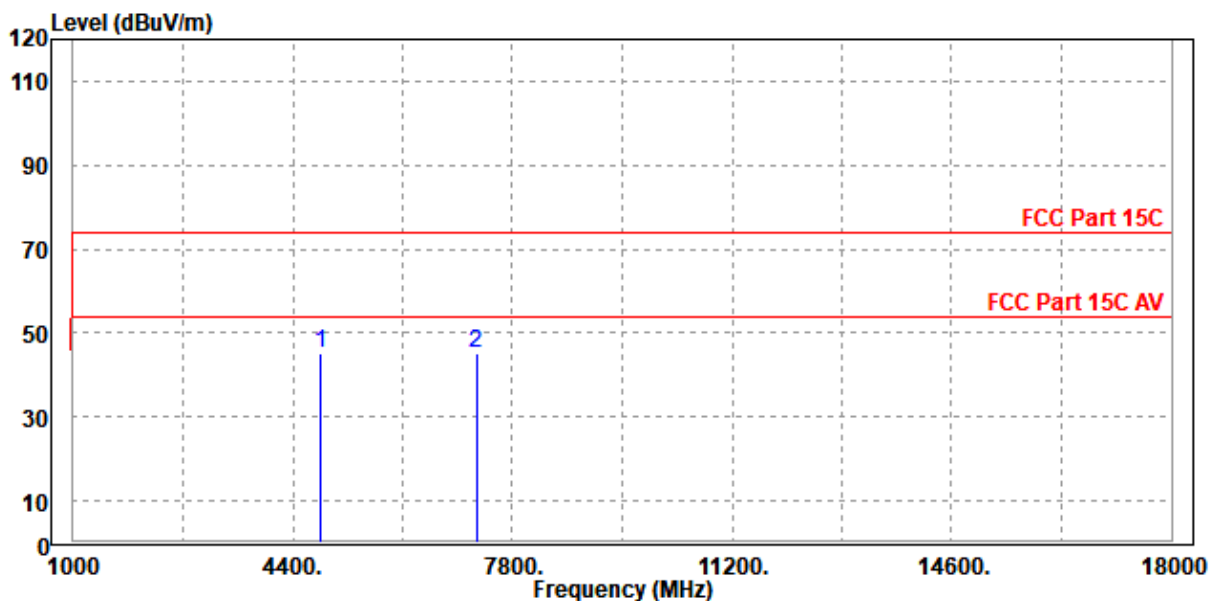


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Test Report No.: W7L-240423W001RF04

ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M

		Freq	Level	Read Level	Limit Line	Over Limit	Factor	Remark	Pol/Phase
		MHz	dBuV/m	dBuV	dBuV/m	dB	dB/m		
1	PP	4828.000	45.30	46.51	74.00	-28.70	-1.21	Peak	Vertical
2		7239.000	45.09	43.16	74.00	-28.91	1.93	Peak	Vertical



REMARKS:

1. Emission Level = Read Level+ Antenna Factor + Cable Loss- Preamp Factor
Margin value = Emission level – Limit value.
2. 2412MHz: Fundamental frequency.
3. For frequency above 18GHz, the emission was tested 20db below the limit so the data not recorded in the sheet.

3.3 6 dB BANDWIDTH MEASUREMENT

3.3.1 LIMITS OF 6dB BANDWIDTH MEASUREMENT

The minimum of 6dB Bandwidth Measurement is 0.5 MHz.

3.3.2 TEST INSTRUMENTS

Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Next Cal.
Power Meter	ANRITSU	ML2495A	1506002	Feb. 22,24	Feb. 21,25
EXA Signal Analyzer	KEYSIGHT	N9010A-526	MY54510322	Feb. 18,24	Feb. 17,25
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.15,23	May.14,24
EXA Signal Analyzer	KEYSIGHT	N9010A-544	MY54510355	May.14,24	May.13,25
Power Sensor	ANRITSU	MA2411B	1339352	May. 06,24	May. 05,25

NOTE:

1. The calibration interval of the above test instruments is 12 months and the calibrations are traceable to CEPREI/CHINA, GRGT/CHINA and NIM/CHINA.
2. The test was performed in RF Oven room.

3.3.3 TEST PROCEDURE

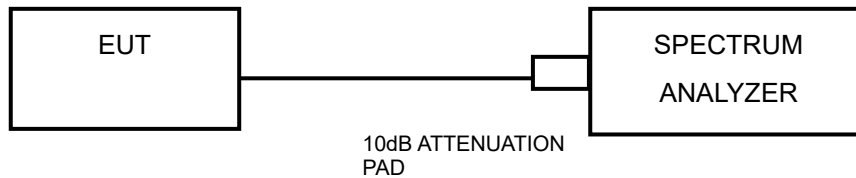
1. Set RBW = 100 kHz.
2. Set the video bandwidth (VBW) ≥ 3 RBW.
3. Detector = Peak.
4. Trace mode = max hold.
5. Sweep = auto couple.
6. Allow the trace to stabilize.
7. Measure the maximum width of the emission that is constrained by the frequencies associated with the two outermost amplitude points (upper and lower frequencies) that are attenuated by 6 dB relative to the maximum level measured in the fundamental emission.



3.3.4 DEVIATION FROM TEST STANDARD

No deviation.

3.3.5 TEST SETUP



3.3.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



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3.3.7 TEST RESULTS

Please Refer to Appendix Of this test report.

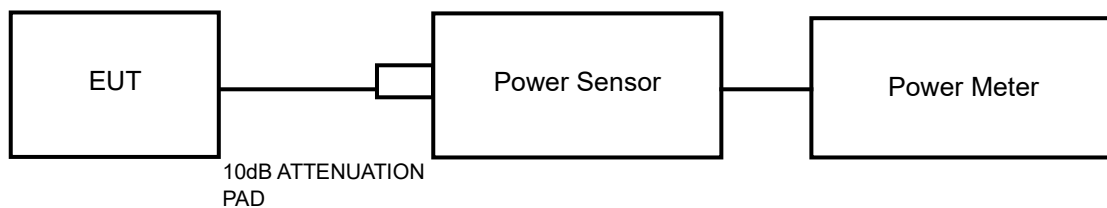


3.4 CONDUCTED OUTPUT POWER

3.4.1 LIMITS OF CONDUCTED OUTPUT POWER MEASUREMENT

For systems using digital modulation in the 2400–2483.5 MHz band: 1 Watt (30dBm)

3.4.2 TEST SETUP



3.4.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.4.4 TEST PROCEDURES

A peak power sensor was used on the output port of the EUT. A power meter was used to read the response of the peak power sensor. Record the power level.

3.4.5 DEVIATION FROM TEST STANDARD

No deviation.

3.4.6 EUT OPERATING CONDITIONS

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



Test Report No.: W7L-240423W001RF04

3.4.7 TEST RESULTS

3.4.7.1 MAXIMUM PEAK OUTPUT POWER

Please Refer to Appendix Of this test report.



Test Report No.: W7L-240423W001RF04

3.4.7.2 AVERAGE OUTPUT POWER (FOR REFERENCE)

The average power sensor was used on the output port of the EUT. A power meter was used to read the response of the power sensor. Record the power level.

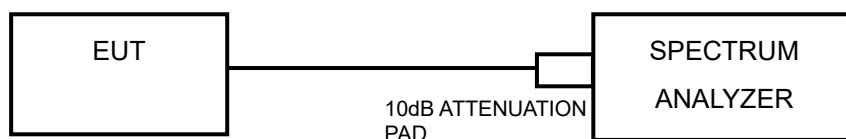
Please Refer to Appendix Of this test report.

3.5 POWER SPECTRAL DENSITY MEASUREMENT

3.5.1 LIMITS OF POWER SPECTRAL DENSITY MEASUREMENT

The Maximum of Power Spectral Density Measurement is 8dBm/3KHz.

3.5.2 TEST SETUP



3.5.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.5.4 TEST PROCEDURE

1. Set the span to 1.5 times the DTS bandwidth
2. Set the RBW = 3 kHz, VBW $\geq 3 \times$ RBW, Detector = peak.
3. Sweep time = auto couple, Trace mode = max hold, allow trace to fully stabilize.
4. Use the peak marker function to determine the maximum amplitude level.

3.5.5 DEVIATION FROM TEST STANDARD

No deviation.

3.5.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.



Test Report No.: W7L-240423W001RF04

3.5.7 TEST RESULTS

Please Refer to Appendix Of this test report.

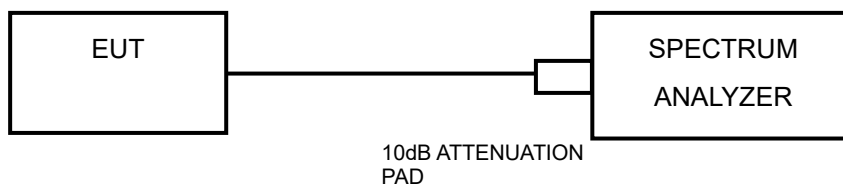


3.6 OUT OF BAND EMISSION MEASUREMENT

3.6.1 LIMITS OF OUT OF BAND EMISSION MEASUREMENT

Below –20dB of the highest emission level of operating band (in 100kHz Resolution Bandwidth).

3.6.2 TEST SETUP



3.6.3 TEST INSTRUMENTS

Refer to section 3.3.2 to get information of above instrument.

3.6.4 TEST PROCEDURE

MEASUREMENT PROCEDURE REF

1. Set the RBW = 100 kHz.
2. Set the VBW $\geq$ 300 kHz.
3. Detector = peak.
4. Sweep time = auto couple.
5. Trace mode = max hold.
6. Allow trace to fully stabilize.
7. Use the peak marker function to determine the maximum power level in any 100 kHz band segment within the fundamental EBW.



MEASUREMENT PROCEDURE OOB

1. Set RBW = 100 kHz.
2. Set VBW $\geq$ 300 kHz.
3. Set span to encompass the spectrum to be examined
4. Detector = peak.
5. Trace Mode = max hold.
6. Sweep = auto couple.

3.6.5 DEVIATION FROM TEST STANDARD

No deviation.

3.6.6 EUT OPERATING CONDITION

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

3.6.7 TEST RESULTS

The spectrum plots are attached on the following images. D1 line indicates the highest level. D2 line indicates the 20dB offset below D1. It shows compliance to the requirement.

Please Refer to Appendix Of this test report.



3.7 ANTENNA REQUIREMENTS

3.7.1 STANDARD APPLICABLE

If transmitting antenna directional gain is greater than 6 dBi, both the peak transmit power and the peak power spectral density shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

3.7.2 ANTENNA CONNECTED CONSTRUCTION

An embedded-in antenna design is used.

3.7.3 ANTENNA GAIN

The antenna peak gain of EUT is less than 6 dBi. Therefore, it is not necessary to reduce maximum peak output power limit and PSD limit.

4 PHOTOGRAPHS OF THE TEST CONFIGURATION

Please refer to the attached file (Test Setup Photo).



Test Report No.: W7L-240423W001RF04

5 MODIFICATIONS RECORDERS FOR ENGINEERING CHANGES TO THE EUT BY THE LAB

No any modifications are made to the EUT by the lab during the test.



6 APPENDIX

DTS BANDWIDTH

TEST RESULT

TestMode	Antenna	Frequency[MHz]	DTS BW [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	8.520	2407.960	2416.480	0.5	PASS
		2437	7.120	2433.400	2440.520	0.5	PASS
		2462	8.080	2457.920	2466.000	0.5	PASS
11G	Ant1	2412	14.360	2405.080	2419.440	0.5	PASS
		2437	14.680	2429.400	2444.080	0.5	PASS
		2462	14.480	2455.080	2469.560	0.5	PASS
11N20SISO	Ant1	2412	16.000	2404.080	2420.080	0.5	PASS
		2437	12.640	2430.640	2443.280	0.5	PASS
		2462	14.920	2454.560	2469.480	0.5	PASS



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Test Report No.: W7L-240423W001RF04

TEST GRAPHS

11B_Ant1_2412



11B_Ant1_2437



11B_Ant1_2462



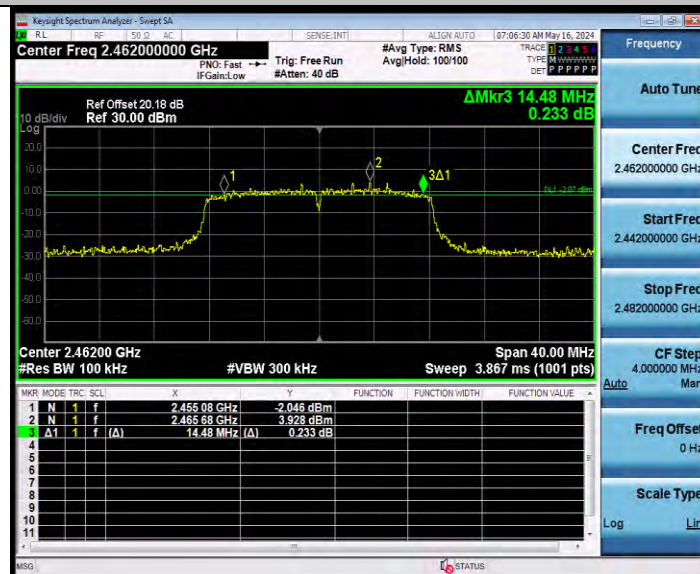


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Test Report No.: W7L-240423W001RF04



11G_Ant1_2462

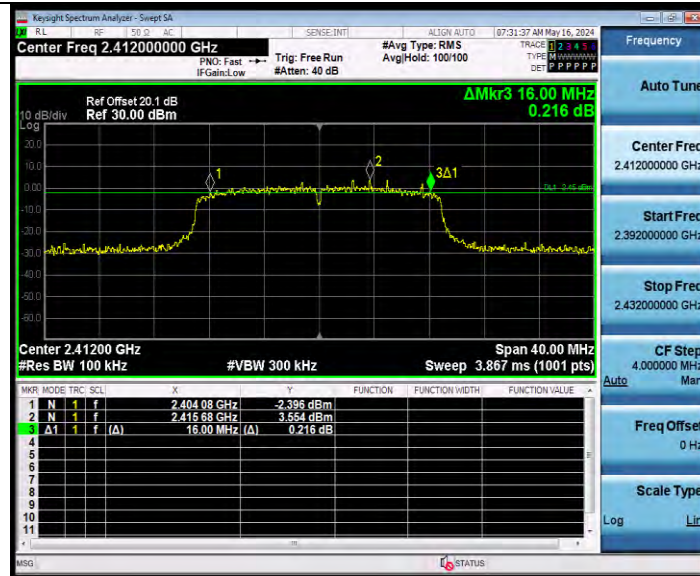


11N20SISO_Ant1_2412



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Test Report No.: W7L-240423W001RF04



11N20SISO_Ant1_2437



11N20SISO_Ant1_2462



Test Report No.: W7L-240423W001RF04





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OCCUPIED CHANNEL BANDWIDTH

TEST RESULT

TestMode	Antenna	Channel Frequency[MHz]	OCB [MHz]	FL[MHz]	FH[MHz]	Limit[MHz]	Verdict
11B	Ant1	2412	14.694	2404.7111	2419.4051	---	---
		2437	14.640	2429.6115	2444.2515	---	---
		2462	14.891	2454.5356	2469.4266	---	---
11G	Ant1	2412	16.504	2403.7382	2420.2422	---	---
		2437	16.485	2428.7140	2445.1990	---	---
		2462	16.554	2453.6681	2470.2221	---	---
11N20SISO	Ant1	2412	17.608	2403.1840	2420.7920	---	---
		2437	17.605	2428.1529	2445.7579	---	---
		2462	17.597	2453.1845	2470.7815	---	---

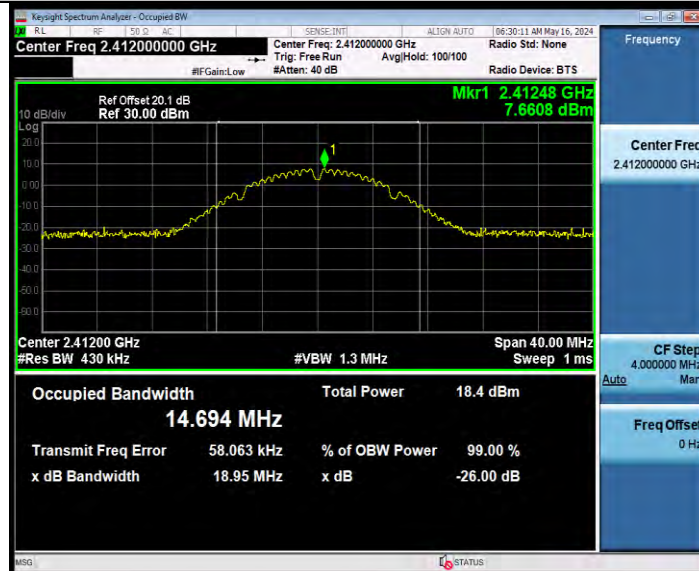


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Test Report No.: W7L-240423W001RF04

TEST GRAPHS

11B_Ant1_2412



11B_Ant1_2437



11B_Ant1_2462

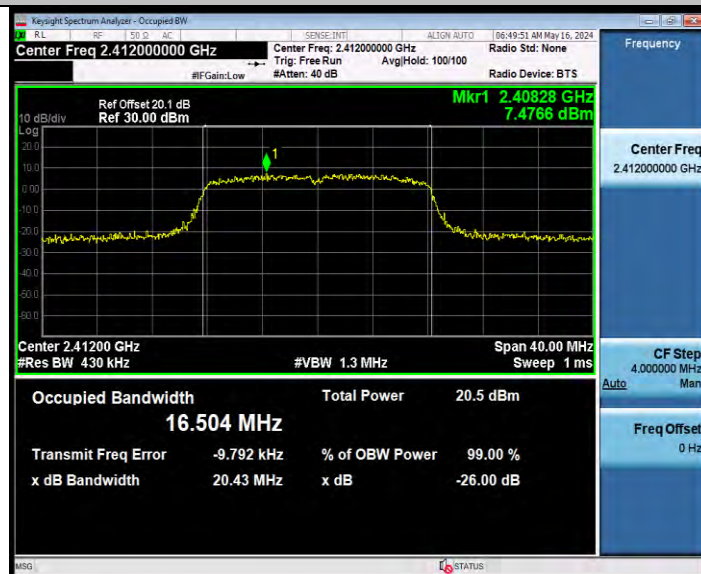


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Test Report No.: W7L-240423W001RF04



11G_Ant1_2412

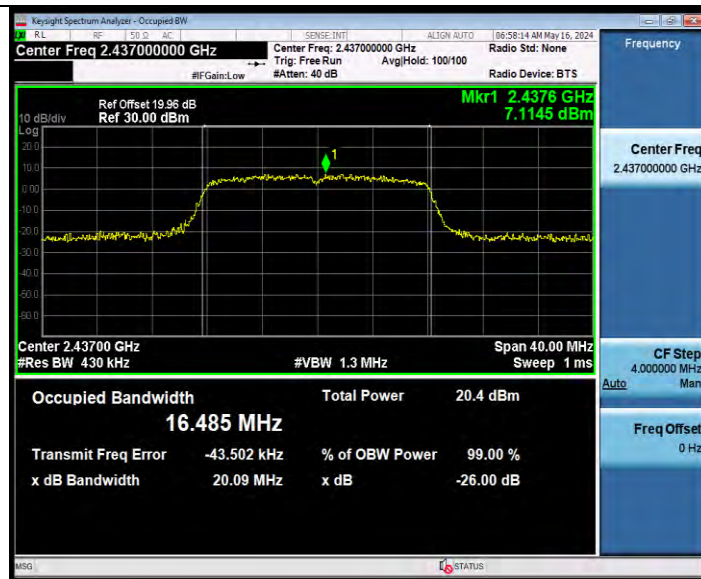


11G_Ant1_2437

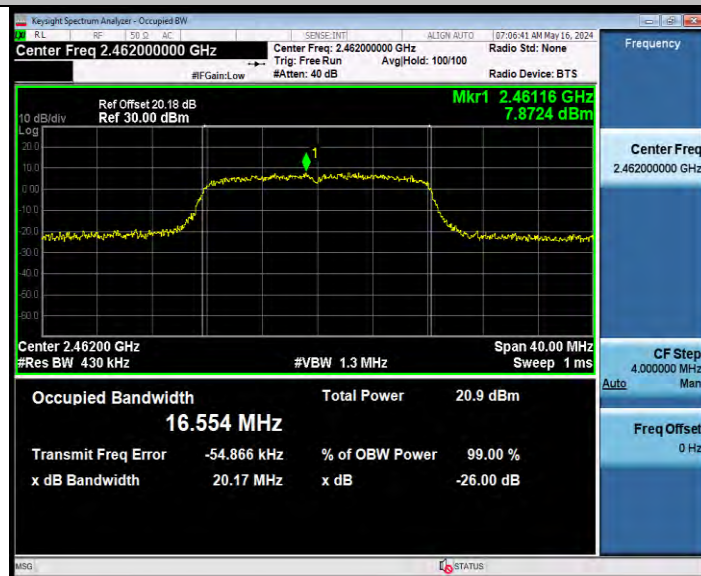


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Test Report No.: W7L-240423W001RF04



11G_Ant1_2462

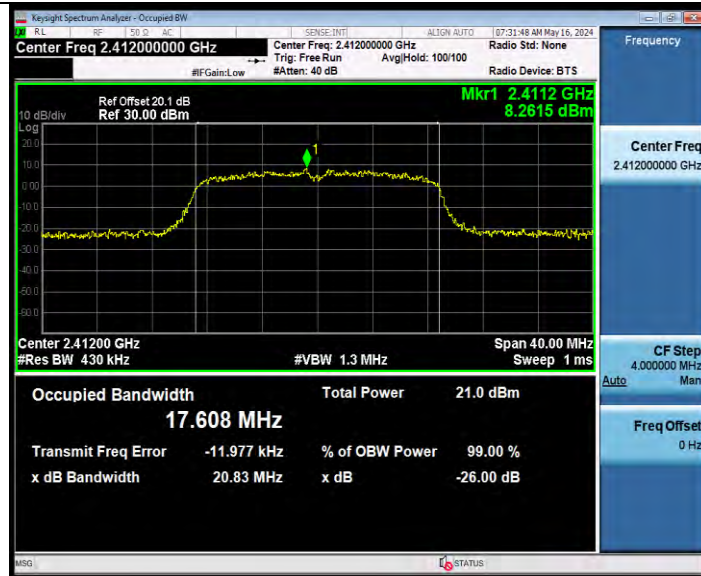


11N20SISO_Ant1_2412

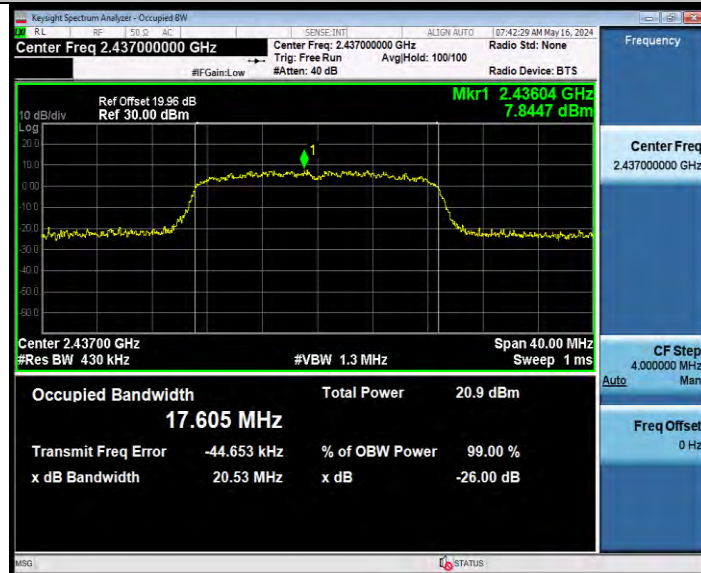


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Test Report No.: W7L-240423W001RF04



11N20SISO_Ant1_2437

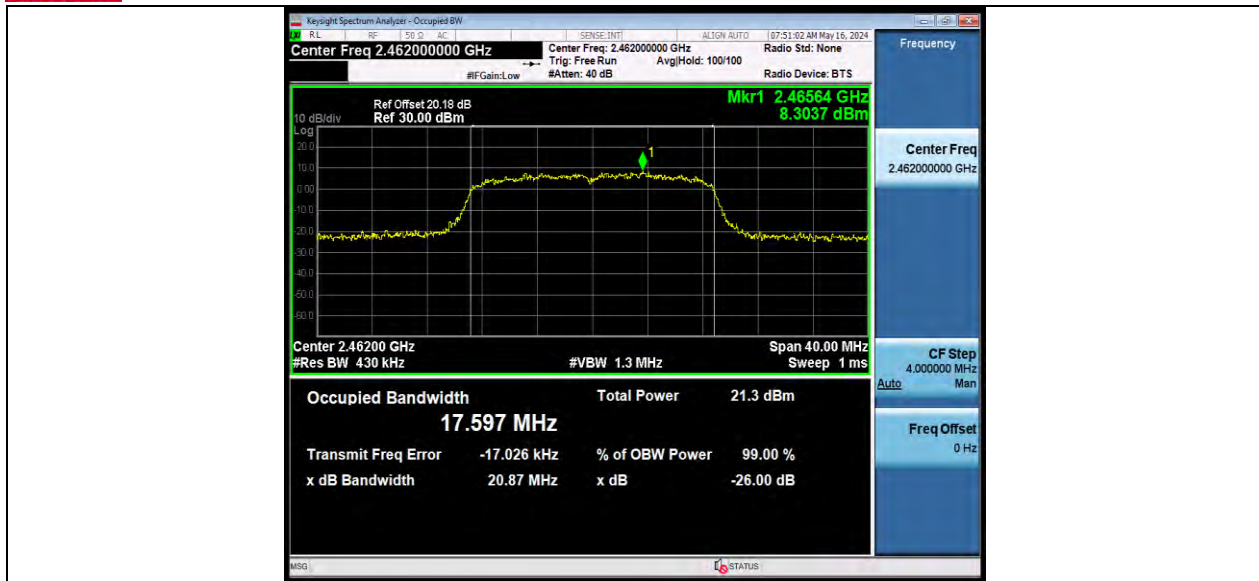


11N20SISO_Ant1_2462



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Test Report No.: W7L-240423W001RF04





MAXIMUM CONDUCTED OUTPUT POWER

TEST RESULT

Test Mode	TX Mod.	Freq. [MHz]	Ant.	Average power [dBm]	Peak power [dBm]	Peak power [mw]	Conducted Power Limit [dBm]	EIRP power [dBm]	EIRP power [mw]	EIRP Limit [dBm]	Verdict	Power Setting
11B	SISO	2412	ANT1	16.19	18.49	70.63	≤30.00	21.78	150.66	≤36.00	PASS	18.5
		2437	ANT1	16.36	18.86	76.91	≤30.00	22.15	164.06	≤36.00	PASS	18.0
		2462	ANT1	16.10	18.40	69.18	≤30.00	21.69	147.57	≤36.00	PASS	19.0
11G	SISO	2412	ANT1	15.28	21.43	139.00	≤30.00	24.72	296.48	≤36.00	PASS	18.0
		2437	ANT1	15.48	21.89	154.53	≤30.00	25.18	329.61	≤36.00	PASS	17.5
		2462	ANT1	15.53	21.79	151.01	≤30.00	25.08	322.11	≤36.00	PASS	18.5
11N20	SISO	2412	ANT1	15.56	21.97	157.40	≤30.00	25.26	335.74	≤36.00	PASS	18.5
		2437	ANT1	15.72	22.51	178.24	≤30.00	25.80	380.19	≤36.00	PASS	18.0
		2462	ANT1	15.80	22.52	178.65	≤30.00	25.81	381.07	≤36.00	PASS	19.0

Note: The Average power with duty cycle factor.



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Test Report No.: W7L-240423W001RF04

MAXIMUM POWER SPECTRAL DENSITY

TEST RESULT

TestMode	Antenna	Frequency[MHz]	Result[dBm/3-100kHz]	Limit[dBm/3kHz]	Verdict
11B	Ant1	2412	6.50	≤8.00	PASS
		2437	7.24	≤8.00	PASS
		2462	7.32	≤8.00	PASS
11G	Ant1	2412	-11.42	≤8.00	PASS
		2437	-10.92	≤8.00	PASS
		2462	-11.22	≤8.00	PASS
11N20SISO	Ant1	2412	-9.72	≤8.00	PASS
		2437	-10.34	≤8.00	PASS
		2462	-10.40	≤8.00	PASS



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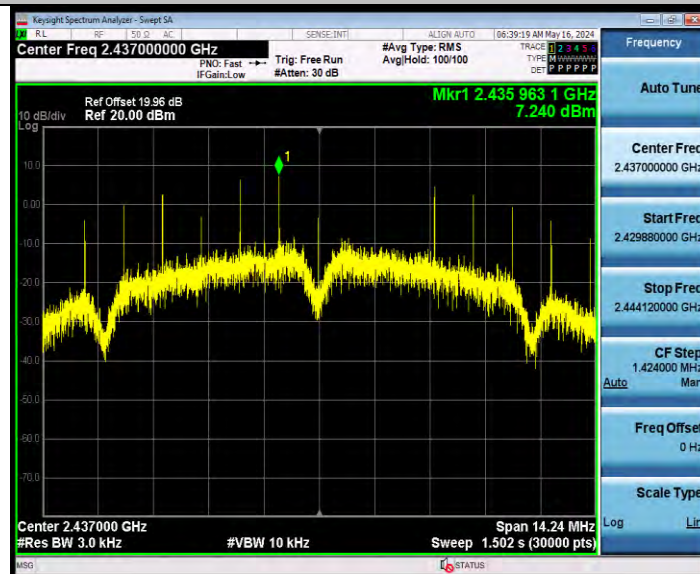
Test Report No.: W7L-240423W001RF04

TEST GRAPHS

11B_Ant1_2412



11B_Ant1_2437

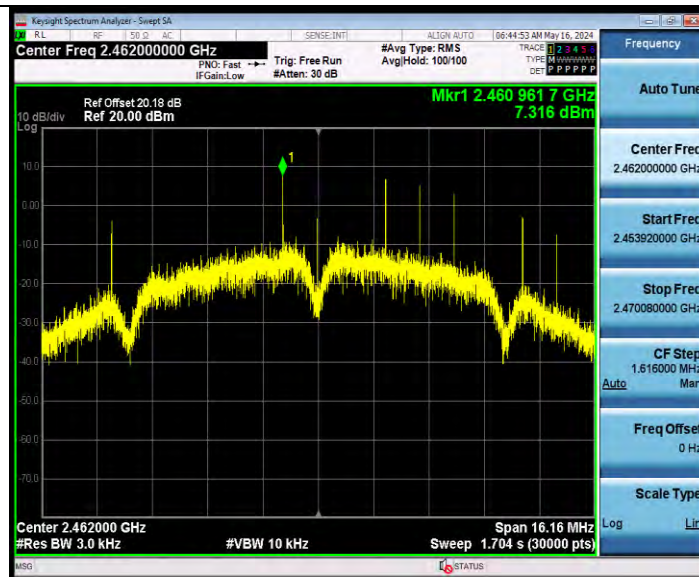


11B_Ant1_2462



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Test Report No.: W7L-240423W001RF04



11G_Ant1_2412

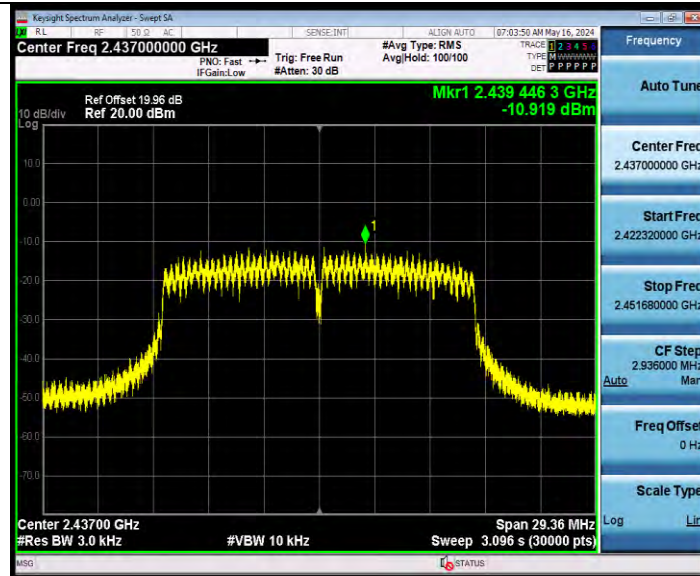


11G_Ant1_2437

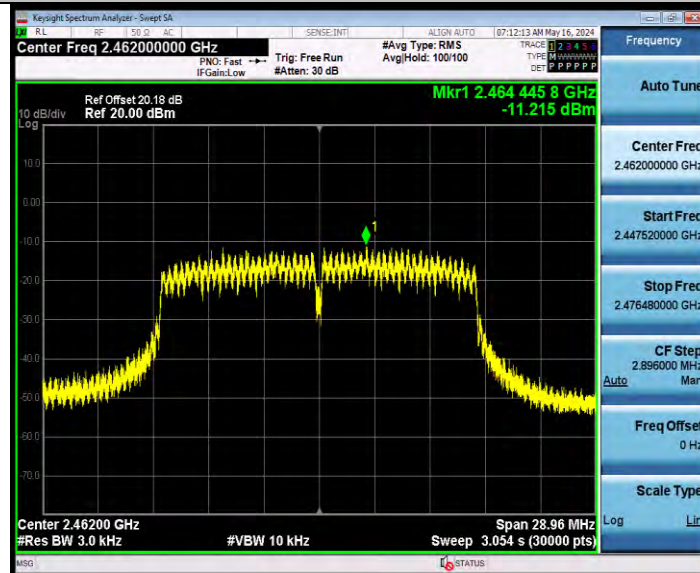


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Test Report No.: W7L-240423W001RF04



11G_Ant1_2462

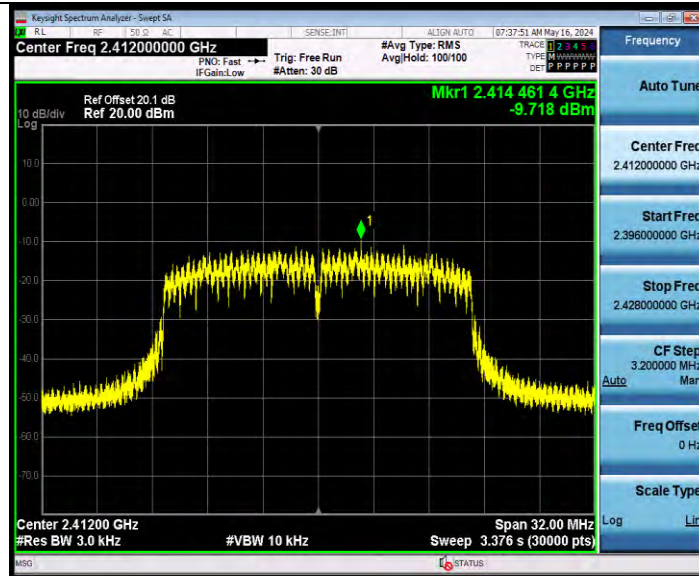


11N20SISO_Ant1_2412

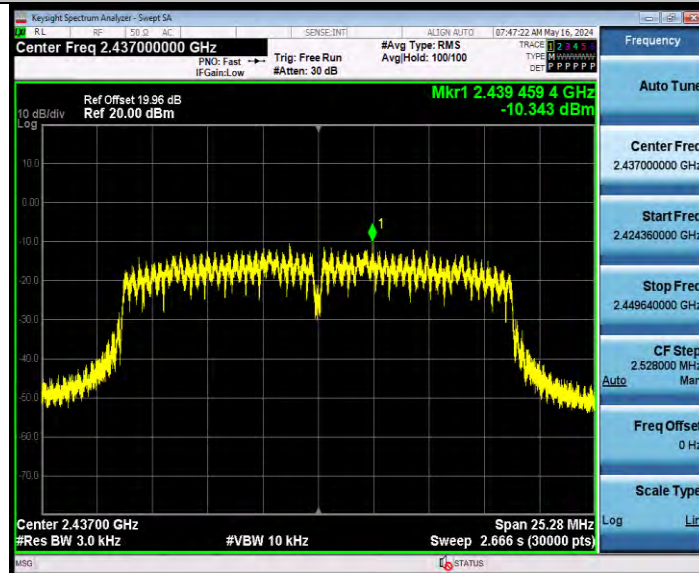


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Test Report No.: W7L-240423W001RF04



11N20SISO_Ant1_2437

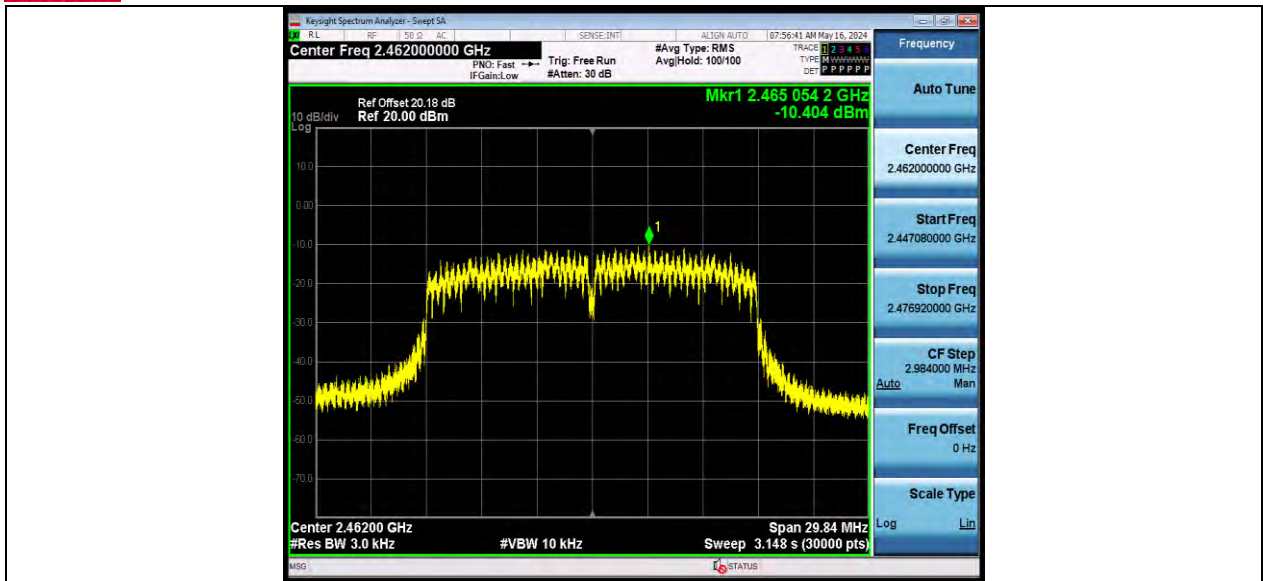


11N20SISO_Ant1_2462



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Test Report No.: W7L-240423W001RF04



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Test Report No.: W7L-240423W001RF04

BAND EDGE MEASUREMENTS

TEST RESULT

TestMode	Antenna	ChName	Frequency[MHz]	RefLevel[dBm]	Result[dBm]	Limit[dBm]	Verdict
11B	Ant1	Low	2412	7.27	-33.15	≤ -12.73	PASS
		High	2462	6.16	-34.76	≤ -13.84	PASS
11G	Ant1	Low	2412	4.46	-32.13	≤ -15.54	PASS
		High	2462	3.91	-35.15	≤ -16.09	PASS
11N20SISO	Ant1	Low	2412	4.56	-30.72	≤ -15.44	PASS
		High	2462	4.39	-35.08	≤ -15.61	PASS



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Test Report No.: W7L-240423W001RF04

TEST GRAPHS

11B_Ant1_Low_2412



11B_Ant1_High_2462

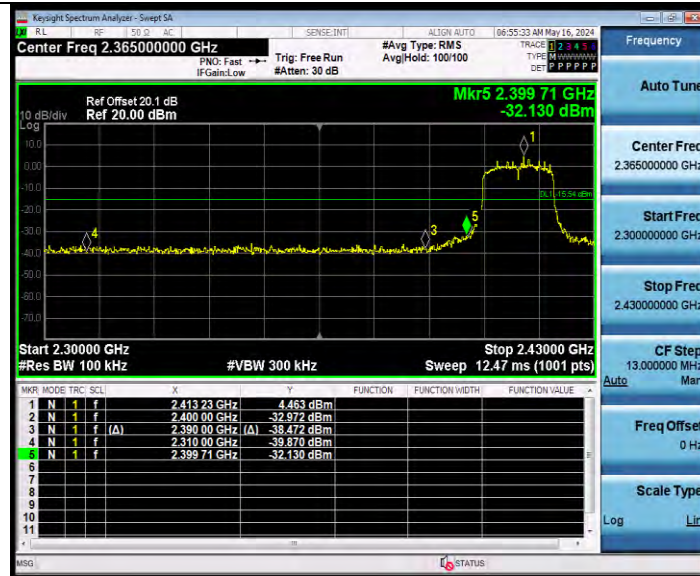


11G_Ant1_Low_2412

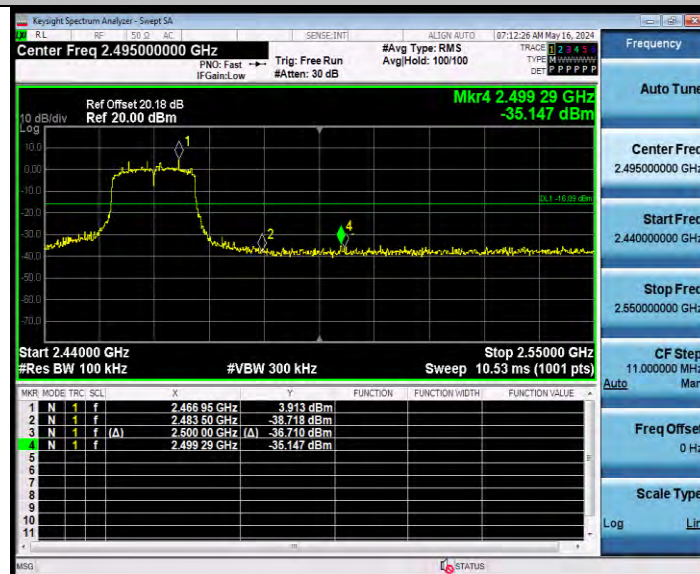


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Test Report No.: W7L-240423W001RF04



11G_Ant1_High_2462



11N20SISO_Ant1_Low_2412

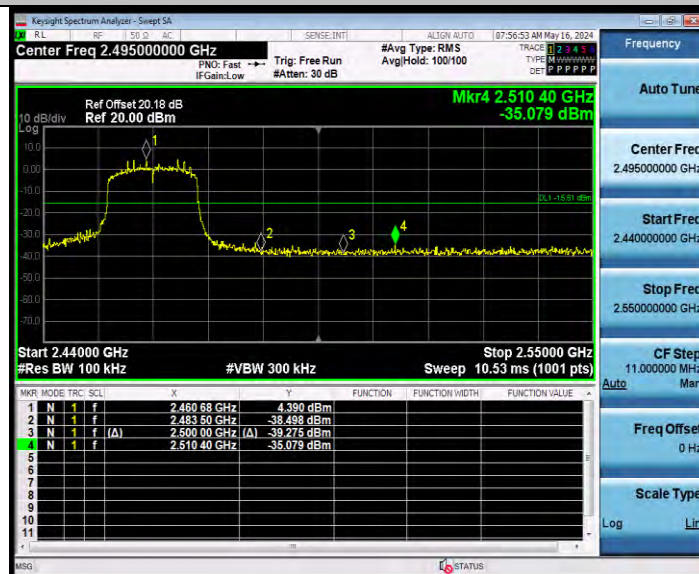


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Test Report No.: W7L-240423W001RF04



11N20SISO_Ant1_High_2462



**CONDUCTED SPURIOUS EMISSION****TEST RESULT**

TestMode	Antenna	Frequency[MHz]	FreqRange [Mhz]	RefLevel [dBm]	Result [dBm]	Limit [dBm]	Verdict
11B	Ant1	2412	Reference	5.91	5.91	---	PASS
			30~1000	5.91	-53.9	≤-14.09	PASS
			1000~26500	5.91	-34.35	≤-14.09	PASS
		2437	Reference	5.91	5.91	---	PASS
			30~1000	5.91	-54.99	≤-14.09	PASS
			1000~26500	5.91	-36.14	≤-14.09	PASS
		2462	Reference	6.14	6.14	---	PASS
			30~1000	6.14	-54.65	≤-13.86	PASS
			1000~26500	6.14	-34.99	≤-13.86	PASS
11G	Ant1	2412	Reference	1.27	1.27	---	PASS
			30~1000	1.27	-54.41	≤-18.73	PASS
			1000~26500	1.27	-35.07	≤-18.73	PASS
		2437	Reference	0.78	0.78	---	PASS
			30~1000	0.78	-54.61	≤-19.22	PASS
			1000~26500	0.78	-35.54	≤-19.22	PASS
		2462	Reference	3.10	3.10	---	PASS
			30~1000	3.10	-54.59	≤-16.9	PASS
			1000~26500	3.10	-34.13	≤-16.9	PASS
11N20SISO	Ant1	2412	Reference	0.55	0.55	---	PASS
			30~1000	0.55	-55.1	≤-19.45	PASS
			1000~26500	0.55	-35.08	≤-19.45	PASS
		2437	Reference	0.99	0.99	---	PASS
			30~1000	0.99	-54.85	≤-19.01	PASS
			1000~26500	0.99	-35.22	≤-19.01	PASS
		2462	Reference	1.39	1.39	---	PASS
			30~1000	1.39	-54.01	≤-18.61	PASS
			1000~26500	1.39	-34.51	≤-18.61	PASS



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Test Report No.: W7L-240423W001RF04

TEST GRAPHS

11B_Ant1_2412_0~Reference



11B_Ant1_2412_30~1000

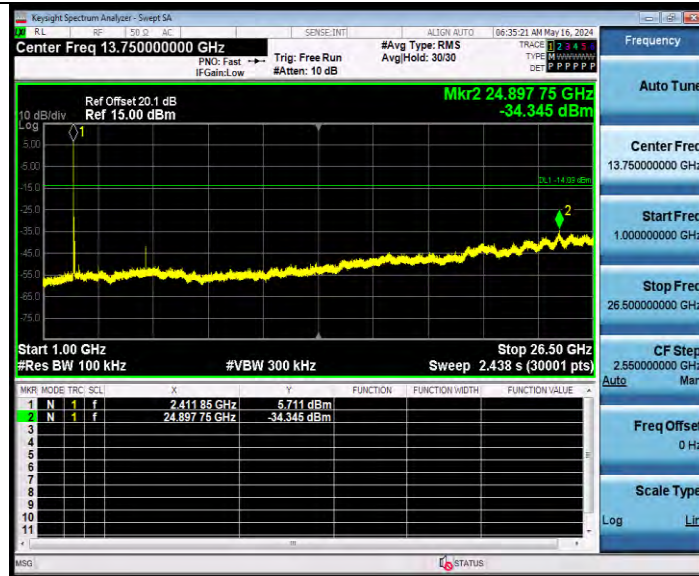


11B_Ant1_2412_1000~26500



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Test Report No.: W7L-240423W001RF04



11B_Ant1_2437_0~Reference

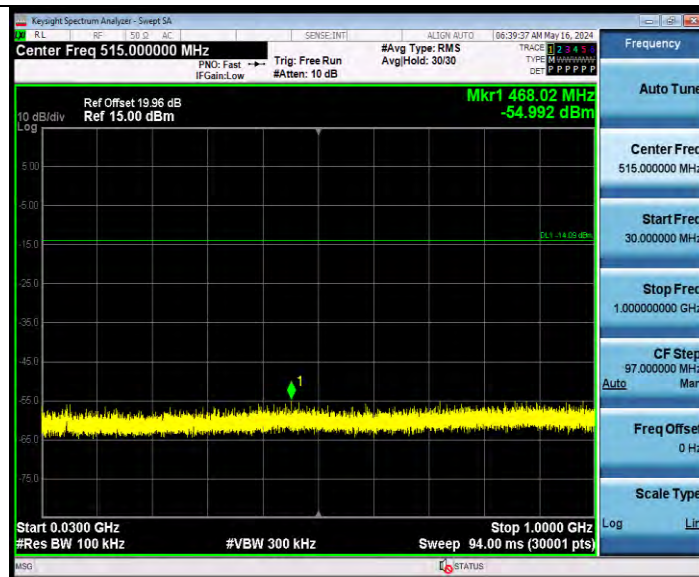


11B_Ant1_2437_30~1000



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11B_Ant1_2437_1000~26500



11B_Ant1_2462_0~Reference



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11B_Ant1_2462_30~1000



11B_Ant1_2462_1000~26500

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11G_Ant1_2412_0~Reference



11G_Ant1_2412_30~1000



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11G_Ant1_2412_1000~26500



11G_Ant1_2437_0~Reference

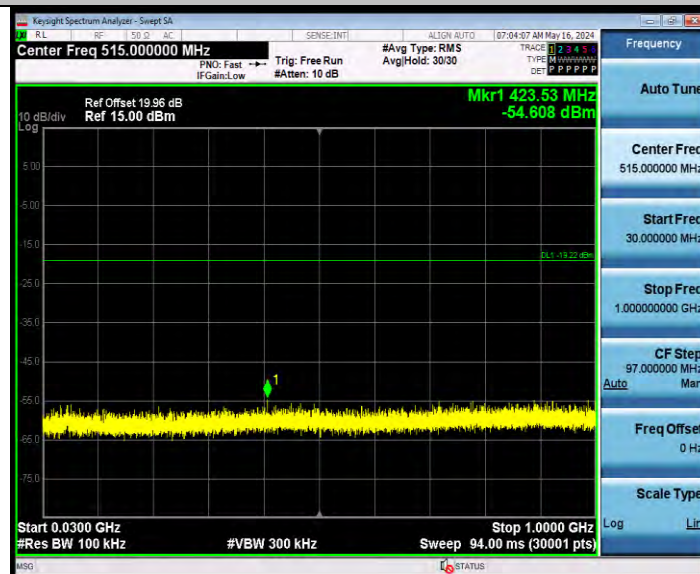


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11G_Ant1_2437_30~1000

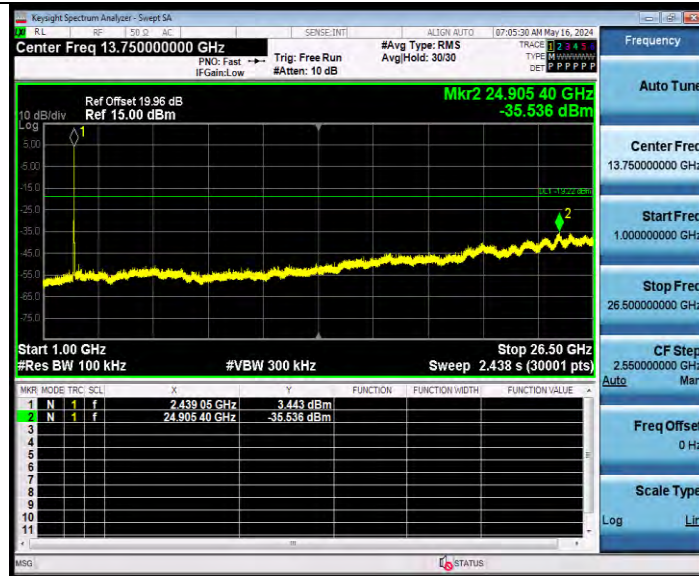


11G_Ant1_2437_1000~26500



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Test Report No.: W7L-240423W001RF04



11G_Ant1_2462_0~Reference

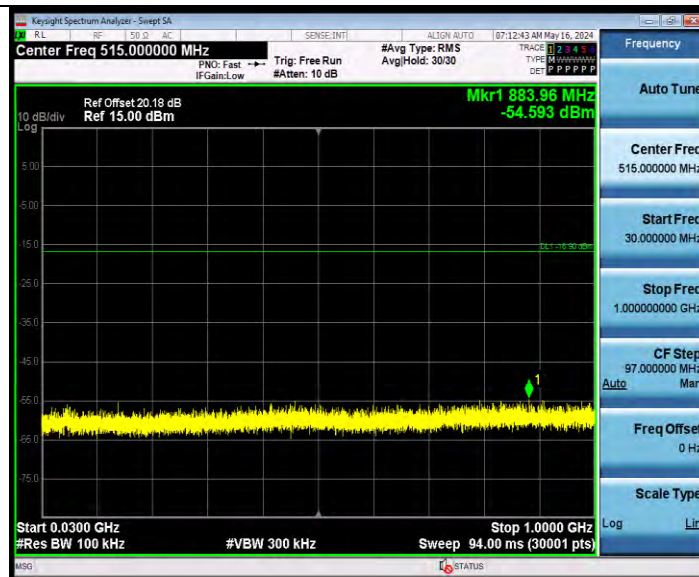


11G_Ant1_2462_30~1000



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11G_Ant1_2462_1000~26500



11N20SISO_Ant1_2412_0~Reference

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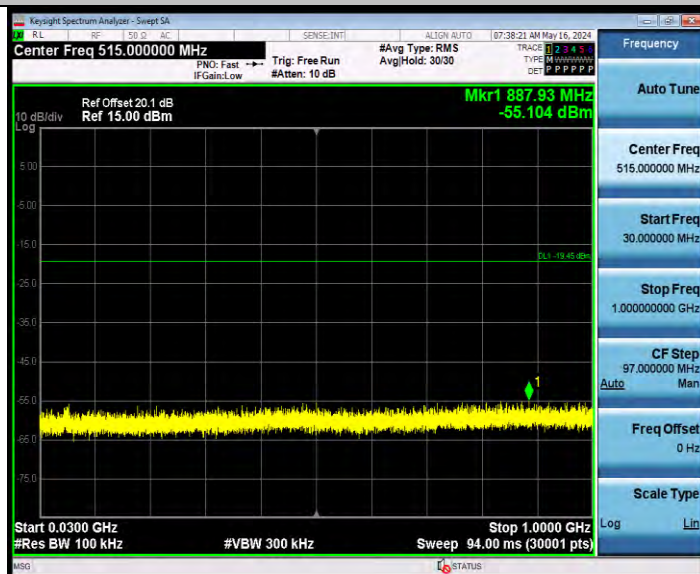


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11N20SISO_Ant1_2412_30~1000



11N20SISO_Ant1_2412_1000~26500



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Test Report No.: W7L-240423W001RF04



11N20SISO_Ant1_2437_0~Reference



11N20SISO_Ant1_2437_30~1000



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Test Report No.: W7L-240423W001RF04



11N20SISO_Ant1_2437_1000~26500



11N20SISO_Ant1_2462_0~Reference



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11N20SISO_Ant1_2462_30~1000



11N20SISO_Ant1_2462_1000~26500

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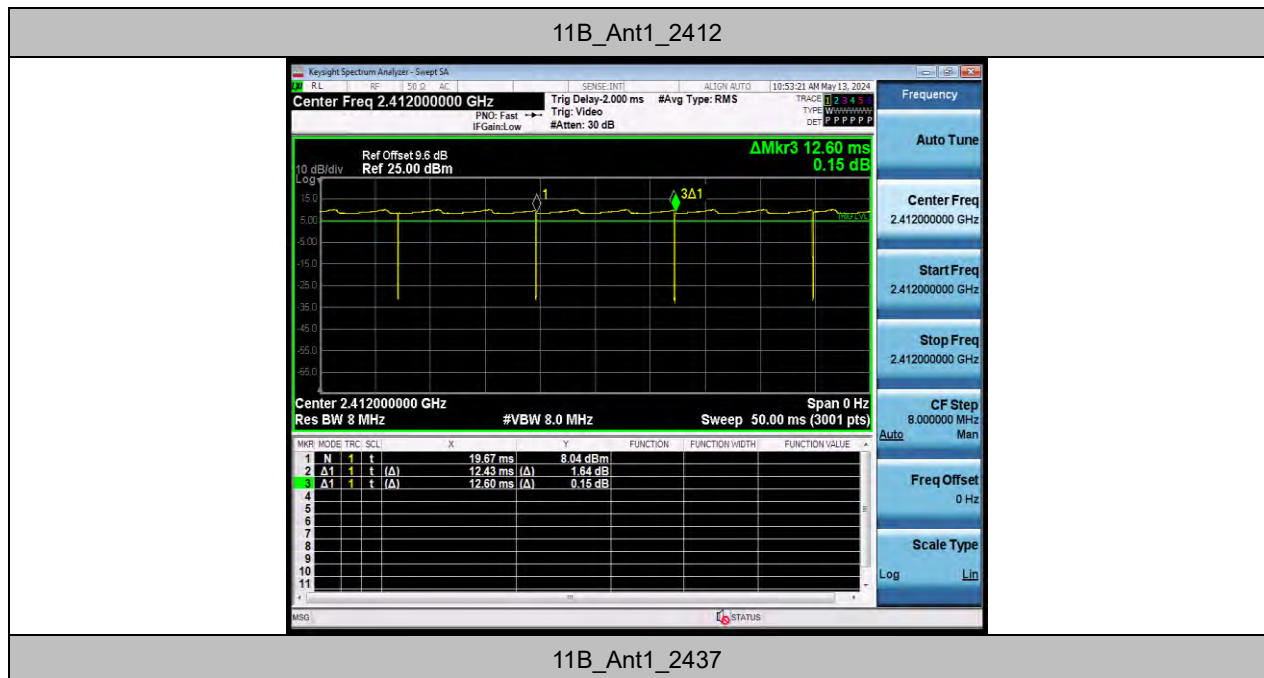
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Test Report No.: W7L-240423W001RF04

DUTY CYCLE TEST RESULT

TestMode	Antenna	Frequency[MHz]	Transmission Duration [ms]	Transmission Period [ms]	Duty Cycle [%]	Factor
11B	Ant1	2412	12.43	12.60	98.65	0.06
		2437	12.43	12.60	98.65	0.06
		2462	12.43	12.58	98.81	0.05
11G	Ant1	2412	2.06	2.24	91.96	0.36
		2437	2.07	2.35	88.09	0.55
		2462	2.06	2.24	91.96	0.36
11N20SISO	Ant1	2412	1.92	2.17	88.48	0.53
		2437	1.92	2.08	92.31	0.35
		2462	1.92	2.08	92.31	0.35

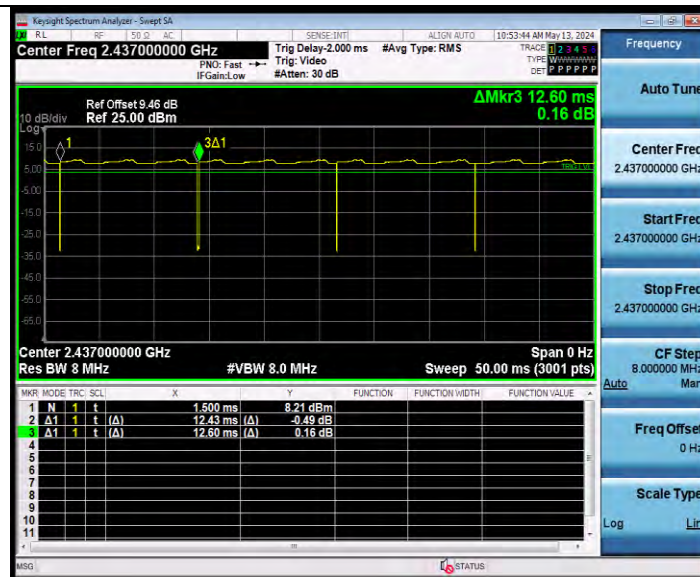
TEST GRAPHS



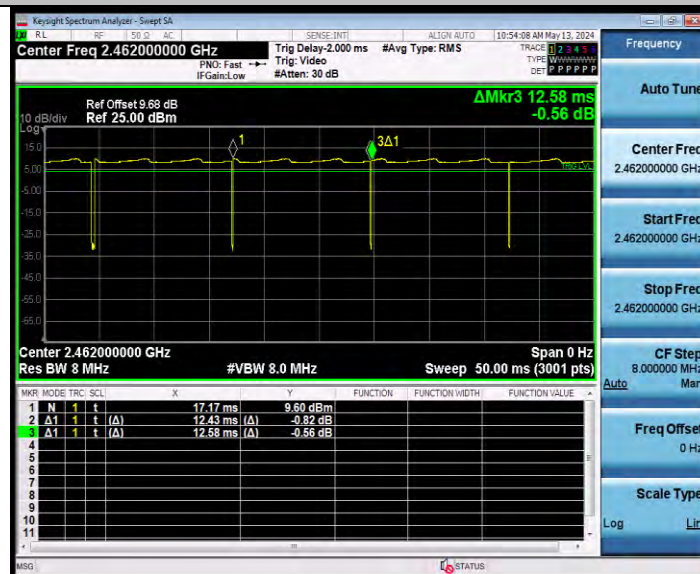


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Test Report No.: W7L-240423W001RF04



11B_Ant1_2462

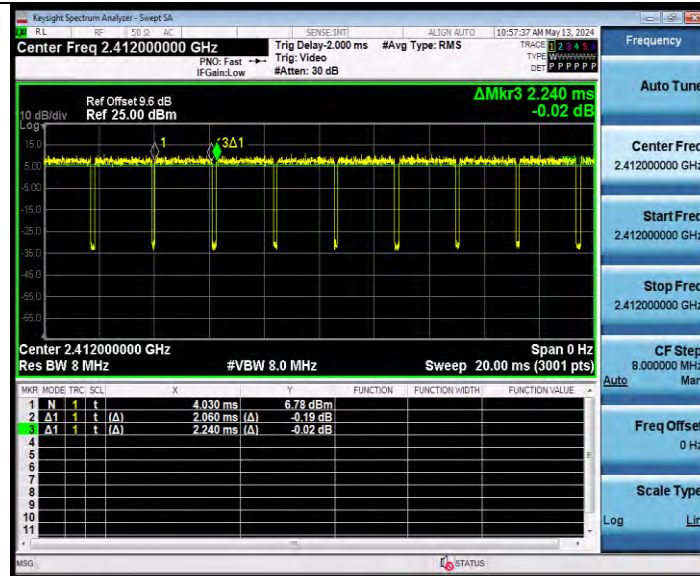


11G_Ant1_2412

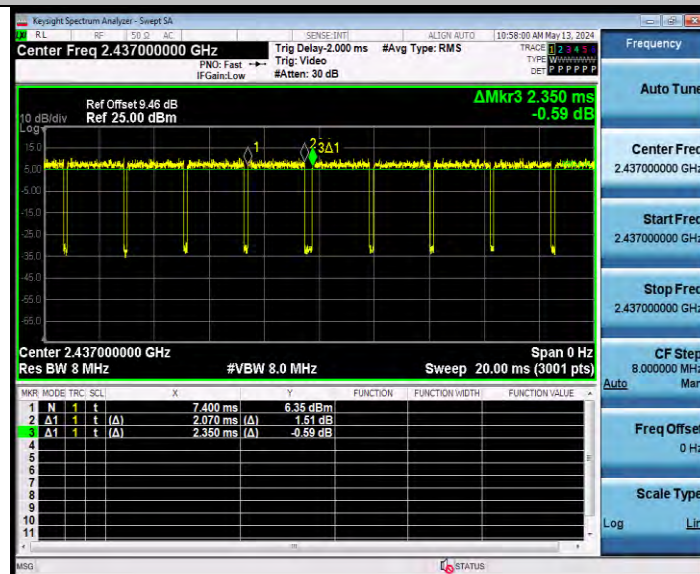


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11G_Ant1_2437

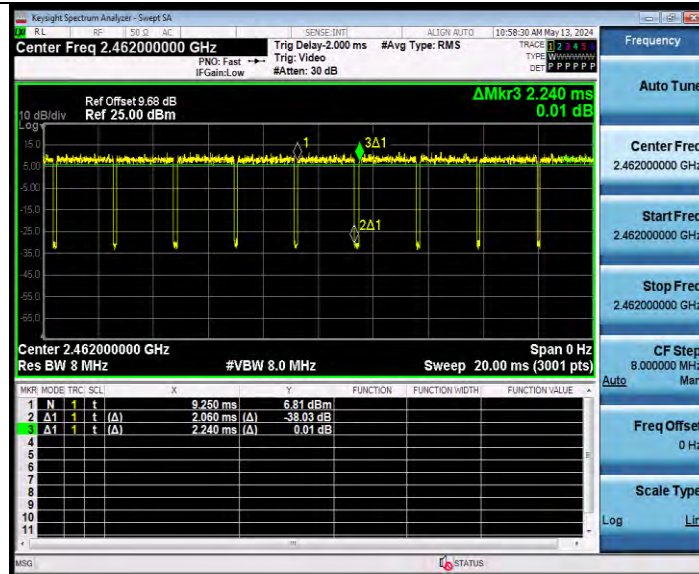


11G_Ant1_2462

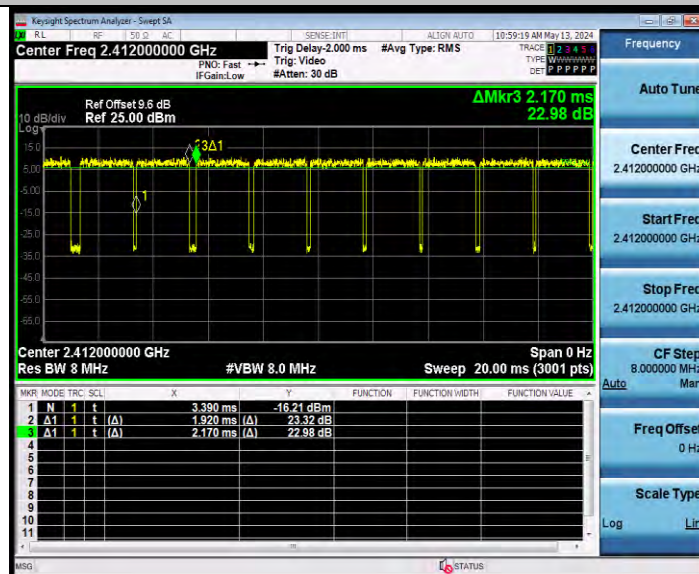


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11N20SISO_Ant1_2412

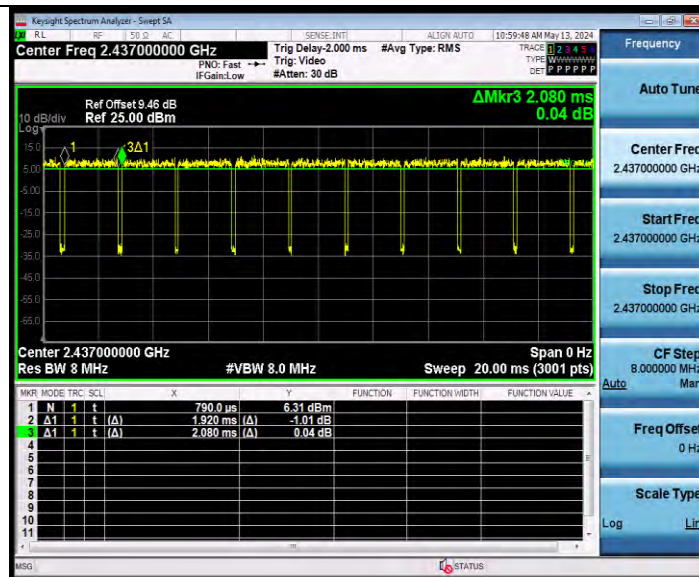


11N20SISO_Ant1_2437

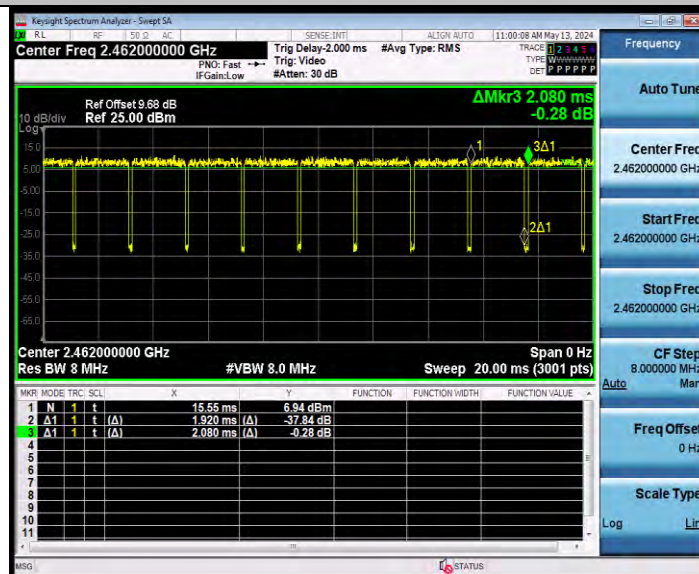


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11N20SISO_Ant1_2462



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