中认信通
CHINA CERTIFICATION ICT CO., LTD (DONGGUAN)

ACCREDITED
TESTING LABORATORY
CERTIFICATE # 6356.01

TEST REPORT

Applicant: **Iconnect**

Address: No.9, Aly. 58, Ln. 112, Ruiguang Rd., Neihu Dist., Taipei City,Taiwan

FCC ID: **2AB876108**

Product Name: **IEEE 802.11ah sub 1 GHz Devices**

Standard(s): **47 CFR Part 15, Subpart C(15.247)**
ANSI C63.10-2013
KDB 558074 D01 15.247 Meas Guidance v05r02

The above device has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: **2403U79820E-RF-00C**

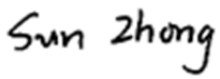
Date Of Issue: **2024/8/5**

Reviewed By: **Calvin Chen**

Title: RF Engineer

Approved By: **Sun Zhong**

Title: Manager



Test Laboratory: **China Certification ICT Co., Ltd (Dongguan)**
No. 113, Pingkang Road, Dalang Town, Dongguan,Guangdong, China

Tel: +86-769-82016888

Test Facility

The Test site used by China Certification ICT Co., Ltd (Dongguan) to collect test data is located on the No. 113, Pingkang Road, Dalang Town, Dongguan, Guangdong, China.

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. : 442868, the FCC Designation No. : CN1314.

Declarations

China Certification ICT Co., Ltd (Dongguan) is not responsible for the authenticity of any test data provided by the applicant. Data included from the applicant that may affect test results are marked with a triangle symbol "▲". Customer model name, addresses, names, trademarks etc. are not considered data.

Unless otherwise stated the results shown in this test report refer only to the sample(s) tested.

This report cannot be reproduced except in full, without prior written approval of the Company.

This report is valid only with a valid digital signature. The digital signature may be available only under the Adobe software above version 7.0.

This report may contain data that are not covered by the accreditation scope and shall be marked with an asterisk "★".

CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2403U79820E-RF-00C	Original Report	2024/8/5

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

EUT Name:	IEEE 802.11ah sub 1 GHz Devices
Trade Name:	ALFA
EUT Model:	HaLow-R
Multiple Model:	HaLow-M485, HaLow-ON, HaLow-ON2, HaLow-RM, HaLow-R2, HaLow-ONM, HaLow-ONM2, HaLow-RM2, HaLow-M4852, HaLow-XXXXX(X: Any alphanumeric character or blank)
Operation Frequency:	2412-2462 MHz(802.11b/g/n ht20) 2422-2452 MHz(802.11n ht40)
Maximum Peak Output Power (Conducted):	22.95 dBm
Modulation Type:	802.11b: DSSS-DBPSK, DQPSK, CCK 802.11g/n: OFDM-BPSK, QPSK, 16QAM, 64QAM
Rated Input Voltage:	DC 12V from adapter
Serial Number:	2MM7-1 (for RF Conducted Test) 2MM7-2(for Radiated Spurious Emissions Test) 2MM7-3(for AC Line Conducted Emissions Test)
EUT Received Date:	2024/6/7
EUT Received Status:	Good
Note: The multiple models are electrically identical with the test model. Please refer to the declaration letter for more detail, which was provided by manufacturer.	

Operation Frequency Detail:

For 802.11b/g/n ht20:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2412	7	2442
2	2417	8	2447
3	2422	9	2452
4	2427	10	2457
5	2432	11	2462
6	2437	/	/

Per section 15.31(m), the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	2412
Middle	2437
Highest	2462

For 802.11n ht40:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
3	2422	7	2442
4	2427	8	2447
5	2432	9	2452
6	2437	/	/

Per section 15.31(m), the below frequencies were performed the test as below:

Test Channel	Frequency (MHz)
Lowest	2422
Middle	2437
Highest	2452

Antenna Information Detail▲:

Antenna	Antenna Type	input impedance (Ohm)	Frequency Range (MHz)	Antenna Gain (dBi)
Chain 0	Dipole Antenna	50	2400-2500	2.71
Chain 1	Dipole Antenna	50	2400-2500	2.71

The Method of §15.203 Compliance either:

☐ Antenna was permanently attached to the unit.

☐ Antenna use a unique type of connector to attach to the EUT.

☒ Unit was professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.

Accessory Information:

Accessory Description	Manufacturer	Model
Adapter	XIAMEN CASTEC ELECTRONIC INDUSTRY CO., LTD	MN012K-L120100

1.2 Description of Test Configuration

1.2.1 EUT Operation Condition:

EUT Operation Mode:	The system was configured for testing in Engineering Mode, which was provided by the manufacturer.
Equipment Modifications:	No
EUT Exercise Software:	QATool_Dbg.exe

The software was provided by manufacturer. The maximum power was configured as below, that was provided by the manufacturer▲:

Test Modes	Test Frequency (MHz)	Data Rate	Power Level Setting	
			Chain 0	Chain 1
802.11b	2412	1Mbps	**16**	**16**
	2437	1Mbps	**16**	**16**
	2462	1Mbps	**16**	**16**
802.11g	2412	6Mbps	**16**	**16**
	2437	6Mbps	**16**	**16**
	2462	6Mbps	**16**	**16**
802.11n ht20	2412	MCS0	**16**	**16**
	2437	MCS0	**16**	**16**
	2462	MCS0	**16**	**16**
802.11n ht40	2422	MCS0	**16**	**16**
	2437	MCS0	**16**	**16**
	2452	MCS0	**16**	**16**

Note:
1. The above are the worst-case data rates, which are determined for each mode based upon investigations by measuring the average power and PSD across all data rates, bandwidths, and modulations.
2. The device supports SISO in all modes and MIMO in 802.11n modes, per pretest, MIMO mode was the worst mode and reported for 802.11n modes.

1.2.2 Support Equipment List and Details

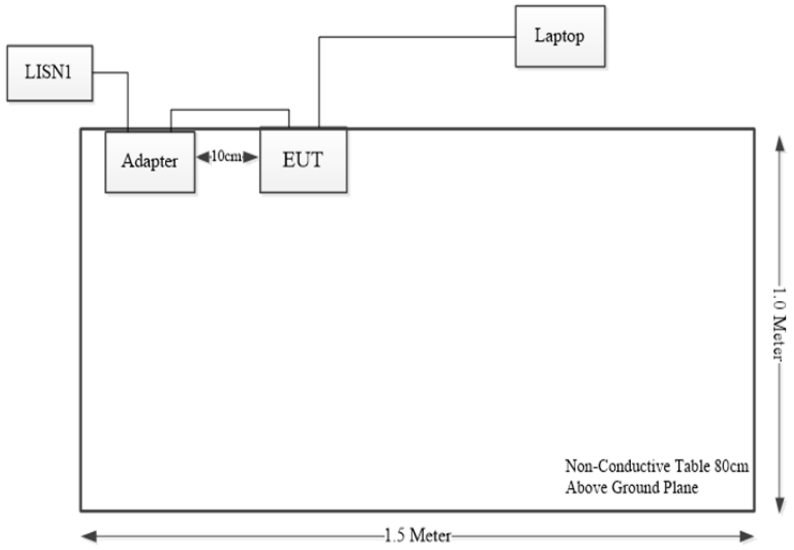
Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	T460S	60PDTEK7

1.2.3 Support Cable List and Details

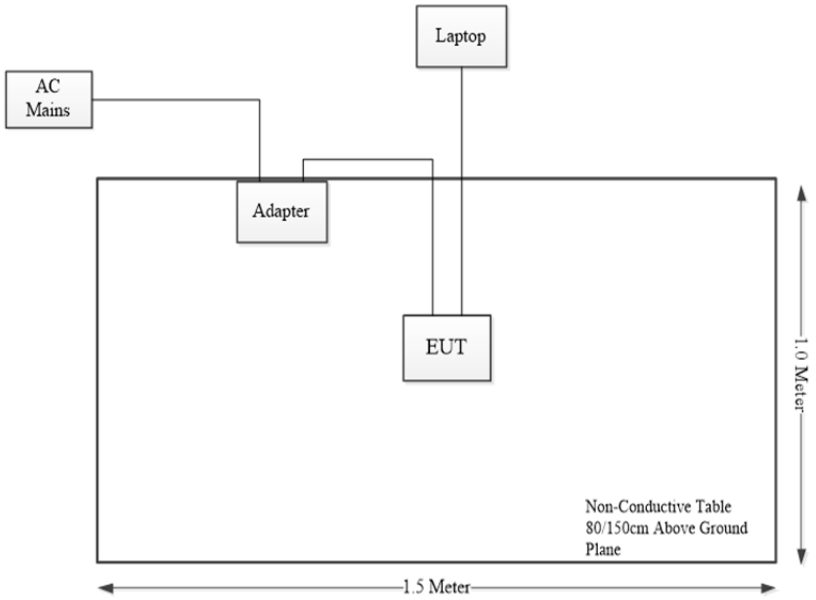
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
RJ45 Cable	No	Yes	10	Laptop	EUT
Power Cable	No	No	1.2	Adapter	EUT

1.2.4 Block Diagram of Test Setup

AC line conducted emissions:



Spurious Emissions:



1.3 Measurement Uncertainty

Otherwise required by the applicant or Product Regulations, Decision Rule in this report did not consider the uncertainty. The extended uncertainty given in this report is obtained by combining the standard uncertainty times the coverage factor K with the 95% confidence interval.

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
RF output power, conducted	±0.61dB
Power Spectral Density, conducted	±0.61 dB
Unwanted Emissions, radiated	9k~30MHz: 4.12dB, 30M~200MHz: 4.15 dB, 200M~1GHz: 5.61 dB, 1G~6GHz: 5.14 dB, 6G~18GHz: 5.93 dB, 18G~26.5G:5.47 dB, 26.5G~40G:5.63 dB
Unwanted Emissions, conducted	±1.26 dB
Temperature	±1℃
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	2.8 dB (150 kHz to 30 MHz)

2. SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
FCC §15.203	Antenna Requirement	PASS
FCC §15.207(a)	AC Line Conducted Emissions	PASS
FCC §15.205,§15.209,§15.247(d)	Radiated Spurious Emission	PASS
FCC §15.207(a)(2)	6dB Emission Bandwidth	PASS
FCC §15.247(b)(1)	Maximum Conducted Output Power	PASS
FCC §15.247(d)	100 kHz Bandwidth of Frequency Band Edge	PASS
FCC §15.247(d)	Power Spectral Density	PASS
C63.10 §11.6	Duty Cycle	PASS

3. REQUIREMENTS AND TEST PROCEDURES

3.1 AC Line Conducted Emissions

3.1.1 Applicable Standard

FCC§15.207(a).

(a) Except as shown in paragraphs (b) and (c) of this section, for an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μH/50 ohms line impedance stabilization network (LISN). Compliance with the provisions of this paragraph shall be based on the measurement of the radio frequency voltage between each power line and ground at the power terminal. The lower limit applies at the boundary between the frequency ranges.

Frequency of emission (MHz)	Conducted limit (dBμV)	
	Quasi-peak	Average
0.15-0.5	66 to 56*	56 to 46*
0.5-5	56	46
5-30	60	50

*Decreases with the logarithm of the frequency.

(b) The limit shown in paragraph (a) of this section shall not apply to carrier current systems operating as intentional radiators on frequencies below 30 MHz. In lieu thereof, these carrier current systems shall be subject to the following standards:

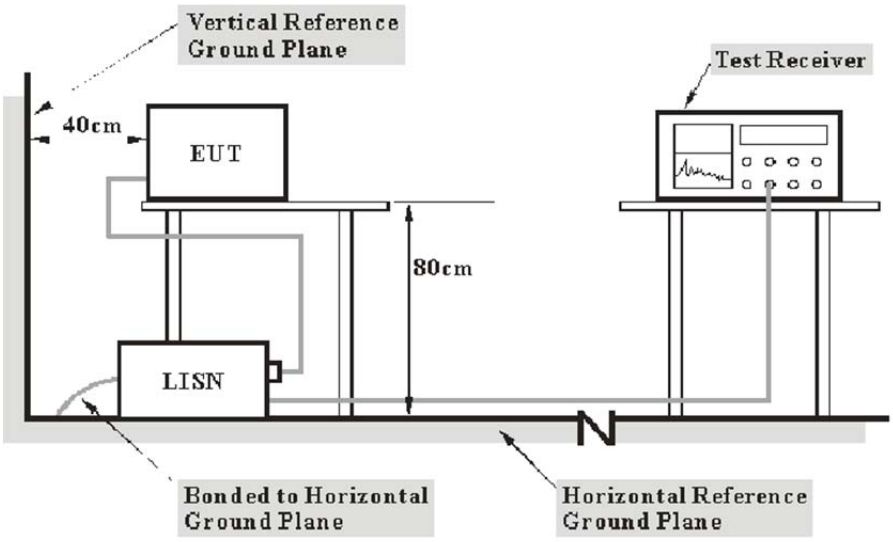
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(2) For all other carrier current systems: 1000 μV within the frequency band 535-1705 kHz, as measured using a 50 μH/50 ohms LISN.

(3) Carrier current systems operating below 30 MHz are also subject to the radiated emission limits in §15.205, §15.209, §15.221, §15.223, or §15.227, as appropriate.

(c) Measurements to demonstrate compliance with the conducted limits are not required for devices which only employ battery power for operation and which do not operate from the AC power lines or contain provisions for operation while connected to the AC power lines. Devices that include, or make provisions for, the use of battery chargers which permit operating while charging, AC adapters or battery eliminators or that connect to the AC power lines indirectly, obtainig their power through another device which is connected to the AC power lines, shall be tested to demonstrate compliance with the conducted limits.

3.1.2 EUT Setup



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

The setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10 cm.

3.1.3 EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

3.1.4 Test Procedure

The frequency and amplitude of the six highest ac power-line conducted emissions relative to the limit, measured over all the current-carrying conductors of the EUT power cords, and the operating frequency or frequency to which the EUT is tuned (if appropriate), should be reported, unless such emissions are more than 20 dB below the limit. AC power-line conducted emissions measurements are to be separately carried out only on each of the phase ("hot") line(s) and (if used) on the neutral line(s), but not on the ground [protective earth] line(s). If less than six emission frequencies are within 20 dB of the limit, then the noise level of the measuring instrument at representative frequencies should be reported. The specific conductor of the power-line cord for each of the reported emissions should be identified. Measure the six highest emissions with respect to the limit on each current-carrying conductor of each power cord associated with the EUT (but not the power cords of associated or peripheral equipment that are part of the test configuration). Then, report the six highest emissions with respect to the limit from among all the measurements identifying the frequency and specific current-carrying conductor identified with the emission. The six highest emissions should be reported for each of the current-carrying conductors, or the six highest emissions may be reported over all the current-carrying conductors.

3.1.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor
Factor = attenuation caused by cable loss + voltage division factor of AMN

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

3.2 Radiation Spurious Emissions

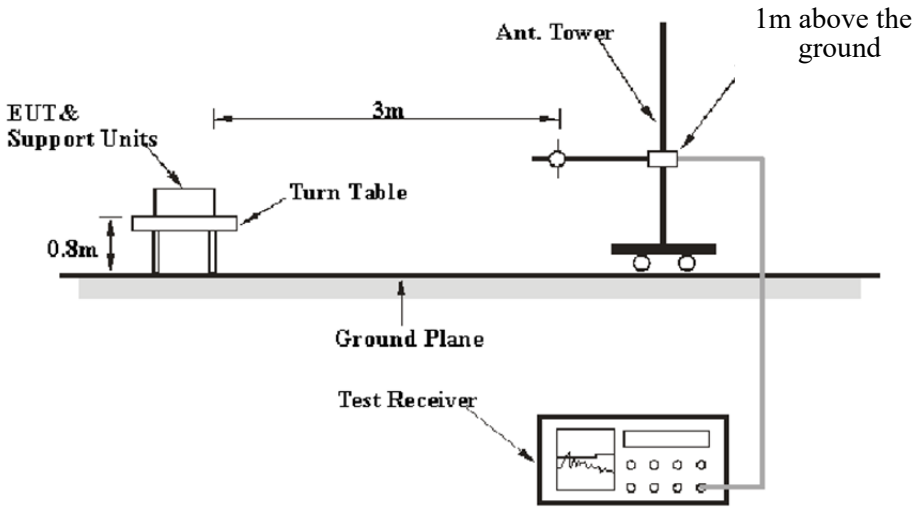
3.2.1 Applicable Standard

FCC §15.247 (d);

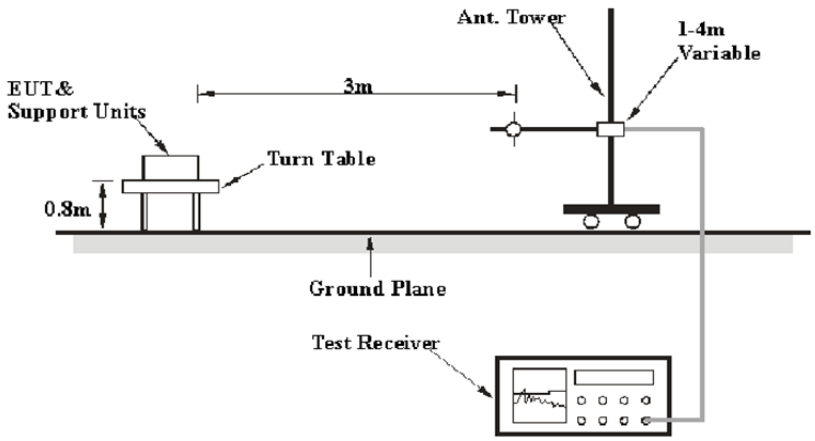
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

3.2.2 EUT Setup

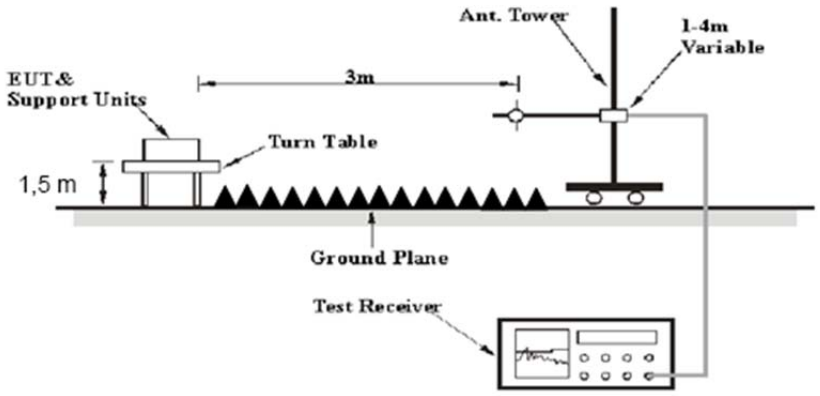
9kHz - 30MHz:



30M~1GHz:



Above 1GHz:



The radiated emissions were performed in the 3 meters distance, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC 15.209, and FCC 15.247 limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

The spacing between the peripherals was 10 cm.

For 9kHz-30MHz test, the lowest height of the magnetic antenna shall be 1 m above the ground and three antenna orientations (parallel, perpendicular, and ground-parallel) shall be measured.

3.2.3 EMI Test Receiver & Spectrum Analyzer Setup

The system was investigated from 9 kHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

9kHz-1000MHz:

Frequency Range	RBW	Video B/W	IF B/W	Measurement
9 kHz – 150 kHz	300 Hz	1 kHz	/	PK
	/	/	200 Hz	QP/AV
150 kHz – 30 MHz	10 kHz	30 kHz	/	PK
	/	/	9 kHz	QP/AV
30 MHz – 1000 MHz	100 kHz	300 kHz	/	PK
	/	/	120 kHz	QP

1GHz- 25GHz:

Measurement	Duty cycle	RBW	Video B/W
PK	Any	1MHz	3 MHz
Ave.	>98%	1MHz	10 Hz
	<98%	1MHz	1/T

Note: T is minimum transmission duration

If the maximized peak measured value complies with under the QP/Average limit more than 6dB, then it is unnecessary to perform an QP/Average measurement.

3.2.4 Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

Data was recorded in Quasi-peak detection mode for frequency range of 9 kHz-1 GHz except 9–90 kHz, 110–490 kHz, employing an average detector, peak and Average detection modes for frequencies above 1 GHz.

All emissions under the average limit and under the noise floor have not recorded in the report.

3.2.5 Corrected Amplitude & Margin Calculation

The basic equation is as follows:

Result = Reading + Factor
Factor = Antenna Factor + Cable Loss- Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance within the applicable limit. The equation for margin calculation is as follows:

Margin = Limit – Result

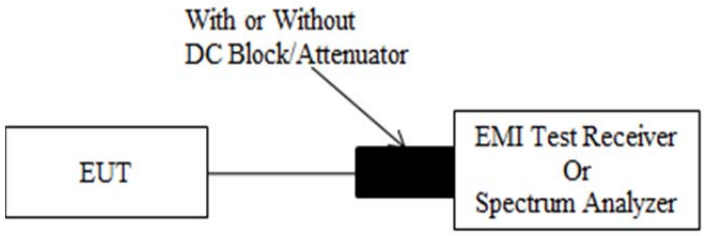
3.3 Minimum 6 dB Emission Bandwidth

3.3.1 Applicable Standard

FCC §15.247 (a)(2)

Systems using digital modulation techniques may operate in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands. The minimum 6 dB bandwidth shall be at least 500 kHz.

3.3.2 EUT Setup



3.3.3 Test Procedure

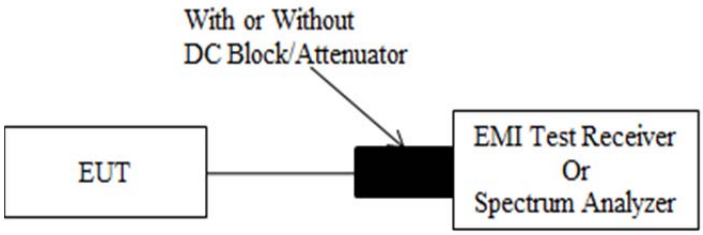
According to ANSI C63.10-2013 Section 11.8

a) Set RBW = 100 kHz.
b) Set the video bandwidth (VBW) ≥ 3×RBW.
c) Detector = Peak.
d) Trace mode = max hold.
e) Sweep = auto couple.
f) Allow the trace to stabilize.
g) 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.

3.4 99% Occupied Bandwidth

3.4.1 Applicable Standard

3.4.2 EUT Setup



3.4.3 Test Procedure

According to ANSI C63.10-2013 Section 6.9.3

The occupied bandwidth is the frequency bandwidth such that, below its lower and above its upper frequency limits, the mean powers are each equal to 0.5% of the total mean power of the given emission.
The following procedure shall be used for measuring 99% power bandwidth:
a) The instrument center frequency is set to the nominal EUT channel center frequency. The frequency span for the spectrum analyzer shall be between 1.5 times and 5.0 times the OBW.
b) The nominal IF filter bandwidth (3 dB RBW) shall be in the range of 1% to 5% of the OBW, and VBW shall be approximately three times the RBW, unless otherwise specified by the applicable requirement.
c) Set the reference level of the instrument as required, keeping the signal from exceeding the maximum input mixer level for linear operation. In general, the peak of the spectral envelope shall be more than [10 log (OBW/RBW)] below the reference level. Specific guidance is given in 4.1.5.2.
d) Step a) through step c) might require iteration to adjust within the specified range.
e) Video averaging is not permitted. Where practical, a sample detection and single sweep mode shall be used. Otherwise, peak detection and max hold mode (until the trace stabilizes) shall be used.
f) Use the 99% power bandwidth function of the instrument (if available) and report the measured bandwidth.
g) If the instrument does not have a 99% power bandwidth function, then the trace data points are recovered and directly summed in linear power terms. The recovered amplitude data points, beginning at the lowest frequency, are placed in a running sum until 0.5% of the total is reached; that frequency is recorded as the lower frequency. The process is repeated until 99.5% of the total is reached; that frequency is recorded as the upper frequency. The 99% power bandwidth is the difference between these two frequencies.
h) The occupied bandwidth shall be reported by providing plot(s) of the measuring instrument display; the plot axes and the scale units per division shall be clearly labeled. Tabular data may be reported in addition to the plot(s).

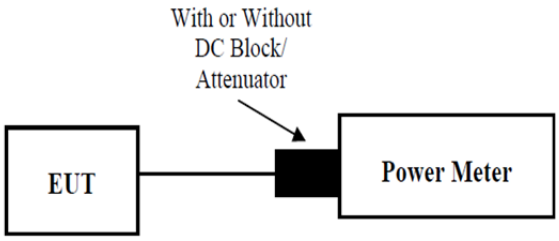
3.5 Maximum Conducted Output Power

3.5.1 Applicable Standard

FCC §15.247 (b)(3)

For systems using digital modulation in the 902-928 MHz, 2400-2483.5 MHz, and 5725-5850 MHz bands: 1 Watt. As an alternative to a peak power measurement, compliance with the one Watt limit can be based on a measurement of the maximum conducted output power. Maximum Conducted Output Power is defined as the total transmit power delivered to all antennas and antenna elements averaged across all symbols in the signaling alphabet when the transmitter is operating at its maximum power control level. Power must be summed across all antennas and antenna elements. The average must not include any time intervals during which the transmitter is off or is transmitting at a reduced power level. If multiple modes of operation are possible (e.g., alternative modulation methods), the maximum conducted output power is the highest total transmit power occurring in any mode.

3.5.2 EUT Setup



3.5.3 Test Procedure

According to ANSI C63.10-2013 Section 11.9.1.3

PKPM1 Peak power meter method

The maximum peak conducted output power may be measured using a broadband peak RF power meter. The power meter shall have a video bandwidth that is greater than or equal to the DTS bandwidth and shall use a fast-responding diode detector.

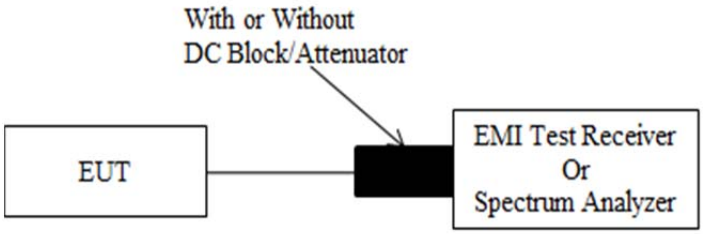
3.6 Maximum Power Spectral Density

3.6.1 Applicable Standard

FCC §15.247 (e)

For digitally modulated systems, the power spectral density conducted from the intentional radiator to the antenna shall not be greater than 8 dBm in any 3 kHz band during any time interval of continuous transmission. This power spectral density shall be determined in accordance with the provisions of paragraph (b) of this section. The same method of determining the conducted output power shall be used to determine the power spectral density.

3.6.2 EUT Setup



3.6.3 Test Procedure

According to ANSI C63.10-2013 Section 11.10.2

a) Set analyzer center frequency to DTS channel center frequency.
b) Set the span to 1.5 times the DTS bandwidth.
c) Set the RBW to 3 kHz ≤ RBW ≤ 100 kHz.
d) Set the VBW ≥ [3 × RBW].
e) Detector = peak.
f) Sweep time = auto couple.
g) Trace mode = max hold.
h) Allow trace to fully stabilize.
i) Use the peak marker function to determine the maximum amplitude level within the RBW.
j) If measured value exceeds requirement, then reduce RBW (but no less than 3 kHz) and repeat.

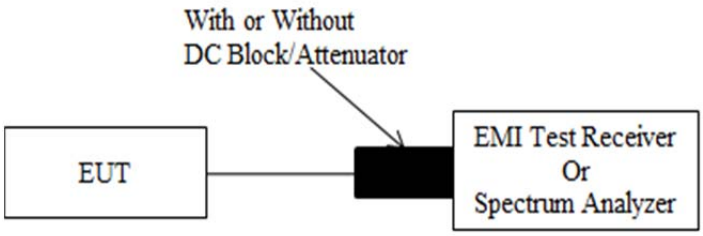
3.7 100 kHz Bandwidth of Frequency Band Edge

3.7.1 Applicable Standard

FCC §15.247 (d);

In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits. If the transmitter complies with the conducted power limits based on the use of RMS averaging over a time interval, as permitted under paragraph (b)(3) of this section, the attenuation required under this paragraph shall be 30 dB instead of 20 dB. Attenuation below the general limits specified in §15.209(a) is not required. In addition, radiated emissions which fall in the restricted bands, as defined in §15.205(a), must also comply with the radiated emission limits specified in §15.209(a) (see §15.205(c)).

3.7.2 EUT Setup



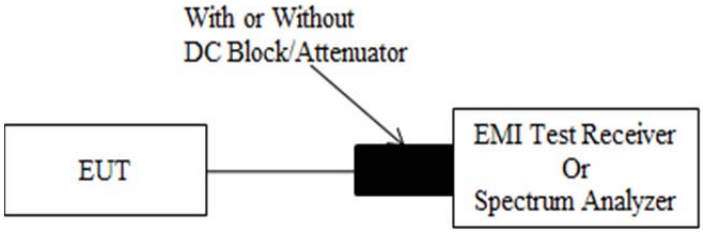
3.7.3 Test Procedure

According to ANSI C63.10-2013 Section 11.11

a) Set the center frequency and span to encompass frequency range to be measured.
b) Set the RBW = 100 kHz.
c) Set the VBW ≥ [3 × RBW].
d) Detector = peak.
e) Sweep time = auto couple.
f) Trace mode = max hold.
g) Allow trace to fully stabilize.
h) Use the peak marker function to determine the maximum amplitude level.
Ensure that the amplitude of all unwanted emissions outside of the authorized frequency band (excluding restricted frequency bands) is attenuated by at least the minimum requirements specified in 11.11. Report the three highest emissions relative to the limit.

3.8 Duty Cycle

3.8.1 EUT Setup



3.8.2 Test Procedure

According to ANSI C63.10-2013 Section 11.6

The zero-span mode on a spectrum analyzer or EMI receiver if the response time and spacing between bins on the sweep are sufficient to permit accurate measurements of the ON and OFF times of the transmitted signal:
1) Set the center frequency of the instrument to the center frequency of the transmission.
2) Set RBW ≥ OBW if possible; otherwise, set RBW to the largest available value.
3) Set VBW ≥ RBW. Set detector = peak or average.
4) The zero-span measurement method shall not be used unless both RBW and VBW are > 50/T and the number of sweep points across duration T exceeds 100. (For example, if VBW and/or RBW are limited to 3 MHz, then the zero-span method of measuring the duty cycle shall not be used if T ≤ 16.7 μs.)

3.9 Antenna Requirement

3.9.1 Applicable Standard

FCC §15.203

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

3.9.2 Judgment

Compliant. Please refer to the Antenna Information detail in Section 1.

4. TEST DATA AND RESULTS

4.1 AC Line Conducted Emissions

Serial Number:	2MM7-3	Test Date:	2024/6/20
Test Site:	CE	Test Mode:	Transmitting (maximum output power mode, 802.11n ht40 high channel)
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:

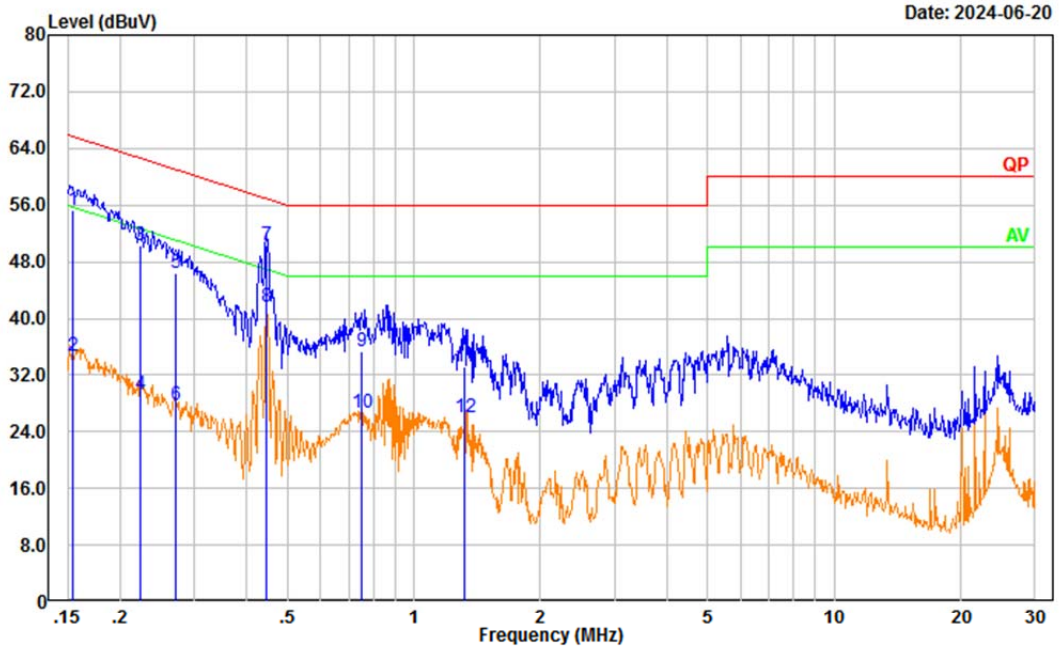
Temperature: (℃)	25.4	Relative Humidity: (%)	58	ATM Pressure: (kPa)	100.1

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101132	2024/4/1	2025/3/31
R&S	EMI Test Receiver	ESR3	103104	2024/5/10	2025/5/9
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2024/1/15	2025/1/14
Audix	Test Software	E3	191218 (V9)	N/A	N/A

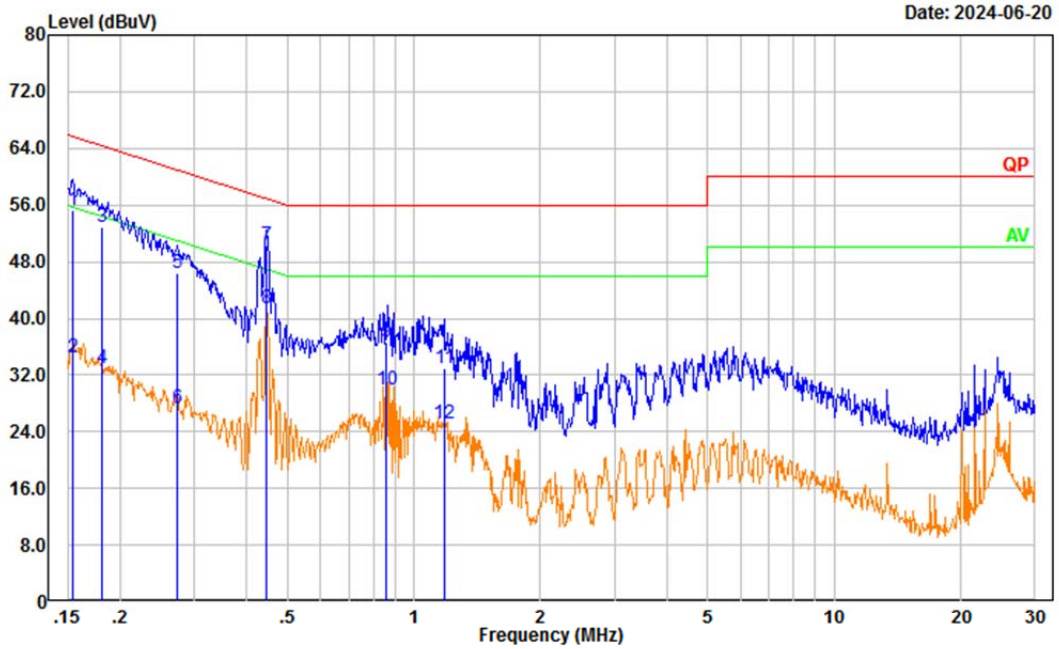
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Project No.: 2403U79820E-RF
Tester: David Huang
Port: Line
Note: Transmitting(2.4G WIFI)



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.155	44.82	10.37	55.19	65.74	10.55	QP
2	0.155	24.40	10.37	34.77	55.74	20.97	Average
3	0.223	40.27	10.05	50.32	62.70	12.38	QP
4	0.223	19.29	10.05	29.34	52.70	23.36	Average
5	0.271	36.34	10.13	46.47	61.08	14.61	QP
6	0.271	17.67	10.13	27.80	51.08	23.28	Average
7	0.447	39.97	10.42	50.39	56.94	6.55	QP
8	0.447	31.20	10.42	41.62	46.94	5.32	Average
9	0.751	24.62	10.69	35.31	56.00	20.69	QP
10	0.751	15.91	10.69	26.60	46.00	19.40	Average
11	1.320	22.63	10.46	33.09	56.00	22.91	QP
12	1.320	15.47	10.46	25.93	46.00	20.07	Average

Project No.: 2403U79820E-RF
Tester: David Huang
Port: neutral
Note: Transmitting(2.4G WIFI)



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.154	44.72	10.49	55.21	65.78	10.57	QP
2	0.154	23.98	10.49	34.47	55.78	21.31	Average
3	0.181	42.42	10.39	52.81	64.43	11.62	QP
4	0.181	22.46	10.39	32.85	54.43	21.58	Average
5	0.275	35.97	10.36	46.33	60.98	14.65	QP
6	0.275	16.86	10.36	27.22	50.98	23.76	Average
7	0.446	39.86	10.47	50.33	56.95	6.62	QP
8	0.446	30.98	10.47	41.45	46.95	5.50	Average
9	0.860	26.30	10.37	36.67	56.00	19.33	QP
10	0.860	19.50	10.37	29.87	46.00	16.13	Average
11	1.178	22.50	10.48	32.98	56.00	23.02	QP
12	1.178	14.64	10.48	25.12	46.00	20.88	Average

4.2 Radiation Spurious Emissions

4.2.1 9 kHz – 1 GHz

Serial Number:	2MM7-2	Test Date:	2024/7/10
Test Site:	966-2	Test Mode:	Transmitting (maximum output power mode, 802.11n ht40 high channel)
Tester:	Carl Xue	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	25.3	Relative Humidity: (%)	54	ATM Pressure: (kPa)	100.2

Test Equipment List and Details:

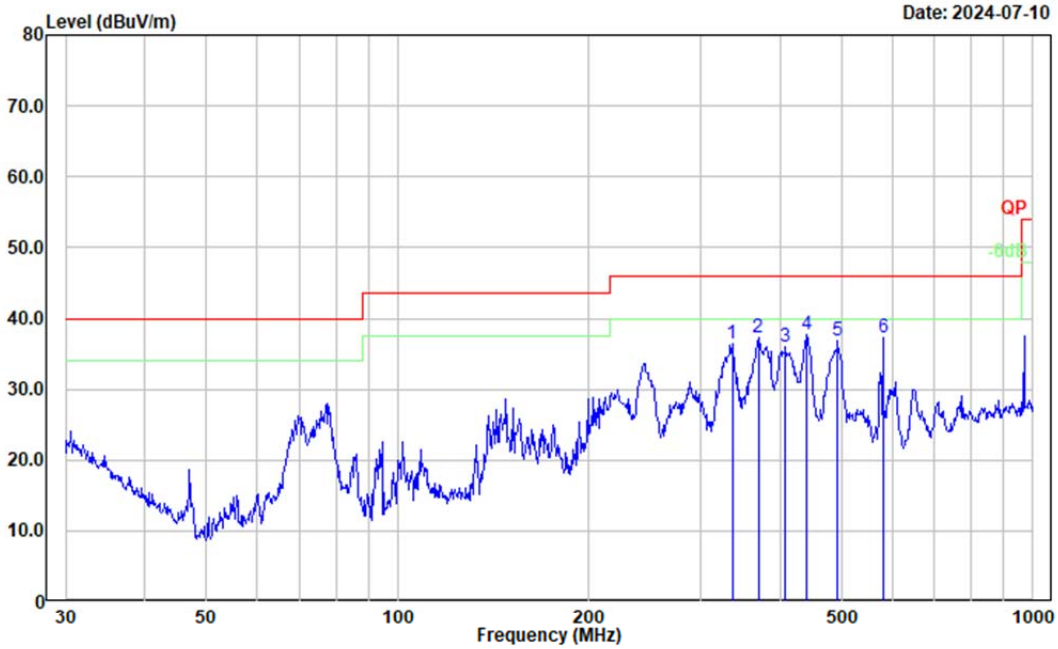
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2023/12/1	2026/11/30
BACL	Loop Antenna	1313-1A	3110611	2023/12/4	2026/12/3
Daruikang	Coaxial Cable	BNC-JJ-RG58	C-0300-01	2024/1/11	2025/1/10
Daruikang	Coaxial Cable	BNC-JJ-RG58	C-0500-01	2024/1/11	2025/1/10
R&S	EMI Test Receiver	ESR3	102724	2024/2/29	2025/2/28
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0100-03	2023/12/4	2024/12/3
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0370-01	2023/12/4	2024/12/3
XQY	Coaxial Cable	XQY-CMR400UF-NJ-NJ-7M	24056379	2024/6/11	2025/6/10
Sonoma	Amplifier	310N	186165	2023/12/4	2024/12/3
Audix	Test Software	E3	191218 (V9)	N/A	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

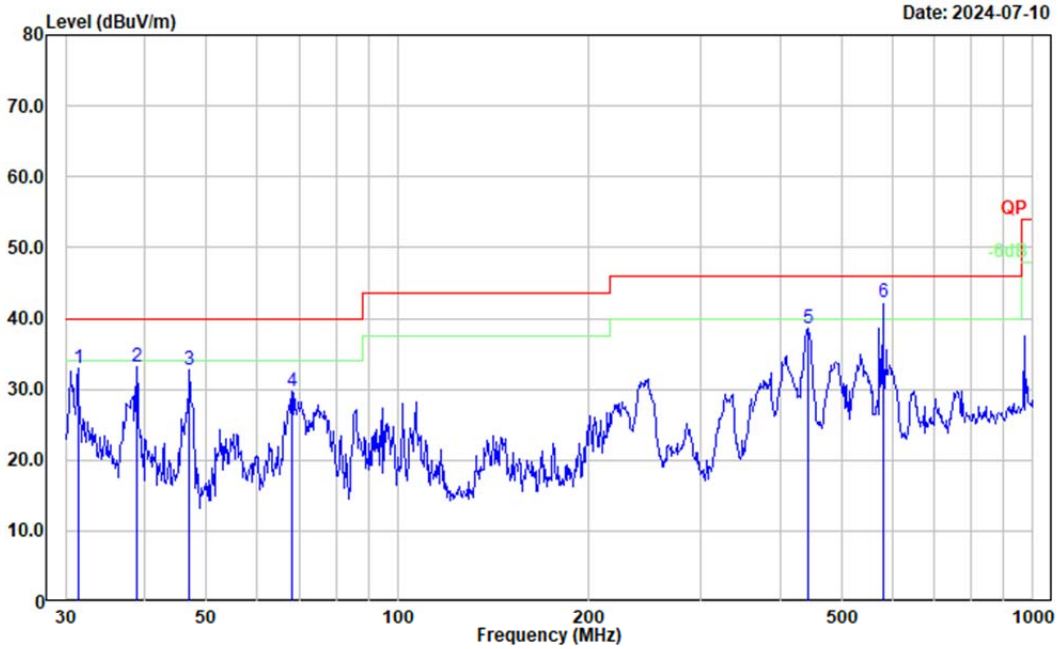
After pre-scan in the X, Y and Z axes of orientation, the worst case is refer to plots.
For 9kHz-30MHz, The amplitude of spurious emissions attenuated more than 20 dB below the limit was not be reported.

Project No.: 2403U79820E-RF
Tester: Carl Xue
Polarization: horizontal
Note: Transmitting 2.4G WIFI



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	336.035	46.01	-9.68	36.33	46.00	9.67	Peak
2	369.405	46.42	-9.14	37.28	46.00	8.72	Peak
3	407.515	43.87	-7.97	35.90	46.00	10.10	Peak
4	440.196	44.52	-6.85	37.67	46.00	8.33	Peak
5	492.469	42.71	-5.89	36.82	46.00	9.18	Peak
6	580.703	41.76	-4.53	37.23	46.00	8.77	Peak

Project No.: 2403U79820E-RF
Tester: Carl Xue
Polarization: vertical
Note: Transmitting 2.4G WIFI



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	31.399	37.75	-4.72	33.03	40.00	6.97	Peak
2	38.888	43.71	-10.53	33.18	40.00	6.82	Peak
3	46.995	48.77	-15.98	32.79	40.00	7.21	Peak
4	68.151	47.02	-17.22	29.80	40.00	10.20	Peak
5	441.743	45.41	-6.86	38.55	46.00	7.45	Peak
6	580.077	46.90	-4.53	42.37	46.00	3.63	QP

4.2.2 1GHz – 25 GHz:

Serial Number:	2MM7-2	Test Date:	2024/6/17
Test Site:	966-1	Test Mode:	Transmitting
Tester:	Tao Zhu	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	27.1	Relative Humidity: (%)	68	ATM Pressure: (kPa)	100.1

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
ETS-Lindgren	Horn Antenna	3115	9912-5985	2023/12/6	2026/12/5
R&S	Spectrum Analyzer	FSV40	101591	2024/4/1	2025/3/31
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2024/1/15	2025/1/14
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2024/1/15	2025/1/14
BACL	Preamplifier	1313-A20M18G	4032311	2024/4/1	2025/3/31
Audix	Test Software	E3	191218 (V9)	N/A	N/A
PASTERNACK	Horn Antenna	PE9852/2F-20	112002	2024/2/4	2027/2/3
Quinstar	Preamplifier	QLW-18405536-JO	15964001005	2024/1/15	2025/1/14
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2024/1/15	2025/1/14
JD	Multiplex Switch Test Control Set	DT7220SCU	DQ77925	2023/8/6	2024/8/5
JD	Filter Switch Unit	DT7220FSU	DQ77928	2023/8/6	2024/8/5

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

After pre-scan in the X, Y and Z axes of orientation, the worst case is below:

802.11b Mode Chain 0:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2412 MHz							
2390.000	27.01	PK	H	31.46	58.47	74.00	15.53
2390.000	14.05	AV	H	31.46	45.51	54.00	8.49
2390.000	26.79	PK	V	31.46	58.25	74.00	15.75
2390.000	13.80	AV	V	31.46	45.26	54.00	8.74
4824.000	37.66	PK	H	8.73	46.39	74.00	27.61
4824.000	33.32	AV	H	8.73	42.05	54.00	11.95
4824.000	39.60	PK	V	8.73	48.33	74.00	25.67
4824.000	35.20	AV	V	8.73	43.93	54.00	10.07
7236.000	34.32	PK	H	11.40	45.72	74.00	28.28
7236.000	21.49	AV	H	11.40	32.89	54.00	21.11
7236.000	34.21	PK	V	11.40	45.61	74.00	28.39
7236.000	21.41	AV	V	11.40	32.81	54.00	21.19
Middle Channel: 2437 MHz							
4874.000	38.20	PK	H	8.99	47.19	74.00	26.81
4874.000	34.56	AV	H	8.99	43.55	54.00	10.45
4874.000	39.44	PK	V	8.99	48.43	74.00	25.57
4874.000	35.87	AV	V	8.99	44.86	54.00	9.14
7311.000	34.28	PK	H	11.51	45.79	74.00	28.21
7311.000	21.57	AV	H	11.51	33.08	54.00	20.92
7311.000	34.35	PK	V	11.51	45.86	74.00	28.14
7311.000	21.47	AV	V	11.51	32.98	54.00	21.02
High Channel: 2462 MHz							
2483.500	27.25	PK	H	31.50	58.75	74.00	15.25
2483.500	14.10	AV	H	31.50	45.60	54.00	8.40
2483.500	26.87	PK	V	31.50	58.37	74.00	15.63
2483.500	13.76	AV	V	31.50	45.26	54.00	8.74
4924.000	39.88	PK	H	8.88	48.76	74.00	25.24
4924.000	35.11	AV	H	8.88	43.99	54.00	10.01
4924.000	42.83	PK	V	8.88	51.71	74.00	22.29
4924.000	39.20	AV	V	8.88	48.08	54.00	5.92
7386.000	34.30	PK	H	11.53	45.83	74.00	28.17
7386.000	21.37	AV	H	11.53	32.90	54.00	21.10
7386.000	34.55	PK	V	11.53	46.08	74.00	27.92
7386.000	21.29	AV	V	11.53	32.82	54.00	21.18

802.11b Mode Chain 1:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2412 MHz							
2390.000	26.68	PK	H	31.46	58.14	74.00	15.86
2390.000	13.74	AV	H	31.46	45.20	54.00	8.80
2390.000	26.88	PK	V	31.46	58.34	74.00	15.66
2390.000	13.76	AV	V	31.46	45.22	54.00	8.78
4824.000	37.21	PK	H	8.73	45.94	74.00	28.06
4824.000	32.68	AV	H	8.73	41.41	54.00	12.59
4824.000	38.20	PK	V	8.73	46.93	74.00	27.07
4824.000	34.77	AV	V	8.73	43.50	54.00	10.50
7236.000	33.85	PK	H	11.40	45.25	74.00	28.75
7236.000	20.83	AV	H	11.40	32.23	54.00	21.77
7236.000	34.28	PK	V	11.40	45.68	74.00	28.32
7236.000	21.46	AV	V	11.40	32.86	54.00	21.14
Middle Channel: 2437 MHz							
4874.000	37.66	PK	H	8.99	46.65	74.00	27.35
4874.000	34.56	AV	H	8.99	43.55	54.00	10.45
4874.000	38.63	PK	V	8.99	47.62	74.00	26.38
4874.000	34.28	AV	V	8.99	43.27	54.00	10.73
7311.000	34.27	PK	H	11.51	45.78	74.00	28.22
7311.000	21.34	AV	H	11.51	32.85	54.00	21.15
7311.000	34.30	PK	V	11.51	45.81	74.00	28.19
7311.000	21.55	AV	V	11.51	33.06	54.00	20.94
High Channel: 2462 MHz							
2483.500	27.02	PK	H	31.50	58.52	74.00	15.48
2483.500	14.06	AV	H	31.50	45.56	54.00	8.44
2483.500	27.14	PK	V	31.50	58.64	74.00	15.36
2483.500	14.20	AV	V	31.50	45.70	54.00	8.30
4924.000	38.21	PK	H	8.88	47.09	74.00	26.91
4924.000	33.89	AV	H	8.88	42.77	54.00	11.23
4924.000	40.79	PK	V	8.88	49.67	74.00	24.33
4924.000	36.32	AV	V	8.88	45.20	54.00	8.80
7386.000	34.51	PK	H	11.53	46.04	74.00	27.96
7386.000	21.47	AV	H	11.53	33.00	54.00	21.00
7386.000	34.59	PK	V	11.53	46.12	74.00	27.88
7386.000	21.69	AV	V	11.53	33.22	54.00	20.78

802.11g Mode Chain 0:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2412 MHz							
2390.000	27.65	PK	H	31.46	59.11	74.00	14.89
2390.000	13.88	AV	H	31.46	45.34	54.00	8.66
2390.000	30.30	PK	V	31.46	61.76	74.00	12.24
2390.000	16.33	AV	V	31.46	47.79	54.00	6.21
4824.000	37.55	PK	H	8.73	46.28	74.00	27.72
4824.000	24.52	AV	H	8.73	33.25	54.00	20.75
4824.000	38.66	PK	V	8.73	47.39	74.00	26.61
4824.000	35.38	AV	V	8.73	44.11	54.00	9.89
7236.000	34.56	PK	H	11.40	45.96	74.00	28.04
7236.000	21.46	AV	H	11.40	32.86	54.00	21.14
7236.000	35.20	PK	V	11.40	46.60	74.00	27.40
7236.000	22.12	AV	V	11.40	33.52	54.00	20.48
Middle Channel: 2437 MHz							
4874.000	35.63	PK	H	8.99	44.62	74.00	29.38
4874.000	22.58	AV	H	8.99	31.57	54.00	22.43
4874.000	39.62	PK	V	8.99	48.61	74.00	25.39
4874.000	26.55	AV	V	8.99	35.54	54.00	18.46
7311.000	34.30	PK	H	11.51	45.81	74.00	28.19
7311.000	21.55	AV	H	11.51	33.06	54.00	20.94
7311.000	34.28	PK	V	11.51	45.79	74.00	28.21
7311.000	21.37	AV	V	11.51	32.88	54.00	21.12
High Channel: 2462 MHz							
2483.500	27.14	PK	H	31.50	58.64	74.00	15.36
2483.500	13.66	AV	H	31.50	45.16	54.00	8.84
2483.500	29.12	PK	V	31.50	60.62	74.00	13.38
2483.500	15.46	AV	V	31.50	46.96	54.00	7.04
4924.000	37.86	PK	H	8.88	46.74	74.00	27.26
4924.000	24.66	AV	H	8.88	33.54	54.00	20.46
4924.000	42.84	PK	V	8.88	51.72	74.00	22.28
4924.000	29.82	AV	V	8.88	38.70	54.00	15.30
7386.000	34.28	PK	H	11.53	45.81	74.00	28.19
7386.000	21.33	AV	H	11.53	32.86	54.00	21.14
7386.000	34.12	PK	V	11.53	45.65	74.00	28.35
7386.000	21.20	AV	V	11.53	32.73	54.00	21.27

802.11g Mode Chain 1:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2412 MHz							
2390.000	29.63	PK	H	31.46	61.09	74.00	12.91
2390.000	14.78	AV	H	31.46	46.24	54.00	7.76
2390.000	35.24	PK	V	31.46	66.70	74.00	7.30
2390.000	17.65	AV	V	31.46	49.11	54.00	4.89
4824.000	38.25	PK	H	8.73	46.98	74.00	27.02
4824.000	25.25	AV	H	8.73	33.98	54.00	20.02
4824.000	39.19	PK	V	8.73	47.92	74.00	26.08
4824.000	26.31	AV	V	8.73	35.04	54.00	18.96
7236.000	34.31	PK	H	11.40	45.71	74.00	28.29
7236.000	21.24	AV	H	11.40	32.64	54.00	21.36
7236.000	35.17	PK	V	11.40	46.57	74.00	27.43
7236.000	22.20	AV	V	11.40	33.60	54.00	20.40
Middle Channel: 2437 MHz							
4874.000	37.14	PK	H	8.99	46.13	74.00	27.87
4874.000	24.28	AV	H	8.99	33.27	54.00	20.73
4874.000	38.65	PK	V	8.99	47.64	74.00	26.36
4874.000	25.67	AV	V	8.99	34.66	54.00	19.34
7311.000	34.69	PK	H	11.51	46.20	74.00	27.80
7311.000	21.52	AV	H	11.51	33.03	54.00	20.97
7311.000	35.47	PK	V	11.51	46.98	74.00	27.02
7311.000	22.20	AV	V	11.51	33.71	54.00	20.29
High Channel: 2462 MHz							
2483.500	28.62	PK	H	31.50	60.12	74.00	13.88
2483.500	14.28	AV	H	31.50	45.78	54.00	8.22
2483.500	35.47	PK	V	31.50	66.97	74.00	7.03
2483.500	18.24	AV	V	31.50	49.74	54.00	4.26
4924.000	37.24	PK	H	8.88	46.12	74.00	27.88
4924.000	24.52	AV	H	8.88	33.40	54.00	20.60
4924.000	38.65	PK	V	8.88	47.53	74.00	26.47
4924.000	25.82	AV	V	8.88	34.70	54.00	19.30
7386.000	34.82	PK	H	11.53	46.35	74.00	27.65
7386.000	21.59	AV	H	11.53	33.12	54.00	20.88
7386.000	35.70	PK	V	11.53	47.23	74.00	26.77
7386.000	22.43	AV	V	11.53	33.96	54.00	20.04

802.11n ht20 Mode:

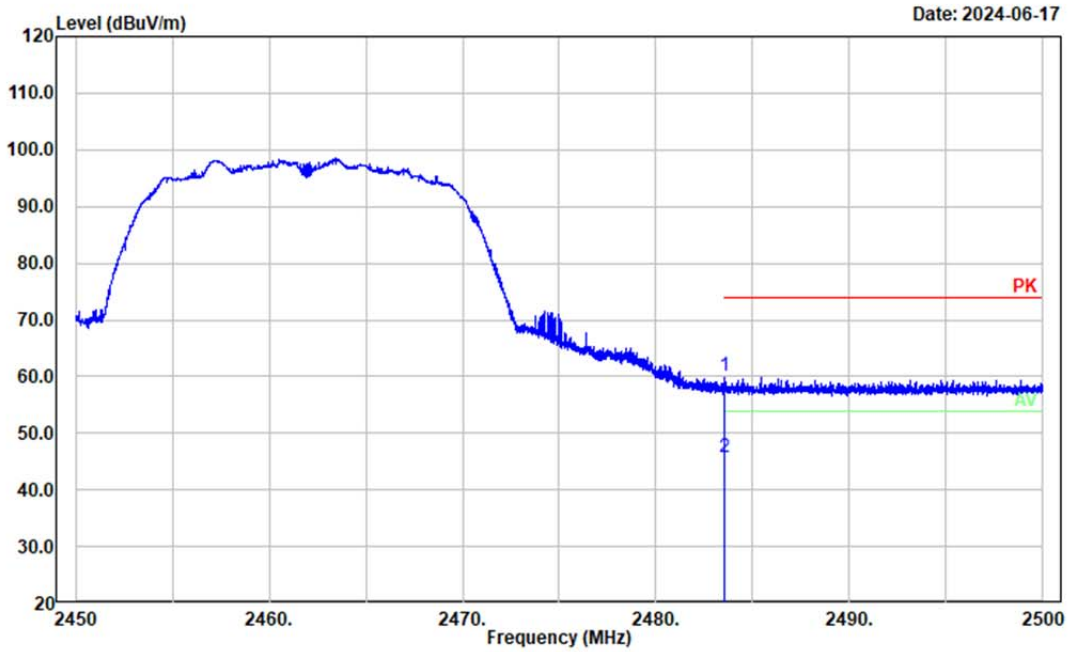
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2412 MHz							
2390.000	28.66	PK	H	31.46	60.12	74.00	13.88
2390.000	14.78	AV	H	31.46	46.24	54.00	7.76
2390.000	31.18	PK	V	31.46	62.64	74.00	11.36
2390.000	15.67	AV	V	31.46	47.13	54.00	6.87
4824.000	37.46	PK	H	8.73	46.19	74.00	27.81
4824.000	24.37	AV	H	8.73	33.10	54.00	20.90
4824.000	38.41	PK	V	8.73	47.14	74.00	26.86
4824.000	25.58	AV	V	8.73	34.31	54.00	19.69
7236.000	34.56	PK	H	11.40	45.96	74.00	28.04
7236.000	21.41	AV	H	11.40	32.81	54.00	21.19
7236.000	34.62	PK	V	11.40	46.02	74.00	27.98
7236.000	21.47	AV	V	11.40	32.87	54.00	21.13
Middle Channel: 2437 MHz							
4874.000	37.88	PK	H	8.99	46.87	74.00	27.13
4874.000	24.14	AV	H	8.99	33.13	54.00	20.87
4874.000	39.65	PK	V	8.99	48.64	74.00	25.36
4874.000	26.55	AV	V	8.99	35.54	54.00	18.46
7311.000	34.27	PK	H	11.51	45.78	74.00	28.22
7311.000	21.43	AV	H	11.51	32.94	54.00	21.06
7311.000	34.36	PK	V	11.51	45.87	74.00	28.13
7311.000	21.41	AV	V	11.51	32.92	54.00	21.08
High Channel: 2462 MHz							
2483.500	29.63	PK	H	31.50	61.13	74.00	12.87
2483.500	15.14	AV	H	31.50	46.64	54.00	7.36
2483.500	35.12	PK	V	31.50	66.62	74.00	7.38
2483.500	16.17	AV	V	31.50	47.67	54.00	6.33
4924.000	38.74	PK	H	8.88	47.62	74.00	26.38
4924.000	25.69	AV	H	8.88	34.57	54.00	19.43
4924.000	41.18	PK	V	8.88	50.06	74.00	23.94
4924.000	28.68	AV	V	8.88	37.56	54.00	16.44
7386.000	34.52	PK	H	11.53	46.05	74.00	27.95
7386.000	21.63	AV	H	11.53	33.16	54.00	20.84
7386.000	34.47	PK	V	11.53	46.00	74.00	28.00
7386.000	21.24	AV	V	11.53	32.77	54.00	21.23

802.11n ht40 Mode:

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Detector					
Low Channel: 2422 MHz							
2390.000	30.15	PK	H	31.46	61.61	74.00	12.39
2390.000	15.49	AV	H	31.46	46.95	54.00	7.05
2390.000	33.52	PK	V	31.46	64.98	74.00	9.02
2390.000	16.92	AV	V	31.46	48.38	54.00	5.62
4844.000	35.57	PK	H	8.97	44.54	74.00	29.46
4844.000	22.49	AV	H	8.97	31.46	54.00	22.54
4844.000	36.68	PK	V	8.97	45.65	74.00	28.35
4844.000	23.54	AV	V	8.97	32.51	54.00	21.49
7266.000	33.82	PK	H	11.43	45.25	74.00	28.75
7266.000	20.54	AV	H	11.43	31.97	54.00	22.03
7266.000	34.63	PK	V	11.43	46.06	74.00	27.94
7266.000	21.47	AV	V	11.43	32.90	54.00	21.10
Middle Channel: 2437 MHz							
4874.000	35.22	PK	H	8.99	44.21	74.00	29.79
4874.000	22.58	AV	H	8.99	31.57	54.00	22.43
4874.000	36.73	PK	V	8.99	45.72	74.00	28.28
4874.000	23.72	AV	V	8.99	32.71	54.00	21.29
7311.000	34.11	PK	H	11.51	45.62	74.00	28.38
7311.000	21.30	AV	H	11.51	32.81	54.00	21.19
7311.000	34.25	PK	V	11.51	45.76	74.00	28.24
7311.000	21.25	AV	V	11.51	32.76	54.00	21.24
High Channel: 2452 MHz							
2483.500	27.30	PK	H	31.50	58.80	74.00	15.20
2483.500	14.20	AV	H	31.50	45.70	54.00	8.30
2483.500	32.43	PK	V	31.50	63.93	74.00	10.07
2483.500	16.47	AV	V	31.50	47.97	54.00	6.03
4904.000	35.52	PK	H	8.91	44.43	74.00	29.57
4904.000	22.41	AV	H	8.91	31.32	54.00	22.68
4904.000	36.69	PK	V	8.91	45.60	74.00	28.40
4904.000	23.55	AV	V	8.91	32.46	54.00	21.54
7356.000	33.89	PK	H	11.68	45.57	74.00	28.43
7356.000	20.82	AV	H	11.68	32.50	54.00	21.50
7356.000	34.25	PK	V	11.68	45.93	74.00	28.07
7356.000	21.45	AV	V	11.68	33.13	54.00	20.87

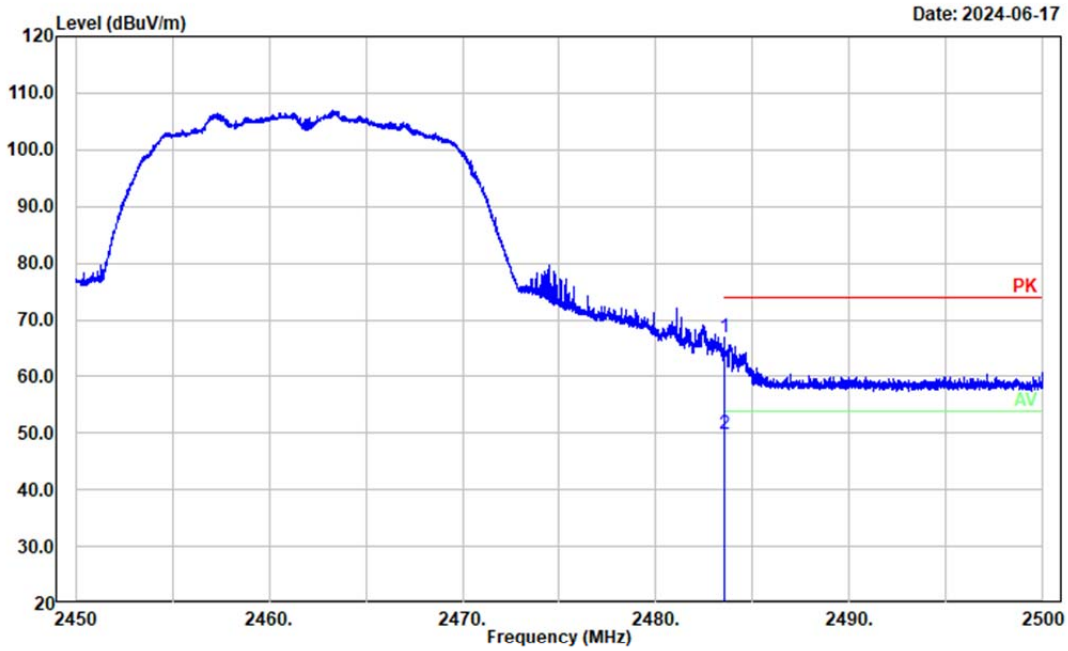
Worst band edge test plots

Project No.: 2403U79820E-RF
Tester: Tao Zhu
Polarization: Horizontal
Note: g High 2462MHz Chain 1



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	2483.500	28.62	31.50	60.12	74.00	13.88	Peak
2	2483.500	14.28	31.50	45.78	54.00	8.22	Average

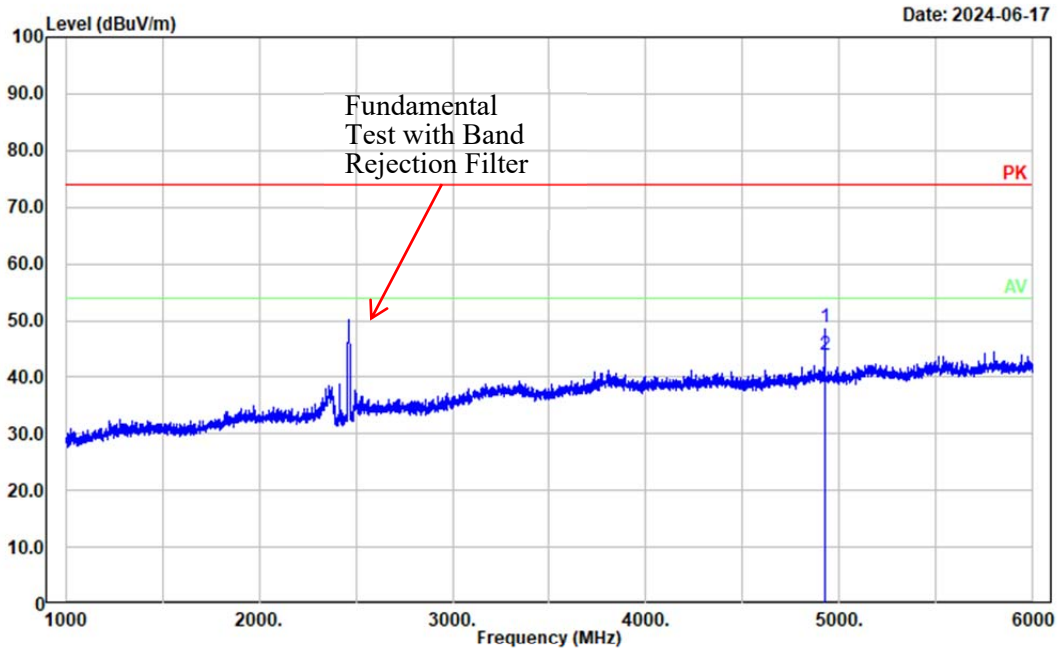
Project No.: 2403U79820E-RF
Tester: Tao Zhu
Polarization: Vertical
Note: g High 2462MHz Chain 1



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	2483.500	35.47	31.50	66.97	74.00	7.03	Peak
2	2483.500	18.24	31.50	49.74	54.00	4.26	Average

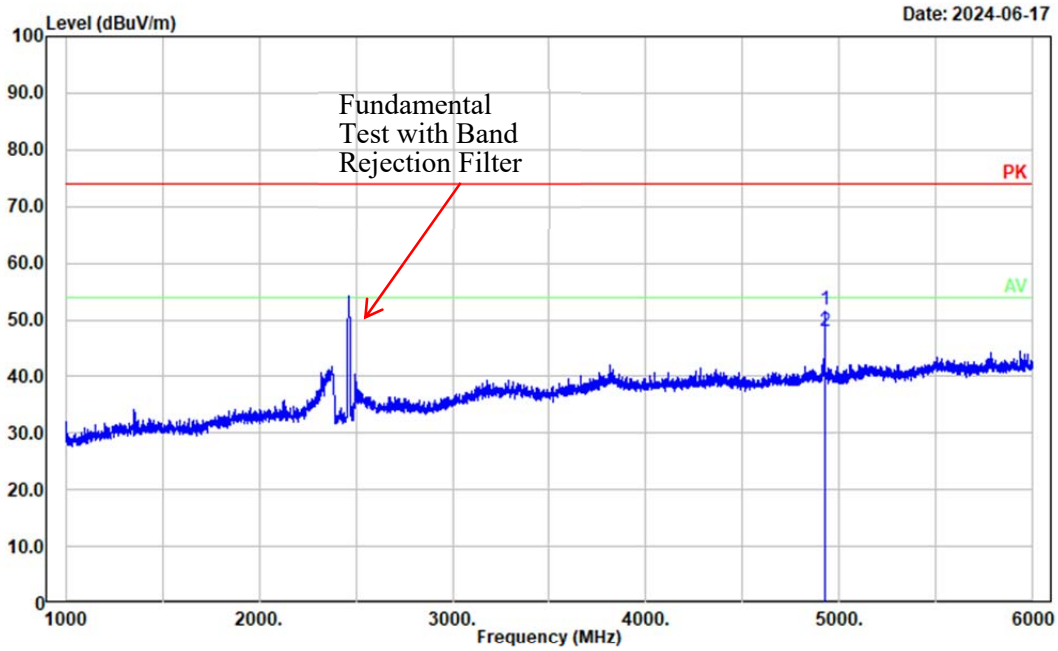
Worst radiation spurious emissions margin test plots

```
Project No.: 2403U79820E-RF
     Tester: Tao Zhu
Polarization: horizontal
       Note: b High 2462MHz Chain 0
```



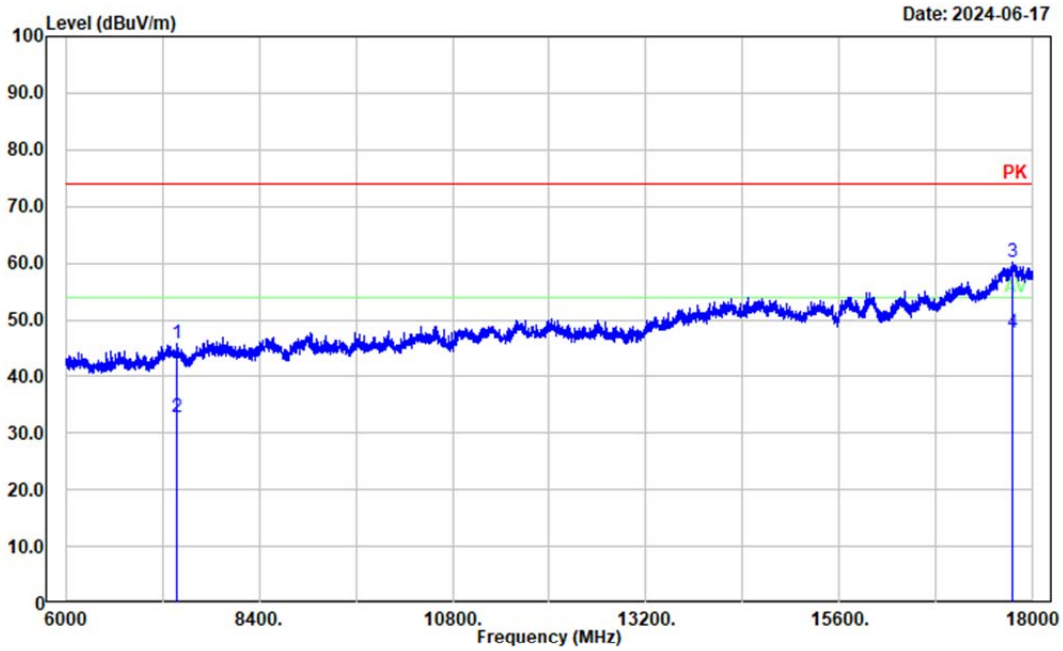
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	4924.000	39.88	8.88	48.76	74.00	25.24	Peak
2	4924.000	35.11	8.88	43.99	54.00	10.01	Average

Project No.: 2403U79820E-RF
Tester: Tao Zhu
Polarization: vertical
Note: b High 2462MHz Chain 0



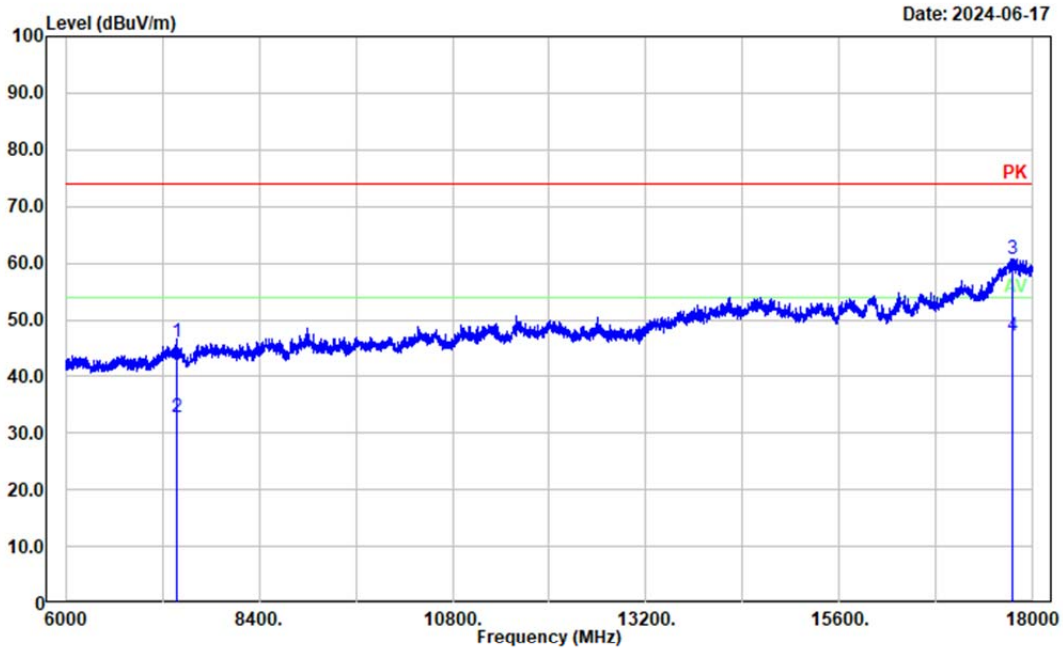
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	4924.000	42.83	8.88	51.71	74.00	22.29	Peak
2	4924.000	39.20	8.88	48.08	54.00	5.92	Average

Project No.: 2403U79820E-RF
Tester: Tao Zhu
Polarization: horizontal
Note: b High 2462MHz Chain 0



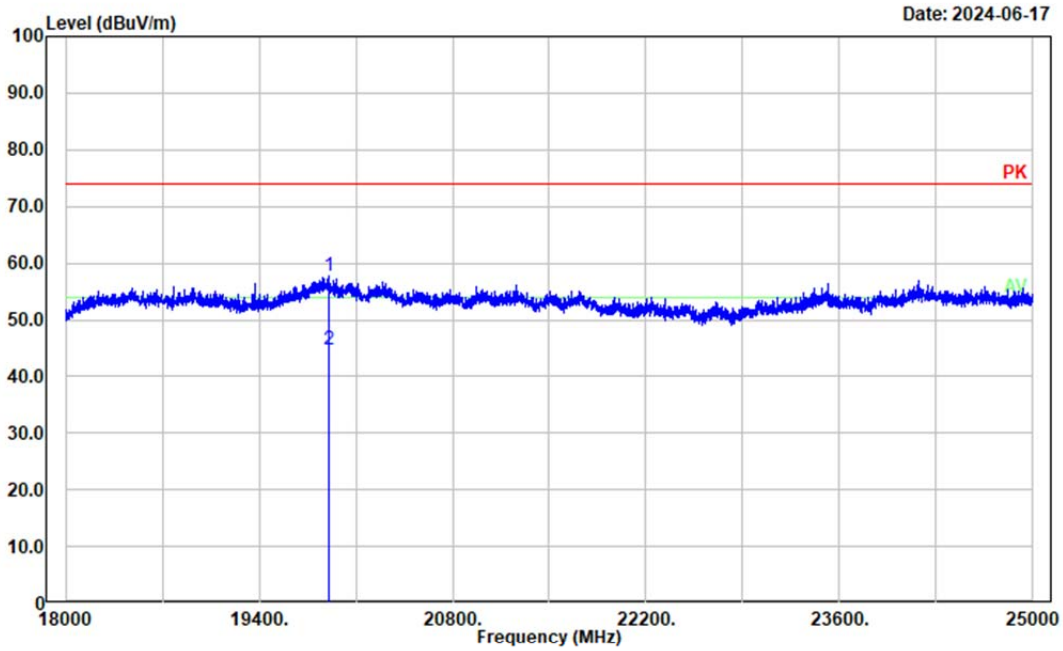
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	7386.000	34.30	11.53	45.83	74.00	28.17	Peak
2	7386.000	21.37	11.53	32.90	54.00	21.10	Average
3	17738.400	34.37	25.86	60.23	74.00	13.77	Peak
4	17738.400	21.76	25.86	47.62	54.00	6.38	Average

Project No.: 2403U79820E-RF
Tester: Tao Zhu
Polarization: vertical
Note: b High 2462MHz Chain 0



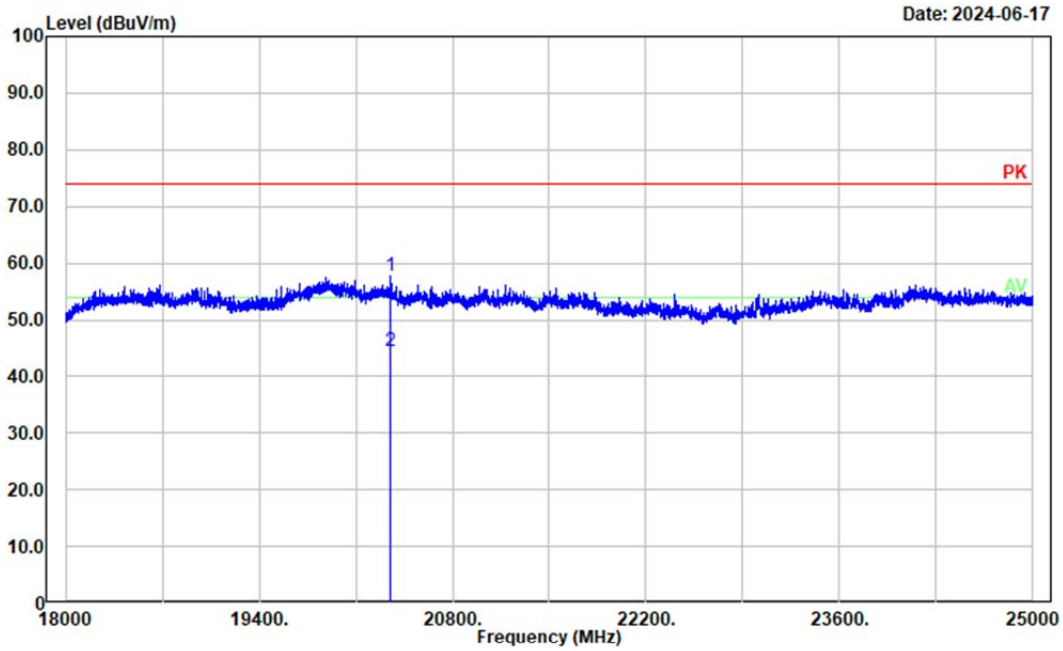
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	7386.000	34.55	11.53	46.08	74.00	27.92	Peak
2	7386.000	21.29	11.53	32.82	54.00	21.18	Average
3	17745.600	34.90	25.85	60.75	74.00	13.25	Peak
4	17745.600	21.43	25.85	47.28	54.00	6.72	Average

Project No.: 2403U79820E-RF
Tester: Tao Zhu
Polarization: Horizontal
Note: b High 2462MHz Chain 0



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	19901.200	49.83	7.96	57.79	74.00	16.21	Peak
2	19901.200	36.75	7.96	44.71	54.00	9.29	Average

Project No.: 2403U79820E-RF
Tester: Tao Zhu
Polarization: vertical
Note: b High 2462MHz Chain 0



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Detector
1	20350.600	51.60	5.99	57.59	74.00	16.41	Peak
2	20350.600	38.58	5.99	44.57	54.00	9.43	Average

4.3 6dB Emission Bandwidth

Test Information:

Serial No.:	2MM7-1	**Test Date:**	2024/7/16~2024/7/18
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Chin Qin	**Test Result:**	Pass

Environmental Conditions:

Temperature: (°C):	26.7	**Relative Humidity: (%)**	55-57	**ATM Pressure: (kPa)**	100.5-100.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2024/04/01	2025/03/31
R&S	Spectrum Analyzer	FSU26	100147	2024/04/01	2025/03/31
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

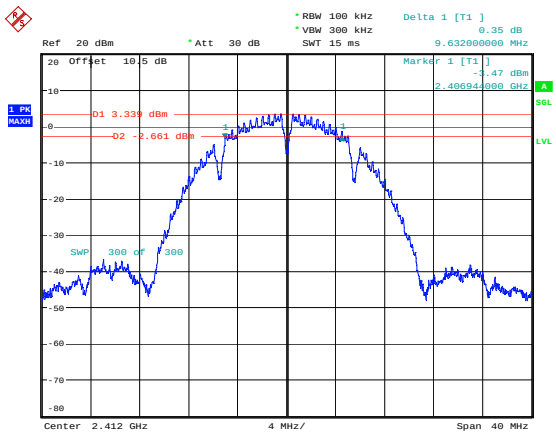
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

2.4G

Mode	Value (MHz)	Limit (MHz)	Result
b_2412MHz_Chain 0	9.632	≥0.5	Pass
b_2412MHz_Chain 1	9.600	≥0.5	Pass
b_2437MHz_Chain 0	9.680	≥0.5	Pass
b_2437MHz_Chain 1	9.632	≥0.5	Pass
b_2462MHz_Chain 0	9.680	≥0.5	Pass
b_2462MHz_Chain 1	9.600	≥0.5	Pass
g_2412MHz_Chain 0	15.200	≥0.5	Pass
g_2412MHz_Chain 1	15.136	≥0.5	Pass
g_2437MHz_Chain 0	15.200	≥0.5	Pass
g_2437MHz_Chain 1	15.104	≥0.5	Pass
g_2462MHz_Chain 0	15.160	≥0.5	Pass
g_2462MHz_Chain 1	15.168	≥0.5	Pass
n20_2412MHz_Chain 0	15.200	≥0.5	Pass
n20_2412MHz_Chain 1	15.136	≥0.5	Pass
n20_2437MHz_Chain 0	15.200	≥0.5	Pass
n20_2437MHz_Chain 1	15.168	≥0.5	Pass
n20_2462MHz_Chain 0	15.200	≥0.5	Pass
n20_2462MHz_Chain 1	15.200	≥0.5	Pass
n40_2422MHz_Chain 0	32.720	≥0.5	Pass
n40_2422MHz_Chain 1	33.984	≥0.5	Pass
n40_2437MHz_Chain 0	32.800	≥0.5	Pass
n40_2437MHz_Chain 1	33.984	≥0.5	Pass
n40_2452MHz_Chain 0	32.800	≥0.5	Pass
n40_2452MHz_Chain 1	33.984	≥0.5	Pass

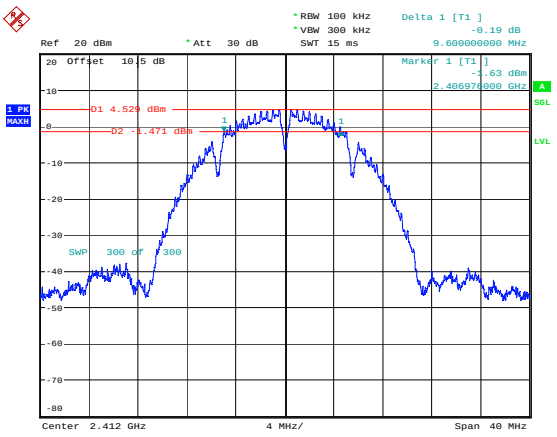
2.4G

b_2412MHz_Chain 0 9.632MHz



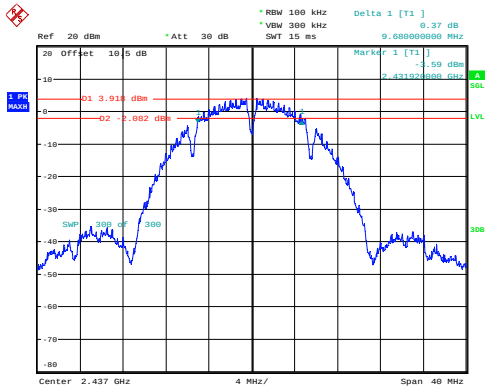
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 22:18:25

b_2412MHz_Chain 1 9.600MHz



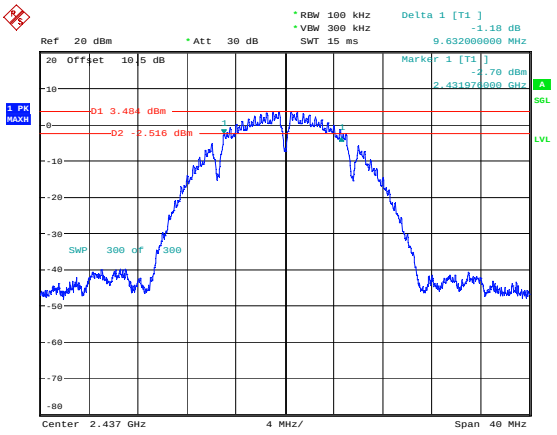
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 22:14:09

b_2437MHz_Chain 0 9.680MHz



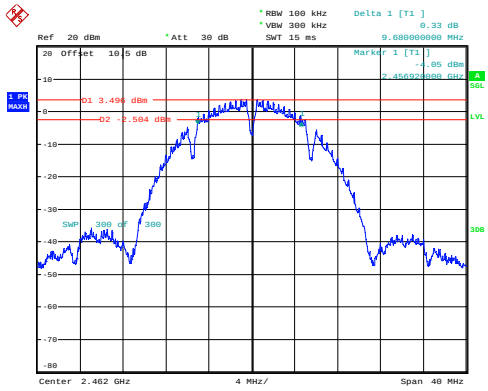
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:02:46

b_2437MHz_Chain 1 9.632MHz



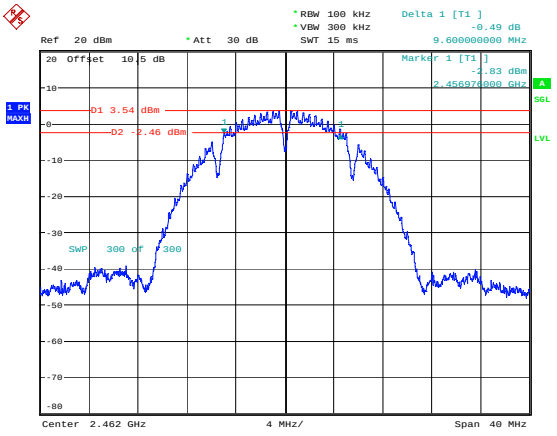
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:38:10

b_2462MHz_Chain 0 9.680MHz



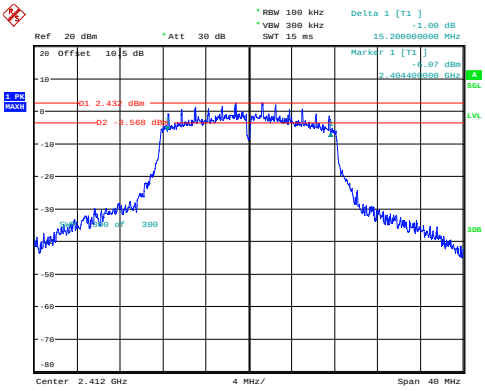
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:07:07

b_2462MHz_Chain 1 9.600MHz



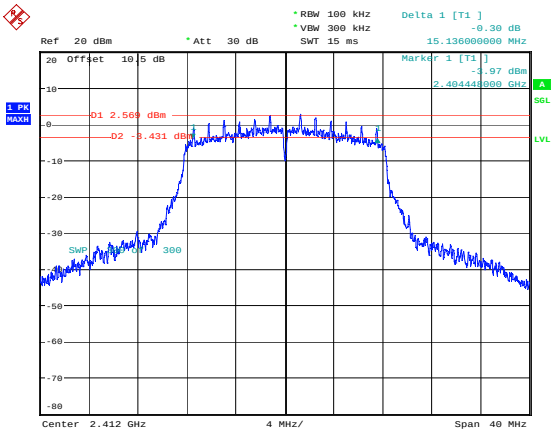
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:39:44

g_2412MHz_Chain 0 15.200MHz



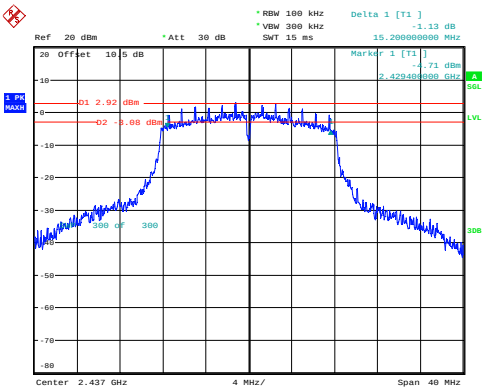
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:11:07

g_2412MHz_Chain 1 15.136MHz



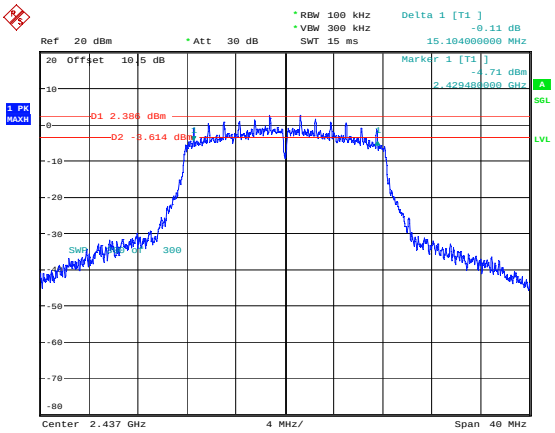
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:41:06

g_2437MHz_Chain 0 15.200MHz



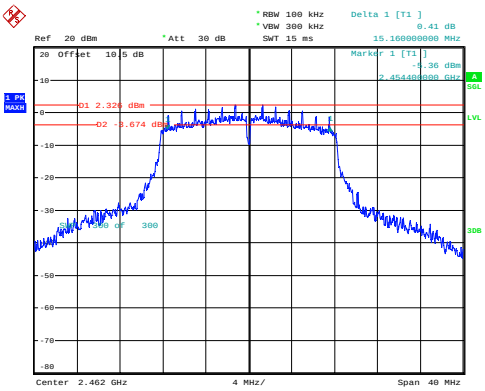
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:13:16

g_2437MHz_Chain 1 15.104MHz



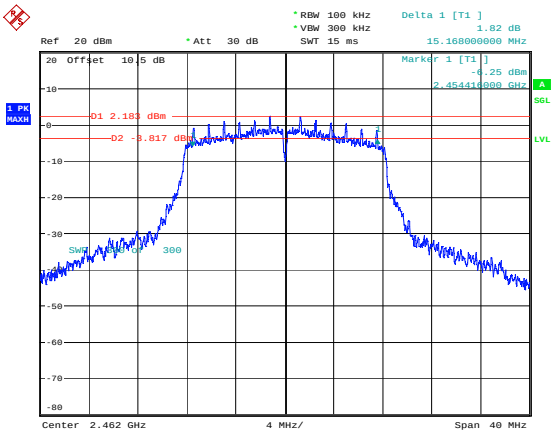
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:42:32

g_2462MHz_Chain 0 15.160MHz



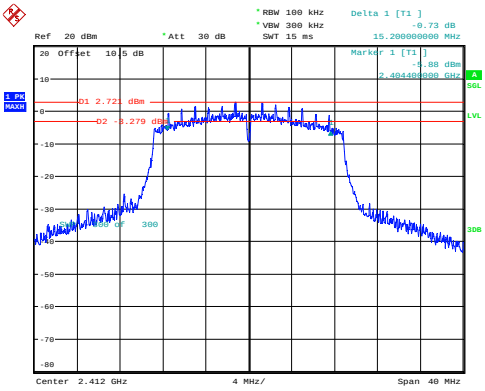
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:16:51

g_2462MHz_Chain 1 15.168MHz



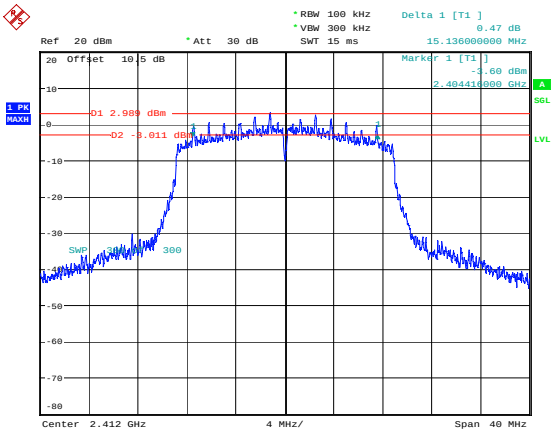
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:44:10

n20_2412MHz_Chain 0 15.200MHz



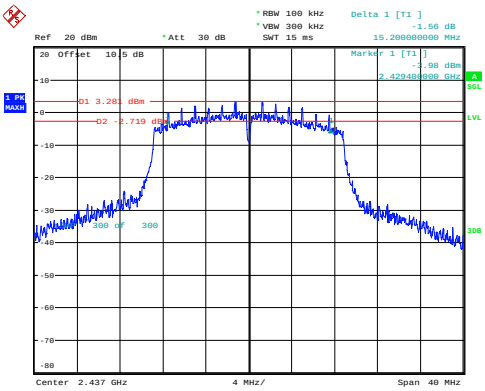
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:20:31

n20_2412MHz_Chain 1 15.136MHz



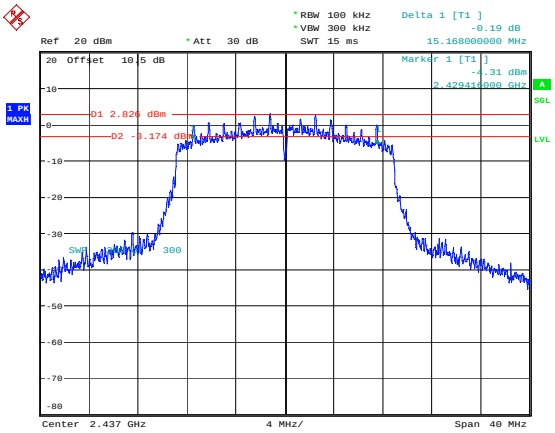
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:46:06

n20_2437MHz_Chain 0 15.200MHz



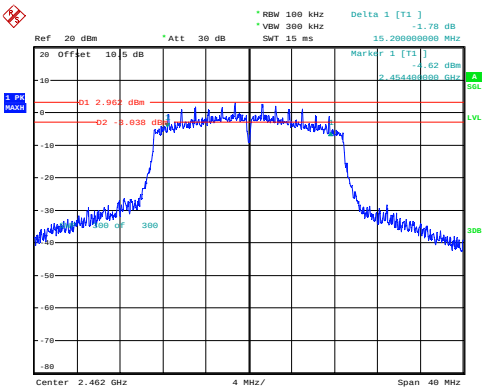
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:22:52

n20_2437MHz_Chain 1 15.168MHz



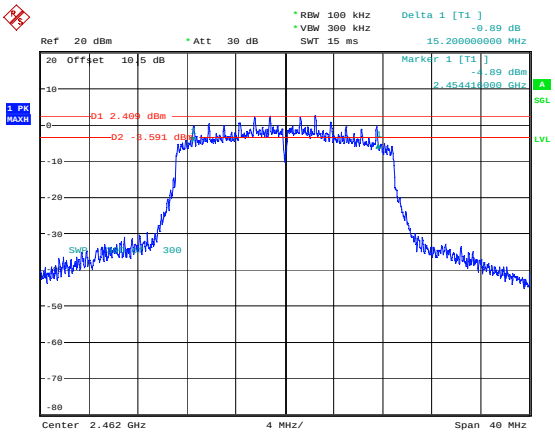
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:47:54

n20_2462MHz_Chain 0 15.200MHz



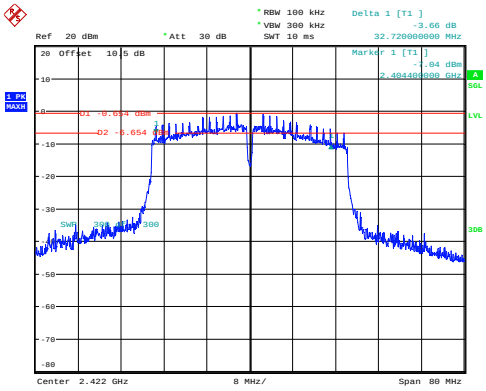
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:26:22

n20_2462MHz_Chain 1 15.200MHz



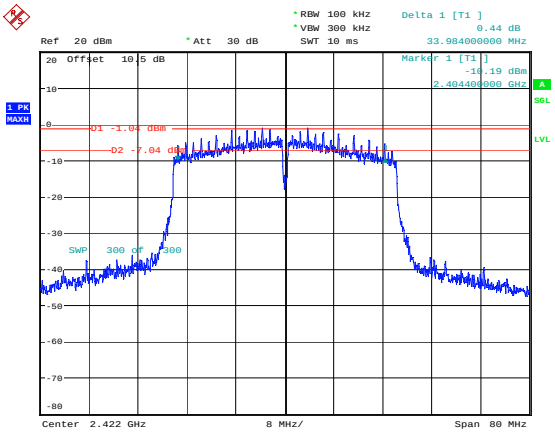
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:49:28

n40_2422MHz_Chain 0 32.720MHz



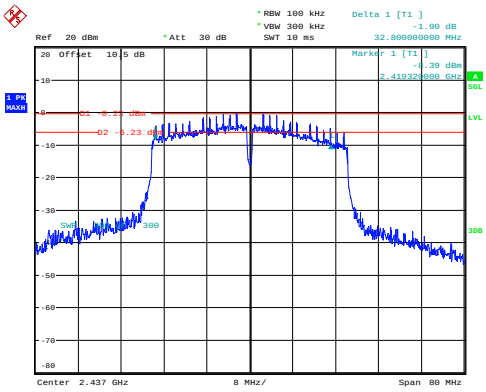
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:29:59

n40_2422MHz_Chain 1 33.984MHz



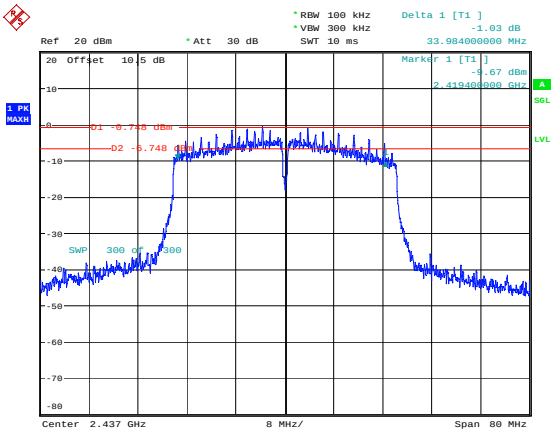
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:51:07

n40_2437MHz_Chain 0 32.800MHz



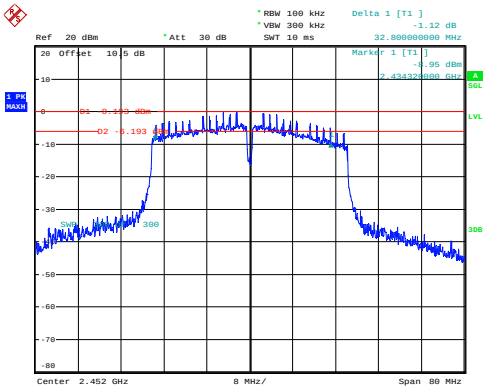
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:33:46

n40_2437MHz_Chain 1 33.984MHz



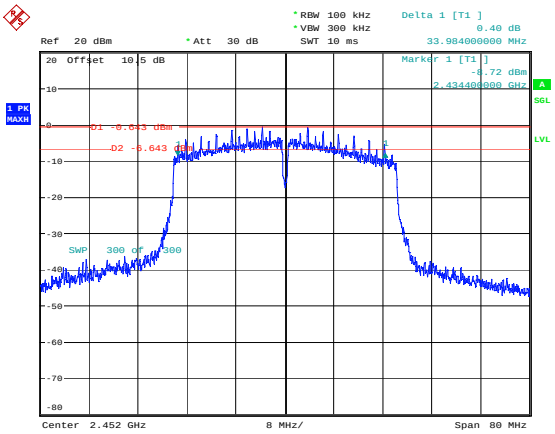
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:52:55

n40_2452MHz_Chain 0 32.800MHz



ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:37:35

n40_2452MHz_Chain 1 33.984MHz



Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:54:40

4.4 99% Occupied Bandwidth

Test Information:

Serial No.:	2MM7-1	**Test Date:**	2024/7/16
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Chin Qin	**Test Result:**	N/A

Environmental Conditions:

Temperature: (°C):	26.7	**Relative Humidity: (%)**	57	**ATM Pressure: (kPa)**	100.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2024/04/01	2025/03/31
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

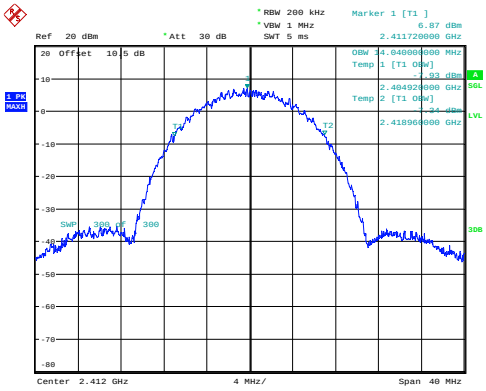
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

2.4G

Mode	99% OBW (MHz)
b_2412MHz_Chain 0	14.040
b_2437MHz_Chain 0	14.400
b_2462MHz_Chain 0	14.400
g_2412MHz_Chain 0	16.600
g_2437MHz_Chain 0	16.600
g_2462MHz_Chain 0	16.600
n20_2412MHz_Chain 0	17.520
n20_2437MHz_Chain 0	17.560
n20_2462MHz_Chain 0	17.560
n40_2422MHz_Chain 0	36.080
n40_2437MHz_Chain 0	36.080
n40_2452MHz_Chain 0	36.080

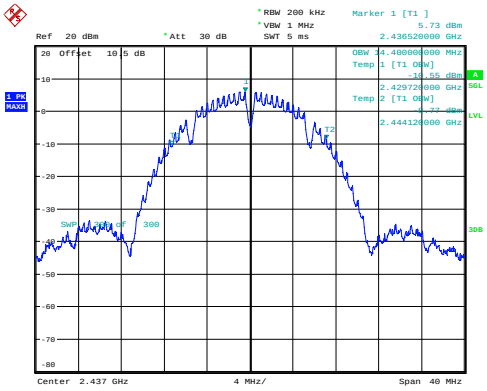
2.4G

b_2412MHz_Chain 0 14.040MHz



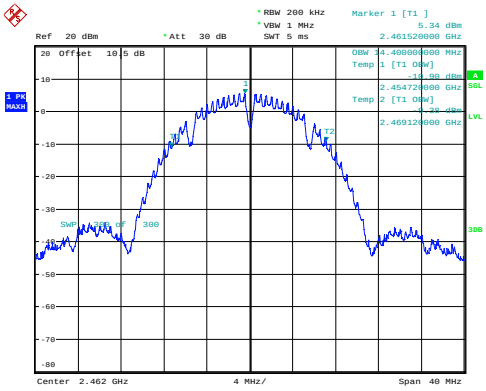
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:01:26

b_2437MHz_Chain 0 14.400MHz



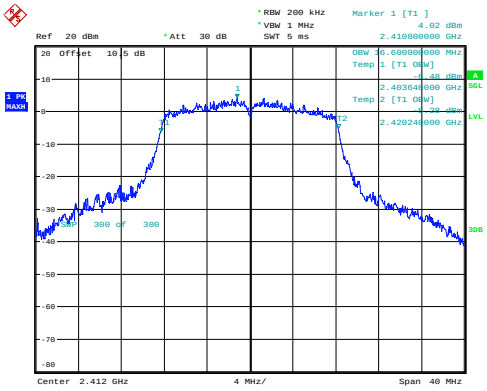
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:03:28

b_2462MHz_Chain 0 14.400MHz



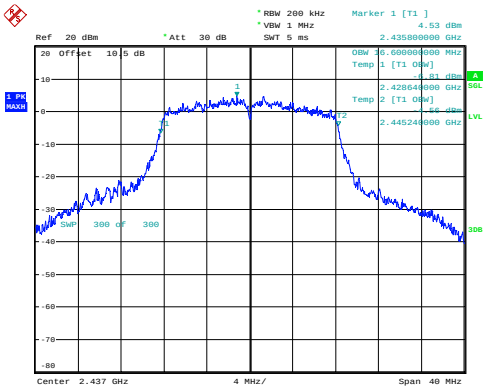
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:07:59

g_2412MHz_Chain 0 16.600MHz



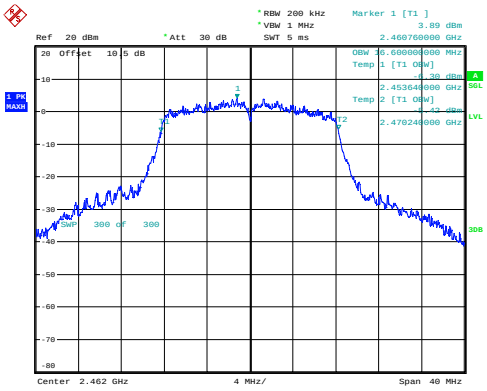
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:11:54

g_2437MHz_Chain 0 16.600MHz



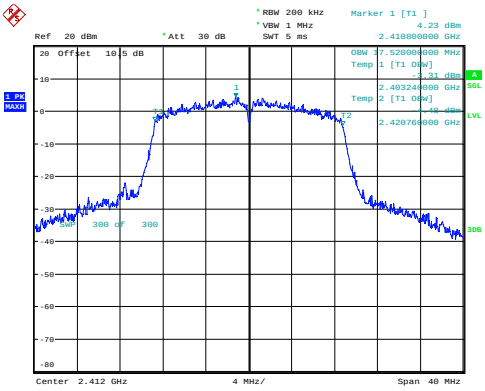
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:13:58

g_2462MHz_Chain 0 16.600MHz



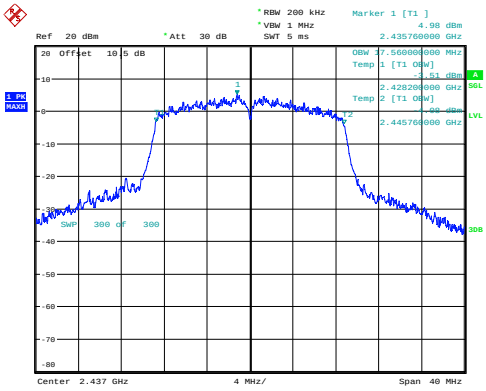
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:17:44

n20_2412MHz_Chain 0 17.520MHz



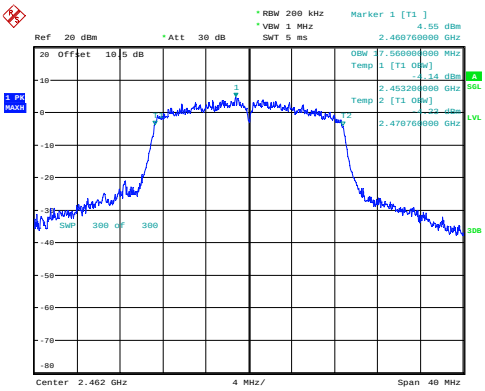
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:21:17

n20_2437MHz_Chain 0 17.560MHz



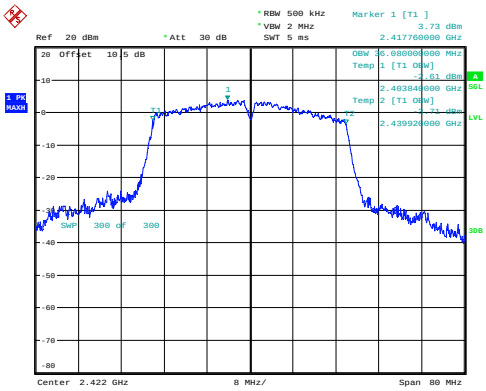
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:23:34

n20_2462MHz_Chain 0 17.560MHz



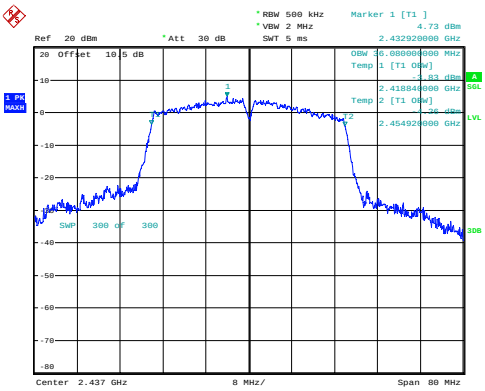
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:27:14

n40_2422MHz_Chain 0 36.080MHz



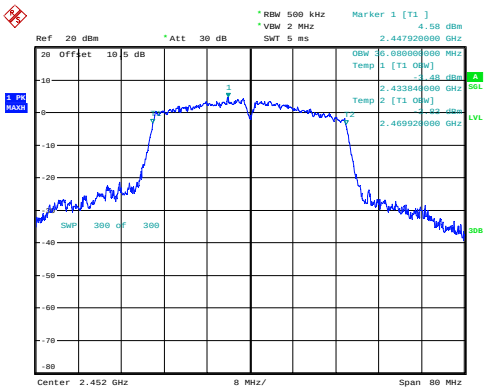
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:30:34

n40_2437MHz_Chain 0 36.080MHz



ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:34:21

n40_2452MHz_Chain 0 36.080MHz



ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:38:07

4.5 Power Spectral Density

Test Information:

Serial No.:	2MM7-1	**Test Date:**	2024/7/16~2024/7/18
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Chin Qin	**Test Result:**	Pass

Environmental Conditions:

Temperature: (°C):	26.7	**Relative Humidity: (%)**	55-57	**ATM Pressure: (kPa)**	100.5-100.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	200256	2024/04/01	2025/03/31
R&S	Spectrum Analyzer	FSU26	100147	2024/04/01	2025/03/31
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-1 8G	21060301	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

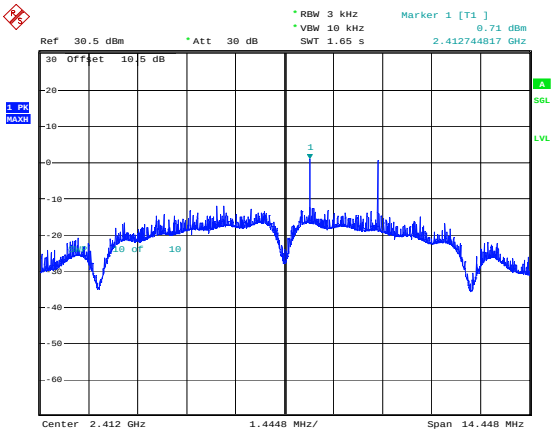
2.4G

Mode	Value (dBm/3kHz)	Limit (dBm/3kHz)	Result
b_2412MHz_Chain 0	0.71	8	Pass
b_2412MHz_Chain 1	2.23	8	Pass
b_2437MHz_Chain 0	1.49	8	Pass
b_2437MHz_Chain 1	-0.95	8	Pass
b_2462MHz_Chain 0	1.77	8	Pass
b_2462MHz_Chain 1	-1.85	8	Pass
g_2412MHz_Chain 0	-13.84	8	Pass
g_2412MHz_Chain 1	-12.46	8	Pass
g_2437MHz_Chain 0	-11.85	8	Pass
g_2437MHz_Chain 1	-14.06	8	Pass
g_2462MHz_Chain 0	-13.11	8	Pass
g_2462MHz_Chain 1	-12.34	8	Pass
n20_2412MHz_Chain 0	-13.22	8	Pass
n20_2412MHz_Chain 1	-12.76	8	Pass
n20_2412MHz_Chain 0+Chain 1	-9.97	8	Pass
n20_2437MHz_Chain 0	-11.33	8	Pass
n20_2437MHz_Chain 1	-12.38	8	Pass
n20_2437MHz_Chain 0+Chain 1	-8.81	8	Pass
n20_2462MHz_Chain 0	-12.73	8	Pass
n20_2462MHz_Chain 1	-12.32	8	Pass
n20_2462MHz_Chain 0+Chain 1	-9.51	8	Pass
n40_2422MHz_Chain 0	-16.59	8	Pass
n40_2422MHz_Chain 1	-16.34	8	Pass
n40_2422MHz_Chain 0+Chain 1	-13.45	8	Pass
n40_2437MHz_Chain 0	-15.59	8	Pass
n40_2437MHz_Chain 1	-16.80	8	Pass
n40_2437MHz_Chain 0+Chain 1	-13.14	8	Pass
n40_2452MHz_Chain 0	-16.05	8	Pass
n40_2452MHz_Chain 1	-16.59	8	Pass
n40_2452MHz_Chain 0+Chain 1	-13.30	8	Pass

Note:
The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power spectral density (PSD) measurements on the devices:
Array Gain = 10 log(NANT/NSS) dB, so directional gain is 2.71+10*log(2/1) = 5.71 dBi.

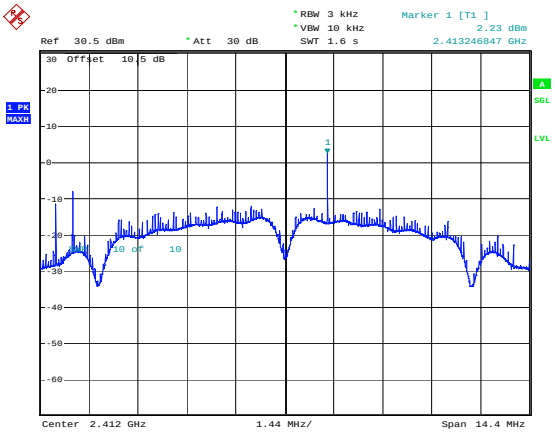
2.4G

b_2412MHz_Chain 0 0.71dBm/3kHz



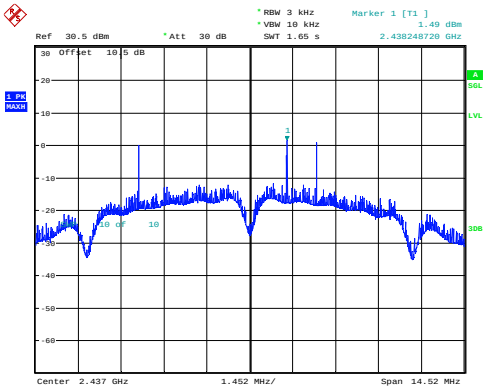
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 22:18:51

b_2412MHz_Chain 1 2.23dBm/3kHz



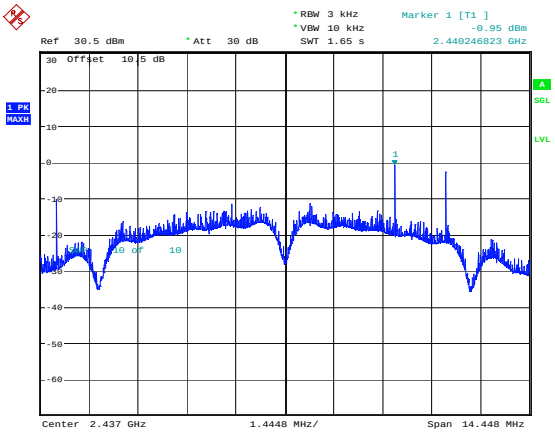
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 22:14:34

b_2437MHz_Chain 0 1.49dBm/3kHz



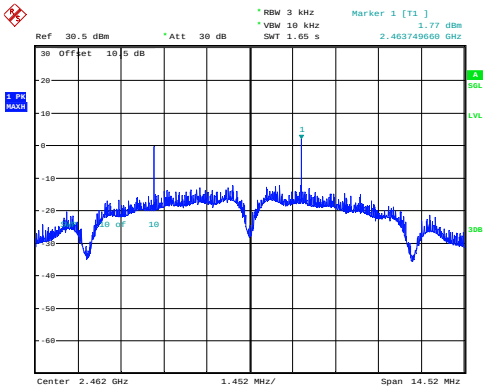
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:03:52

b_2437MHz_Chain 1 -0.95dBm/3kHz



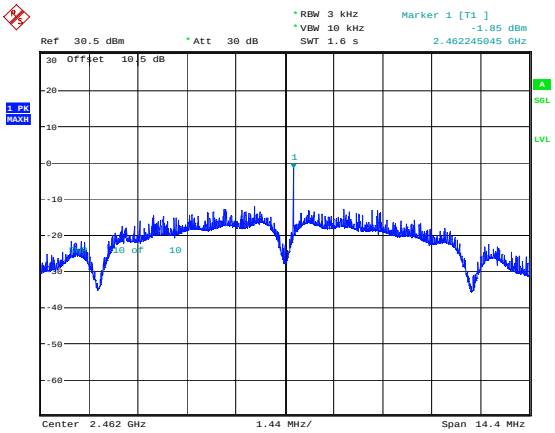
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:38:35

b_2462MHz_Chain 0 1.77dBm/3kHz



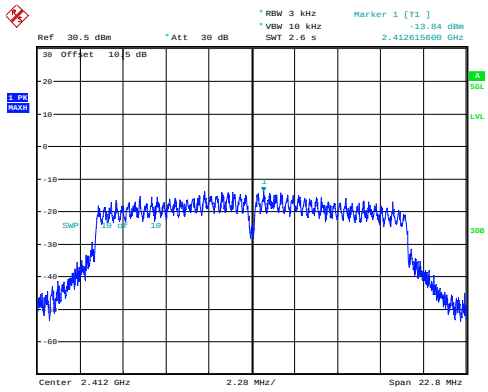
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:08:23

b_2462MHz_Chain 1 -1.85dBm/3kHz



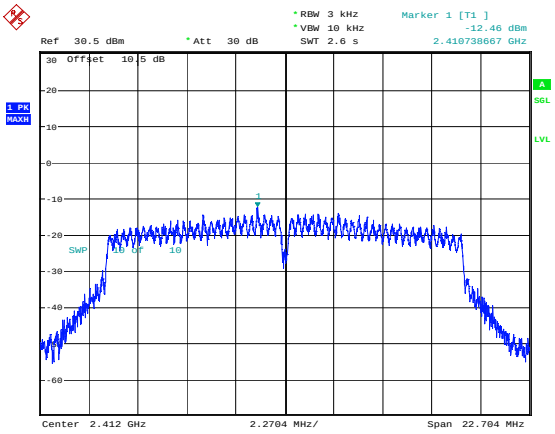
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:40:09

g_2412MHz_Chain 0 -13.84dBm/3kHz



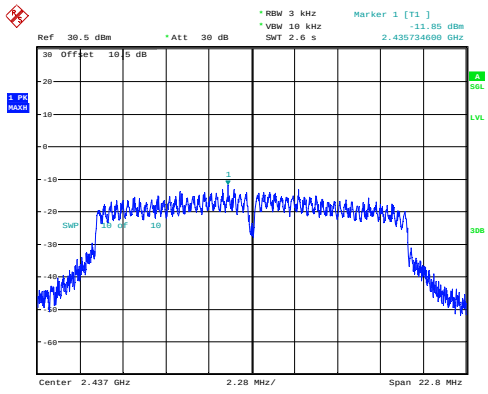
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:12:27

g_2412MHz_Chain 1 -12.46dBm/3kHz



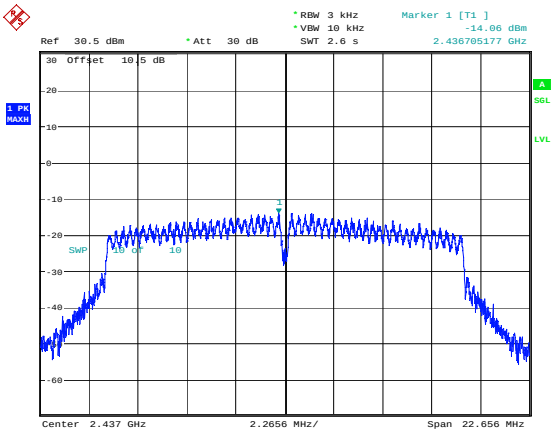
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:41:41

g_2437MHz_Chain 0 -11.85dBm/3kHz



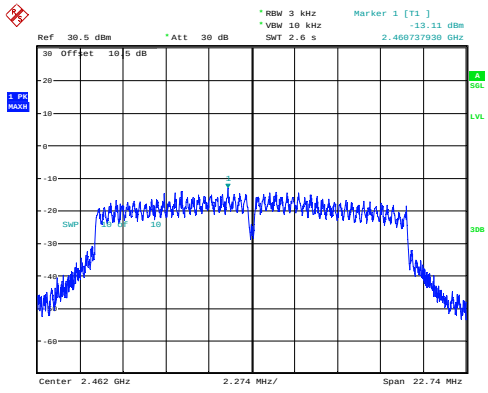
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:14:31

g_2437MHz_Chain 1 -14.06dBm/3kHz



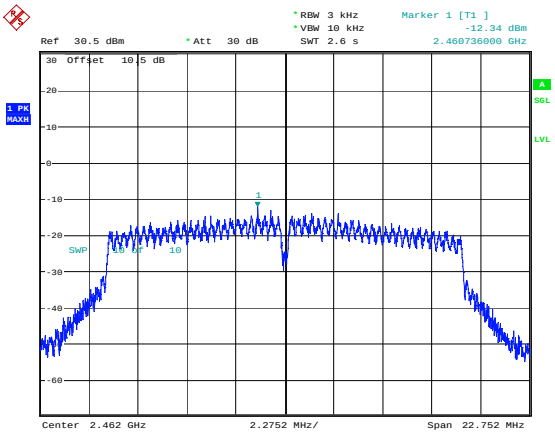
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:43:07

g_2462MHz_Chain 0 -13.11dBm/3kHz



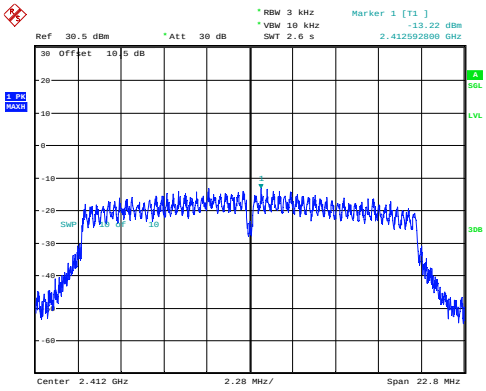
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:18:18

g_2462MHz_Chain 1 -12.34dBm/3kHz



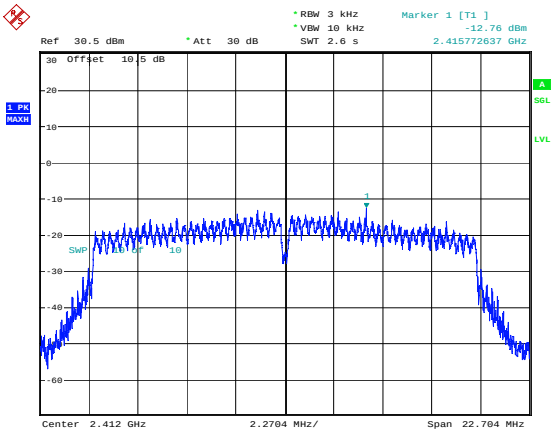
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:44:45

n20_2412MHz_Chain 0 -13.22dBm/3kHz



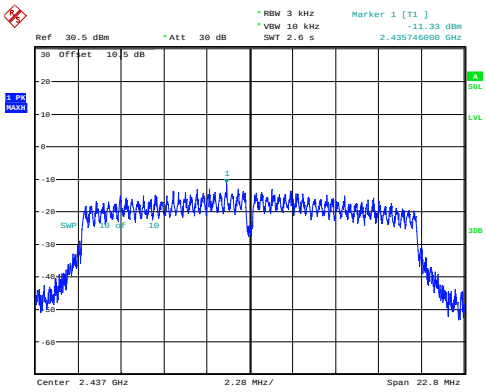
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:21:50

n20_2412MHz_Chain 1 -12.76dBm/3kHz



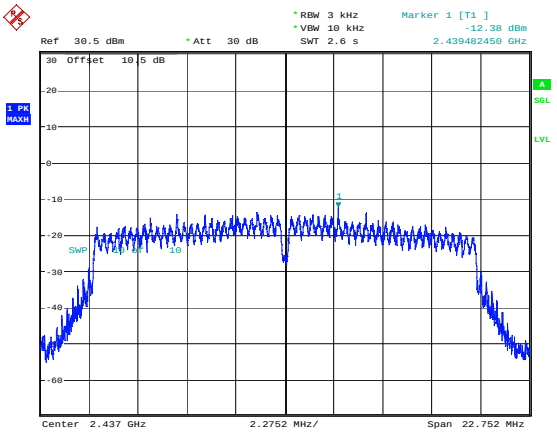
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:46:40

n20_2437MHz_Chain 0 -11.33dBm/3kHz



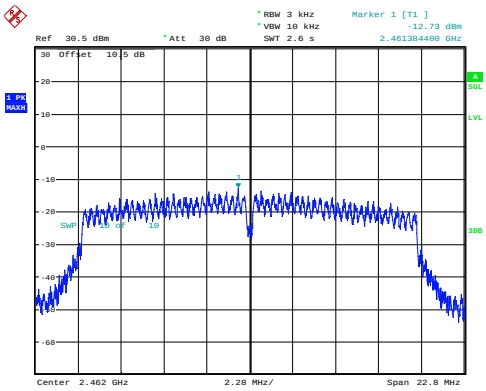
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:24:07

n20_2437MHz_Chain 1 -12.38dBm/3kHz



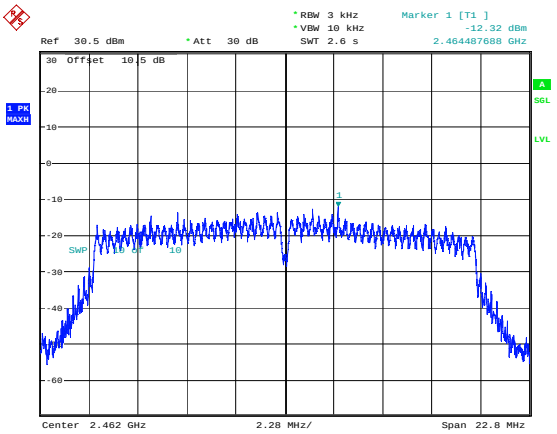
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:48:28

n20_2462MHz_Chain 0 -12.73dBm/3kHz



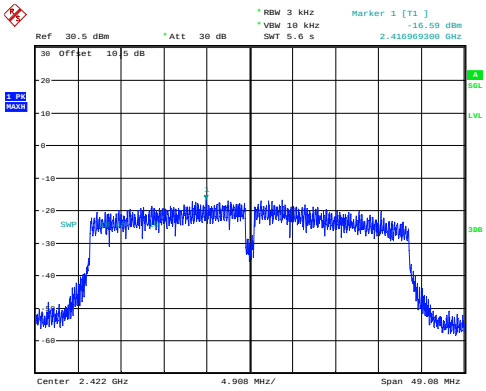
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:27:48

n20_2462MHz_Chain 1 -12.32dBm/3kHz



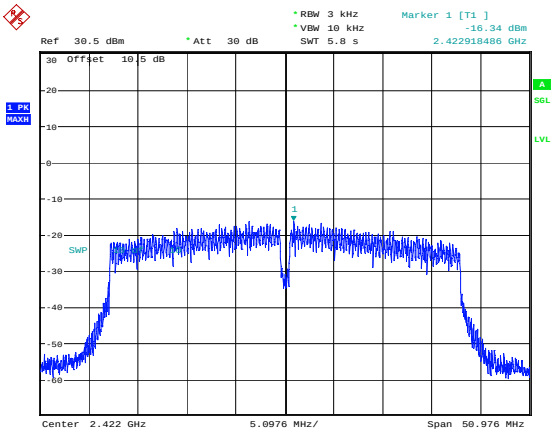
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:50:03

n40_2422MHz_Chain 0 -16.59dBm/3kHz



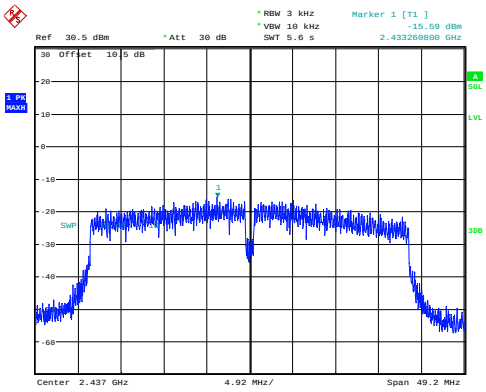
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:31:37

n40_2422MHz_Chain 1 -16.34dBm/3kHz



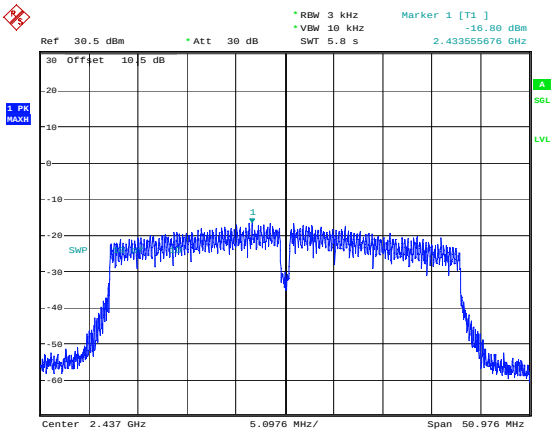
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:52:14

n40_2437MHz_Chain 0 -15.59dBm/3kHz



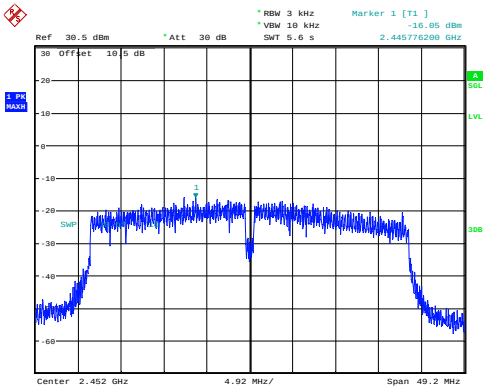
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:35:24

n40_2437MHz_Chain 1 -16.80dBm/3kHz



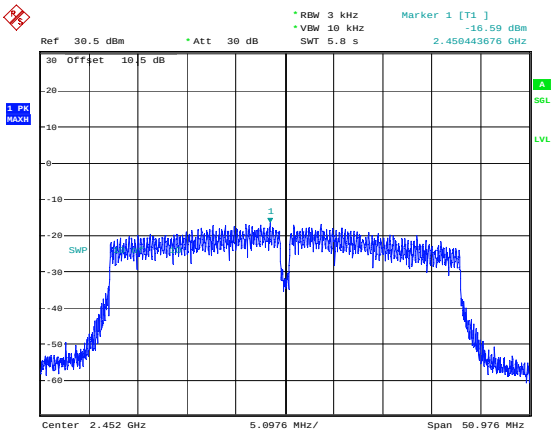
Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:54:02

n40_2452MHz_Chain 0 -16.05dBm/3kHz



ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 23:39:10

n40_2452MHz_Chain 1 -16.59dBm/3kHz



Comment: ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 18.JUL.2024 21:55:46

4.6 100 kHz Bandwidth of Frequency Band Edge

Test Information:

Serial No.:	2MM7-1	**Test Date:**	2024/8/5
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Chin Qin	**Test Result:**	Pass

Environmental Conditions:

Temperature: (°C):	26.5	**Relative Humidity: (%)**	59	**ATM Pressure: (kPa)**	100.5

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	100147	2024/04/01	2025/03/31
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

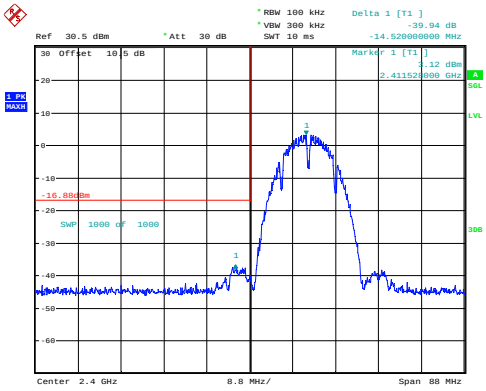
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

2.4G

Mode	Value (dB)	Limit (dB)	Result
b_2412MHz_Chain 0	39.94	20	Pass
b_2412MHz_Chain 1	41.95	20	Pass
b_2462MHz_Chain 0	45.05	20	Pass
b_2462MHz_Chain 1	44.88	20	Pass
g_2412MHz_Chain 0	30.99	20	Pass
g_2412MHz_Chain 1	32.62	20	Pass
g_2462MHz_Chain 0	44.47	20	Pass
g_2462MHz_Chain 1	43.89	20	Pass
n20_2412MHz_Chain 0	27.34	20	Pass
n20_2412MHz_Chain 1	33.27	20	Pass
n20_2462MHz_Chain 0	43.36	20	Pass
n20_2462MHz_Chain 1	44.50	20	Pass
n40_2422MHz_Chain 0	32.13	20	Pass
n40_2422MHz_Chain 1	33.28	20	Pass
n40_2452MHz_Chain 0	36.36	20	Pass
n40_2452MHz_Chain 1	39.58	20	Pass

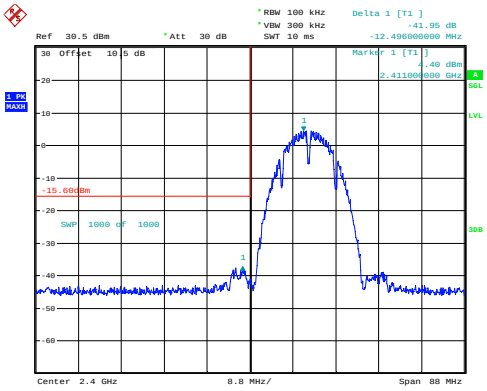
2.4G

b_2412MHz_Chain 0 39.94dB



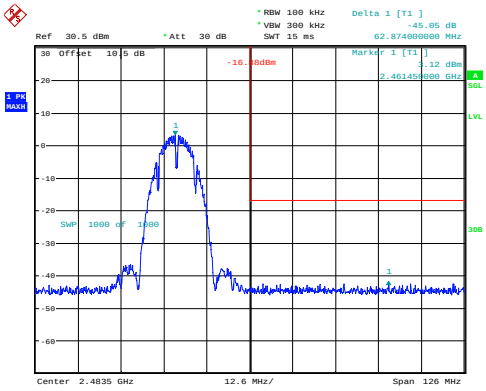
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:29:54

b_2412MHz_Chain 1 41.95dB



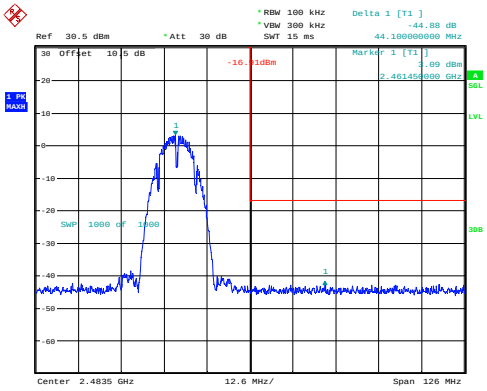
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 17:51:47

b_2462MHz_Chain 0 45.05dB



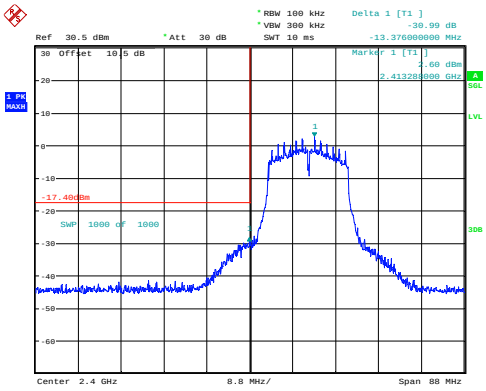
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:31:35

b_2462MHz_Chain 1 44.88dB



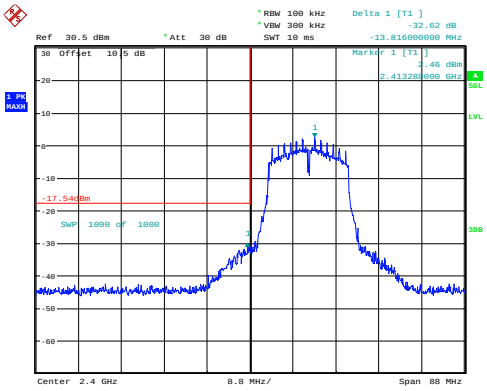
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 17:53:22

g_2412MHz_Chain 0 30.99dB



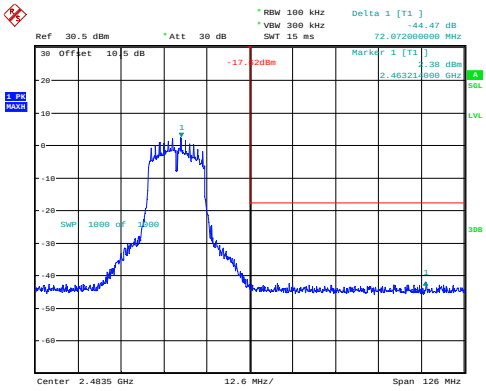
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:33:28

g_2412MHz_Chain 1 32.62dB



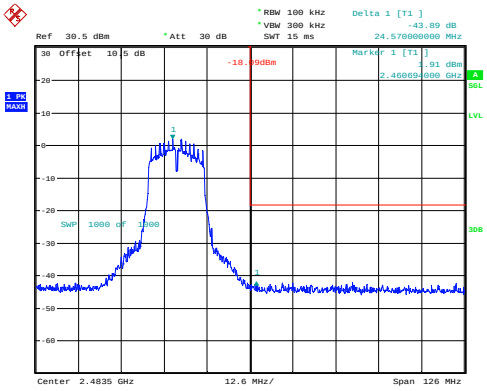
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 17:54:54

g_2462MHz_Chain 0 44.47dB



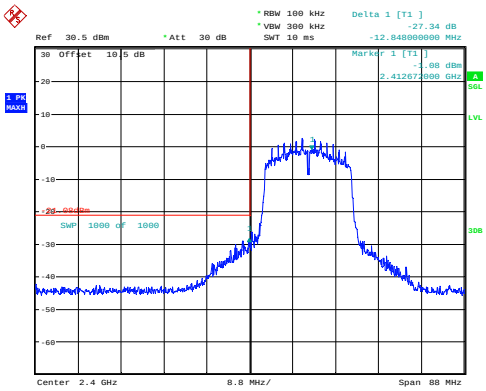
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:36:20

g_2462MHz_Chain 1 43.89dB



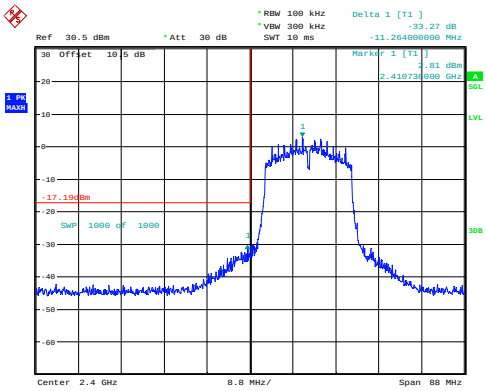
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 17:56:32

n20_2412MHz_Chain 0 27.34dB



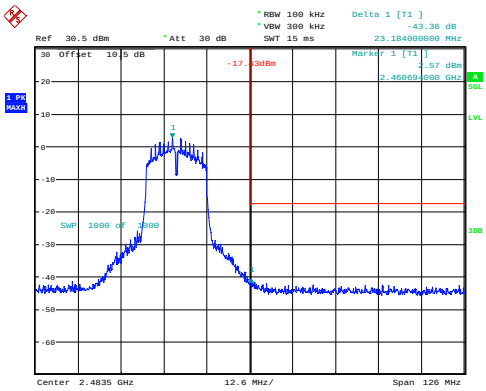
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:39:11

n20_2412MHz_Chain 1 33.27dB



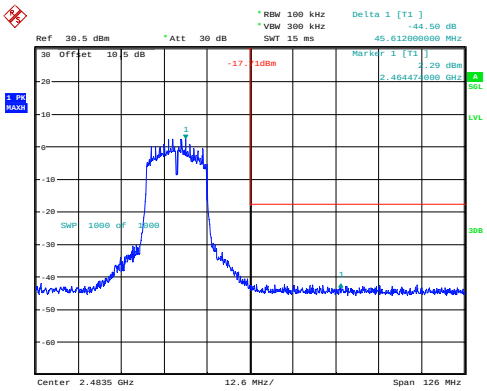
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:26:49

n20_2462MHz_Chain 0 43.36dB



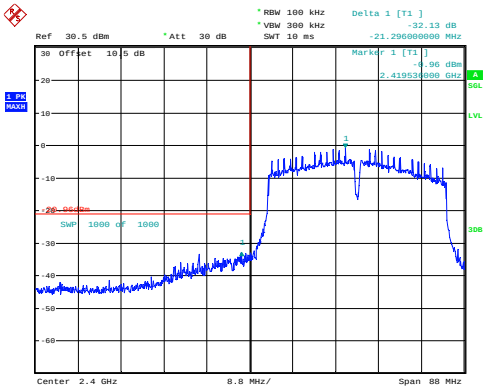
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:40:37

n20_2462MHz_Chain 1 44.50dB



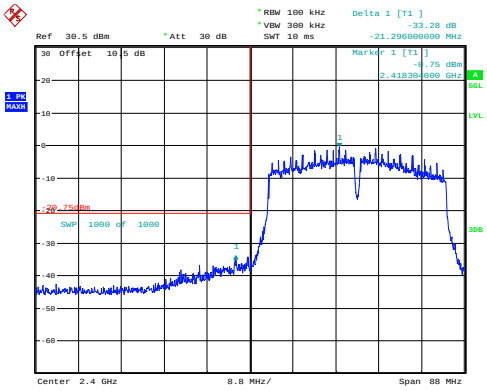
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:00:30

n40_2422MHz_Chain 0 32.13dB



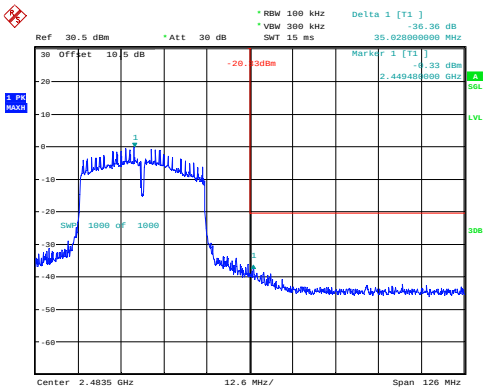
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:46:00

n40_2422MHz_Chain 1 33.28dB



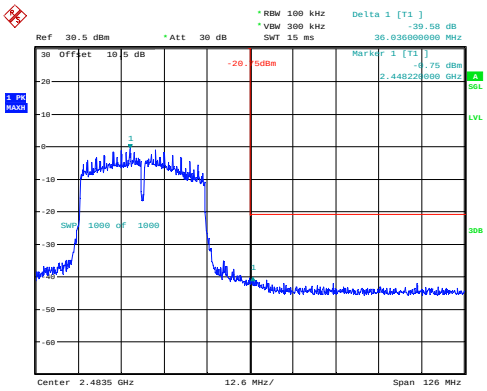
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:21:04

n40_2452MHz_Chain 0 36.36dB



ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:47:40

n40_2452MHz_Chain 1 39.58dB



ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 5.AUG.2024 18:24:21

4.7 Duty Cycle

Test Information:

Serial No.:	2MM7-1	**Test Date:**	2024/7/16
Test Site:	RF	**Test Mode:**	Transmitting
Tester:	Chin Qin	**Test Result:**	N/A

Environmental Conditions:

Temperature: (℃)	26.7	Relative Humidity: (%)	57	ATM Pressure: (kPa)	100.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	Spectrum Analyzer	FSU26	100147	2024/04/01	2025/03/31
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

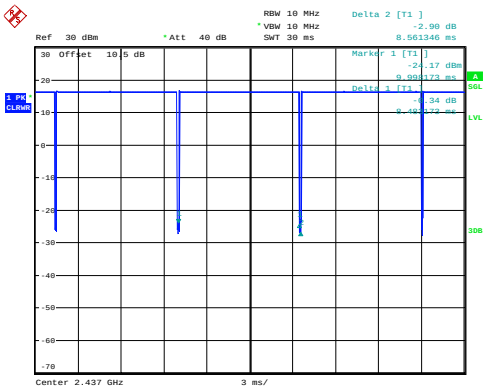
2.4G

Mode	Ton (ms)	Ton+Toff (ms)	Duty Cycle (%)	Duty Cycle Factor (dB)	1/Ton (Hz)	VBW Setting (kHz)
b_2437MHz_Chain 0	8.483	8.561	99.09	/	117.9	0.2
g_2437MHz_Chain 0	1.404	1.428	98.32	/	712.3	1
n20_2437MHz_Chain 0	0.682	0.749	91.01	0.41	1466.9	2
n40_2437MHz_Chain 0	0.090	0.204	44.34	3.53	11063.8	20

Duty Cycle = Ton/(Ton+Toff)*100%

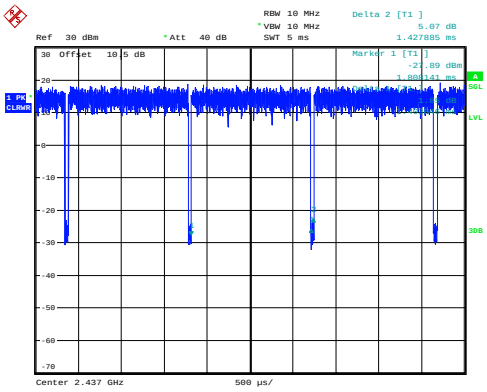
2.4G

b_2437MHz_Chain 0
8.483ms,8.561ms



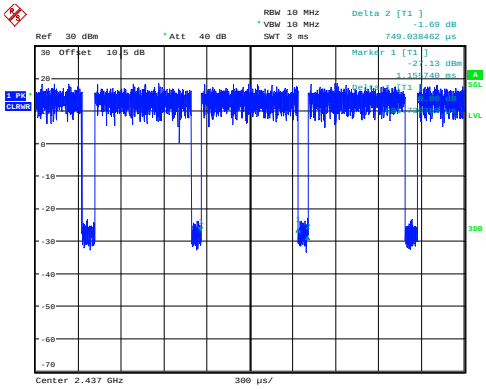
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 22:46:05

g_2437MHz_Chain 0
1.404ms,1.428ms



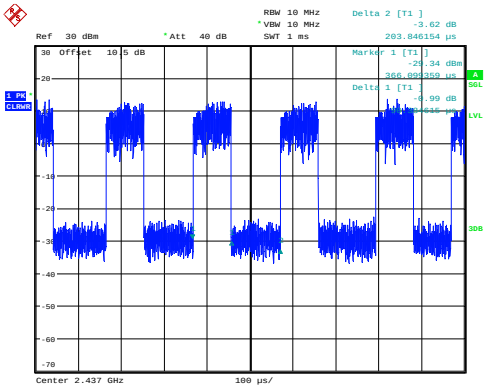
ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 22:48:12

n20_2437MHz_Chain 0
0.682ms,0.749ms



ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 22:49:40

n40_2437MHz_Chain 0
0.090ms,0.204ms



ProjectNo.:2403U79820E-RF Tester:Chin Qin
Date: 16.JUL.2024 22:54:14

4.8 Maximum Conducted Output Power

Serial Number:	2MM7-1	Test Date:	2024/7/16
Test Site:	RF	Test Mode:	Transmitting
Tester:	Chin Qin	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	26.7	Relative Humidity: (%)	57	ATM Pressure: (kPa)	100.6

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Anritsu	Power Meter	ML2495A	1106009	2023/8/4	2024/8/3
Anritsu	Pulse Power Sensor	MA2411A	10780	2023/8/4	2024/8/3
eastsheep	Coaxial Attenuator	2W-SMA-JK-18G	21060301	Each time	N/A
zhuoxiang	Coaxial Cable	SMA-178	211001	Each time	N/A

** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Test Data:

Test Modes	Test Frequency (MHz)	Maximum Conducted Peak Output Power (dBm)			Limit (dBm)
		Chain 0	Chain 1	Total	
802.11b	2412	16.86	17.97	/	30
	2437	17.18	16.71	/	30
	2462	16.74	16.55	/	30
802.11g	2412	20.37	20.42	/	30
	2437	21.22	20..32	/	30
	2462	20.31	20.11	/	30
802.11n ht20	2412	18.66	20.52	22.70	30
	2437	19.11	20.34	22.78	30
	2462	18.88	20.45	22.75	30
802.11n ht40	2422	19.69	19.66	22.69	30
	2437	20.12	19.72	22.93	30
	2452	20.04	19.83	22.95	30
Note: The device employed Cyclic Delay Diversity (CDD) for 802.11 MIMO transmitting, per KDB 662911 D01 Multiple Transmitter Output v02r01, for power measurements on IEEE 802.11 devices: Array Gain = 0 dB (i.e., no array gain) for $N_{ANT} \leqslant 4$					
Antenna Gain:	2.71	dBi	Directional gain:	2.71	dBi

5. EUT PHOTOGRAPHS

Please refer to the attachment 2403U79820E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2403U79820E-RF-INP EUT INTERNAL PHOTOGRAPHS

6. TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2403U79820E-RF-00C-TSP TEST SETUP PHOTOGRAPHS.

===== END OF REPORT ====