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

ACCREDITED
TESTING LABORATORY
CERTIFICATE # 6356.01

TEST REPORT

Applicant: **NOVISOLUTIONS CIA LTDA**

Address: Ponceano N73 y Mariano Paredes QUITO ECUADOR Ecuador

FCC ID: **2BO97ENVNOTEX**

Product Name: **smartphone**

Standard(s): **47 CFR Part 15, Subpart C(15.247)**
ANSI C63.10-2020
KDB 558074 D01 15.247 Meas Guidance v05r02

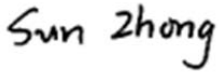
The above device has been tested and found compliant with the requirement of the relative standards by China Certification ICT Co., Ltd (Dongguan)

Report Number: **2503S14680E-RF-00B**

Date Of Issue: **2025-05-16**

Reviewed By: **Calvin Chen**
Title: RF Engineer

Approved By: **Sun Zhong**
Title: Lab Manager



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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.

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Each test item follows the test standard(s) without deviation.

CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
1.0	2503S14680E-RF-00B	Original Report	2025-05-16

1. GENERAL INFORMATION

1.1 Product Description for Equipment under Test (EUT)

1.1.1 General

EUT Name:	smartphone
EUT Model:	ENV NOTE X
Trade Name:	ENV
Operation Frequency:	2402-2480 MHz
Maximum Peak Output Power (Conducted):	8.76dBm
Modulation Type:	GFSK, π/4-DQPSK, 8DPSK
Rated Input Voltage:	3.84Vdc from battery or 5Vdc from adapter
Sample Number:	31B1-1 (for RF Conducted Test) 31B1-2 (for Radiated Spurious Emissions Test& for AC Line Conducted Emissions Test)
EUT Received Date:	2025.4.17
EUT Received Status:	Good

1.1.2 Operation Frequency Detail

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	40	2442
1	2403	41	2443
…	…	…	…
…	…	…	…
…	…	78	2480
39	2441		

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

Test Channel	Frequency (MHz)
Lowest	2402
Middle	2441
Highest	2480

1.1.3 Antenna Information Detail▲

Antenna Type	input impedance (Ohm)	Frequency Range (MHz)	Antenna Gain (dBi)
FPC	50	2400-2500	-0.33

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.

1.1.4 Accessory Information

Accessory Description	Manufacturer	Model
Adapter	Unknown	EE5020-P25
USB Cable	/	/

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:	Engineer mode

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

Test Modes	Packet Type	Power Level Setting		
		Lowest Channel	Middle Channel	Highest Channel
BDR Mode(GFSK)	DH1	4	4	4
	DH3	4	4	4
	DH5	4	4	4
2EDR Mode(π/4-DQPSK)	2DH1	4	4	4
	2DH3	4	4	4
	2DH5	4	4	4
3EDR Mode (8DPSK)	3DH1	4	4	4
	3DH3	4	4	4
	3DH5	4	4	4

1.2.2 Support Equipment List and Details

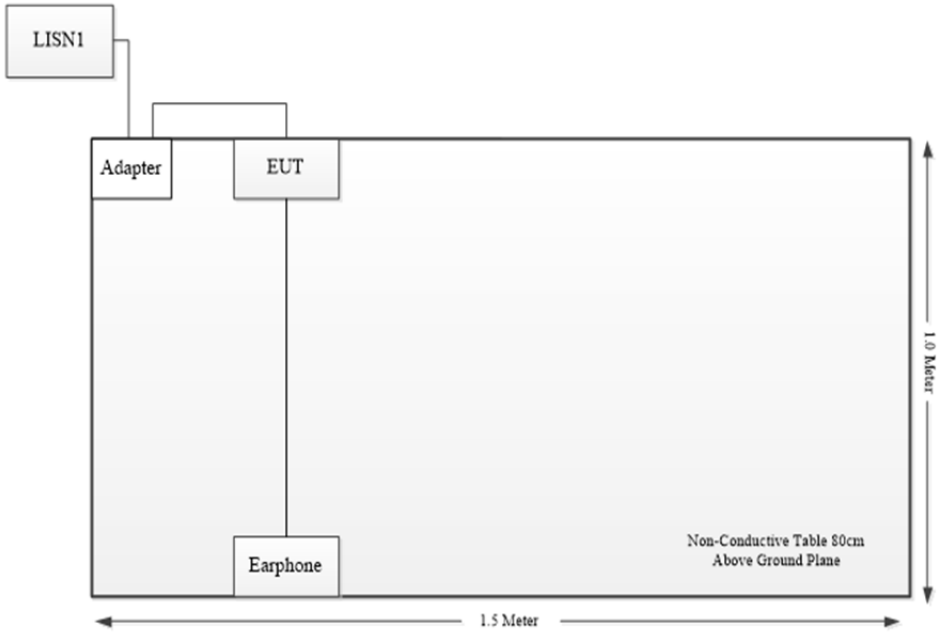
Manufacturer	Description	Model	Serial Number
CLC	Earphone	Whiteview5.0	EP21106054

1.2.3 Support Cable List and Details

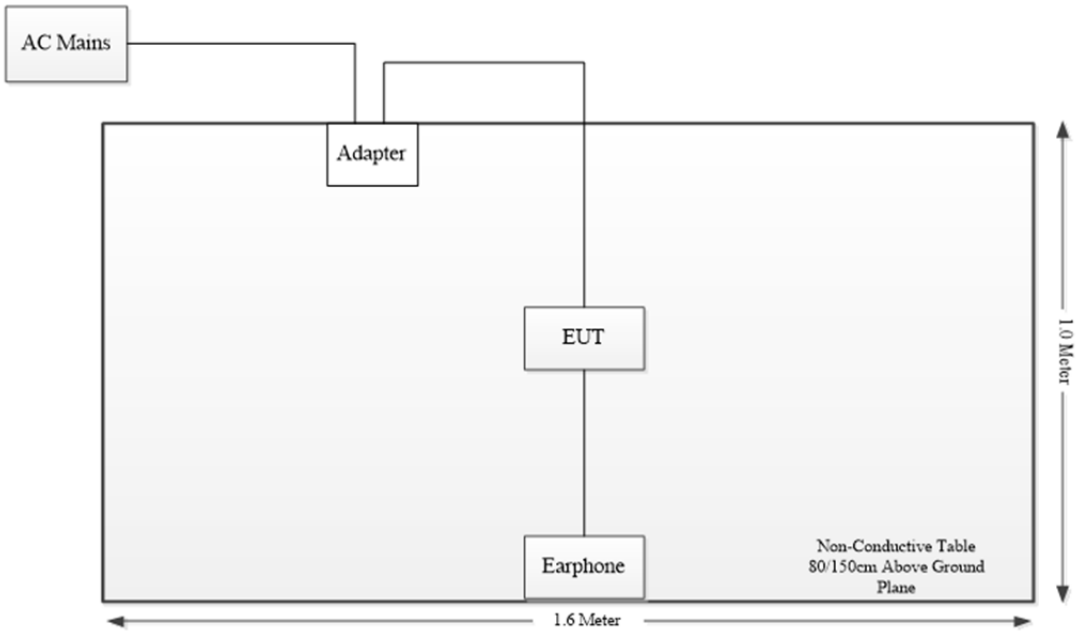
Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
Earphone Cable	No	No	1.2	Earphone	EUT
USB Cable	No	No	1	Adapter	EUT

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	Compliant
FCC §15.207(a)	AC Line Conducted Emissions	Compliant
FCC §15.205, §15.209, §15.247(d)	Radiated Spurious Emission	Compliant
FCC §15.247(a)(1), §C63.10 6.9.3	20 dB Emission Bandwidth & 99% Occupied Bandwidth	Compliant
FCC §15.247(a)(1)	Channel Separation	Compliant
FCC §15.247(a)(1)(iii)	Number of Hopping Frequency	Compliant
FCC §15.247(a)(1)(iii)	Time of Occupancy (dwell time)	Compliant
FCC §15.247(b)(1)	Maximum Conducted Output Power	Compliant
FCC §15.247(d)	100 kHz Bandwidth of Frequency Band Edge	Compliant
FCC §1.1307&§2.1093&§15.247 (i)	RF Exposure	Compliant

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:

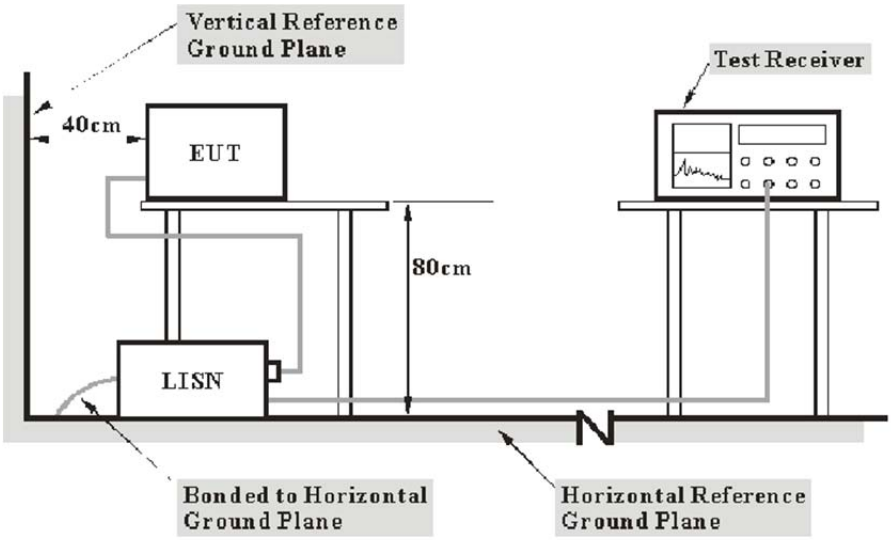
(1) For carrier current system containing their fundamental emission within the frequency band 535-1705 kHz and intended to be received using a standard AM broadcast receiver: no limit on conducted emissions.

(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, obtaining 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 C63.10-2020 measurement procedure. The specification used was with the FCC Part 15.207 limits.

The spacing between the peripherals was 10cm.

3.1.3 EMI Test Receiver Setup

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

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 Radiated Spurious Emissions

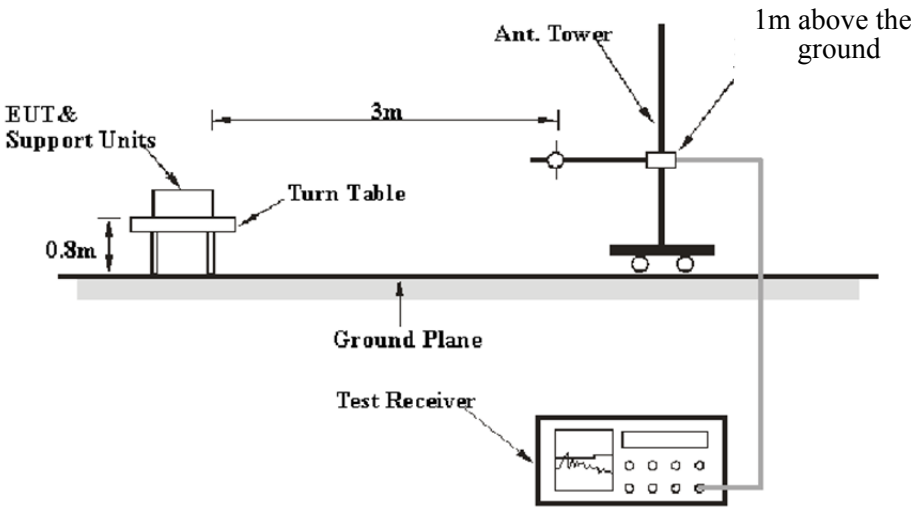
3.2.1 Applicable Standard

FCC §15.247 (d);

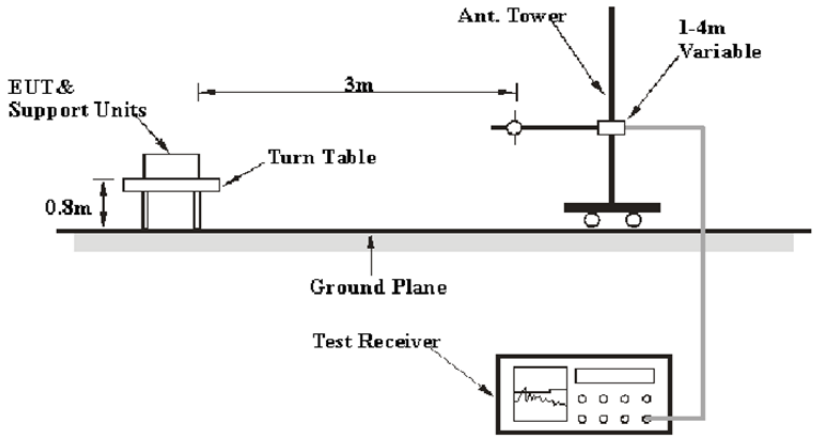
In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the 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

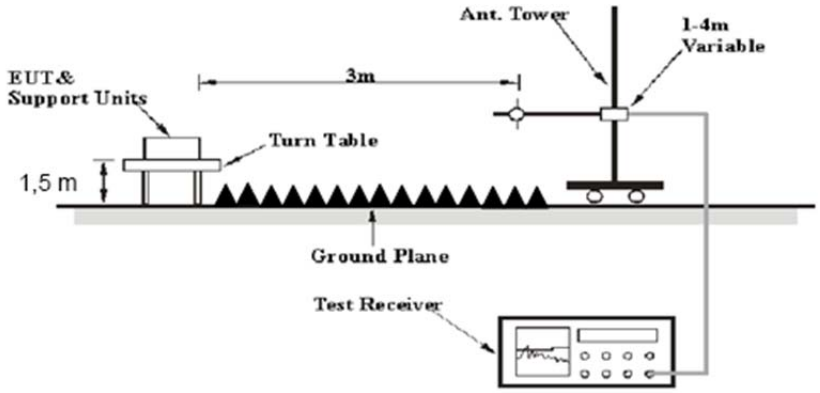
9kHz - 30MHz:



30MHz - 1GHz:



Above 1GHz:



The radiated emissions were performed in the 3 meters distance, using the setup accordance with the ANSI C63.10-2020. 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 40cm long in the middle.

The spacing between the peripherals was 10cm.

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:

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

1GHz – 25GHz:
Pre-scan:

Measurement	RBW	Video B/W	Detector
PK	1MHz	3 MHz	Peak
AV	1MHz	5 kHz	Peak

Final measurement for emission identified during the pre-scan:

Measurement	RBW	Video B/W	Detector
PK	1MHz	3 MHz	Peak
AV	1MHz	10 Hz	Peak

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

The spurious emissions which below the limit more than 20dB was not be recorded.

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

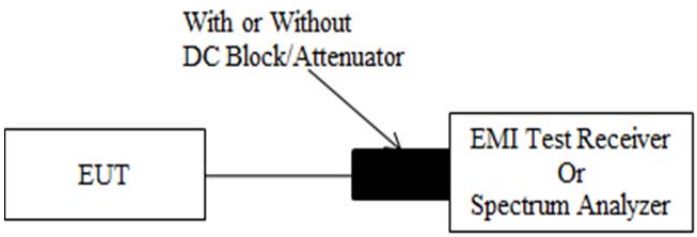
3.3 20 dB Emission Bandwidth

3.3.1 Applicable Standard

FCC §15.247 (a)(1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

3.3.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, the insert loss of this RF cable/attenuator was offset into the setting of test equipment.

3.3.3 Test Procedure

According to ANSI C63.10-2020 Section 6.9.2

a) The spectrum analyzer center frequency is set to the nominal EUT channel center frequency. The span range for the EMI receiver or spectrum analyzer shall be between two times and five 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 video bandwidth (VBW) shall be at least three times 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 4.1.6.2.
d) Steps a) through c) might require iteration to adjust within the specified tolerances.
e) The dynamic range of the instrument at the selected RBW shall be more than 10 dB below the target "−xx dB down" requirement; that is, if the requirement calls for measuring the −20 dB OBW, the instrument noise floor at the selected RBW shall be at least 30 dB below the reference value.
f) Set detection mode to peak and trace mode to max-hold.
g) Determine the reference value: Set the EUT to transmit an unmodulated carrier or modulated signal, as applicable. Allow the trace to stabilize. Set the spectrum analyzer marker to the highest level of the displayed trace (this is the reference value).

h) Determine the "−xx dB down amplitude" using [(reference value) - xx]. Alternatively, this calculation may be made by using the marker-delta function of the instrument.
i) If the reference value is determined by an unmodulated carrier, then turn the EUT modulation ON, and either clear the existing trace or start a new trace on the spectrum analyzer and allow the new trace to stabilize. Otherwise, the trace from step g) shall be used for step j).
j) Place two markers, one at the lowest frequency and the other at the highest frequency of the envelope of the spectral display, such that each marker is at or slightly below the "−xx dB down amplitude" determined in step h). If a marker is below this "−xx dB down amplitude" value, then it shall be as close as possible to this value. The dBc bandwidth is the frequency difference between the two markers. Alternatively, set a marker at the lowest frequency of the envelope of the spectral display, such that the marker is at or slightly below the "−xx dB down amplitude" determined in step h). Reset the marker-delta function and move the marker to the other side of the emission until the delta marker amplitude is at the same level as the reference marker amplitude. The marker-delta frequency reading at this point is the specified emission bandwidth.
k) The dBc bandwidth shall be reported by providing spectral 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).

3.4 99% Occupied Bandwidth

3.4.1 Applicable Standard

3.4.2 EUT Setup

A short RF cable with low cable loss connected to the EUT antenna port, the insert loss of this RF cable/attenuator was offset into the setting of test equipment.

3.4.3 Test Procedure

According to ANSI C63.10-2020 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 at least 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 4.1.6.2.
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 spectral 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).

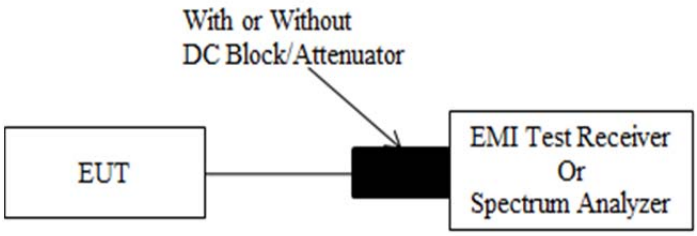
3.5 Channel Separation

3.5.1 Applicable Standard

FCC §15.247 (a)(1)

Frequency hopping systems shall have hopping channel carrier frequencies separated by a minimum of 25 kHz or the 20 dB bandwidth of the hopping channel, whichever is greater. Alternatively, frequency hopping systems operating in the 2400-2483.5 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater, provided the systems operate with an output power no greater than 125 mW. The system shall hop to channel frequencies that are selected at the system hopping rate from a pseudo randomly ordered list of hopping frequencies. Each frequency must be used equally on the average by each transmitter. The system receivers shall have input bandwidths that match the hopping channel bandwidths of their corresponding transmitters and shall shift frequencies in synchronization with the transmitted signals.

3.5.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, the insert loss of this RF cable/attenuator was offset into the setting of test equipment.

3.5.3 Test Procedure

According to ANSI C63.10-2020 Section 7.8.2

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

a) Span: Wide enough to capture the peaks of two adjacent channels.
b) RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
c) Video (or average) bandwidth (VBW) ≥ RBW.
d) Sweep: No faster than coupled (auto) time.
e) Detector function: Peak.
f) Trace: Max-hold.
g) Allow the trace to stabilize.

Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Compliance of an EUT with the appropriate regulatory limit shall be determined. A spectral plot of the data shall be included in the test report.

Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the carrier separation need only be measured for one of those modulation schemes or data rates.

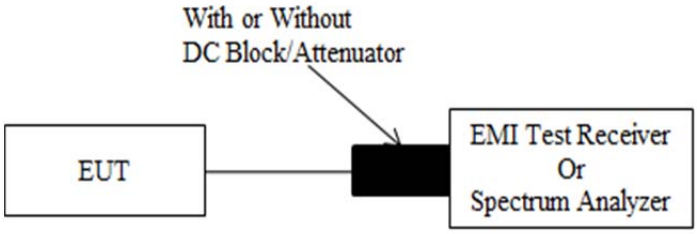
3.6 Number Of Hopping Frequency

3.6.1 Applicable Standard

FCC §15.247 (a)(1)(iii)

Frequency hopping systems in the 2400–2483.5 MHz band shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

3.6.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, the insert loss of this RF cable/attenuator was offset into the setting of test equipment.

3.6.3 Test Procedure

According to ANSI C63.10-2020 Section 7.8.3

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings:

a) Span: The frequency band of operation. Depending on the number of channels the device supports, it could be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.
b) RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
c) VBW ≥ RBW.
d) Sweep: No faster than coupled (auto) time.
e) Detector function: Peak.
f) Trace: Max-hold.
g) Allow the trace to stabilize.

It might prove necessary to break the span up into subranges to show clearly all of the hopping frequencies. Compliance of an EUT with the appropriate regulatory limit shall be determined for the number of hopping channels. A spectral plot of the data shall be included in the test report.

Where the device shares the same channel plan (carrier frequencies and number of channels) across multiple data rates or modulation schemes then the number of channels need only be measured for one of those modulation schemes or data rates.

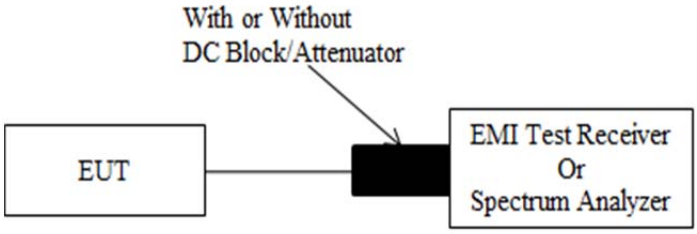
3.7 Time Of Occupancy (Dwell Time)

3.7.1 Applicable Standard

FCC §15.247 (a)(1)(iii)

Frequency hopping systems in the 2400-2483.5 MHz shall use at least 15 channels. The average time of occupancy on any channel shall not be greater than 0.4 seconds within a period of 0.4 seconds multiplied by the number of hopping channels employed. Frequency hopping systems may avoid or suppress transmissions on a particular hopping frequency provided that a minimum of 15 channels are used.

3.7.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, the insert loss of this RF cable/attenuator was offset into the setting of test equipment.

3.7.3 Test Procedure

According to ANSI C63.10-2020 Section 7.8.4

The EUT shall have its hopping function enabled. Use the following spectrum analyzer settings to determine the dwell time per hop:

a) Span: Zero span, centered on a hopping channel.
b) RBW shall be ⩽ channel spacing and where possible RBW should be set >> 1 / T, where T is the expected transmission time per hop.
c) Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = 1/hopping rate) should achieve this.
d) Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel.
e) Detector function: Peak.
f) Trace: Clear-write, single sweep.
g) Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers.

To determine the number of hops on a channel in the regulatory observation period repeat the measurement using a longer sweep time. When the device uses a single hopping sequence the period of measurement should be sufficient to capture at least 2 hops. When the device uses a dynamic hopping sequence, or the sequence varies, the period of measurement may need to capture multiple hops to better determine the average time of occupancy. Count the number of hops on the channel across the sweep time. The average number of hops on the same channel within the regulatory observation period is calculated from the number of hops on the channel divided by the spectrum analyzer sweep time multiplied by the regulatory observation period. For example, if three hops are counted with an analyzer sweep time of 500 ms and the regulatory observation period is 10 s, then the number of hops in that ten seconds is 3 / 0.5 × 10, or 60 hops.

The average time of occupancy is calculated by multiplying the dwell time per hop by the number of hops in the observation period. Where the device shares the same hopping algorithms (dwell time, channel selection) across multiple data rates or modulation schemes then the time of occupancy need only be measured for one of those modulation schemes or data rates. If the dwell time value varies with different modes of operation (data rate, modulation format, number of hopping channels, etc.), then repeat this test for each variation in dwell time.

Spectral plots of the channel occupancy shall be included in the report.

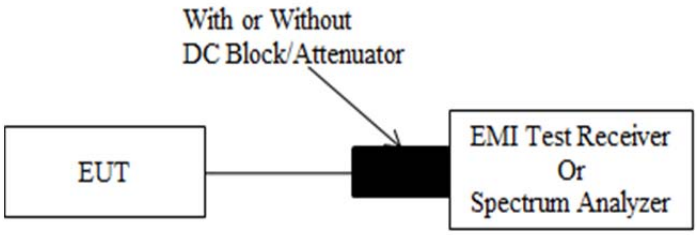
3.8 Maximum Conducted Output Power

3.8.1 Applicable Standard

FCC §15.247 (b)(1)

For frequency hopping systems operating in the 2400–2483.5 MHz band employing at least 75 non-overlapping hopping channels, and all frequency hopping systems in the 5725-5850 MHz band: 1 watt. For all other frequency hopping systems in the 2400–2483.5 MHz band:0.125watts.

3.8.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, the insert loss of this RF cable/attenuator was offset into the setting of test equipment.

3.8.3 Test Procedure

According to ANSI C63.10-2020 Section 7.8.5

This is an RF-conducted test to evaluate maximum peak output power. Use a direct connection between the antenna port of the unlicensed wireless device and the spectrum analyzer, through suitable attenuation. Frequency hopping shall be disabled for this test. Use the following spectrum analyzer settings:

a) Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
b) RBW > 20 dB bandwidth of the emission being measured.
c) VBW ≥ RBW.
d) Sweep: No faster than coupled (auto) time.
e) Detector function: Peak.
f) Trace: Max-hold.
g) Allow trace to stabilize.
h) Use the marker-to-peak function to set the marker to the peak of the emission.
i) The indicated level is the peak output power, after any corrections for external attenuators and cables.
j) A spectral plot of the test results and setup description shall be included in the test report.

NOTE—A peak responding power meter may be used, where the power meter and sensor system video bandwidth is greater than the occupied bandwidth of the unlicensed wireless device, rather than a spectrum analyzer.

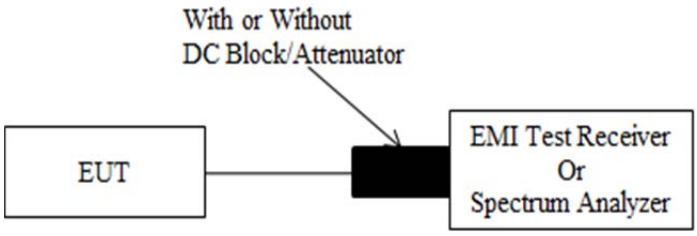
3.9 100 kHz Bandwidth of Frequency Band Edge

3.9.1 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)).

3.9.2 EUT Setup



A short RF cable with low cable loss connected to the EUT antenna port, the insert loss of this RF cable/attenuator was offset into the setting of test equipment.

3.9.3 Test Procedure

According to ANSI C63.10-2020 Section 7.8.7.2

Compliance with a relative limit at the band-edges (e.g., −20 dBc) shall be made on the lowest and on the highest channels with frequency hopping disabled and repeated with frequency hopping enabled. For the latter test the hopping sequence shall include the lowest and highest channels.

For measurements with the hopping disabled the analyzer screen shall clearly show compliance with the requirement within 10 MHz of the allocated band-edge.

For measurements with the hopping enabled the analyzer screen shall clearly show compliance with the requirement within 10 MHz of both of the allocated band-edges. This could require separate spectral plots for each band-edge.

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. Report the three highest emissions relative to the limit.

3.10 Antenna Requirement

3.10.1 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.

3.10.2 Judgment

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

4. TEST DATA AND RESULTS

4.1 AC Line Conducted Emissions

Sample Number:	31B1-2	Test Date:	2025/4/27
Test Site:	CE	Test Mode:	Transmitting (maximum output power mode 8DPSK middle channel)
Tester:	David Huang	Test Result:	Pass

Environmental Conditions:

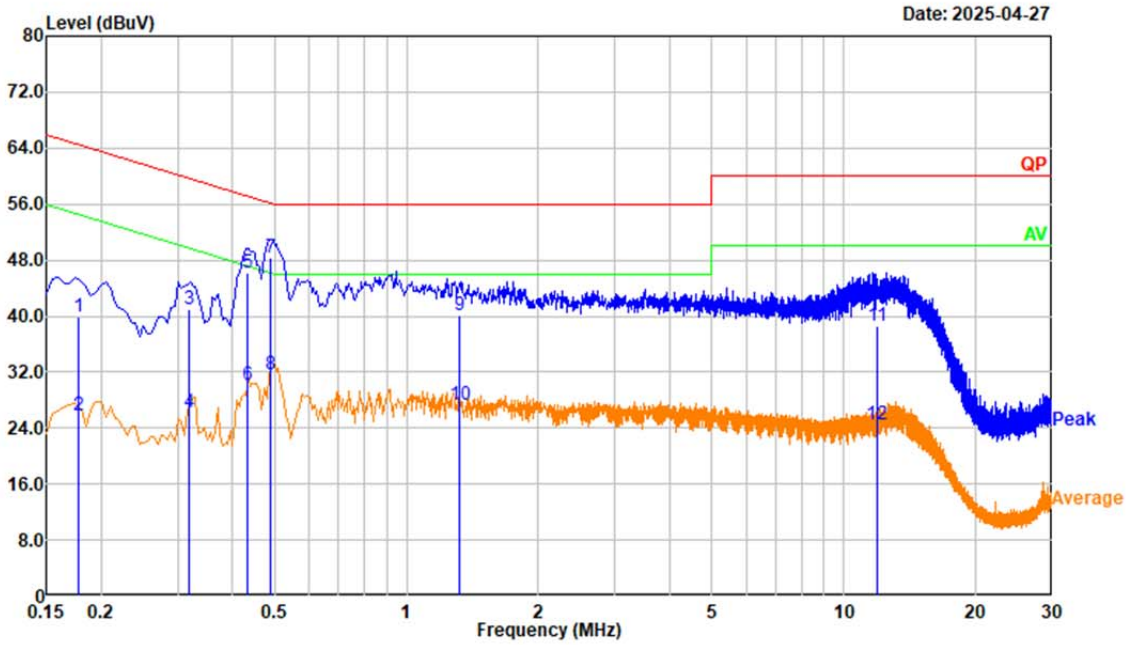
Temperature: (℃)	26.2	Relative Humidity: (%)	48	ATM Pressure: (kPa)	100.5

Test Equipment List and Details:

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
R&S	LISN	ENV216	101132	2025/3/31	2026/3/30
R&S	EMI Test Receiver	ESR3	103104	2024/5/10	2025/5/9
MICRO-COAX	Coaxial Cable	UTIFLEX	C-0200-01	2025/1/6	2026/1/5
Audix	Test Software	E3	191218 (V9)	N/A	N/A

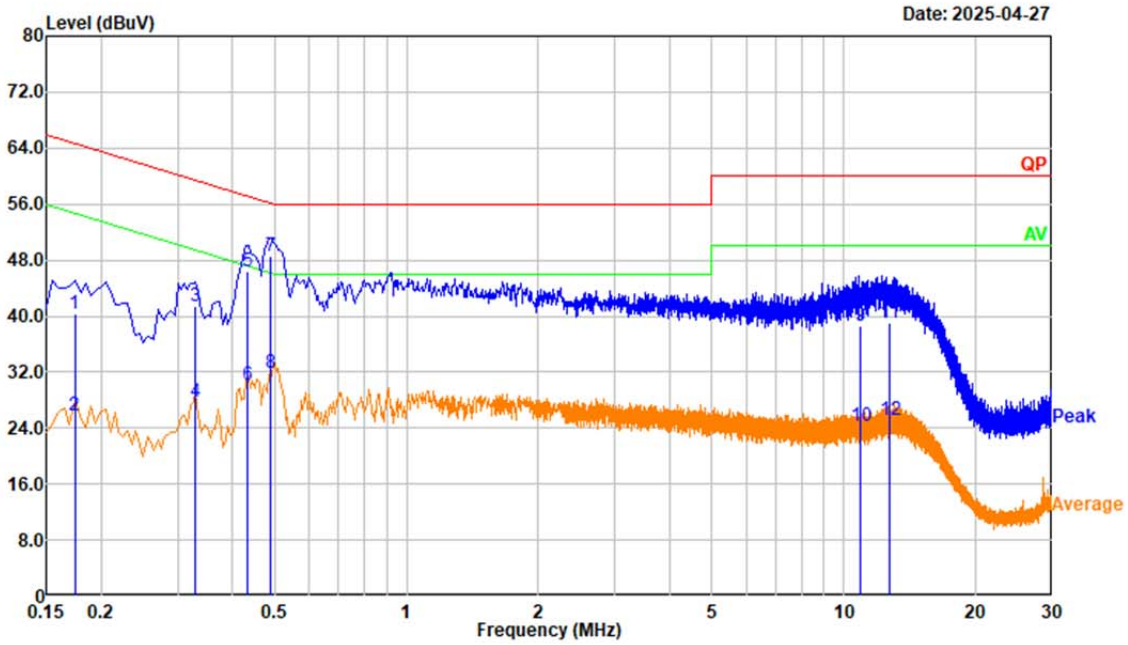
** Statement of Traceability: China Certification ICT Co., Ltd (Dongguan) attests that all calibrations have been performed, traceable to National Primary Standards and International System of Units (SI).*

Project No.: 2503S14680E-RF
Tester: David Huang
Condition: IFBW:9 kHz Meas Time:0.025sec
Port: Line
Note: Transmitting BT



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.178	29.43	10.45	39.88	64.60	24.72	QP
2	0.178	15.26	10.45	25.71	54.60	28.89	Average
3	0.319	30.63	10.41	41.04	59.72	18.68	QP
4	0.319	15.84	10.41	26.25	49.72	23.47	Average
5	0.433	35.81	10.41	46.22	57.20	10.98	QP
6	0.433	19.68	10.41	30.09	47.20	17.11	Average
7	0.488	37.91	10.41	48.32	56.20	7.88	QP
8	0.488	21.14	10.41	31.55	46.20	14.65	Average
9	1.326	29.79	10.42	40.21	56.00	15.79	QP
10	1.326	16.79	10.42	27.21	46.00	18.79	Average
11	11.882	28.43	10.11	38.54	60.00	21.46	QP
12	11.882	14.48	10.11	24.59	50.00	25.41	Average

Project No.: 2503S14680E-RF
Tester: David Huang
Condition: IFBW:9 kHz Meas Time:0.025sec
Port: neutral
Note: Transmitting BT



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB)	Result (dBµV)	Limit (dBµV)	Margin (dB)	Detector
1	0.174	30.05	10.31	40.36	64.76	24.40	QP
2	0.174	15.53	10.31	25.84	54.76	28.92	Average
3	0.328	31.05	10.41	41.46	59.50	18.04	QP
4	0.328	17.23	10.41	27.64	49.50	21.86	Average
5	0.434	35.90	10.41	46.31	57.18	10.87	QP
6	0.434	19.73	10.41	30.14	47.18	17.04	Average
7	0.490	38.22	10.41	48.63	56.16	7.53	QP
8	0.490	21.43	10.41	31.84	46.16	14.32	Average
9	10.881	28.22	10.27	38.49	60.00	21.51	QP
10	10.881	14.03	10.27	24.30	50.00	25.70	Average
11	12.705	28.94	10.01	38.95	60.00	21.05	QP
12	12.705	15.06	10.01	25.07	50.00	24.93	Average

4.2 Radiated Spurious Emissions

4.2.1 9 kHz – 1 GHz:

Sample Number:	31B1-2	Test Date:	2025/4/19
Test Site:	966-2	Test Mode:	Transmitting (maximum output power mode 8DPSK middle channel)
Tester:	Roinin Fu	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	25.2	Relative Humidity: (%)	53	ATM Pressure: (kPa)	100.9

Test Equipment List and Details:

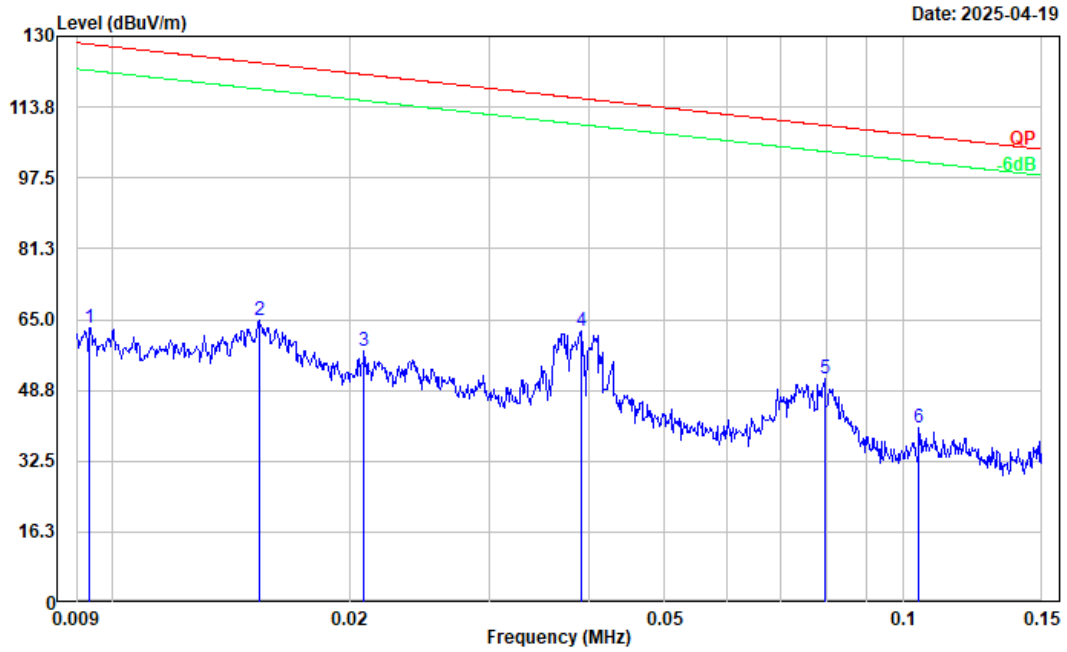
Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Sunol Sciences	Antenna	JB6	A082520-5	2023/12/1	2026/11/30
BACL	Loop Antenna	1313-1A	3110611	2023/12/4	2026/12/3
Daruikang	Coaxial Cable	BNC-JJ-RG58	C-0300-01	2025/1/10	2026/1/9
Daruikang	Coaxial Cable	BNC-JJ-RG58	C-0500-01	2025/1/10	2026/1/9
R&S	EMI Test Receiver	ESR3	102724	2025/2/14	2026/2/13
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0100-03	2024/12/3	2025/12/2
TIMES MICROWAVE	Coaxial Cable	LMR-600-UltraFlex	C-0370-01	2024/12/3	2025/12/2
XQY	Coaxial Cable	XQY-CMR400UF-NJ-NJ-7M	24056379	2024/6/11	2025/6/10
Sonoma	Amplifier	310N	186165	2024/12/3	2025/12/2
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:

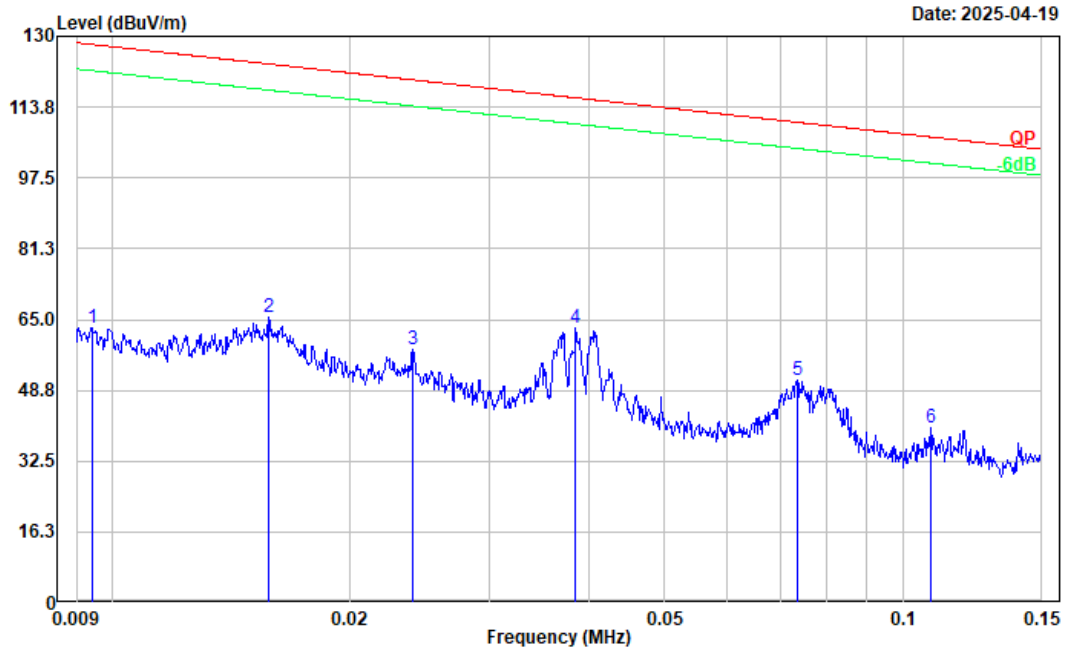
After pre-scan in the X, Y and Z axes of orientation, the worst case is refer to plots.

Project No.: 2503S14680E-RF
Tester: Roinin Fu
Condition: RBW:0.3 kHz VBW:1 kHz SWT:0.1 sec
Polarization: Parallel
Note: Transmitting



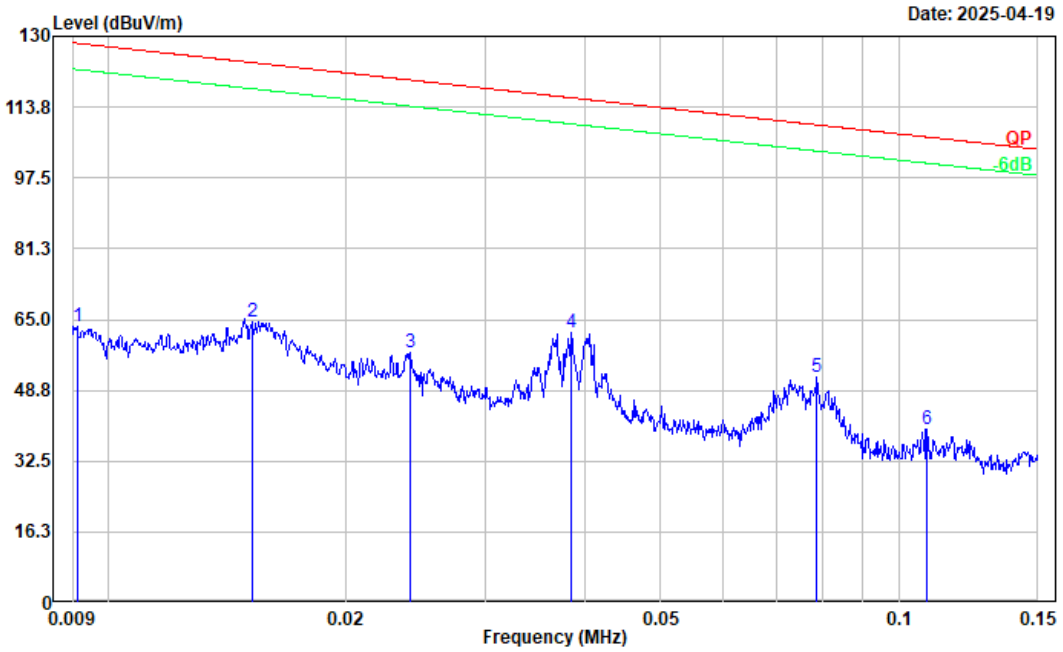
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	0.009	27.74	35.26	63.00	128.18	65.18	Peak
2	0.015	32.82	31.83	64.65	123.90	59.25	Peak
3	0.021	28.70	29.14	57.84	121.24	63.40	Peak
4	0.039	39.56	22.71	62.27	115.74	53.47	Peak
5	0.080	35.00	16.40	51.40	109.58	58.18	Peak
6	0.105	25.70	14.42	40.12	107.19	67.07	Peak

Project No.: 2503S14680E-RF
Tester: Roinin Fu
Condition: RBW:0.3 kHz VBW:1 kHz SWT:0.1 sec
Polarization: Perpendicular
Note: Transmitting



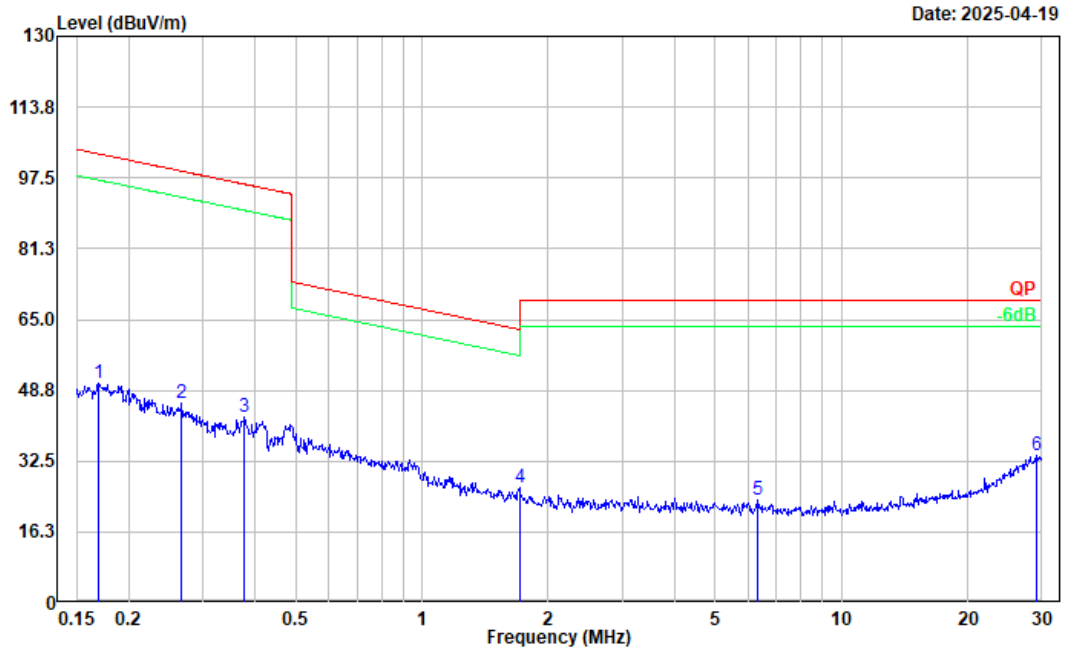
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	0.009	28.02	35.20	63.22	128.13	64.91	Peak
2	0.016	33.83	31.62	65.45	123.66	58.21	Peak
3	0.024	30.65	27.57	58.22	119.99	61.77	Peak
4	0.039	40.09	22.85	62.94	115.89	52.95	Peak
5	0.074	33.70	17.22	50.92	110.27	59.35	Peak
6	0.109	26.08	14.25	40.33	106.89	66.56	Peak

Project No.: 2503S14680E-RF
Tester: Roinin Fu
Condition: RBW:0.3 kHz VBW:1 kHz SWT:0.1 sec
Polarization: Ground-parallel
Note: Transmitting



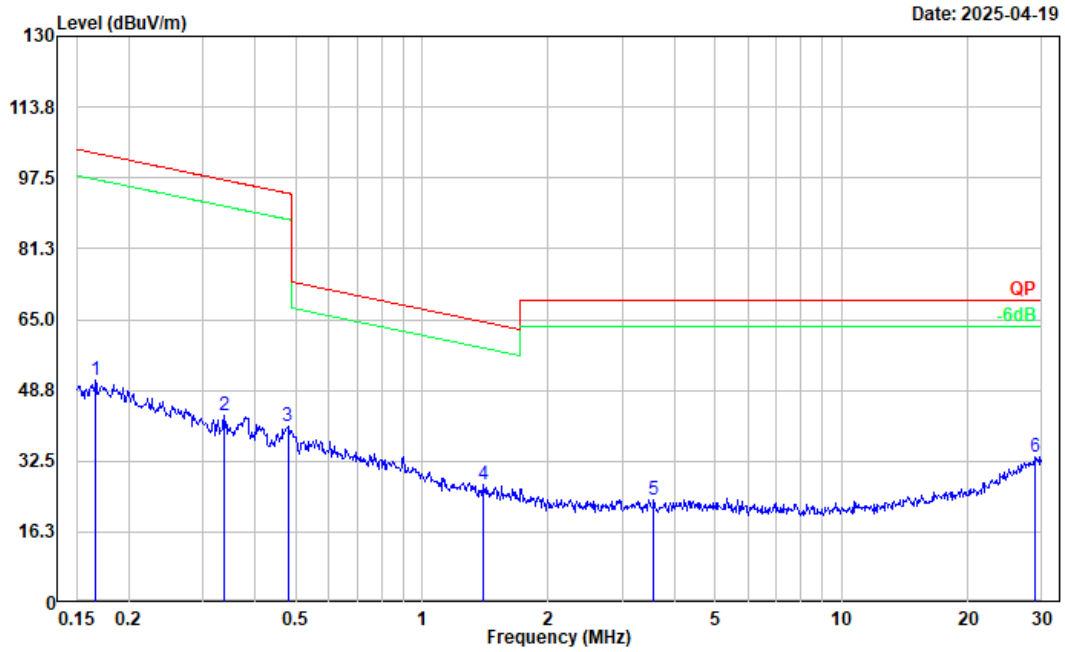
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	0.009	27.90	35.56	63.46	128.40	64.94	Peak
2	0.015	32.66	31.88	64.54	123.95	59.41	Peak
3	0.024	29.86	27.54	57.40	119.97	62.57	Peak
4	0.038	39.14	22.87	62.01	115.91	53.90	Peak
5	0.079	35.21	16.52	51.73	109.68	57.95	Peak
6	0.109	25.55	14.25	39.80	106.89	67.09	Peak

Project No.: 2503S14680E-RF
Tester: Roinin Fu
Condition: RBW:10 kHz VBW:30 kHz SWT:0.1 sec
Polarization: Parallel
Note: Transmitting



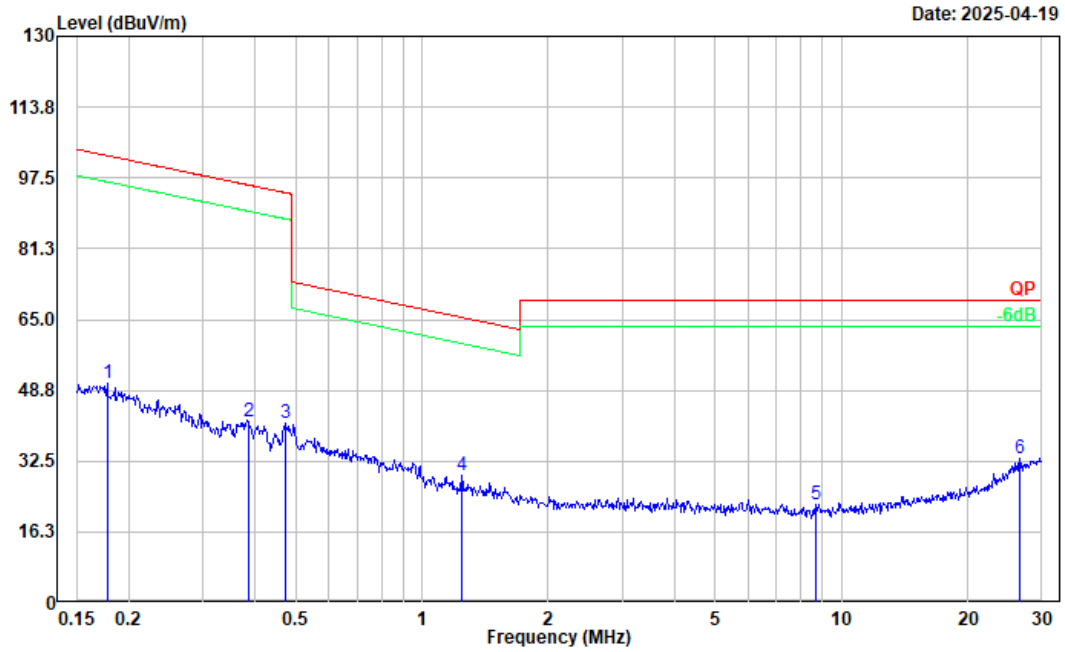
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	0.169	39.13	11.42	50.55	103.02	52.47	Peak
2	0.267	38.82	6.88	45.70	99.07	53.37	Peak
3	0.377	38.88	3.67	42.55	96.07	53.52	Peak
4	1.707	33.00	-6.71	26.29	69.54	43.25	Peak
5	6.285	32.53	-8.86	23.67	69.54	45.87	Peak
6	29.061	41.09	-7.22	33.87	69.54	35.67	Peak

Project No.: 2503S14680E-RF
Tester: Roinin Fu
Condition: RBW:10 kHz VBW:30 kHz SWT:0.1 sec
Polarization: Perpendicular
Note: Transmitting



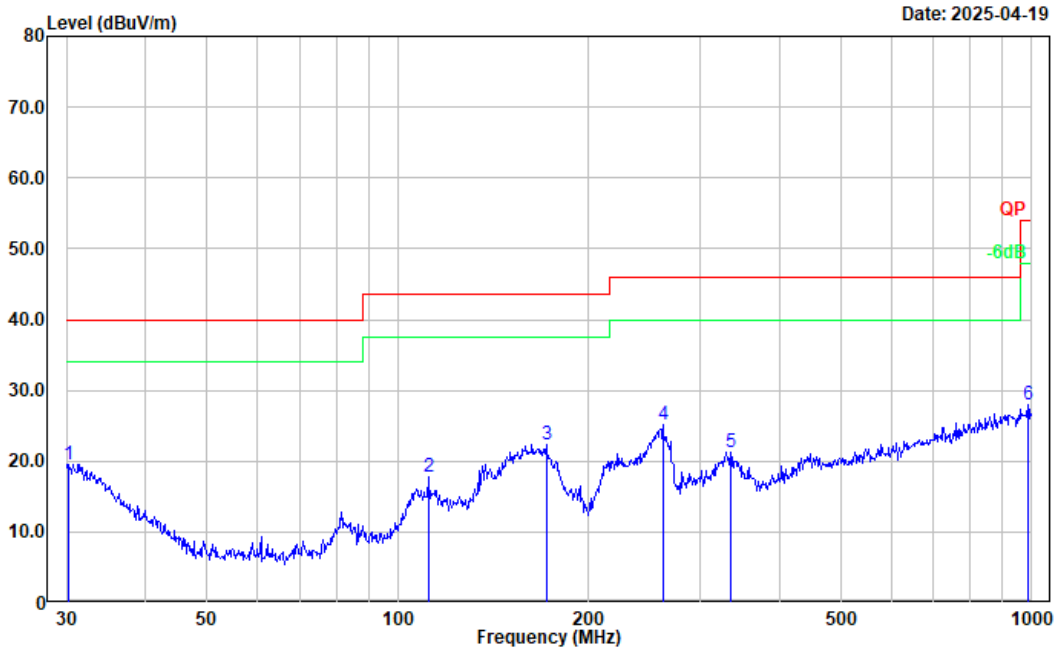
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	0.167	39.39	11.55	50.94	103.16	52.22	Peak
2	0.337	38.42	4.55	42.97	97.04	54.07	Peak
3	0.479	38.93	1.44	40.37	94.00	53.63	Peak
4	1.403	32.63	-5.63	27.00	64.47	37.47	Peak
5	3.565	32.31	-8.62	23.69	69.54	45.85	Peak
6	28.908	40.71	-7.24	33.47	69.54	36.07	Peak

Project No.: 2503S14680E-RF
Tester: Roinin Fu
Condition: RBW:10 kHz VBW:30 kHz SWT:0.1 sec
Polarization: Ground-parallel
Note: Transmitting



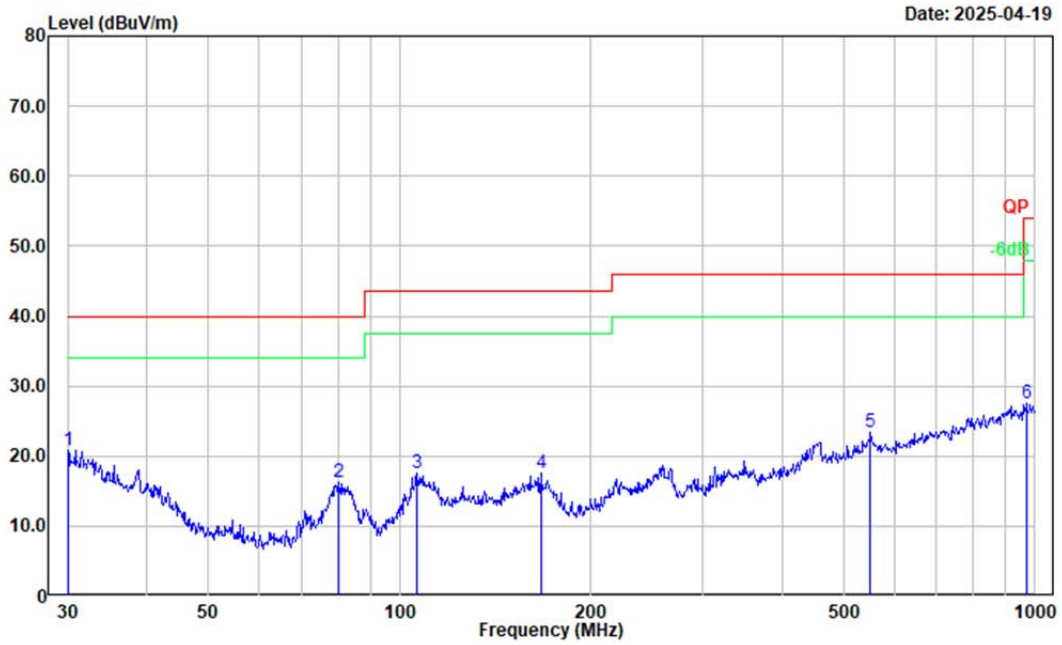
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	0.178	39.32	11.04	50.36	102.61	52.25	Peak
2	0.385	38.21	3.50	41.71	95.89	54.18	Peak
3	0.471	39.54	1.61	41.15	94.14	52.99	Peak
4	1.242	34.33	-5.06	29.27	65.55	36.28	Peak
5	8.683	31.19	-8.51	22.68	69.54	46.86	Peak
6	26.558	40.65	-7.48	33.17	69.54	36.37	Peak

Project No.: 2503S14680E-RF
Tester: Roinin Fu
Condition: RBW:100 kHz VBW:300 kHz SWT:0.1 sec
Polarization: horizontal
Note: Transmitting



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	30.317	23.61	-4.00	19.61	40.00	20.39	Peak
2	111.738	29.79	-12.02	17.77	43.50	25.73	Peak
3	171.393	35.18	-12.78	22.40	43.50	21.10	Peak
4	261.975	36.62	-11.57	25.05	46.00	20.95	Peak
5	334.859	30.98	-9.82	21.16	46.00	24.84	Peak
6	986.072	26.57	1.29	27.86	54.00	26.14	Peak

Project No.: 2503S14680E-RF
Tester: Roinin Fu
Condition: RBW:100 kHz VBW:300 kHz SWT:0.1 sec
Polarization: vertical
Note: Transmitting



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	30.105	24.62	-3.86	20.76	40.00	19.24	Peak
2	80.081	33.62	-17.29	16.33	40.00	23.67	Peak
3	106.385	30.39	-12.88	17.51	43.50	25.99	Peak
4	166.651	29.83	-12.33	17.50	43.50	26.00	Peak
5	550.948	29.02	-5.53	23.49	46.00	22.51	Peak
6	968.934	26.56	1.06	27.62	54.00	26.38	Peak

4.2.2 1 GHz – 25 GHz:

Sample Number	31B1-2	Test Date:	2025/4/18
Test Site:	966-1	Test Mode:	Transmitting
Tester:	Mack Huang	Test Result:	Pass

Environmental Conditions:					
Temperature: (℃)	24.4	Relative Humidity: (%)	61	ATM Pressure: (kPa)	100.4

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	2025/3/31	2026/3/30
MICRO-COAX	Coaxial Cable	UFA210A-1-1200-70U300	217423-008	2025/1/10	2026/1/9
MICRO-COAX	Coaxial Cable	UFA210A-1-2362-300300	235780-001	2025/1/10	2026/1/9
A.H	Preamplifier	PAM-0118P	628	2025/2/21	2026/2/20
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	2025/1/6	2026/1/5
MICRO-COAX	Coaxial Cable	UFB142A-1-2362-200200	235772-001	2025/1/6	2026/1/5
JD	Multiplex Switch Test Control Set	DT7220SCU	DQ77925	2024/8/5	2025/8/4
JD	Filter Switch Unit	DT7220FSU	DQ77928	2024/8/5	2025/8/4

** 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:

BDR Mode(GFSK):

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Remark					
Low Channel: 2402 MHz							
4804.000	46.32	PK	H	-5.31	41.01	74.00	32.99
4804.000	33.87	AV	H	-5.31	28.56	54.00	25.44
4804.000	45.18	PK	V	-5.31	39.87	74.00	34.13
4804.000	32.95	AV	V	-5.31	27.64	54.00	26.36
7206.000	47.01	PK	H	-2.05	44.96	74.00	29.04
7206.000	34.20	AV	H	-2.05	32.15	54.00	21.85
7206.000	46.56	PK	V	-2.05	44.51	74.00	29.49
7206.000	33.44	AV	V	-2.05	31.39	54.00	22.61
Middle Channel: 2441 MHz							
4882.000	47.11	PK	H	-5.29	41.82	74.00	32.18
4882.000	34.25	AV	H	-5.29	28.96	54.00	25.04
4882.000	46.35	PK	V	-5.29	41.06	74.00	32.94
4882.000	33.62	AV	V	-5.29	28.33	54.00	25.67
7323.000	46.08	PK	H	-1.17	44.91	74.00	29.09
7323.000	33.12	AV	H	-1.17	31.95	54.00	22.05
7323.000	46.50	PK	V	-1.17	45.33	74.00	28.67
7323.000	33.49	AV	V	-1.17	32.32	54.00	21.68
High Channel: 2480 MHz							
4960.000	46.33	PK	H	-5.33	41.00	74.00	33.00
4960.000	33.28	AV	H	-5.33	27.95	54.00	26.05
4960.000	45.79	PK	V	-5.33	40.46	74.00	33.54
4960.000	32.57	AV	V	-5.33	27.24	54.00	26.76
7440.000	46.68	PK	H	-1.21	45.47	74.00	28.53
7440.000	33.02	AV	H	-1.21	31.81	54.00	22.19
7440.000	46.89	PK	V	-1.21	45.68	74.00	28.32
7440.000	33.41	AV	V	-1.21	32.20	54.00	21.80

EDR Mode (π/4-DQPSK):

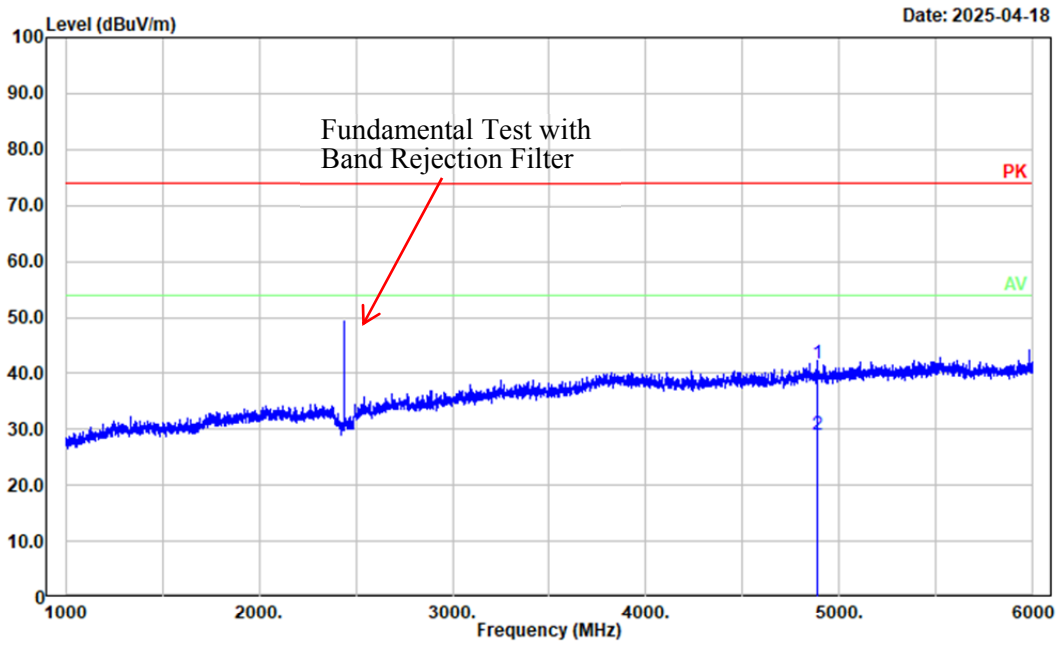
Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Remark					
Low Channel: 2402 MHz							
4804.000	46.68	PK	H	-5.31	41.37	74.00	32.63
4804.000	33.20	AV	H	-5.31	27.89	54.00	26.11
4804.000	45.85	PK	V	-5.31	40.54	74.00	33.46
4804.000	32.44	AV	V	-5.31	27.13	54.00	26.87
7206.000	46.32	PK	H	-2.05	44.27	74.00	29.73
7206.000	33.10	AV	H	-2.05	31.05	54.00	22.95
7206.000	46.17	PK	V	-2.05	44.12	74.00	29.88
7206.000	33.58	AV	V	-2.05	31.53	54.00	22.47
Middle Channel: 2441 MHz							
4882.000	45.74	PK	H	-5.29	40.45	74.00	33.55
4882.000	33.20	AV	H	-5.29	27.91	54.00	26.09
4882.000	46.01	PK	V	-5.29	40.72	74.00	33.28
4882.000	33.07	AV	V	-5.29	27.78	54.00	26.22
7323.000	46.69	PK	H	-1.17	45.52	74.00	28.48
7323.000	33.54	AV	H	-1.17	32.37	54.00	21.63
7323.000	45.87	PK	V	-1.17	44.70	74.00	29.30
7323.000	32.49	AV	V	-1.17	31.32	54.00	22.68
High Channel: 2480 MHz							
4960.000	47.18	PK	H	-5.33	41.85	74.00	32.15
4960.000	34.22	AV	H	-5.33	28.89	54.00	25.11
4960.000	47.48	PK	V	-5.33	42.15	74.00	31.85
4960.000	34.45	AV	V	-5.33	29.12	54.00	24.88
7440.000	46.43	PK	H	-1.21	45.22	74.00	28.78
7440.000	33.31	AV	H	-1.21	32.10	54.00	21.90
7440.000	46.08	PK	V	-1.21	44.87	74.00	29.13
7440.000	33.61	AV	V	-1.21	32.40	54.00	21.60

EDR Mode (8DPSK):

Frequency (MHz)	Receiver		Polar (H/V)	Factor (dB/m)	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)
	Reading (dBμV)	Remark					
Low Channel: 2402 MHz							
4804.000	46.23	PK	H	-5.31	40.92	74.00	33.08
4804.000	33.31	AV	H	-5.31	28.00	54.00	26.00
4804.000	45.85	PK	V	-5.31	40.54	74.00	33.46
4804.000	32.64	AV	V	-5.31	27.33	54.00	26.67
7206.000	46.18	PK	H	-2.05	44.13	74.00	29.87
7206.000	33.35	AV	H	-2.05	31.30	54.00	22.70
7206.000	46.06	PK	V	-2.05	44.01	74.00	29.99
7206.000	33.41	AV	V	-2.05	31.36	54.00	22.64
Middle Channel: 2441 MHz							
4882.000	45.85	PK	H	-5.29	40.56	74.00	33.44
4882.000	32.64	AV	H	-5.29	27.35	54.00	26.65
4882.000	46.03	PK	V	-5.29	40.74	74.00	33.26
4882.000	33.34	AV	V	-5.29	28.05	54.00	25.95
7323.000	46.24	PK	H	-1.17	45.07	74.00	28.93
7323.000	33.40	AV	H	-1.17	32.23	54.00	21.77
7323.000	45.80	PK	V	-1.17	44.63	74.00	29.37
7323.000	32.66	AV	V	-1.17	31.49	54.00	22.51
High Channel: 2480 MHz							
4960.000	46.85	PK	H	-5.33	41.52	74.00	32.48
4960.000	34.44	AV	H	-5.33	29.11	54.00	24.89
4960.000	46.90	PK	V	-5.33	41.57	74.00	32.43
4960.000	34.50	AV	V	-5.33	29.17	54.00	24.83
7440.000	46.10	PK	H	-1.21	44.89	74.00	29.11
7440.000	33.08	AV	H	-1.21	31.87	54.00	22.13
7440.000	46.53	PK	V	-1.21	45.32	74.00	28.68
7440.000	33.64	AV	V	-1.21	32.43	54.00	21.57

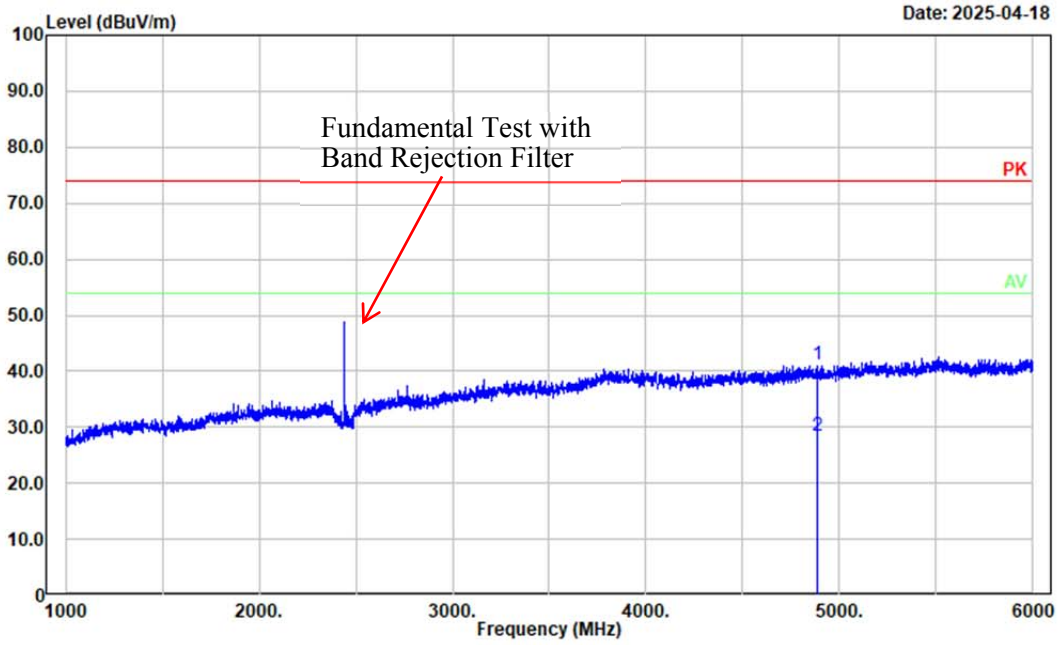
Worst radiation spurious emissions margin test plots for each mode
Note: for 18 – 25 GHz range, test was performed on the maximum power mode.

```
Project No.: 2503S14680E-RF
     Tester: Mack Huang
  Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: horizontal
       Note: BDR Middle Channel 2441MHz
```



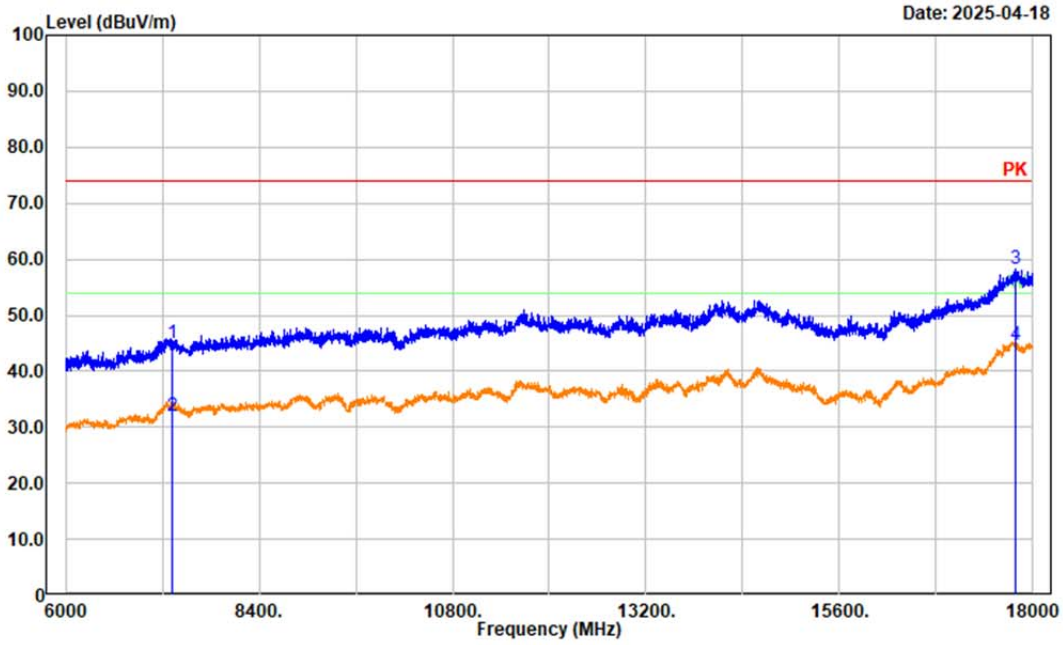
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	4882.000	47.11	-5.29	41.82	74.00	32.18	Peak
2	4882.000	34.25	-5.29	28.96	54.00	25.04	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: vertical
Note: BDR Middle Channel 2441MHz



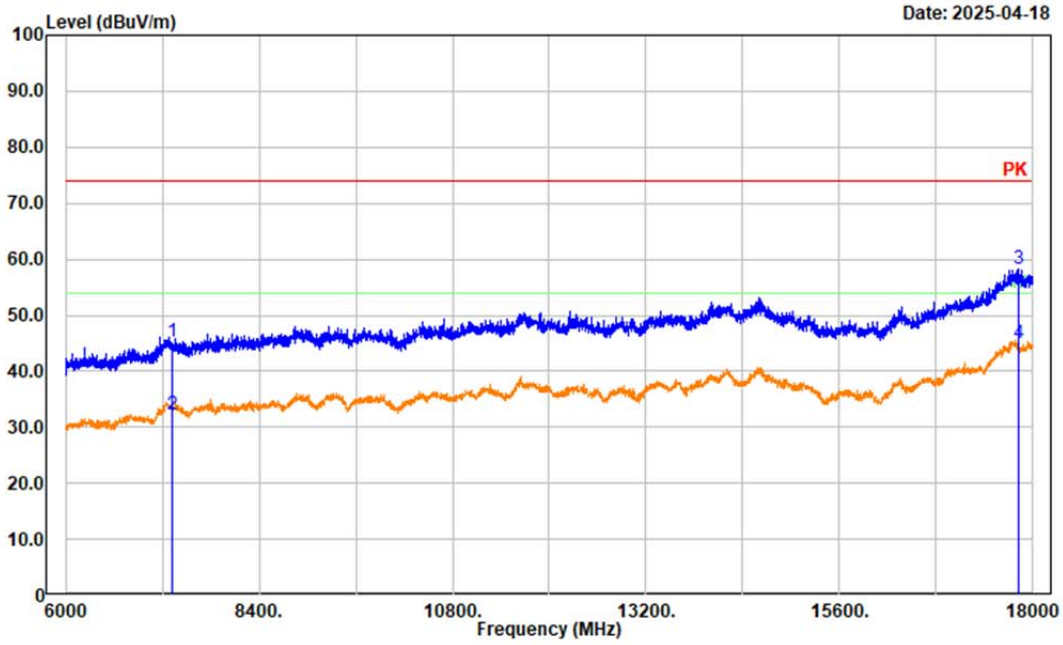
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	4882.000	46.35	-5.29	41.06	74.00	32.94	Peak
2	4882.000	33.62	-5.29	28.33	54.00	25.67	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec AV trace RBW:1MHz; VBW:5kHz; SWT:auto
Polarization: horizontal
Note: BDR Middle Channel 2441MHz



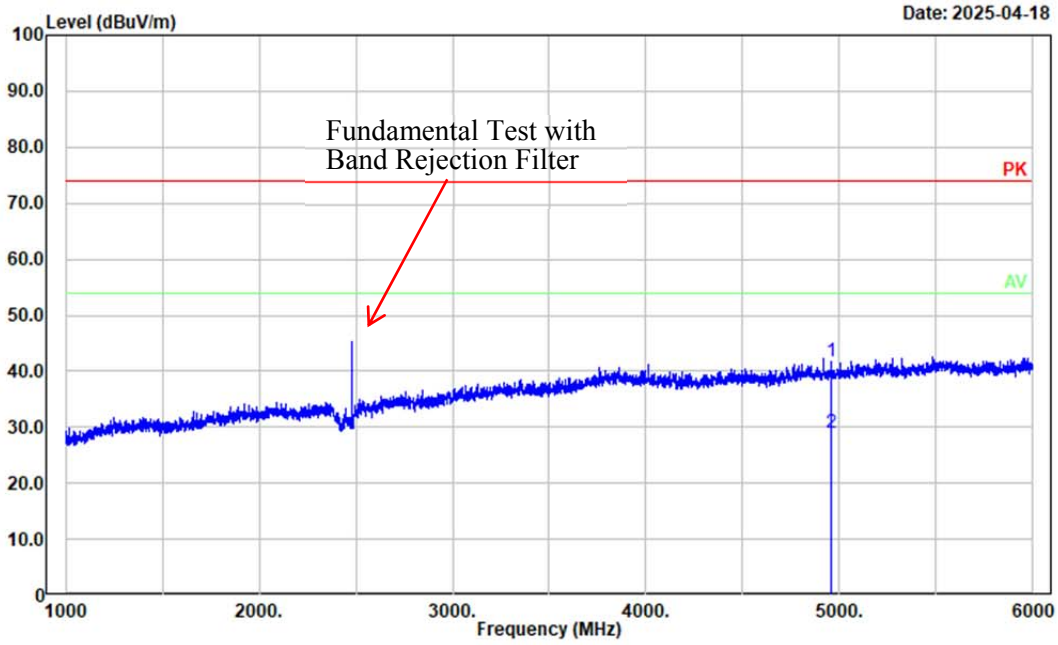
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	7323.000	46.08	-1.17	44.91	74.00	29.09	Peak
2	7323.000	33.12	-1.17	31.95	54.00	22.05	Average
3	17776.800	44.72	13.44	58.16	74.00	15.84	Peak
4	17776.800	31.30	13.44	44.74	54.00	9.26	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec AV trace RBW:1MHz; VBW:5kHz; SWT:auto
Polarization: vertical
Note: BDR Middle Channel 2441MHz



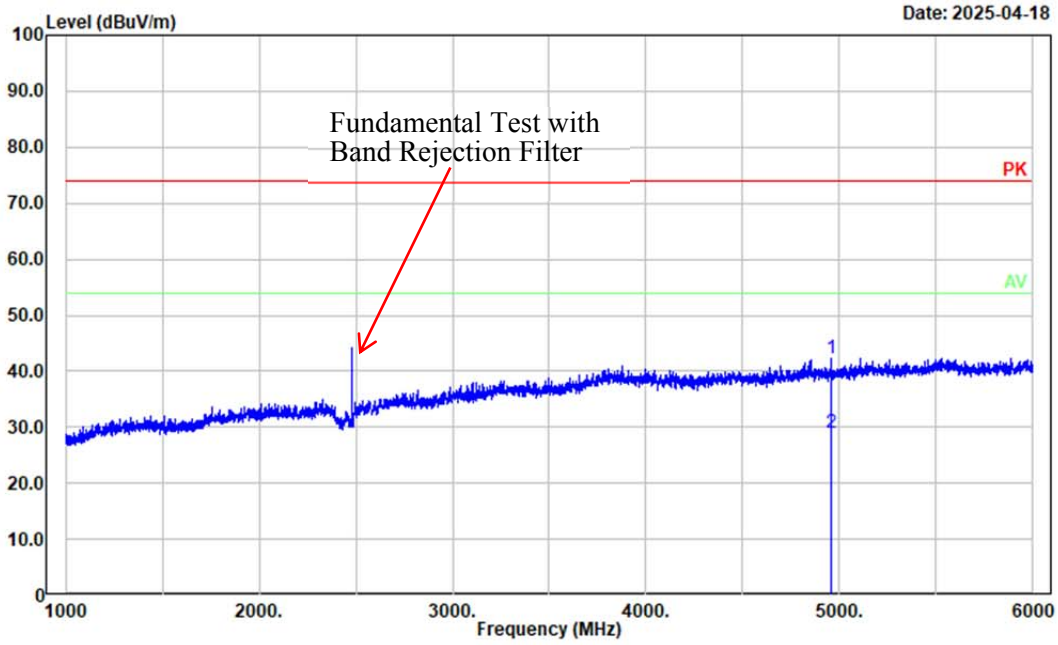
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	7323.000	46.50	-1.17	45.33	74.00	28.67	Peak
2	7323.000	33.49	-1.17	32.32	54.00	21.68	Average
3	17812.800	44.67	13.55	58.22	74.00	15.78	Peak
4	17812.800	31.34	13.55	44.89	54.00	9.11	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: horizontal
Note: 2EDR High Channel 2480MHz



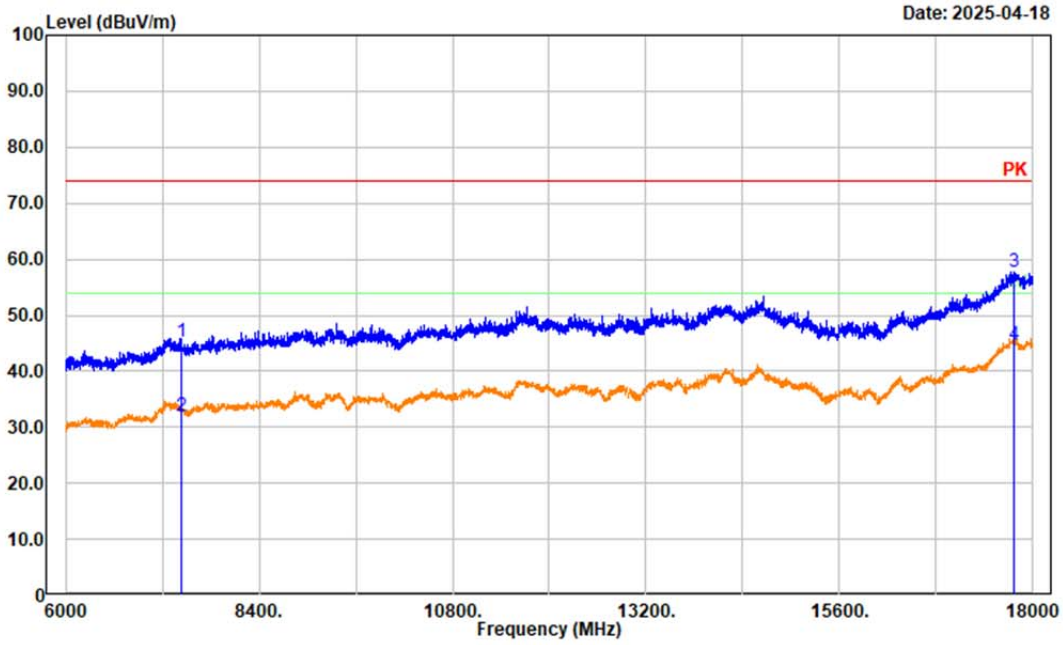
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	4960.000	47.18	-5.33	41.85	74.00	32.15	Peak
2	4960.000	34.22	-5.33	28.89	54.00	25.11	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: vertical
Note: 2EDR High Channel 2480MHz



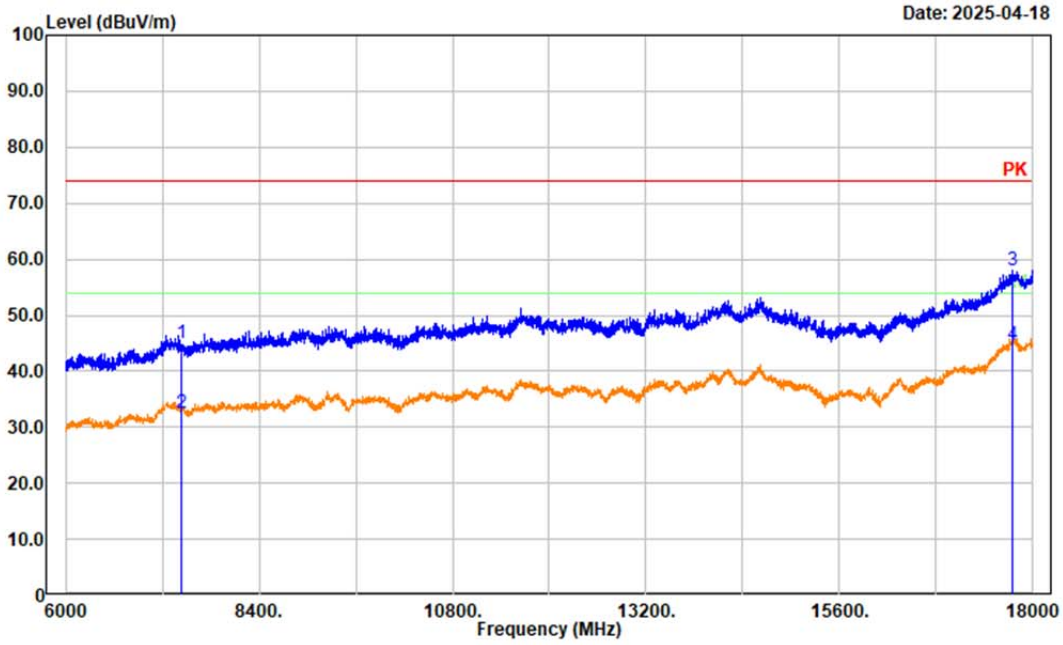
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	4960.000	47.48	-5.33	42.15	74.00	31.85	Peak
2	4960.000	34.45	-5.33	29.12	54.00	24.88	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec AV trace RBW:1MHz; VBW:5kHz; SWT:auto
Polarization: horizontal
Note: 2EDR High Channel 2480MHz



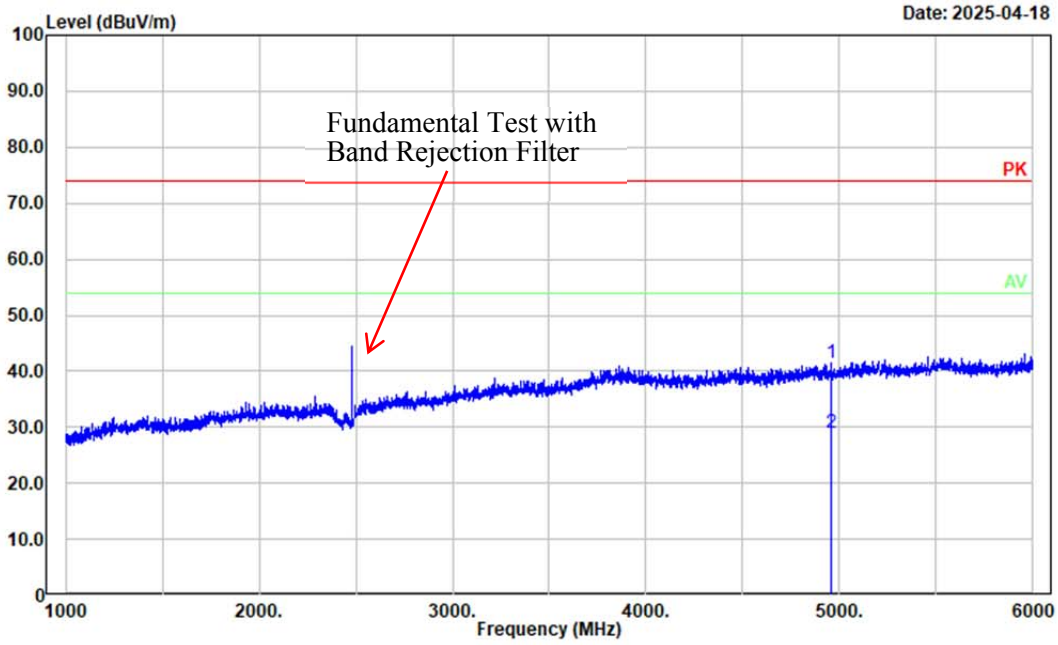
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	7440.000	46.43	-1.21	45.22	74.00	28.78	Peak
2	7440.000	33.31	-1.21	32.10	54.00	21.90	Average
3	17767.200	44.43	13.39	57.82	74.00	16.18	Peak
4	17767.200	31.29	13.39	44.68	54.00	9.32	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec AV trace RBW:1MHz; VBW:5kHz; SWT:auto
Polarization: vertical
Note: 2EDR High Channel 2480MHz



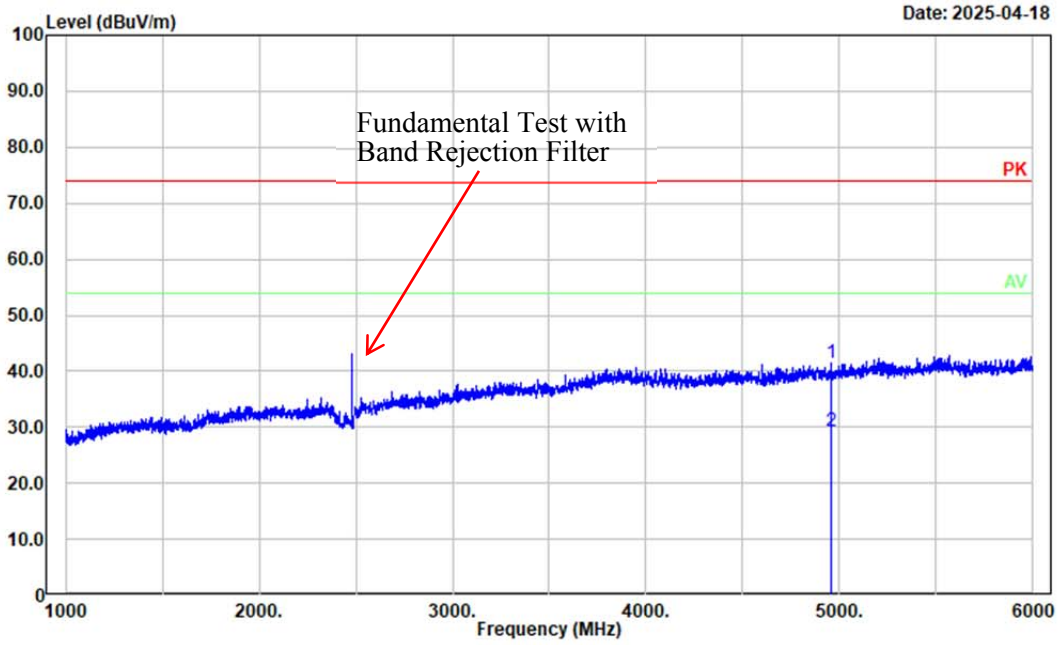
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	7440.000	46.08	-1.21	44.87	74.00	29.13	Peak
2	7440.000	33.61	-1.21	32.40	54.00	21.60	Average
3	17736.000	44.85	13.25	58.10	74.00	15.90	Peak
4	17736.000	31.53	13.25	44.78	54.00	9.22	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: horizontal
Note: 3EDR High Channel 2480MHz



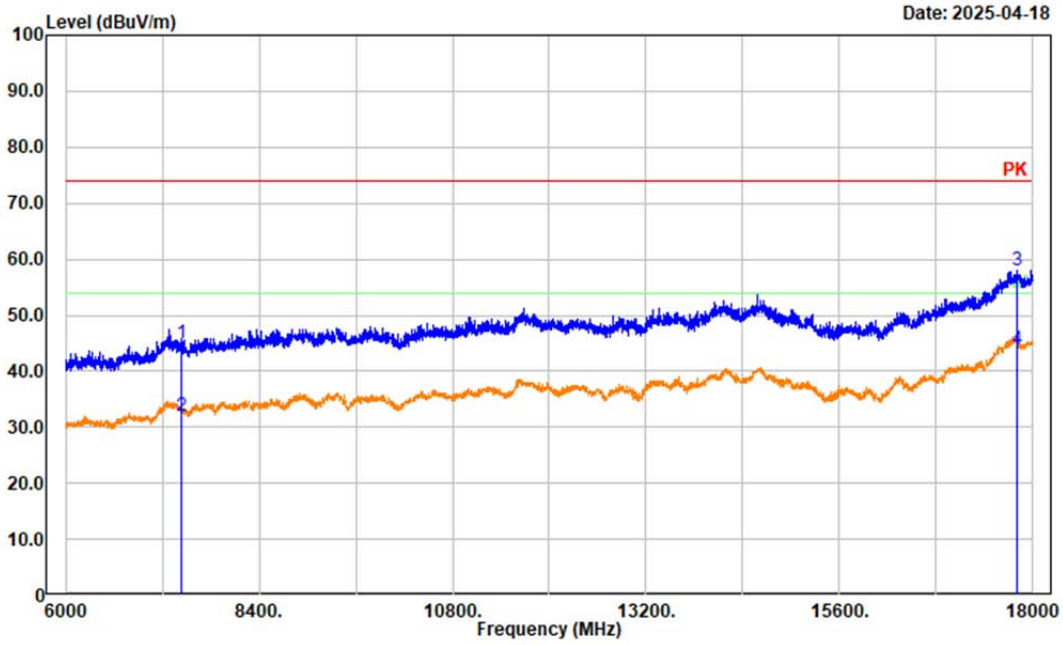
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	4960.000	46.85	-5.33	41.52	74.00	32.48	Peak
2	4960.000	34.44	-5.33	29.11	54.00	24.89	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: vertical
Note: 3EDR High Channel 2480MHz



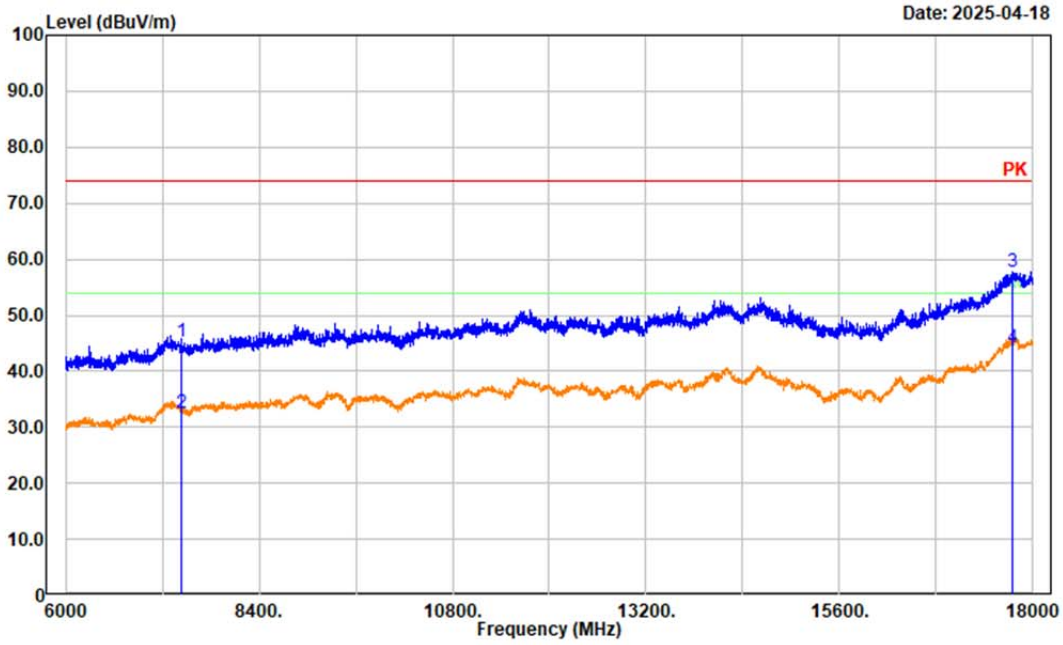
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	4960.000	46.90	-5.33	41.57	74.00	32.43	Peak
2	4960.000	34.50	-5.33	29.17	54.00	24.83	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec AV trace RBW:1MHz; VBW:5kHz; SWT:auto
Polarization: horizontal
Note: 3EDR High Channel 2480MHz



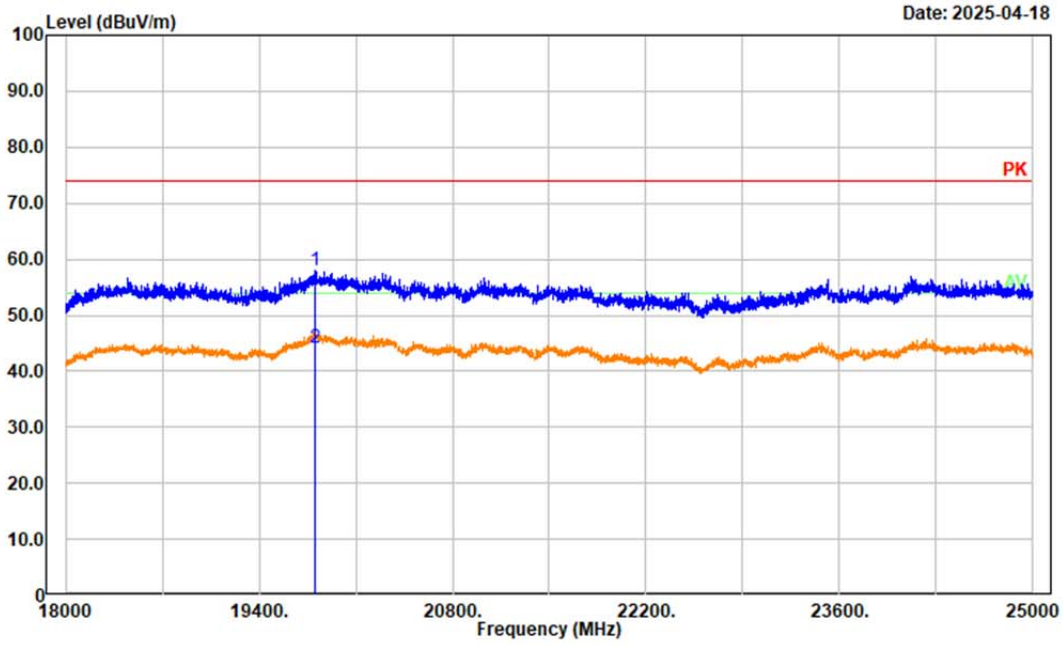
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	7440.000	46.10	-1.21	44.89	74.00	29.11	Peak
2	7440.000	33.08	-1.21	31.87	54.00	22.13	Average
3	17798.400	44.31	13.55	57.86	74.00	16.14	Peak
4	17798.400	30.46	13.55	44.01	54.00	9.99	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec AV trace RBW:1MHz; VBW:5kHz; SWT:auto
Polarization: vertical
Note: 3EDR High Channel 2480MHz



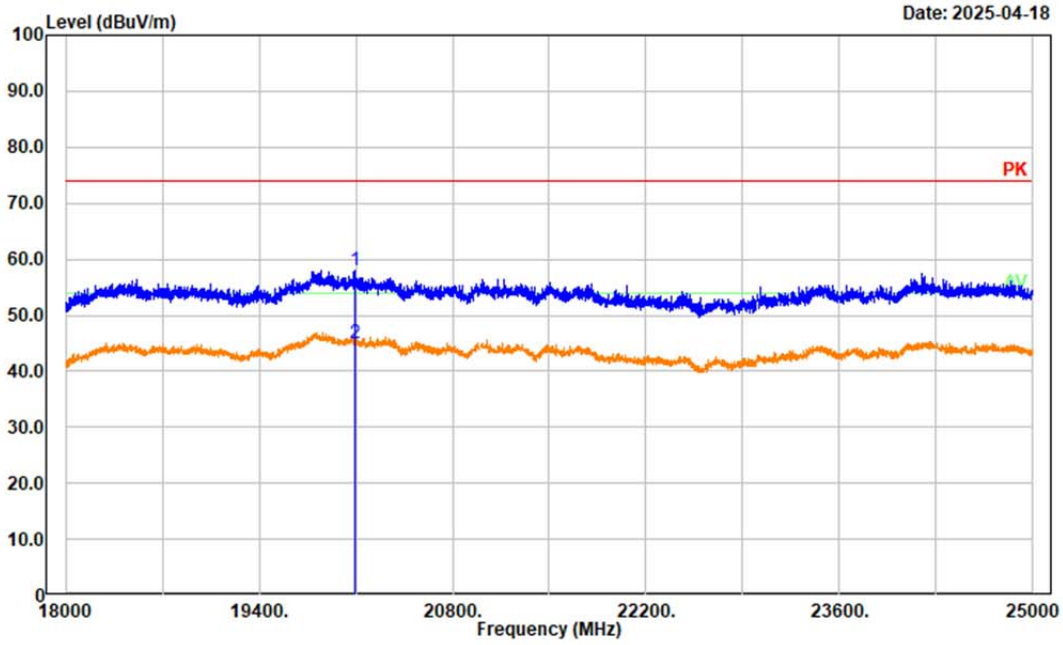
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	7440.000	46.53	-1.21	45.32	74.00	28.68	Peak
2	7440.000	33.64	-1.21	32.43	54.00	21.57	Average
3	17743.200	44.39	13.27	57.66	74.00	16.34	Peak
4	17743.200	30.77	13.27	44.04	54.00	9.96	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec AV trace RBW:1MHz; VBW:5kHz; SWT:auto
Polarization: Horizontal
Note: 3EDR High Channel 2480MHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	19808.800	50.01	7.95	57.96	74.00	16.04	Peak
2	19808.800	36.28	7.95	44.23	54.00	9.77	Average

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec AV trace RBW:1MHz; VBW:5kHz; SWT:auto
Polarization: Vertical
Note: 3EDR High Channel 2480MHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	20098.600	51.48	6.64	58.12	74.00	15.88	Peak
2	20098.600	38.39	6.64	45.03	54.00	8.97	Average

Band edge test plots

```
Project No.: 2503S14680E-RF
     Tester: Mack Huang
  Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Horizontal
       Note: BDR Low Channel 2402MHz
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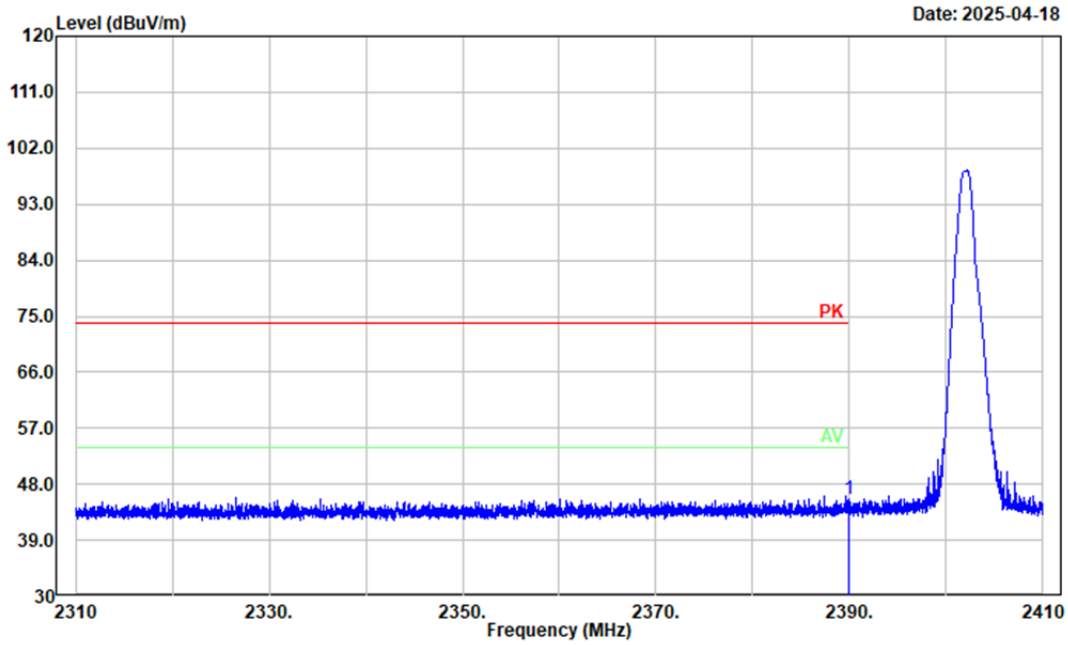
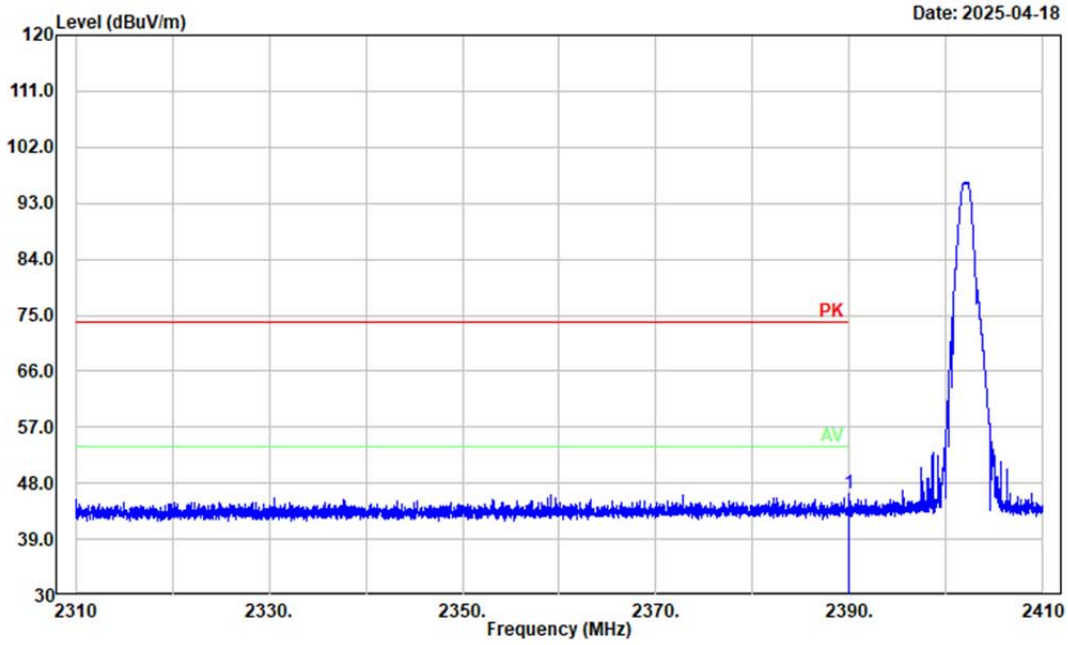


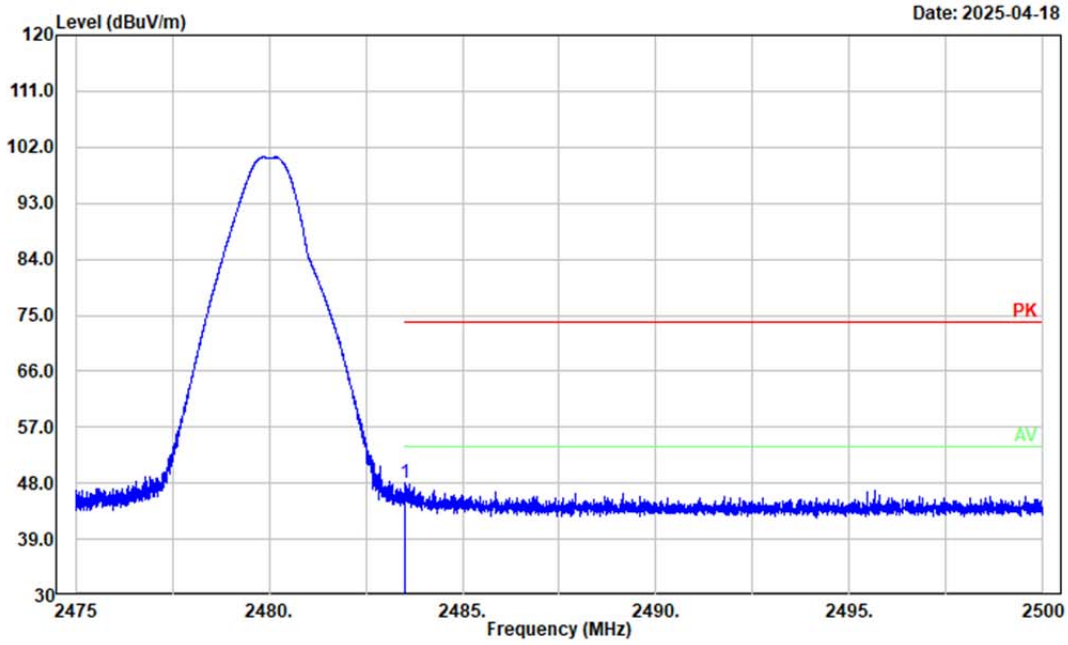
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2390.000	55.92	-10.30	45.62	74.00	28.38	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Vertical
Note: BDR Low Channel 2402MHz



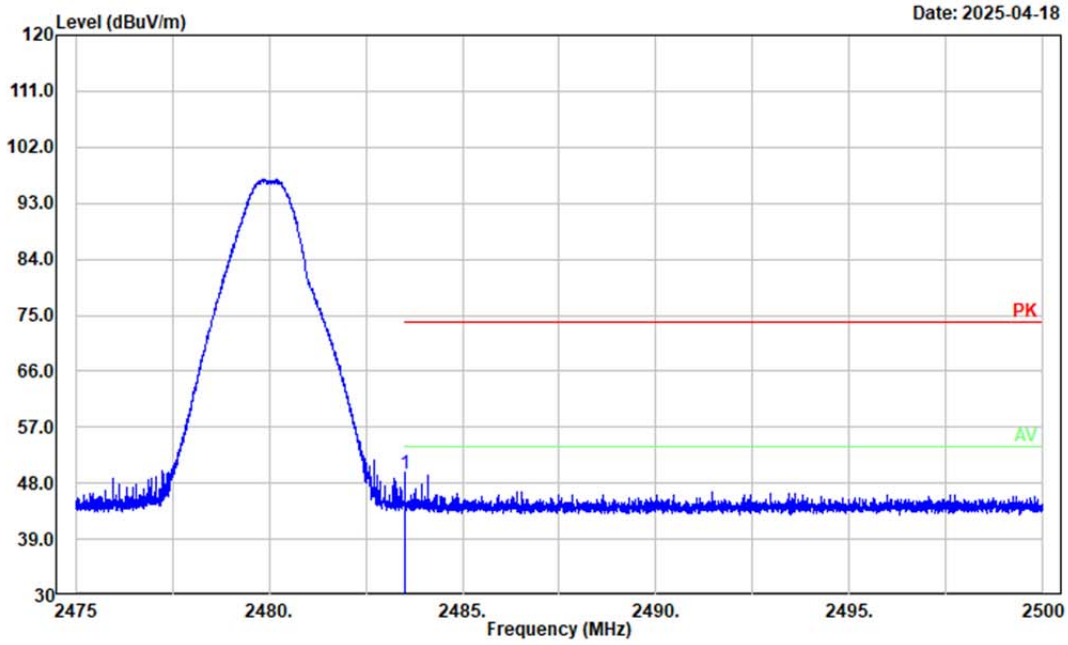
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2390.000	56.61	-10.30	46.31	74.00	27.69	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Horizontal
Note: BDR High Channel 2480MHz



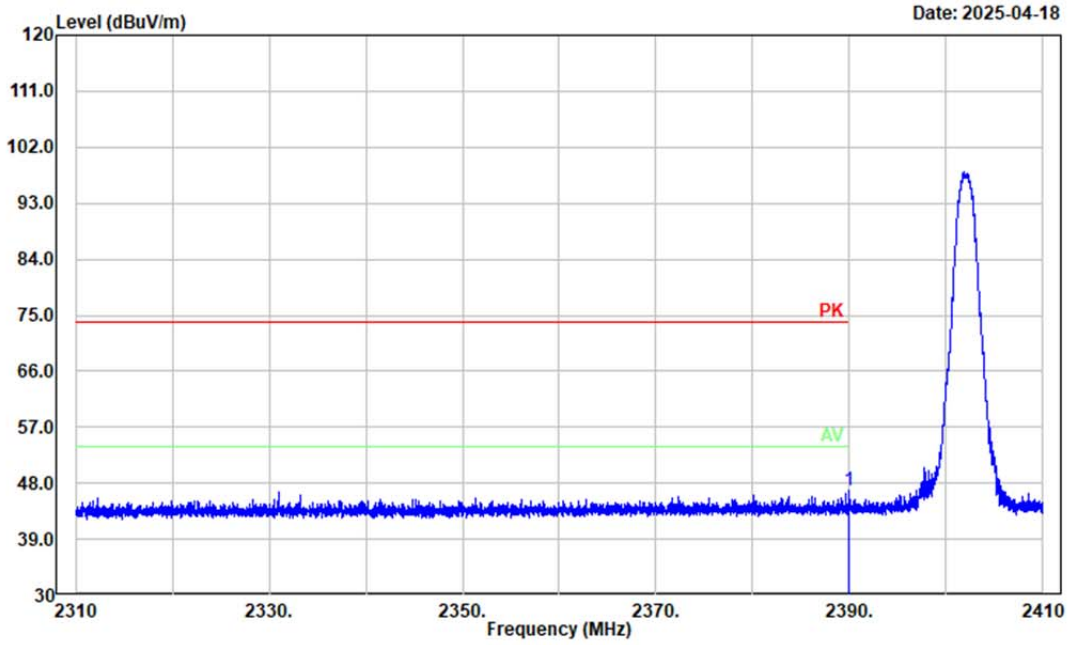
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2483.500	58.35	-10.40	47.95	74.00	26.05	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Vertical
Note: BDR High Channel 2480MHz



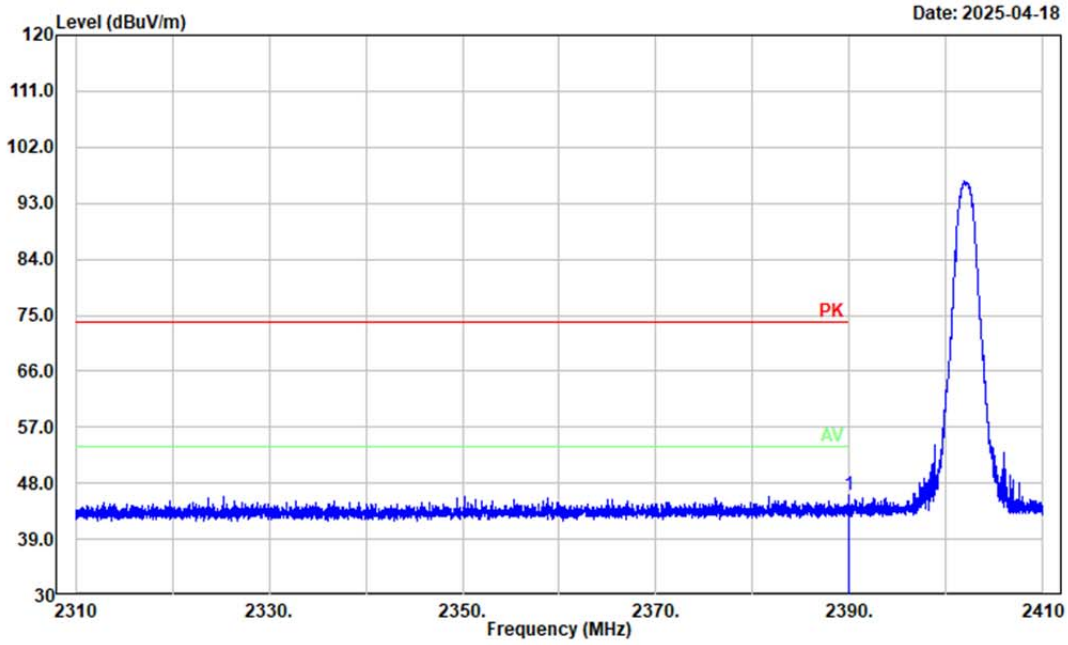
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2483.500	60.01	-10.40	49.61	74.00	24.39	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Horizontal
Note: 2EDR Low Channel 2402MHz



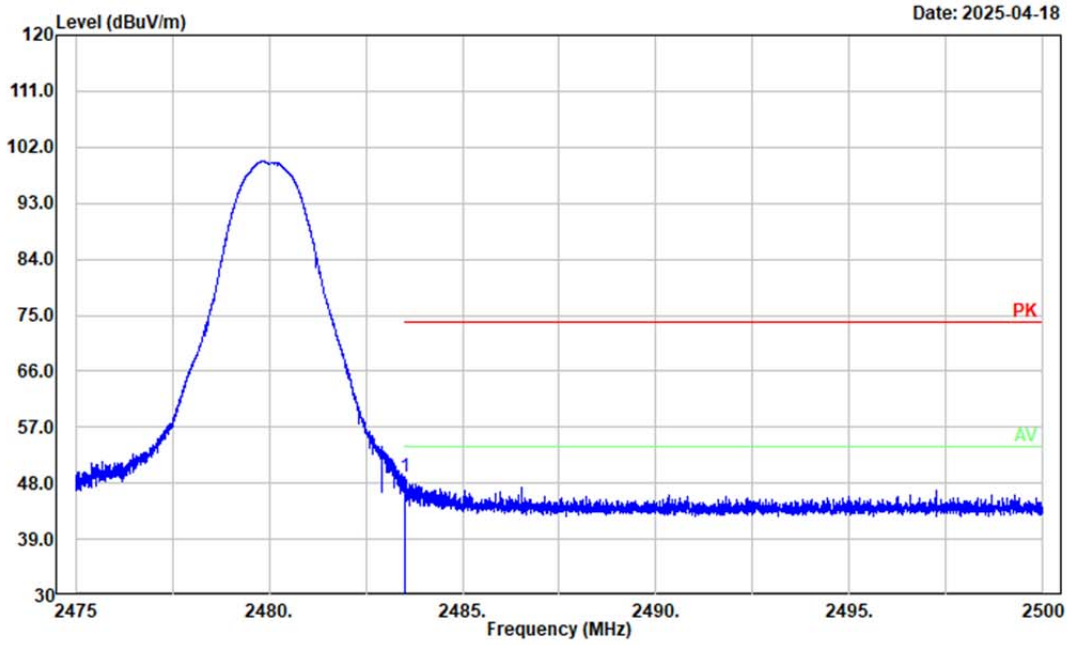
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2390.000	57.20	-10.30	46.90	74.00	27.10	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Vertical
Note: 2EDR Low Channel 2402MHz



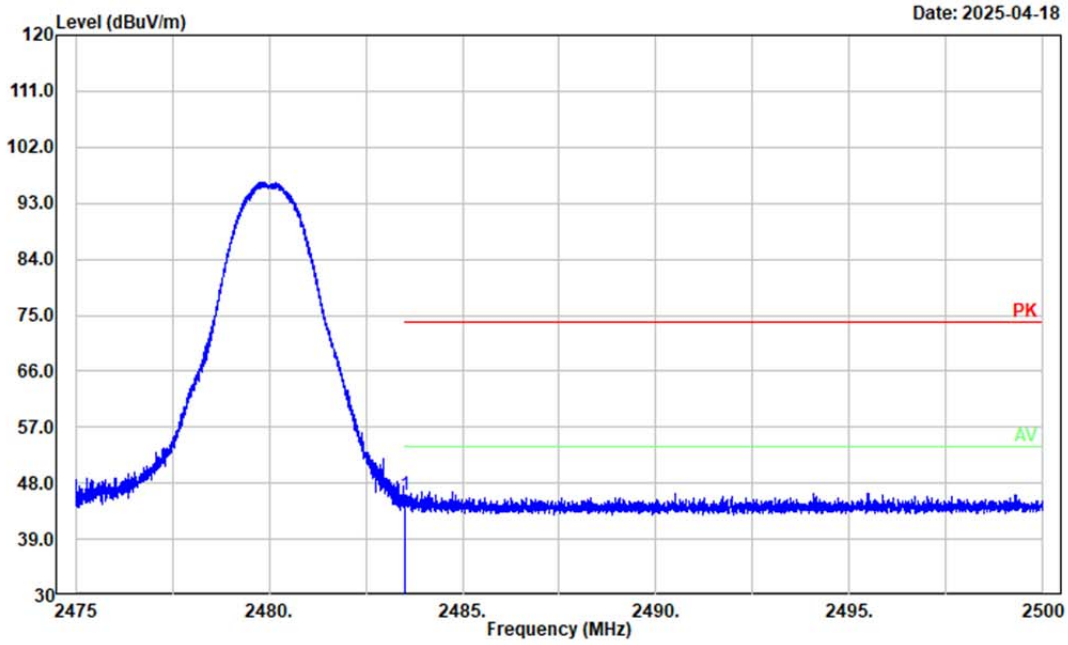
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2390.000	56.31	-10.30	46.01	74.00	27.99	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Horizontal
Note: 2EDR High Channel 2480MHz



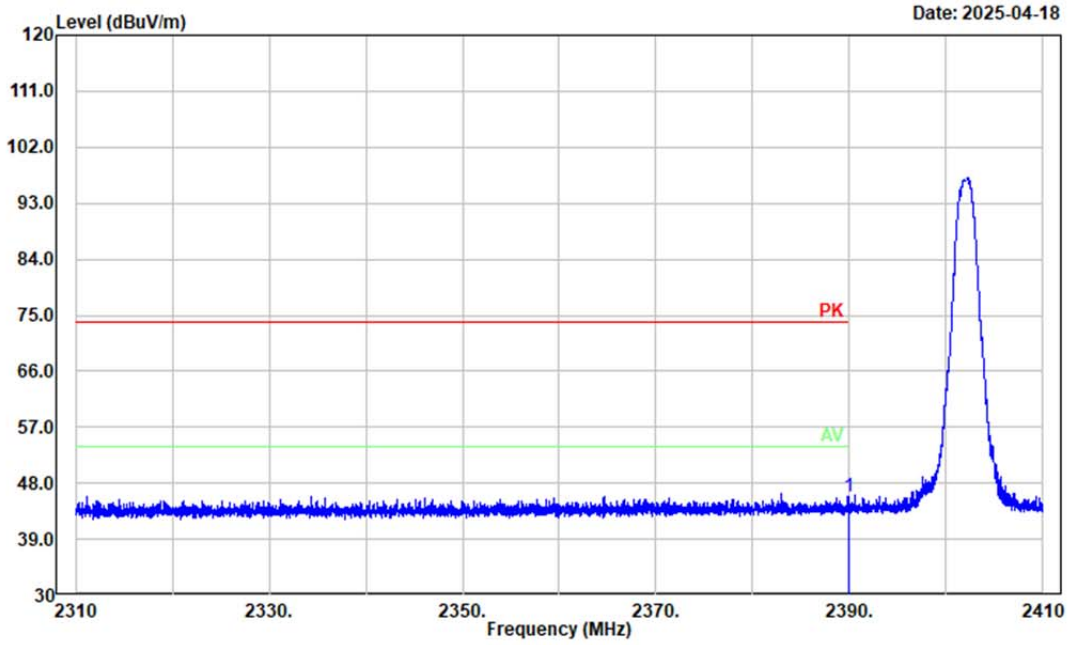
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2483.500	59.42	-10.40	49.02	74.00	24.98	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Vertical
Note: 2EDR High Channel 2480MHz



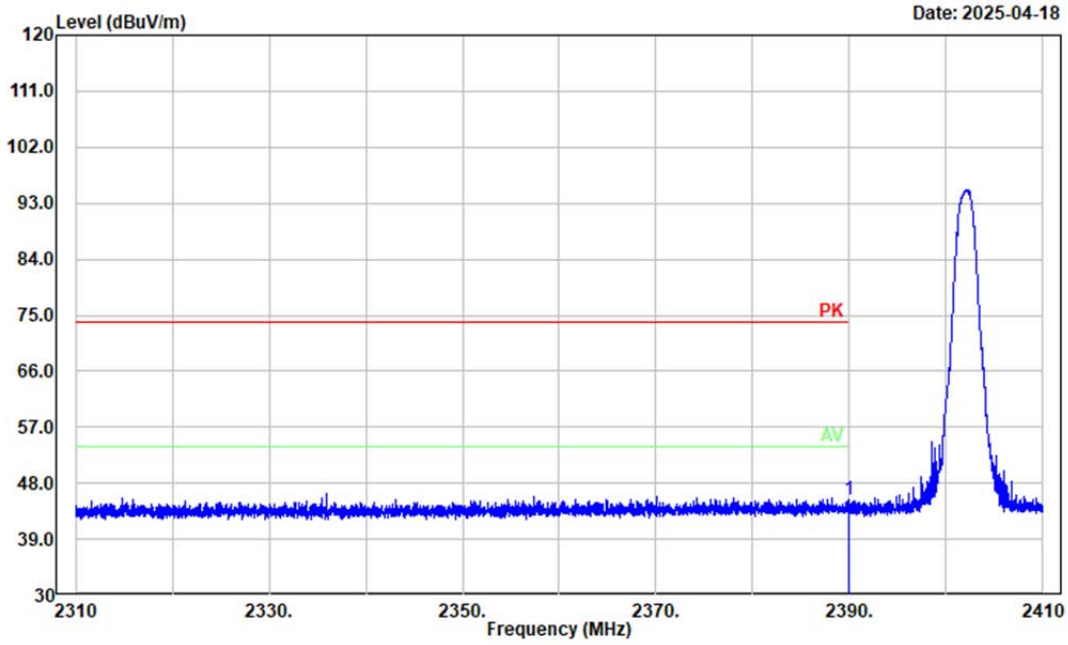
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2483.500	56.59	-10.40	46.19	74.00	27.81	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Horizontal
Note: 3EDR Low Channel 2402MHz



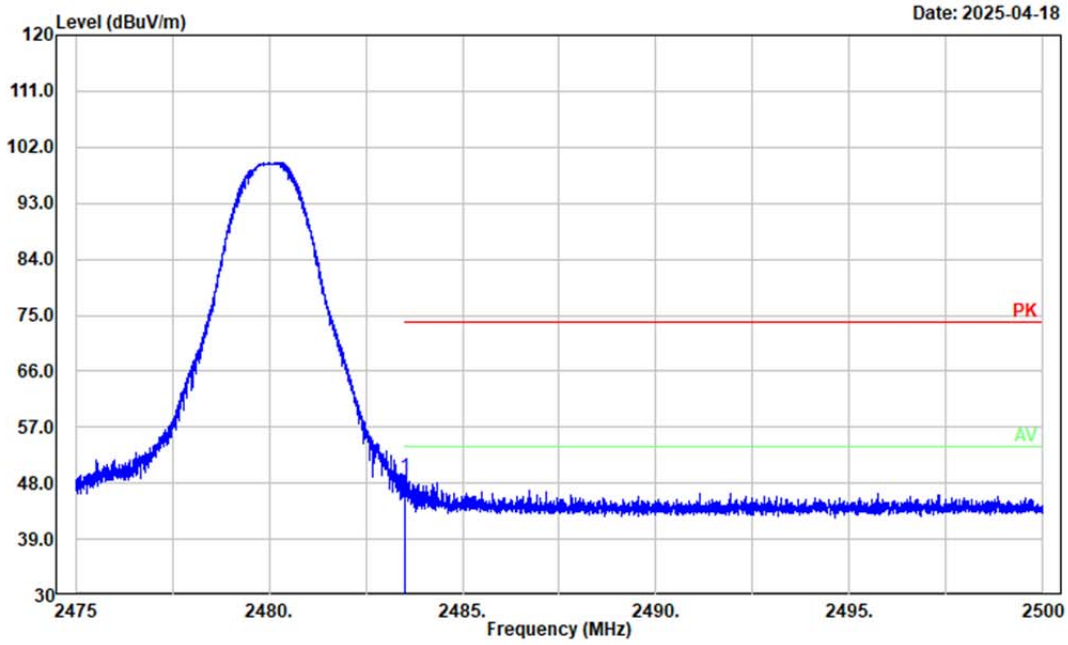
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2390.000	56.21	-10.30	45.91	74.00	28.09	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Vertical
Note: 3EDR Low Channel 2402MHz



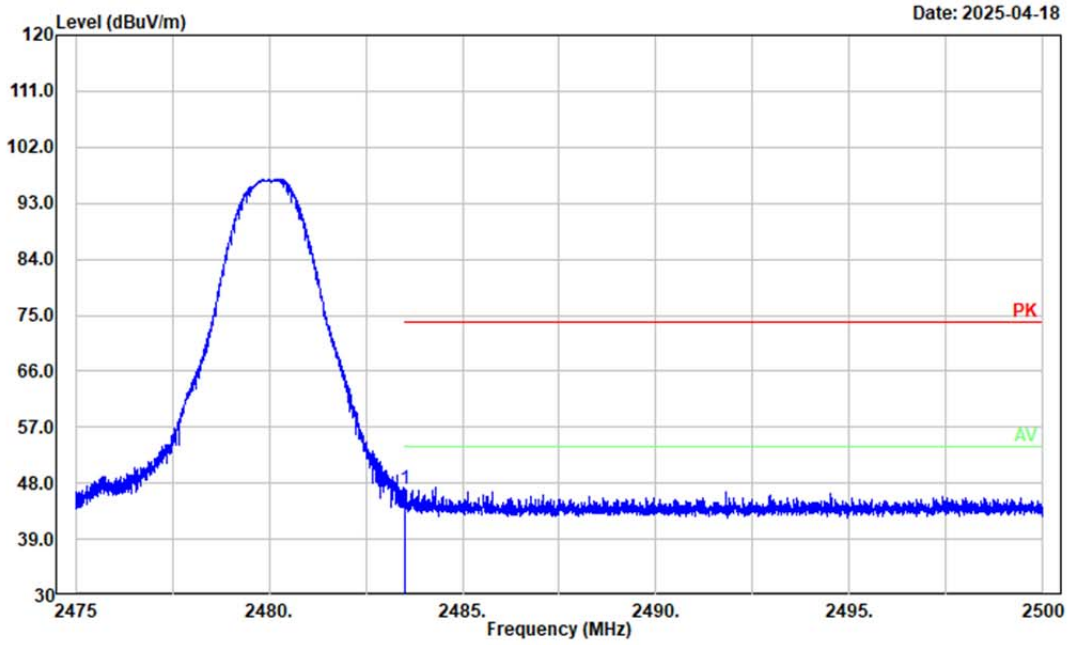
No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2390.000	55.71	-10.30	45.41	74.00	28.59	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Horizontal
Note: 3EDR High Channel 2480MHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2483.500	59.42	-10.40	49.02	74.00	24.98	Peak

Project No.: 2503S14680E-RF
Tester: Mack Huang
Condition: PK trace RBW:1MHz; VBW:3MHz; SWT:0.3sec
Polarization: Vertical
Note: 3EDR High Channel 2480MHz



No.	Frequency (MHz)	Reading (dBµV)	Factor (dB/m)	Result (dBµV/m)	Limit (dBµV/m)	Margin (dB)	Remark
1	2483.500	57.55	-10.40	47.15	74.00	26.85	Peak

4.3 RF Conducted Data

Please refer to Annex "2503S14680E-RF-00B_Appendix A" for detail test data.

5. RF EXPOSURE EVALUATION

5.1 Applicable Standard

According to§15.247(i) and §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

According to KDB447498 D01 General RF Exposure Guidance v06:

The 1-g and 10-g SAR test exclusion thresholds for 100 MHz to 6 GHz at test separation distances ≤ 50 mm are determined by:
[(max. power of channel, including tune-up tolerance, mW)/(min. test separation distance, mm)] • [√f(GHz)] ≤ 3.0 for 1-g SAR and ≤ 7.5 for 10-g extremity SAR, where
• f(GHz) is the RF channel transmit frequency in GHz
• Power and distance are rounded to the nearest mW and mm before calculation
• The result is rounded to one decimal place for comparison
• 3.0 and 7.5 are referred to as the numeric thresholds in the step 2 below

The test exclusions are applicable only when the minimum test separation distance is ≤ 50 mm and for transmission frequencies between 100 MHz and 6 GHz. When the minimum test separation distance is < 5 mm, a distance of 5 mm according to 5) in section 4.1 is applied to determine SAR test exclusion.

5.2 Measurement Result

Frequency (MHz)	Conducted Output Power Including Tolerance		Distance (mm)	Calculated value	Threshold (1-g)	SAR Test Exclusion
	(dBm)	(mW)				
2402-2480	9	7.94	5	2.5	3	Yes

Note: The Maximum Conducted Power including Tune-up Tolerance was declared by manufacturer.

Result: Compliant. The stand-alone SAR evaluation is not necessary.

6. EUT PHOTOGRAPHS

Please refer to the attachment 2503S14680E-RF-EXP EUT EXTERNAL PHOTOGRAPHS and 2503S14680E-RF-INP EUT INTERNAL PHOTOGRAPHS

7. TEST SETUP PHOTOGRAPHS

Please refer to the attachment 2503S14680E-RF-00B-TSP TEST SETUP PHOTOGRAPHS.

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