TEST REPORT

Applicant Name:	FCC: VTech Telecommunications Ltd IC: VTECH TELECOMMUNICATIONS LIMITED
Address:	FCC: 23/F Tai Ping Ind Center Block 1 57 Ting Kok Rd Tai Po NT, Hong Kong IC: BL.1 23/F Tai Ping Industr Ctr. 57 Ting Kok Road Tai Po, NT Hongkong
Report Number:	2501R02198E-RFB
FCC ID:	EW780-3612-00
IC:	1135B-80361200

Test Standard (s)

FCC PART 15D; RSS-GEN ISSUE 5, FEBRUARY 2021 AMENDMENT 2; RSS-213, ISSUE 3, MARCH 2015

Sample Description

Product Type:	DECT 6.0 cordless telephone
Model No.:	EL1121-2
Multiple Model(s) No.:	FCC: EL1121, EL1121-3, EL1121-4, EL1121-5, EL1121-11, EL1121-21, EL1121-31, EL1121-41, EL1121-51, EL1121-XY IC: EL1121, EL1121-3, EL1121-4, EL1121-5, EL1121-11, EL1121-21, EL1121-31, EL1121-41, EL1121-51
Trade Mark:	AT&T
Date Received:	2025-03-05
Issue Date:	2025-05-06

Test Result:	Pass▲

▲ In the configuration tested, the EUT complied with the standards above.

Prepared and Checked By:

Bruce Lin

Bruce Lin
RF Engineer

Approved By:

Nancy Wang

Nancy Wang
RF Supervisor

Note: The information marked # is provided by the applicant, the laboratory is not responsible for its authenticity and this information can affect the validity of the result in the test report. Customer model name, addresses, names, trademarks etc. are included.

This report may contain data that are not covered by the NVLAP accreditation and are marked with an asterisk "▼".

TABLE OF CONTENTS

DOCUMENT REVISION HISTORY

Revision Number	Report Number	Description of Revision	Date of Revision
0	2501R02198E-RFB	Original Report	2025-05-06

GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

HVIN	35-202516BS
FVIN	4630Be0002
Product	DECT 6.0 cordless telephone
Tested Model	EL1121-2
Multiple Model(s)	FCC: EL1121, EL1121-3, EL1121-4, EL1121-5, EL1121-11, EL1121-21, EL1121-31, EL1121-41, EL1121-51, EL1121-XY IC: EL1121, EL1121-3, EL1121-4, EL1121-5, EL1121-11, EL1121-21, EL1121-31, EL1121-41, EL1121-51
Frequency Range	1921.536-1928.448 MHz
Maximum conducted peak output power	19.88dBm
Modulation Technique	GFSK
Antenna Specification[#]	ANT0/1: 0dBi (It is provided by the applicant)
Voltage Range	DC 6V from adapter
Sample serial number	2ZA6-13 for Conducted and Radiated Emissions Test 2ZA6-14 for RF Conducted Test (Assigned by BACL, Shenzhen)
Sample/EUT Status	Good condition
Adapter Information	Adapter 1 Model: A318-060040W-US1 Input: AC 100-120V, 50-60Hz 0.15A Output: DC 6.0V 0.4A Adapter 2 Model: GQ06-060040-ZU Input: AC 100-120V, 50-60Hz 0.15A Output: DC 6.0V 0.4A Adapter 3 Model: VT05UUS06040 Input: AC 100-120V, 60Hz 150mA Output: DC 6V 400mA
Note 1: The EUT powered by three adapters, the worst case adapter1 was selected to test for radiated emission below 1GHz according to BT report test result. Note 2: The Multiple models are electrically identical with the test model except for color, model number, package type, no. of handset and charger. Please refer to the declaration letter[#] for more detail, which was provided by manufacturer.	

Objective

The tests were performed in order to determine the compliance of the EUT with FCC Part 15-Subpart D, section 15.207, 15.315, 15.317, 15.319 and 15.323 rules. The EMI measurements were performed according to the measurement procedure described in ANSI C63.17 – 2013 and RSS-213 Issue 3, 2GHz License-Exempt Personal Communications Service Devices (PCS) OF THE Canadian Department of Industry rules and RSS-GEN ISSUE 5, FEBRUARY 2021 AMENDMENT 2of the Innovation, Science and Economic Development Canada rules.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.17 - 2013, American National Standard Methods of Measurement of the Electromagnetic and Operational Compatibility of Unlicensed Personal Communications Services (UPCS) Devices.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Shenzhen). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Each test item follows test standards and with no deviation.

Measurement Uncertainty

Parameter		Uncertainty
Occupied Channel Bandwidth		109.2kHz(k=2, 95% level of confidence)
RF Frequency		56.6Hz(k=2, 95% level of confidence)
RF output power, conducted		0.86dB(k=2, 95% level of confidence)
Unwanted Emission, conducted		1.60dB(k=2, 95% level of confidence)
AC Power Lines Conducted Emissions	9kHz-150kHz	3.63dB(k=2, 95% level of confidence)
	150kHz-30MHz	3.66dB(k=2, 95% level of confidence)
Radiated Emissions	0.009MHz~30MHz	3.60dB(k=2, 95% level of confidence)
	30MHz~200MHz (Horizontal)	5.32dB(k=2, 95% level of confidence)
	30MHz~200MHz (Vertical)	5.43dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Horizontal)	5.77dB(k=2, 95% level of confidence)
	200MHz~1000MHz (Vertical)	5.73dB(k=2, 95% level of confidence)
	1GHz - 6GHz	5.34dB(k=2, 95% level of confidence)
	6GHz - 18GHz	5.40dB(k=2, 95% level of confidence)
Temperature		±1℃
Humidity		±1%
Supply voltages		±0.4%

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

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Shenzhen) to collect test data is located on the 5F(B-West) , 6F, 7F, the 3rd Phase of Wan Li Industrial Building D, Shihua Rd, FuTian Free Trade Zone, Shenzhen, 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. : 715558, the FCC Designation No. : CN5045.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0023.

SYSTEM TEST CONFIGURATION

Description of Test Configuration

The system was configured to testing mode which is provided by the manufacturer.

Equipment Modifications

No modification was made to the EUT tested.

Support Equipment List and Details

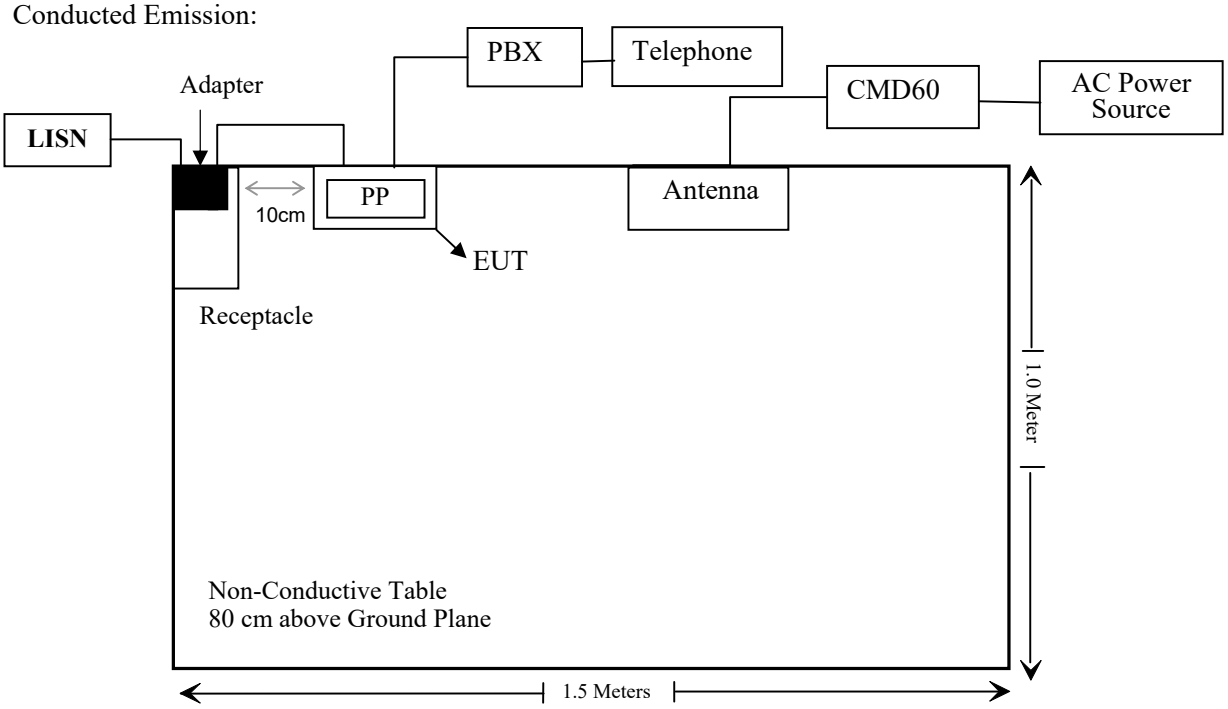
Manufacturer	Description	Model	Serial Number
Rohde & Schwarz	Digital Radio Communication Tester	CMD60	830553/018
YIKE	PBX	TC-208	Unknown
Kinhao	Telephone	KT86AS	Unknown

External I/O Cable

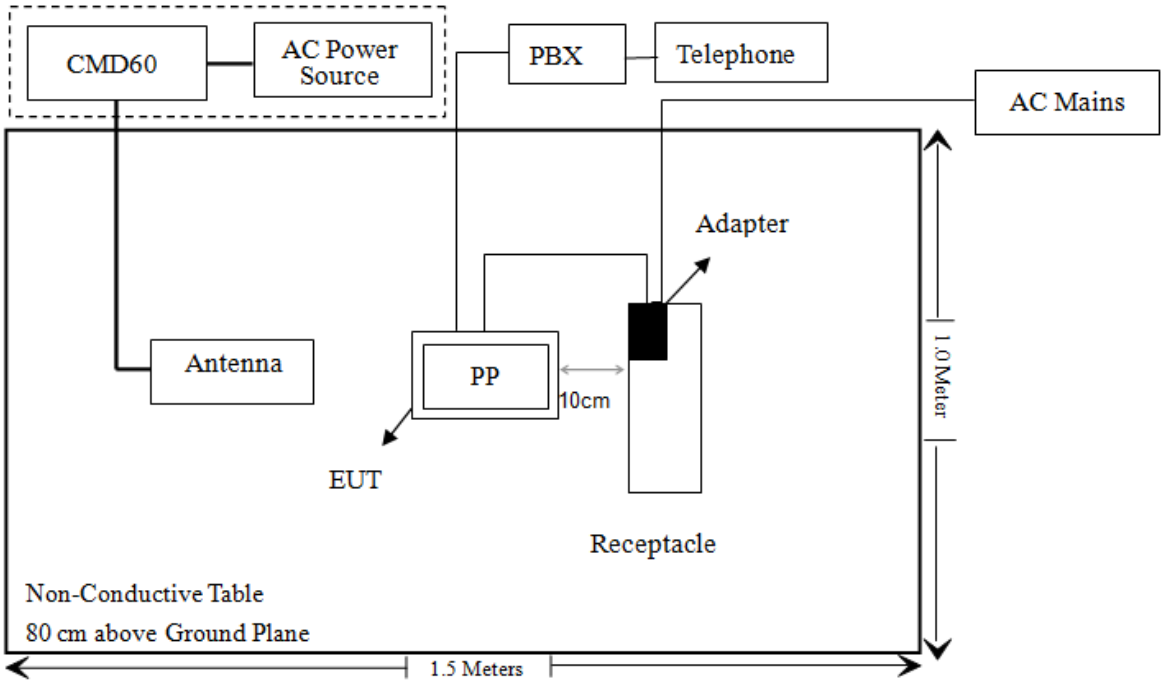
Cable Description	Length (m)	From Port	To
Unshielded Un-detachable AC cable	1.2	Receptacle	LISN/AC Mains
Unshielded Un-detachable DC cable	1.2	Adapter	EUT(base)
Unshielded detachable RJ11 cable	3.0	EUT(base)	PBX
Unshielded detachable RJ11 cable	1.0	Telephone	PBX
Unshielded Detachable AC cable	1.2	AC Power	CMD60

Block Diagram of Test Setup

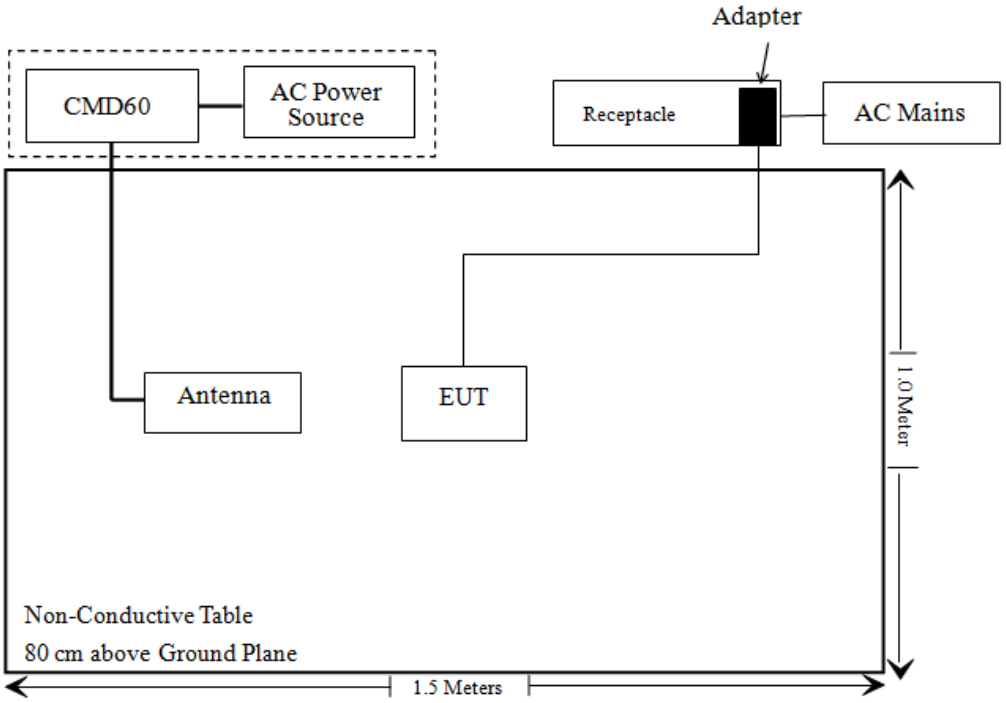
Conducted Emission:



For Radiated Emissions below 1GHz:



For Radiated Emissions above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	RSS Rules	Description of Test	Result
§1.1310 & §2.1091	/	Maximum Permissible Exposure (MPE)	Compliant
/	RSS-102 § 6.6	Field reference level exposure exemption limits	Compliant
§ 15.317, § 15.203	RSS-Gen §6.8	Antenna Requirement	Compliant
§ 15.315, § 15.207	RSS-213 §5.4	Conducted Emission	Compliant
§ 15.323 (a)	RSS-213 §5.5	Emission Bandwidth	Compliant
§ 15.319 (c)	RSS-213 §5.6	Peak Transmit Power	Compliant
§ 15.319 (d)	RSS-213 §5.7	Power Spectral Density	Compliant
§ 15.323 (d)	RSS-213 §5.8	Emission Inside and Outside the sub-band	Compliant
§15.205, §15.209, § 15.319 (g)	RSS-213 §5.8	Radiated Emission	Compliant
§ 15.323 (f)	RSS-213 §5.3	Frequency Stability	Compliant
§ 15.323 (c)(e) § 15.319 (f)	RSS-213 §5.1&§5.2	Specific Requirements for UPCS	Compliant

Note: The product has two antennas, scan all antenna output power, the ANT0 which with the highest output power was selected to perform full test.

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Conducted Emissions Test					
Rohde & Schwarz	EMI Test Receiver	ESCI	101120	2024/12/04	2025/12/03
Rohde & Schwarz	LISN	ENV216	101613	2024/12/04	2025/12/03
Rohde & Schwarz	Transient Limiter	ESH3Z2	DE25985	2024/05/21	2025/05/20
Unknown	CE Cable	Unknown	UF A210B-1-0720-504504	2024/05/21	2025/05/20
Audix	EMI Test software	E3	191218(V9)	NCR	NCR
Radiated Emission Test					
Rohde & Schwarz	EMI Test Receiver	ESR3	102455	2024/12/04	2025/12/03
Sonoma instrument	Pre-amplifier	310 N	186238	2024/05/21	2025/05/20
Sunol Sciences	Broadband Antenna	JB1	A040904-1	2023/07/20	2026/07/19
Unknown	Cable	Chamber A Cable 1	N/A	2024/06/18	2025/06/17
Unknown	Cable	XH500C	J-10M-A	2024/06/18	2025/06/17
BACL	Active Loop Antenna	1313-1A	4031911	2024/05/14	2027/05/13
Unknown	Cable	2Y194	0735	2024/12/04	2025/12/03
Unknown	Cable	PNG214	1354	2024/12/04	2025/12/03
Audix	EMI Test software	E3	19821b(V9)	NCR	NCR
Rohde & Schwarz	Spectrum Analyzer	FSV40	101605	2025/03/26	2026/03/25
A.H.System	Preamplifier	PAM-0118P	489	2024/11/15	2025/11/14
Schwarzbeck	Horn Antenna	BBHA9120D(1201)	1143	2023/07/26	2026/07/25
Unknown	RF Cable	KMSE	735	2024/12/04	2025/12/03
Unknown	RF Cable	UFA147	219661	2024/12/04	2025/12/03
Unknown	RF Cable	XH750A-N	J-10M	2024/12/04	2025/12/03
JD	Filter Switch Unit	DT7220FSU	DS79906	2024/09/09	2025/09/08
JD	Multiplex Switch Test Control Set	DT7220SCU	DS79903	2024/09/09	2025/09/08
A.H.System	Pre-amplifier	PAM-1840VH	190	2024/06/18	2025/06/17
Electro-Mechanics Co	Horn Antenna	3116	9510-2270	2023/09/18	2026/09/17
UTIFLEX	RF Cable	NO. 13	232308-001	2024/06/18	2025/06/17
Audix	EMI Test software	E3	191218(V9)	NCR	NCR

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
RF Conducted Test					
Rohde & Schwarz	Spectrum Analyzer	FSV40-N	102259	2024/12/04	2025/12/03
Rohde & Schwarz	Digital Radio Communication Tester	CMD60	830553/018	2024/05/21	2025/05/20
Keysight	MXG Vector Signal Generator	N5182B	MY53051503	2024/12/04	2025/12/03
Fluke	Digital Multimeter	287	19000011	2024/05/21	2025/05/20
WEINSCHEL	3dB Attenuator	Unknown	F-03-EM119	2024/06/27	2025/06/26
WEINSCHEL	Power Splitter	1515	RH476	2024/06/27	2025/06/26
Micro-Tronics	RF Cable	8082176	W6111	2024/06/27	2025/06/26
HELLVIAO	Contact voltage regulator	TDGC2-5KVA	Unknown	NCR	NCR

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Shenzhen) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC §1.1310 & §2.1091 - MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Applicable Standard

According to subpart §1.1310, systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

Limits for Maximum Permissible Exposure (MPE) (§1.1310, §2.1091)

(B) Limits for General Population/Uncontrolled Exposure				
Frequency Range (MHz)	**Electric Field Strength (V/m)**	**Magnetic Field Strength (A/m)**	**Power Density (mW/cm^2)**	**Averaging Time (minutes)**
0.3–1.34	614	1.63	*(100)	30
1.34–30	824/f	2.19/f	*(180/f^2)	30
30–300	27.5	0.073	0.2	30
300–1500	/	/	f/1500	30
1500–100,000	/	/	1.0	30

f = frequency in MHz; * = Plane-wave equivalent power density;

According to §1.1310 and §2.1091 RF exposure is calculated.

Result

Calculation formula:

Prediction of power density at the distance of the applicable MPE limit
$S = PG/4\pi R^2$ = power density (in appropriate units, e.g. mW/cm^2);
P = power input to the antenna (in appropriate units, e.g., mW);
G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor, is normally numeric gain;
R = distance to the center of radiation of the antenna (appropriate units, e.g., cm);

For simultaneously transmit system, the calculated power density should comply with:

$$\sum_i \frac{S_i}{S_{Limit,i}} \leq 1$$

Calculated Data:

For worst case:

Mode	Frequency (MHz)	Antenna Gain#		Max Tune-up Power#		Evaluation Distance (cm)	Power Density (mW/cm^2)	MPE Limit (mW/cm^2)
		(dBi)	(numeric)	(dBm)	(mW)			
BT	2402-2480	0	1.00	4.5	2.82	20	0.0006	1.0
DECT	1921.536-1928.448	0	1.00	20.0	100.00	20	0.0199	1.0

Note:
1) The tune up conducted power and antenna gain was declared by the applicant.
2) The DECT function can transmit at the same time with the BT function.

Simultaneous transmitting consideration (worst case):

The ratio=MPE_{BT}/limit+ MPE_{DECT}/limit = 0.0006/1.0+0.0199/1.0 =0.021<1.0

So simultaneous exposure is compliant.

To maintain compliance with the FCC's RF exposure guidelines, place the equipment at least 20cm from nearby persons.

Result: Compliant.

RSS-102 § 6.6 - FIELD REFERENCE LEVEL EXPOSURE EXEMPTION LIMITS

Applicable Standard

According to RSS-102 Issue 6§6.6:

Field reference level (FRL) exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm (i.e. mobile devices), except when the device operates as follows:

• below 20 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 1 W (adjusted for tune-up tolerance)

• at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than $4.49/f^{0.5}$ W (adjusted for tune-up tolerance), where f is in MHz

• at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance)

• at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than $1.31 \times 10^{-2} f^{0.6834}$ W (adjusted for tune-up tolerance), where f is in MHz

• at or above 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 5 W (adjusted for tune-up tolerance) In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the EIRP was derived.

Result

Calculated Data:

Mode	Frequency (MHz)	Maximum tune-up conducted power# (dBm)	Antenna Gain#	Maximum tune-up EIRP		Evaluation Distance (m)	Limit (mW)
			(dBi)	(dBm)	(mW)		
BT	2402-2480	4.5	0	4.50	2.82	0.2	2676
DECT	1920-1930	20.0	0	20.00	100.00	0.2	2297

Note: 1. The tune up conducted power# and antenna gain# was declared by the applicant.
2. The DECT function can transmit at the same time with the BT function.

Simultaneous transmitting consideration (worst case):

The ratio=$EIRP_{BT}$/Limit $_{BT}$+ $EIRP_{DECT}$/Limit $_{DECT}$ = 2.82/2676+100/2297 =0.045<1.0

So simultaneous exposure is compliant.

Result: Compliant

FCC § 15.317, § 15.203 & RSS-Gen §6.8 ANTENNA REQUIREMENT

Applicable Standard

According to 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.

The applicant for equipment certification shall provide a list of all antenna types that may be used with the transmitter, where applicable (i.e. for transmitters with detachable antenna), indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna. The test report shall demonstrate the compliance of the transmitter with the limit for maximum equivalent isotropically radiated power (e.i.r.p.) specified in the applicable RSS, when the transmitter is equipped with any antenna type, selected from this list.

For expediting the testing, measurements may be performed using only the antenna with highest gain of each combination of transmitter and antenna type, with the transmitter output power set at the maximum level. However, the transmitter shall comply with the applicable requirements under all operational conditions and when in combination with any type of antenna from the list provided in the test report (and in the notice to be included in the user manual, provided below).

When measurements at the antenna port are used to determine the RF output power, the effective gain of the device's antenna shall be stated, based on a measurement or on data from the antenna's manufacturer.

The test report shall state the RF power, output power setting and spurious emission measurements with each antenna type that is used with the transmitter being tested.

For licence-exempt equipment with detachable antennas, the user manual shall also contain the following notice in a conspicuous location:

This radio transmitter [enter the device's ISED certification number] has been approved by Innovation, Science and Economic Development Canada to operate with the antenna types listed below, with the maximum permissible gain indicated. Antenna types not included in this list that have a gain greater than the maximum gain indicated for any type listed are strictly prohibited for use with this device.
Immediately following the above notice, the manufacturer shall provide a list of all antenna types which can be used with the transmitter, indicating the maximum permissible antenna gain (in dBi) and the required impedance for each antenna type.

Antenna Connector Construction

The EUT has two integral antenna arrangements which were permanently attached and both the gain[#] is 0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

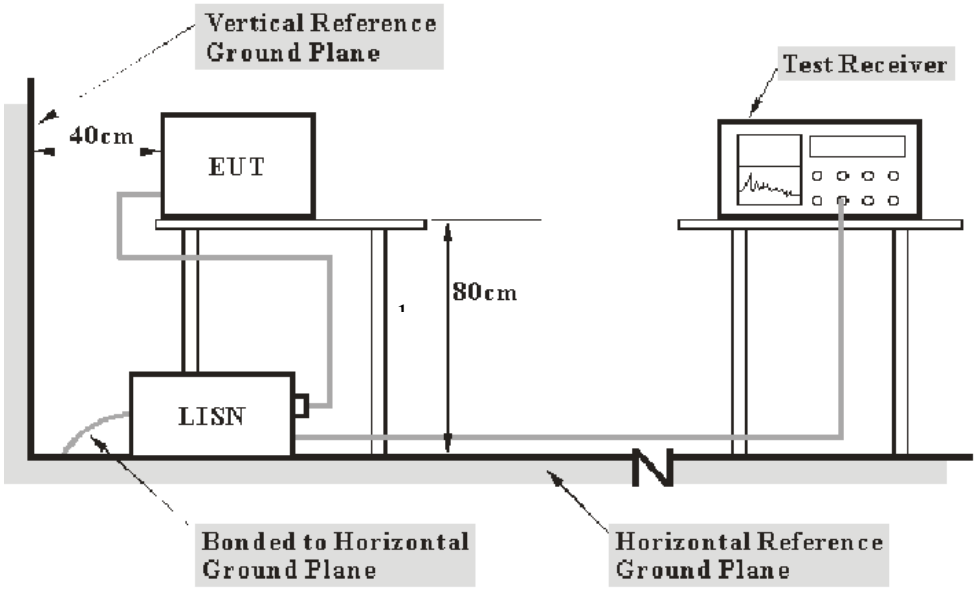
Antenna	Type	Antenna Gain[#]	Impedance
Antenna 0	Monopole	0dBi	50Ω
Antenna 1	Monopole	0dBi	50Ω

FCC § 15.315, § 15.207 & RSS-213 §5.4 CONDUCTED EMISSIONS

Applicable Standard

FCC§15.315, §15.207(a), RSS-213 §5.4, RSS-GEN § 8.8.

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 C63.4-2014 measurement procedure. The specification used was with the FCC 15.315, FCC 15.207 and RSS-Gen 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.

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

Test Procedure

During the conducted emission test, adapter was connected to the outlet of the LISN.

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Factor & Over Limit Calculation

The factor is calculated by adding LISN VDF (Voltage Division Factor) and Cable Loss. The basic equation is as follows:

Factor = LISN VDF + Cable Loss

The "**Over limit**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over limit of -7 dB means the emission is 7 dB below the limit. The equation for calculation is as follows:

Over Limit = Level – Limit
Level = Read Level + Factor

Note: The term "cable loss" refers to the combination of a cable and a 10dB transient limiter (attenuator).

Test Data

Environmental Conditions

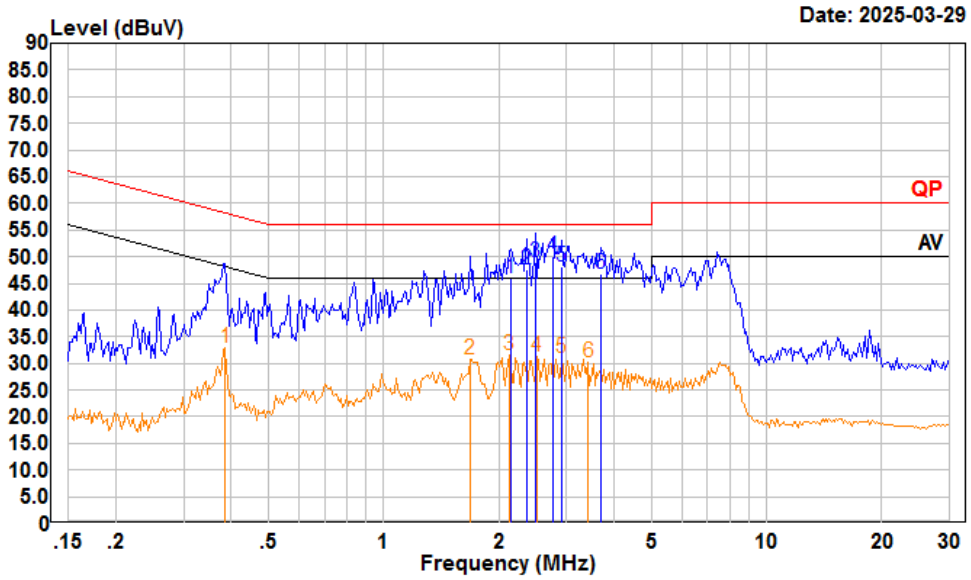
Temperature:	25.0 ℃
Relative Humidity:	42 %
ATM Pressure:	101.1 kPa

The testing was performed by Macy Shi on 2025-03-29.

EUT operation mode: Transmitting (Maximum output power mode, ANT0 High channel)

Adapter 1

AC 120V/60 Hz, Line



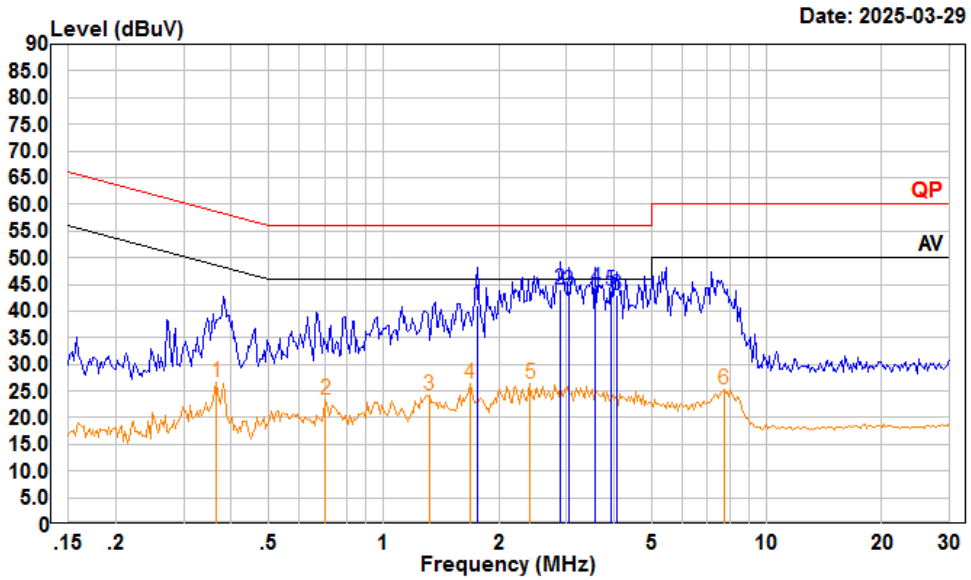
Trace: 1

Condition: Line
Project : 2501R02198E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	2.144	24.60	45.86	11.08	10.18	56.00	-10.14	QP
2	2.358	26.30	47.53	11.05	10.18	56.00	-8.47	QP
3	2.487	27.80	49.01	11.04	10.17	56.00	-6.99	QP
4	2.765	28.79	49.98	11.01	10.18	56.00	-6.02	QP
5	2.915	26.90	48.07	10.99	10.18	56.00	-7.93	QP
6	3.681	25.70	46.82	10.92	10.20	56.00	-9.18	QP

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.385	12.17	32.84	10.56	10.11	48.17	-15.33	Average
2	1.680	9.71	30.85	10.97	10.17	46.00	-15.15	Average
3	2.121	10.15	31.42	11.08	10.19	46.00	-14.58	Average
4	2.513	10.15	31.35	11.03	10.17	46.00	-14.65	Average
5	2.915	9.90	31.07	10.99	10.18	46.00	-14.93	Average
6	3.417	8.99	30.13	10.95	10.19	46.00	-15.87	Average

AC 120V/60 Hz, Neutral



Trace: 1

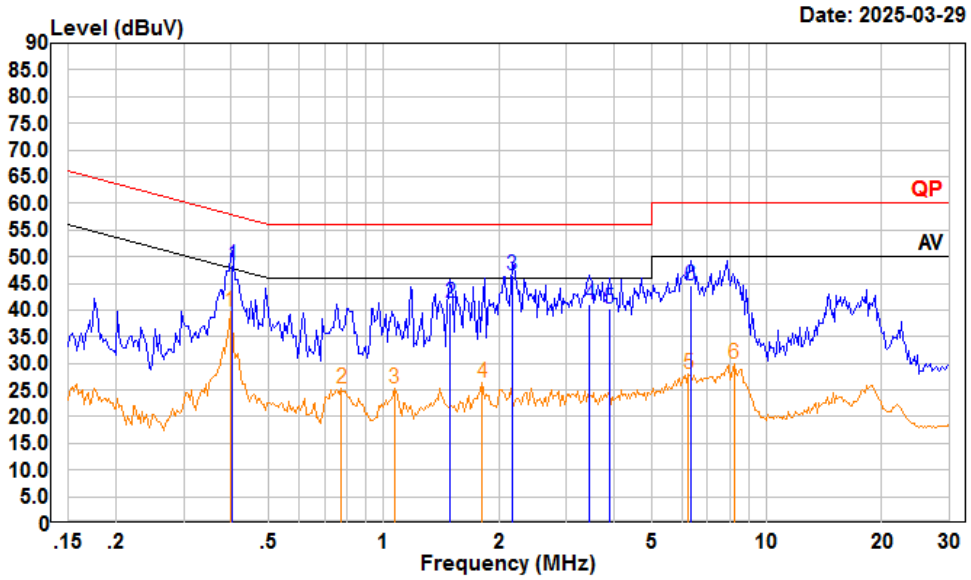
Condition: Neutral
Project : 2501R02198E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	1.753	20.29	41.19	10.72	10.18	56.00	-14.81	QP
2	2.884	22.90	43.94	10.86	10.18	56.00	-12.06	QP
3	3.041	22.60	43.66	10.88	10.18	56.00	-12.34	QP
4	3.565	23.20	44.35	10.95	10.20	56.00	-11.65	QP
5	3.922	22.64	43.84	10.99	10.21	56.00	-12.16	QP
6	4.049	21.72	42.92	10.99	10.21	56.00	-13.08	QP

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.365	5.91	26.62	10.60	10.11	48.61	-21.99	Average
2	0.705	2.77	23.52	10.60	10.15	46.00	-22.48	Average
3	1.317	3.23	24.14	10.76	10.15	46.00	-21.86	Average
4	1.680	5.50	26.40	10.73	10.17	46.00	-19.60	Average
5	2.409	5.53	26.48	10.78	10.17	46.00	-19.52	Average
6	7.728	4.53	25.29	10.57	10.19	50.00	-24.71	Average

Adapter 2

AC 120V/60 Hz, Line



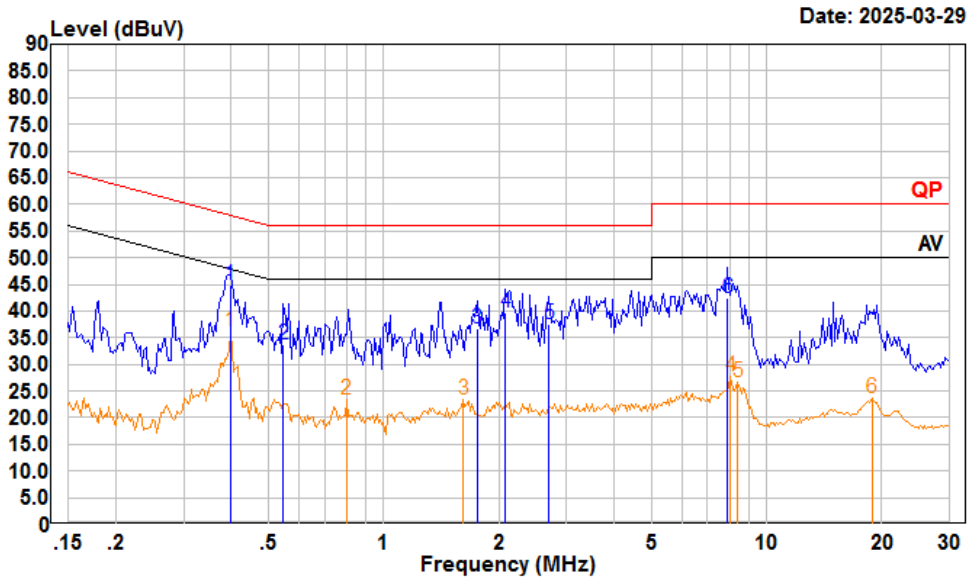
Trace: 1

Condition: Line
Project : 2501R02198E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.402	27.80	48.45	10.55	10.10	57.81	-9.36	QP
2	1.495	20.30	41.35	10.89	10.16	56.00	-14.65	QP
3	2.167	25.20	46.46	11.08	10.18	56.00	-9.54	QP
4	3.454	20.01	41.14	10.94	10.19	56.00	-14.86	QP
5	3.881	19.20	40.32	10.91	10.21	56.00	-15.68	QP
6	6.319	23.80	44.64	10.65	10.19	60.00	-15.36	QP

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.398	19.12	39.77	10.55	10.10	47.90	-8.13	Average
2	0.775	4.25	25.19	10.81	10.13	46.00	-20.81	Average
3	1.065	4.51	25.28	10.65	10.12	46.00	-20.72	Average
4	1.810	5.08	26.29	11.03	10.18	46.00	-19.71	Average
5	6.252	7.09	27.94	10.66	10.19	50.00	-22.06	Average
6	8.235	9.32	29.98	10.46	10.20	50.00	-20.02	Average

AC 120V/60 Hz, Neutral



Trace: 1

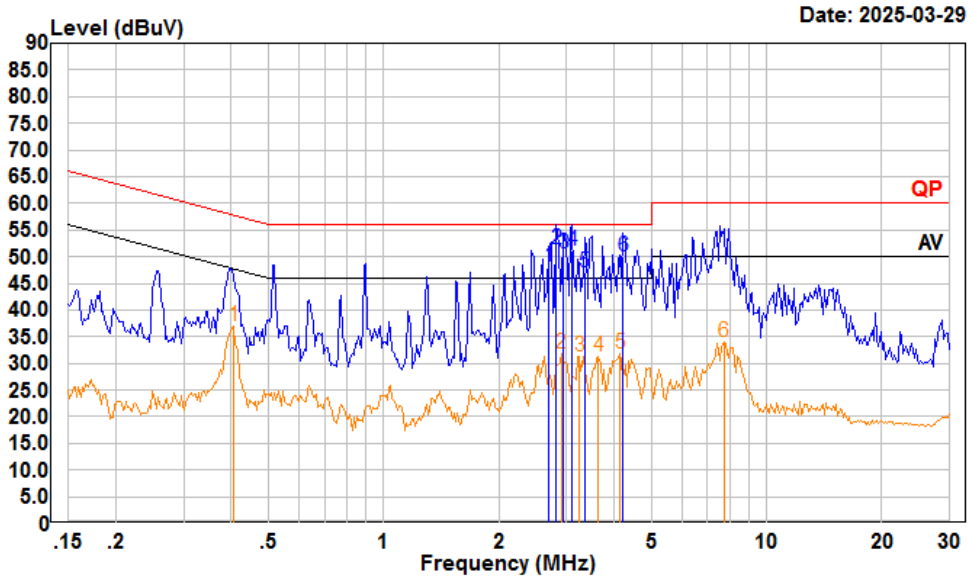
Condition: Neutral
Project : 2501R02198E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.398	24.20	44.88	10.58	10.10	57.90	-13.02	QP
2	0.546	13.20	33.86	10.53	10.13	56.00	-22.14	QP
3	1.753	15.69	36.59	10.72	10.18	56.00	-19.41	QP
4	2.077	18.89	39.80	10.72	10.19	56.00	-16.20	QP
5	2.707	16.51	37.51	10.83	10.17	56.00	-18.49	QP
6	7.893	21.69	42.46	10.57	10.20	60.00	-17.54	QP

	Freq	Read Level	LISN Level	Factor	Cable Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.398	15.51	36.19	10.58	10.10	47.90	-11.71	Average
2	0.800	2.60	23.40	10.68	10.12	46.00	-22.60	Average
3	1.610	2.41	23.31	10.73	10.17	46.00	-22.69	Average
4	8.062	6.90	27.66	10.56	10.20	50.00	-22.34	Average
5	8.412	5.90	26.65	10.55	10.20	50.00	-23.35	Average
6	18.820	2.65	23.76	10.93	10.18	50.00	-26.24	Average

Adapter 3

AC 120V/60 Hz, Line



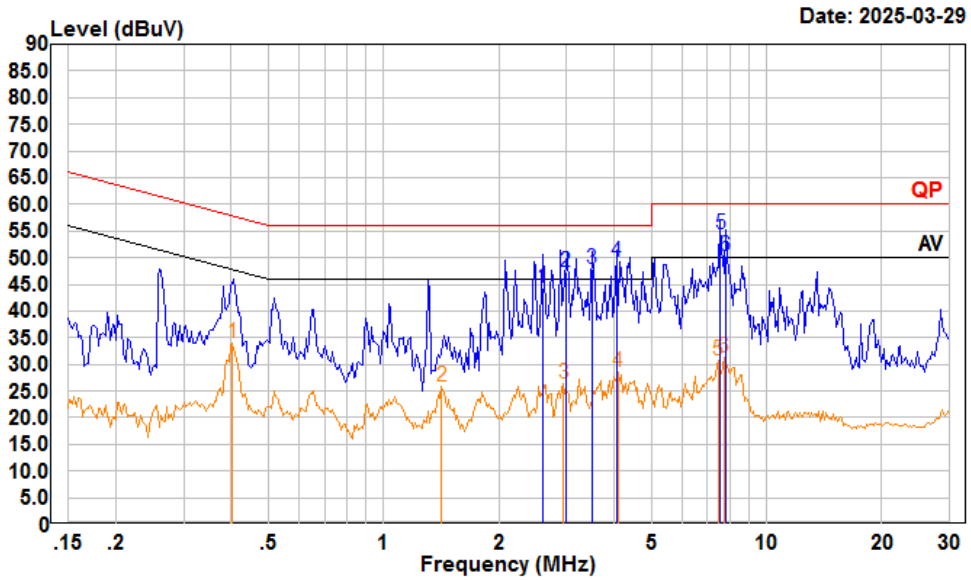
Trace: 1

Condition: Line
Project : 2501R02198E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	2.700	26.91	48.09	11.01	10.17	56.00	-7.91	QP
2	2.828	30.10	51.28	11.00	10.18	56.00	-4.72	QP
3	2.954	29.40	50.57	10.99	10.18	56.00	-5.43	QP
4	3.107	30.11	51.26	10.97	10.18	56.00	-4.74	QP
5	3.346	26.00	47.14	10.95	10.19	56.00	-8.86	QP
6	4.224	28.90	49.97	10.87	10.20	56.00	-6.03	QP

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.406	16.23	36.88	10.55	10.10	47.73	-10.85	Average
2	2.915	10.56	31.73	10.99	10.18	46.00	-14.27	Average
3	3.241	10.22	31.37	10.96	10.19	46.00	-14.63	Average
4	3.642	10.05	31.18	10.93	10.20	46.00	-14.82	Average
5	4.136	10.65	31.74	10.88	10.21	46.00	-14.26	Average
6	7.728	13.24	33.95	10.52	10.19	50.00	-16.05	Average

AC 120V/60 Hz, Neutral



Trace: 1

Condition: Neutral
Project : 2501R02198E-RF
tester : Macy.shi Note:Transmitting
Setting : RBW:9kHz

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	2.595	23.40	44.38	10.81	10.17	56.00	-11.62	QP
2	2.987	26.30	47.35	10.87	10.18	56.00	-8.65	QP
3	3.491	26.81	47.94	10.94	10.19	56.00	-8.06	QP
4	4.049	27.90	49.10	10.99	10.21	56.00	-6.90	QP
5	7.566	33.50	54.27	10.58	10.19	60.00	-5.73	QP
6	7.810	29.59	50.36	10.57	10.20	60.00	-9.64	QP

	Freq	Read Level	LISN Level	Cable Factor	Loss	Limit Line	Over Limit	Remark
	MHz	dBuV	dBuV	dB	dB	dBuV	dB	
1	0.402	13.31	33.98	10.57	10.10	47.81	-13.83	Average
2	1.418	4.86	25.76	10.75	10.15	46.00	-20.24	Average
3	2.946	5.27	26.32	10.87	10.18	46.00	-19.68	Average
4	4.092	7.37	28.56	10.98	10.21	46.00	-17.44	Average
5	7.486	9.94	30.71	10.58	10.19	50.00	-19.29	Average
6	7.728	10.45	31.21	10.57	10.19	50.00	-18.79	Average

FCC §15.323 (A) & RSS-213 §5.5 EMISSION BANDWIDTH

Applicable Standard

According to FCC §15.323(a):

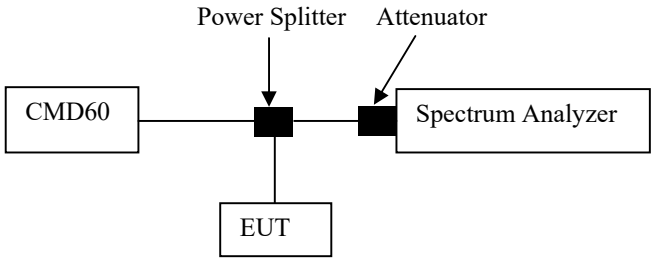
Operation shall be contained within the 1920–1930 MHz band. The emission bandwidth shall be less then 2.5 MHz and greater than 50 kHz.

According to RSS-213§ 5.5:

The emission bandwidth shall not be less than 50 kHz nor more than 2.5 MHz.

The emission bandwidth is measured in accordance with ANSI C63.17 sub-clause 6.1.3 using the setup below:

Test Setup 1:



The width, in Hz, of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that is 26 dB down relative to the maximum level of the modulated carrier. It is based on the use of measurement instrumentation employing a peak detector function with an instrument resolution bandwidth approximately equal to 1% of the emission band-width of the device under measurement. [Extraction from 47 CFR 15, subpart D, 15.303 (C)].

Test Procedure

Using the manufacturer's information on occupied bandwidth set the spectrum analyzer as follows:

Resolution bandwidth	1.0% of the emission bandwidth (as close as possible)
Video bandwidth	>3 times the resolution bandwidth
Number of sweeps	sufficient to stability the trace
Detection mode	peak detection with maximum hold

EBW:
The emission bandwidth (x dB) is defined as the frequency range between two points, one above and one below the carrier frequency, at which the spectral density of the emission is attenuated x dB below the maximum in-band spectral density of the modulated signal. Spectral density (power per unit bandwidth) is to be measured with a detector of resolution bandwidth in the range of 1% to 5% of the anticipated emission bandwidth, and a video bandwidth at least 3x the resolution bandwidth.
OBW:

- The transmitter shall be operated at its maximum carrier power measured under normal test conditions.
- The span of the analyzer shall be set to capture all products of the modulation process, including the emission skirts.
- The resolution bandwidth (RBW) shall be in the range of 1% to 5% of the occupied bandwidth (OBW) and video bandwidth (VBW) shall be approximately 3x RBW.

Test Data

Environmental Conditions

Temperature:	25.2 ℃
Relative Humidity:	46 %
ATM Pressure:	101.6 kPa

The testing was performed by Rainbow Zhu on 2025-03-25.

Test mode: Transmitting

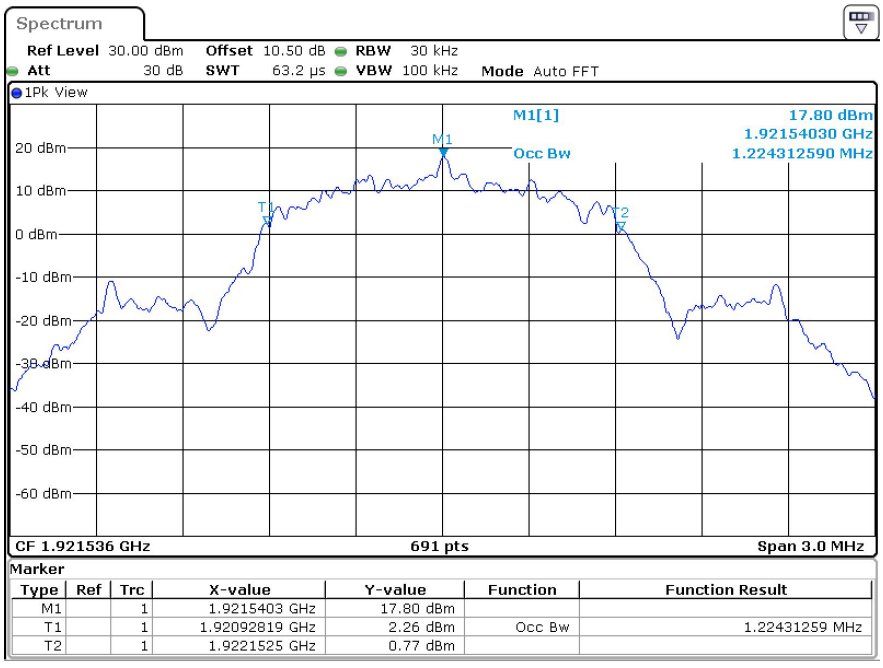
Test Result: Compliant

ANT0

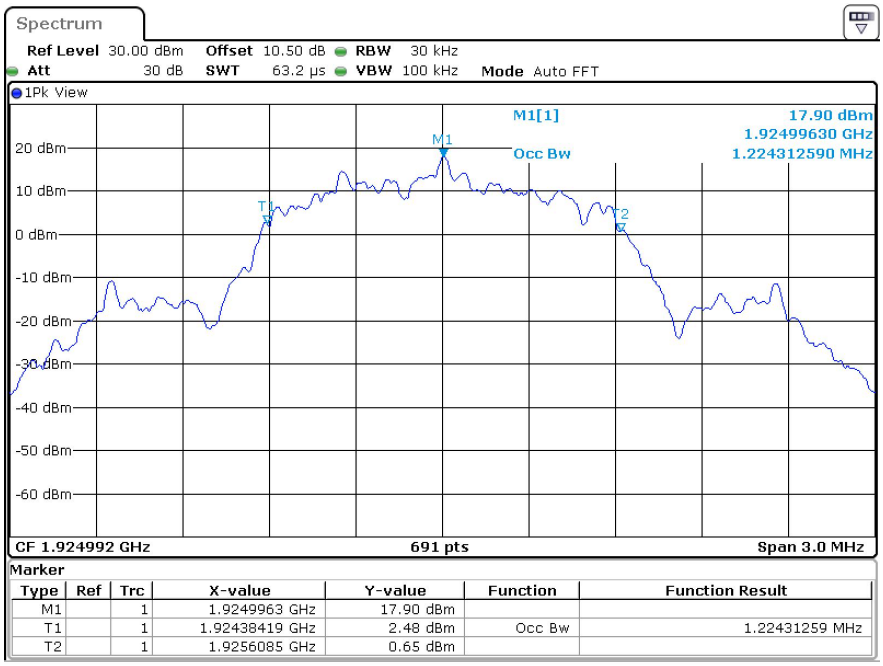
Channel	Center Frequency (MHz)	99% Emission Bandwidth (MHz)	26 dB Emission Bandwidth (MHz)	Limit
Low	1921.536	1.224	1.433	50 kHz ~ 2.5 MHz
Middle	1924.992	1.224	1.420	50 kHz ~ 2.5 MHz
High	1928.448	1.220	1.437	50 kHz ~ 2.5 MHz

99% Emission Bandwidth

Low Channel



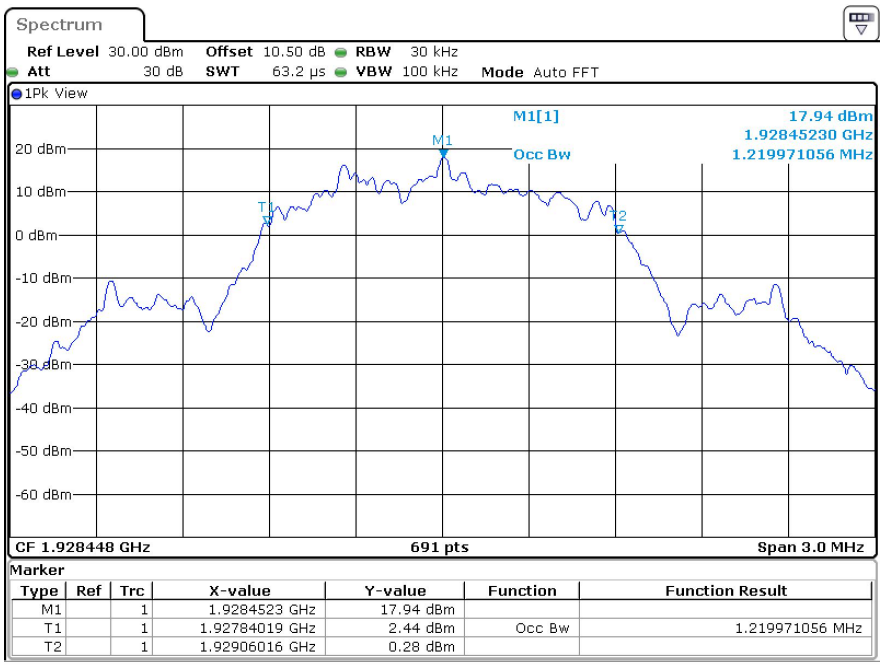
Middle Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:48:40

High Channel

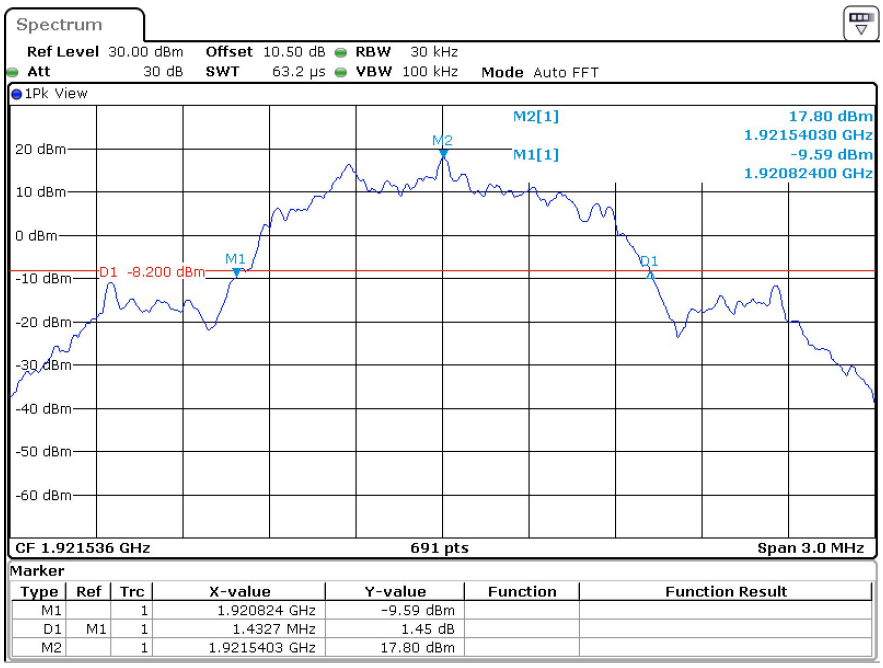


ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:46:41

26 dB Emission Bandwidth

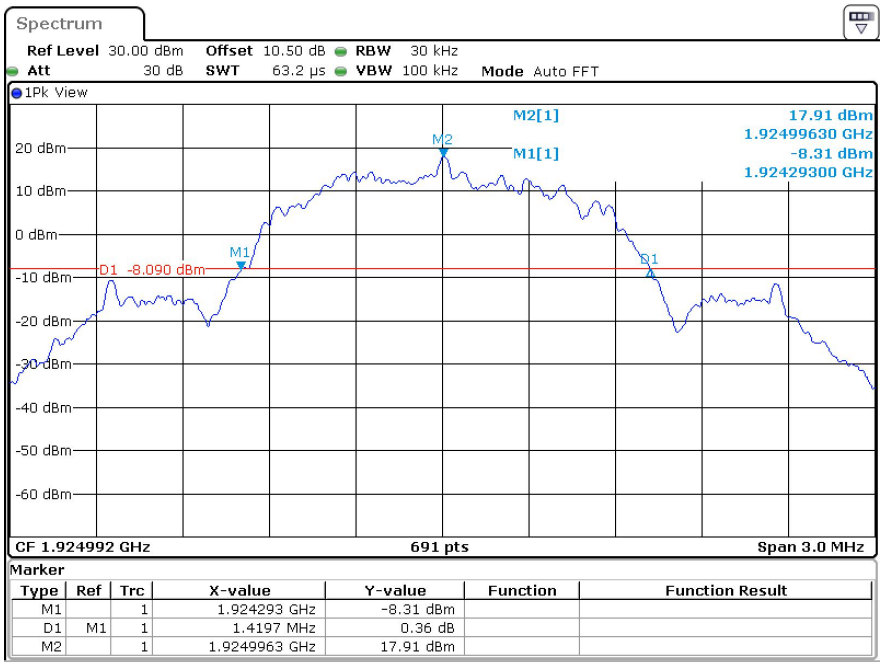
Low Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:43:14

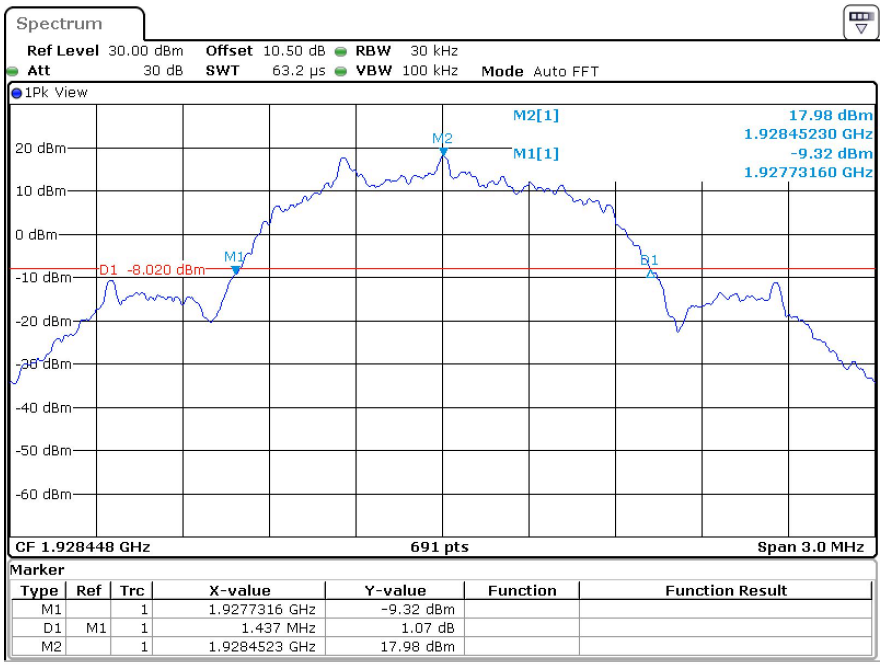
Middle Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:37:25

High Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:34:11

FCC § 15.319 (c) & RSS-213 §5.6 PEAK TRANSMIT POWER

Applicable Standard

The peak power output as measured over an interval of time equal to the frame rate or transmission burst of the device under all conditions of modulation. Usually this parameter is measured as a conducted emission by direct connection of a calibrated test instrument to the equipment under test. If the device cannot be connected directly, alternative techniques acceptable to the Commission may be used[47 CFR 15, subpart D, 15.303].

The peak transmit power is according to ANSI C63.17-2013 §6.1.2

Per FCC Part15.319 (c) Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the emission bandwidth in hertz. Peak transmit power must be measured over any interval of continuous transmission using instrumentation calibrated in terms of an rms-equivalent voltage. The measurement results shall be properly adjusted for any instrument limitations, such as detector response times, limited resolution bandwidth capability when compared to the emission bandwidth, sensitivity, etc., so as to obtain a true peak measurement for the emission in question over the full bandwidth of the channel.

Per FCC Part15.319 (e), the peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

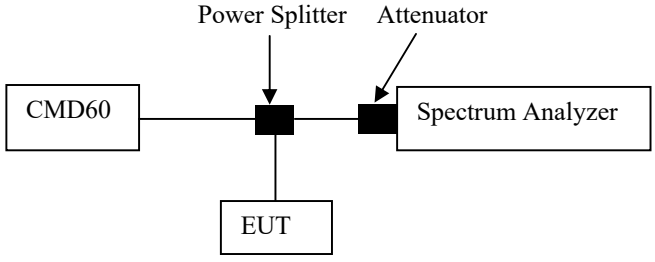
Calculation of Peak Transmit Power Limit:
Peak Transmit Power Limit = $100\mu W \times (EBW)^{1/2}$
EBW is the transmit emission bandwidth in Hz determined in the other test item:

Per RSS-213 §5.6, Peak transmit power shall not exceed 100 μW multiplied by the square root of the occupied bandwidth in hertz. The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

Test Procedure

Using the manufacturer's information on occupied bandwidth set the spectrum analyzer as follows:

RBW	≥ Emission bandwidth
Video bandwidth	≥ RBW
Span	Zero
Center frequency	Nominal center frequency of channels
Amplitude scale	Log (linear may be used if analyzer has sufficient linear dynamic range and accuracy)
Detection	Peak detection
Trigger	Video
Sweep rate	Sufficiently rapid to permit the transmit pulse to be resolved accurately



Test Data

Environmental Conditions

Temperature:	25.2 ℃
Relative Humidity:	46 %
ATM Pressure:	101.6 kPa

The testing was performed by Rainbow Zhu on 2025-03-25.

Test mode: Transmitting:

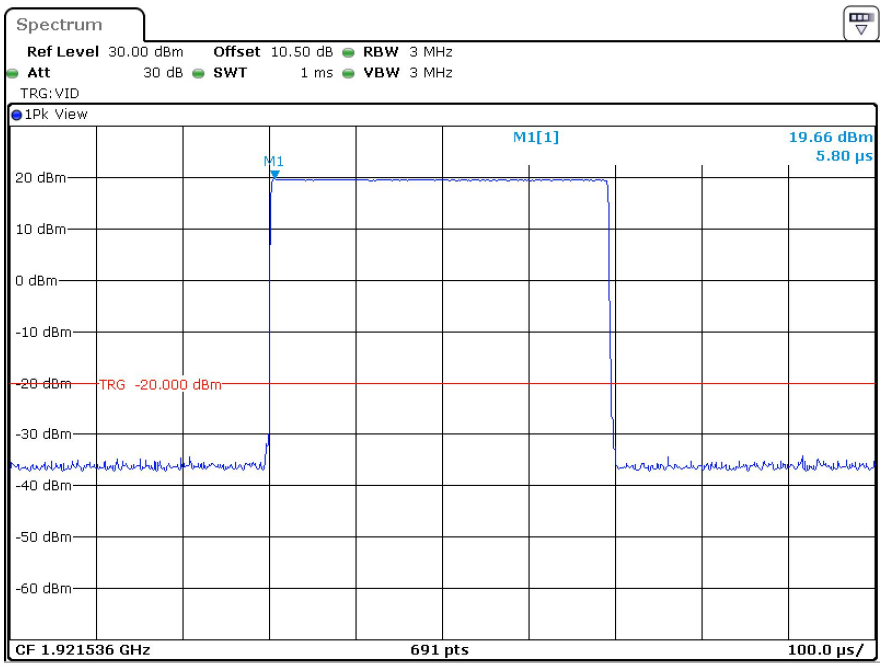
Test Result: Compliant

Please refer to the following table and plots.

Channel	Frequency (MHz)	Peak Transmit Power (dBm)	FCC Limit (dBm)	ISEDC Limit (dBm)
ANT0				
Low	1921.536	19.66	20.78	20.44
Middle	1924.992	19.76	20.76	20.44
High	1928.448	19.88	20.79	20.43
ANT1				
Low	1921.536	19.28	20.78	20.44
Middle	1924.992	19.27	20.76	20.44
High	1928.448	19.30	20.79	20.43
For FCC: Peak Transmit Power Limit = $100(EBW)^{1/2}$ μW For ISEDC: Peak Transmit Power Limit = $100(OBW)^{1/2}$ μW				

ANT0

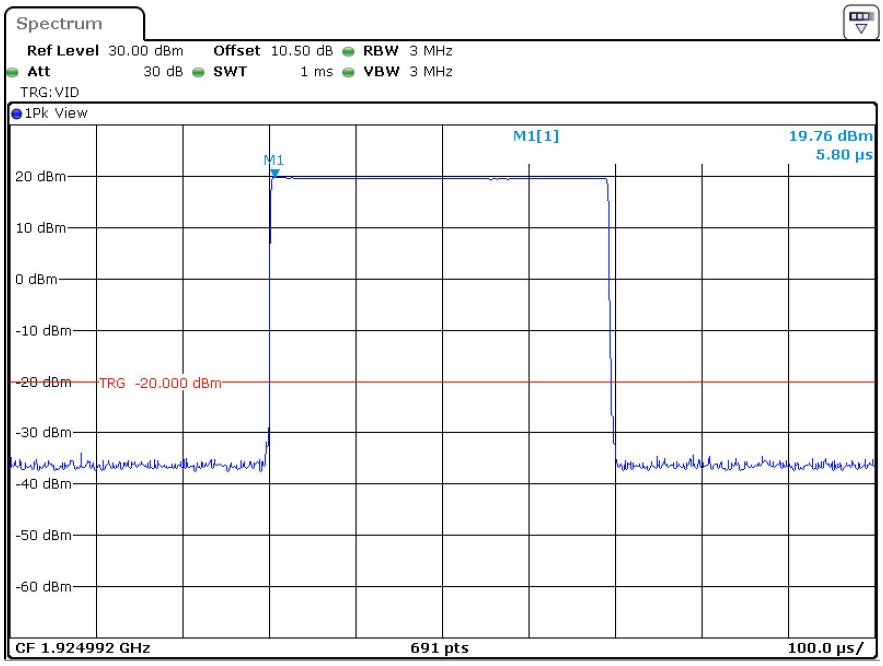
Low Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:19:46

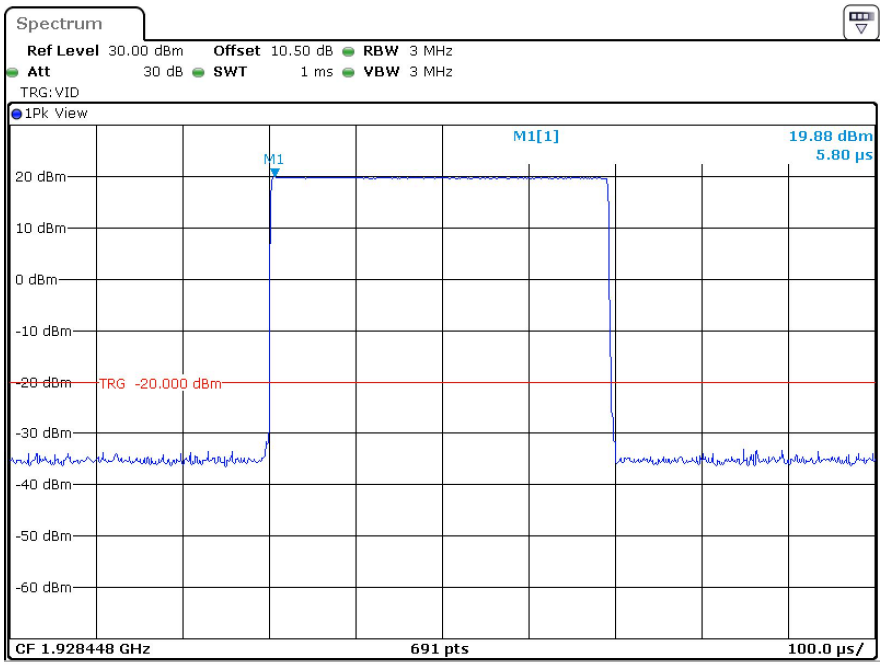
Middle Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:17:35

High Channel

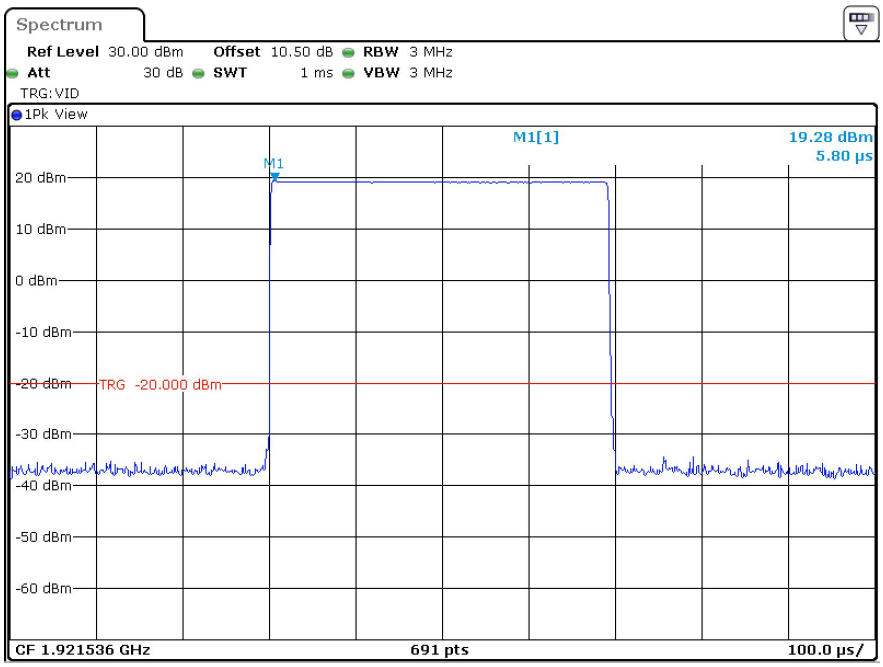


ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:15:46

ANT1

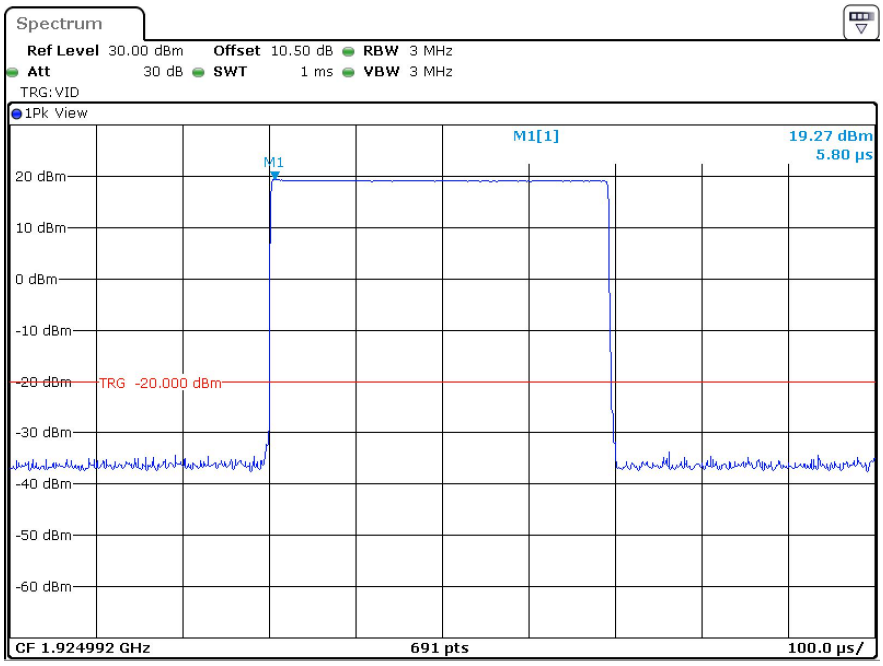
Low Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:26:11

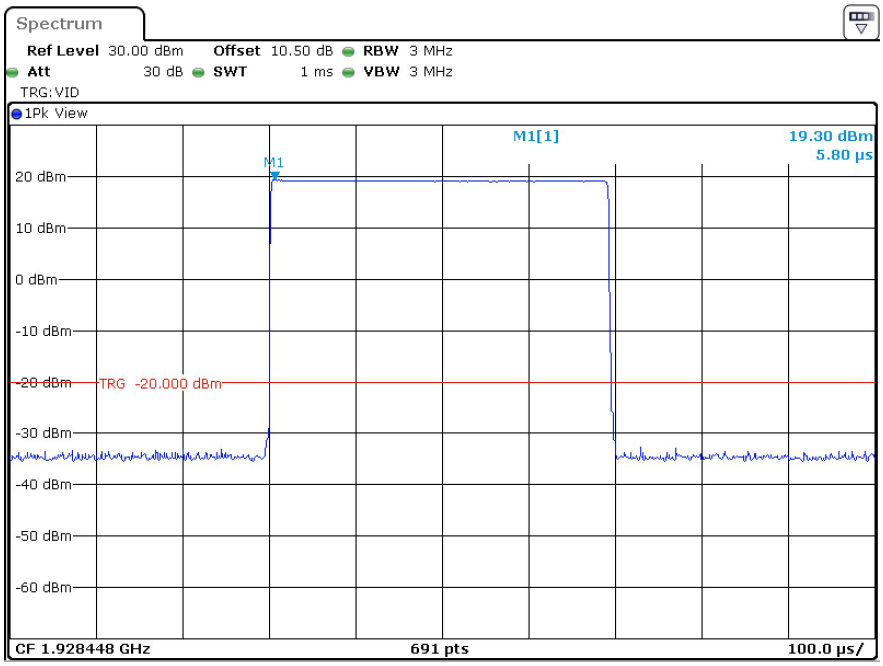
Middle Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:23:48

High Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 16:22:19

FCC § 15.319 (d) & RSS-213 §5.7 POWER SPECTRAL DENSITY

Applicable Standard

According to FCC § 15.319 (d):

The average pulse energy in a 3 kHz bandwidth is divided by the pulse duration.

The power spectral density shall not exceed 3mW in any 3 kHz bandwidth as measured with a spectrum analyzer having a resolution bandwidth of 3 kHz.

The power spectral density is measured in accordance with ANSI C63.17-2013 Clause 6.1.5.

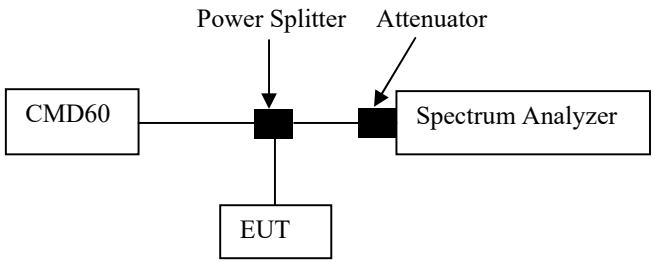
According to RSS-213 §5.7:

The peak-hold power spectral density of transmitters shall not exceed 12 mW per any 3 kHz bandwidth. As an alternative to the peak-hold power spectral density, the time-averaged power spectral density may be measured and it shall not exceed 3 mW per any 3 kHz bandwidth.

Test Procedure

Using the manufacturer's information on occupied bandwidth set the spectrum analyzer as follows:

RBW	3 kHz
Video bandwidth	≥ 3 × RBW
Span	Zero span at frequency with the maximum level (frequency determined in 6.1.3 if the same type of signal (continuous versus burst) was used in 6.1.3)
Center frequency	Spectral peak as determined in 6.1.3
Sweep time	For burst signals, sufficient to include essentially all of the maximum length burst at the output of a 3 kHz filter (e.g., maximum input burst duration plus 600 μs). For continuous signals, 20 ms.
Amplitude scale	Log power
Detection	Sample detection and averaged for a minimum of 100 sweeps
Trigger	External or internal



Test Data

Environmental Conditions

Temperature:	25.2 ℃
Relative Humidity:	46 %
ATM Pressure:	101.6 kPa

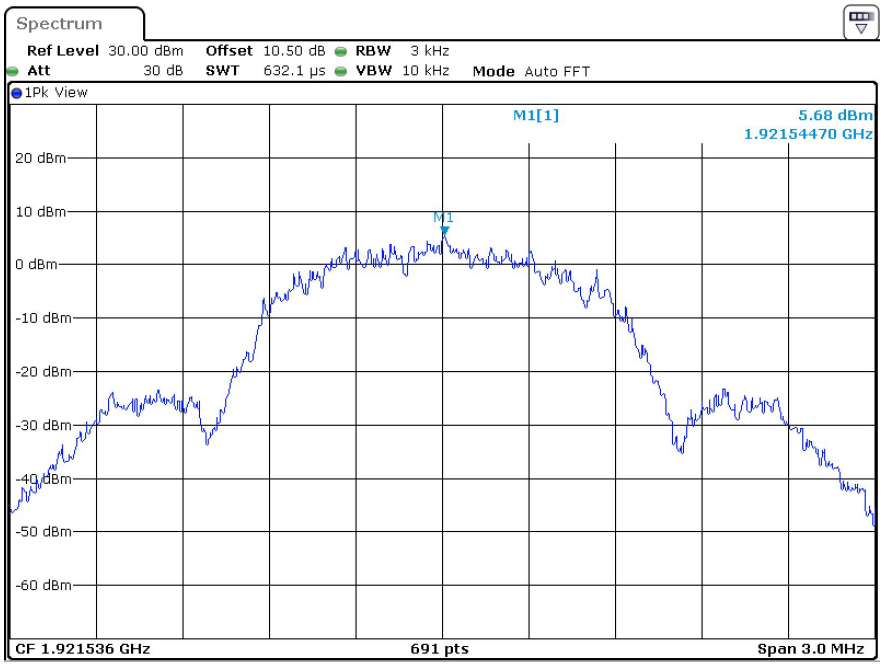
The testing was performed by Rainbow Zhu on 2025-03-25.

Test mode: Transmitting

Test Result: Compliant. *Please refer to following table and plots*

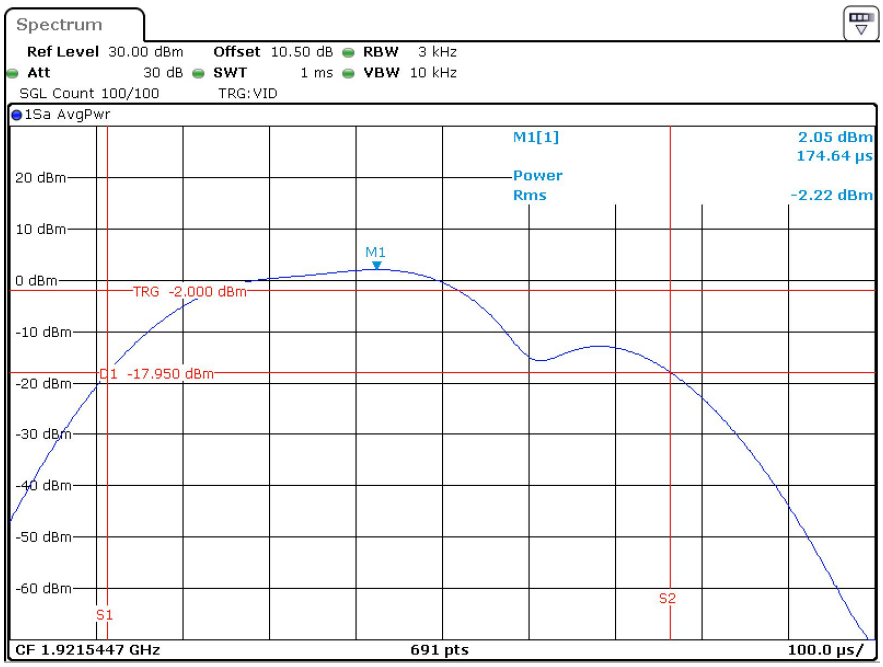
Channel	Frequency (MHz)	Power Spectral Density		Limit (mW/3kHz)
		(dBm/3kHz)	(mW/3kHz)	
Low	1921.536	-2.22	0.600	3
Middle	1924.992	-3.48	0.449	3
High	1928.448	-3.36	0.461	3

Low Channel



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

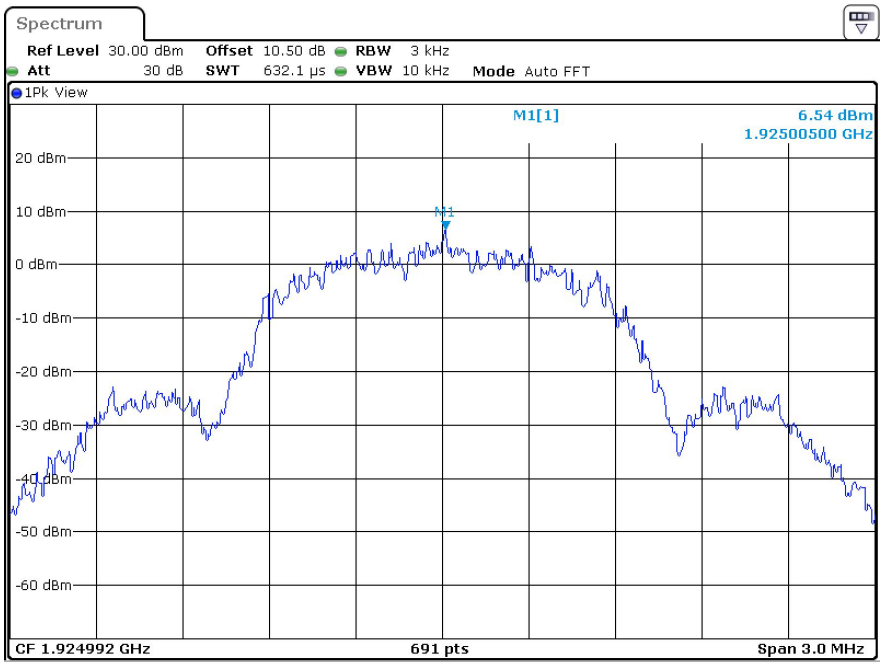
Date: 25.MAR.2025 18:56:04



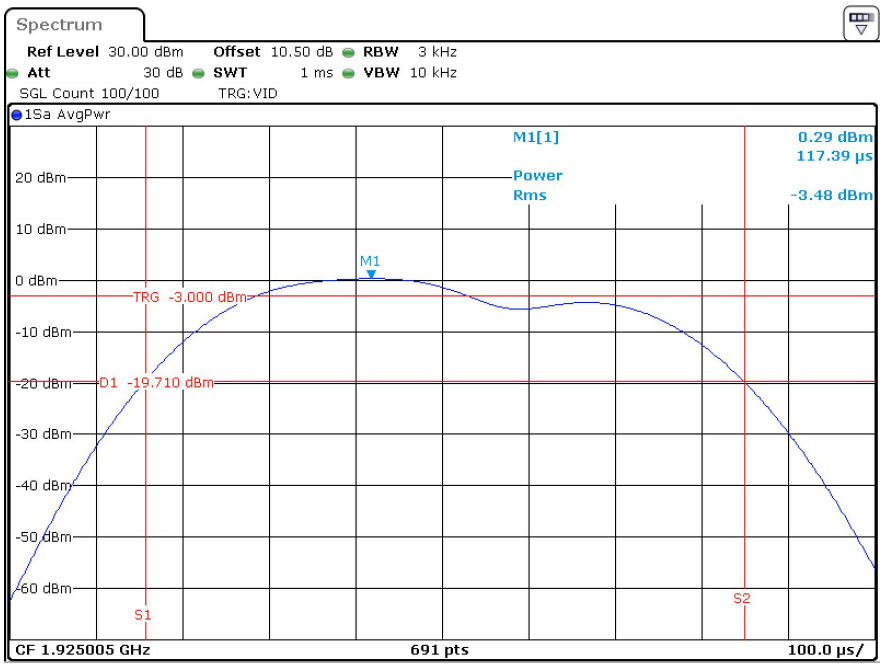
ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu

Date: 25.MAR.2025 18:02:30

Middle Channel

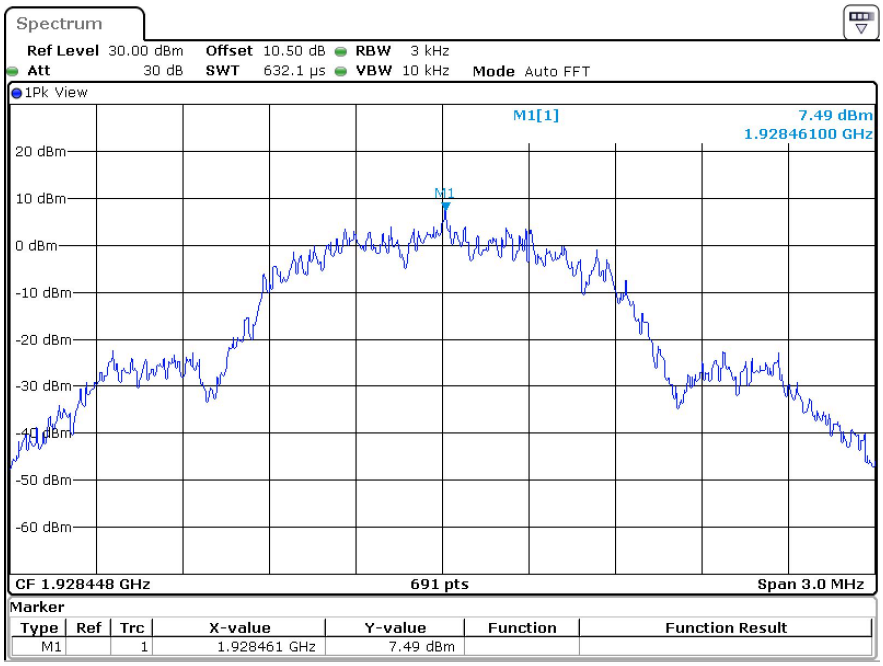


ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu
Date: 25.MAR.2025 17:31:04



ProjectNo.:2501R02198E-RF-FP Tester:Rainbow Zhu
Date: 25.MAR.2025 17:36:43

High Channel



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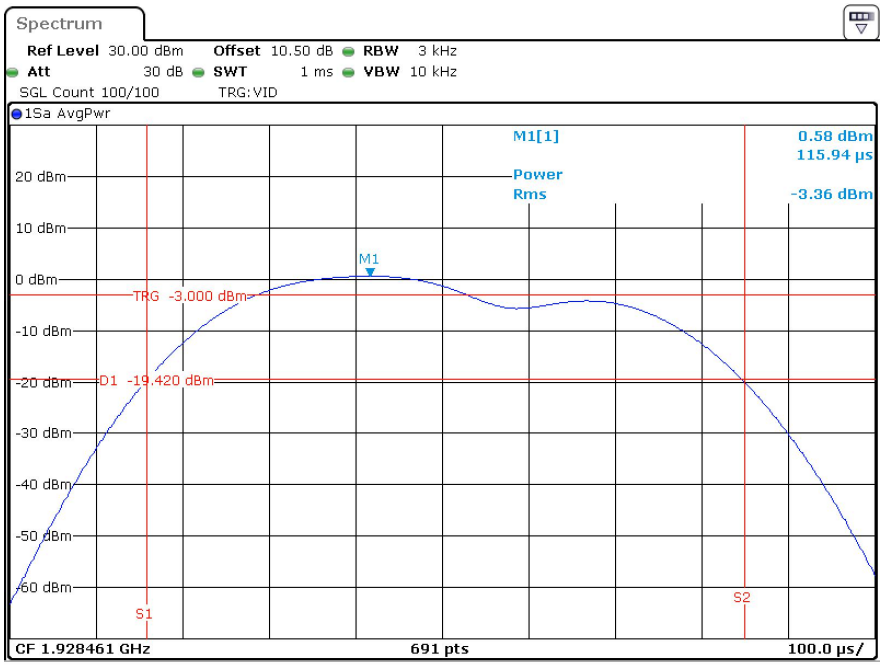

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FCC § 15.323 (d) & RSS-213 §5.8 EMISSION INSIDE AND OUTSIDE THE SUB-BAND

Applicable Standard

According to FCC § 15.323 (d):

Emissions inside the sub-band must comply with the following emission mask:

1. In the bands between 1B and 2B measured from the center of the emission bandwidth the total power emitted by the device shall be at least 30 dB below the transmit power permitted for that device;
2. in the bands between 2B and 3B measured from the center of the emission bandwidth the total power emitted by an intentional radiator shall be at least 50 dB below the transmit power permitted for that radiator;
3. in the bands between 3B and the sub-band edge the total power emitted by an intentional radiator in the measurement bandwidth shall be at least 60 dB below the transmit power permitted for that radiator.

Where B = emission bandwidth

Emission Outside the sub-band shall be attenuated below a reference power of 112 mw (20.5 dBm) as follows:

1. 30 dB between the sub-band and 1.25 MHz above or below the sub-band;
2. 50 dB between 1.25 and 2.5 MHz above or below the sub-band;
3. 60 dB at 2.5 MHz or greater above or below the sub-band.

According to RSS-213 §5.8:

Emissions outside the 1920-1930 MHz Band

Emissions outside the 1920-1930 MHz band shall be attenuated below a reference power of 112 milliwatts (-9.5 dBW) by at least:
• 30 dB between the band edges and 1.25 MHz above and below the band edges;
• 50 dB between 1.25 MHz and 2.5 MHz above or below the band edges; and
• 60 dB at 2.5 MHz or greater above or below the band edges.

Emissions inside the 1920-1930 MHz Band

Emissions inside the 1920-1930 MHz band shall be attenuated below the transmit power permitted for that device, as follows:
• 30 dB between the frequencies 1B and 2B measured from the centre of the occupied bandwidth;
• 50 dB between the frequencies 2B and 3B measured from the centre of the occupied bandwidth; and
• 60 dB between the frequencies 3B and band edge, where B is the occupied bandwidth in hertz.

Test Procedure

According to ANSI C63.17.2013 Clause 6.1.6.

In-band emission:

Spectrum analyzer settings for measuring in-band emission

RBW	Approximately 1% of the emission bandwidth (*B*)
Video bandwidth	3 × RBW
Sweep time	The sweep time shall be sufficiently slow that the swept frequency rate shall not exceed one RBW per three transmit bursts.
Number of sweeps	Sufficient to stabilize the trace
Amplitude scale	Log
Detection	Peak detection and max hold enabled
Span	Approximately equal to 3.5 *B*

Out-band emission:

Out-of-band tests shall be performed with the RF carrier set to the lowest and highest carriers defined by the EUT. The spectrum analyzer settings for in-band unwanted emissions in 6.1.6.1 also apply to out-of-band emissions. The EUT shall pass the tests of item a), item b), and either item c) or item d), as follows:

a) In the region between the band edges and 1.25 MHz below and above the lower and the upper band edges, respectively, the measured emission level shall not exceed −9.5 dBm.

b) In the region between 1.25 and 2.5 MHz below and above the lower and the upper band edges, respectively, the measured emission level shall not exceed −29.5 dBm.

c) In the region at 2.5 MHz or greater below and above the lower and upper band edges, respectively, the measured emission level shall not exceed −39.5 dBm.

For Radiated Emission:

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

All final data was recorded in Quasi-peak detection mode except for the frequency bands 9–90 kHz, 110–490 kHz and above 1000 MHz, average detection modes for frequency bands 9–90 kHz and 110–490 kHz, peak and average detection modes for frequencies above 1 GHz.

For 9 kHz-30MHz, the report shall list the six emissions with the smallest margin relative to the limit, for each of the three antenna orientations (parallel, perpendicular, and ground-parallel) unless the margin is greater than 20 dB.

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	Measurement	Detector
9 kHz – 150 kHz	/	/	200 Hz	QP	QP
	300 Hz	1 kHz	/	PK	Peak
150 kHz – 30 MHz	/	/	9 kHz	QP	QP
	10 kHz	30 kHz	/	PK	Peak
30 MHz – 1000 MHz	/	/	120 kHz	QP	QP
	100 kHz	300 kHz	/	PK	Peak
Above 1 GHz	Fundamental &Harmonics				
	1MHz	3 MHz	/	PK	Peak
	Average level= Peak level+ 20lg (Duty cycle)				
	Other Emissions				
	1MHz	3 MHz	/	PK	Peak
	1MHz	≥10 Hz	/	Average	Peak

Factor & Over Limit/Margin Calculation

The Factor is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain. The basic equation is as follows:

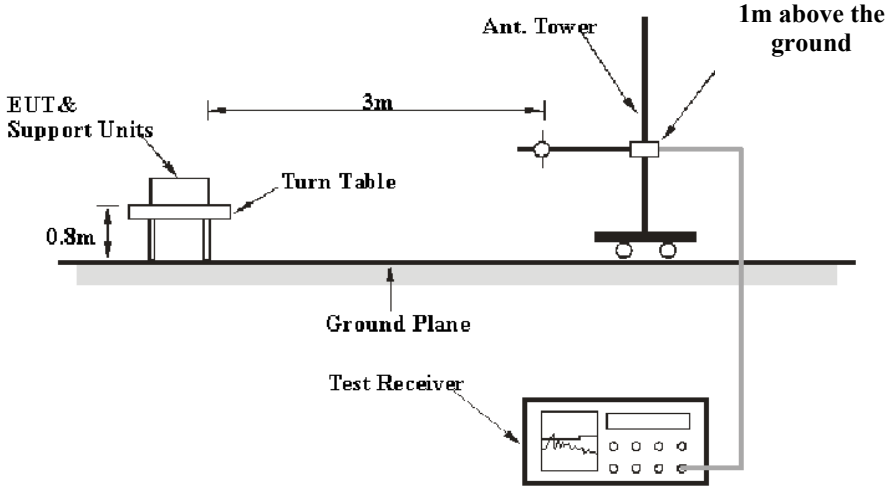
Factor = Antenna Factor + Cable Loss - Amplifier Gain

The "**Over Limit/Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, an Over Limit/margin of -7dB means the emission is 7dB below the limit. The equation for calculation is as follows:

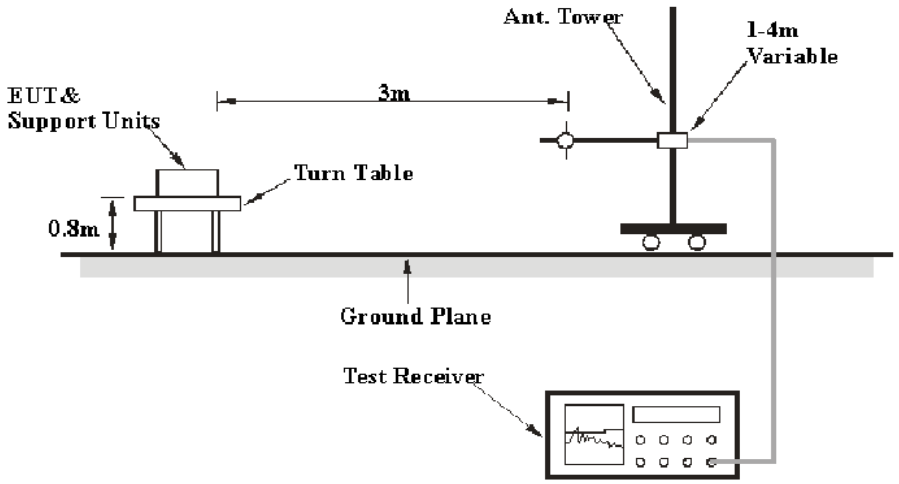
Over Limit/Margin = Level/Corrected Amplitude – Limit
Level / Corrected Amplitude = Read Level + Factor

EUT Setup

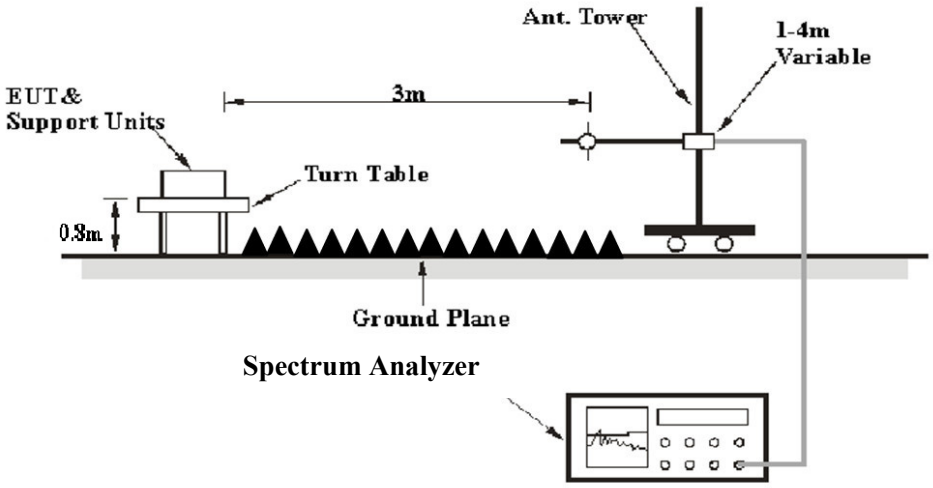
9 kHz-30MHz:



30MHz-1GHz:

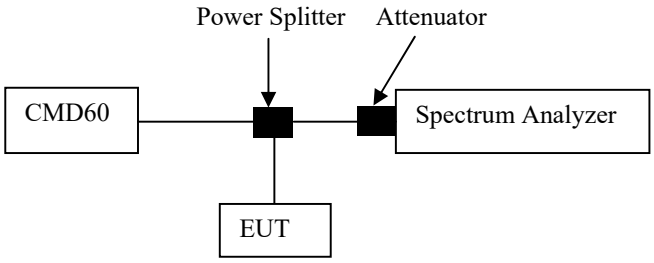


Above 1GHz:



The radiated emission tests were performed in the 3 meters test site.

RF Conducted Emission:



Test Data

Environmental Conditions

Temperature:	21.5~25.2 ℃
Relative Humidity:	46~50 %
ATM Pressure:	100.3~102.2 kPa

The testing was performed by Alex Yan on 2025-03-26 for below 1GHz, Wing K Ji on 2025-03-31 for above 1GHz and Rainbow Zhu on 2025-03-25 for RF conducted.

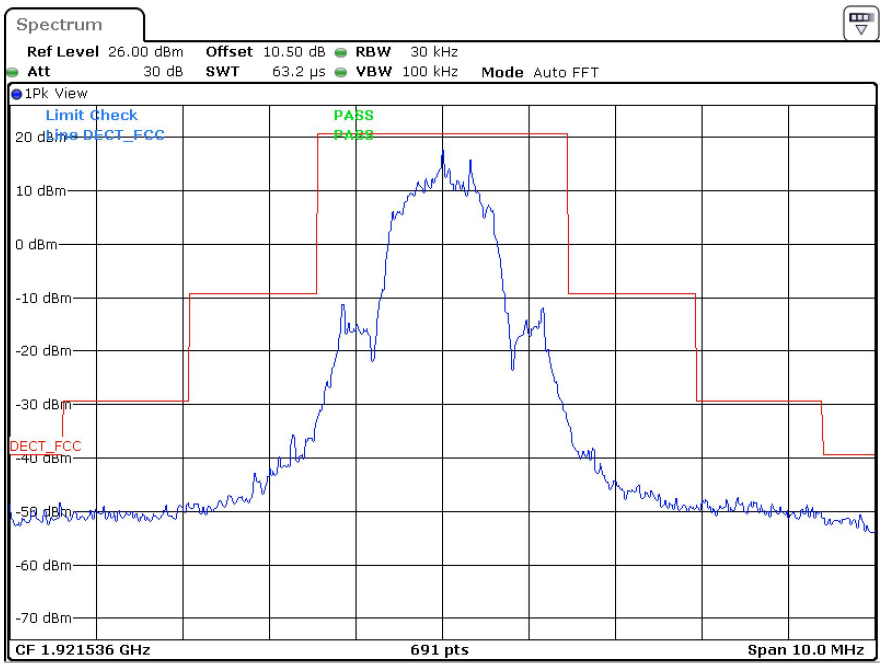
Test mode: Transmitting

Test Result: Compliant

Please refer to following plots

FCC:

Low Channel (Unwanted Emission inside the Sub-band)



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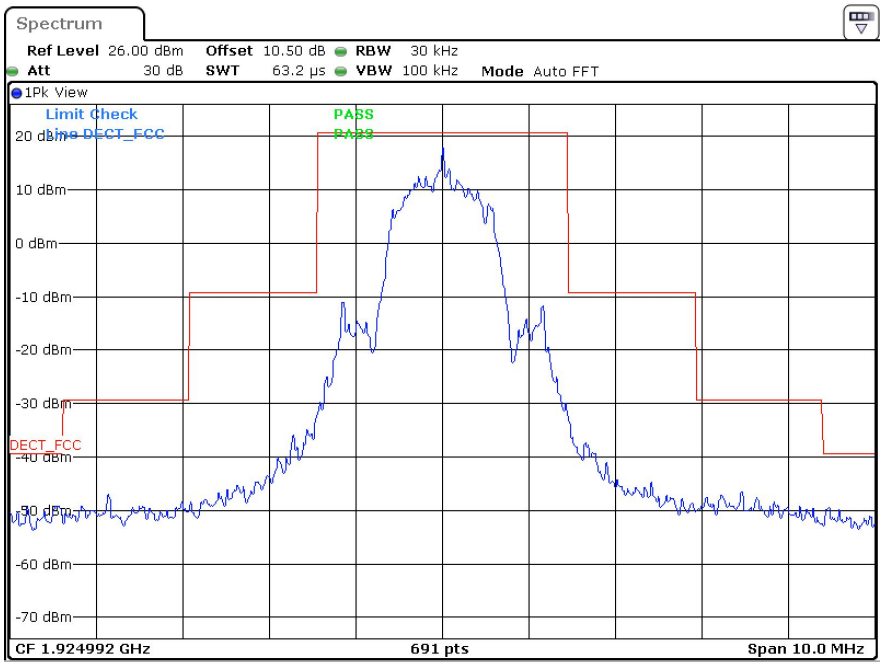
Middle Channel (Unwanted Emission inside the Sub-band)



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