RF TEST REPORT

Product Name: DECT RADIO MODULE

Model Name: RTX1090 DECT

FCC ID: 2BFX8ZN-WW-1

Issued For : RACING FORCE S.p.A

Via E. Bazzano, 5 – 16019 Ronco Scrivia (GE) - ITALY

Issued By : Shenzhen LGT Test Service Co., Ltd.

Room 205, Building 13, Zone B, Zhenxiong Industrial Park, No.177, Renmin West Road, Jinsha, Kengzi Street, Pingshan District, Shenzhen, Guangdong, China

Report Number:	LGT24E075RF01
Sample Received Date:	May 17, 2024
Date of Test:	May 17, 2024 – Jun. 13, 2024
Date of Issue:	Jun. 13, 2024

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TEST REPORT CERTIFICATION

Applicant	RACING FORCE S.p.A
Address	Via E. Bazzano, 5 – 16019 Ronco Scrivia (GE) - ITALY
Manufacturer	RTX A/S
Address	Stroemmen 6, DK-9400 Noerresundby Denmark
Product Name	DECT RADIO MODULE
Trademark	RTX
Model Name	RTX1090 DECT
Sample Status	Normal

APPLICABLE STANDARDS	
STANDARD	**TEST RESULTS**
47 CFR Part 15 Subpart D ANSI C63.17-2013	PASS

Prepared by:

Zane Shan

Zane Shan
Engineer

Approved by:

Vita Li
Technical Director

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APPENDIX I - TEST SETUP **67**

Revision History

Rev.	Issue Date	Revisions
00	Jun. 13, 2024	Initial Issue

1.SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

The following tests were conducted on a sample of the equipment for the purpose of demonstrating compliance with 47 CFR Part 15 Subpart D.

Requirement	FCC Part	Test Procedure	Result
Emission Bandwidth	15.323 (a)	6.1.3	Compliant
Labeling Requirements	15.19(a)(3)	--	Compliant
Conducted Emissions	15.315 & 15.207	ANSI C63.4	Compliant
Antenna Requirements	15.317 & 15.203	Declaration	Compliant
Use digital modulation	15.319 (b)	6.1.4	Compliant
Peak transmit power	15.319 (c)	6.1.2	Compliant
Power spectral density	15.319 (d)	6.1.5	Compliant
Power adjustment for antenna gain	15.319 (e)	4.3.1	Compliant
Automatically discontinue transmission	15.319 (f)	--	Compliant
Spurious emissions conducted	15.323 (d) (1) & 15.323 (d) (2)	6.1.6	Compliant
RF Exposure	15.319 (i) & 1.1307(b), 2.1091 and 2.1093	ANSI/IEEE C95.1	Compliant (The test data please refer to RF exposure report)
Monitoring time	15.323 (c)(1)	7.3.4	Compliant
Monitoring threshold	15.323 (c)(2)	7.3	Compliant
Duration of transmission	15.323 (c)(3)	8.2.2	Compliant
System acknowledgment test	15.323(c)(4)	8.2.1	Compliant
Channel confirmation, Power accuracy, Segment occupancy	15.323 (c)(5)	7.3.3 & 7.3.4	Compliant
Random waiting	15.323 (c)(6)	8.1.3	Not Applicable

Monitoring bandwidth	15.323 (c)(7)	7.4	Compliant
Monitoring reaction time	15.323 (c)(1)	7.5	Compliant
Monitoring antenna	15.323 (c)(8)	4	Compliant
Monitoring threshold relaxation	15.323 (c)(9)	4	Compliant
Duplex connections	15.323 (c)(10)	8.3	Compliant
Alternate monitoring interval	15.323 (c)(11)	8.4	Not Applicable
Fair access	15.323 (c)(12)	Declaration	Not Applicable
Frame period	15.323 (e)	6.2.2 & 6.2.3	Compliant
Frequency stability	15.323 (f)	6.2.1	Compliant
Radiated Out of Band Emissions	15.319 (g), 15.309 (b) & FCC Part 15 Subpart B, 15.109 and 15.209	--	Compliant

1.1 TEST FACTORY

Company Name:	Shenzhen LGT Test Service Co., Ltd.
Address:	Room 205, Building 13, Zone B, Chen Hsong Industrial Park, No.177 Renmin West Road, Jinsha Community, Kengzi Street, Pingshan New District, Shenzhen, China
Accreditation Certificate	A2LA Certificate No.: 6727.01
	FCC Registration No.: 746540
	CAB ID: CN0136

1.2 MEASUREMENT UNCERTAINTY

The reported uncertainty of measurement y ± U, where expended uncertainty U is based on a standard uncertainty multiplied by a coverage factor of k=2, providing a level of confidence of approximately 95 %.

No.	Item	Uncertainty
1	RF Output Power, Conducted	±0.71dB
2	Unwanted Emission, Conducted	±0.63dB
3	All Emissions, Radiated (0.009-30MHz)	±2.16dB
4	All Emissions, Radiated (30MHz-1GHz)	±4.40dB
5	All Emissions, Radiated (1GHz-18GHz)	±5.49dB
6	Conducted Emission (150KHz-30MHz)	±2.80dB

2 PRODUCT INFORMATION

Product Name	DECT RADIO MODULE
Trademark	RTX
Model Name	RTX1090 DECT
Series Model	N/A
Model Difference	N/A
EUT Frequency Ranges	1921.536-1928.448MHz
Modulation Type:	GFSK, π/2-DBPSK
Number of Channels	5 CH. Please see Note 2.
Antenna Type	Chip antenna
Antenna Gain	ANT 1: 1.34dBi ANT 2: 1.34dBi
Rated Input	DC 5V
Hardware version	N/A
Software version	N/A

Note 1: For a more detailed features description, please refer to the manufacturer's specifications or the User's Manual, ANT 1 and ANT 2 cannot transmit simultaneously.

Note 2: Channel List

Channel	Frequency (MHz)	Channel	Frequency (MHz)	Channel	Frequency (MHz)
04	1921.536	03	1923.264	02	1924.992
01	1926.720	00	1928.448	--	--

3 TEST MODE

The EUT was programmed to be in continuously transmitting mode.

Test Channel	EUT Channel	Test Frequency (MHz)
Lowest	CH04	1921.536
Middle	CH02	1924.992
Highest	CH00	1928.448

3.1 DESCRIPTION OF NECESSARY ACCESSORIES AND SUPPORT UNITS

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

Accessories Equipment

Description	Manufacturer	Model	S/N	Rating

Auxiliary Equipment

Description	Manufacturer	Model	S/N	Rating
Laptop	HUAWEI	HKF-16	N/A	N/A
Adapter	HUAWEI	HW-200450CP0	N/A	Input: 100-240V ~ 50/60Hz 1.6A Output: 5V3A or 9V3A or 12V3A or 15V5A or 20V4.5A

Note:

(1) For detachable type I/O cable should be specified the length in cm in 『Length』 column.

3.2 TEST SOFTWARE AND POWER LEVEL

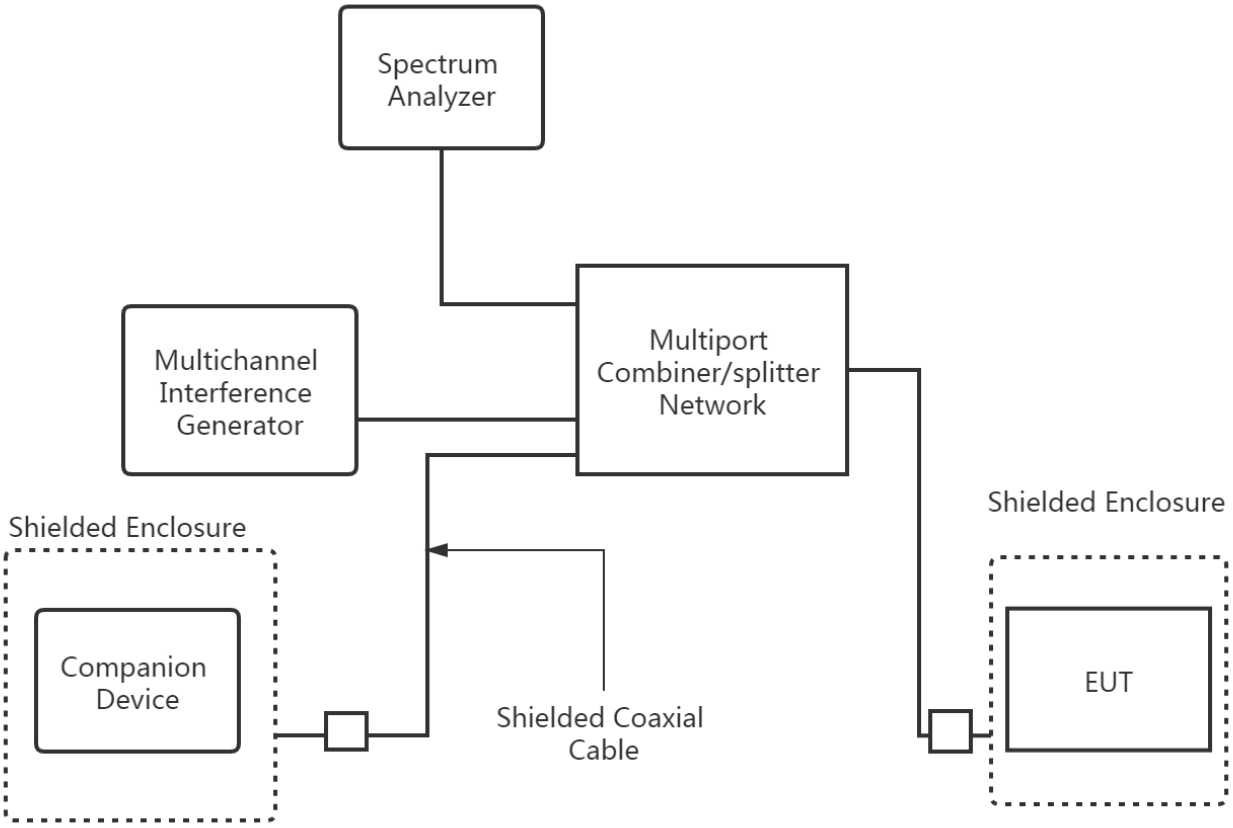
During testing channel & power controlling software provided by the customer was used to control the operating channel as well as the output power level.

RF Function	Type	Power Class	Software For Testing
DECT	FP+PP	Default	CMD command

3.3 SYSTEM TEST CONFIGURATION

Figure 1

Figure 2



4 MEASUREMENT INSTRUMENTS

RF Radiated Test equipment					
Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Until
EMI Test Receiver	R&S	ESU8	100372	2024.03.09	2025.03.08
Active loop Antenna	ETS	6502	00049544	2023.10.13	2025.10.12
Spectrum Analyzer	Keysight	N9010B	MY60242508	2023.08.14	2024.08.13
Bilog Antenna	Schwarzbeck	VULB 9168	01447	2022.12.12	2025.12.11
Horn Antenna	Schwarzbeck	3115	10SL0060	2022.06.02	2025.06.01
Pre-amplifier (9kHz-1GHz)	EMtrace	RP01A	02017	2024.03.09	2025.03.08
Pre-amplifier (1-26.5G)	Agilent	8449B	3008A4722	2024.03.09	2025.03.08
RF Test Platform for DECT	RTX	RTX 2011	6036	2023/03/09	2025.03.08
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2024.03.11	2025.03.10
Testing Software	EMC-I_V1.4.0.3_SKET				

Conducted Emission					
Equipment	**Manufacturer**	**Model No.**	**Serial No.**	**Cal. Date**	**Cal. Until**
EMI Test Receiver	R&S	ESU8	100372	2024.03.09	2025.03.08
LISN	COM-POWER	LI-115	02032	2024.03.09	2025.03.08
LISN	EMTRACE	PWL-50-3200	00317	2024.03.09	2025.03.08
Transient Limiter	CYBERTEK	EM5010A	E2250100049	2024.03.09	2025.03.08
Temperature & Humidity	JINGCHUANG	BT-3	N.A	2024.03.11	2025.03.10
Testing Software	EMC-I_V1.4.0.3_SKET				

5 TEST ITEMS

5.1 ANTENNA REQUIREMENT

TEST OVERVIEW

§ 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 structure and application of the EUT were analyzed to determine compliance with Section 15.203 of the Rules. Section 15.203 states that the subject device must meet at least one of the following criteria:
a.) Antenna must be permanently attached to the unit.
b.) Antenna must use a unique type of connector to attach to the EUT.
c.) Unit must be professionally installed. Installer shall be responsible for verifying that the correct antenna is employed with the unit.

TEST RESULT

The EUT as tested is compliant the criteria of §15.203. The antenna is permanently attached to the unit.

5.2 MODULATION TECHNIQUES

TEST REQUIREMENT

All transmissions must use only digital modulation techniques.

TEST PROCEDURES

Attestation of manufacturer supported by reference to relevant DECT specifications.

ATTESTATION

This device is compliant with the DECT standards described in European Standards EN 300 175-2 and EN 300 175-3. DECT transmissions are MC/TDMA/TDD (Multi carrier / Time Division Multiple Access / Time Division Duplex) using Digital GFSK, π/2-DBPSK, π/4-DQPSK and π/8-D8PSK modulation. For further details see operational description or relevant portions of the DECT standards.

TEST RESULTS

The EUT as tested is compliant the criteria of §15.319(b).

5.3 EMISSION BANDWIDTH

TEST OVERVIEW

§ 15.323(a): For purposes of this subpart the emission bandwidth shall be determined by measuring the width of the signal between two points, one below the carrier center frequency and one above the carrier center frequency, that are 26 dB down relative to the maximum level of the modulated carrier. Compliance with the emissions limits is based on the use of measurement instrumentation employing a peak detector function with an instrument resolutions bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

TEST PROCEDURE

Operation shall be contained within the 1920-1930 MHz band. The emission bandwidth shall be less than 2.5 MHz. The power level shall be as specified in §15.319(c), but in no event shall the emission bandwidth be less than 50 kHz.

TEST SETUP

The test setup is shown in section 3.2 figure 1.

TEST RESULTS

The Eut was compliant with this requirement.

ANT 1

Channel	26dB BW(MHz)	99% BW(MHz)	Limit
CH4	2.365	1.446	＜2.5MHz
CH2	2.362	1.443	
CH0	2.363	1.445	
AVG	2.363	1.445	

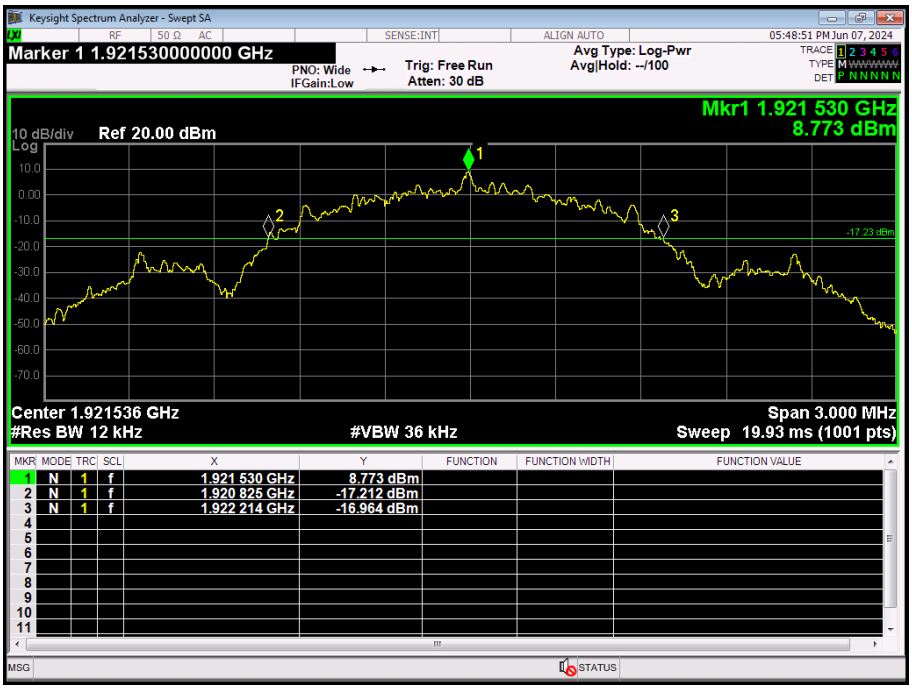
ANT 2

Channel	26dB BW(MHz)	99% BW(MHz)	Limit
CH4	2.368	1.490	＜2.5MHz
CH2	2.330	1.469	
CH0	2.368	1.483	
AVG	2.355	1.481	

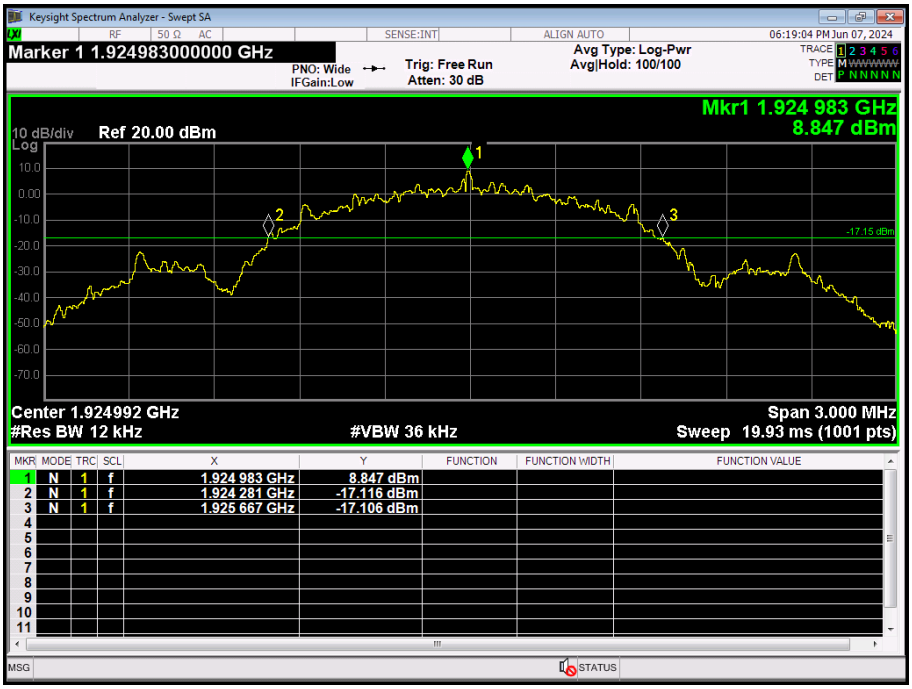
26dB BW

ANT 1

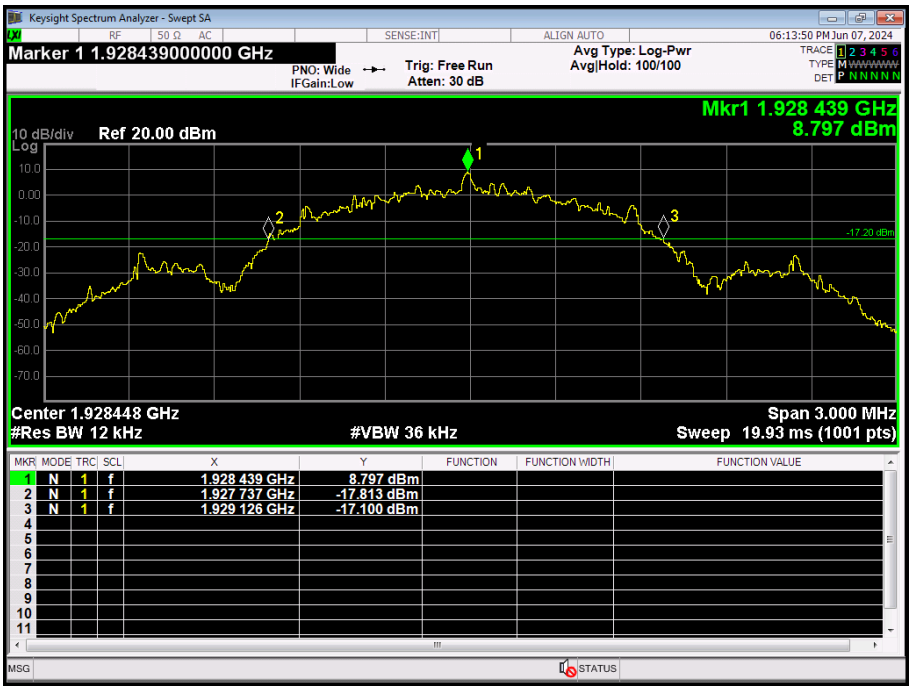
CH4



CH2

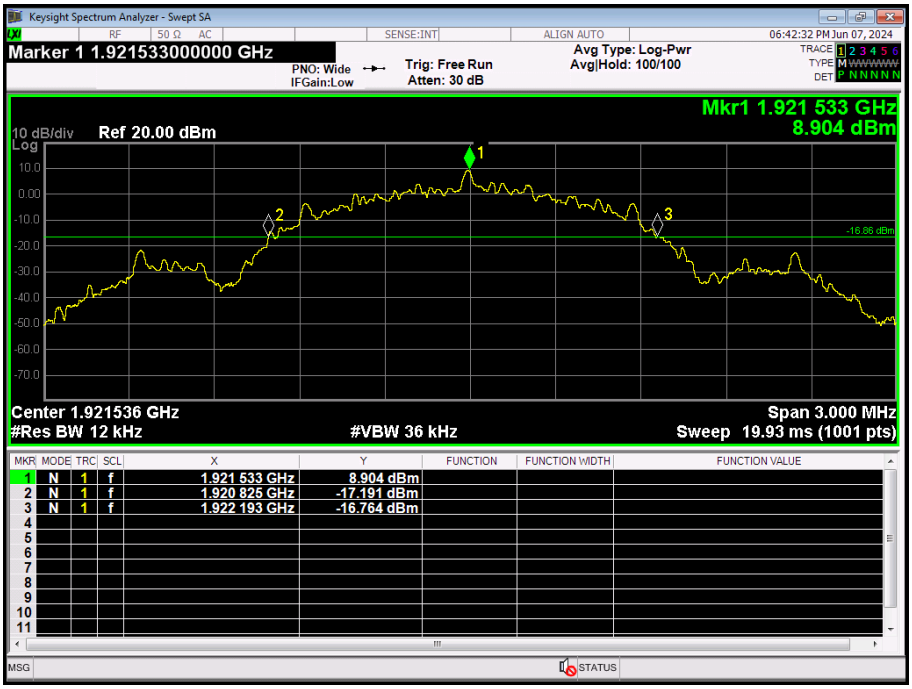


CH0

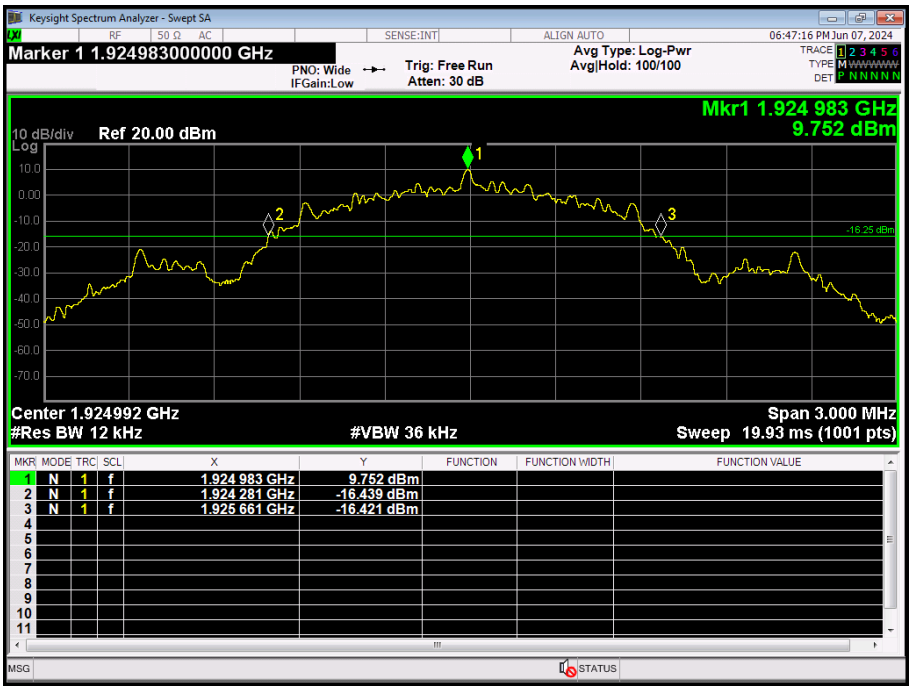

Keysight Spectrum Analyzer - Swept SA
Marker 1 1.928439000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
06:13:50 PM Jun 07, 2024
Mkr1 1.928 439 GHz
8.797 dBm
10 dB/div
Ref 20.00 dBm
-17.20 dBm
Center 1.928448 GHz
#Res BW 12 kHz
#VBW 36 kHz
Span 3.000 MHz
Sweep 19.93 ms (1001 pts)
1 N 1 f 1.928 439 GHz 8.797 dBm
2 N 1 f 1.927 737 GHz -17.813 dBm
3 N 1 f 1.929 126 GHz -17.100 dBm

ANT 2

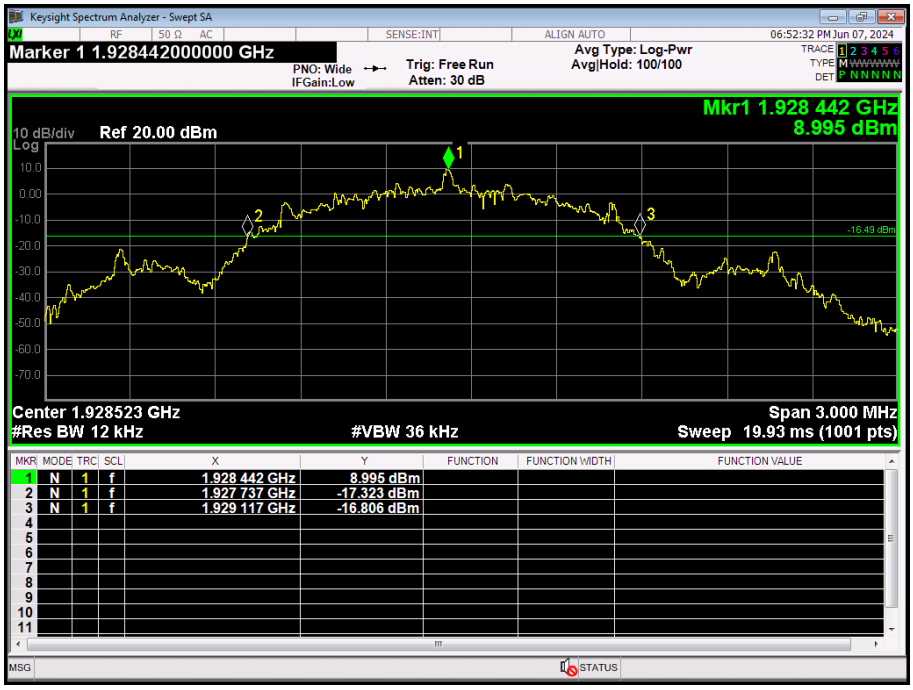
CH4


Keysight Spectrum Analyzer - Swept SA
Marker 1 1.921533000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
06:42:32 PM Jun 07, 2024
Mkr1 1.921 533 GHz
8.904 dBm
10 dB/div
Ref 20.00 dBm
-16.86 dBm
Center 1.921536 GHz
#Res BW 12 kHz
#VBW 36 kHz
Span 3.000 MHz
Sweep 19.93 ms (1001 pts)
1 N 1 f 1.921 533 GHz 8.904 dBm
2 N 1 f 1.920 825 GHz -17.191 dBm
3 N 1 f 1.922 193 GHz -16.764 dBm

CH2


Keysight Spectrum Analyzer - Swept SA
Marker 1 1.924983000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
06:47:16 PM Jun 07, 2024
Mkr1 1.924 983 GHz
9.752 dBm
10 dB/div
Ref 20.00 dBm
-16.25 dBm
Center 1.924992 GHz
#Res BW 12 kHz
#VBW 36 kHz
Span 3.000 MHz
Sweep 19.93 ms (1001 pts)
1 N 1 f 1.924 983 GHz 9.752 dBm
2 N 1 f 1.924 281 GHz -16.439 dBm
3 N 1 f 1.925 661 GHz -16.421 dBm

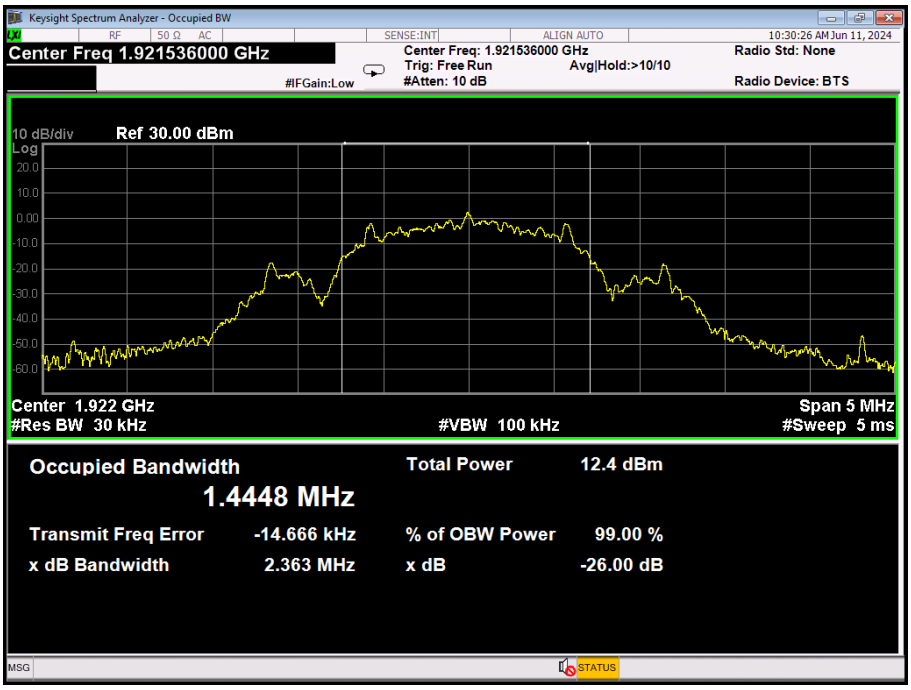
CH0


Keysight Spectrum Analyzer - Swept SA
Marker 1 1.928442000000 GHz
PNO: Wide
IFGain:Low
Trig: Free Run
Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
06:52:32 PM Jun 07, 2024
Mkr1 1.928 442 GHz
8.995 dBm
10 dB/div
Ref 20.00 dBm
-16.49 dBm
Center 1.928523 GHz
#Res BW 12 kHz
#VBW 36 kHz
Span 3.000 MHz
Sweep 19.93 ms (1001 pts)
1 N 1 f 1.928 442 GHz 8.995 dBm
2 N 1 f 1.927 737 GHz -17.323 dBm
3 N 1 f 1.929 117 GHz -16.806 dBm

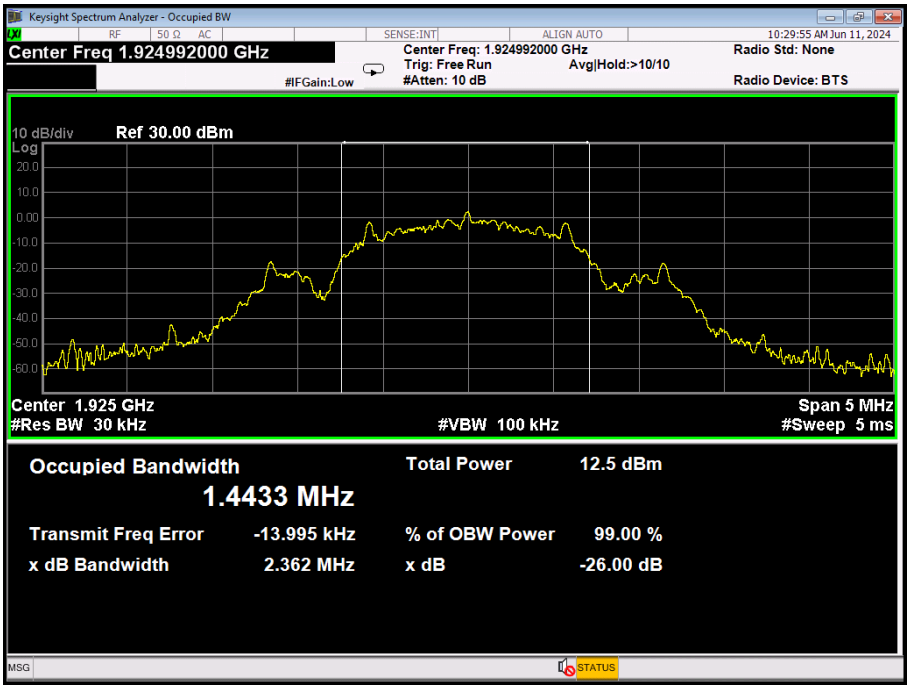
OBW

ANT 1

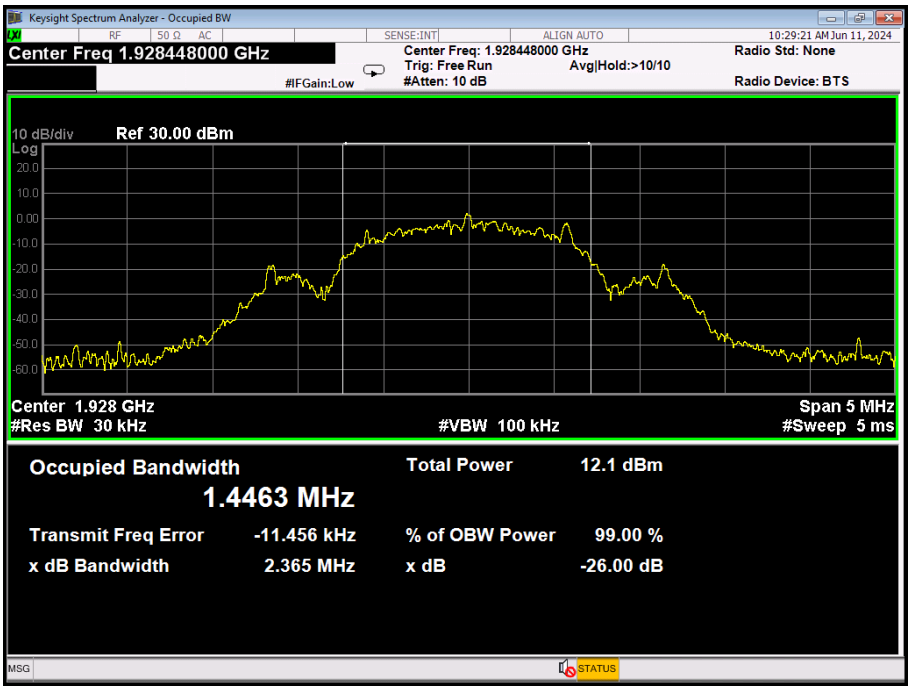
CH4



CH2

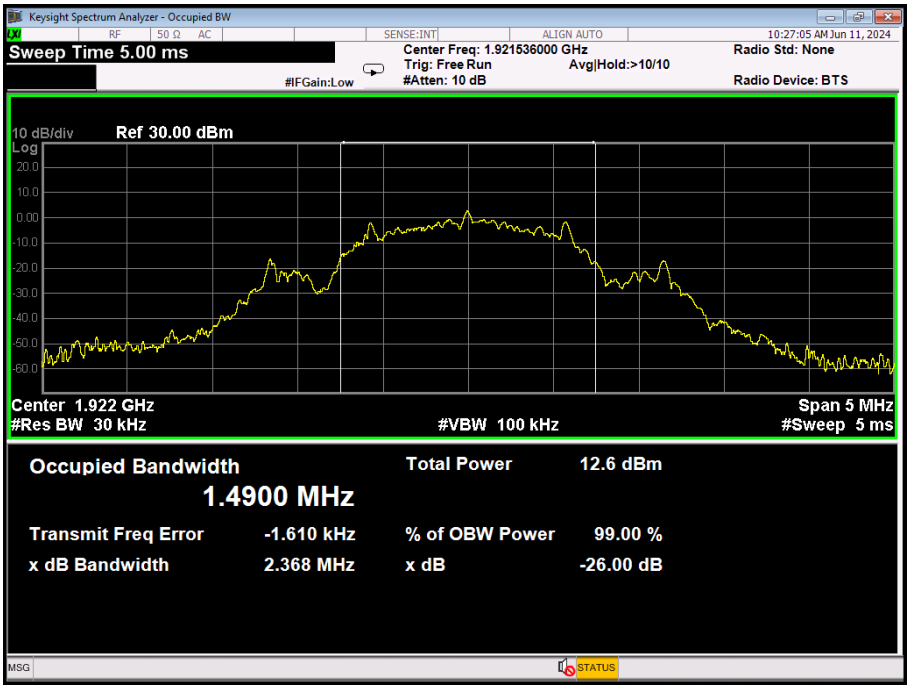


CH0

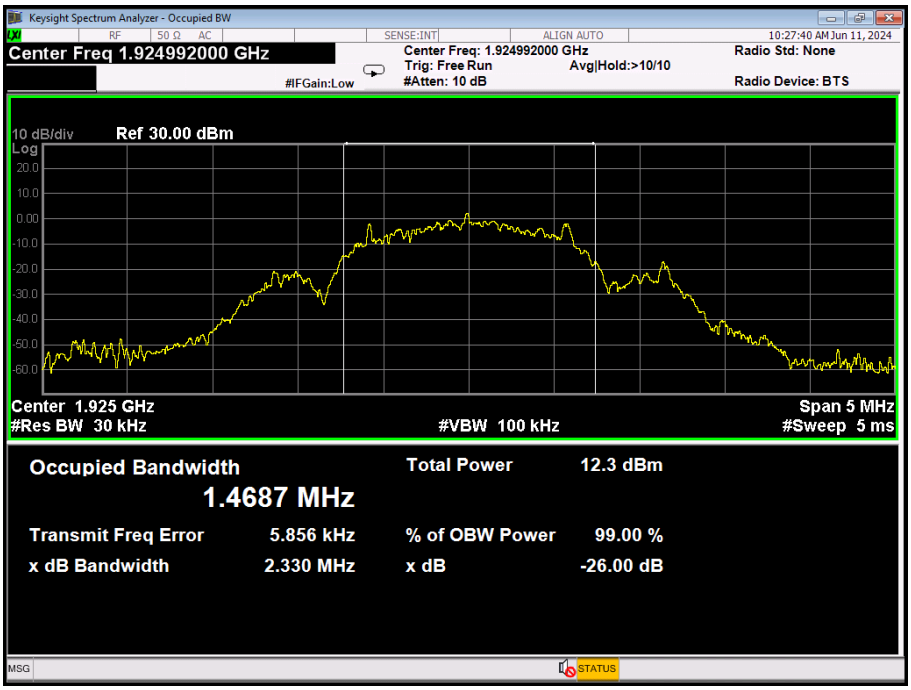


ANT 2 OBW

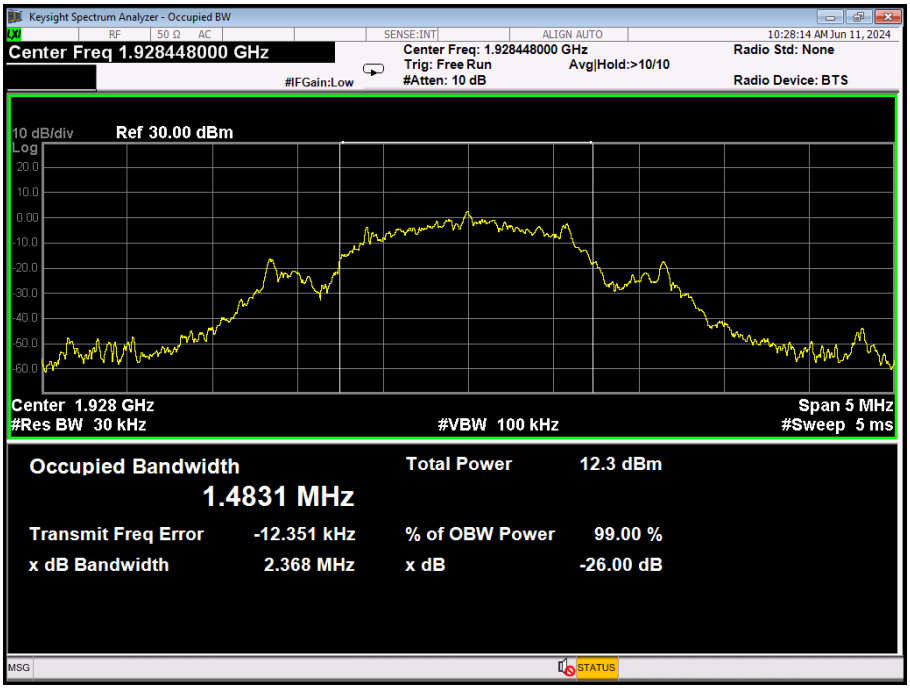
CH4



CH2


Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:27:40 AM Jun 11, 2024
Center Freq 1.924992000 GHz
Center Freq: 1.924992000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 10 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
10 dB/div
Ref 30.00 dBm
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Center 1.925 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 5 MHz
#Sweep 5 ms
Occupied Bandwidth
1.4687 MHz
Total Power 12.3 dBm
Transmit Freq Error 5.856 kHz
% of OBW Power 99.00 %
x dB Bandwidth 2.330 MHz
x dB -26.00 dB
MSG
STATUS

CH0


Keysight Spectrum Analyzer - Occupied BW
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
10:28:14 AM Jun 11, 2024
Center Freq 1.928448000 GHz
Center Freq: 1.928448000 GHz
Trig: Free Run
Avg|Hold:>10/10
#Atten: 10 dB
#IFGain:Low
Radio Std: None
Radio Device: BTS
10 dB/div
Ref 30.00 dBm
Log
20.0
10.0
0.00
-10.0
-20.0
-30.0
-40.0
-50.0
-60.0
Center 1.928 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 5 MHz
#Sweep 5 ms
Occupied Bandwidth
1.4831 MHz
Total Power 12.3 dBm
Transmit Freq Error -12.351 kHz
% of OBW Power 99.00 %
x dB Bandwidth 2.368 MHz
x dB -26.00 dB
MSG
STATUS

5.4 PEAK TRANSMIT POWER

TEST OVERVIEW

§15.319(c): The 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.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 6.1.2, which provides the test methodology for this provision. The EUT is controlled from a personal computer and set into continuous transmission mode.

TEST SETUP

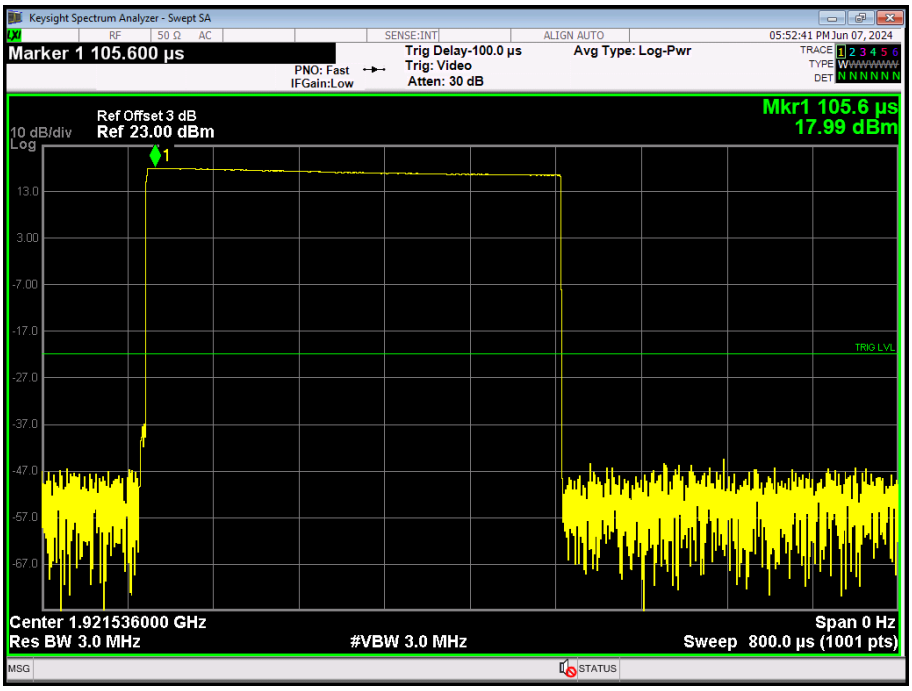
The test setup is shown in section 3.2 figure 1.

TEST RESULTS

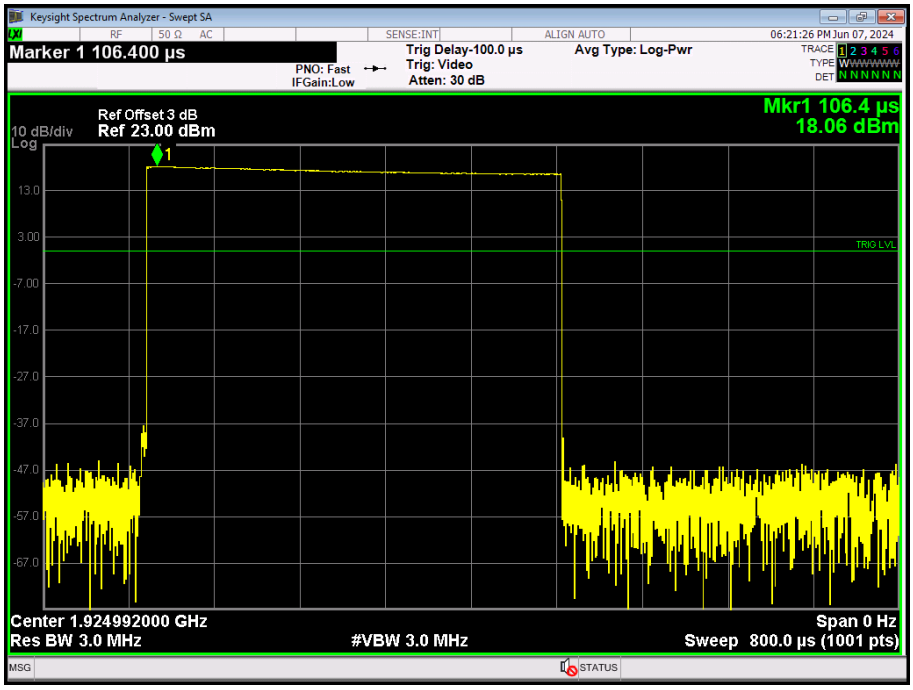
ANT 1

Carrier Channel	Frequency (MHz)	Measured Peak Output Power (dBm)	Limit (uw)	Limit (dBm)
CH4	1921.536	17.99	153786	21.87
CH2	1924.992	18.06	153688	21.87
CH0	1928.448	18.08	153731	21.87
EBWLow Channel=	2365000			Hz
EBWMid Channel=	2362000			Hz
EBWHigh Channel=	2363333			Hz
Note:Peak Transmitter Power Limit=100 (EBW) 1/2µW				

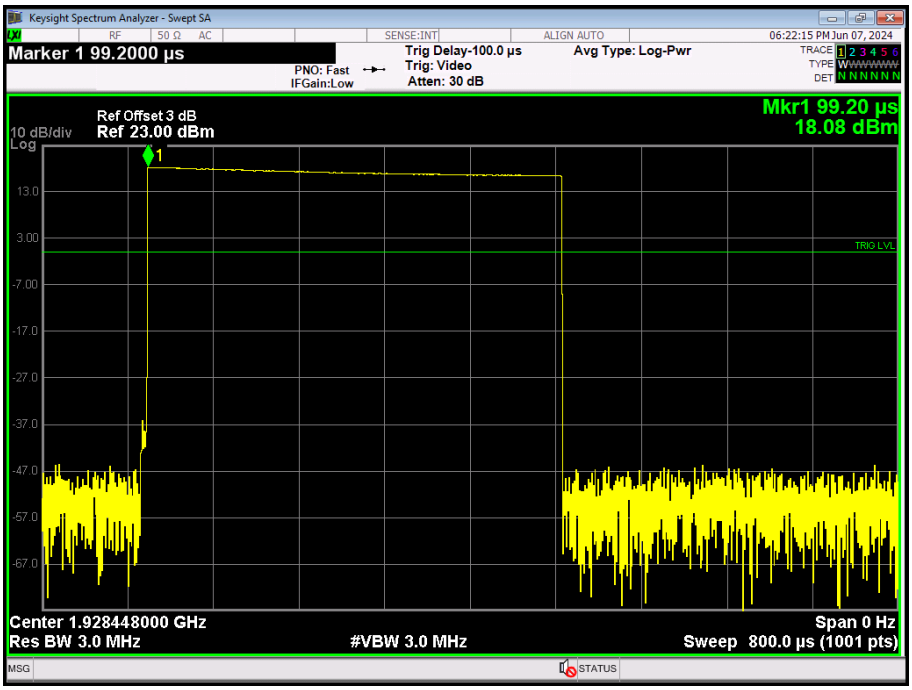
CH4


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
05:52:41 PM Jun 07, 2024
Marker 1 105.600 µs
PNO: Fast
IFGain:Low
Trig Delay-100.0 µs
Trig: Video
Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W W W W W W
DET N N N N N N
Ref Offset 3 dB
10 dB/div
Ref 23.00 dBm
Log
Mkr1 105.6 µs
17.99 dBm
13.0
3.00
-7.00
-17.0
-27.0
-37.0
-47.0
-57.0
-67.0
TRIG LVL
Center 1.921536000 GHz
Res BW 3.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 800.0 µs (1001 pts)
MSG
STATUS

CH2


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
06:21:26 PM Jun 07, 2024
Marker 1 106.400 µs
PNO: Fast
IFGain:Low
Trig Delay-100.0 µs
Trig: Video
Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W W W W W W
DET N N N N N N
Ref Offset 3 dB
10 dB/div
Ref 23.00 dBm
Log
Mkr1 106.4 µs
18.06 dBm
13.0
3.00
-7.00
-17.0
-27.0
-37.0
-47.0
-57.0
-67.0
TRIG LVL
Center 1.924992000 GHz
Res BW 3.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 800.0 µs (1001 pts)
MSG
STATUS

CH0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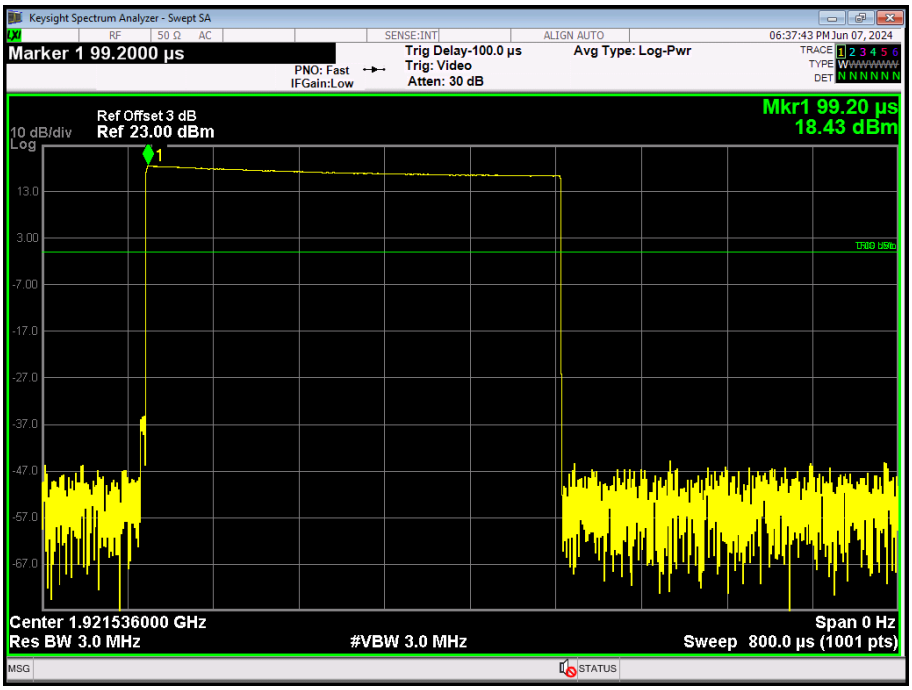
RF
50 Ω AC
SENSE:INT
ALIGN AUTO
06:22:15 PM Jun 07, 2024
Marker 1 99.2000 µs
PNO: Fast
IFGain:Low
Trig Delay-100.0 µs
Trig: Video
Atten: 30 dB
Avg Type: Log-Pwr
TRACE 1 2 3 4 5 6
TYPE W W W W W W
DET N N N N N N
Ref Offset 3 dB
10 dB/div
Ref 23.00 dBm
Log
Mkr1 99.20 µs
18.08 dBm
13.0
3.00
-7.00
-17.0
-27.0
-37.0
-47.0
-57.0
-67.0
TRIG LVL
Center 1.928448000 GHz
Res BW 3.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 800.0 µs (1001 pts)
MSG
STATUS

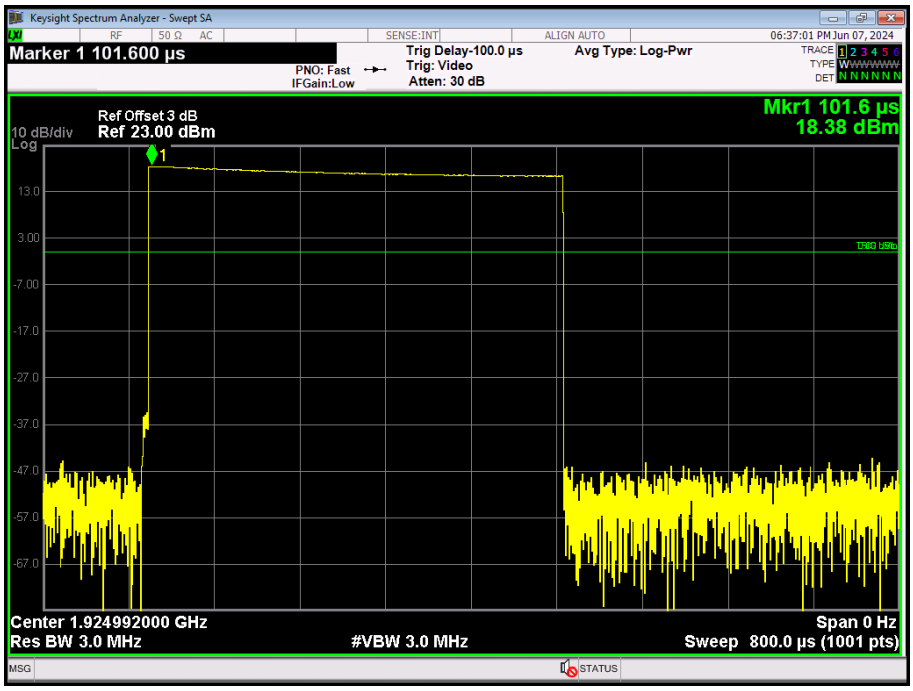
ANT 2

Carrier Channel	Frequency (MHz)	Measured Peak Output Power (dBm)	Limit (uw)	Limit (dBm)
CH4	1921.536	18.43	153883	21.87
CH2	1924.992	18.38	152643	21.84
CH0	1928.448	19.12	153471	21.86
EBWLow Channel=	2368000			Hz
EBWMid Channel=	2330000			Hz
EBWHigh Channel=	2355333			Hz
Note:Peak Transmitter Power Limit=100 (EBW) 1/2µW				

CH4



CH2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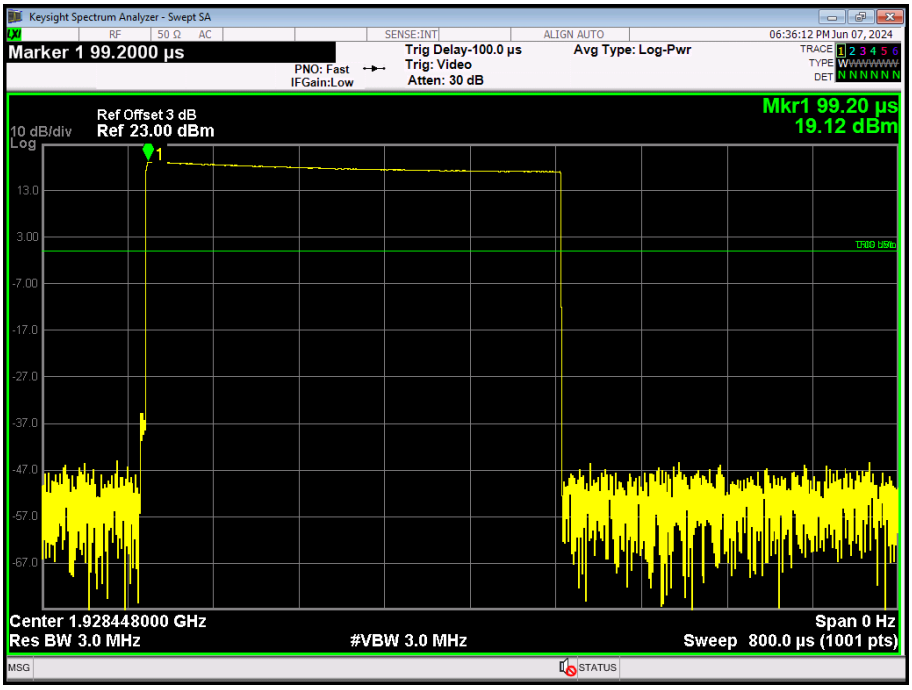
Marker 1 101.600 µs
Trig Delay-100.0 µs
Trig: Video
Atten: 30 dB
Avg Type: Log-Pwr
06:37:01 PM Jun 07, 2024
Ref Offset 3 dB
10 dB/div
Ref 23.00 dBm
Mkr1 101.6 µs
18.38 dBm
Center 1.924992000 GHz
Res BW 3.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 800.0 µs (1001 pts)

CH0


Keysight Spectrum Analyzer - Swept SA
Marker 1 99.2000 µs
Trig Delay-100.0 µs
Trig: Video
Atten: 30 dB
Avg Type: Log-Pwr
06:36:12 PM Jun 07, 2024
Ref Offset 3 dB
10 dB/div
Ref 23.00 dBm
Mkr1 99.20 µs
19.12 dBm
Center 1.928448000 GHz
Res BW 3.0 MHz
#VBW 3.0 MHz
Span 0 Hz
Sweep 800.0 µs (1001 pts)

5.5 POWER SPECTRAL DENSITY

TEST OVERVIEW

§15.319(d): Power spectral density shall not exceed 3 milliwatts in any 3 kHz bandwidth as measured with a spectrum analyzer having a resolution bandwidth of 3 kHz.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 6.1.5, which provides the test methodology for this provision.

TEST SETUP

The test setup is shown in section 3.2 figure 1.

TEST RESULTS

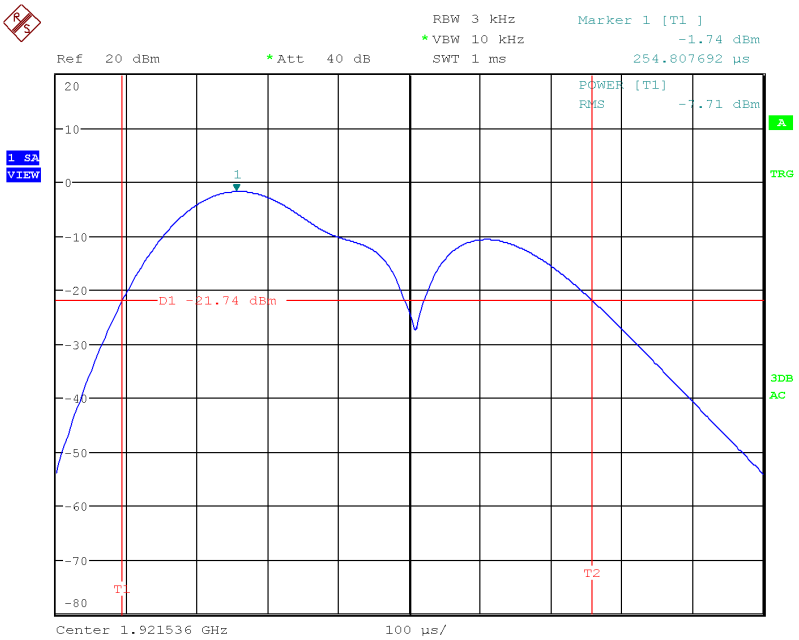
Note: Both ANT 1 and ANT 2 have been tested, the worst case is ANT 2, and only shwon the worst case in this report.

ANT 2

Carrier Channel	Frequency (MHz)	Measured Peak Power Spectral Density (dBm)	Limit(mw)	Limit(dBm)
CH4	1921.536	-7.71	3	4.77
CH2	1924.992	-7.75		
CH0	1928.448	-7.85		

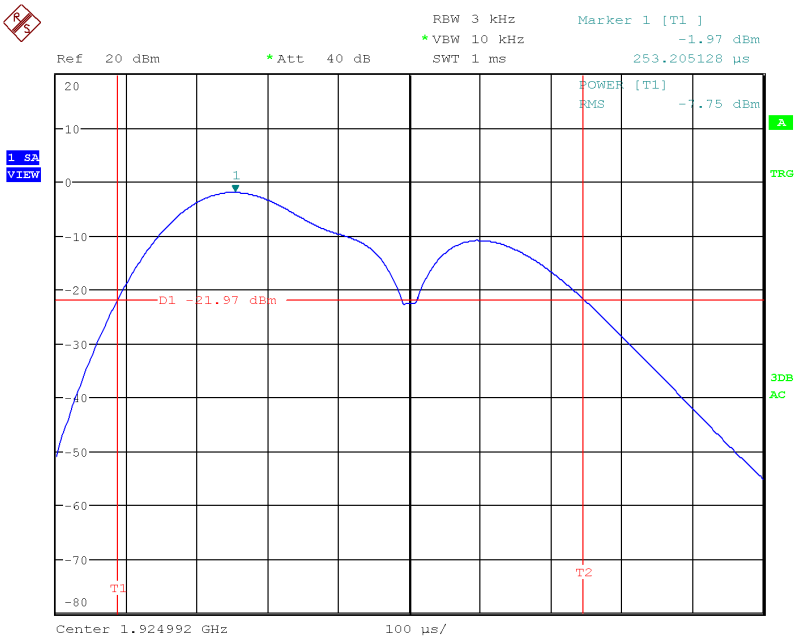
ANT 2

CH4



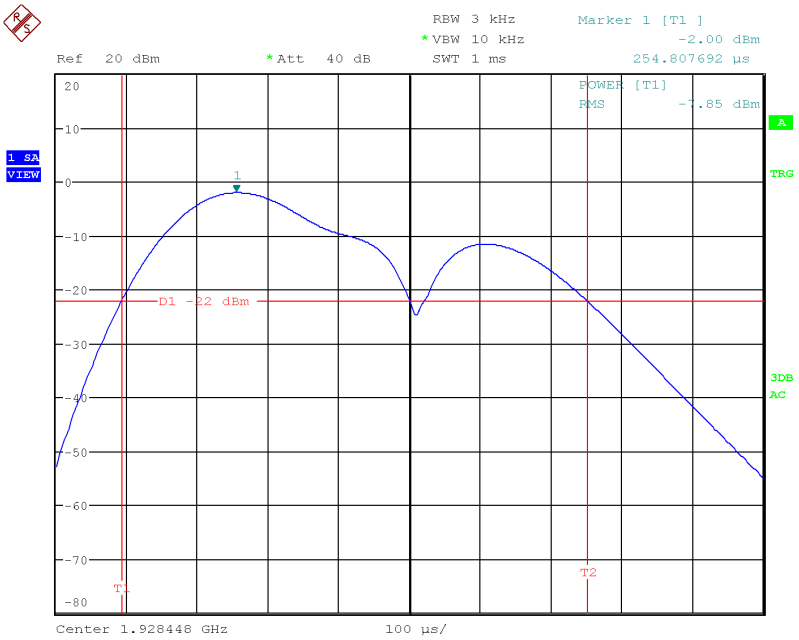
Date: 11.JUN.2024 23:32:47

CH2



Date: 11.JUN.2024 23:34:27

CH0



Date: 11.JUN.2024 23:35:41

5.6 POWER ADJUSTMENT FOR ANTENNA GAIN

TEST OVERVIEW

§15.319(e): The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 4.3.1, which provides the test methodology for this provision.

TEST RESULT

Equipment Employs a 1.34 dBi Antenna. Max output power allowed with this gain by the EUT is 20.46dBm. The Max output power does not need to be reduced.

The Output Power complies with the Power Adjustment for Antenna Gain requirements of §15.319(e).

5.7 AUTOMATICALLY DISCONTINUE TRANSMISSION

OVERVIEW

§15.319(f): The device shall automatically discontinue transmission in case of either absence of information to transmit or operational failure. These provisions are not intended to preclude transmission of control and signaling information or use of repetitive codes used by certain digital technologies to complete frame or burst intervals.

TEST RESULTS

	Test	Reaction of EUT	Result
1	Remove Power from Companion Device	A	Pass
2	Switch off the companion device	A	Pass
3	Terminate call at the companion device	NA1	Pass
4	Switch off the EUT	NA2	Pass
5	Terminate call at the EUT	NA3	Pass

A - Connection was terminated and transmission ceased.

B - Connection was terminated but the EUT transmits control or signaling information.

C - Connection was terminated but the companion device transmits control or signaling information.

NA 1 - Companion Device does not have an on/off switch for terminate call.

NA 2 - EUT does not have an on/off switch.

NA 3 – EUT does not have a switch for terminate call.

5.8 SYSTEM ACKNOWLEDGE-MENT TEST

TEST OVERVIEW

§ 15.323(c)(4): Once access to specific combined time and spectrum windows is obtained an acknowledgment from a system participant must be received by the initiating transmitter within one second or transmission must cease. Periodic acknowledgments must be received at least every 30 seconds or transmission must cease. Channels used exclusively for control and signaling information may transmit continuously for 30 seconds without receiving an acknowledgment, at which time the access criteria must be repeated.

TEST PROCEDURE

Measurement method according to ANSI C63.17 2013 clause 8.2.1

During testing initial transmission without acknowledgement, the signal from the EUT to the companion device is blocked by the circulator.

The test of the transmission time after loss of acknowledgements is performed by cutting off the signal from the companion device by a RF switch and measuring the time until the EUT stops transmitting.

TEST SETUP

The test setup is shown in section 3.2 figure 2.

TEST RESULTS

Note: Both ANT 1 and ANT 2 have been tested, the worst case is ANT 2, and only shwon the worst case in this report.

ANT 2

Test	Time taken (second)	Limit (second)	Result
Initial Connection acknowledgement	0.8	1	Pass
Change of access criteria for control information	N/A	30	N/A
Transmission cease time after loss of acknowledgement	4.2	30	Pass

5.9 MONITORING THRESHOLD

TEST OVERVIEW

§15.323 (c)(2). The monitoring threshold must not be more than 30 dB above the thermal noise power for a bandwidth equivalent to the emission bandwidth used by the device.

§15.323 (c)(9). Devices that have a power output lower than the maximum permitted under this sub-part may increase their monitoring detection threshold by one decibel for each one decibel that the transmitter power is below the maximum permitted.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 7.3, which provides the test methodology for this provision. The Clause states that the lower threshold is for devices that do not use the LIC procedure. The equation for the lower monitoring threshold is given in ANSI C63.17 Clause 4.3.4.

TEST SETUP

The test setup is shown in section 3.2 figure 2.

TEST RESULTS

Note: Both ANT 1 and ANT 2 have been tested, the worst case is ANT 2, and only shwon the worst case in this report.

ANT 2

Upper Threshold		
B	2355333	Hz
Mu	50	dB
Peut	19.12	dBm
TU	-57.539	dBm
Lower Threshold		
B	2355333	Hz
Ml	30	dB
Peut	18.43	dBm
TL	-76.849	dBm

ATTESTATION

The sensor will go into hibernation after a few minutes. It is not possible to keep a connection running very long. Therefore, this requirement is not applicable.

5.10 DURATION OF TRANSMISSION

TEST OVERVIEW

§15.323 (c)(3) If no signal above the threshold level is detected, transmission may commence and continue with the same emission bandwidth in the monitored time and spectrum windows without further monitoring. However, occupation of the same combined time and spectrum windows by a device or group of cooperating devices continuously over a period of time longer than 8 hours is not permitted without repeating the access criteria.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 4, which provides the test methodology for this provision. A communication link is established between BS and MS in a conducted mode and in a room without other US DECT devices to prevent influence from other transmissions. According to FCC Part 15.323(c)(3), the access criteria have to be verified at least every 8 hours. The following test is performed:

TEST SETUP

The test setup is shown in section 3.2 figure 2.

TEST RESULT

Note: Both ANT 1 and ANT 2 have been tested, the worst case is ANT 2, and only shwon the worst case in this report.

ANT 2

Test ref. to ANSI C63.17:2013 clause 8.2.2	Observation result (H)	Limit (H)	Verdict
Transmission duration on same time and frequency window	4	8	Pass

5.11 SELECTED CHANNEL CONFIRMATION, POWER ACCURACY, SEGMENT OCCUPANCY

TEST OVERVIEW

§15.323 (c)(5) If access to spectrum is not available as determined by the above, and a minimum of 20 duplex system access channels are defined for the system, the time and spectrum windows with the lowest power level may be accessed. A device utilizing the provisions of this paragraph must have monitored all access channels defined for its system within the last 10 seconds and must verify, within the 20 milliseconds (40 milliseconds for devices designed to use a 20 milliseconds frame period) immediately preceding actual channel access that the detected power of the selected time and spectrum windows is no higher than the previously detected value. The power measurement resolution for this comparison must be accurate to within 6 dB. No device or group of co-operating devices located within 1 meter of each other shall during any frame period occupy more than 6 MHz of aggregate bandwidth, or alternatively, more than one third of the time and spectrum windows defined by the system.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 7.3.2. & 7.3.3, which provides the test methodology for this provision. The current product offers 12 duplex channels per frequency channel and therefore 12x5=60 duplex channels in total. Hence Part §15.323(c)(5) applies. The equation for the lower monitoring threshold is given in ANSI C63.17 Clause 4.3.3. Max measured interference level (dBm) = -85.02 dBm

TEST SETUP

The test setup is shown in section 3.2 figure 2.

MONITORING LIMIT THRESHOLD

The EUT's monitoring limit threshold power at the monitoring antenna terminals shall be less than a maximum, shown in Equation (3):

$T_L \leq (-174+10\log B+M_L+P_{MAX}-P_{EUT})$dBm

M_L is a level specified by the manufacturer and is the maximum amount in decibels by which the limiting threshold may exceed thermal noise for an EUT transmitting the maximum allowed power.

Calculation of monitoring threshold limits for isochroous devices:

Lower threshold: $T_L=-174+10\log_{10}B+M_L+P_{MAX}-P_{EUT}$ (dBm)

Where: B= Emission bandwidth (Hz)

M_L= dB the threshold may exceed thermal noise (30 for T_L)

$P_{MAX}=5\mathrm{Log}_{10}B-10$(dBm)

P_{EUT}=Transmitted power (dBm)

Monitor Threshold	B(Hz)	ML(dB)	PMAX(dBm)	PEUT(dBm)	Threshold(dBm)
Lower threshold	2.3553	30	20.46	18.43	-76.849

Note: 1.The lower threshold is applicable as the EUT utilizes more than 20duplex system channels

TEST RESULTS

1) LIC procedure test:

Interference (Refer to ANSI C63.17 clause 7.3.3)	Reaction fo EUT	Results
a) Apply the interference on f1 at level T_L+U_M+7dB and the interference on f_2 at level T_L+U_{M-} Initiate transmission and verify the transmission only on f_2.Repeat 5 times.	EUT transmits on f2	Pass
b) Apply the interference on f_1 at level T_L+U_M and the interference on f_2 at level T_L+U_M+7dB. Initiate transmission and verify the transmission only on f_1.Repeat 5 times.	EUT transmits on f1	Pass
c) Apply the interference on f_1 at level T_L+U_M+1dB and the interference on f_2 at level T_L+U_M-6dB. Initiate transmission and verify the transmission only on f_2.Repeat 5 times.	EUT transmits on f2	Pass
d) Apply the interference on f_1 at level T_L+U_M-6dB and the interference on f_2 at level T_L+U_M+1dB. Initiate transmission and verify the transmission only on f_2.Repeat 5 times.	EUT transmits on f1	Pass

2) Selected channel confirmation:

Interference (Refer to ANSI C63.17 clause 7.3.4)	Reaction fo EUT	Results
a) Apply the interference on f_1 at level T_L+U_M and no interference on f_{2-} Initiate transmission and verify the transmission only on f_2.Then terminate it.	EUT transmits on f2	Pass
b) Apply the interference on f_2 at level T_L+U_M and immediately remove all interference from f_1. The EUT should immediately attempt transmission f_1(but at least 20ms after the interference on f_2 is applied), verify the transmission only on f_1.	EUT transmits on f1	Pass

5.12 RANDOM WAITING

TEST CRITERIA

§15.323 (c)(6) if the selected combined time and spectrum windows are unavailable, the device may either monitor and select different windows or seek to use the same windows after waiting an amount of time, randomly chosen from a uniform random distribution between 10 and 150 milliseconds, commencing when the channel becomes available.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 8.1.3, which provides the test methodology for this provision.

ATTESTATION

The Manufacturer declared that this provision is not utilized by the EUT.

5.13 MONITORING REQUIREMENTS

TEST CRITERIA

§15.323 (c)(7) The monitoring system bandwidth must be equal to or greater than the emission bandwidth of the intended transmission and have a maximum reaction time less than 50xSQRT(1.25/ emission bandwidth in MHz) microseconds for signals at the applicable threshold level but shall not be required to be less than 50 microseconds. If a signal is detected that is 6 dB or more above the applicable threshold level, the maximum reaction time shall be 35xSQRT (1.25/emission bandwidth in MHz) microseconds but shall not be required to be less than 35 microseconds.

TEST PROCEDURE

Measurement method according to ANXI C63.17 2013 clause 7.5

a) Restrict the EUT to a single transmit carrier frequency f1 and verify that the EUT can establish a connection with no interference applied on f1.
b) Apply time-synchronized, pulsed interference on f1 at the pulsed level TL+UM, veify that the EUT does not establish a connection when the width of the interference pulse exceeds the largest of 50μs and 50 √1.25 / B μs, where B is the emission bandwidth of the EUT in megahertz.
c) With the channel interference level 6dB above TL+UM, verify that the EUT does not eatablish a connection when the width of the interference pulse exceeds the largest of 35μs and 35√1.25/Bμs, where B is the emission bandwidth of the EUT in megahertz.

Test pulse width Equation(μs)	B(bandwidth)(MHz)	Pulse width(μs)	Limit(Largest)(μs)
$50(1.25/B)^{1/2}$	2.3553	36.4	50
$35(1.25/B)^{1/2}$	2.3553	25.5	35

TEST SETUP

The test setup is shown in section 3.2 figure 2.

TEST RESULTS

1) Monitoring Bandwidth:

The antenna of the EUT used for monitoring is the same interior antenna that used for transmission, so the monitorting system bandwidth is equall to the emission bandwidth of the intended transmission.

2) Reaction Time Test:

No.	Interference Pulse width(μs)	Reaction of EUT	Observing time(μs)	Result
1	50μs with level T_L+U_m	No transmission	50	Pass
2	35μs with level T_L+U_M +6dB	No transmission	35	Pass

5.14 MONITORING ANTENNA

TEST CRITERIA

§15.323 (c)(8) Transmission is intended to occupy. The following criteria must be met: (8) The monitoring system shall use the same antenna used for transmission, or an antenna that yields equivalent reception at that location.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 4, which provides the test methodology for this provision.

ATTESTATION

The EUT uses the same antennas for transmission and reception as for monitoring.

5.15 DUPLEX CONNECTIONS

TEST CRITERIA

§15.323 (c)(10) An initiating device may attempt to establish a duplex connection bymonitoring both its intended transmit and receive time and spectrum windows. If both the intended transmit and receive time and spectrum windows meet the access criteria, then the initiating device can initiate a transmission in the intended transmit time and spectrum window. If the power detected by the responding device can be decoded as a duplex connection signal from the initiating device, then the responding device may immediately begin transmitting on the receive time and spectrum window monitored by the initiating device.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 8.3, which provides the test methodology for this provision. The MS is the initiating device and the BS is the companion device.

TEST RESULTS

Interference (Refer to ANSI C63.17 S 8.3& S 8.3.2)	Reaction of EUT	Results
a) Only a single carrier f1 for EUT TDMA systems and on f1 and f2 and corresponding duplex carriers for FDMA systems.	EUT can transmit	Pass
b) All Tx windows with level TL+UM except one & Rx windows with level TL+UM+7dB except one, which are not the duplex mate.	Connected on the target Rxwindow and its duplex mate	Pass
c) All Tx windows with level TL+UM+7dB except one & Rx windows with level TL+UM except one, which are not duplex mate	Connected on the target Txwindowand its duplex mate	Pass
d) All Tx & Rx windows with level TU+UM, except one for Tx window & one for Rx window, which are not duplex mate.	No connection possible	Pass

5.16 ALTERNATIVE MONITORING INTERVAL FOR CO-LOCATED DEVICES

TEST CRITERIA

§15.323 (c)(11) an initiating device that is prevented from monitoring during its intended transmit window due to monitoring system blocking from the transmissions of a co-located (within one meter) transmitter of the same system, may monitor the portions of the time and spectrum windows in which they intend to receive over a period of at least 10 milliseconds. The Monitored time and spectrum window must total at least 50 percent of the 10 millisecond frame interval and the monitored spectrum must be within the 1.25 mhz frequency channel(s) already occupied by that device or co-located co-operating devices. If the access criteria is met for the intended receive time and spectrum window under the above conditions, then transmission in The intended transmit window by the initiating device may commence.

TEST PROCEDURE

Testing to ANSI C63.17-2013 Clause 8.4, which provides the test methodology for this provision. The MS is initiating device and the BS is the companion device.

TEST RESULTS

The Manufacturer declares that this provision is not utilized by the EUT.

5.17 FAIR ACCESS

TEST CRITERIA

§15.323 (c)(12) The provisions of (c)(10) or (c)(11) of this section shall not be used to extend the range of spectrum occupied over space or time for the purpose of denying fair access to spectrum to other devices.

TEST PROCEDURE

The manufacturer supplies an attestation.

ATTESTATION

The manufacturer declares that the EUT does not work in a mode which denies fair access to spectrum for other devices.

5.18 SPURIOUS EMISSIONS

TEST CRITERIA

§15.323(d)(1): Out of Band Emissions

Emissions shall be attenuated below a reference power of 112 milliwatts as follows: 30 dB between the band edge and 1.25 MHz above or below the band; 50 dB between 1.25 and 2.5 MHz above or below the band; and 60 dB at 2.5 MHz or greater above or below the band.

§15.323(d)(2): In-Band Emissions

Emissions inside the band must comply with the following emission mask: 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; 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; in the bands between 3B and the 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. “B” is defined as the emission bandwidth of the device in hertz. Compliance with the emission limits is based on the use of measurement instrumentation employing peak detector function with an instrument resolution bandwidth approximately equal to 1.0 percent of the emission bandwidth of the device under measurement.

TEST PROCEDURE

For both in and out of band emissions the EUT was connected directly to a spectrum analyzer.
The RBW of the spectrum analyzer was set to a minimum 1% of the emission band width.

TEST SETUP

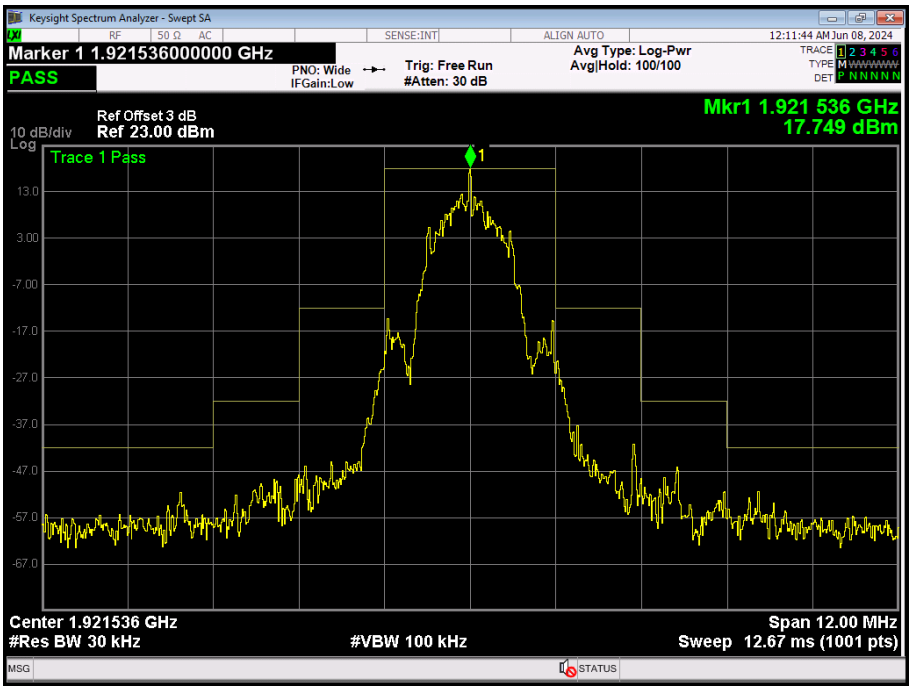
The test setup is shown in section 3.2 figure 1.

TEST RESULTS

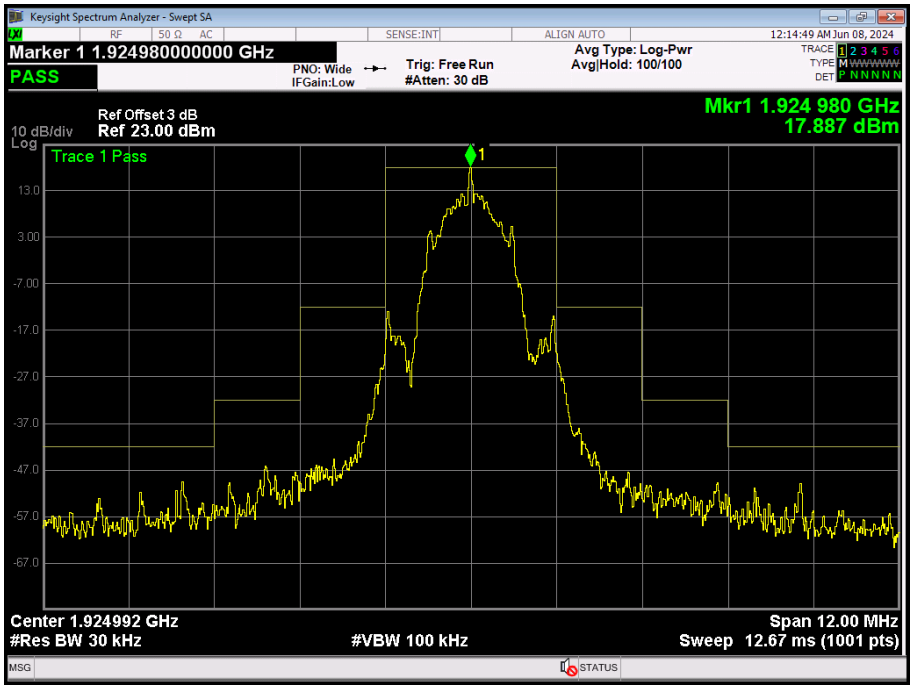
Equipment complies with the Spurious Emission limits of § 15.323(d)(1).
Note: Both ANT 1 and ANT 2 have been tested, the worst case is ANT 2, and only shwon the worst case in this report.

In-Band Emissions

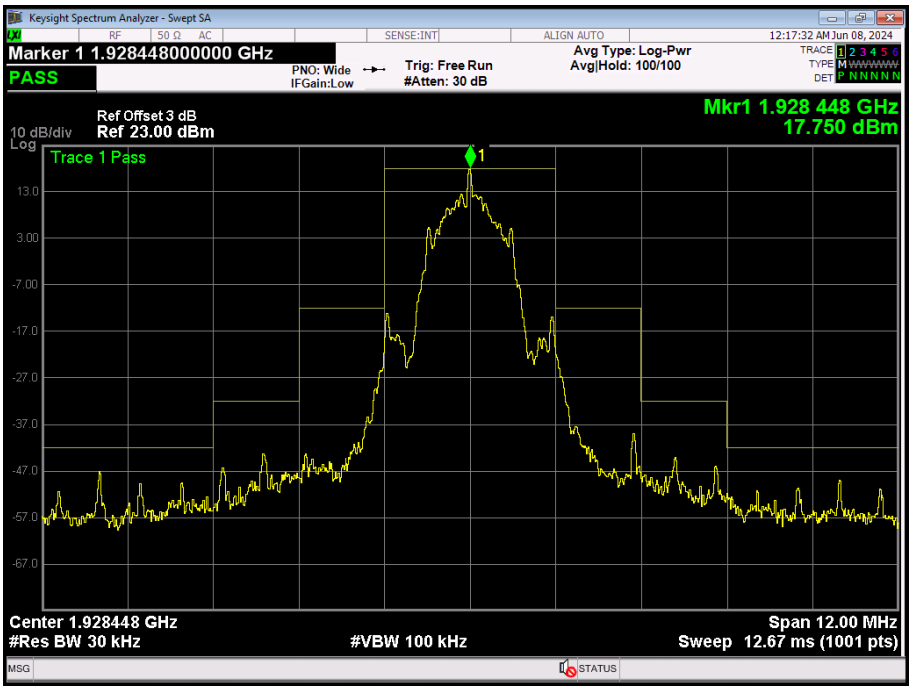
CH4



CH2


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
12:14:49 AM Jun 08, 2024
Marker 1 1.924980000000 GHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
Ref Offset 3 dB
10 dB/div Ref 23.00 dBm
Log
Mkr1 1.924 980 GHz
17.887 dBm
Trace 1 Pass
13.0
3.00
-7.00
-17.0
-27.0
-37.0
-47.0
-57.0
-67.0
Center 1.924992 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 12.00 MHz
Sweep 12.67 ms (1001 pts)
MSG
STATUS

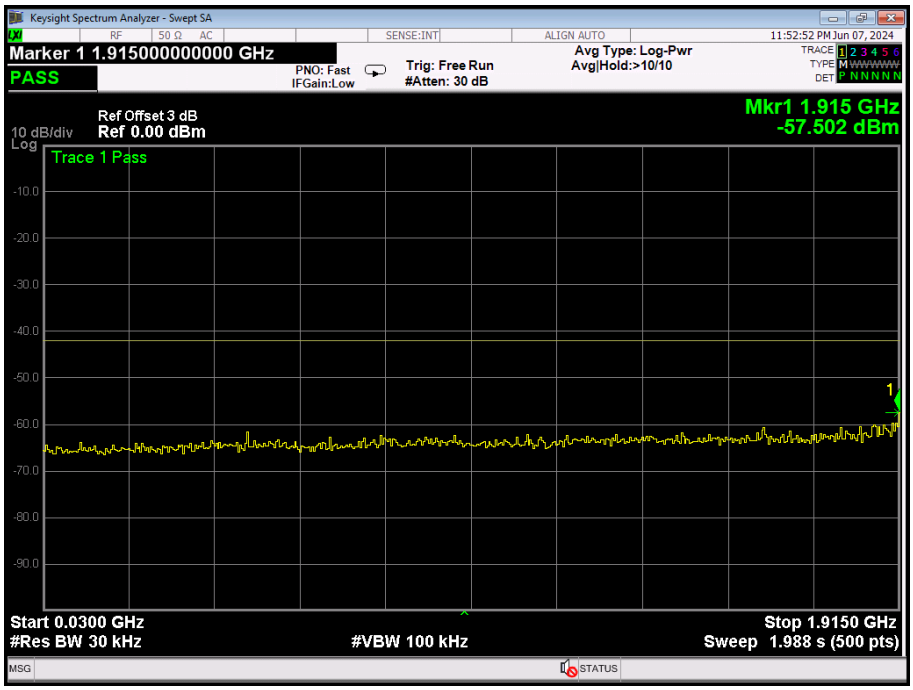
CH0


Keysight Spectrum Analyzer - Swept SA
RF 50 Ω AC
SENSE:INT
ALIGN AUTO
12:17:32 AM Jun 08, 2024
Marker 1 1.928448000000 GHz
PASS
PNO: Wide
IFGain:Low
Trig: Free Run
#Atten: 30 dB
Avg Type: Log-Pwr
Avg|Hold: 100/100
TRACE 1 2 3 4 5 6
TYPE M WWWWWW
DET P N N N N N
Ref Offset 3 dB
10 dB/div Ref 23.00 dBm
Log
Mkr1 1.928 448 GHz
17.750 dBm
Trace 1 Pass
13.0
3.00
-7.00
-17.0
-27.0
-37.0
-47.0
-57.0
-67.0
Center 1.928448 GHz
#Res BW 30 kHz
#VBW 100 kHz
Span 12.00 MHz
Sweep 12.67 ms (1001 pts)
MSG
STATUS

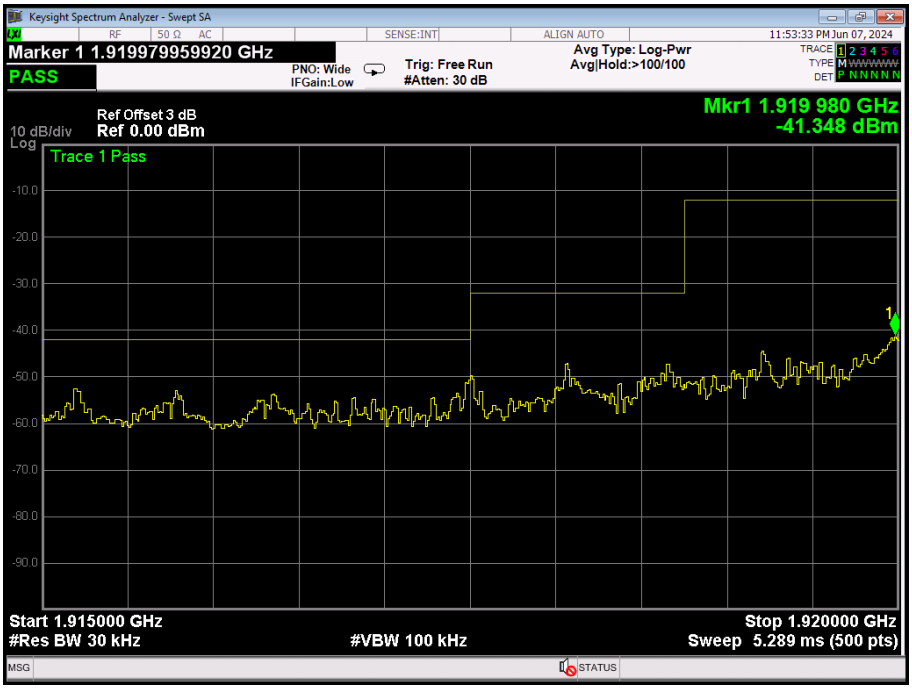
Out of Band Emissions

CH4

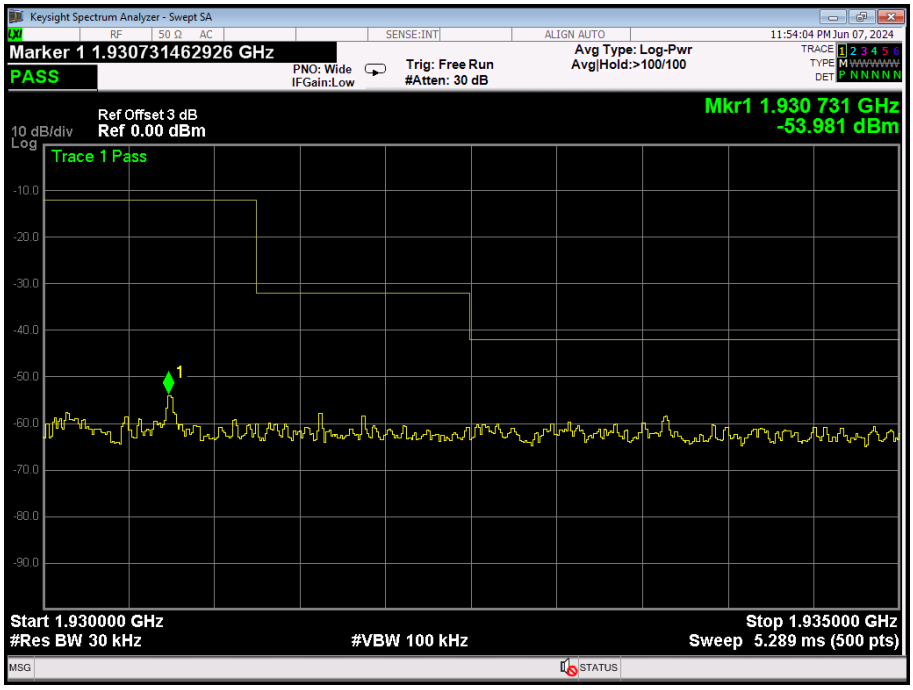
30MHz - 1915 MHz



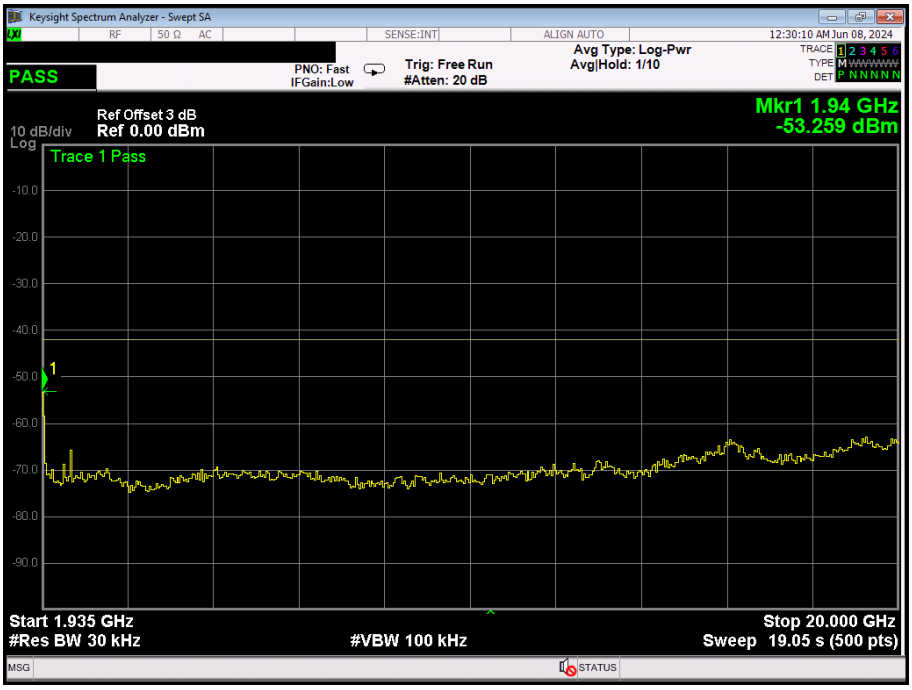
1915 MHz – 1920 MHz



1930 MHz – 1935 MHz

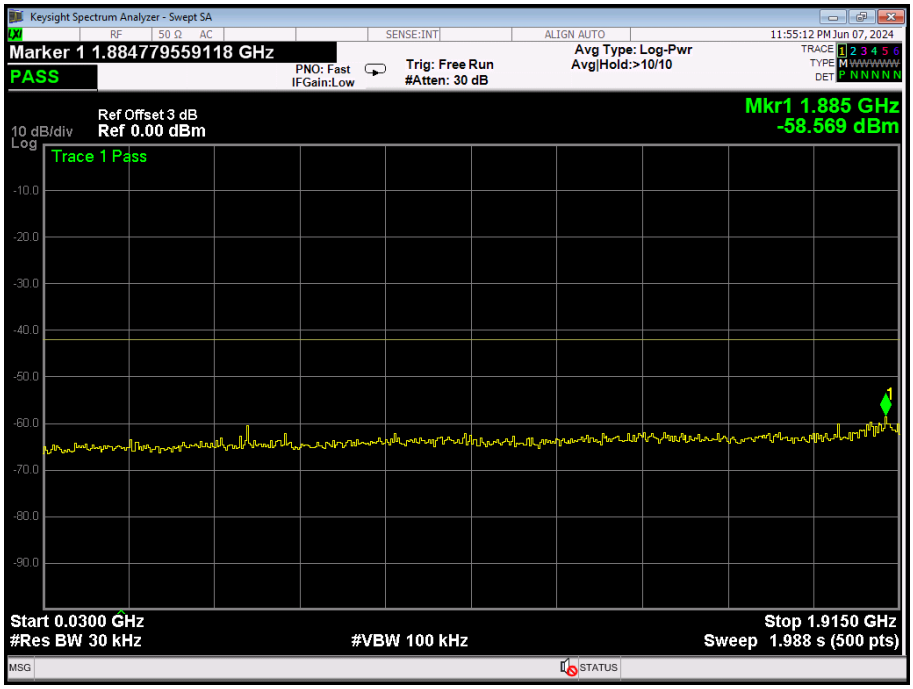


1935 MHz – 20GHz

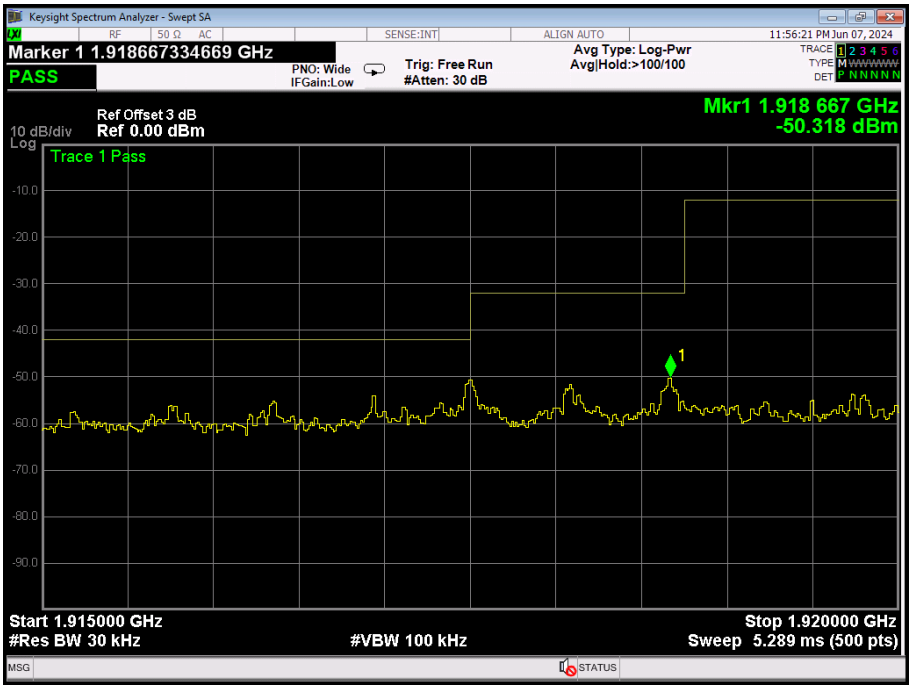


CH2

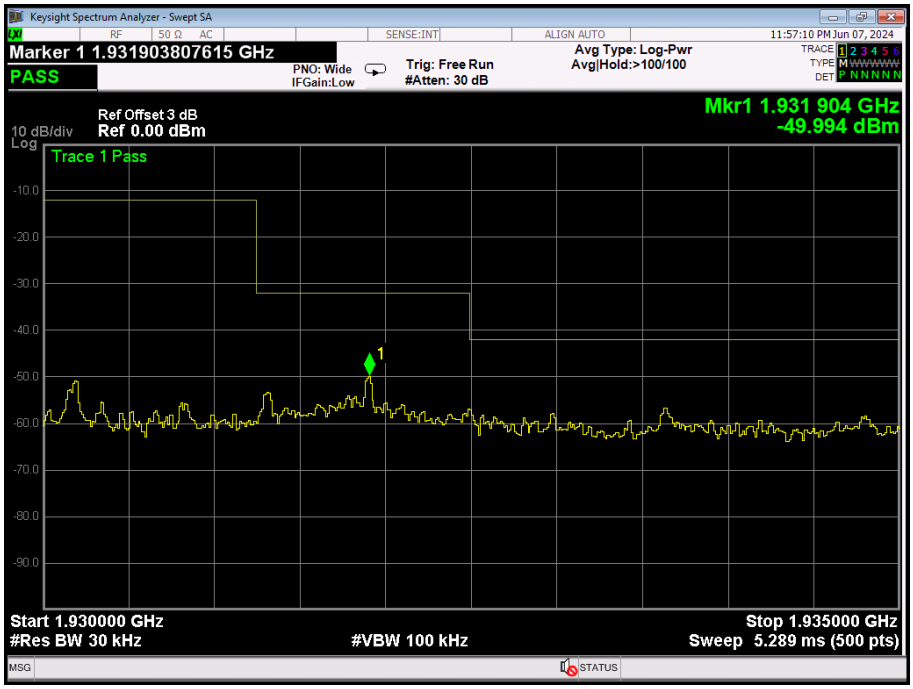
30MHz - 1915 MHz



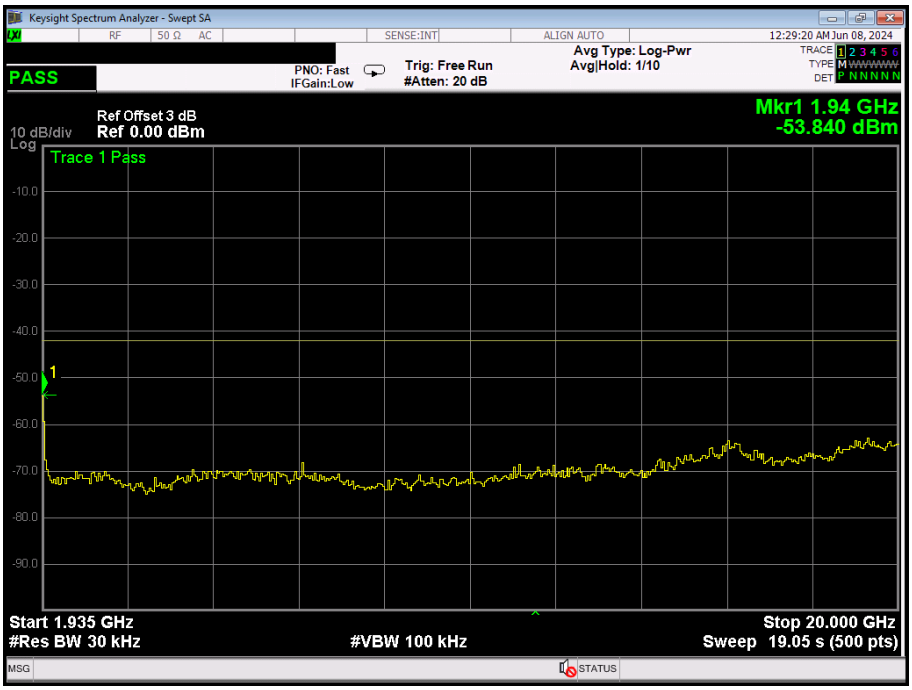
1915 MHz – 1920 MHz



1930 MHz – 1935 MHz

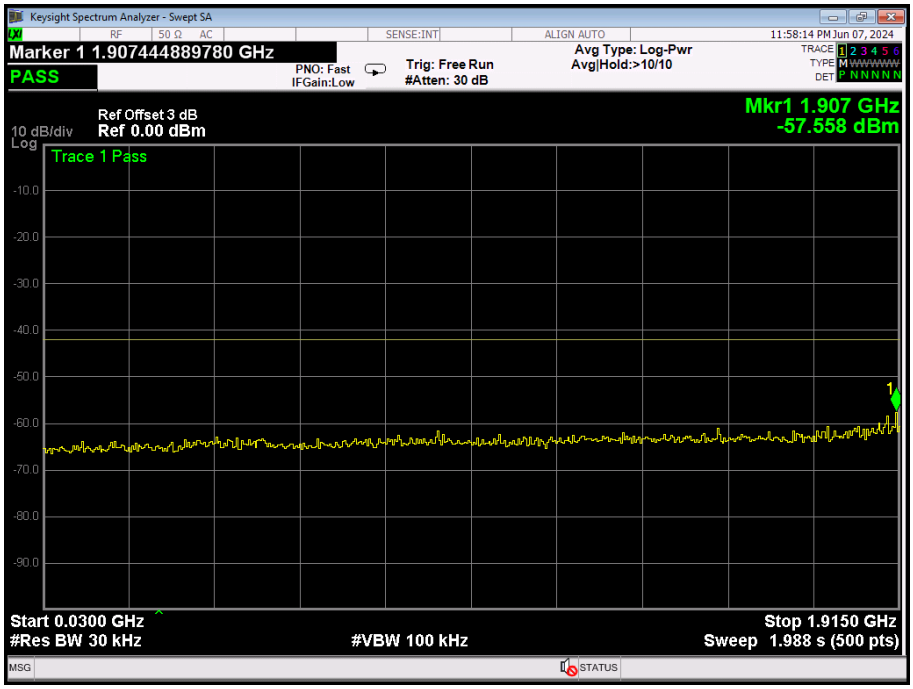


1935 MHz – 20GHz

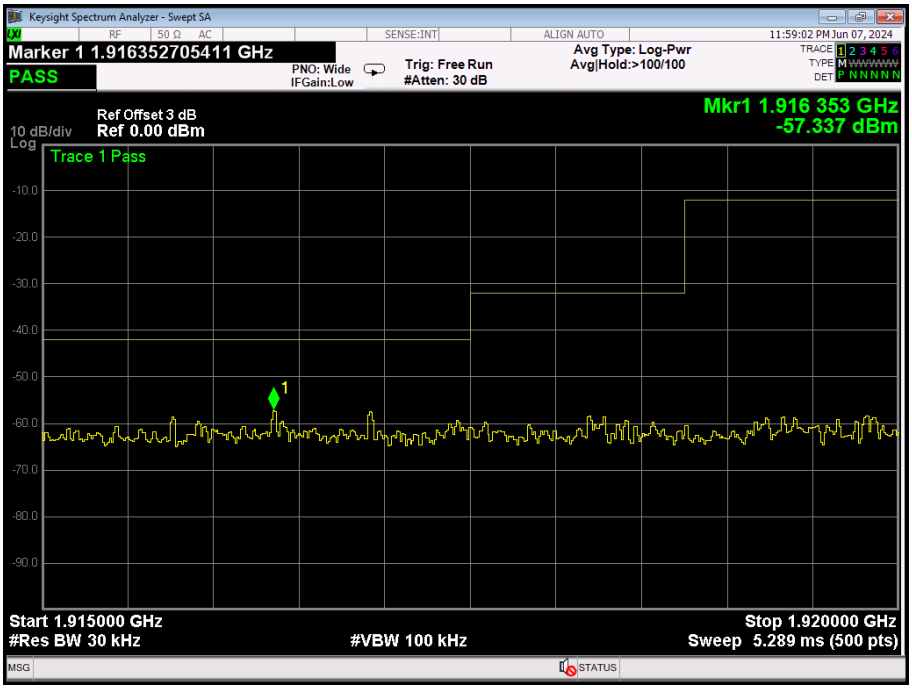


CH0

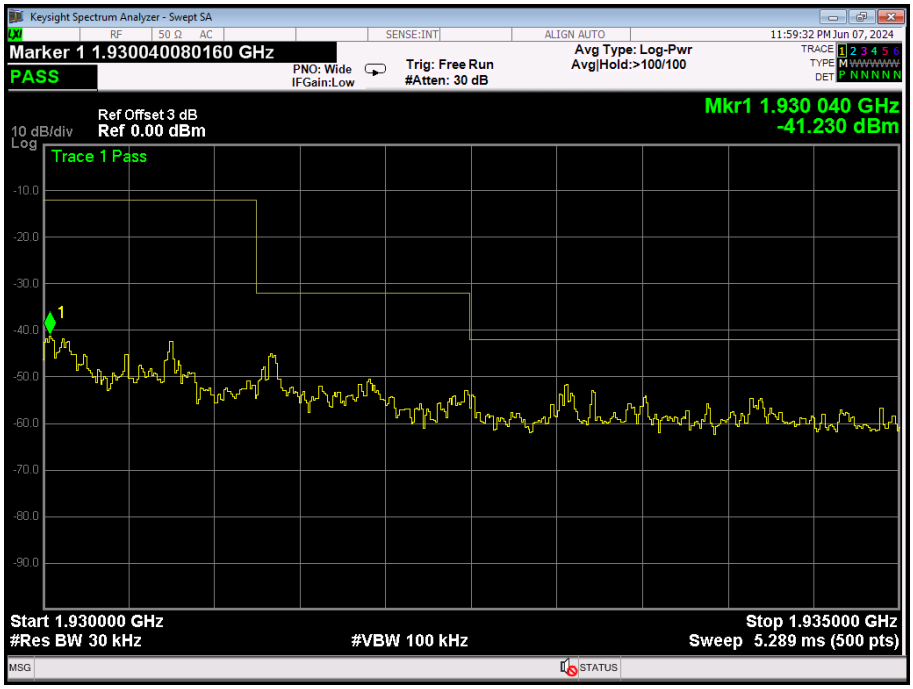
30MHz - 1915 MHz



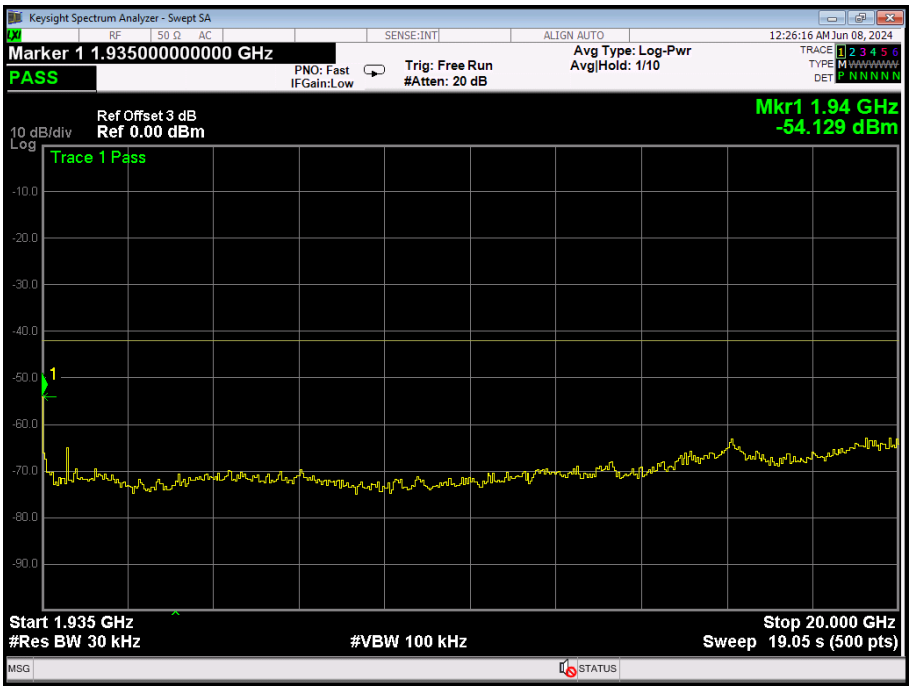
1915 MHz – 1920 MHz



1930 MHz – 1935 MHz



1935 MHz – 20GHz



5.19 FRAME PERIOD

TEST CRITERIA

§15.323 (e) The frame period (a set of consecutive time slots in which the position of each time slot can be identified by reference to a synchronizing source) of an intentional radiator operating in these sub-bands shall be 20 milliseconds or 10 milliseconds/X where X is a positive whole number. Each device that implements time division for the purposes of maintaining a duplex connection on a given frequency carrier shall maintain a frame repetition rate with a frequency stability of at least 50 parts per million (ppm). Each device which further divides access in time in order to support multiple communication links on a given frequency carrier shall maintain a frame repetition rate with a frequency stability of at least 10 ppm.

Timing Jitter

§ 15.323 (e) Specific requirements for isochronous devices operating in the 1920–1930 MHz sub-band. The jitter (time-related, abrupt, spurious variations in the duration of the frame interval) introduced at the two ends of such a communication link shall not exceed 25 microseconds for any two consecutive transmissions. Transmissions shall be continuous in every time and spectrum window during the frame period defined for the device.

TEST LIMIT

Frame Period	20 or 10ms
Max Jitter	25µs
3 times St.Dev of Jitter	12.5µs

TEST SETUP

The test setup is shown in section 3.2 figure 2.

TEST PROCEDURE

The manufacturer supplies an attestation

TEST RESULTS

The Frame Repetition Stability is measured with the RF Test Platform for DECT. The Frame Repetition Stability is 3 times the standard deviation.

ANT 2

Channel	Standard Deviation(ppm)	Frame Repetition	The limit of Frame Repetition Stability(ppm)	Verdict
Middle	0.7260	2.1780	±10	Pass

Channel	Frame Period (ms)	Max Jitter (µs)	3xStandard Deviation of Jitter(µs)	Limit(µs)		Verdict
				Max Jitter	3 times St.Dev.of Jitter	
CH2	10.0000	-0.5000	2.1780	25	12.5	Pass

Max Jitter= (1/(Frame Period+Pk-Pk)/2)-(1/Frame Period). When Pk-Pk and Frame period are in Hz.

3x St.Dev. Jitter 3 x(1/(Frame Period +St. Dev))-(1/St.Dev)) x10^6

Both ANT 1 and ANT 2 have been tested, the worst case is ANT 1, and only shwon the worst case in this report.

5.20 FREQUENCY STABILITY

TEST CRITERIA

§15.323 (f) The frequency stability of the carrier frequency of the intentional radiator shall be maintained within ±10ppm over 1hour or the interval between channel access monitoring, whichever is shorter. The frequency stability shall be maintained over a temperature variation of -20º to +50º C at normal supply voltage and over a variation in the primary supply voltage of 85% to 115% of the rated supply voltage at a temperature of 200 C. For equipment that is capable only of operating from a battery, the frequency stability tests shall be performed using a new battery without any further requirement to vary supply voltage.

TEST PROCEDURE

The EUT was placed in the Environmental Chamber and support equipment are outside the chamber on a table. A CW signal was injected into the EUT at the appropriate RF level. The frequency counter option on the Spectrum Analyzer was used to measure frequency deviations.
The frequency drift was investigated for every 10º C increment until the unit is stabilized then recorded the reading in tabular format with the temperature range of -20º to +50º C.
Voltage supplied to EUT is DC 3.8V reference temperature was done at 20º C.

TEST SETUP

The test setup is shown in section 3.2 figure 1.

TEST RESULTS

The EUT was compliant with this requirement
Note: Both ANT 1 and ANT 2 have been tested, the worst case is ANT 2, and only shwon the worst case in this report.

ANT 2

Reference Frequency (MHz)	Voltage (V)	Temperature (℃)	Frequency (MHz)	Deviation (ppm)	Limit (ppm)
CH4 1921.536	3	50	1921.52756	4.39	±10
		40	1921.52869	3.80	
		30	1921.52619	5.11	
		20	1921.53353	1.28	
		10	1921.53851	-1.31	
		0	1921.53696	-0.50	
		-10	1921.54647	-5.45	
		-20	1921.55013	-7.35	

Reference Frequency (MHz)	Voltage (V)	Temperature (℃)	Frequency (MHz)	Deviation (ppm)	Limit (ppm)
CH2 1924.992	5	50	1924.99853	-3.39	±10
		40	1924.99487	-1.49	
		30	1924.99699	-2.59	
		20	1924.99952	-3.91	
		10	1924.99760	-2.91	
		0	1925.00407	-6.27	
		-10	1924.98396	4.18	
		-20	1924.98336	4.49	

Reference Frequency (MHz)	Voltage (V)	Temperature (℃)	Frequency (MHz)	Deviation (ppm)	Limit (ppm)
CH0 1928.448	5	50	1928.43865	4.85	±10
		40	1928.43986	4.22	
		30	1928.44129	3.48	
		20	1928.44186	3.19	
		10	1928.44742	0.30	
		0	1928.45016	-1.12	
		-10	1928.44817	-0.09	
		-20	1928.45189	-2.02	

5.21 CONDUCTED EMISSION MEASUREMENT

POWER LINE CONDUCTED EMISSION LIMITS

Operating frequency band. In case the emission fall within the restricted band specified on Part 207(a) limit in the table below has to be followed.

FREQUENCY (MHz)	Conducted Emission limit (dBuV)	
	Quasi-peak	Average
0.15 -0.5	66 - 56 *	56 - 46 *
0.50 -5.0	56.00	46.00
5.0 -30.0	60.00	50.00

Note:

(1) The tighter limit applies at the band edges.

(2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

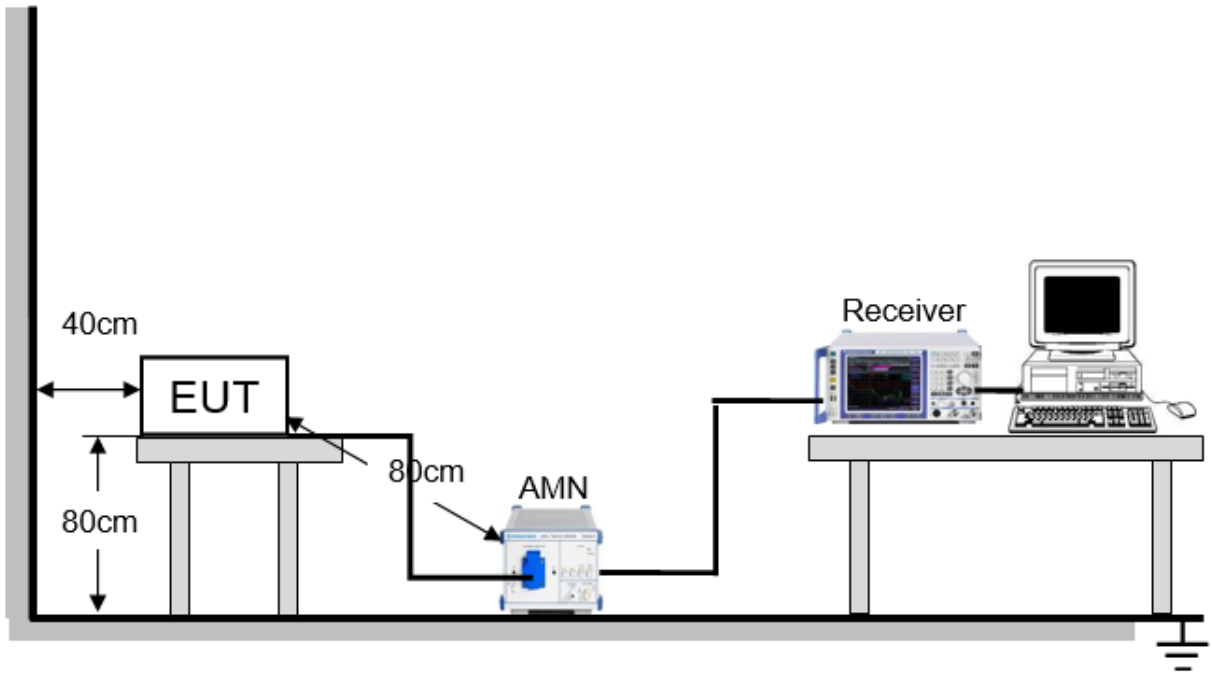
The following table is the setting of the receiver

Receiver Parameters	**Setting**
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

TEST PROCEDURE

a. The EUT was 0.8 meters from the horizontal ground plane and 0.4 meters from the vertical ground plane with EUT being connected to the power mains through a line impedance stabilization network (LISN). All other support equipments powered from additional LISN(s). The LISN provide 50 Ohm/ 50uH of coupling impedance for the measuring instrument.
b. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
c. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
d. LISN at least 80 cm from nearest part of EUT chassis.
e. For the actual test configuration, please refer to the related Item –EUT Test Photos.

TEST SETUP

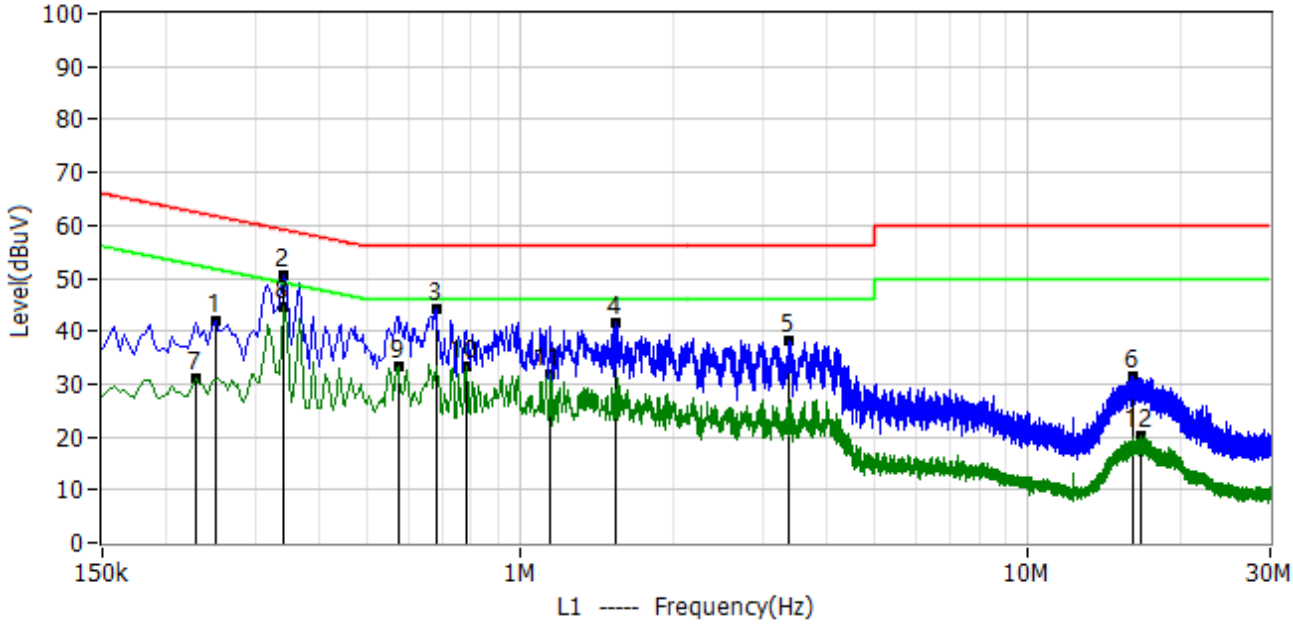


EUT OPERATING CONDITIONS

The EUT was configured for testing in a typical fashion (as a customer would normally use it). The EUT has been programmed to continuously transmit during test. This operating condition was tested and used to collect the included data.

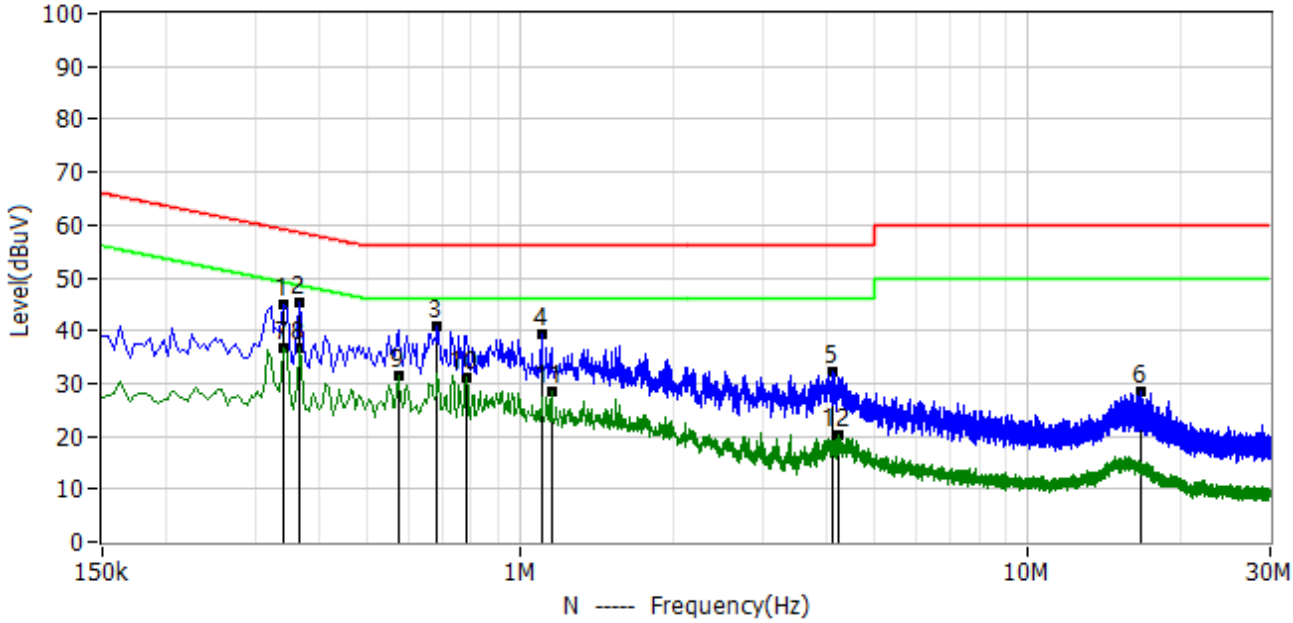
TEST RESULTS

Project: LGT24E075	Test Engineer: LiuH
EUT: DECT RADIO MODULE	Temperature: 25.9℃
M/N: RTX1090 DECT	Humidity: 60%RH
Test Voltage: AC 120V/60Hz	Test Data: 2024-05-28
Test Mode: TX	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	0.250	31.25	10.60	41.85	61.76	-19.91	QP	L1
2*	0.342	40.12	10.57	50.69	59.15	-8.46	QP	L1
3*	0.682	33.47	10.57	44.04	56.00	-11.96	QP	L1
4*	1.534	30.55	10.85	41.40	56.00	-14.60	QP	L1
5*	3.386	27.19	11.17	38.36	56.00	-17.64	QP	L1
6*	16.142	20.07	11.44	31.51	60.00	-28.49	QP	L1
7*	0.230	20.65	10.61	31.26	52.45	-21.19	AV	L1
8*	0.342	34.04	10.57	44.61	49.15	-4.54	AV	L1
9*	0.574	22.86	10.57	33.43	46.00	-12.57	AV	L1
10*	0.782	22.68	10.60	33.28	46.00	-12.72	AV	L1
11*	1.146	20.93	10.73	31.66	46.00	-14.34	AV	L1
12*	16.738	8.63	11.47	20.10	50.00	-29.90	AV	L1

Project: LGT24E075	Test Engineer: LiuH
EUT: DECT RADIO MODULE	Temperature: 25.9℃
M/N: RTX1090 DECT	Humidity: 60%RH
Test Voltage: AC 120V/60Hz	Test Data: 2024-05-28
Test Mode: TX	
Note:	



No.	Frequency MHz	Reading dBuV	Factor dB	Level dBuV	Limit dBuV	Margin dB	Detector	Polar
1*	0.342	34.35	10.59	44.94	59.15	-14.21	QP	N
2*	0.366	34.64	10.59	45.23	58.59	-13.36	QP	N
3*	0.686	30.28	10.56	40.84	56.00	-15.16	QP	N
4*	1.098	28.74	10.56	39.30	56.00	-16.70	QP	N
5*	4.126	21.28	10.82	32.10	56.00	-23.90	QP	N
6*	16.642	16.85	11.46	28.31	60.00	-31.69	QP	N
7*	0.342	26.04	10.59	36.63	49.15	-12.52	AV	N
8*	0.366	25.96	10.59	36.55	48.59	-12.04	AV	N
9*	0.574	21.05	10.55	31.60	46.00	-14.40	AV	N
10*	0.782	20.34	10.56	30.90	46.00	-15.10	AV	N
11*	1.150	17.99	10.57	28.56	46.00	-17.44	AV	N
12*	4.246	9.43	10.82	20.25	46.00	-25.75	AV	N

5.22 RADIATED SPURIOUS EMISSION

RADIATED EMISSION LIMITS

In any 100 kHz bandwidth outside the operating frequency band. In case the emission fall within the Restricted band specified on Part15.205(a) limit in the table and according to ANSI C63.10-2013 below has to be followed.

LIMITS OF RADIATED EMISSION MEASUREMENT (Frequency Range 9kHz-1000MHz)

Frequencies (MHz)	Field Strength (micorvolts/meter)	Measurement Distance (meters)
0.009~0.490	2400/F(KHz)	300
0.490~1.705	24000/F(KHz)	30
1.705~30.0	30	30
30~88	100	3
88~216	150	3
216~960	200	3
Above 960	500	3

LIMITS OF RADIATED EMISSION MEASUREMENT (Above 1000MHz)

FREQUENCY (MHz)	(dBuV/m) (at 3M)	
	PEAK	AVERAGE
Above 1000	74	54

Notes:

(1) The limit for radiated test was performed according to FCC PART 15C.

(2) The tighter limit applies at the band edges.

(3) Emission level (dBuV/m)=20log Emission level (uV/m).

For Radiated Emission

Spectrum Parameter	Setting
Attenuation	Auto
Detector	Peak/AV
Start Frequency	1000 MHz(Peak/AV)
Stop Frequency	10th carrier hamonic(Peak/AV)
RB / VB (emission in restricted band)	1 MHz / 3 MHz

Receiver Parameter	**Setting**
Start ~ Stop Frequency	9kHz~90kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	90kHz~110kHz / RB 200Hz for QP
Start ~ Stop Frequency	110kHz~490kHz / RB 200Hz for PK & AV
Start ~ Stop Frequency	490kHz~30MHz / RB 9kHz for QP
Start ~ Stop Frequency	30MHz~1000MHz / RB 120kHz for QP

TEST PROCEDURE

a. The measuring distance of at 3 m shall be used for measurements at frequency 0.009MHz up

to 1GHz, and above 1GHz.

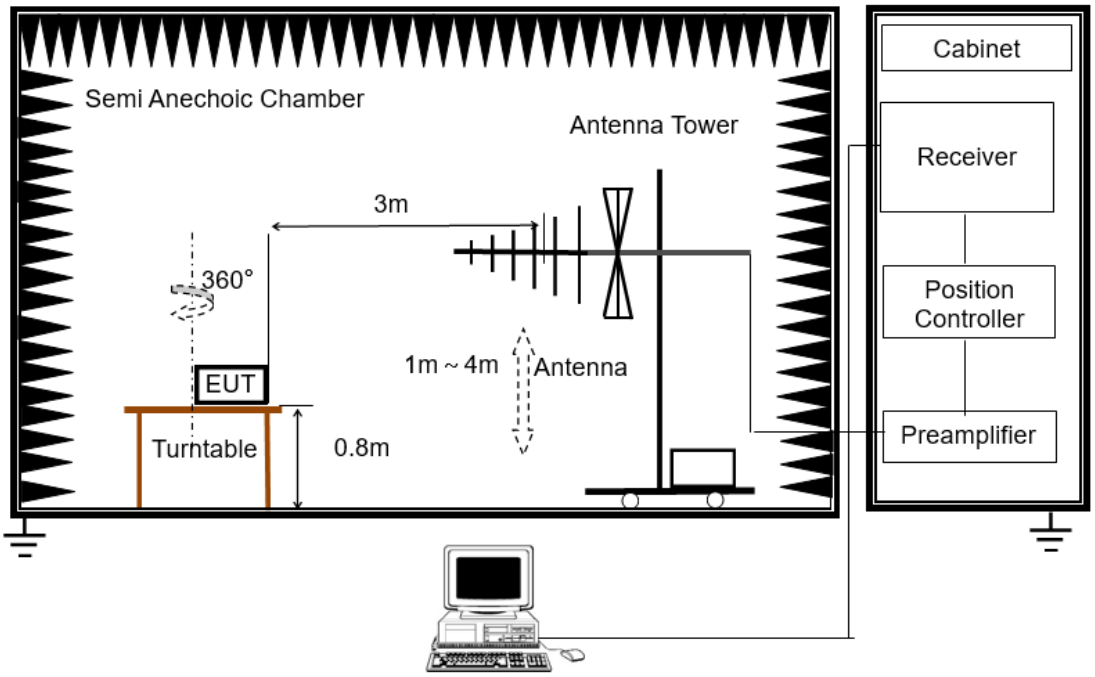
b. The EUT was placed on the top of a rotating table 0.8 meters(above 1GHz is 1.5 m) above the ground at a 3 meter anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
c. The height of the equipment shall be 0.8 m(above 1GHz is 1.5 m); the height of the test antenna shall vary between 1 m to 4 m. Horizontal and vertical polarizations of the ANT 2re set to make the measurement
d. The initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
e. If the Peak Mode measured value compliance with and lower than Quasi Peak Mode Limit, the EUT shall be deemed to meet QP Limits and then no additional QP Mode measurement performed.
f. For the actual test configuration, please refer to the related Item –EUT Test Photos.

Note:

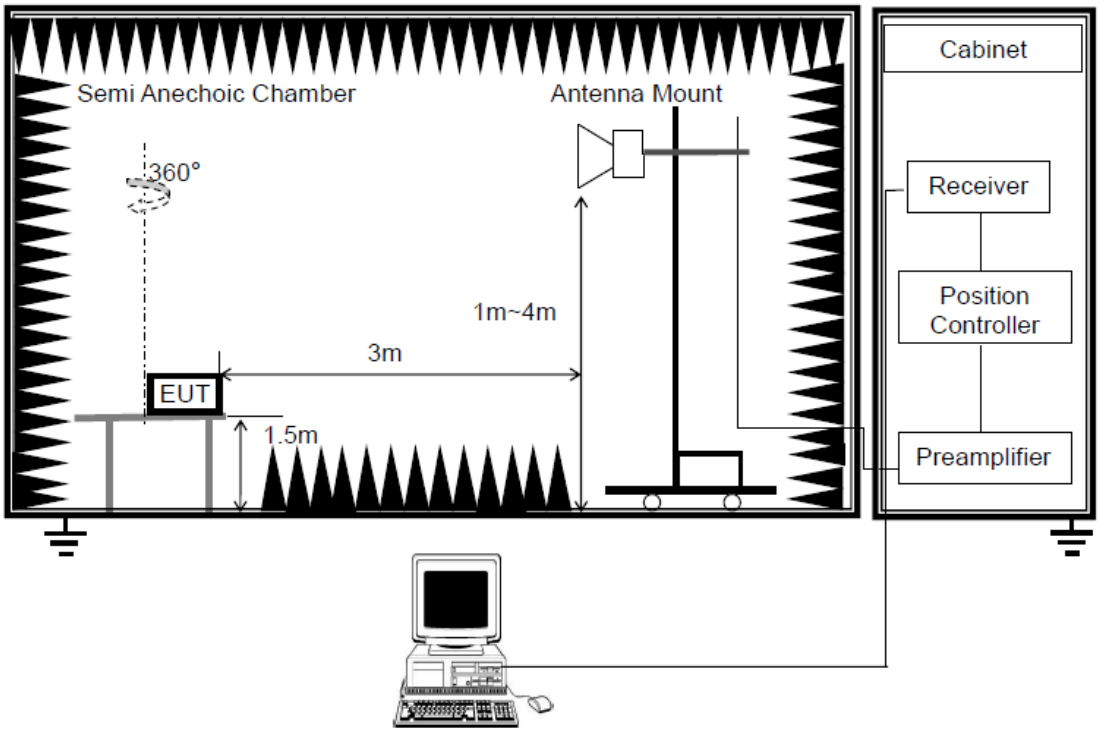
Both horizontal and vertical antenna polarities were tested and performed pretest to three orthogonal axis. The worst case emissions were reported.

TEST SETUP

(A) Radiated Emission Test-Up Frequency 30MHz~1GHz



(B) Radiated Emission Test-Up Frequency Above 1GHz



EUT OPERATING CONDITIONS

The EUT tested system was configured as the statements of 2.3 Unless otherwise a special operating condition is specified in the follows during the testing.

FIELD STRENGTH CALCULATION

The field strength is calculated by adding the Antenna Factor and Cable Factor and subtracting the Amplifier Gain and Duty Cycle Correction Factor (if any) from the measured reading. The basic equation with a sample calculation is as follows:

Margin=PL-PK L or AL- AV L; Margin only shown the worst case.

Where

PR = Peak Reading

AR = Average Reading

PL = Peak Level

AL = Average Level

AF = Antenna Factor

PK L = Peak Limit

AV L = AV Limit

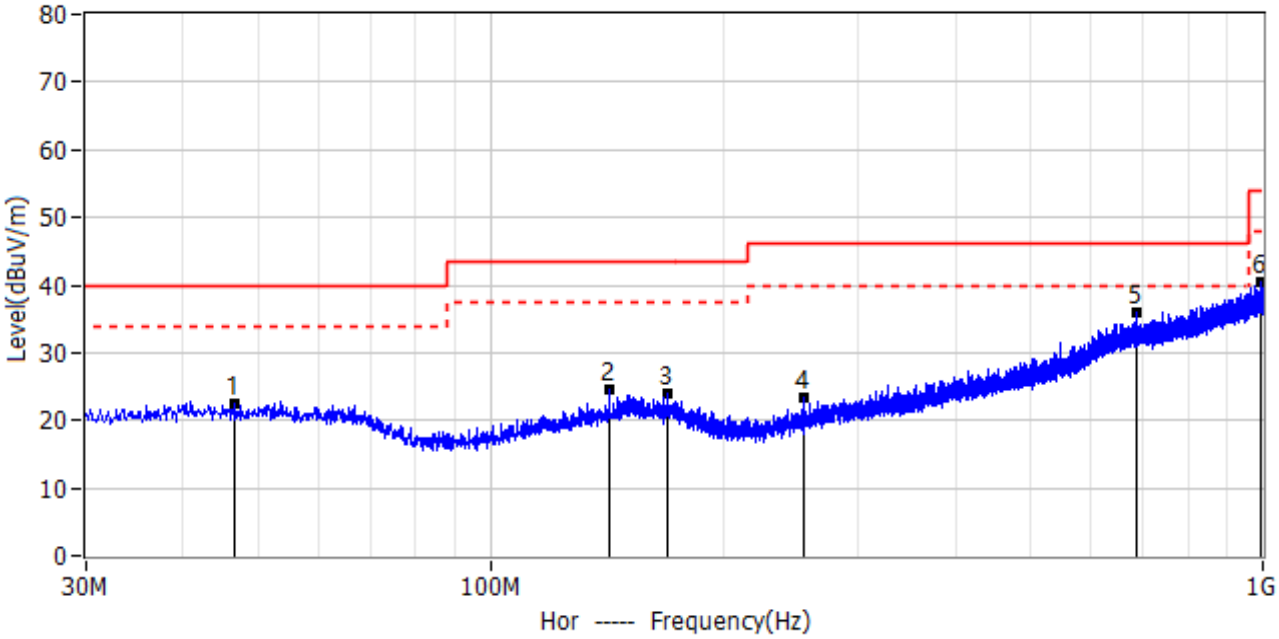
For example

Frequency	PR	AR	AF	PL	AL	PK L	AV L	Margin
(MHz)	(dBμV/m)	(dBμV/m)	(dB)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dBμV/m)	(dB)
2178	40.23	30.31	9.83	50.06	40.14	74.00	54.00	-13.86

Factor=AF+CL-AG

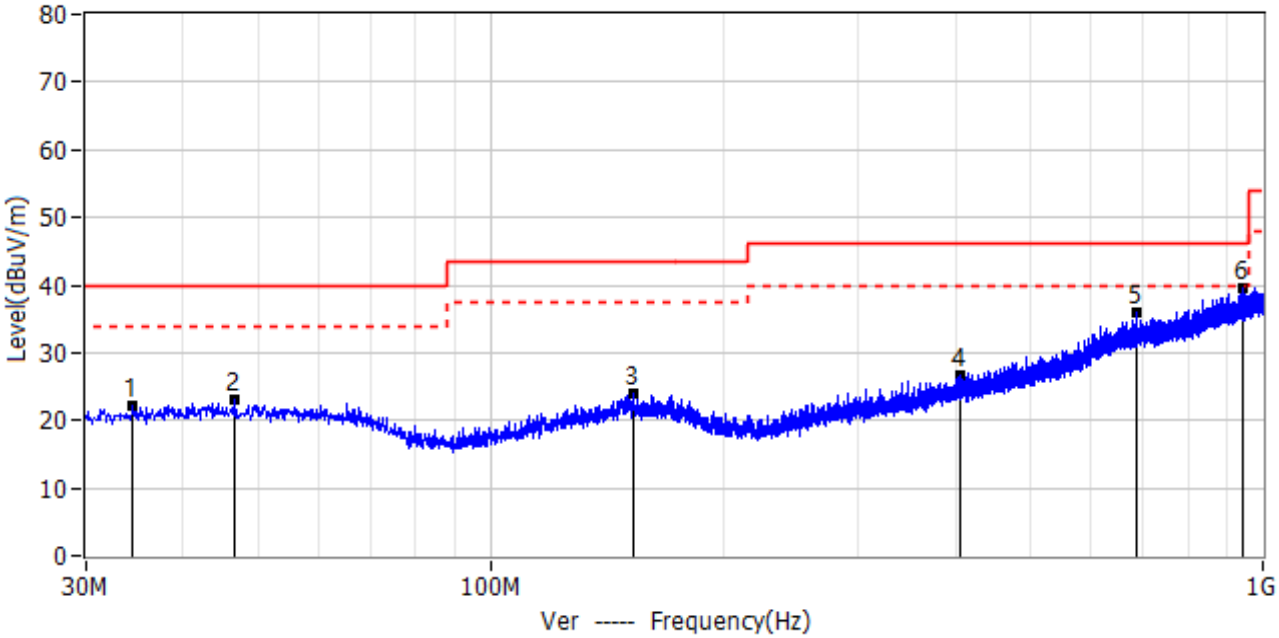
TEST RESULTS(30MHz – 1GHz)

Project: LGT24E075	Test Engineer: Xiangdong Ma
EUT: DECT RADIO MODULE	Temperature: 24℃
M/N: RTX1090 DECT	Humidity: 52%RH
Test Voltage: Battery	Test Data: 2024-05-28
Test Mode: TX	
Note:	



No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	46.611	3.35	19.27	22.62	40.00	-17.38	QP	Hor
2*	142.399	5.27	19.27	24.54	43.50	-18.96	QP	Hor
3*	169.559	4.20	19.79	23.99	43.50	-19.51	QP	Hor
4*	255.040	4.92	18.47	23.39	46.00	-22.61	QP	Hor
5*	687.539	6.37	29.69	36.06	46.00	-9.94	QP	Hor
6*	995.635	6.02	34.55	40.57	54.00	-13.43	QP	Hor

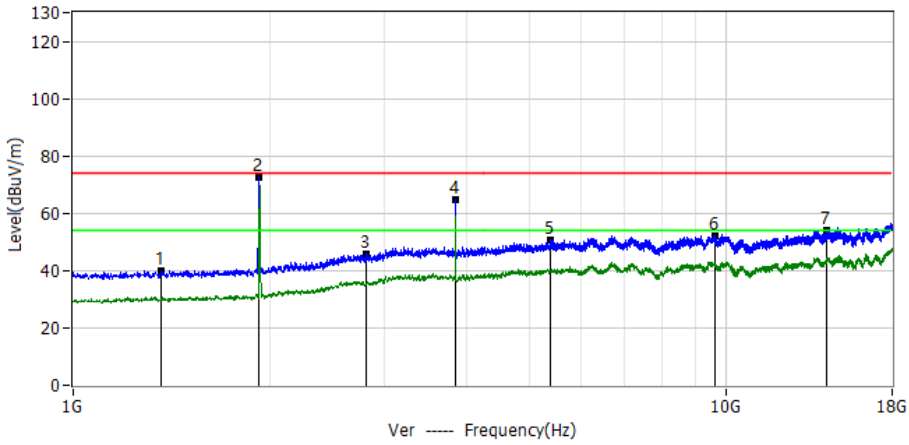
Project: LGT24E075	Test Engineer: Xiangdong Ma
EUT: DECT RADIO MODULE	Temperature: 24℃
M/N: RTX1090 DECT	Humidity: 52%RH
Test Voltage: Battery	Test Data: 2024-05-28
Test Mode: TX	
Note:	



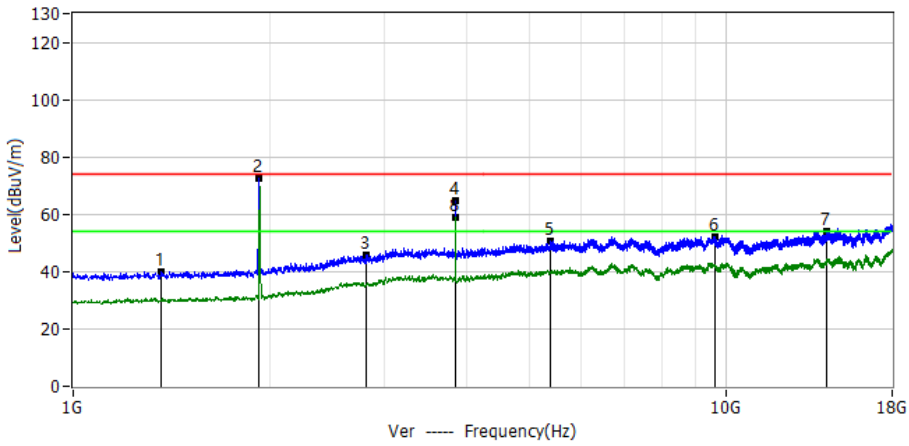
No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	34.486	3.77	18.51	22.28	40.00	-17.72	QP	Ver
2*	46.611	3.86	19.27	23.13	40.00	-16.87	QP	Ver
3*	153.069	3.98	19.94	23.92	43.50	-19.58	QP	Ver
4*	406.724	3.62	22.95	26.57	46.00	-19.43	QP	Ver
5*	687.539	6.13	29.69	35.82	46.00	-10.18	QP	Ver
6*	942.406	5.88	33.78	39.66	46.00	-6.34	QP	Ver

TEST RESULTS(Above 1GHz)

Project: LGT24E075	Test Engineer: Xiangdong Ma
EUT: DECT RADIO MODULE	Temperature: 25℃
M/N: RTX1090 DECT	Humidity: 48%RH
Test Voltage: Battery	Test Data: 2024-06-14
Test Mode: CH1 ANT1	
Note:	

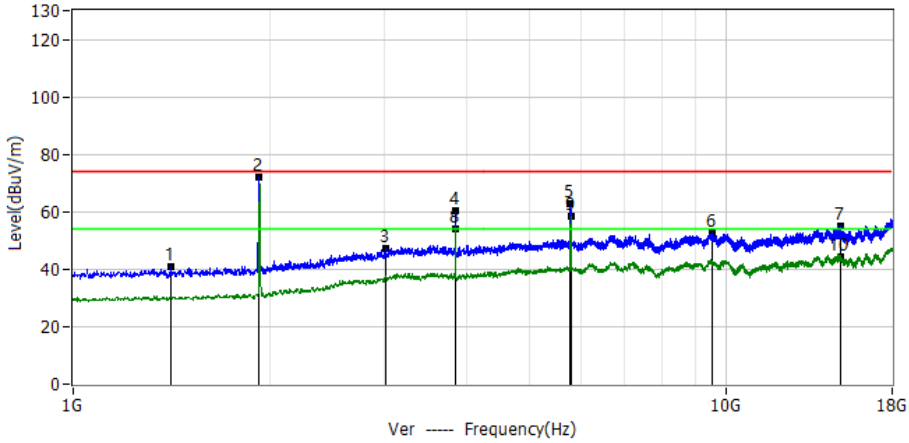


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1361.2000	62.18	-22.38	39.80	74.00	-34.20	PK	Ver
2*	1928.6000	91.08	-18.64	72.44	74.00	-1.56	PK	Ver
3*	2816.9000	55.65	-9.67	45.98	74.00	-28.02	PK	Ver
4*	3856.0000	70.45	-5.68	64.77	74.00	-9.23	PK	Ver
5*	5383.9000	57.32	-6.58	50.74	74.00	-23.26	PK	Ver
6*	9653.0000	57.38	-5.11	52.27	74.00	-21.73	PK	Ver
7*	14311.0000	55.80	-1.91	53.89	74.00	-20.11	PK	Ver

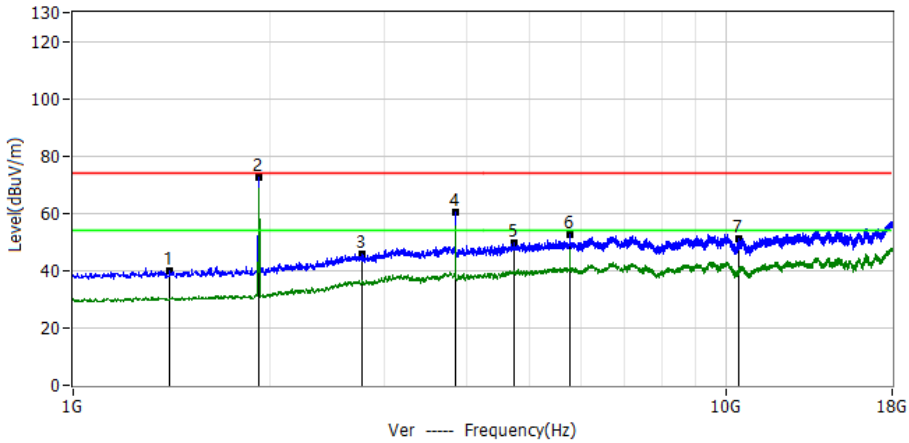


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1361.2000	62.18	-22.38	39.80	74.00	-34.20	PK	Ver
2*	1928.6000	91.08	-18.64	72.44	74.00	-1.56	PK	Ver
3*	2816.9000	55.65	-9.67	45.98	74.00	-28.02	PK	Ver
4*	3856.0000	70.45	-5.68	64.77	74.00	-9.23	PK	Ver
5*	5383.9000	57.32	-6.58	50.74	74.00	-23.26	PK	Ver
6*	9653.0000	57.38	-5.11	52.27	74.00	-21.73	PK	Ver
7*	14311.0000	55.80	-1.91	53.89	74.00	-20.11	PK	Ver
!8*	3858.1000	64.79	-5.70	59.09	54.00	5.09	AV	Ver

Project: LGT24E075	Test Engineer: Xiangdong Ma
EUT: DECT RADIO MODULE	Temperature: 25℃
M/N: RTX1090 DECT	Humidity: 48%RH
Test Voltage: Battery	Test Data: 2024-06-14
Test Mode: CH1 ANT1	
Note:	

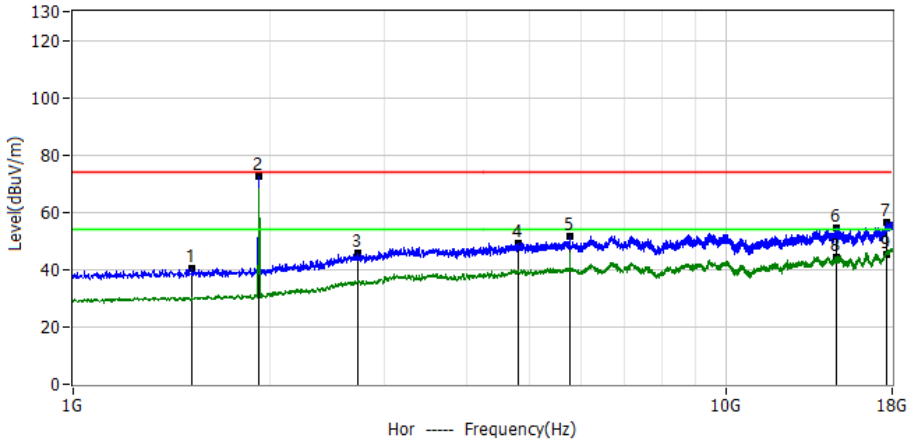


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1414.4000	63.10	-22.12	40.98	74.00	-33.02	PK	Ver
2*	1928.6000	90.88	-18.64	72.24	74.00	-1.76	PK	Ver
3*	3008.1000	55.38	-8.24	47.14	74.00	-26.86	PK	Ver
4*	3856.0000	66.07	-5.68	60.39	74.00	-13.61	PK	Ver
5*	5785.5000	69.80	-7.19	62.61	74.00	-11.39	PK	Ver
6*	9544.6000	57.98	-5.47	52.51	74.00	-21.49	PK	Ver
7*	14978.2000	56.35	-1.31	55.04	74.00	-18.96	PK	Ver
!8*	3858.1000	59.80	-5.70	54.10	54.00	0.10	AV	Ver
!9*	5787.6000	65.63	-7.19	58.44	54.00	4.44	AV	Ver
10*	14978.2000	45.81	-1.31	44.50	54.00	-9.50	AV	Ver

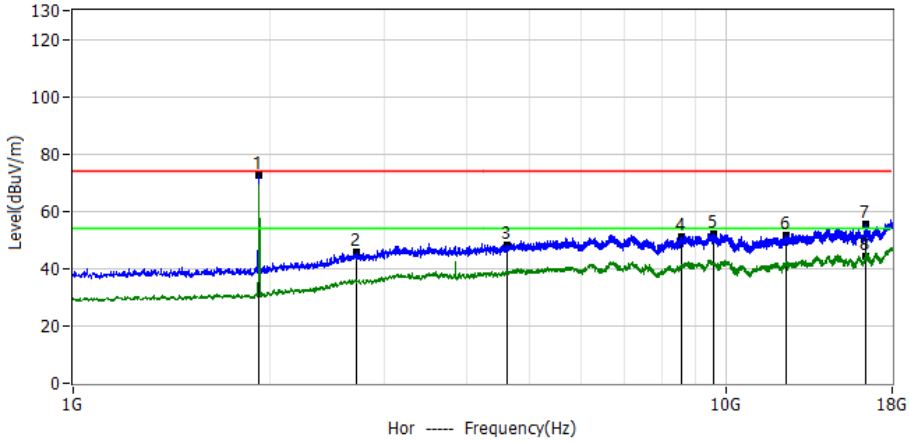


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1403.7000	61.95	-22.17	39.78	74.00	-34.22	PK	Ver
2*	1924.4000	91.05	-18.67	72.38	74.00	-1.62	PK	Ver
3*	2770.1000	55.88	-9.93	45.95	74.00	-28.05	PK	Ver
4*	3849.6000	66.15	-5.64	60.51	74.00	-13.49	PK	Ver
5*	4740.0000	55.65	-6.11	49.54	74.00	-24.46	PK	Ver
6*	5774.9000	59.83	-7.20	52.63	74.00	-21.37	PK	Ver
7*	10473.2000	56.88	-5.52	51.36	74.00	-22.64	PK	Ver

Project: LGT24E075	Test Engineer: Xiangdong Ma
EUT: DECT RADIO MODULE	Temperature: 25℃
M/N: RTX1090 DECT	Humidity: 48%RH
Test Voltage: Battery	Test Data: 2024-06-14
Test Mode: CH2 ANT2	
Note: 10DB 衰减器	

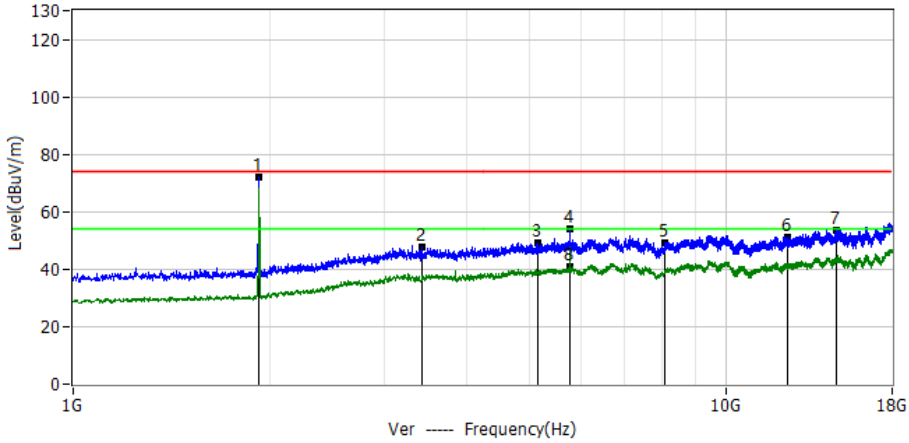


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1520.6000	61.84	-21.53	40.31	74.00	-33.69	PK	Hor
2*	1924.4000	91.14	-18.67	72.47	74.00	-1.53	PK	Hor
3*	2731.9000	55.71	-10.14	45.57	74.00	-28.43	PK	Hor
4*	4814.4000	55.20	-6.10	49.10	74.00	-24.90	PK	Hor
5*	5774.9000	58.83	-7.20	51.63	74.00	-22.37	PK	Hor
6*	14774.2000	55.80	-1.37	54.43	74.00	-19.57	PK	Hor
7*	17689.7000	56.32	0.26	56.58	74.00	-17.42	PK	Hor
8*	14774.2000	45.47	-1.37	44.10	54.00	-9.90	AV	Hor
9*	17689.7000	45.24	0.26	45.50	54.00	-8.50	AV	Hor

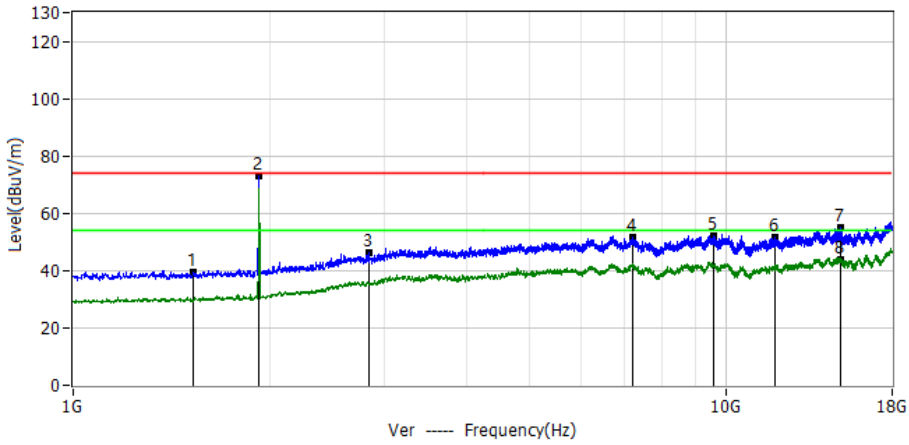


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1924.4000	91.33	-18.67	72.66	74.00	-1.34	PK	Hor
2*	2721.2000	55.82	-10.19	45.63	74.00	-28.37	PK	Hor
3*	4618.9000	54.45	-6.26	48.19	74.00	-25.81	PK	Hor
4*	8571.4000	58.09	-6.93	51.16	74.00	-22.84	PK	Hor
5*	9582.9000	57.59	-5.38	52.21	74.00	-21.79	PK	Hor
6*	12383.6000	56.52	-5.01	51.51	74.00	-22.49	PK	Hor
7*	16397.7000	57.38	-2.11	55.27	74.00	-18.73	PK	Hor
8*	16397.7000	46.31	-2.11	44.20	54.00	-9.80	AV	Hor

Project: LGT24E075	Test Engineer: Xiangdong Ma
EUT: DECT RADIO MODULE	Temperature: 25℃
M/N: RTX1090 DECT	Humidity: 48%RH
Test Voltage: Battery	Test Data: 2024-06-14
Test Mode: CH2 ANT2	
Note:	

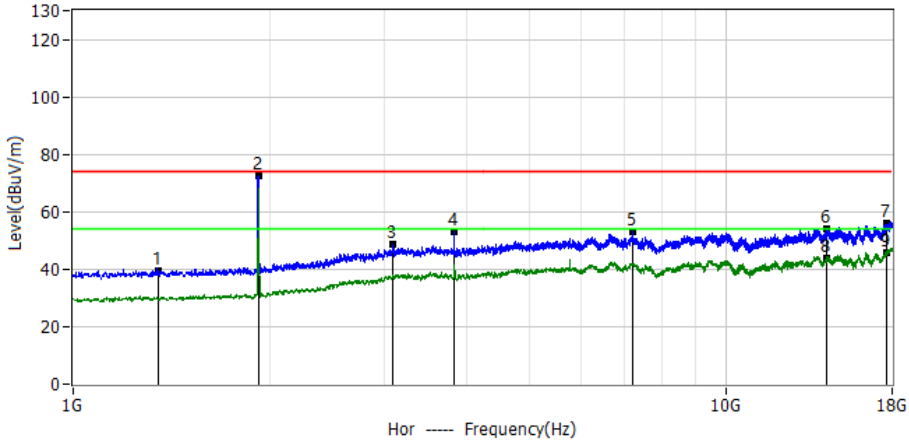


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1924.4000	90.80	-18.67	72.13	74.00	-1.87	PK	Ver
2*	3424.6000	54.39	-6.63	47.76	74.00	-26.24	PK	Ver
3*	5141.6000	55.05	-6.01	49.04	74.00	-24.96	PK	Ver
4*	5774.9000	61.44	-7.20	54.24	74.00	-19.76	PK	Ver
5*	8076.2000	57.98	-8.66	49.32	74.00	-24.68	PK	Ver
6*	12443.1000	56.10	-4.90	51.20	74.00	-22.80	PK	Ver
7*	14784.9000	55.00	-1.34	53.66	74.00	-20.34	PK	Ver
8*	5774.9000	48.20	-7.20	41.00	54.00	-13.00	AV	Ver

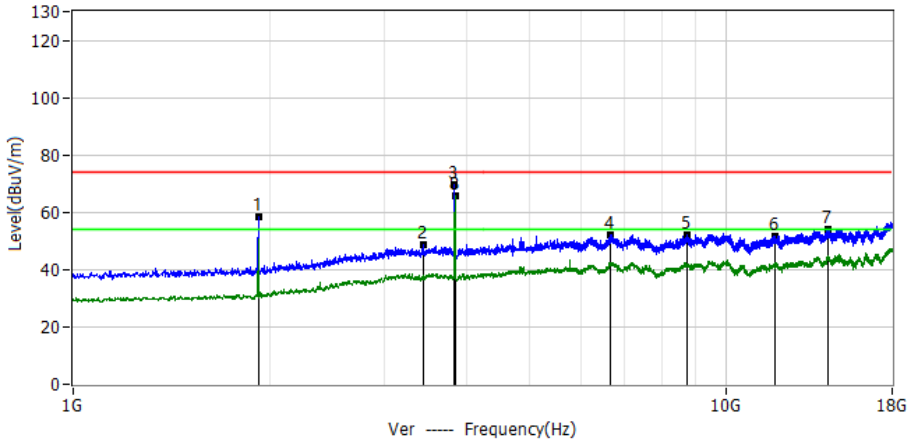


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1529.1000	60.70	-21.46	39.24	74.00	-34.76	PK	Ver
2*	1924.4000	91.62	-18.67	72.95	74.00	-1.05	PK	Ver
3*	2842.4000	55.64	-9.53	46.11	74.00	-27.89	PK	Ver
4*	7213.5000	58.03	-6.25	51.78	74.00	-22.22	PK	Ver
5*	9580.7000	57.40	-5.38	52.02	74.00	-21.98	PK	Ver
6*	11918.2000	56.43	-5.01	51.42	74.00	-22.58	PK	Ver
7*	14971.9000	56.32	-1.31	55.01	74.00	-18.99	PK	Ver
8*	14971.9000	45.01	-1.31	43.70	54.00	-10.30	AV	Ver

Project: LGT24E075	Test Engineer: Xiangdong Ma
EUT: DECT RADIO MODULE	Temperature: 25℃
M/N: RTX1090 DECT	Humidity: 48%RH
Test Voltage: Battery	Test Data: 2024-06-14
Test Mode: CH4 ANT1	
Note:	

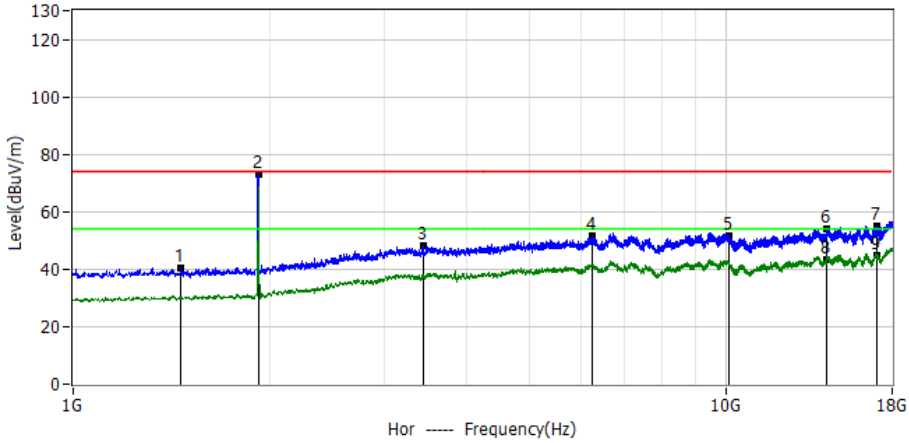


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1352.7000	61.96	-22.42	39.54	74.00	-34.46	PK	Hor
2*	1922.2000	91.05	-18.69	72.36	74.00	-1.64	PK	Hor
3*	3093.1000	56.60	-8.00	48.60	74.00	-25.40	PK	Hor
4*	3841.1000	58.78	-5.61	53.17	74.00	-20.83	PK	Hor
5*	7217.7000	59.18	-6.27	52.91	74.00	-21.09	PK	Hor
6*	14302.5000	56.05	-1.90	54.15	74.00	-19.85	PK	Hor
7*	17630.2000	55.73	0.02	55.75	74.00	-18.25	PK	Hor
8*	14302.5000	45.50	-1.90	43.60	54.00	-10.40	AV	Hor
9*	17630.2000	45.88	0.02	45.90	54.00	-8.10	AV	Hor

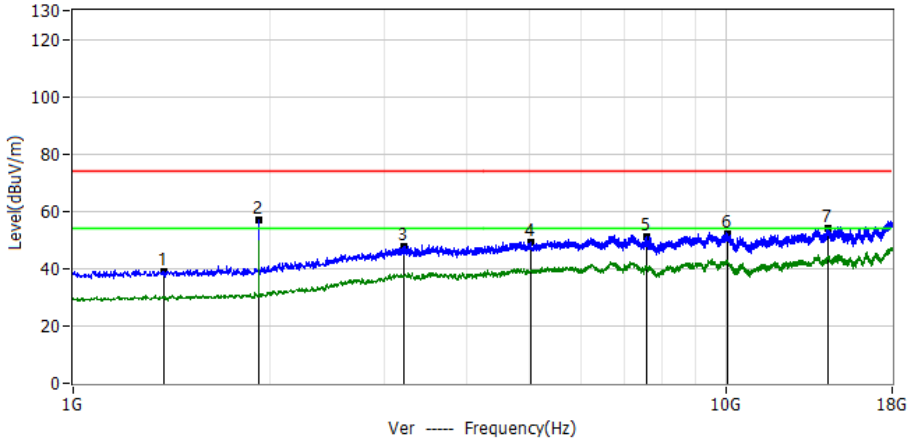


No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1924.4000	77.12	-18.67	58.45	74.00	-15.55	PK	Ver
2*	3433.1000	55.27	-6.60	48.67	74.00	-25.33	PK	Ver
3*	3843.2000	75.02	-5.62	69.40	74.00	-4.60	PK	Ver
4*	6665.2000	58.32	-5.99	52.33	74.00	-21.67	PK	Ver
5*	8747.7000	58.58	-6.64	51.94	74.00	-22.06	PK	Ver
6*	11924.6000	56.77	-5.01	51.76	74.00	-22.24	PK	Ver
7*	14381.1000	55.86	-1.99	53.87	74.00	-20.13	PK	Ver
!8*	3845.4000	71.57	-5.63	65.94	54.00	11.94	AV	Ver

Project: LGT24E075	Test Engineer: Xiangdong Ma
EUT: DECT RADIO MODULE	Temperature: 25℃
M/N: RTX1090 DECT	Humidity: 48%RH
Test Voltage: Battery	Test Data: 2024-06-14
Test Mode: CH4 ANT2	
Note:	



No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1463.2000	62.22	-21.88	40.34	74.00	-33.66	PK	Hor
2*	1922.2000	91.54	-18.69	72.85	74.00	-1.15	PK	Hor
3*	3435.2000	54.84	-6.59	48.25	74.00	-25.75	PK	Hor
4*	6248.7000	58.17	-6.48	51.69	74.00	-22.31	PK	Hor
5*	10135.4000	56.56	-4.84	51.72	74.00	-22.28	PK	Hor
6*	14308.9000	56.07	-1.90	54.17	74.00	-19.83	PK	Hor
7*	17043.7000	55.91	-0.77	55.14	74.00	-18.86	PK	Hor
8*	14308.9000	45.30	-1.90	43.40	54.00	-10.60	AV	Hor
9*	17043.7000	45.37	-0.77	44.60	54.00	-9.40	AV	Hor



No.	Frequency MHz	Read-ing dBuV	Factor dB/m	Level dBuV/m	Limit dBuV/m	Margin dB	Detector	Polar
1*	1376.1000	61.49	-22.30	39.19	74.00	-34.81	PK	Ver
2*	1924.4000	75.60	-18.67	56.93	74.00	-17.07	PK	Ver
3*	3205.7000	55.40	-7.45	47.95	74.00	-26.05	PK	Ver
4*	5029.0000	55.39	-6.00	49.39	74.00	-24.61	PK	Ver
5*	7559.9000	58.63	-7.39	51.24	74.00	-22.76	PK	Ver
6*	10067.4000	56.72	-4.76	51.96	74.00	-22.04	PK	Ver
7*	14323.7000	55.91	-1.92	53.99	74.00	-20.01	PK	Ver

Note
Average measurement was not performed if peak level lower than average limit.
No any other emissions level which are attenuated less than 20dB below the limit. The amplitude of spurious emissions from intentional radiators and emissions from unintentional radiators which are attenuated more than 20 dB below the permissible value need not be reported unless specifically required elsewhere in this Part.
Hence there no other emissions Above 18GHz have been reported.

APPENDIX I - TEST SETUP

Note: See test photos in setup photo document for the actual connections between Product and support equipment.

※※※※※END OF THE REPORT※※※※※