

RADIO PERFORMANCE TEST REPORT

Test Report No. : OT-266-RWD-013
Reception No. : 2605001779
Applicant : Westcom Wireless Inc.
Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States
Manufacturer : Westcom Wireless Inc.
Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States
Type of Equipment : ProCom
FCC ID. : 2AO37-PHANTOMMAX
Model Name : Phantom Max
Multiple Model Name : N/A
Serial number : N/A
Total page of Report : 38 pages (including this page)
Date of Incoming : May 11, 2026
Date of issue : June 15, 2026

SUMMARY

The equipment complies with the regulation; **FCC PART 15 SUBPART C Section 15.247**

This test report only contains the result of a single test of the sample supplied for the examination.

It is not a generally valid assessment of the features of the respective products of the mass-production.

This test report is not associated with the accreditation granted by the Korean Laboratory Accreditation Scheme (KOLAS).





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※ Please refer to the Annex section for All test plots

Revision History

Rev. No.	Issue Report No.	Issued Date	Revisions	Section Affected
0	OT-266-RWD-013	June 15, 2026	Initial Release	All

1. VERIFICATION OF COMPLIANCE

Applicant : Westcom Wireless Inc.

Address : 2773 Leechburg Road, Lower Burrell, Pennsylvania, 15068, United States

Contact Person : Frank Girardi / President

Telephone No. : +1-724-337-1400

FCC ID : 2AO37-PHANTOMMAX

Model Name : Phantom Max

Brand Name : -

Serial Number : N/A

Date : June 15, 2026

EQUIPMENT CLASS	DSS – PART 15 SPREAD SPECTRUM TRANSMITTER
E.U.T. DESCRIPTION	ProCom
THIS REPORT CONCERNS	Original Grant
MEASUREMENT PROCEDURES	ANSI C63.10: 2020
TYPE OF EQUIPMENT TESTED	Pre-Production
KIND OF EQUIPMENT AUTHORIZATION REQUESTED	Certification
EQUIPMENT WILL BE OPERATED UNDER FCC RULES PART(S)	FCC PART 15 SUBPART C Section 15.247 KDB 558074 D01 15.247 Meas Guidance v05r02
Modifications on the Equipment to Achieve Compliance	None
Final Test was Conducted On	3 m, Semi Anechoic Chamber

-. The above equipment was tested by ONETECH Corp. for compliance with the requirement set forth in the FCC Rules and Regulations. This said equipment in the configuration described in this report, shows the maximum emission levels emanating from equipment are within the compliance requirements.

2. TEST SUMMARY

2.1 Test items and results

SECTION	TEST ITEMS	RESULTS
15.247(a)(1)(i)	20 dB Bandwidth	Met the Limit / PASS
15.247(b)(2)	Conducted Maximum Peak Output Power	Met the Limit / PASS
15.247(a)(1)	Carrier Frequency Separation	Met the Limit / PASS
15.247(a)(1)(i), 15.247(b)(2)	Number of Hopping Frequencies	Met the Limit / PASS
15.247(a)(1)(i)	Time of Occupancy	Met the Limit / PASS
15.247(d)	100 kHz Bandwidth Outside the Frequency Band	Met the Limit / PASS
15.207	Conducted Limits	Met the Limit / PASS
15.209	Radiated Emission Limits, General Requirement	Met the Limit / PASS
15.203	Antenna Requirement	Met requirement / PASS

Note.: All test items have been performed for each Normal (CH 20 ~ CH 220), Long (CH12 ~ CH 138) and Repeat (CH 20 ~ CH 220) Mode. And the conducted Emissions and Radiated Spurious Emissions have been performed for Transmitting mode.

2.2 Additions, deviations, exclusions from standards

No additions, deviations or exclusions have been made from standard.

2.3 Related Submittal(s) / Grant(s)

Original submittal only

2.4 Purpose of the test

To determine whether the equipment under test fulfills the requirements of the regulation stated in FCC PART 15 SUBPART C Section 15.247.

2.5 Test Methodology

Both conducted and radiated testing was performed according to the procedures in ANSI C63.10: 2020. Radiated testing was performed at a distance of 3 m from EUT to the antenna.

2.6 Test Facility

The Onetech Corp. has been designated to perform equipment testing in compliance with ISO/IEC 17025.

The Electromagnetic compatibility measurement facilities are located at 43-14, Jinsaegol-gil, Chowol-eup, Gwangju-si, Gyeonggi-do, 12735, Korea.

-. Site Filing:

VCCI (Voluntary Control Council for Interference) – Registration No. R-20122/ C-14617/ G-10666/ T-11842

ISED (Innovation, Science and Economic Development Canada) – Registration No. Site# 3736A-3

KOLAS (Korea Laboratory Accreditation Scheme) - Accreditation NO. KT085

FCC (Federal Communications Commission) - Accreditation No. KR0013

RRA (Radio Research Agency) – Designation No. KR0013

3. GENERAL INFORMATION

3.1 Product Description

The Westcom Wireless Inc., Model Phantom Max (referred to as the EUT in this report) is a ProCom. The product specification described herein was obtained from product data sheet or user's manual.

DEVICE TYPE	ProCom
Temperature Range	-10 °C ~ 50 °C
OPERATING FREQUENCY	902 MHz ~ 928 MHz
MODULATION TYPE	GFSK
RF OUTPUT POWER	22.58 dBm (Mode 1 Normal) 27.79 dBm (Mode 2 Long) 27.66 dBm (Mode 3 Repeat)
ANTENNA TYPE	Helical Antenna
ANTENNA GAIN	-0.65 dBi
List of each Osc. or crystal Freq.(Freq. >= 1 MHz)	12.288 MHz, 16 MHz, 30 MHz, 48 MHz

3.2 Alternative type(s)/model(s); also covered by this test report.

-. None

4. EUT MODIFICATIONS

-. None

5. SYSTEM TEST CONFIGURATION

5.1 Justification

This device was configured for testing in a typical way as a normal customer is supposed to be used. During the test, the following components were installed inside of the EUT.

DEVICE TYPE	MANUFACTURER	MODEL/PART NUMBER	FCC ID
Main Board	Westcom Wireless Inc.	N/A	N/A
SUB Board	N/A	N/A	N/A
Charger Board	N/A	N/A	N/A
LCD Board	N/A	N/A	N/A
Battery	Mirim Technology	MS35E-M	N/A

5.2 Peripheral equipment

Defined as equipment needed for correct operation of the EUT, but not considered as tested:

Model	Manufacturer	Description	Connected to
Phantom Max	Westcom Wireless Inc.	ProCom (EUT)	
Probook G7	HP	Notebook PC	EUT

5.3 Mode of operation during the test

For the testing, software used to control the EUT for staying in continuous transmitting is programmed.

For final testing EUT was set as below to get a maximum emission levels from the EUT.

Mode 1 (Normal): 902.5 MHz, 915.0 MHz, and 927.5 MHz (Low/Middle/High)

Mode 2 (Long): 902.4 MHz, 914.8 MHz, and 927.6 MHz (Low/Middle/High)

Mode 3 (Repeat): 902.5 MHz, 915.0 MHz, and 927.5 MHz (Low/Middle/High)

The EUT was moved throughout the XY, XZ, and YZ planes and the worst case is “XY” axis, but the worst data was recorded in this report.

-. Channel List

[Mode 1_Normal]

Channel	Frequency[MHz]	Channel	Frequency[MHz]	Channel	Frequency[MHz]
20	902.500	96	912.000	172	921.500
24	903.000	100	912.500	176	922.000
28	903.500	104	913.000	180	922.500
32	904.000	108	913.500	184	923.000
36	904.500	112	914.000	188	923.500
40	905.000	116	914.500	192	924.000
44	905.500	120	915.000	196	924.500
48	906.000	124	915.500	200	925.000
52	906.500	128	916.000	204	925.500
56	907.000	132	916.500	208	926.000
60	907.500	136	917.000	212	926.500
64	908.000	140	917.500	216	927.000
68	908.500	144	918.000	220	927.500
72	909.000	148	918.500	-	-
76	909.500	152	919.000	-	-
80	910.000	156	919.500	-	-
84	910.500	160	920.000	-	-
88	911.000	164	920.500	-	-
92	911.500	168	921.000	-	-

[Mode 2_Long]

Channel	Frequency[MHz]	Channel	Frequency[MHz]	Channel	Frequency[MHz]
12	902.400	60	912.000	108	921.600
14	902.800	62	912.400	110	922.000
16	903.200	64	912.800	112	922.400
18	903.600	66	913.200	114	922.800
20	904.000	68	913.600	116	923.200
22	904.400	70	914.000	118	923.600
24	904.800	72	914.400	120	924.000
26	905.200	74	914.800	122	924.400
28	905.600	76	915.200	124	924.800
30	906.000	78	915.600	126	925.200
32	906.400	80	916.000	128	925.600
34	906.800	82	916.400	130	926.000
36	907.200	84	916.800	132	926.400
38	907.600	86	917.200	134	926.800
40	908.000	88	917.600	136	927.200
42	908.400	90	918.000	138	927.600
44	908.800	92	918.400	-	-
46	909.200	94	918.800	-	-
48	909.600	96	919.200	-	-
50	910.000	98	919.600	-	-
52	910.400	100	920.000	-	-
54	910.800	102	920.400	-	-
56	911.200	104	920.800	-	-
58	911.600	106	921.200	-	-

[Mode 3_Repeat]

Channel	Frequency[MHz]	Channel	Frequency[MHz]	Channel	Frequency[MHz]
20	902.500	92	911.500	164	920.500
24	903.000	96	912.000	168	921.000
28	903.500	100	912.500	172	921.500
32	904.000	104	913.000	176	922.000
36	904.500	108	913.500	180	922.500
40	905.000	112	914.000	184	923.000
44	905.500	116	914.500	188	923.500
48	906.000	120	915.000	192	924.000
52	906.500	124	915.500	196	924.500
56	907.000	128	916.000	200	925.000
60	907.500	132	916.500	204	925.500
64	908.000	136	917.000	208	926.000
68	908.500	140	917.500	212	926.500
72	909.000	144	918.000	216	927.000
76	909.500	148	918.500	220	927.500
80	910.000	152	919.000	-	-
84	910.500	156	919.500	-	-
88	911.000	160	920.000	-	-

5.4 Configuration of Test System

Line Conducted Test:

The EUT is placed on the turntable, which is 0.8 m above ground plane. According to the requirements in Section 6.2 of ANSI C63.10: 2020 Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30 MHz using CISPR Quasi-peak and average Measurement Type or modes.

Radiated Emission Test:

Preliminary radiated emissions test were conducted using the procedure in ANSI C63.10: 2020 to determine the worse operating conditions. Final radiated emission tests were conducted at 3 meter Semi Anechoic Chamber.

The EUT is placed on a turn table, which is 0.8 m above ground plane below 1 GHz. Above 1 GHz with 1.5 m using absorbers between the EUT and receive antenna. The turntable shall rotate 360 degrees to determine the position of maximum emission level. EUT is set 3 m away from the receiving antenna, which varied from 1 m to 4 m to find out the highest emission. And also, each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.

In order to find out the max. emission, the relative positions of this EUT was rotated through three orthogonal axes according to the requirements in Section 6.6.5 of ANSI C63.10: 2020

5.5 Antenna Requirement

For intentional device, according to section 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.

Antenna Construction:

The EUT's antennas are a Helical Antenna, which are permanently attached to the EUT and cannot be replaced by the user.

6. MEASUREMENT UNCERTAINTY

The measurement uncertainties shown below were calculated in accordance with the requirements of ANSI C63.10-2020.

All measurement uncertainty values are shown with a coverage factor of $k = 2$ to indicate a 95 % level of confidence.

The measurement data shown herein meets or exceeds the U_{CISPR} measurement uncertainty values specified in CISPR 16-4-2 and, thus, can be compared directly to specified limits to determine compliance.

Parameter	Expanded Uncertainty (dB)
Conducted Output Power	1.22
Conducted Spurious Emission < 26.5 GHz	1.40
Power Spectral Density	1.22
Line Conducted Disturbance (150 kHz ~ 30 MHz)	1.40
Radiated Disturbance (9 kHz ~ 30 MHz)	3.28
Radiated Disturbance (30 MHz ~ 1 GHz)	4.42
Radiated Disturbance (1 GHz ~ 18 GHz)	5.12
Radiated Disturbance (18 GHz ~ 40 GHz)	4.62

7. PRELIMINARY TEST

7.1 AC Power line Conducted Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

7.2 General Radiated Emissions Tests

During Preliminary Test, the following operating mode was investigated.

Operation Mode	The Worse operating condition (Please check one only)
Transmitting Mode	X

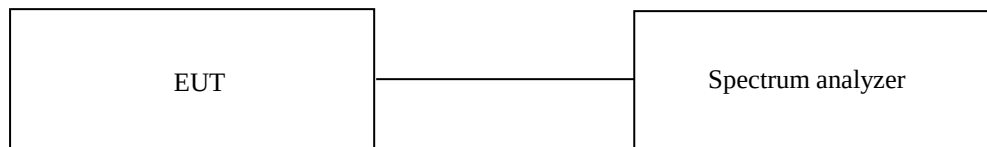
7.3 LIST OF TEST EQUIPMENT

Model Number	Manufacturer	Description	Serial Number	Last Cal.(Interval)
FSV40-N	Rohde & Schwarz	Spectrum Analyzer	101651	Feb. 09, 2026 (1Y)
ESCI7	Rohde & Schwarz	EMI Test Receiver	100895	Sep. 24, 2025 (1Y)
ESR3	Rohde & Schwarz	EMI TEST RECEIVER	102602	Mar. 11, 2026 (1Y)
GP-4303D	LG Precision Co.,Ltd	DC Power Supply	5071069	Jan. 04, 2026 (1Y)
SMB100A	Rohde & Schwarz	SIGNAL GENERATOR	177648	Jan 14, 2026 (1Y)
FMZB 1519-60D	Schwarzbeck	Active Magnetic Loop Antenna	00113	Jan. 07, 2025 (2Y)
CBL6112B	SCHAFFNER	BILOG ANTENNA	2867	Dec. 17, 2025 (2Y)
BBHA9120D	Schwarzbeck	Horn Antenna	9120D-1349	Jun. 27, 2025 (1Y)
BBHA9170	Schwarzbeck	Horn Antenna	BBHA9170178	Jan. 04, 2026 (1Y)
310N	Sonoma Instrument	Pre-Amplifier	312544	Mar. 11, 2026 (1Y)
SCU18	Rohde & Schwarz	Signal Conditioning unit	102266	Jul. 02, 2025 (1Y)
SCU40A	Rohde & Schwarz	Signal Conditioning unit	100436	Jan. 15, 2026 (1Y)
HPF 1.5GHz	Rohde & Schwarz	High Pass Filter	N/A	Jan. 12, 2026 (1Y)
HPF 3GHz	Rohde & Schwarz	High Pass Filter	N/A	Jan. 12, 2026 (1Y)
8493C	HP	Coaxial Fixed Attenuator(6dB)	06134	Jul. 04, 2025 (1Y)
NSLK8126	Schwarzbeck	V - LISN (4*16/25A)	8126404	Sep. 24, 2025 (1Y)
ESH3-Z2	Rohde & Schwarz	PULSE LIMITER	100655	Mar. 11, 2026 (1Y)
DT3000	Innco System	Turn Table	DT3000/093	N/A
MA-4000XPET	Innco System	Antenna Master	MA4000/509	N/A
CO3000	Innco System	Controller	CO3000/904	N/A

8. DESCRIPTION OF TESTS

8.1 Duty Cycle

1) Test Configuration

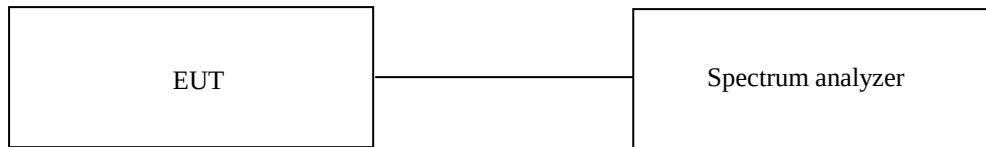


2) Test Procedure

1. RBW = 10 MHz (the largest available value)
2. VBW = 10 MHz ($\geq$ RBW)
3. SPAN = 0 Hz
4. Measurement Type = Peak
5. Trace mode = Clear write
6. Calculate Duty Cycle = T_{on} / T_{total} and Duty Cycle Factor = $10\log(1/\text{Duty Cycle})$

8.2 Minimum 20 dB Bandwidth

1) Test Configuration



2) Test Procedure

20 dB Bandwidth

We tested according to Procedure Section 6.9.2 in ANSI C63.10-2020.

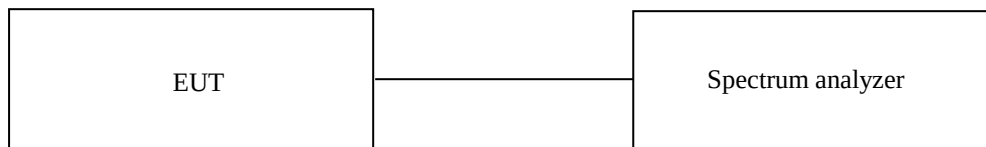
7. RBW: 1 % to 5 % of the OBW
8. $VBW \geq 3 \times RBW$
9. Detector: Peak
10. Trace mode: max hold
11. Measure the maximum width of the emission that is 20 dB down from the maximum of the emission.

8.3 Carrier Frequency Separation

1) Limit

According to §15.247(a)(1), frequency hopping systems operating in the 902-928 MHz band may have hopping channel carrier frequencies that are separated by 25 kHz or two-thirds of the 20 dB bandwidth of the hopping channel, whichever is greater.

2) Test Configuration



3) Test Procedure

We tested according to Procedure Section 7.8.2 in ANSI C63.10-2020.

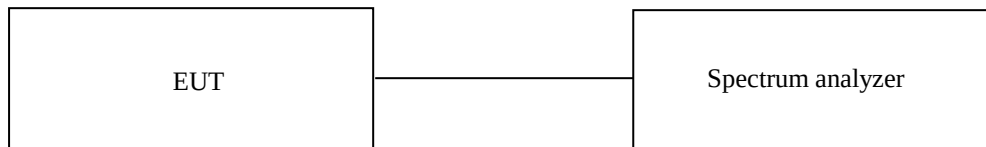
1. Span: Wide enough to capture the peaks of two adjacent channels.
2. RBW: Start with the RBW set to approximately 30% of the channel spacing; adjust as necessary to best identify the center of each individual channel.
3. $VBW \geq RBW$
4. Sweep: No faster than coupled (auto) time
5. Detector: Peak
6. Trace mode: max hold
7. Allow the trace to stabilize
8. Use the marker-delta function to determine the separation between the peaks of the adjacent channels. Compliance of an EUT with the appropriate regulatory limit shall be determined. A spectral plot of the data shall be included in the test report.

8.4 Number of Hopping Channels

1) Limit

According to §15.247(a)(1)(i), §15.247(b)(2) Frequency hopping systems in the 902-928 MHz band shall use at least 50 channels.

2) Test Configuration



3) Test Procedure

We tested according to Procedure Section 7.8.3 in ANSI C63.10-2020.

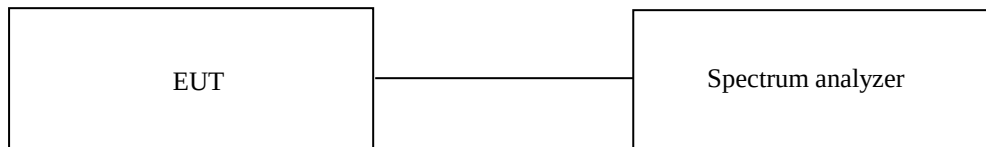
1. Span: The frequency band of operation. Depending on the number of channels the device supports, it could be necessary to divide the frequency range of operation across multiple spans, to allow the individual channels to be clearly seen.sadsd
2. RBW: To identify clearly the individual channels, set the RBW to less than 30% of the channel spacing or the 20 dB bandwidth, whichever is smaller.
3. $VBW \geq RBW$
4. Sweep: No faster than coupled (auto) time
5. Detector: Peak
6. Trace mode: max hold
7. Allow the trace to stabilize

8.5 Time of Occupancy

1) Limit

According to §15.247(a)(1)(i), The average time of occupancy on any channel shall not be greater than 0.4 seconds within a 10 second period

2) Test Configuration



3) Test Procedure

We tested according to Procedure Section 7.8.4 in ANSI C63.10-2020.

1. Span: Zero span, centered on a hopping channel.
2. RBW shall be $\leq$ channel spacing and where possible RBW should be set $\gg 1 / T$, where T is the expected transmission time per hop.
3. Sweep time: Set so that the start of the first transmission and end of the last transmission for the hop are clearly captured. Setting the sweep time to be slightly longer than the hopping period per channel (hopping period = $1/\text{hopping rate}$) should achieve this.
4. Use a video trigger, where possible with a trigger delay, so that the start of the transmission is clearly observed. The trigger level might need adjustment to reduce the chance of triggering when the system hops on an adjacent channel.
5. Detector: Peak.
6. Trace mode: Clear-write, single sweep.
7. Place markers at the start of the first transmission on the channel and at the end of the last transmission. The dwell time per hop is the time between these two markers.

4) Calculation

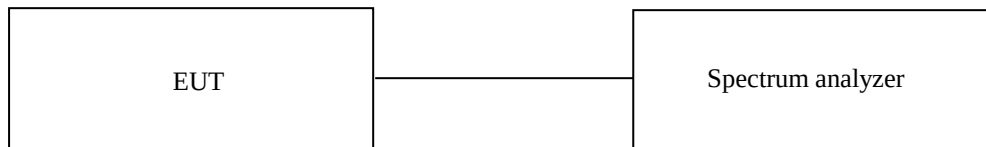
Total Dwell Time = Pulse time * Number of hops spectrum analyzer

8.6 Maximum Peak Output Power

1) Limit

According to §15.247(b)(2), For frequency hopping systems operating in the 902-928 MHz band : 1 watt systems employing at least 50 hopping channels

2) Test Configuration



3) Test Procedure

We tested according to Procedure Section 7.8.5 in ANSI C63.10-2020.

Frequency hopping shall be disabled for this test.

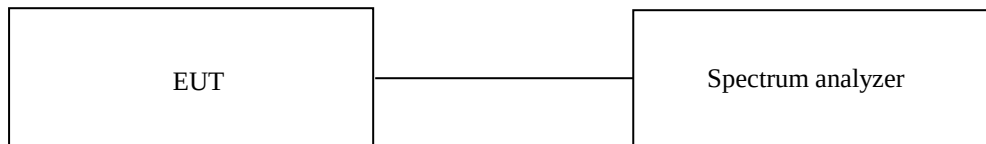
1. Span: Approximately five times the 20 dB bandwidth, centered on a hopping channel.
2. RBW > 20 dB bandwidth of the emission being measured.
3. VBW $\geq$ RBW
4. Sweep: No faster than coupled (auto) time
5. Detector: Peak
6. Trace mode: max hold
7. Allow the trace to stabilize
8. Use the marker-to-peak function to set the marker to the peak of the emission

8.7 100 kHz Bandwidth Outside the Frequency Band

1) Limit

According to §15.247(d), In any 100 kHz bandwidth outside the frequency band in which the spread spectrum or digitally modulated intentional radiator is operating, the radio frequency power that is produced by the intentional radiator shall be at least 20 dB below that in the 100 kHz bandwidth within the band that contains the highest level of the desired power, based on either an RF conducted or a radiated measurement, provided the transmitter demonstrates compliance with the peak conducted power limits.

2) Test Configuration



3) Test Procedure

We tested according to Procedure Section 7.8.7 in ANSI C63.10-2020.

1. RBW: 100 kHz
2. VBW: 300 kHz
3. Sweep: No faster than coupled (auto) time
4. Detector: Peak
5. Trace mode: max hold

8.8 Radiated Test

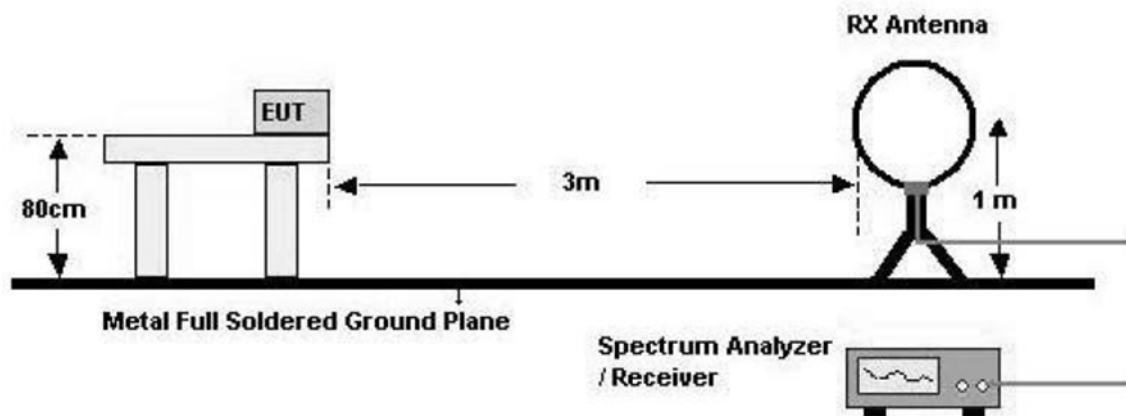
1) Limit

All out of band emissions appearing in a restricted band as specified in Section 15.205 of the Title 47 CFR must not exceed the limits shown in Section 15.209.

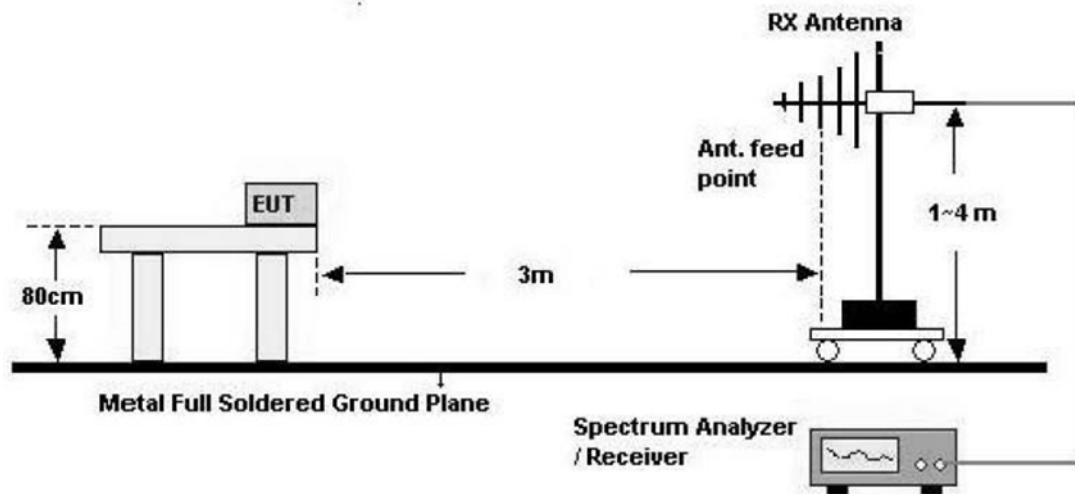
Frequency Range (MHz)	Field Strength ($\mu\text{V/m}$)	Measurement Distance (m)
0.009 ~ 0.490	$2400/F(\text{kHz})$	300
0.490 ~ 1.705	$24000/F(\text{kHz})$	30
1.705 ~ 30	30	30
30 ~ 88	100	3
88 ~ 216	150	3
216 ~ 860	200	3
Above 960	500	3

2) Test Configuration

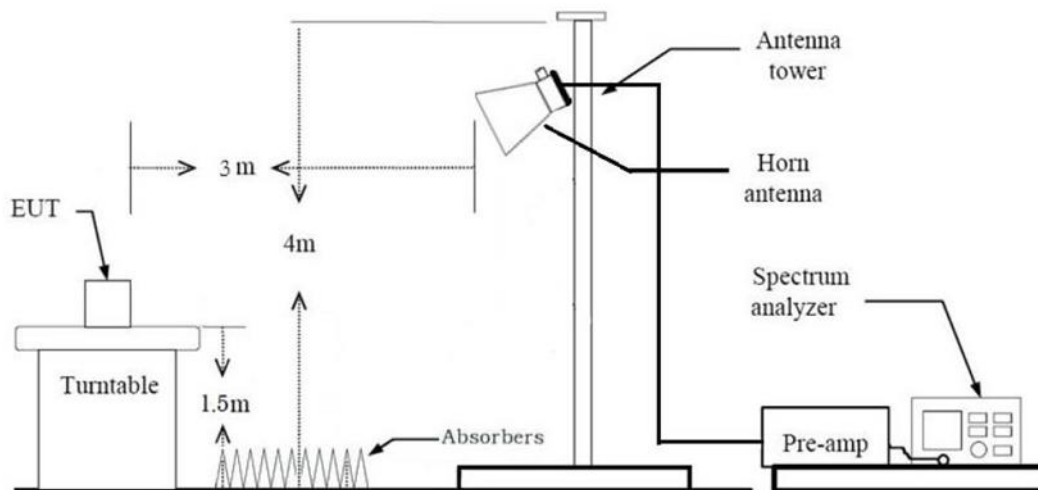
Below 30 MHz



30 MHz ~ 1 GHz



Above 1 GHz



3) Test Procedure

Radiated Spurious Emissions(Below 30 MHz)

We tested according to Procedure Section 6.4 in ANSI C63.10-2020.

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The loop antenna was placed at a location 3 m from the EUT
3. The EUT is placed on a turntable, which is 0.8m above ground plane.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization and Parallel to the ground plane in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Distance Correction Factor(0.009 MHz ~ 0.490 MHz) = $40 \cdot \log(3 \text{ m}/300 \text{ m}) = -80 \text{ dB}$
Measurement Distance : 3 m
7. Distance Correction Factor(0.490 MHz ~ 30 MHz) = $40 \cdot \log(3 \text{ m}/30 \text{ m}) = -40 \text{ dB}$
Measurement Distance : 3 m
8. Spectrum Setting
 - Frequency Range = 9 kHz ~ 30 MHz
 - Detector = Peak
 - Trace = Max Hold
 - RBW = 9 kHz
 - VBW $\geq 3 \times$ RBW
9. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Radiated Spurious Emissions(Below 1 GHz)

We tested according to Procedure Section 6.5 in ANSI C63.10-2020.

1. The EUT was placed on a non-conductive table located on semi-anechoic chamber.
2. The EUT is placed on a turntable, which is 0.8m above ground plane.
3. The Hybrid antenna was placed at a location 3 m from the EUT, which is varied from 1 m to 4 m to find out the highest emissions.
4. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
5. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
6. Spectrum Setting
 - 1) Measurement Type(Peak) :
 - Measured Frequency Range : 30 MHz - 1 GHz
 - Detector = Peak
 - Trace = Max Hold
 - RBW = 100 kHz
 - VBW $\geq$ 3 x RBW
 - 2) Measurement Type(Quasi-peak) :
 - Measured Frequency Range : 30 MHz - 1 GHz
 - Detector = Quasi-Peak
 - RBW = 120 kHz
7. Measurement value only up to 6 maximum emissions noted, or would be lesser if no specific emissions from the EUT are recorded (ie: margin > 20 dB from the applicable limit) and considered that's already beyond the background noise floor.

Radiated Spurious Emissions(Above 1 GHz)

We tested according to Procedure Section 6.6 & 7.8.8 in ANSI C63.10-2020.

1. The EUT is placed on a turntable, which is 1.5 m above ground plane.
2. We have done x, y, z planes in EUT and horizontal and vertical polarization in detecting antenna.
3. The turntable shall be rotated for 360 degrees to determine the position of maximum emission level.
4. EUT is set 3 m away from the receiving antenna, which is varied from 1 m to 4 m to find out the highest emissions.
5. Each emission was to be maximized by changing the polarization of receiving antenna both horizontal and vertical.
6. Spectrum Setting
 - 1) Measurement Type(Peak)
 - Measured Frequency Range : Center frequency was set to the frequency of the Radiated Spurious emission of interest
 - Detector = Peak
 - Trace = Max Hold
 - RBW = 1 MHz
 - VBW $\geq$ 3 x RBW
 - Sweep time = Auto
 - 2) Measurement Type(Method AD – Average Detection)
 - Measured Frequency Range : Center frequency was set to the frequency of the Radiated Spurious emission of interest
 - Detector = RMS(power average)
 - Averaging type = power averaging(RMS)
 - RBW = 1 MHz
 - VBW $\geq$ 3 x RBW
 - Sweep time = auto
 - Trace average at least 100 traces in power averaging(RMS) mode
7. Measuring frequencies from 1 GHz to the 10th harmonic of highest fundamental frequency
8. Distance extrapolation factor = $20\log(\text{test distance} / \text{specific distance})$ (dB)

8.9 AC Power line Conducted Emissions

1) Limit

For an intentional radiator that is designed to be connected to the public utility (AC) power line, the radio frequency voltage that is conducted back onto the AC power line on any frequency or frequencies, within the band 150 kHz to 30 MHz, shall not exceed the limits in the following table, as measured using a 50 μ H/50 ohms line impedance stabilization network (LISN).

The limits are as specified in the tables below.

Frequency Range (MHz)	Limits (dB μ V)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56 ^(a)	56 to 46 ^(a)
0.50 to 5	56	46
5 to 30	60	50

^(a) Decreases with the logarithm of the frequency.

Compliance with this provision shall be based on the measurement of the radio frequency voltage between each power line (LINE and NEUTRAL) and ground at the power terminals.

2) Test Configuration

Setup according to ANSI C63.10:2020, Section 6.2.

Please refer to the attached test photos for the actual connection between the EUT and the supporting equipment.

3) Test Procedure

1. The EUT is placed on a wooden table 80 cm above the reference ground plane.
2. The EUT is connected via LISN to a test power supply.
3. The measurement results are obtained as described below:
4. Measurement Typeors: Quasi Peak and Average Measurement Type

9. TEST RESULT

9.1 Operating environment

Temperature : 26 °C
Relative humidity : 53 % R.H.

9.2 Test Date

May 11, 2026 ~ June 02, 2026

9.3 Duty Cycle

9.3.1 Test data

Mode	Tx On Time [ms]	Tx Off Time [ms]	Duty Cycle [%]	Correction Factor [dB]
GFSK (Mode 1_Normal)	-	-	100.00	0.00
GFSK (Mode 2_Long)	-	-	100.00	0.00
GFSK (Mode 3_Repeat)	-	-	100.00	0.00

9.4 Minimum 20 dB Bandwidth

9.4.1 Test data

Mode	Frequency (MHz)	20 dB Bandwidth (kHz)	Limit (kHz)
GFSK (Mode 1_Normal)	902.50	395.60	500.00
	915.00	395.60	500.00
	927.50	393.60	500.00
GFSK (Mode 2_Long)	902.40	341.70	500.00
	914.80	341.70	500.00
	927.60	341.70	500.00
GFSK (Mode 3_Repeat)	902.50	455.50	500.00
	915.00	477.50	500.00
	927.50	477.50	500.00

9.5 Carrier Frequency Separation

9.5.1 Test data

Mode	Measured Value (kHz)	Two-third of 20 dB Bandwidth (kHz)	Limit
GFSK (Mode 1_Normal)	499.50	263.73	Separated by a minimum of 263.73 kHz
GFSK (Mode 2_Long)	399.60	227.80	Separated by a minimum of 227.80 kHz
GFSK (Mode 3_Repeat)	493.50	318.33	Separated by a minimum of 318.33 kHz

9.6 Number of Hopping Channels

9.6.1 Test data

Mode	Measured value (Number)	Limit (Number)	Margin (Number)
GFSK (Mode 1_Normal)	51	Minimum of 50	1
GFSK (Mode 2_Long)	64	Minimum of 50	14
GFSK (Mode 3_Repeat)	51	Minimum of 50	1

9.7 Time of Occupancy

Total dwell time is calculated as following.

Total Dwell Time = Pulse time * Number of hops on spectrum analyzer

9.7.1 Test data

Mode	Pulse Time (ms)	Number of hops on spectrum analyzer	Period Time (s)	Total Dwell Time (ms)	Limit (ms)
GFSK (Mode 1_Normal)	1.80	33	10.00	59.40	400.00
GFSK (Mode 2_Long)	2.76	13	10.00	35.88	400.00
GFSK (Mode 3_Repeat)	1.28	33	10.00	42.24	400.00

9.8 Maximum Peak Output Power

Margin = Limit – Measured Value (=Receiver Reading + Cable Loss)

9.8.1 Test data

Mode	Frequency (MHz)	Measured Value		Limit (mW)	Margin (mW)
		(dBm)	(mW)		
GFSK (Mode 1_Normal)	902.50	22.58	181.13	1 000.00	818.87
	915.00	21.87	153.82	1 000.00	846.18
	927.50	21.33	135.83	1 000.00	864.17
GFSK (Mode 2_Long)	902.40	27.79	601.17	1 000.00	398.83
	914.80	27.01	502.34	1 000.00	497.66
	927.60	26.40	436.52	1 000.00	563.48
GFSK (Mode 1_Normal)	902.50	27.66	583.45	1 000.00	416.55
	915.00	26.90	489.78	1 000.00	510.22
	927.50	26.27	423.64	1 000.00	576.36

9.9 100 kHz Bandwidth Outside the Frequency Band

For Test data for conducted emission, please refer to the Annex.

9.10 Radiated Spurious Emissions

9.10.1 Frequency Range: Below 30 MHz

Frequency (MHz)	Reading (dBμV)	Ant. Pol. (H/V)	Ant. Height (m)	Angle (°)	Ant. Factor (dB/m)	Cable Loss	Emission Level(dBμV/m)	Limits (dBμV/m)	Margin (dB)
No Critical peaks found									

-. Resolution bandwidth : 200 Hz (from 9 kHz to 0.15 MHz), 9 kHz (from 0.15 MHz to 30 MHz)

-. Frequency range : 9 kHz ~ 30 MHz

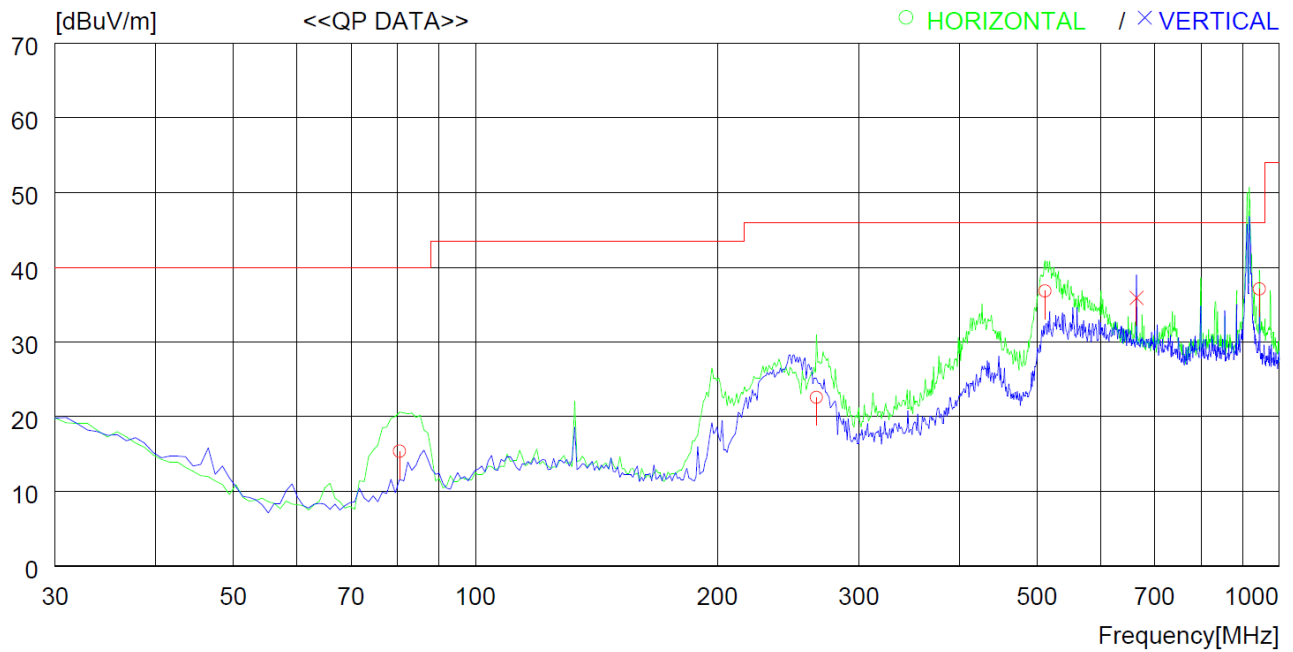
-. Measurement distance : 3 m

Note:

1. The Measured Value of emissions are attenuated more than 20 dB below the permissible limits or the field strength is too small to be measured.
2. Distance extrapolation factor = $40\log(\text{specific distance} / \text{test distance})$ (dB)
3. Limit line = specific Limits (dBμV) + Distance extrapolation factor

9.10.2 Frequency Range: Below 1 GHz

- The highest value is the fundamental.



No.	FREQ	READING	ANT	LOSS	GAIN	RESULT	LIMIT	MARGIN	ANTENNA	TABLE
	[MHz]	QP	FACTOR							
	[MHz]	[dBuV]	[dB]	[dB]	[dB]	[dBuV/m]	[dBuV/m]	[dB]	[cm]	[DEG]
----- Horizontal -----										
1	80.440	33.0	13.0	1.9	32.5	15.4	40.0	24.6	276	336
2	265.710	32.9	18.6	3.5	32.4	22.6	46.0	23.4	105	271
3	511.121	40.7	23.7	4.8	32.4	36.8	46.0	9.2	216	86
4	944.698	34.7	27.1	6.6	31.3	37.1	46.0	8.9	112	332
----- Vertical -----										
5	664.376	37.9	24.9	5.5	32.4	35.9	46.0	10.1	120	52

9.10.3 Frequency Range Above 1 GHz

- Remark: “H”: Horizontal, “V”: Vertical
- Margin (dB) = Limits (dB μ V/m) - Emission Level (dB μ V/m)
- D.F (dB) = Duty Factor(dB)

9.10.3.1 Test data

Channel	CH 20		Frequency(MHz)		902.5			Mode	Normal	
Frequency (MHz)	Reading (dB μ V)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	D.F (dB)	Total (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
1 805.00	62.09	Peak	H	25.23	4.50	42.89	-	48.93	74.00	25.07
1 805.00	43.78	Average	H	25.23	4.50	42.89	-	30.62	54.00	23.38
1 805.00	57.09	Peak	V	25.23	4.50	42.89	-	43.93	74.00	30.07
1 805.00	49.23	Average	V	25.23	4.50	42.89	-	36.07	54.00	17.93

Channel	CH 120		Frequency(MHz)		915.0			Mode	Normal	
Frequency (MHz)	Reading (dB μ V)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	D.F (dB)	Total (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
1 830.00	59.38	Peak	H	25.38	4.50	42.89	-	46.37	74.00	27.63
1 830.00	47.16	Average	H	25.38	4.50	42.89	-	34.15	54.00	19.85
1 830.00	56.96	Peak	V	25.38	4.50	42.89	-	43.95	74.00	30.05
1 830.00	50.00	Average	V	25.38	4.50	42.89	-	36.99	54.00	17.01

Channel	CH 220		Frequency(MHz)		927.5			Mode	Normal	
Frequency (MHz)	Reading (dB μ V)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	D.F (dB)	Total (dB μ V/m)	Limits (dB μ V/m)	Margin (dB)
1 855.00	57.78	Peak	H	25.52	4.73	42.88	-	45.15	74.00	28.85
1 855.00	49.22	Average	H	25.52	4.73	42.88	-	36.59	54.00	17.41
1 855.00	56.05	Peak	V	25.52	4.73	42.88	-	43.42	74.00	30.58
1 855.00	49.08	Average	V	25.52	4.73	42.88	-	36.45	54.00	17.55

Channel	CH 12		Frequency(MHz)		902.4			Mode	Long	
Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	D.F (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
1 804.80	73.32	Peak	H	25.23	4.50	42.89	-	60.16	74.00	13.84
1 804.80	63.13	Average	H	25.23	4.50	42.89	-	49.97	54.00	4.03
1 804.80	66.32	Peak	V	25.23	4.50	42.89	-	53.16	74.00	20.84
1 804.80	62.84	Average	V	25.23	4.50	42.89	-	49.68	54.00	4.32

Channel	CH 74		Frequency(MHz)		914.8			Mode	Long	
Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	D.F (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
1 829.60	70.82	Peak	H	25.38	4.50	42.89	-	57.81	74.00	16.19
1 829.60	63.94	Average	H	25.38	4.50	42.89	-	50.93	54.00	3.07
1 829.60	67.33	Peak	V	25.38	4.50	42.89	-	54.32	74.00	19.68
1 829.60	62.90	Average	V	25.38	4.50	42.89	-	49.89	54.00	4.11

Channel	CH 138		Frequency(MHz)		927.6			Mode	Long	
Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	D.F (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
1 855.20	68.47	Peak	H	25.52	4.73	42.88	-	55.84	74.00	18.16
1 855.20	64.92	Average	H	25.52	4.73	42.88	-	52.29	54.00	1.71
1 855.20	66.45	Peak	V	25.52	4.73	42.88	-	53.82	74.00	20.18
1 855.20	63.36	Average	V	25.52	4.73	42.88	-	50.73	54.00	3.27

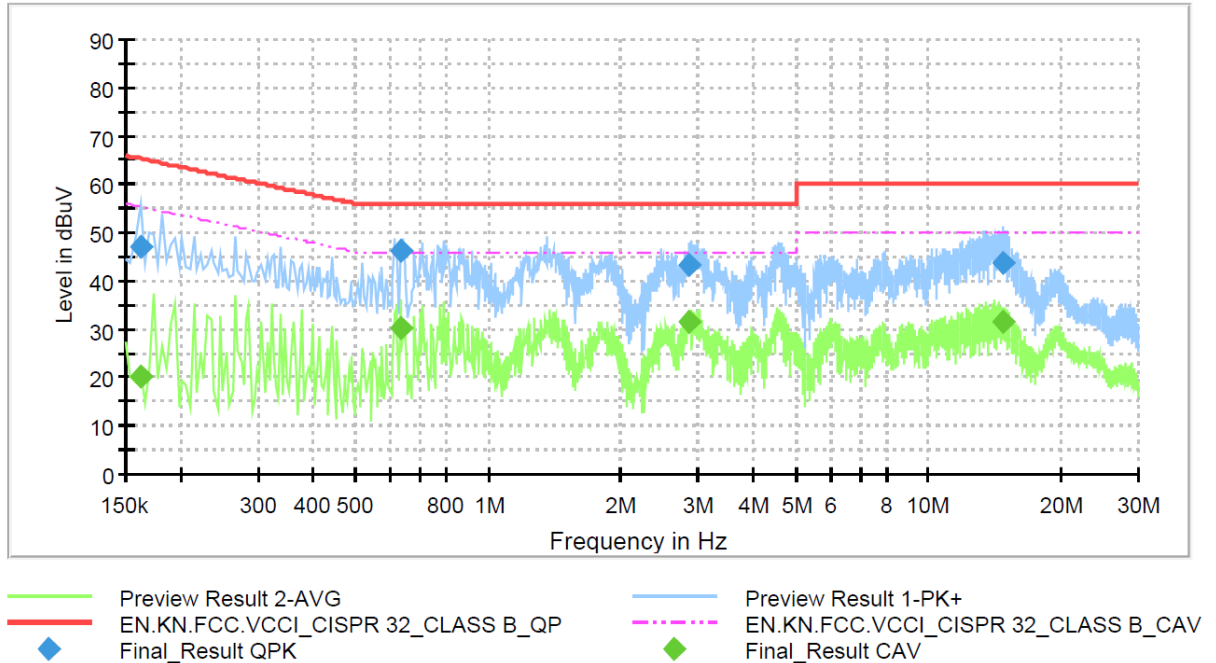
Channel	CH 20		Frequency(MHz)		902.5			Mode	Repeat	
Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	D.F (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
1 805.00	75.25	Peak	H	25.23	4.50	42.89	-	62.09	74.00	11.91
1 805.00	65.39	Average	H	25.23	4.50	42.89	-	52.23	54.00	1.77
1 805.00	67.08	Peak	V	25.23	4.50	42.89	-	53.92	74.00	20.08
1 805.00	63.12	Average	V	25.23	4.50	42.89	-	49.96	54.00	4.04

Channel	CH 120		Frequency(MHz)		915.0			Mode	Repeat	
Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	D.F (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
1 830.00	71.76	Peak	H	25.38	4.50	42.89	-	58.75	74.00	15.25
1 830.00	64.05	Average	H	25.38	4.50	42.89	-	51.04	54.00	2.96
1 830.00	68.50	Peak	V	25.38	4.50	42.89	-	55.49	74.00	18.51
1 830.00	63.28	Average	V	25.38	4.50	42.89	-	50.27	54.00	3.73

Channel	CH 220		Frequency(MHz)		927.5			Mode	Repeat	
Frequency (MHz)	Reading (dBμV)	Detector Mode	Ant. Pol. (H/V)	Ant. Factor	Cable Loss	AMP Gain	D.F (dB)	Total (dBμV/m)	Limits (dBμV/m)	Margin (dB)
1 855.00	70.90	Peak	H	25.52	4.73	42.88	-	58.27	74.00	15.73
1 855.00	65.53	Average	H	25.52	4.73	42.88	-	52.90	54.00	1.10
1 855.00	66.34	Peak	V	25.52	4.73	42.88	-	53.71	74.00	20.29
1 855.00	63.14	Average	V	25.52	4.73	42.88	-	50.51	54.00	3.49

9.11 AC Power line Conducted Emissions

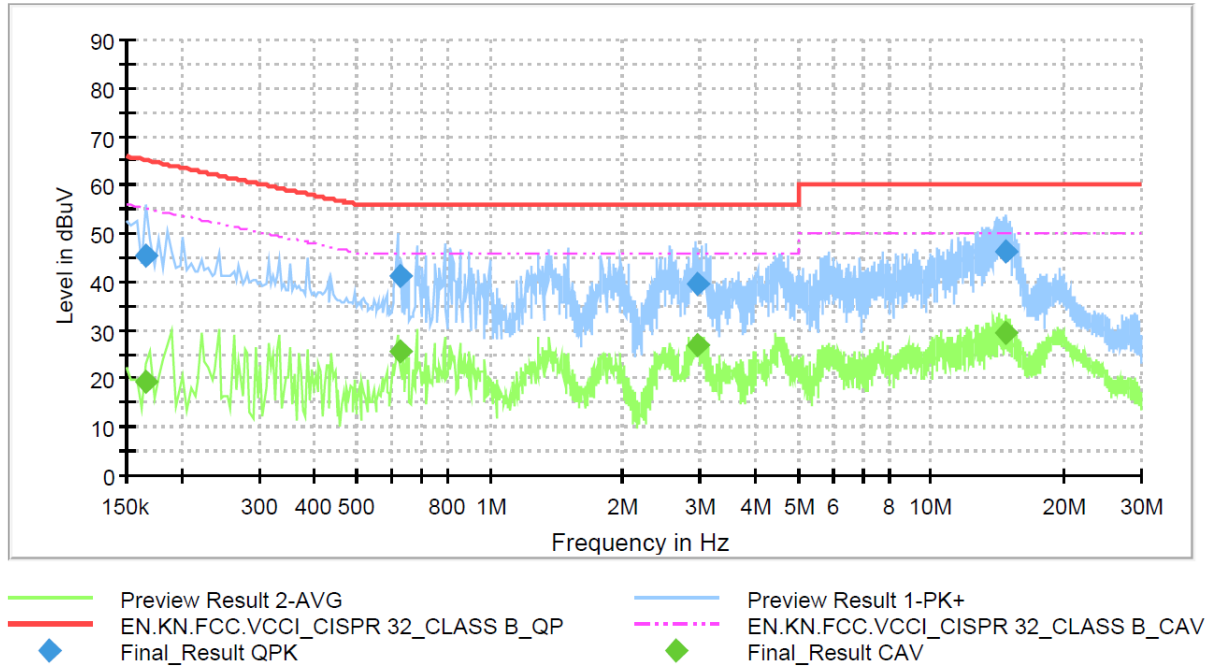
-. Tested Line : HOT LINE



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.161	---	20.03	55.39	35.35	9.0	L1	9.95
0.161	47.15	---	65.39	18.23	9.0	L1	9.95
0.636	---	30.18	46.00	15.82	9.0	L1	10.00
0.636	46.06	---	56.00	9.94	9.0	L1	10.00
2.857	---	31.47	46.00	14.53	9.0	L1	10.09
2.857	43.34	---	56.00	12.66	9.0	L1	10.09
14.750	---	31.51	50.00	18.49	9.0	L1	10.44
14.750	43.65	---	60.00	16.35	9.0	L1	10.44

-. Tested Line : NEUTRAL LINE



Final Result

Frequency (MHz)	QuasiPeak (dBuV)	CAverage (dBuV)	Limit (dBuV)	Margin (dB)	Bandwidth (kHz)	Line	Corr. (dB)
0.165	---	19.39	55.18	35.79	9.0	N	9.94
0.165	45.43	---	65.18	19.75	9.0	N	9.94
0.624	---	25.57	46.00	20.43	9.0	N	9.97
0.624	41.10	---	56.00	14.90	9.0	N	9.97
2.943	---	27.08	46.00	18.92	9.0	N	10.09
2.943	39.60	---	56.00	16.40	9.0	N	10.09
14.842	---	29.28	50.00	20.72	9.0	N	10.71
14.842	46.19	---	60.00	13.81	9.0	N	10.71

Remark: Margin (dB) = Limit – Level (Result)

The emission level in above table is included the transducer factor that means insertion loss (LISN), cable loss and attenuator.