SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

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1 Cover Page

RF TEST REPORT

Application No.:	SHEM1702000910CR
Applicant:	Hangzhou EZVIZ Network Co., Ltd
FCC ID:	2ALZF-CS-W2S
IC:	22696-CSW2S
Equipment Under Test (EUT): **NOTE:** The following sample(s) submitted was/were identified on behalf of the client as	
Product Name:	Wireless Relay Gateway
Model No.(EUT):	CS-W2S
Standards:	FCC PART 15 Subpart C Section 15.249: 2016 RSS-210 Issue 9 (August 2016) RSS-Gen Issue 4 (November 2014)
Date of Receipt:	2017-02-28
Date of Test:	2017-04-29
Date of Issue:	2017-05-15
Test Result:	**Pass***

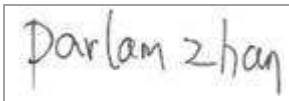
*In the configuration tested, the EUT detailed in this report complied with the standards specified above.

Parlam Zhan
E&E Section Manager
SGS-CSTC (Shanghai) Co., Ltd.

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

2 Version

Revision Record				
Version	**Chapter**	**Date**	**Modifier**	**Remark**
00	/	2017-05-15	/	Original

Authorized for issue by:				
Engineer		Eddy Zong **Print Name**		
Clerk		Susie Liu **Print Name**		
Reviewer		Parlam Zhan **Print Name**		

3 Test Summary

Test Item	Test Requirement	IC Reference	Test method	Result
Antenna Requirement	FCC Part 15, Subpart C Section 15.203	RSS-Gen Section 8.1.3	---	PASS
AC Power Line Conducted Emission	FCC Part 15, Subpart C Section 15.207	RSS-Gen Issue 4 Section 7.2.4	ANSI C63.10 (2013) Section 6.2	PASS
Field Strength of the Fundamental Signal	FCC Part 15, Subpart C Section 15.249 (a)	RSS-210 Issue 9 Annex 2.9 (a)	ANSI C63.10 (2013) Section 6.11	PASS
Radiated Spurious Emissions	FCC Part 15, Subpart C Section 15.249 (a) &15.209&15.205	RSS-Gen Issue 4 Section 4.9 RSS-Gen Issue 4 Section 7.2.2	ANSI C63.10 (2013) Section 6.4&6.5&6.6&6.10	PASS
20dB Bandwidth	FCC Part 15, Subpart C Section 15.215 (c)	RSS-210 Issue 9 Annex 8	ANSI C63.10 (2013) Section 6.9	PASS
99% Occupied bandwidth	---	RSS-Gen Section 6.6	RSS-Gen section 6.6	PASS

4 Contents

5 General Information

5.1 Client Information

Applicant:	Hangzhou EZVIZ Network Co., Ltd
Address of Applicant:	Floor 7, Building 1, No. 700, Dongliu Road, Binjiang District, Hangzhou, Zhejiang,310052,China.
Manufacturer:	Hangzhou EZVIZ Network Co., Ltd
Address of Manufacturer:	Floor 7, Building 1, No. 700, Dongliu Road, Binjiang District, Hangzhou, Zhejiang,310052,China.
Factory:	1. Hangzhou Hikvision Technology Co., Ltd. 2. Hangzhou Hikvision Electronics Co., Ltd.
Address of Factory:	1. No.700, Dongliu Road, Binjiang District, Hangzhou Ctiy,Zhejiang, 310052, China 2. No.299, Qiushi Road,Tonglu Economic Development Zone,Tonglu County, Hangzhou,Zhejiang,310052,China.

5.1 General Description of E.U.T.

Product Description:	Fixed product with 915MHz function
Brand Name:	EZVIZ
EUT Power Supply:	AC 100-240V 50/60Hz 0.3A
Test Voltage:	AC 120V 60Hz

5.2 Technical Specifications

Operation Frequency:	906MHz-924MHz(906MHz, 908MHz, 910MHz, 912MHz, 914MHz, 916MHz, 918MHz, 920MHz, 922MHz, 924MHz)
Modulation Technique:	FSK
Channel Space:	2MHz
Number of Channel:	10
Antenna Type	PCB Antenna

5.3 Description of Support Units

The EUT has been tested with associated equipment below.

Description	Manufacturer	Model No.	Supplied by
Laptop	Lenovo	ThinkPad X100e	SGS

5.4 Test Mode

Test Mode	Description of Test Mode
Engineering mode	Using test software to control EUT working in continuous transmitting, and select channel and modulation type

5.5 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China
Tel: +86 21 6191 5666
Fax: +86 21 6191 5678

5.6 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

- **CNAS (No. CNAS L0599)**
  CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

- **FCC – Registration No.: 402683**
  SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683.

- **Industry Canada (IC) – IC Assigned Code: 8617A**
  The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1.

- **VCCI (Member No.: 3061)**
  The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868 and C-4336 respectively.

5.7 Measurement Uncertainty

No.	Parameter	Measurement Uncertainty
1	Radio Frequency	$< \pm 1 \times 10^{-5}$
2	Total RF power, conducted	< ±1.5 dB
3	RF power density, conducted	< ±3 dB
4	Spurious emissions, conducted	< ±3 dB
5	All emissions, radiated	< ±6 dB (30MHz – 1GHz) < ±6 dB (above 1GHz)
6	Temperature	< ±1°C
7	Humidity	< ±5 %
8	DC and low frequency voltages	< ±3 %

6 Equipments Used during Test

Item	Test Equipment	Manufacturer	Model No.	Serial No.	Cal. Date	Cal. Due date
1	Power meter	Rohde & Schwarz	NRP	101641	2017-01-14	2018-01-13
2	Power Sensor	Rohde & Schwarz	NRP-Z22	101096	2016-08-06	2017-08-05
3	Spectrum Analyzer	Rohde & Schwarz	FSP-30	2705121009	2017-01-14	2018-01-13
4	EMI test receiver	Rohde & Schwarz	ESU40	100109	2017-02-13	2018-01-15
5	Active Loop Antenna (9kHz to 30MHz)	Rohde & Schwarz	FMZB1519	1519-034	2017-02-13	2018-01-15
6	Broadband UHF-VHF ANTENNA (25MHz to 2GHz)	SCHWARZBECK	VULB9168	9168-313	2017-02-13	2018-01-15
7	Ultra broadband antenna (25MHz to3GHz)	Rohde & Schwarz	HL562	100227	2016-08-30	2017-08-29
8	Horn Antenna (1GHz to 18GHz)	Rohde & Schwarz	HF906	100284	2017-02-13	2018-01-15
9	Horn Antenna (1GHz to 18GHz)	SCHWARZBECK	BBHA9120D	9120D-679	2017-02-13	2018-01-15
10	Horn Antenna(14GHz to 40GHz)	SCHWARZBECK	BBHA 9170	BBHA917-0373	2017-02-13	2018-01-15
11	Pre-amplifier (9KHz – 2GHz)	LNA6900	TESEQ	71033	/	/
12	Pre-amplifier (1GHz – 26.5GHz)	SCHWARZBECK	SCU-F0118-G40-BZ4-CSS(F)	10001	2017-01-14	2018-01-13
13	Pre-amplifie (14GHz – 40GHz)	SCHWARZBECK	SCU-F1840-G35-BZ3-CSS(F)	10001	2017-01-14	2018-01-13
14	Tunable Notch Filter	Wainwright instruments Gmbh	WRCT800.0/880.0-0.2/40-5SSK	170397 169777 169780 192507	/	/
15	High pass Filter	FSCW	HP 12/2800-5AA2	19A45-02	/	/
16	High-low temperature cabinet	Suzhou Zhihe	TL-40	50110050	2016-09-11	2017-09-10
17	AC power stabilizer	WOCEN	6100	51122	2017-01-14	2018-01-13
18	DC power	QJE	QJ30003SII	3573/4/3	2017-01-14	2018-01-13
19	Signal Generator (Interferer)	Rohde & Schwarz	SMR40	100555	2016-08-13	2017-08-12
20	Signal Generator (Blocker)	Rohde & Schwarz	SMJ100A	101394	2017-01-14	2018-01-13
21	Splitter	Anritsu	MA1612A	M12265	/	/
22	Coupler	e-meca	803-S-1	900-M01	/	/

7 Test Results

7.1 E.U.T. test conditions

Test Voltage: AC 120V 60Hz

Requirements: 15.31(e) For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. For battery operated equipment, the equipment tests shall be performed using a new battery.

Operating Environment:

Temperature:	20.0 -25.0 °C
Humidity:	35-75 % RH
Atmospheric Pressure:	99.2 -102.0 kPa

7.2 Antenna Requirement

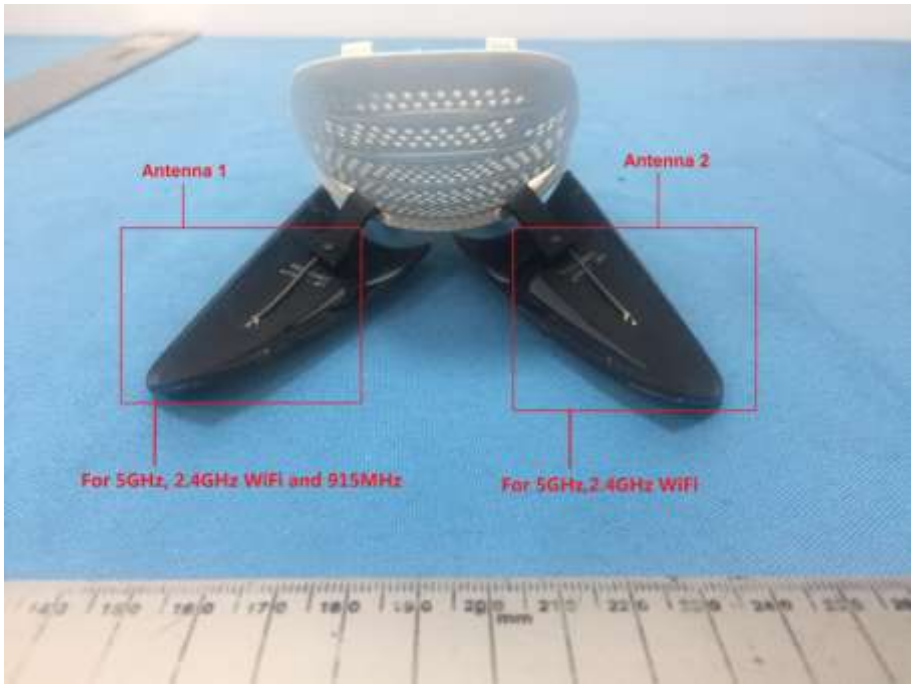
Standard requirement:

15.203 requirement:

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, 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

EUT Antenna:

The antenna is PCB antenna and no consideration of replacement. The gain of the antenna is less than 3 dBi.



7.3 Conducted Emissions on Mains Terminals

Frequency Range: 150 KHz to 30 MHz

Class/Severity: Class B

Limit:

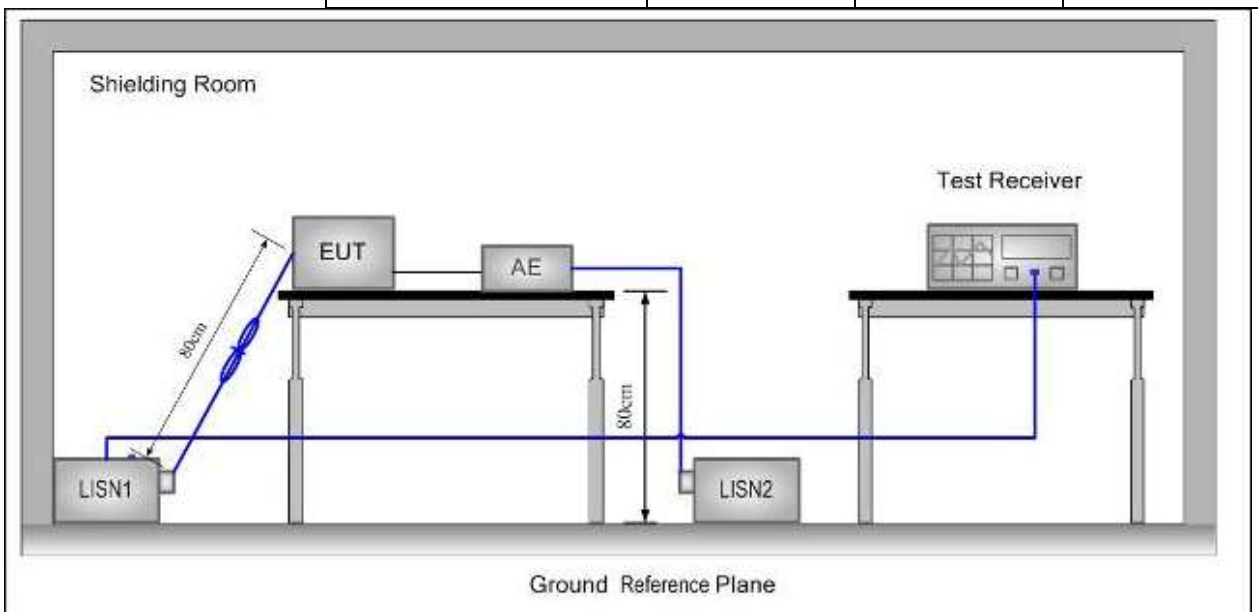
Frequency range MHz	Class B Limits: dB (μV)	
	Quasi-peak	Average
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

Note1: The limit decreases linearly with the logarithm of the frequency in the range 0.15 MHz to 0.50MHz.

Note2: The lower limit is applicable at the transition frequency.

Test site/setup: Test instrumentation set-up:

Frequency Range	Detector	RBW	VBW
9KHz to 150Hz	Quasi-peak	200Hz	500Hz
150KHz to 30MHz	Quasi-peak	9kHz	30kHz



Test Procedure:

1. The mains terminal disturbance voltage was measured with the EUT in a shielded room.
2. The EUT was connected to AC power source through a LISN 1 (Line Impedance Stabilization Network) which provides 50Ω/50μH + 5Ω linear impedance. The power cables of all other units of the EUT were connected to a second LISN, which was bonded to the ground reference plane in the same way as the LISN for the unit being measured. A multiple socket outlet strip was used to connect multiple power cables to a single LISN provided the rating of the LISN was not exceeded
3. The tabletop EUT was placed upon a non-metallic table 0.8m above the ground reference plane. And for floor-standing arrangement, the EUT was placed on the horizontal ground reference

plane, but separated from metallic contact with the ground reference plane by 0.1m of insulation.

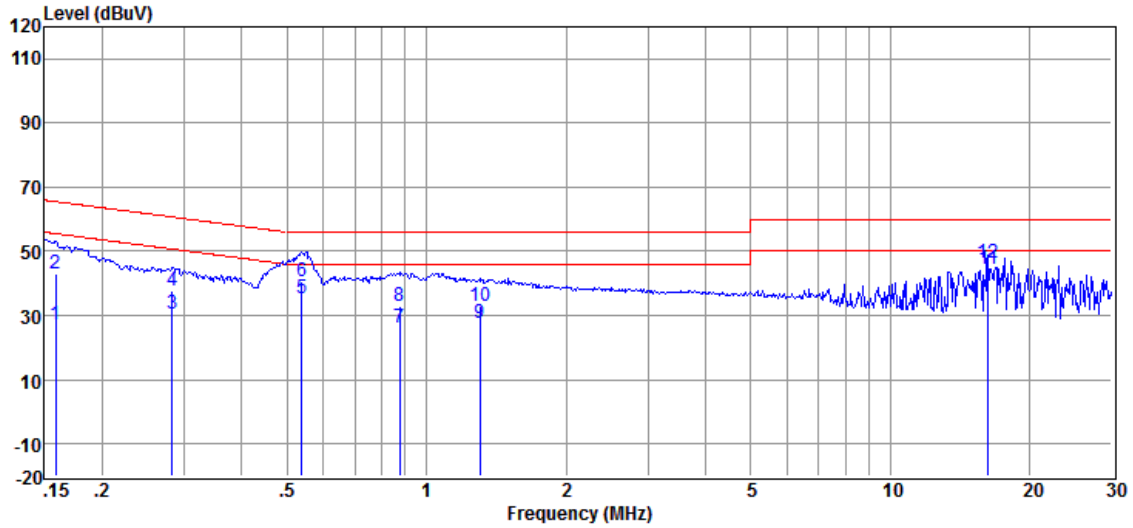
4. The test was performed with a vertical ground reference plane. The rear of the EUT shall be 0.4 m from the vertical ground reference plane. The vertical ground reference plane was bonded to the horizontal ground reference plane. The LISN was placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane for LISN mounted on top of the ground reference plane. This distance was between the closest points of the LISN and the EUT. The mains lead of EUT excess 0.8m was folded back and forth parallel to the lead so as to form a horizontal bundle with a length between 0.3m and 0.4m. All other units of the EUT and associated equipment were at least 0.8 m from the LISN.

Remark: Pre-scan was performed with peak detected on all ports, Quasi-peak & average measurements were performed at the frequencies at which maximum peak emission level were detected. Please see the attached Quasi-peak and Average test results.

Test Result: Pass

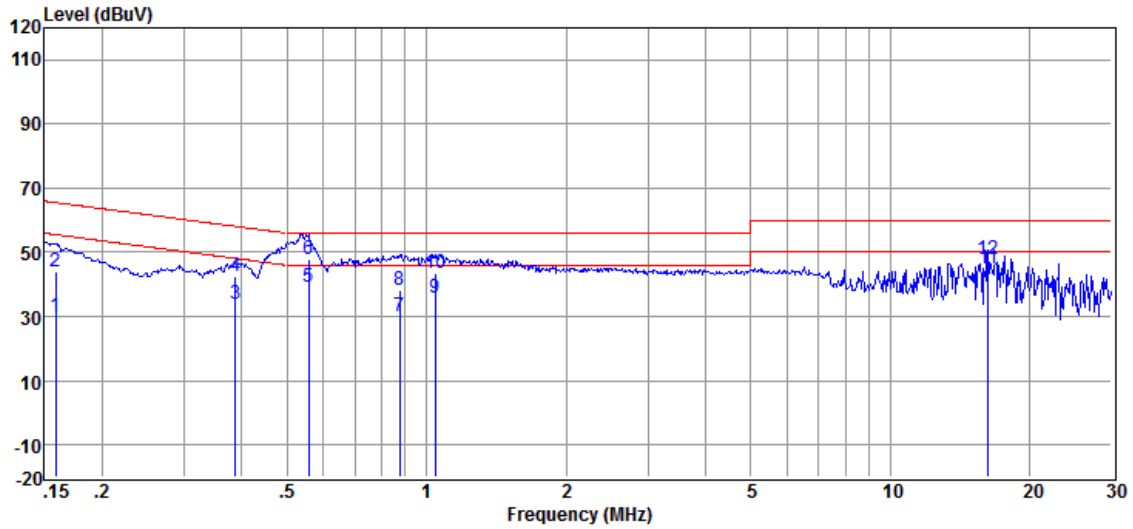
Test Data:

Live Line:



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBµV)	(dB)	(dB)	(dBµV)	(dBµV)	(dB)	
1	0.159	16.80	0.06	10.15	27.01	55.52	-28.51	Average
2	0.159	32.62	0.06	10.15	42.83	65.52	-22.69	QP
3	0.283	20.40	0.09	10.16	30.65	50.72	-20.07	Average
4	0.283	27.55	0.09	10.16	37.80	60.72	-22.92	QP
5	0.538	24.86	0.10	10.17	35.13	46.00	-10.87	Average
6	0.538	30.56	0.10	10.17	40.83	56.00	-15.17	QP
7	0.876	16.15	0.09	10.18	26.42	46.00	-19.58	Average
8	0.876	22.64	0.09	10.18	32.91	56.00	-23.09	QP
9	1.303	17.56	0.08	10.18	27.82	46.00	-18.18	Average
10	1.303	22.78	0.08	10.18	33.04	56.00	-22.96	QP
11	16.226	33.78	0.23	10.30	44.31	50.00	-5.69	Average
12	16.226	35.98	0.23	10.30	46.51	60.00	-13.49	QP

Neutral Line:



Item	Freq.	Read Level	LISN Factor	Cable Loss	Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB)	(dB)	(dBμV)	(dBμV)	(dB)	
1	0.159	19.99	0.05	10.15	30.19	55.52	-25.33	Average
2	0.159	33.75	0.05	10.15	43.95	65.52	-21.57	QP
3	0.387	23.53	0.04	10.16	33.73	48.12	-14.39	Average
4	0.387	32.34	0.04	10.16	42.54	58.12	-15.58	QP
5	0.558	28.74	0.04	10.17	38.95	46.00	-7.05	Average
6	0.558	37.78	0.04	10.17	47.99	56.00	-8.01	QP
7	0.876	20.03	0.05	10.18	30.26	46.00	-15.74	Average
8	0.876	28.06	0.05	10.18	38.29	56.00	-17.71	QP
9	1.043	25.74	0.05	10.18	35.97	46.00	-10.03	Average
10	1.043	33.37	0.05	10.18	43.60	56.00	-12.40	QP
11	16.226	34.49	0.27	10.30	45.06	50.00	-4.94	Average
12	16.226	37.39	0.27	10.30	47.96	60.00	-12.04	QP

Level = Read Level + LISN/ISN Factor + Cable Loss.

7.4 Field Strength of the Fundamental Signal

Test Site: Measurement Distance: 3m

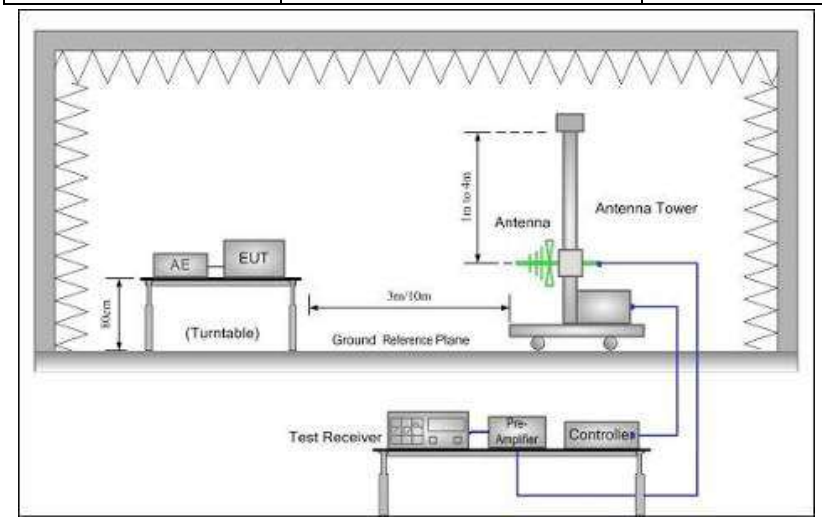
Receiver Setup:

Frequency	Detector	RBW	VBW	Remark
Above 1GHz	Peak	1MHz	3MHz	Peak
	Peak	1MHz	10Hz	Average

Limit:

Frequency	Limit (dBuV/m)	Remark
902-928 MHz	114	Peak
	94	Quasi-Peak

Test Setup:



Test Procedure:

a. The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic camber. The table was rotated 360 degrees to determine the position of the highest radiation.
b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
c. The antenna height is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters (for the test frequency of below 30MHz, the antenna was tuned to heights 1 meter) and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.
e. The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
f. If the emission level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. Otherwise the emissions that did not have 10dB margin would be re-tested one by one using peak, quasi-peak or average method as specified and then reported in a data sheet.

Test Results: Pass

Measurement Data

Peak value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
906	93.83	-3.45	90.38	94	-3.62	Peak	Horizontal
	85.62	-3.45	82.17	94	-11.83	Peak	Vertical

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
914	93.88	-3.21	90.67	94	-3.33	Peak	Horizontal
	85.62	-3.21	82.41	94	-11.59	Peak	Vertical

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
924	93.26	-3.02	90.24	94	-3.76	Peak	Horizontal
	86.17	-3.02	83.15	94	-10.85	Peak	Vertical

Remark:

1) The basic equation with a sample calculation is as follows: Level = Read Level + Factor.
(The Factor is calculated by adding the Antenna Factor, Cable Loss and Preamp Factor)
2) If the Peak value below the Quasi-Peak Limit, the Quasi-Peak test doesn't perform for this submission.

7.5 Radiated Spurious Emissions and Band-edge

Frequency Range: 9KHz to 10GHz

Test site/setup: Measurement Distance: 3m
Test instrumentation set-up:

Frequency Range	Detector	RBW	VBW
0.009MHz-0.090MHz	Peak	10kHz	30kHz
0.009MHz-0.090MHz	Average	10kHz	30kHz
0.090MHz-0.110MHz	Quasi-peak	10kHz	30kHz
0.110MHz-0.490MHz	Peak	10kHz	30kHz
0.110MHz-0.490MHz	Average	10kHz	30kHz
0.490MHz -30MHz	Quasi-peak	10kHz	30kHz
30MHz-1GHz	Quasi-peak	100kHz	300kHz
Above 1GHz	Peak	RBW=1MHz	VBW≥RBW
	Average		VBW=10Hz

Sweep=Auto

15.209 Limit:

Frequency	Field strength (microvolt/meter)	Limit (dBuV/m)
0.009MHz-0.490MHz	2400/F(KHz)	128.5 ~ 93.8
0.490MHz-1.705MHz	24000/F(KHz)	73.8 ~63.0
1.705MHz-30MHz	30	69.5
30MHz-88MHz	100	40.0
88MHz-216MHz	150	43.5
216MHz-960MHz	200	46.0
960MHz-1GHz	500	54.0
Above 1GHz	500	54.0

Note: 15.35(b), Unless otherwise specified, the limit on peak radio frequency emissions is 20dB above the maximum permitted average emission limit applicable to the equipment under test. This peak limit applies to the total peak emission level radiated by the device.

Test Configuration: Receive antenna scan height 1 m - 4 m. polarization Vertical / Horizontal

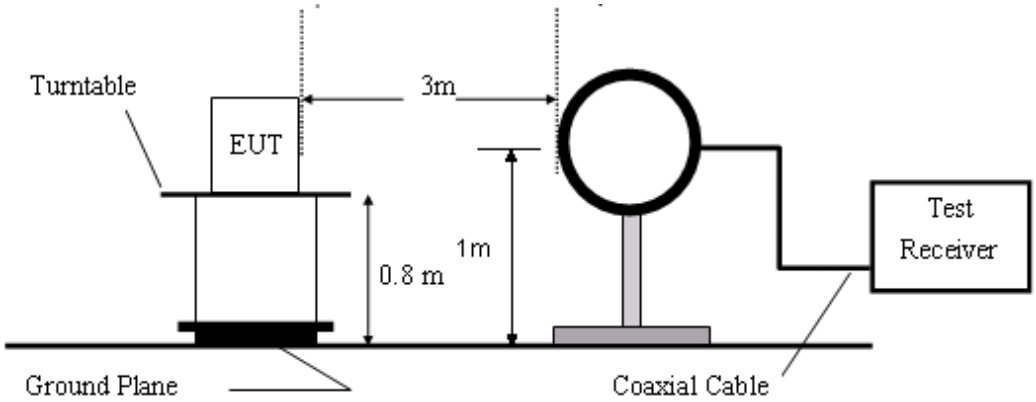


Figure1. Below 30MHz radiated emissions test configuration

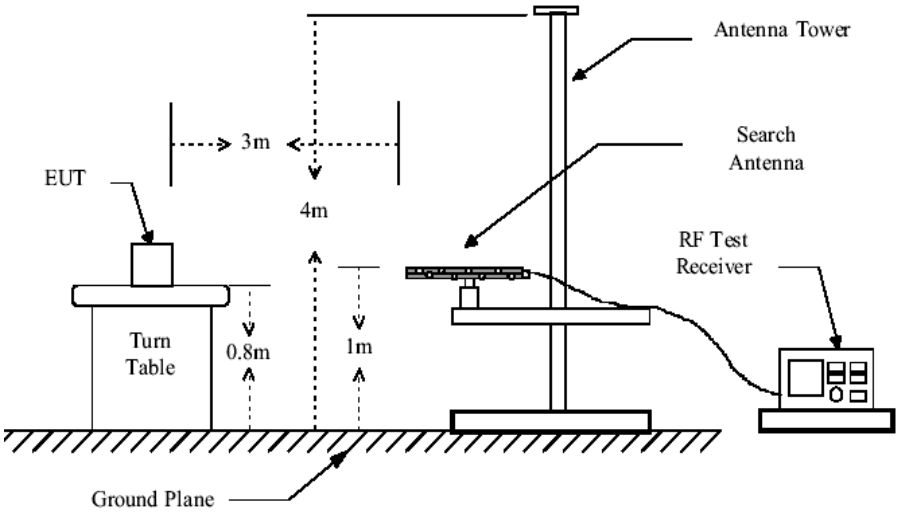


Figure2. 30MHz to 1GHz radiated emissions test configuration

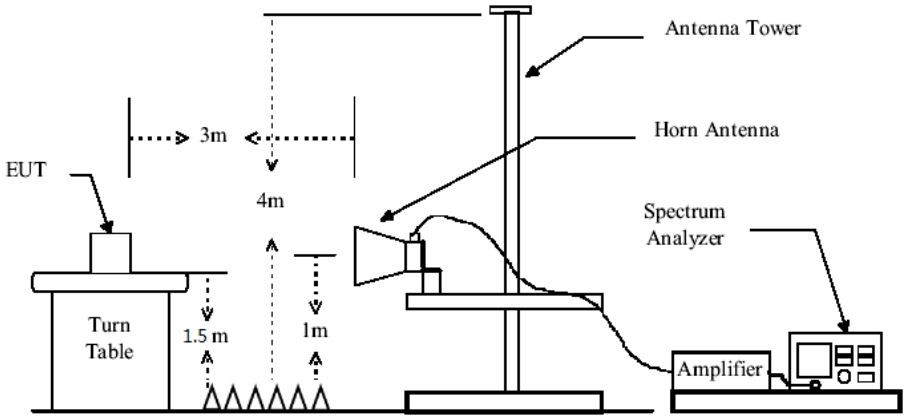


Figure3. Above 1GHz radiated emissions test configuration

Test Procedure: The procedure used was ANSI Standard C63.10. The receiver was scanned from 9KHz to 10GHz.When an emission was found, the table was rotated to produce the maximum signal strength. An initial pre-scan was performed for in peak detection mode using the receiver. The EUT was measured for both the Horizontal and Vertical polarities and performed a pre-test three orthogonal planes. For intentional radiators, measurements of the variation of the input power or the radiated signal level of the fundamental frequency component of the emission, as appropriate, shall be performed with the supply voltage varied between 85% and 115% of the nominal rated supply voltage. The worst case emissions were reported.

Low noise amplifier was used below 1GHz, High pass Filter was used above 3GHz.

Between 1G and 3GHz, we did not use any amplifier or filter.

Pre-test was performed on Antenna A and Antenna B mode, Compliance test was performed on worse case (Antenna A mode).

Test were performed for their spatial orthogonal(X, Y, Z), the worst test data (X orthogonal) was submitted.

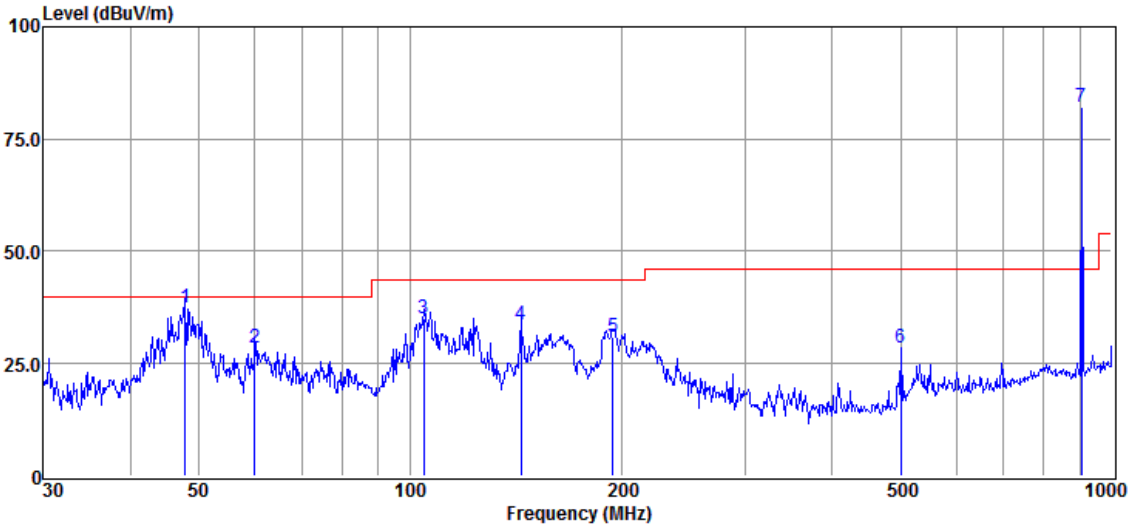
1) For this intentional radiator operates below 25 GHz. the spectrum shall be investigated to the tenth harmonic of the highest fundamental frequency. And above the third harmonic of this intentional radiator, the disturbance is very low. So the test result only displays to 5rd harmonic.
2) As shown in Section, for frequencies above 1000MHz. the above field strength limits are based on average limits. However, the peak field strength of any emission shall not exceed the maximum permitted average limits specified above by more than 20 dB under any condition of modulation.

The test only perform the EUT in transmitting status since the test frequencies were over 1GHz only required transmitting status.

Test Result: Pass

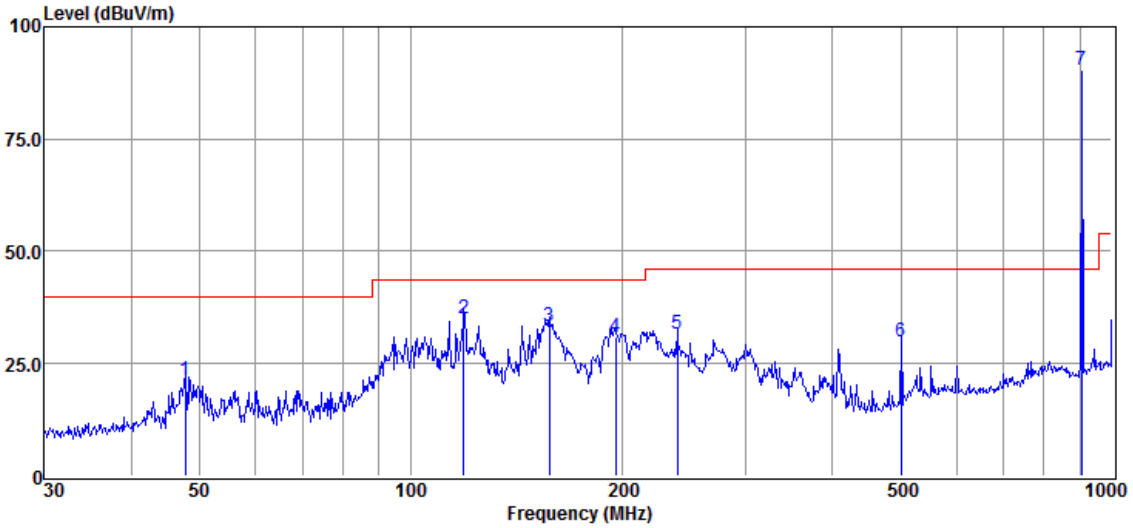
7.5.1 Radiated Spurious Emissions

30MHz-1GHz:
Vertical:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBµV)	(dB/m)	(dB)	(dB)	(dBµV/m)	(dBµV/m)	(dB)	
1	47.83	52.09	13.84	28.80	0.25	37.38	40.00	-2.62	QP
2	60.07	44.88	12.10	28.80	0.30	28.48	40.00	-11.52	QP
3	104.54	53.09	9.99	28.60	0.47	34.95	43.50	-8.55	QP
4	143.83	49.12	12.50	28.40	0.61	33.83	43.50	-9.67	QP
5	194.45	47.30	10.96	28.18	0.69	30.77	43.50	-12.73	QP
6	501.18	39.28	17.26	29.20	1.18	28.52	46.00	-17.48	QP
7	906.00	85.62	23.04	28.94	2.45	82.17	Fundamental signal		

Horizontal:



Item	Freq.	Read Level	Antenna Factor	Preamp Factor	Cable Loss	Result Level	Limit Line	Over Limit	Detector
(Mark)	(MHz)	(dBμV)	(dB/m)	(dB)	(dB)	(dBμV/m)	(dBμV/m)	(dB)	
1	47.66	36.13	13.78	28.80	0.25	21.36	40.00	-18.64	QP
2	119.02	51.55	11.73	28.60	0.53	35.21	43.50	-8.29	QP
3	157.56	48.81	12.26	28.40	0.63	33.30	43.50	-10.20	QP
4	195.82	47.61	10.92	28.15	0.69	31.07	43.50	-12.43	QP
5	239.99	47.65	11.10	27.96	0.75	31.54	46.00	-14.46	QP
6	501.18	40.66	17.26	29.20	1.18	29.90	46.00	-16.10	QP
7	906.00	93.83	23.04	28.94	2.45	90.38	Fundamental signal		

Level = Read Level + Antenna Factor + Cable Loss – Preamp Factor.

Above 1GHz:
906MHz:

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	1812	56.73	-4.48	52.25	54	-1.75	peak	Horizontal
2	2718	43.79	-1.86	41.93	54	-12.07	peak	Horizontal
3	3624	44.29	2.58	46.87	54	-7.13	peak	Horizontal
4	1812	55.09	-4.48	50.61	54	-3.39	peak	Vertical
5	2718	52.11	-1.86	50.25	54	-3.75	peak	Vertical
6	3624	43.33	2.58	45.91	54	-8.09	peak	Vertical

914MHz:

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	1828	56.74	-4.38	52.36	54	-1.64	peak	Horizontal
2	2742	51.52	-1.66	49.86	54	-4.14	peak	Horizontal
3	3656	41.93	2.59	44.52	54	-9.48	peak	Horizontal
4	1828	57.15	-4.38	52.77	54	-1.23	peak	Vertical
5	2742	52.08	-1.66	50.42	54	-3.58	peak	Vertical
6	3656	41.26	2.59	43.85	54	-10.15	peak	Vertical

924MHz:

Mark	Frequency (MHz)	Reading (dBuV)	Factor (dB)	Emission (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	1848	55.68	-4.27	51.41	54	-2.59	peak	Horizontal
2	2772	42.39	-1.4	40.99	54	-13.01	peak	Horizontal
3	3696	42.17	2.62	44.79	54	-9.21	peak	Horizontal
4	1848	55.48	-4.27	51.21	54	-2.79	peak	Vertical
5	2772	42.83	-1.4	39.21	54	-12.57	peak	Vertical
6	3696	42.15	2.62	29.21	54	-9.23	peak	Vertical

Remark: 1. Test Level = Receiver Reading + Antenna Factor + Cable Loss- Preamplifier Factor

2. No any other emission which falls in restricted bands can be detected and be reported.

3. If the Peak value below the AV Limit, the AV test doesn't perform for this submission.

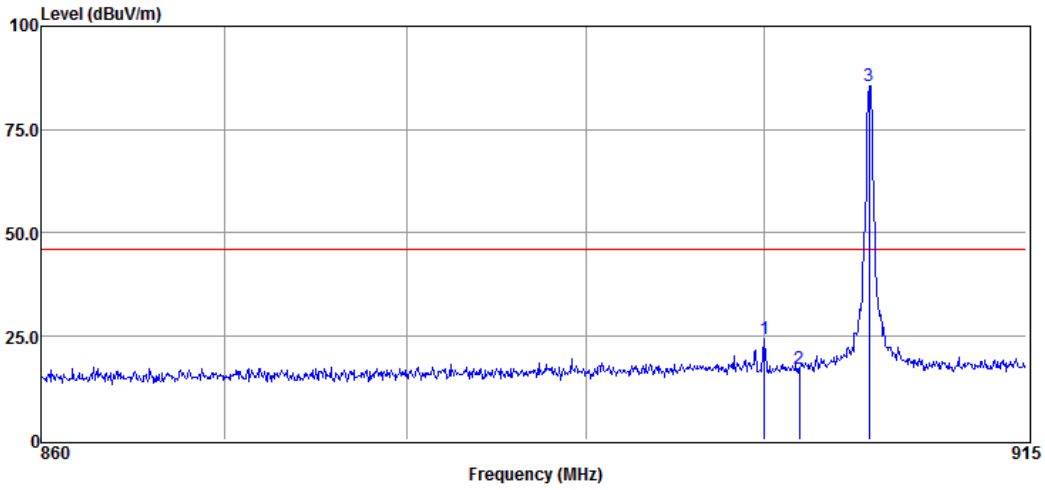
All frequencies within the "Restricted bands" have been evaluated to compliance. Section 15.205 Restricted bands of operation.

7.5.2 Radiated Band edge

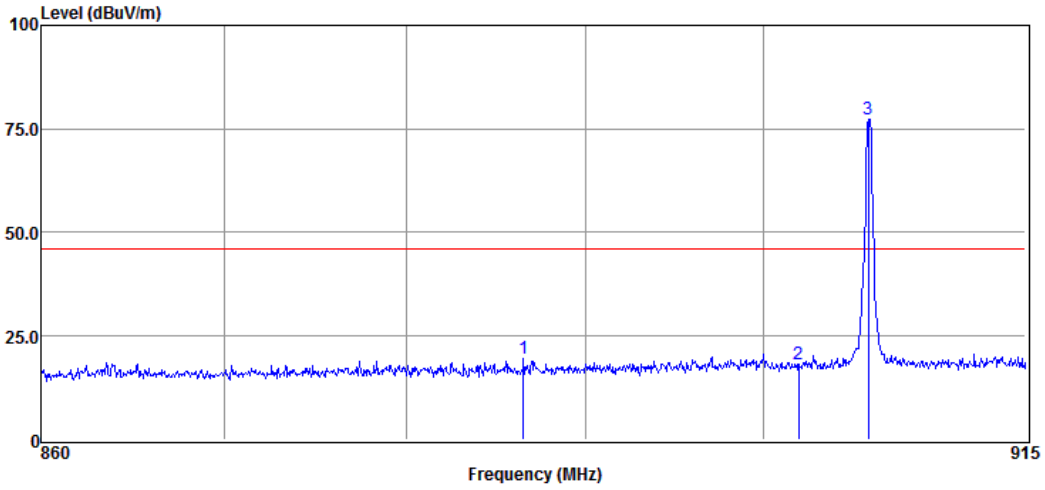
Channel: 906MHz

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	900.04	44.92	-20.58	24.34	46.00	-21.66	Peak	Horizontal
2	902.00	37.74	-20.44	17.30	46.00	-28.70	Peak	Horizontal
3	905.97	105.78	-20.3	85.48	46.00	39.48	Peak	Horizontal
1	886.52	40.97	-21.43	19.54	46.00	-26.46	Peak	Vertical
2	902.00	38.49	-20.44	18.05	46.00	-27.95	Peak	Vertical
3	905.97	97.74	-20.3	77.44	46.00	31.44	Peak	Vertical

Horizontal



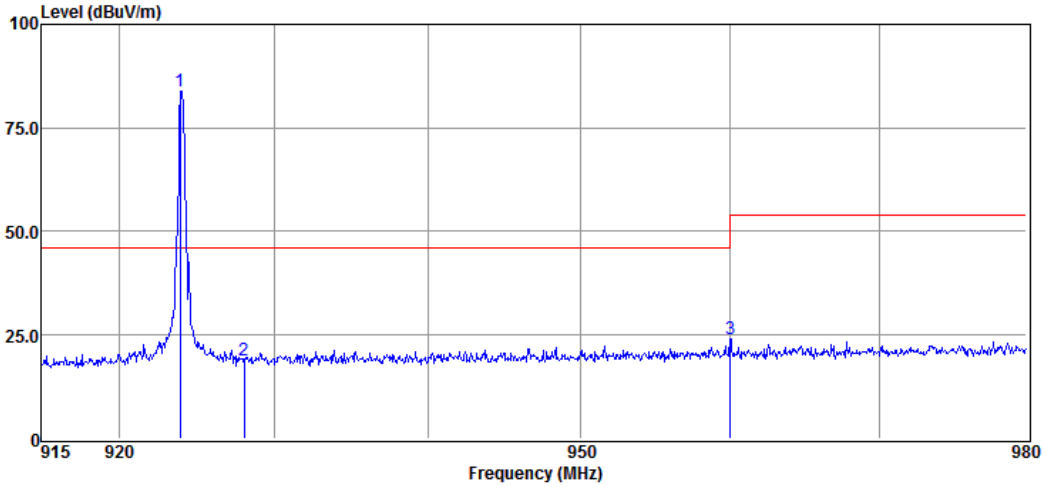
Vertical



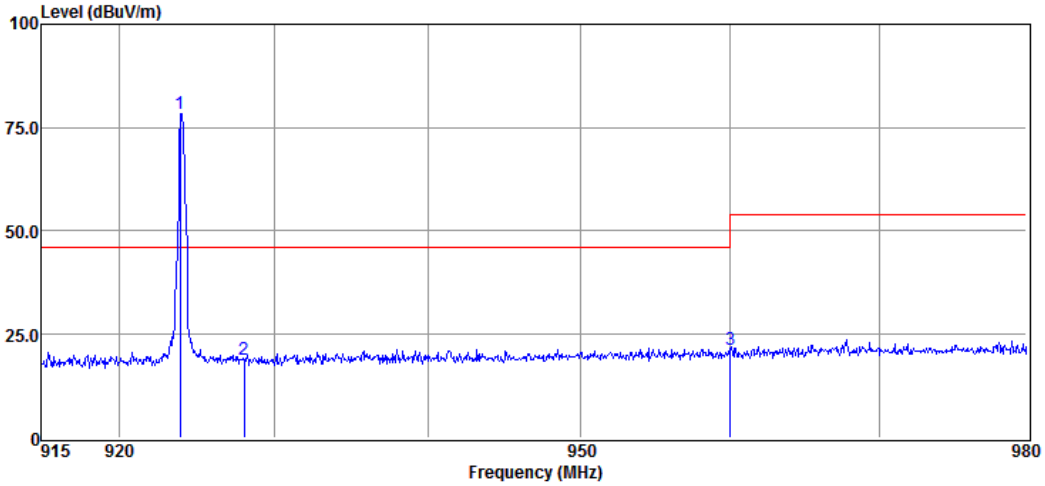
Antenna 1 **Channel: 924MHz**

MK.	Frequency (MHz)	Reading (dBuV/m)	Corrected factor(dB)	Result (dBuV/m)	Limit (dBuV/m)	Over Limit (dB)	Detector	Polarization
1	923.90	103.30	-19.55	83.75	46.00	37.75	Peak	Horizontal
2	928.00	37.95	-19.2	18.75	46.00	-27.25	Peak	Horizontal
3	960.00	41.78	-17.67	24.11	46.00	-21.89	Peak	Horizontal
1	923.90	97.79	-19.55	78.24	46.00	32.24	Peak	Vertical
2	928.00	37.95	-19.2	18.75	46.00	-27.25	Peak	Vertical
3	960.00	38.81	-17.67	21.14	46.00	-24.86	Peak	Vertical

Horizontal



Vertical



Except as shown in paragraph (d) of this section, only spurious emissions are permitted in any of the frequency bands listed below:

1. FCC Part 15, Subpart C Section 15.205 Restricted bands of operation.

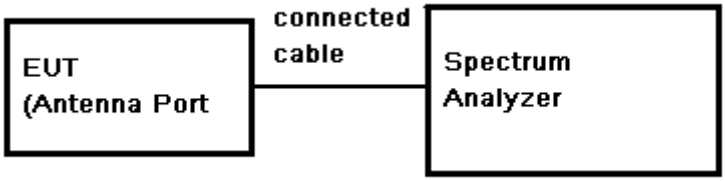
MHz	MHz	MHz	GHz
0.090 - 0.110	16.42 - 16.423	399.9 - 410	4.5 - 5.15
[1]0.495 - 0.505	16.69475 - 16.69525	608 - 614	5.35 - 5.46
2.1735 - 2.1905	16.80425 - 16.80475	960 - 1240	7.25 - 7.75
4.125 - 4.128	25.5 - 25.67	1300 - 1427	8.025 - 8.5
4.17725 - 4.17775	37.5 - 38.25	1435 - 1626.5	9.0 - 9.2
4.20725 - 4.20775	73 - 74.6	1645.5 - 1646.5	9.3 - 9.5
6.215 - 6.218	74.8 - 75.2	1660 - 1710	10.5 - 12.7
6.26775 - 6.26825	108 - 121.94	1718.8 - 1722.2	13.25 - 13.4
6.31175 - 6.31225	123 - 138	2200 - 2300	14.47 - 14.5
8.291 - 8.294	149.9 - 150.05	2310 - 2390	15.35 - 16.2
8.362 - 8.366	156.52475 - 156.52525	2483.5 - 2500	17.7 - 21.4
8.37625 - 8.38675	156.7 - 156.9	2655 - 2900	22.01 - 23.12
8.41425 - 8.41475	162.0125 - 167.17	3260 - 3267	23.6 - 24.0
12.29 - 12.293	167.72 - 173.2	3332 - 3339	31.2 - 31.8
12.51975 - 12.52025	240 - 285	3345.8 - 3358	36.43 - 36.5
12.57675 - 12.57725	322 - 335.4	3600 - 4400	
13.36 - 13.41			

2. RSS-Gen section 7.2.2 Restricted bands of operation

MHz	MHz	GHz
0.090-0.110	240-285	9.0-9.2
2.1735-2.1905	322-335.4	9.3-9.5
3.020-3.026	399.9-410	10.6-12.7
4.125-4.128	608-614	13.25-13.4
4.17725-4.17775	960-1427	14.47-14.5
4.20725-4.20775	1435-1626.5	15.35-16.2
5.677-5.683	1645.5-1646.5	17.7-21.4
6.215-6.218	1660-1710	22.01-23.12
6.26775-6.26825	1718.8-1722.2	23.6-24.0
6.31175-6.31225	2200-2300	31.2-31.8
8.291-8.294	2310-2390	36.43-36.5
8.362-8.366	2655-2900	Above 38.6
8.37625-8.38675	3260-3267	
8.41425-8.41475	3332-3339	
12.29-12.293	3345.8-3358	
12.51975-12.52025	3500-4400	
12.57675-12.57725	4500-5150	
13.36-13.41	5350-5460	
16.42-16.423	7250-7750	
16.69475-16.69525	8025-8500	
16.80425-16.80475		
25.5-25.67		
37.5-38.25		
73-74.6		
74.8-75.2		
108-138		
156.52475-156.52525		
156.7-156.9		

7.6 20dB Bandwidth

Test Configuration:



Test Procedure:

1. Place the EUT on the table and set it in transmitting mode.
2. Remove the antenna from the EUT and then connect a low loss RF cable from the antenna port to the spectrum analyzer.
3. Set the spectrum analyzer as RBW = approximately 1 % to 5 % of the OBW (set 3 kHz), VBW =3* RBW, Span=1MHz, Sweep=auto
4. Mark the peak frequency and –20dB (upper and lower) frequency.
5. Repeat above procedures until all frequency measured was complete.

Limit: N/A

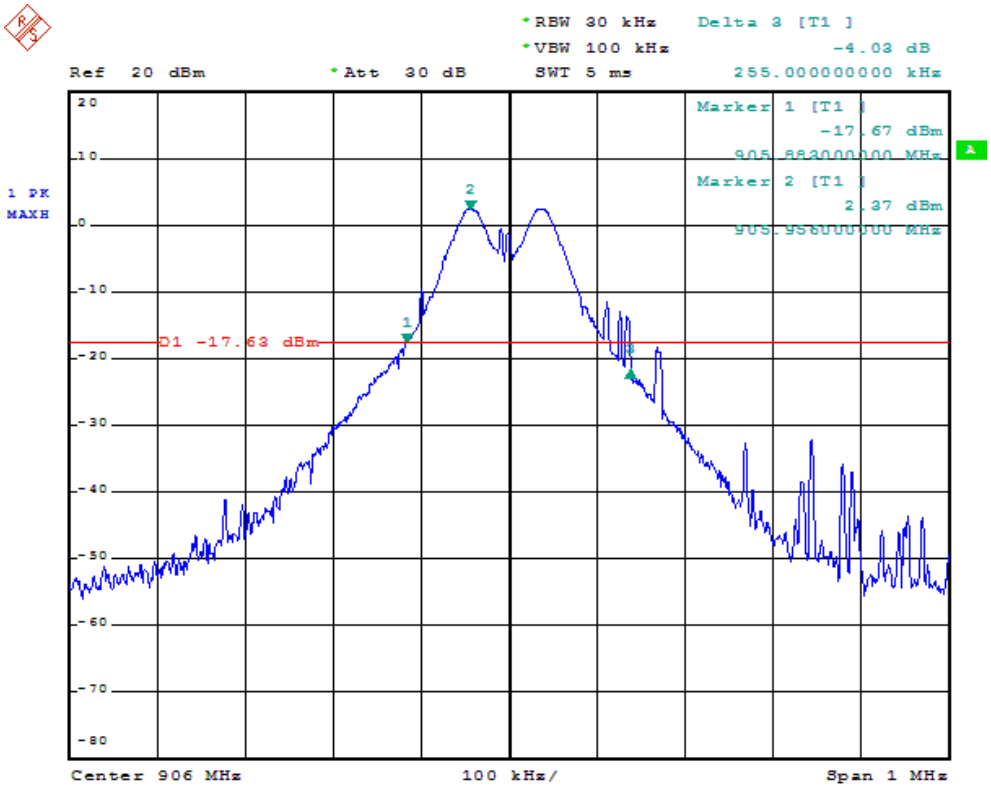
Test Result: Pass

Test Data:

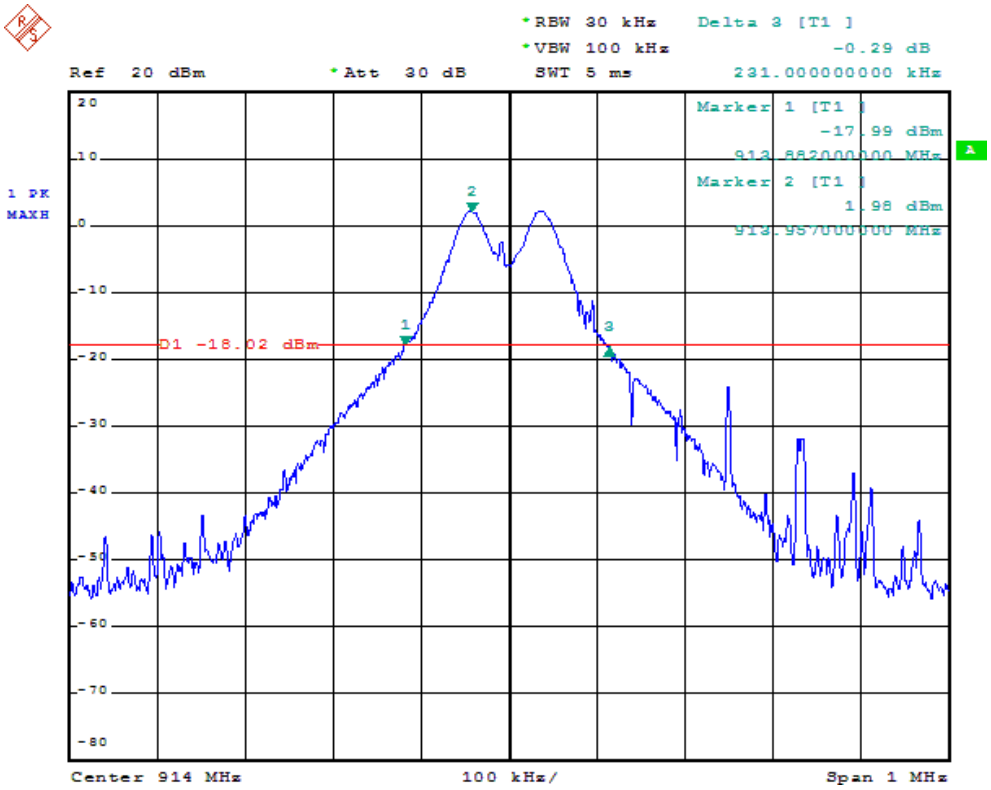
Frequency (MHz)	Bandwidth (kHz)	Result
906	255.00	PASS
914	231.00	PASS
924	283.00	PASS

Test plot as follows:

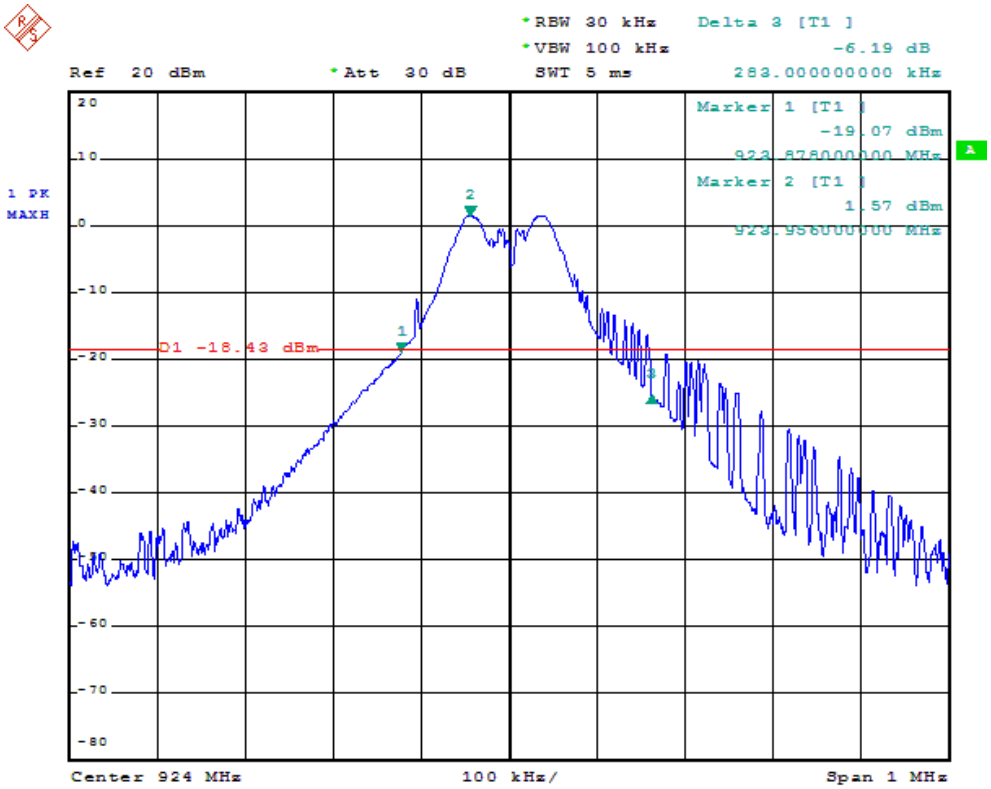
906MHz:



914MHz:

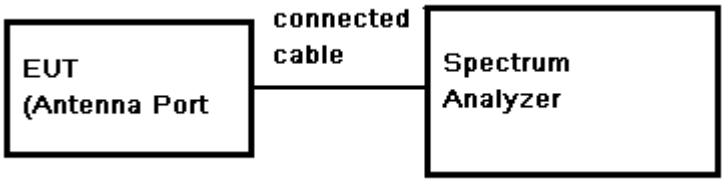


924MHz:



7.7 99% Occupied Bandwidth

Test Configuration:



Test Procedure:

1. Remove the antenna from the EUT and then connect a low RF cable from the antenna port to the spectrum;
2. Set the spectrum analyzer: Span = approximately 2 to 3 times the 20dB bandwidth, centred on the hopping channel;
3. Set the spectrum analyzer: RBW = 1% of the span (set 3 kHz). VBW >= RBW. Sweep = auto; Detector Function = Peak. Trace = Max Hold.
4. Mark the peak frequency and using the 99% OBW function measure the bandwidth.

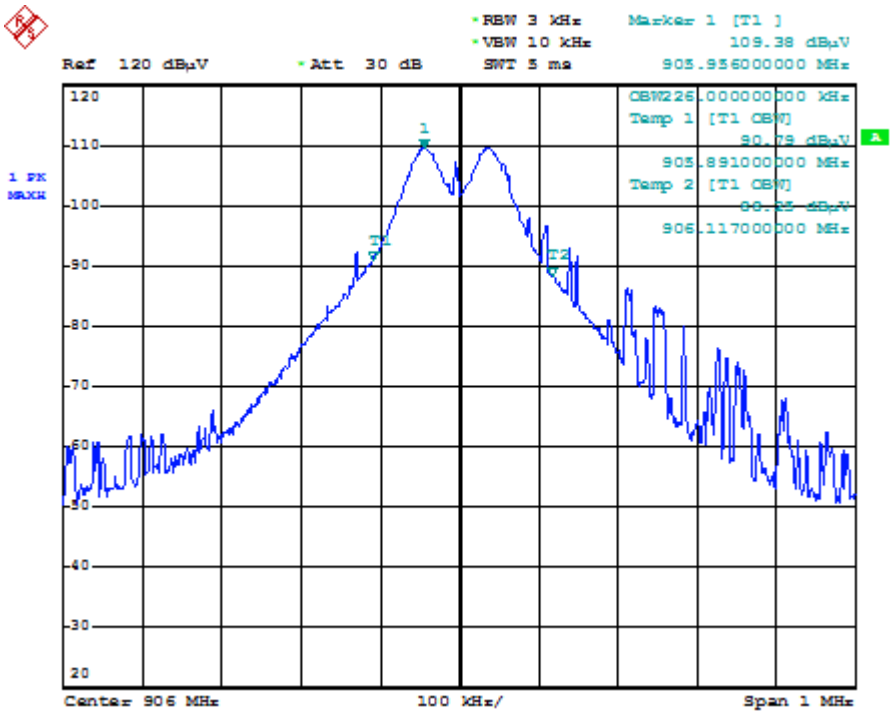
Test Result: Pass

Test Date:

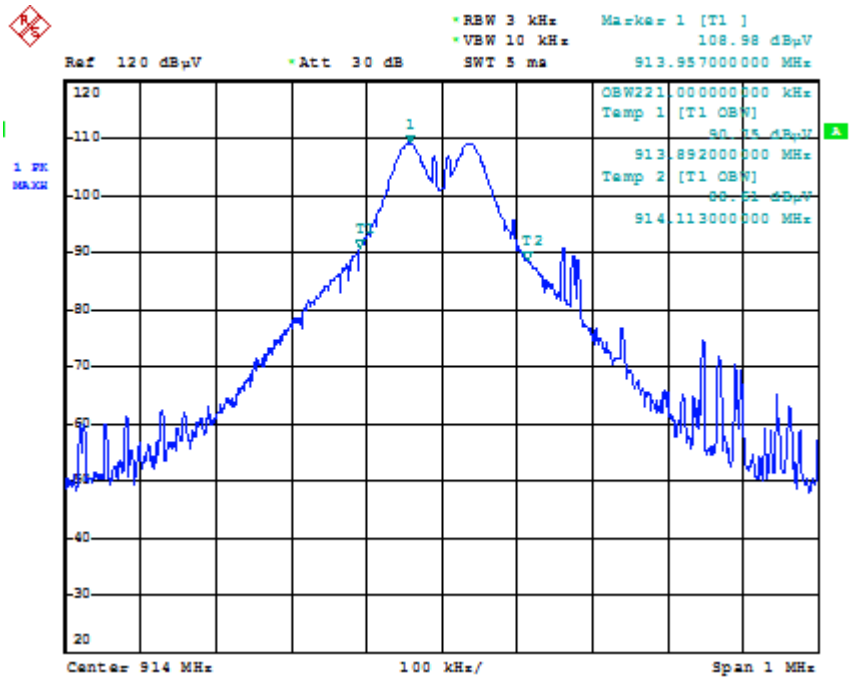
Frequency (MHz)	Bandwidth (kHz)	Result
906	226	PASS
914	221	PASS
924	207	PASS

Test plot as follows:

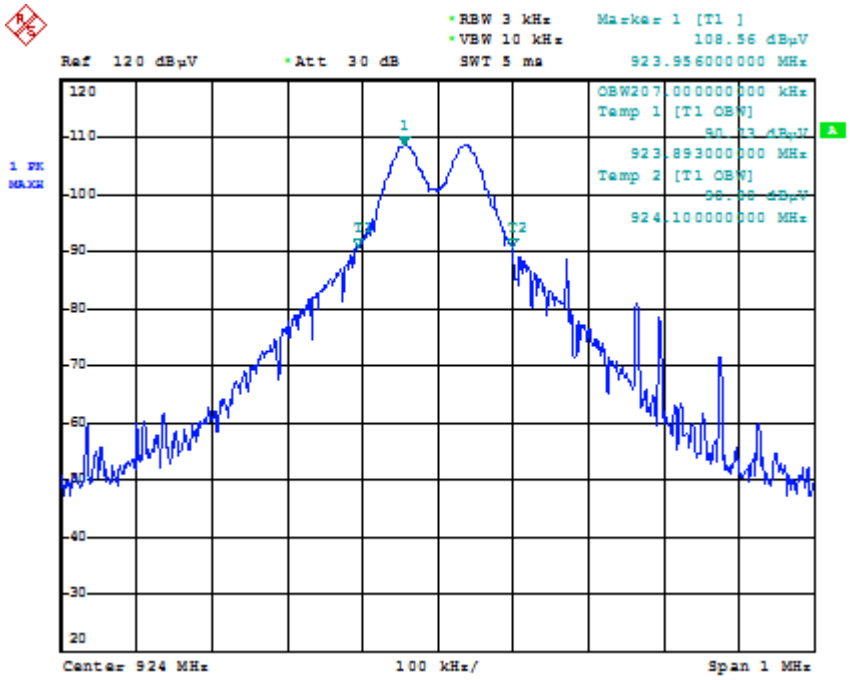
906MHz:



914MHz:



924MHz:



8 Test Setup Photographs

Refer to the < CS-W2S_Test Setup photos-FCC>.

9 EUT Constructional Details

Refer to the < CS-W2S _External Photos > & < CS-W2S _Internal Photos >.

--End of the Report--