



1 Cover Page

TEST REPORT

Application No.: SHEM2108008961CR
FCC ID: 2A229GCMBZT
Applicant: SGS Activos S.L
Address of Applicant: Trespaderne 29, 28042 Madrid, Spain
Manufacturer: SGS Activos S.L
Address of Manufacturer: Trespaderne 29, 28042 Madrid, Spain
Factory: SGS Activos S.L
Address of Factory: Trespaderne 29, 28042 Madrid, Spain
Equipment Under Test (EUT):
EUT Name: Grain Condition Monitoring Device
Model No.: GCM
Trade mark: SGS
Standard(s) : 47 CFR Part 15, Subpart C 15.249
Date of Receipt: 2021-08-10
Date of Test: 2021-08-16 to 2021-09-09
Date of Issue: 2021-09-15

Test Result:	Pass*
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* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan

Parlam Zhan
Laboratory Manager

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.



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SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center EMC Laboratory

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Revision Record			
Version	Description	Date	Remark
00	Original	2021-09-15	/

Authorized for issue by:				
		Bill Wu		
		Bill Wu / Project Engineer		
		Parlam Zhan		
		Parlam Zhan /Reviewer		



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2 Test Summary

Radio Spectrum Technical Requirement				
Item	Standard	Method	Requirement	Result
Antenna Requirement	47 CFR Part 15, Subpart C 15.249	N/A	47 CFR Part 15, Subpart C 15.203	Pass

Radio Spectrum Matter Part				
Item	Standard	Method	Requirement	Result
20dB Bandwidth	47 CFR Part 15, Subpart C 15.249	ANSI C63.10 (2013) Section 6.9	47 CFR Part 15, Subpart C 15.215	Pass
Field Strength of the Fundamental Signal (15.249(a))	47 CFR Part 15, Subpart C 15.249	ANSI C63.10 (2013) Section 6.5&6.6	47 CFR Part 15, Subpart C 15.249(a)	Pass
Restricted Band Around Fundamental Frequency	47 CFR Part 15, Subpart C 15.249	ANSI C63.10 (2013) Section 6.4&6.5&6.6	47 CFR Part 15, Subpart C 15.205 & 15.249(d) & 15.209	Pass
Radiated Emissions	47 CFR Part 15, Subpart C 15.249	ANSI C63.10 (2013) Section 6.4&6.5&6.6	47 CFR Part 15, Subpart C 15.209 & 15.249 (a),(d)	Pass





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4 General Information

4.1 General Description of E.U.T.

Product Description:	Fixed product with 902MHz-928MHz function
EUT Power Supply:	DC 4.5V By 3*AA size batteries
Test Voltage:	DC 4.5V

4.2 Technical Specifications

Operation Frequency:	902.3-914.9MHz
Modulation Technique:	Lora
Spectrum Spread Technology:	Frequency Hopping Spread Spectrum (FHSS)
Channel Space:	200KHz
Number of Channel:	64
Antenna Type	Dipole Antenna
Antenna Gain:	1dBi

4.3 Description of Support Units

The EUT has been tested as an independent unit.

4.4 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

4.5 Test Location

All tests were performed at:

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

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

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SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
Testing Center E&E Lab

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4.6 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 17025:2017 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.

• **A2LA (Certificate No. 6332.01)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

• **FCC (Designation Number: CN1301)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

• **ISED (CAB Identifier: CN0020)**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory Company Number: 8617A

• **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-13868, C-14336, T-12221, G-10830 respectively.

4.7 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Occupied Bandwidth	3%
2	RF Radiated Power	5.1dB (Below 1GHz)
		4.9dB (Above 1GHz)
3	Radiated Spurious Emission Test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
4	Temperature Test	1°C
5	Humidity Test	3%
6	Supply Voltages	1.5%
7	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.



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5 Equipments Used during Test

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Radiated Test					
EMI test Receiver	R&S	ESU40	SHEM051-1	2020-12-20	2021-12-19
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2020-12-20	2021-12-19
Communication Tester	R&S	CMW500	SHEM183-2	2021-04-16	2022-04-15
Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519	SHEM135-1	2020-12-20	2021-12-19
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM048-1	2019-10-14	2021-10-13
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM202-1	2020-04-30	2022-04-29
Horn Antenna (1-18GHz)	Schwarzbeck	HF906	SHEM009-1	2018-10-24	2021-10-23
Horn Antenna (1-18GHz)	Schwarzbeck	BBHA9120D	SHEM050-1	2019-10-14	2021-10-13
Horn Antenna (14-40GHz)	Schwarzbeck	BBHA 9170	SHEM049-1	2018-10-31	2021-10-30
Pre-Amplifier	HP	8447D	SHEM236-1	2021-05-27	2022-05-26
Pre-Amplifier	PANSHAN	LNA 1-18G	SHEM235-1	2021-05-27	2022-05-26
High-amplifier (14-40GHz)	Schwarzbeck	10001	SHEM049-2	2020-12-20	2021-12-19
Band Filter	LORCH	9BRX-875/X150	SHEM156-1	/	/
Band Filter	LORCH	13BRX-1950/X500	SHEM083-2	/	/
Band Filter	LORCH	5BRX-2400/X200	SHEM155-1	/	/
Band Filter	LORCH	5BRX-5500/X1000	SHEM157-2	/	/
High pass Filter	Wainwright	WHK3.0/18G	SHEM157-1	/	/
High pass Filter	Wainwright	WHKS1700	SHEM157-3	/	/
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020-05-25	2023-05-24
RE test Cable	/	RE01, RE02, RE06	/	2020-12-20	2021-12-19
Test software	ESE	E3	Version: 6.111221a	/	/



6 Test Results

6.1 E.U.T. test conditions

Test Voltage: DC 4.5V

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

6.2 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 dipole antenna and no consideration of replacement. The gain of the antenna is less than 1dBi.

Antenna location: Refer to Appendix (Internal Photos)



6.3 Field Strength of the Fundamental Signal

Test Site: Measurement Distance: 3m

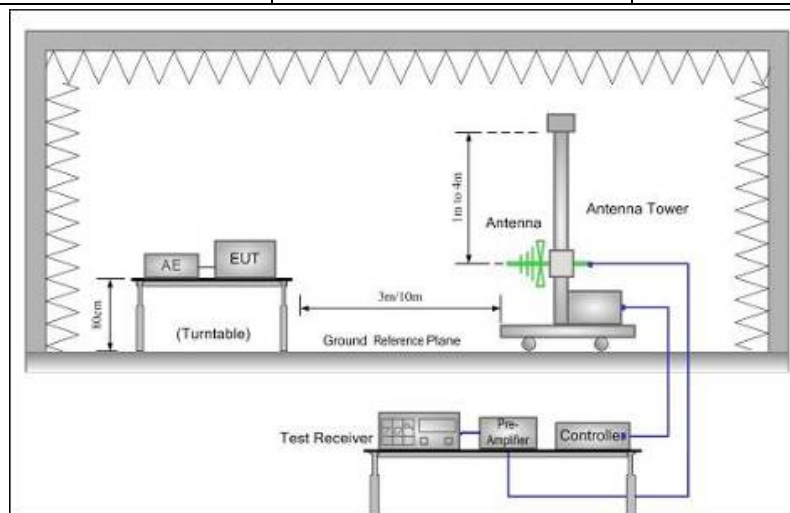
Receiver Setup:

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:

- The EUT was placed on the top of a rotating table 0.8 meters above the ground at a 3 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.
- The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.
- 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.
- 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.
- The test-receiver system was set to Peak Detect Function and Specified Bandwidth with Maximum Hold Mode.
- 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



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Measurement Data

Peak value:

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
902.3	113.30	-3.98	109.32	114	-4.68	Peak	Horizontal
	96.62	-3.98	92.64	94	-1.36	Avg	Horizontal
	102.08	-3.98	98.10	114	-15.90	Peak	Vertical
	85.35	-3.98	81.37	94	-12.63	Avg	Vertical

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
908.5	112.50	-3.65	108.85	114	-5.15	Peak	Horizontal
	95.51	-3.65	91.86	94	-2.14	Avg	Horizontal
	102.07	-3.65	98.42	114	-15.58	Peak	Vertical
	84.50	-3.65	80.85	94	-13.15	Avg	Vertical

Frequency (MHz)	Read Level (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit Line (dBuV/m)	Over Limit (dB)	Detector	Polarization
914.9	110.80	-3.42	107.38	114	-6.62	Peak	Horizontal
	96.01	-3.42	90.59	94	-3.41	Avg	Horizontal
	102.68	-3.42	99.26	114	-14.74	Peak	Vertical
	85.10	-3.42	81.68	94	-12.32	Avg	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 Average Limit, the Average test doesn't perform for this submission.



**6.4 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

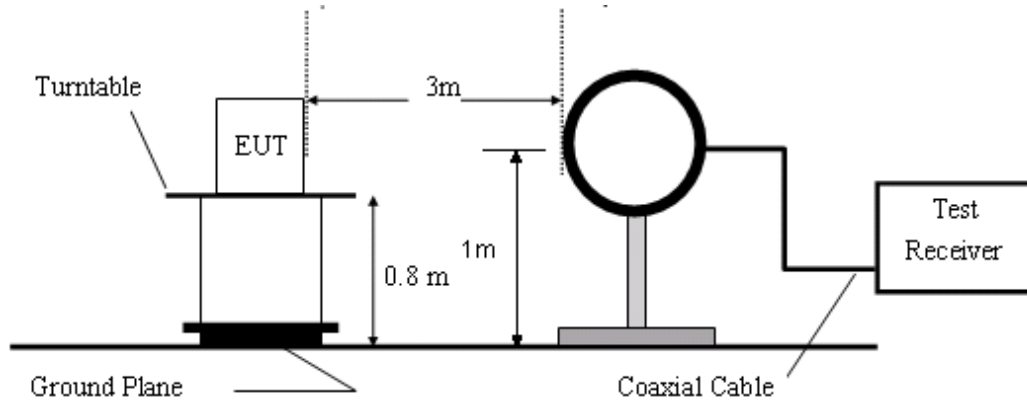


Figure1. Below 30MHz radiated emissions test configuration

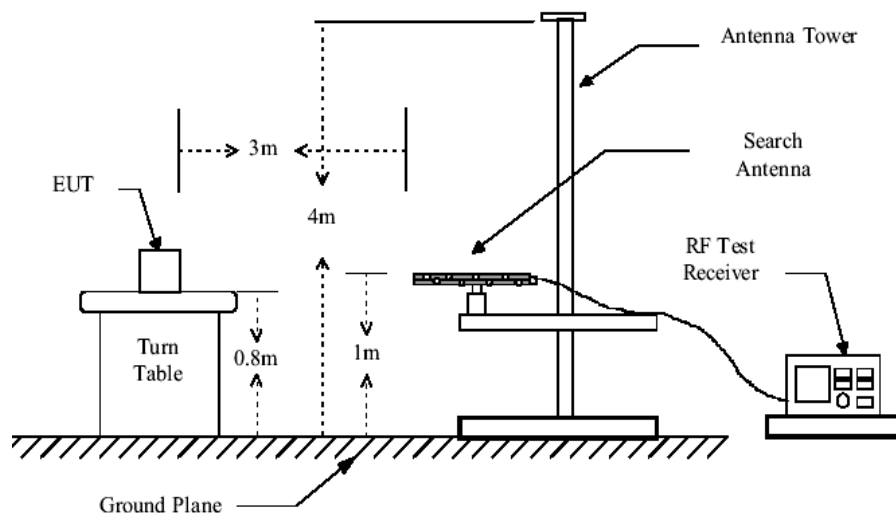


Figure2. 30MHz to 1GHz radiated emissions test configuration

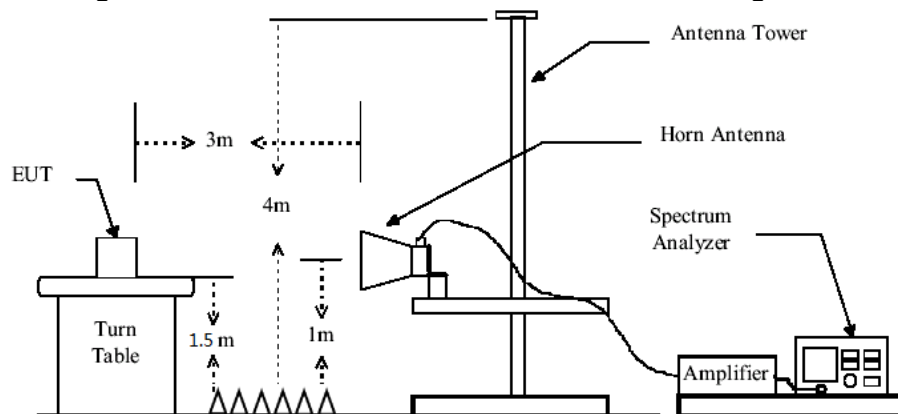


Figure3. Above 1GHz radiated emissions test configuration



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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

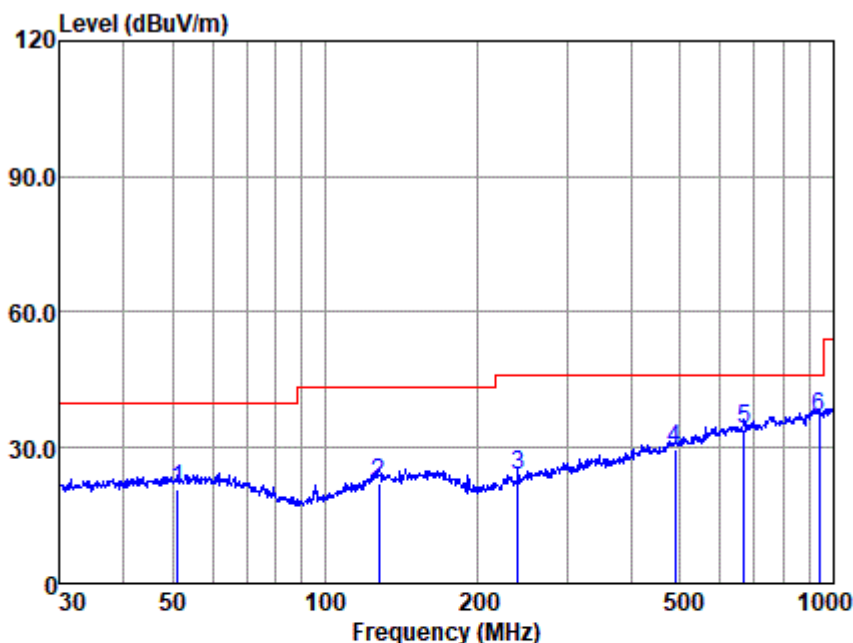


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6.4.1 Radiated Spurious Emissions

30MHz-1GHz: 902.3MHz

Vertical:



Antenna Polarity :VERTICAL

EUT/Project :8961CR

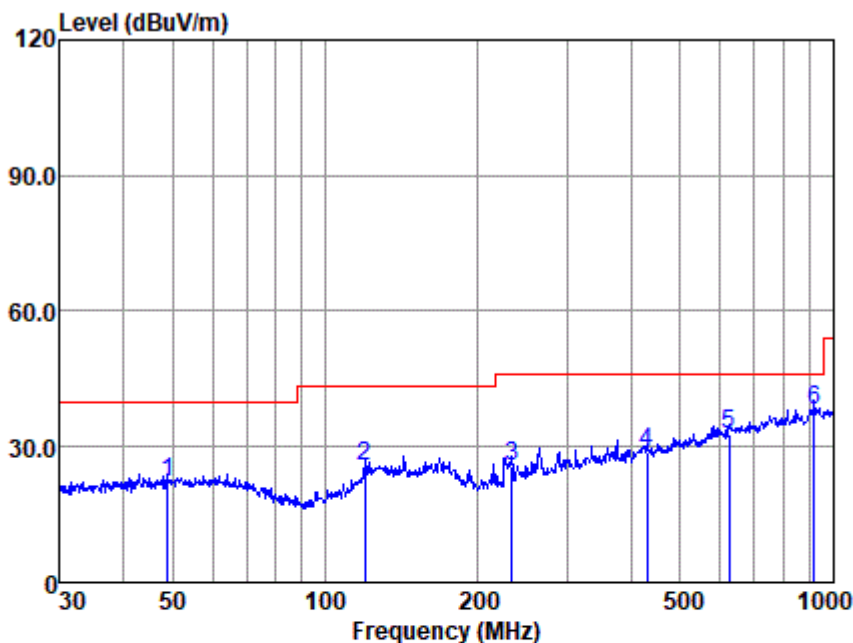
	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	51.121	38.37	13.63	1.02	32.01	21.01	40.00	-18.99	QP
2	127.218	40.69	11.59	1.70	31.66	22.32	43.50	-21.18	QP
3	239.147	41.59	10.79	2.51	31.10	23.79	46.00	-22.21	QP
4	489.027	39.00	17.49	3.48	30.49	29.48	46.00	-16.52	QP
5	668.142	40.52	20.49	4.13	30.94	34.20	46.00	-11.80	QP
6	938.833	40.17	23.88	4.89	32.31	36.63	46.00	-9.37	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



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Attention: To check the authenticity of testing /inspection report & certificate, please contact us at telephone: (86-755) 8307 1443, or email: CN.Doccheck@sgs.com

Horizontal:



Antenna Polarity :HORIZONTAL

EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	49.014	39.34	13.66	0.99	32.06	21.93	40.00	-18.07	QP
2	119.856	44.48	11.00	1.65	31.60	25.53	43.50	-17.97	QP
3	233.349	44.17	10.30	2.47	31.09	25.85	46.00	-20.15	QP
4	429.523	39.44	16.41	3.25	30.34	28.76	46.00	-17.24	QP
5	625.078	39.92	19.97	3.98	30.90	32.97	46.00	-13.03	QP
6	919.287	41.51	23.64	4.85	31.78	38.22	46.00	-7.78	QP

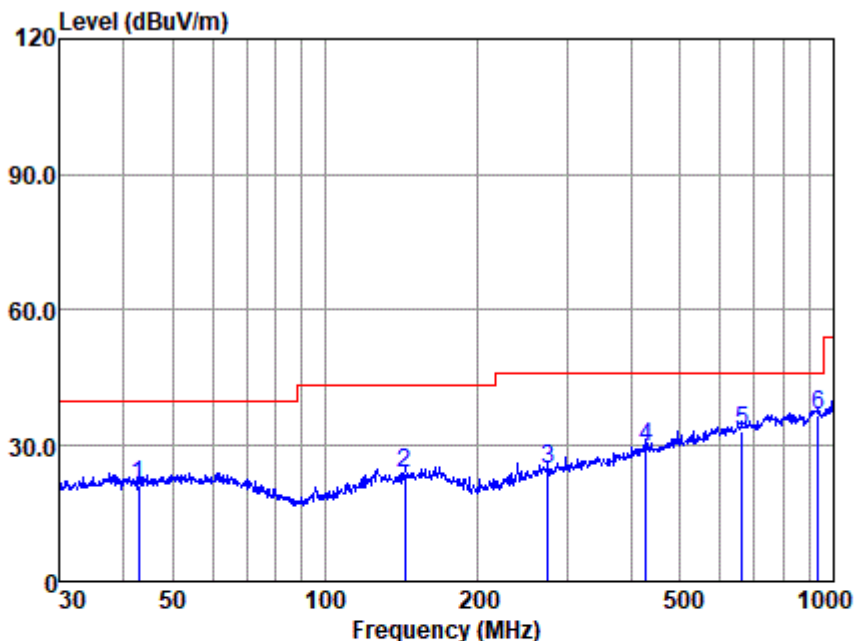
Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor





908.5MHz

Vertical:



Antenna Polarity :VERTICAL

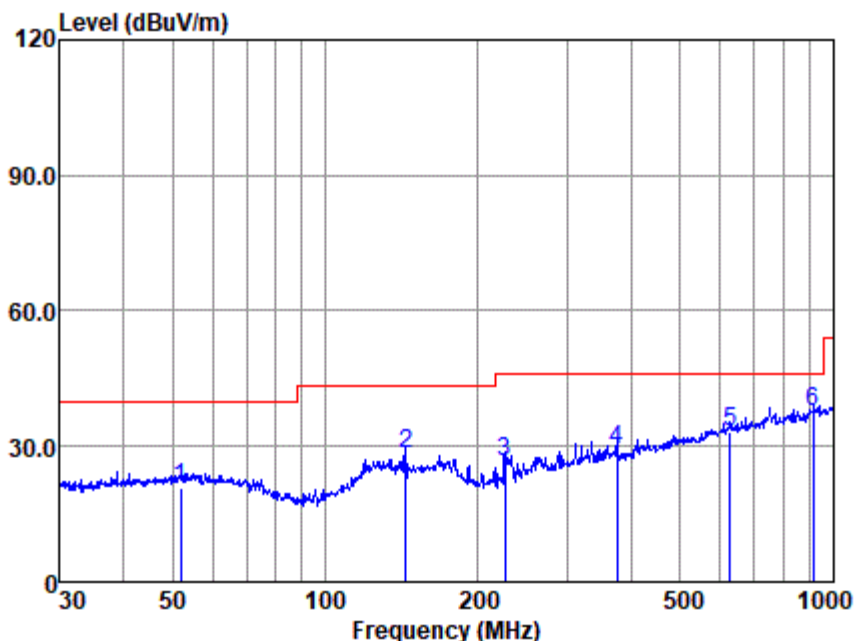
EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	42.900	38.95	13.38	0.92	32.10	21.15	40.00	-18.85	QP
2	143.326	40.91	12.64	1.82	31.64	23.73	43.50	-19.77	QP
3	275.157	40.56	12.70	2.73	31.35	24.64	46.00	-21.36	QP
4	428.019	40.41	16.38	3.22	30.35	29.66	46.00	-16.34	QP
5	661.151	39.80	20.42	4.10	30.92	33.40	46.00	-12.60	QP
6	935.546	40.01	23.84	4.89	32.05	36.69	46.00	-9.31	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



Horizontal:



Antenna Polarity :HORIZONTAL

EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	51.843	38.14	13.58	1.03	31.97	20.78	40.00	-19.22	QP
2	144.335	45.32	12.68	1.82	31.60	28.22	43.50	-15.28	QP
3	226.099	45.79	9.67	2.42	31.12	26.76	46.00	-19.24	QP
4	375.939	42.79	15.03	3.06	31.46	29.42	46.00	-16.58	QP
5	627.274	40.32	20.00	4.01	30.91	33.42	46.00	-12.58	QP
6	916.069	40.81	23.60	4.85	31.82	37.44	46.00	-8.56	QP

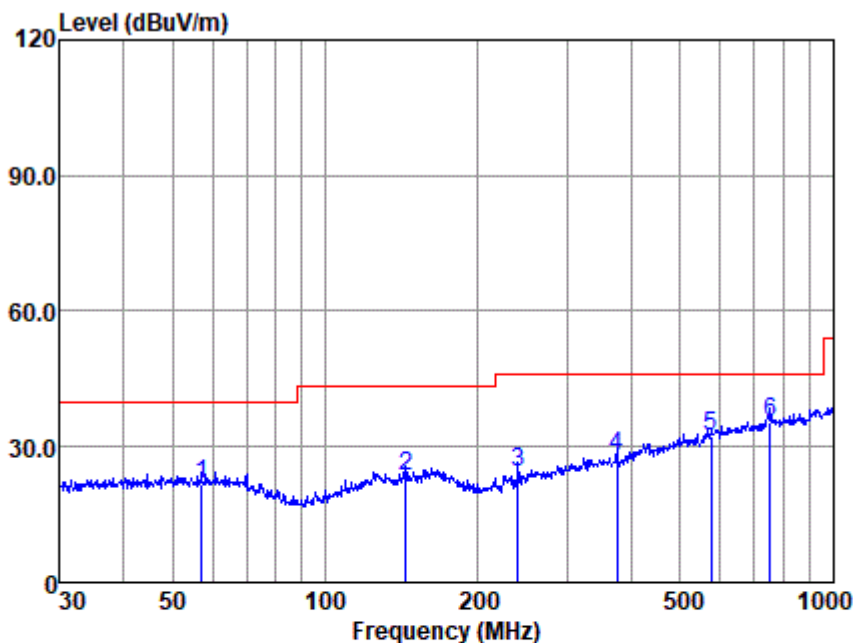
Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor





914.9MHz

Vertical:



Antenna Polarity :VERTICAL

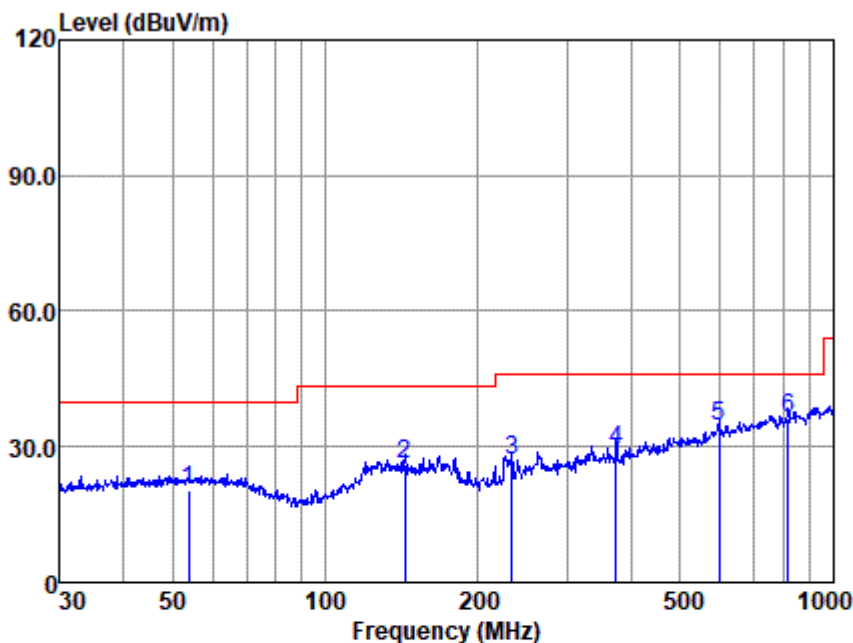
EUT/Project :8961CR

	Freq	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
	MHz	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	56.991	38.97	13.27	1.08	31.78	21.54	40.00	-18.46	QP
2	143.830	40.68	12.66	1.82	31.62	23.54	43.50	-19.96	QP
3	239.987	42.25	10.86	2.51	31.10	24.52	46.00	-21.48	QP
4	375.939	41.08	15.03	3.06	31.46	27.71	46.00	-18.29	QP
5	574.626	39.93	18.95	3.83	30.57	32.14	46.00	-13.86	QP
6	752.743	39.74	22.11	4.37	30.79	35.43	46.00	-10.57	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



Horizontal:



Antenna Polarity :HORIZONTAL

EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Emission Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	53.693	37.82	13.47	1.04	31.89	20.44	40.00	-19.56	QP
2	143.326	43.43	12.64	1.82	31.64	26.25	43.50	-17.25	QP
3	233.349	45.15	10.30	2.47	31.09	26.83	46.00	-19.17	QP
4	374.623	42.68	15.00	3.06	31.45	29.29	46.00	-16.71	QP
5	597.223	41.75	19.55	3.89	30.83	34.36	46.00	-11.64	QP
6	815.968	41.45	22.40	4.55	31.99	36.41	46.00	-9.59	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamplifier Factor

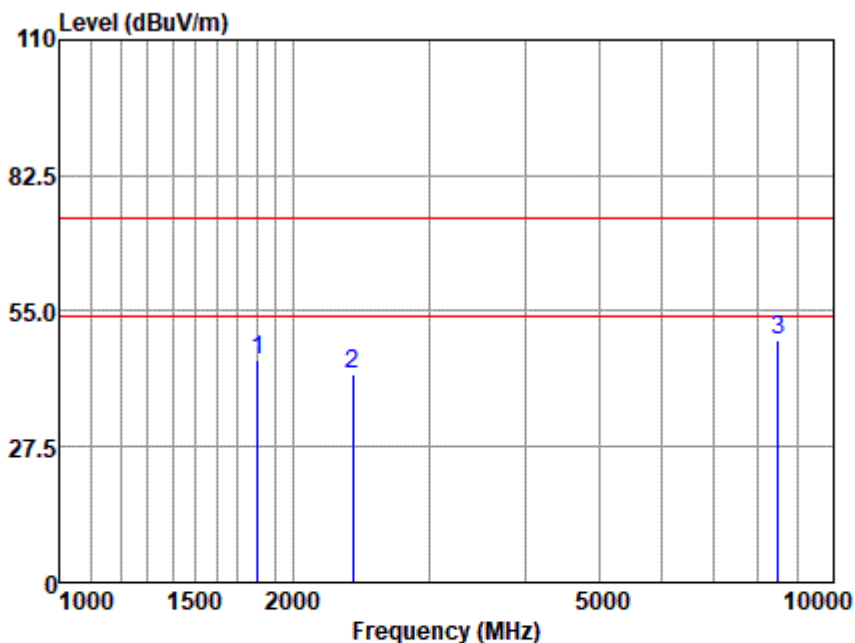




Above 1GHz:

902.3MHz:

Vertical:



Antenna Polarity :VERTICAL

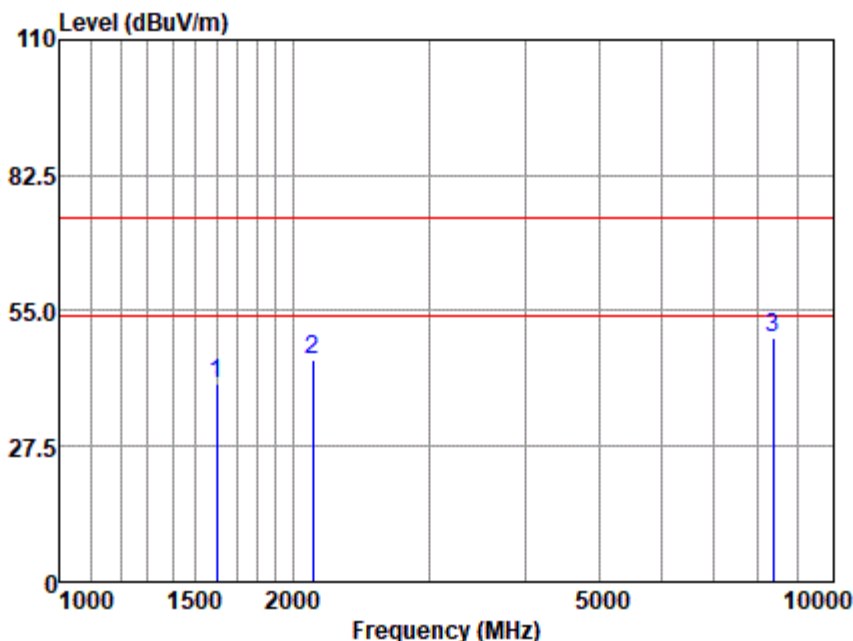
EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1803.018	53.72	25.66	7.05	41.30	45.13	74.00	-28.87	Peak
2	2393.316	49.10	26.83	8.46	42.38	42.01	74.00	-31.99	Peak
3	8491.805	38.92	36.69	15.56	42.00	49.17	74.00	-24.83	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



Horizontal:



Antenna Polarity :HORIZONTAL

EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1595.879	49.56	25.31	6.53	41.23	40.17	74.00	-33.83	Peak
2	2123.244	52.69	26.09	7.89	41.67	45.00	74.00	-29.00	Peak
3	8375.293	39.83	36.54	15.54	42.19	49.72	74.00	-24.28	Peak

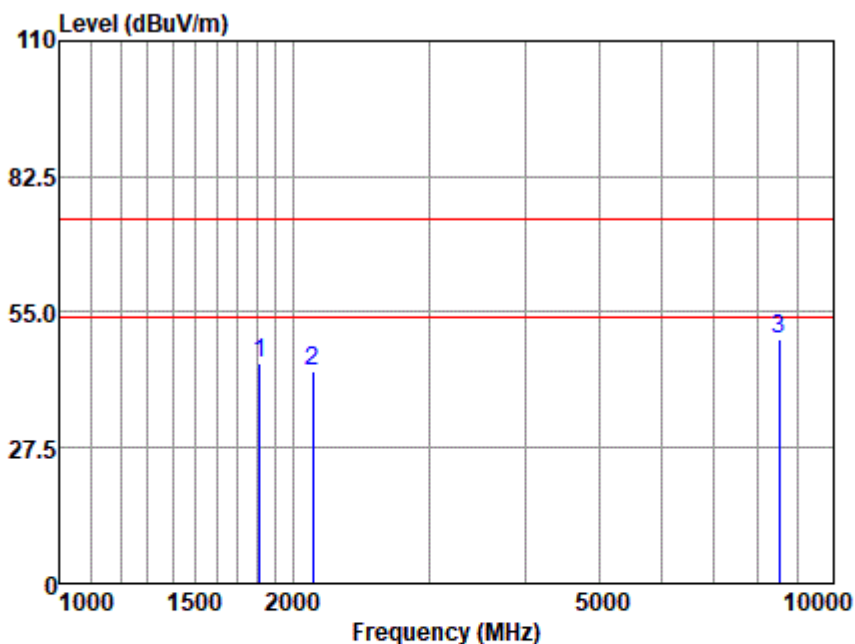
Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor





908.5MHz:

Vertical:



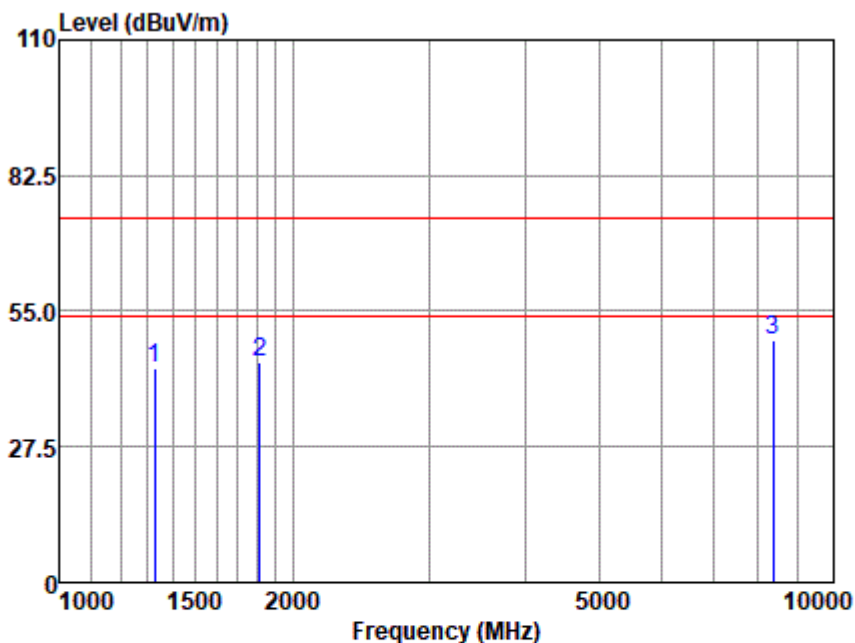
Antenna Polarity :VERTICAL
EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1815.516	53.17	25.68	7.12	41.30	44.67	74.00	-29.33	Peak
2	2123.244	50.81	26.09	7.89	41.67	43.12	74.00	-30.88	Peak
3	8511.381	39.21	36.72	15.56	42.03	49.46	74.00	-24.54	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



Horizontal:



Antenna Polarity :HORIZONTAL

EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1327.394	54.18	24.64	5.80	41.17	43.45	74.00	-30.55	Peak
2	1815.516	53.19	25.68	7.12	41.30	44.69	74.00	-29.31	Peak
3	8375.293	39.40	36.54	15.54	42.19	49.29	74.00	-24.71	Peak

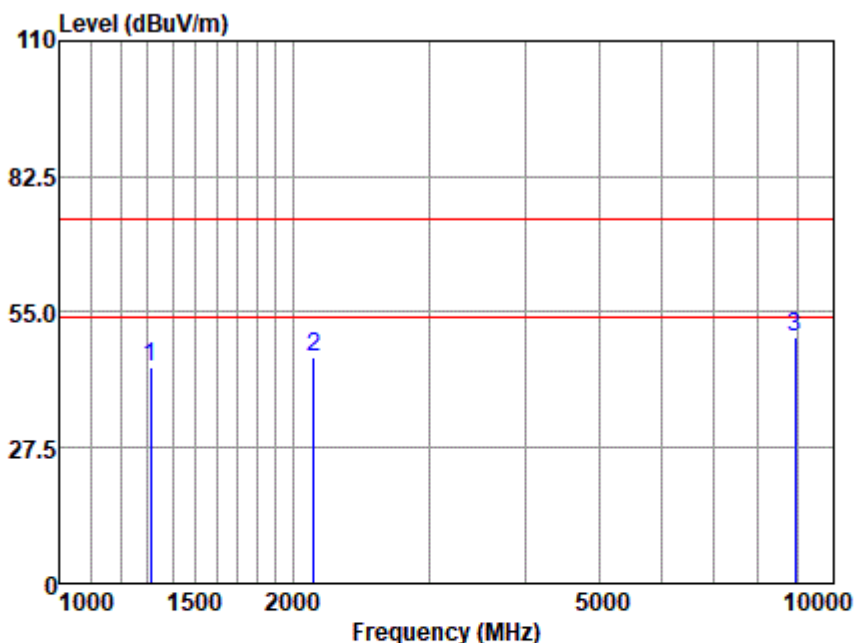
Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamplifier Factor





914.9MHz:

Vertical:



Antenna Polarity :VERTICAL

EUT/Project :8961CR

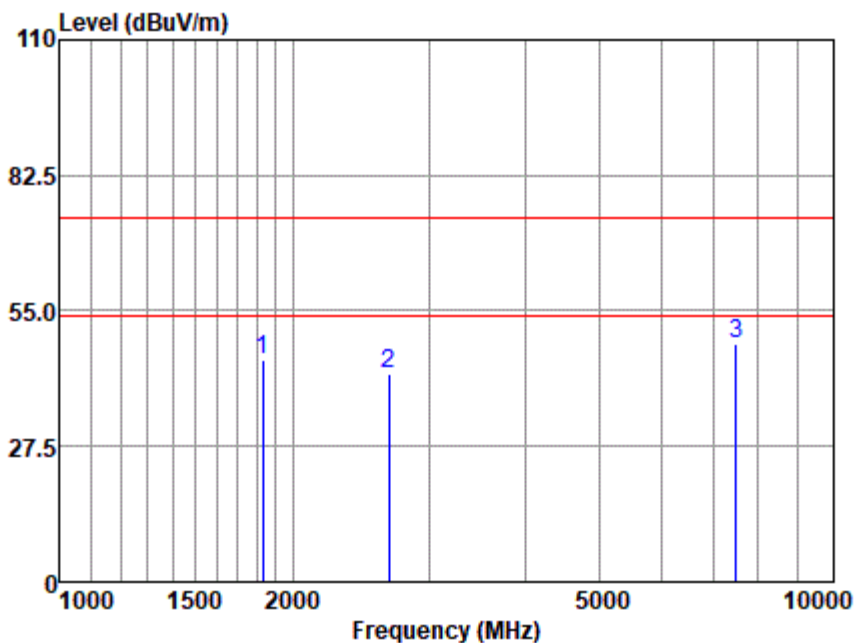
	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 1312.200	54.63	24.62	5.80	41.17	43.88	74.00	-30.12	Peak
2 2133.045	53.50	26.12	7.89	41.68	45.83	74.00	-28.17	Peak
3 8933.055	39.69	37.13	15.86	42.63	50.05	74.00	-23.95	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor





Horizontal:



Antenna Polarity :HORIZONTAL

EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	1828.100	53.42	25.70	7.12	41.30	44.94	74.00	-29.06	Peak
2	2660.725	47.69	28.05	8.98	42.40	42.32	74.00	-31.68	Peak
3	7498.942	40.00	35.72	15.36	42.80	48.28	74.00	-25.72	Peak

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

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.

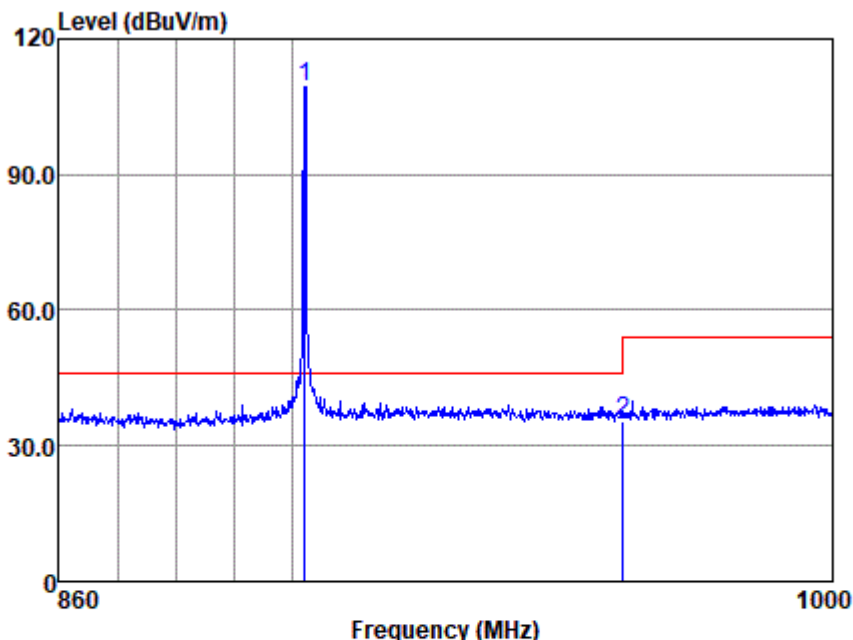
All frequencies within the "Restricted bands" have been evaluated to compliance. Section 15.205 Restricted bands of operation.



6.4.2 Radiated Band edge

902.3MHz

Horizontal



Antenna Polarity :HORIZONTAL

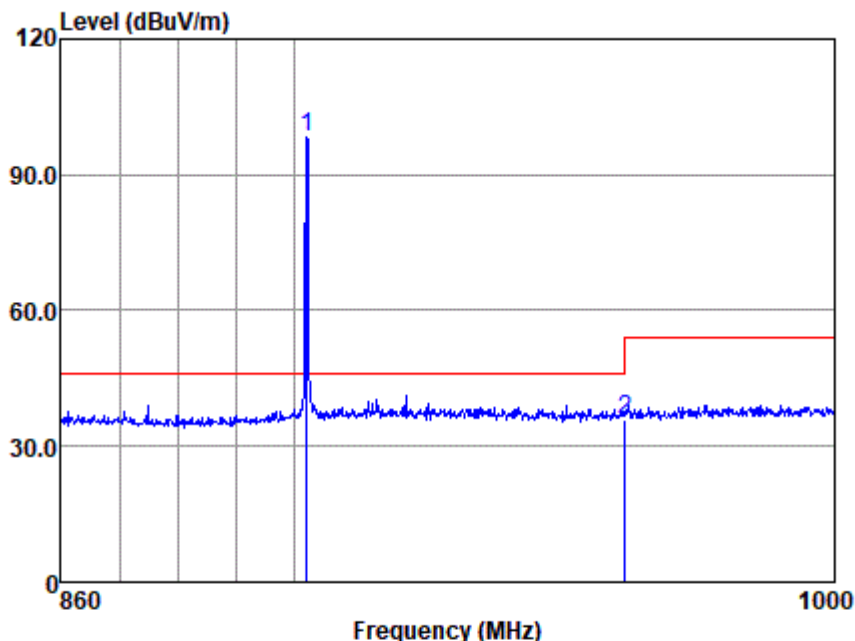
EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	902.252	113.30	23.44	4.81	32.23	109.32	46.00	63.32	Peak
2	960.000	39.07	24.00	4.96	32.74	35.29	46.00	-10.71	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



Vertical



Antenna Polarity :VERTICAL

EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	902.252	102.08	23.44	4.81	32.23	98.10	46.00	52.10	Peak
2	960.000	39.85	24.00	4.96	32.74	36.07	46.00	-9.93	QP

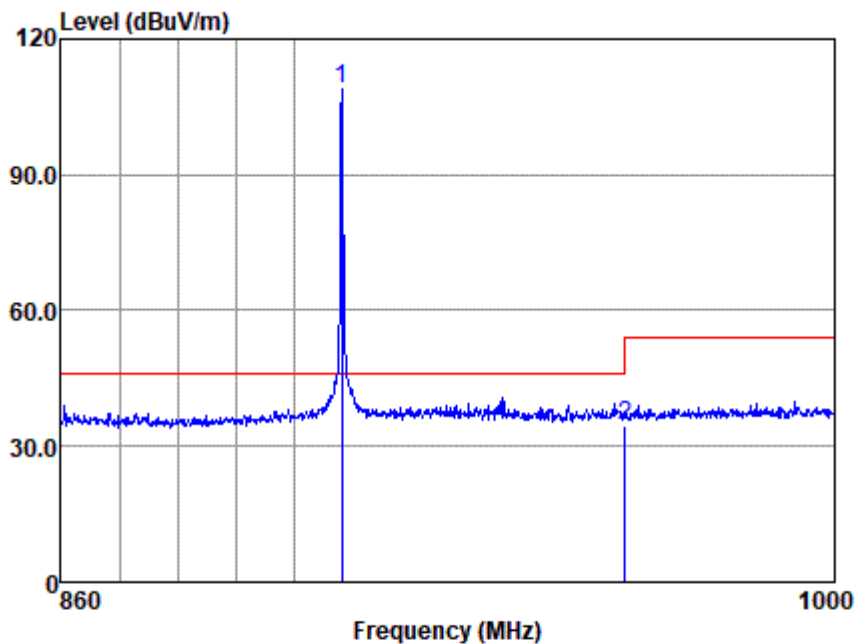
Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor





908.5MHz

Horizontal



Antenna Polarity :HORIZONTAL

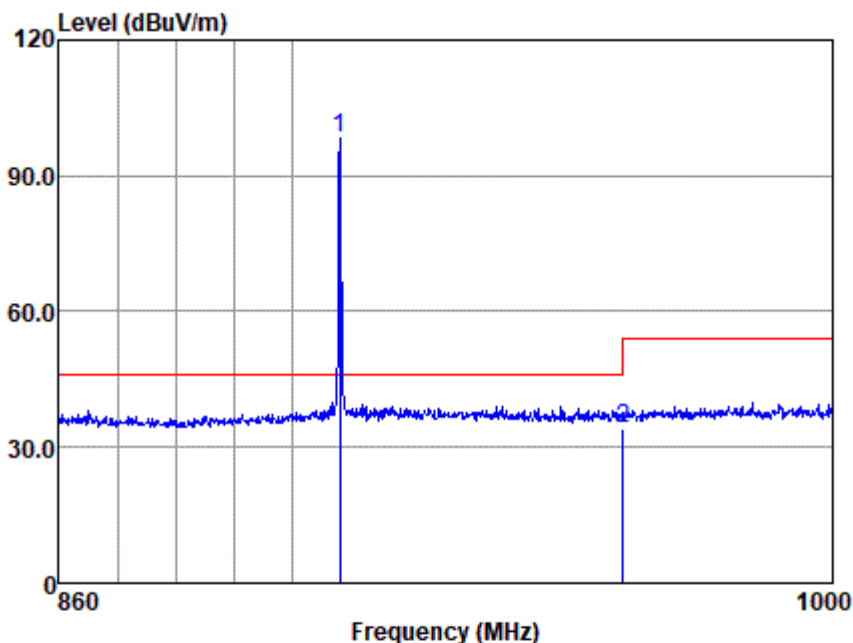
EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier Factor	Emission Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	908.534	112.50	23.52	4.81	31.98	108.85	46.00	62.85	Peak
2	960.000	38.47	24.00	4.96	32.74	34.69	46.00	-11.31	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamplifier Factor



Vertical



Antenna Polarity :VERTICAL

EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamplifier	Emission Level	Limit	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	908.534	102.07	23.52	4.81	31.98	98.42	46.00	52.42	Peak
2	960.000	38.00	24.00	4.96	32.74	34.22	46.00	-11.78	QP

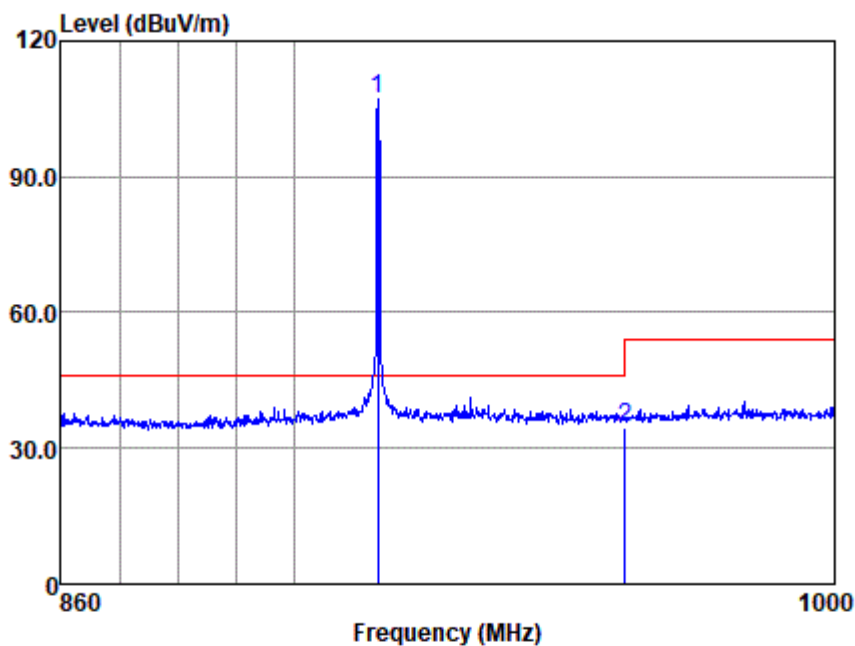
Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamplifier Factor





914.9MHz

Horizontal



Antenna Polarity :HORIZONTAL

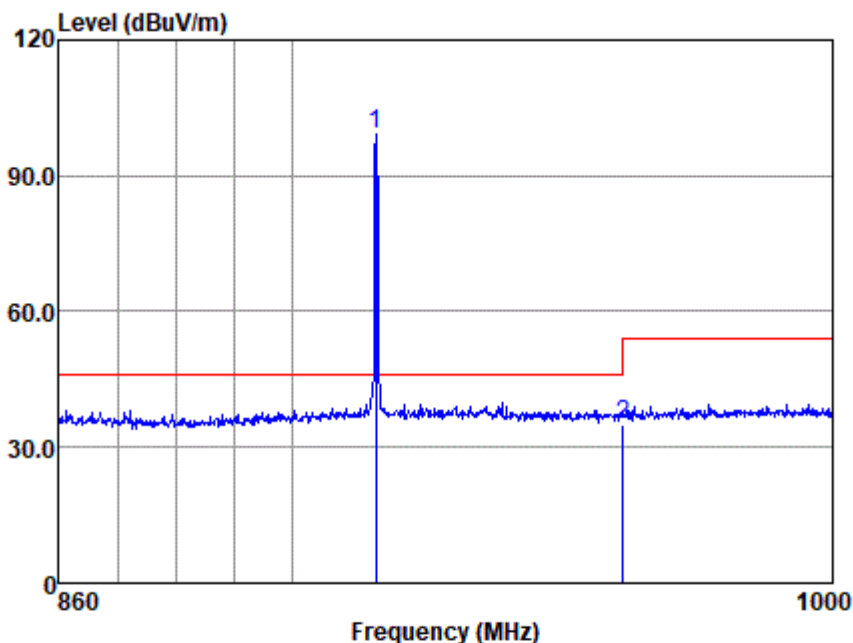
EUT/Project :8961CR

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	914.859	110.80	23.60	4.85	31.87	107.38	46.00	61.38	Peak
2	960.000	38.22	24.00	4.96	32.74	34.44	46.00	-11.56	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor



Vertical



Antenna Polarity :VERTICAL

EUT/Project :8961CR

	Read	Antenna	Cable	Preamp	Emission	Limit	Over	
Freq	Level	Factor	Loss	Factor	Level	Line	Limit	Remark
-----	-----	-----	-----	-----	-----	-----	-----	-----
MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1 914.859	102.68	23.60	4.85	31.87	99.26	46.00	53.26	Peak
2 960.000	38.61	24.00	4.96	32.74	34.83	46.00	-11.17	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor





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
10.495 - 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			



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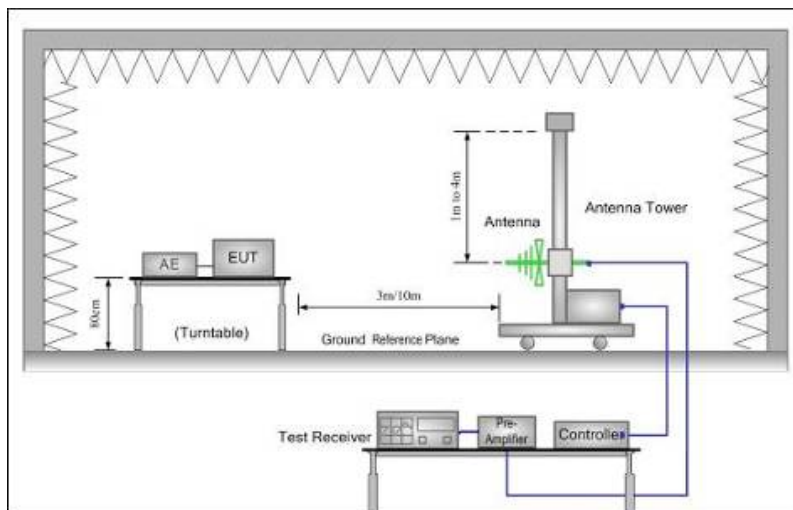
SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.
 Testing Center EMC Laboratory

NO.588 West Jindu Road, Songjiang District, Shanghai, China 201612
 中国·上海·松江区金都西路588号 邮编: 201612

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 t(86-21) 61915666 f(86-21) 61915678 e sgs.china@sgs.com

6.5 20dB Bandwidth

Test Configuration:



Test Procedure:

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

Limit:

N/A

Test Result:

Pass

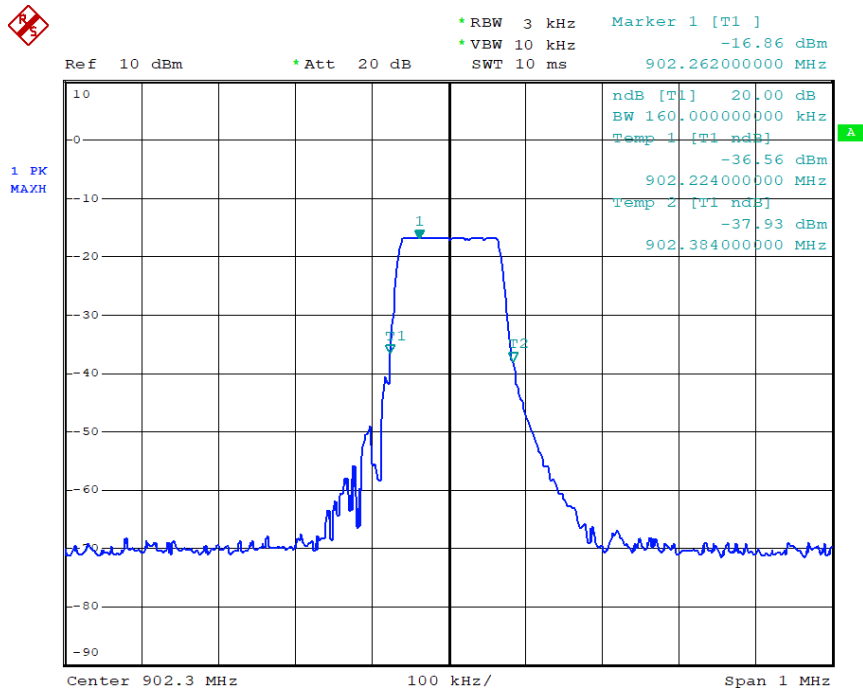
Test Data:

Frequency (MHz)	Bandwidth (kHz)	Result
902.3	160.00	PASS
908.5	162.00	PASS
914.9	162.00	PASS



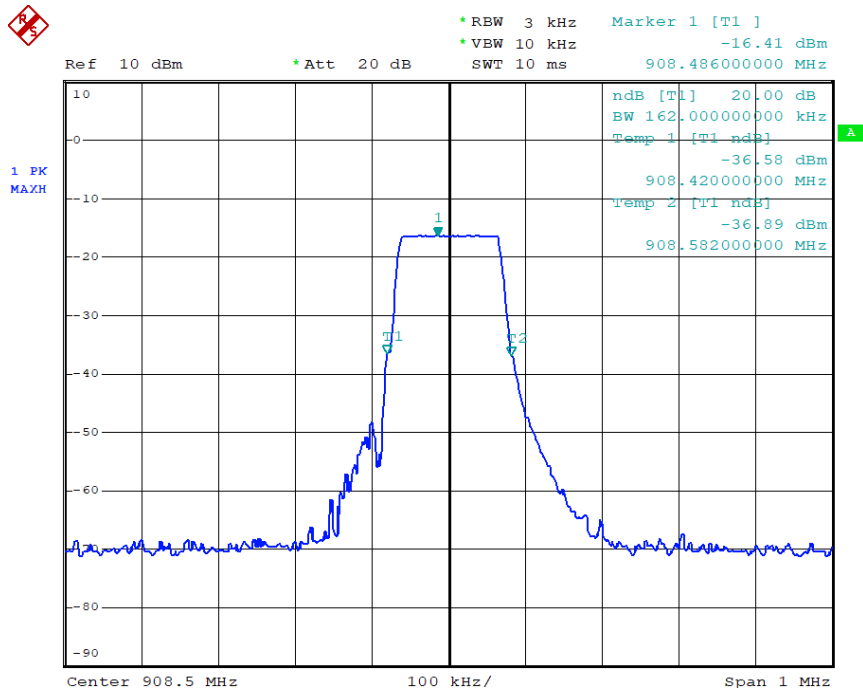


Test plot as follows:
902.3MHz:



Date: 9.SEP.2021 16:12:34

908.5MHz:



Date: 9.SEP.2021 16:13:55

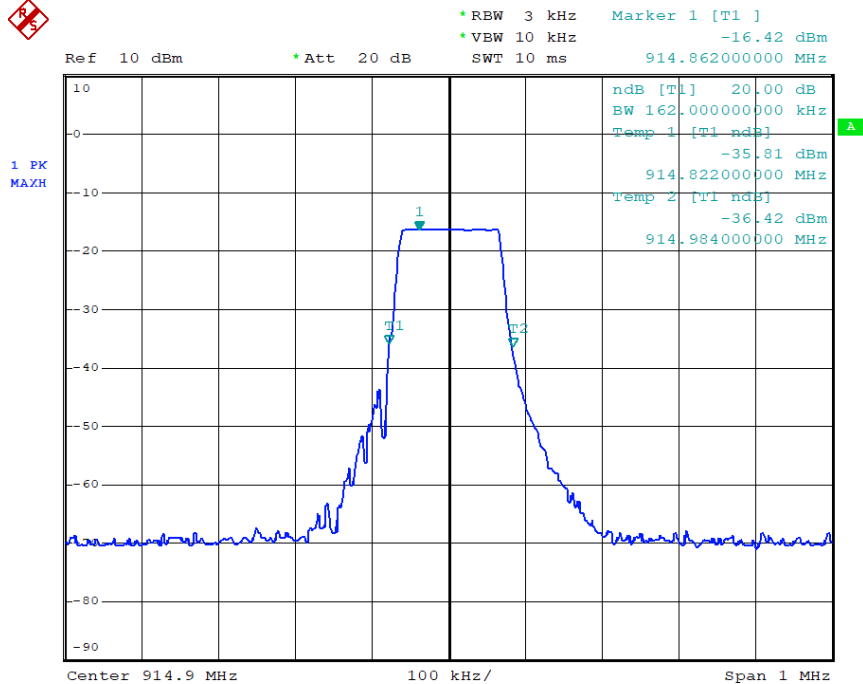


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7 Test Setup Photographs

Refer to the < Test Setup photos-FCC>.

8 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

--End of the Report--

