Ke Mei Ou Lab Corp.

2013-2016, 20th Floor, Business Center, JiahuiXin Cheng, No 3027,
Shen Nan Road, Fu Tian, Shen Zhen, Guang Dong, P. R. China
Tel: + 86 755 83642690 Fax: + 86 755 83297077
www.kmolab.com

FCC TEST REPORT

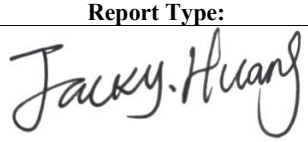
Under
FCC Part 15D for Isochronous UPCS Devices 1920–1930 MHz
☒PUT_Part 15 Unlicensed PCS portable Tx worn on body

Prepared For :

Aiphone Co., Ltd.

2-18, Jinno-cho, Atsuta-ku, Nagoya, Aichi, 456-8666, Japan

FCC ID: 2ALNEWL1MEE1
EUT: Wireless Video Intercom - Master Station
Model: WL-1ME.E1

July 28, 2018 **Issue Date:**
Original Report **Report Type:**
 **Test Engineer:** Jacky Huang
 **Review By:** Apollo Liu / Manager

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Report Revision History

Report #	Version	Description	Issued Date
KSZ2018062101JFP	Rev.01	Initial issue of report	July 28, 2018

1. General Information

1. 1 Notes

The test results of this report relate exclusively to the test item specified in 1.6. The KMO Lab does not assume responsibility for any conclusions and generalizations drawn from the test results with regard to other specimens or samples of the type of the equipment represented by the test item. The test report may only be reproduced or published in full. Reproduction or publication of extracts from the report requires the prior written approval of the KMO Lab.

1. 2 Testing Laboratory

Test Firm Name:	**Ke Mei Ou Lab Co., Ltd.**
Test Firm Address:	2013-2016, 20th Floor, Business Center, Jiahui Xin Cheng, No 3027, Shen Nan Road, Fu Tian, Shen Zhen, Guang Dong, P. R. China
FCC Designation Number:	CN1532
Test Firm Registration Number:	344480
Internet:	www.kmolab.com
Email:	kmo@kmolab.com
ANSI-ASQ National Accreditation Board/ACLASS ISO/IEC 17025 Accredited Lab for telecommunication standards. The Registration Number is AT-1532. The testing quality system meets with ISO/IEC-17025 requirements, This approval results is accepted by MRA of ILAC.	

1. 3 Details of Applicant

Name: **Aiphone Co., Ltd.**
Address: **2-18, Jinno-cho, Atsuta-ku, Nagoya, Aichi, 456-8666, Japan**

1. 4 Application Details

Date of Receipt of Application: June 21, 2018
Date of Receipt of Test Item: June 21, 2018
Date of Test : June 21~July 28, 2018

1. 5 Details of Manufacturer

Name: **Shenzhen Guo Wei Electronics Co., Ltd.**
Address: **No. 3038, Luosha Road, Liantang, Luohu District, Shenzhen, Guangdong, China**

1. 6 Test Item

EUT Feature	
EUT Description:	Wireless Video Intercom - Master Station
Brand Name:	Aiphone
Model Name:	WL-1ME.E1
EUT RF Technology:	☒PUT_Part 15 Unlicensed PCS portable Tx worn on body
HW Version:	REV.0.4
SW Version:	V6703USD
EUT Stage:	Identical Prototype
Note: The above EUT's information was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.	

Standard Product Specification	
Tx/Rx Frequency Range	1921.536~1928.448 MHz
Number of Channels	5
Carrier Frequency of Each Channel	0_1928.448; 1_1926.720; 2_1924.992; 3_1923.264; 4_1921.536
Antenna Type / Gain	Internal Antenna / gain Ant0_ 0dBi Ant1_ 0dBi
Type of Modulation	GFSK
EUT Operational Condition	☐ AC ☒ DC → ☒ From Battery → ☒ External AC adapter ☐ POE

Specification of Accessory				
☒**Rechargeable Battery(Ni-MH)**	**Brand Name**	N/A	**Model Name**	WLW-BT.E
	Power Rating	2.4V 2000mAh		
☒**AC/DC Adapter (US)**	**Brand Name**	Baolijin	**Model Name**	BLJ06W050040P2-U
	Power Rating	I/P: AC 100-240V~50/60Hz, 0.2; O/P:DC 5.0V /400mA		

1. 7 Applicable Standards

Applicable Standards
According to the specifications of the manufacturer, the EUT must comply with the requirements of the following standards: FCC Part 15, Subpart D ANSI C63.17-2013
Note: 1) All test items were verified and recorded according to the standards and without any deviation during the test. 2) This EUT has also been tested and complied with the requirements of FCC 15 Part 15, Subpart B, recorded in a separate test report.

2. Technical Test

2. 1 Summary of Test Results

The EUT has been tested according to the following specifications:

FCC Rule FCC Part15, Subpart D	Test Type	Result	Notes
15.19(a)(3)	Labeling requirements	PASS	Complies
15.317, 15.203	Antenna Requirement	PASS	Complies
15.107(a), 15.207(a)	Power Line Conducted Emission	PASS	Complies
15.319(b)	Digital Modulation Techniques	PASS	Complies
15.303	Channel Frequencies	PASS	Complies
15.319(f)	Automatic discontinuation of transmission	PASS	Complies
15.323(f)	Carrier frequency stability	PASS	Complies
15.323(e)	Frame repetition stability	PASS	Complies
15.323(e)	Frame period and jitter	PASS	Complies
15.323(a)	Emission Bandwidth	PASS	Complies
N/A	Occupied Bandwidth	PASS	Complies
15.323(d)	In-band emissions	PASS	Complies
15.323(d)	Out-of-band emissions	PASS	Complies
15.319(c)(e), 15.31(e)	Output Power and Antenna Gain	PASS	Complies
15.319(d)	Power Spectral Density	PASS	Complies
15.323(c)(2)(5)(9)	Monitoring threshold, Least interfered channel	PASS	Complies
15.323(c)(1)	Monitoring of intended transmit window and maximum reaction time	PASS	Complies
15.323(c)(7)	Threshold monitoring bandwidth	PASS	Complies
15.323(c)(1)(5)(7)	Reaction time and monitoring interval	PASS	Complies
15.323(c)(4)(6)	Access criteria test interval	PASS	Complies
15.323(c)(4)(6)	Access Criteria functional test	PASS	Complies
15.323(c)(4)	Acknowledgements	PASS	Complies
15.323(c)(3)	Transmission duration	PASS	Complies
15.323(c)(10)	Dual access criteria	PASS	Complies
15.323(c)(11)(12)	Alterative monitoring interval	N/A	N/A, see note 1
15.319(g) 15.109(a), 15.209(a)	Spurious Emissions (Radiated)	PASS	Complies

1.The client declares that the tested equipment does not implement this provision

2. 2 Measurement Uncertainty

Measurement	Frequency	Uncertainty
Conducted emissions	0.15MHz~30MHz	1.72
Radiated emissions	30MHz ~ 300MHz	3.88
Radiated emissions	300MHz ~1000MHz	3.86
Radiated emissions	>1000MHz	4.42

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

2. 3 Antenna Requirement

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.

The EUT no antenna connector for internal antenna. This is permanently attached antenna and meets the requirements of this section.

2. 4 Description of Tested Device

The EUT is Door Camera PP Unit 1, Monitor FP Unit 1: Type 1 Wireless Video Door Phone

2. 5 EUT Modification

No modification by test lab.

3. Technical Characteristics Test

3. 1 Conducted Emission Test

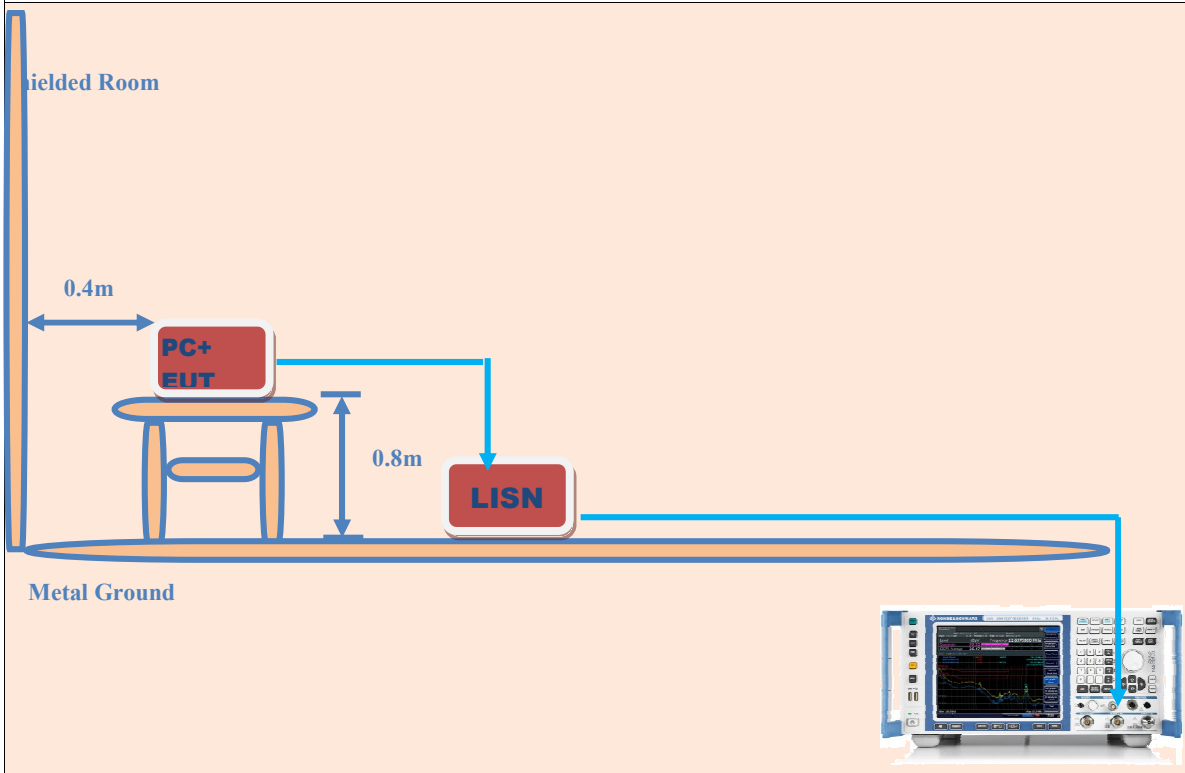
3.1.1 Test Equipment

Please refer to Section 6 this report.

3.1.2 Test Procedure

Test Method	
☒	The EUT and simulators are connected to the main power through a line impedance stabilization network (L.I.S.N.). This provides a 50 ohm/50uH coupling impedance for the measuring equipment. The peripheral devices are also connected to the main power through a LISN that provides a 50ohm/50uH coupling impedance with 50ohm termination. Both sides of A.C. line are checked for maximum conducted interference. In order to find the maximum emission., the relative positions of equipment and all of the interface cables must be changed according to ANSI C63.17:2013 on conducted measurement. Conducted emissions were invested over the frequency range from 0.15MHz to 30MHz using a receiver bandwidth of 9kHz.

3.1.3 Test Setup

Test Setup
AC Line Conducted Emissions

This test is applicable for radio equipment and/or ancillary equipment for fixed use powered by the AC mains. This test shall be performed on a representative configuration of the radio equipment, the associated ancillary equipment, or a representative configuration of the combination of radio and ancillary equipment. This test assesses the level of internally generated electrical noise present on the AC power input/output ports.

3.1.4 Configuration of the EUT

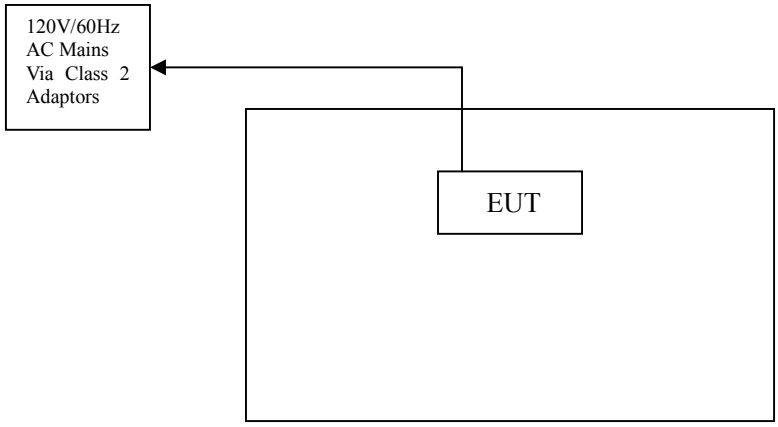
The EUT was configured according to ANSI C63.17:2013. All interface ports were connected to the appropriate peripherals. All peripherals and cables are listed below.

EUT Operation Test Setup	
Pre-Scan has been conducted to determine the worst-case mode from all possible combinations. Only the worst test mode data was reported.	
Pre-Scan Mode	
Test Mode	**Operating Description**
1	EUT power by Rechargeable Battery(Ni-MH)
2	EUT power by AC/DC Adapter (US)
AC Conducted Emissions → Final	
Test Mode	**Operating Description**
2	EUT power by AC/DC Adapter (US)
Conducted Emissions → Final	
Test Mode	**Operating Description**
1	EUT power by Rechargeable Battery(Ni-MH)
Radiated Emissions → Final	
Test Mode	**Operating Description**
1	EUT power by Rechargeable Battery(Ni-MH)
Note: The test modes were carried out for all operation modes (include link and idle). The final test mode of the EUT was the worst test mode for Mode 1, and its test data was reported.	

Support Unit				
Device	**Manufacturer**	**Model # Serial #**	**FCC ID**	**Cable**
-	-	-	-	-

3.1.5 EUT Operating Condition

Operating condition is according to ANSI C63.17:2013.
A. Setup the EUT and simulators as shown on follow.
B. Enable RF signal and confirm EUT active.
A. Modulate output capacity of EUT up to specification.



3.1.6 Conducted Power Line Emission Limits

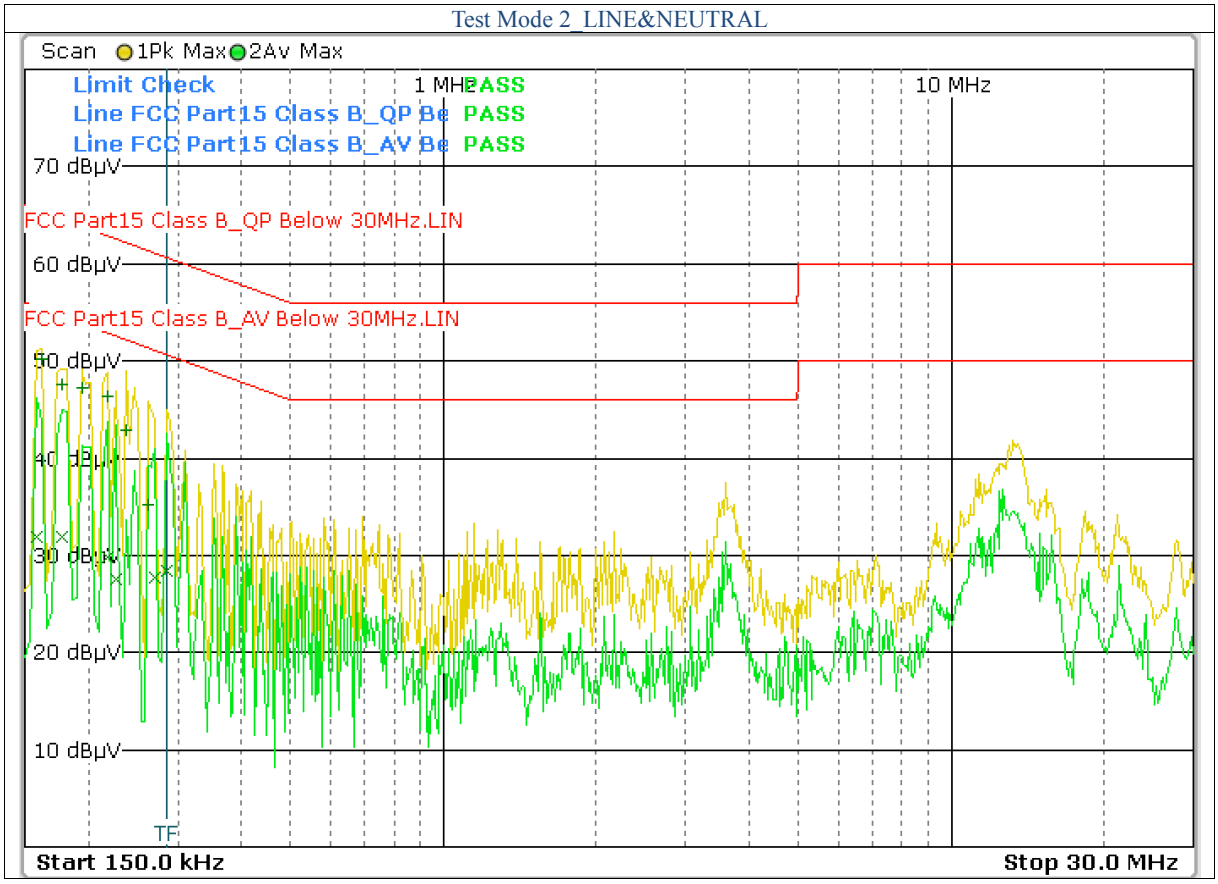
FCC Part 15.207(a)
RSS-213 Clause 6.3, RSS-GEN Clause 8.8

Frequency Range (MHz)	Class A QP/AV (dBuV)	Class B QP/AV (dBuV)
0.15 – 0.5	79/66	66 –56/56 –46
0.5 – 5.0	73/60	56/46
5.0 – 30	73/60	60/50

Note: In the above table, the tighter limit applies at the band edges.

3.1.7 Conducted Power Line Test Result

FP

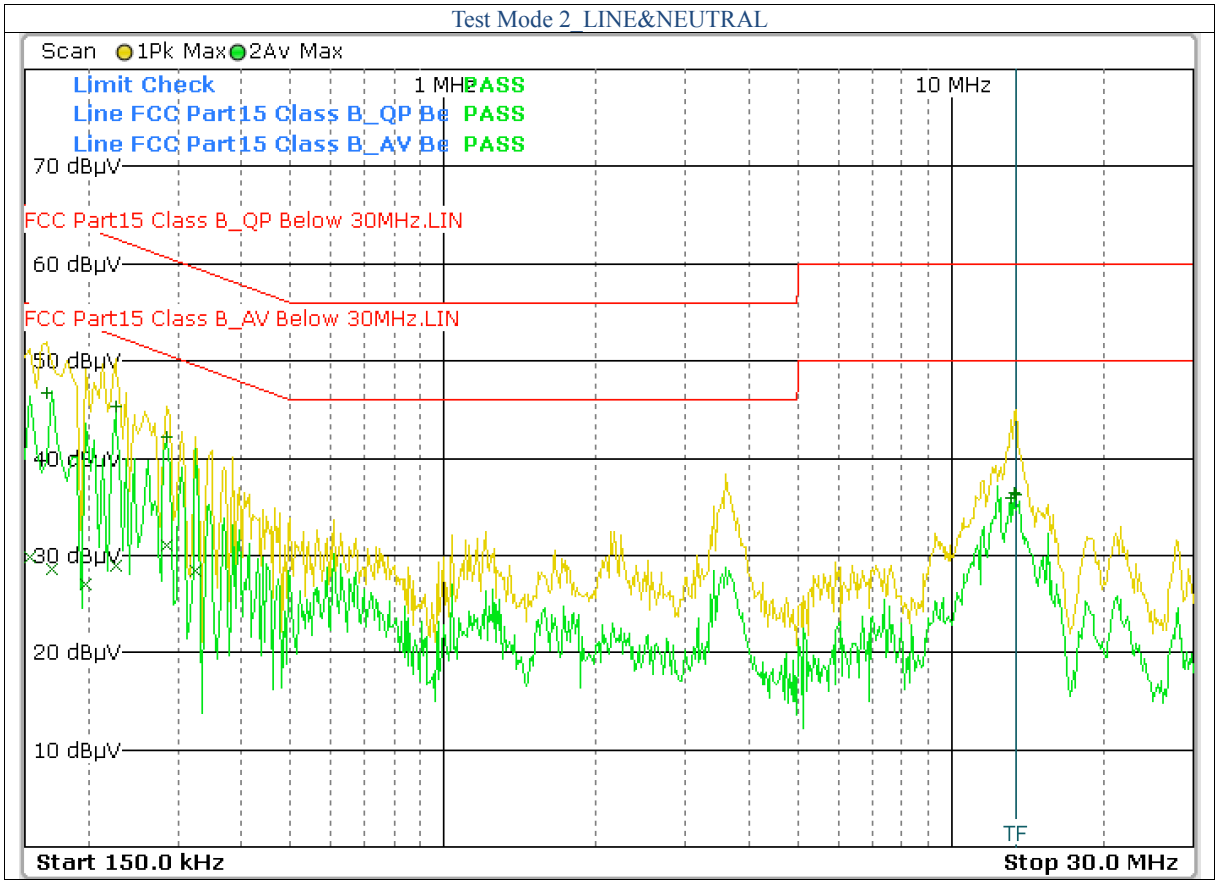


FCC15										
Frequency (MHz)	Read Level (dBuV) QP	Read Level (dBuV) AV	Factor (dB)	Emission (dBuV) QP	Emission (dBuV) AV	Line/ Neutral	Limit (dBuV) QP	Limit (dBuV) AV	Margin(dBuV) QP	Margin(dBuV) AV
0.162	39.91	21.65	10.30	50.21	31.95	Line	65.36	55.36	-15.15	-23.41
0.178	37.23	21.59	10.30	47.53	31.89	Line	64.58	54.58	-17.05	-22.69
0.194	37.01	22.27	10.30	47.31	32.57	Line	63.86	53.86	-16.55	-21.29
0.218	36.00	19.44	10.30	46.30	29.74	Line	62.89	52.89	-16.59	-23.15
0.238	32.61	19.97	10.30	42.91	30.27	Line	62.17	52.17	-19.26	-21.90
0.262	24.92	18.05	10.30	35.22	28.35	Line	61.37	51.37	-26.15	-23.02
FCC15										

Note:

1.Uncertainty in conducted emission measured is <+/ -2dB.
2.The emission levels of other frequencies were very low against the limit.
3.All Reading Levels are Quasi-Peak and Average value.
4.Emission = Meter Reading + Factor; Factor = Insertion Loss + Cable Loss.
5.Margin Value= Emission Level - Limit Value.

Test Mode 2_LINE&NEUTRAL



FCC15										
Frequency (MHz)	Read Level (dBuV) QP	Read Level (dBuV) AV	Factor (dB)	Emission (dBuV) QP	Emission (dBuV) AV	Line/ Neutral	Limit (dBuV) QP	Limit (dBuV) AV	Margin(dBuV) QP	Margin(dBuV) AV
0.166	36.45	19.53	10.30	46.75	29.83	Neutral	65.16	55.16	-18.41	-25.33
0.226	34.98	18.65	10.30	45.28	28.95	Neutral	62.60	52.60	-17.32	-23.65
0.286	31.95	20.75	10.30	42.25	31.05	Neutral	60.64	50.64	-18.39	-19.59
0.326	29.40	18.13	10.30	39.70	28.43	Neutral	59.55	49.55	-19.85	-21.12
13.342	25.67	11.78	10.80	36.47	22.58	Neutral	60.00	50.00	-23.53	-27.42
13.382	25.45	12.65	10.80	36.25	23.45	Neutral	60.00	50.00	-23.75	-26.55
FCC15										

Note:
1.Uncertainty in conducted emission measured is <+/ -2dB.
2.The emission levels of other frequencies were very low against the limit.
3.All Reading Levels are Quasi-Peak and Average value.
4.Emission = Meter Reading + Factor; Factor = Insertion Loss + Cable Loss.
5.Margin Value= Emission Level - Limit Value.

3. 2 Emission Bandwidth & Occupied Bandwidth

3.2.1 Test Equipment

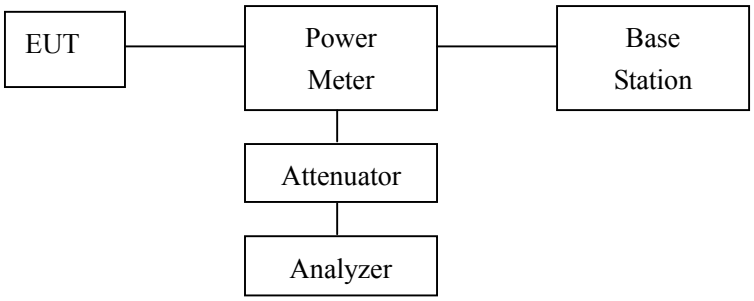
Please refer to section 6 this report.

3.2.2 Test Procedure

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

3.2.3 Test Setup

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



3.2.4 Configuration of The EUT

Same as section 3.1.4 of this report

3.2.5 EUT Operating Condition

Same as section 3.1.5 of this report

3.2.6 Limit

Requirements, FCC 15.323(a), RSS-213 Issue 3, clause 5.5:
The Emission Bandwidth B shall be larger than 50 kHz and less than 2.5 MHz.
No requirements for 6 and 12 dB Bandwidth, these values are only used for testing Monitoring Bandwidth if the Simple Compliance test fails (ANSI C63.17, clause 7.4).
RSS-GEN Issue 5, clause 6.7:
Occupied Bandwidth (99%) is measured according to RSS-GEN Issue 5, clause 6.7. No requirement specified.

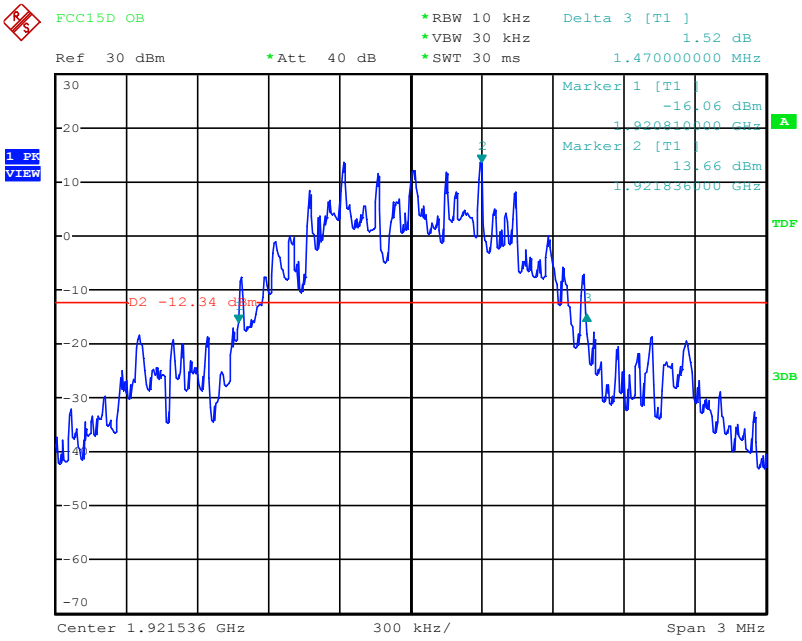
3.2.7 Emission Bandwidth & Occupied Bandwidth Test Result

FP

Ant 0

Channel	Center Frequency (MHz)	26 dB Emission Bandwidth (MHz)	Limit
Low	1921.536	1.470	50 kHz < OBW <2.5 MHz
Middle	1924.992	1.470	50 kHz < OBW <2.5 MHz
High	1928.448	1.470	50 kHz < OBW <2.5 MHz

Low Channel



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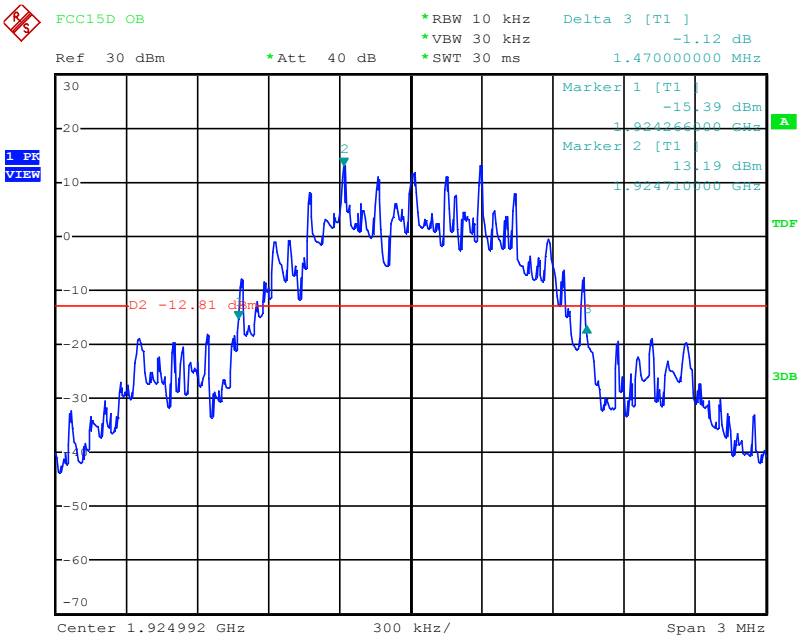
Mid Channel



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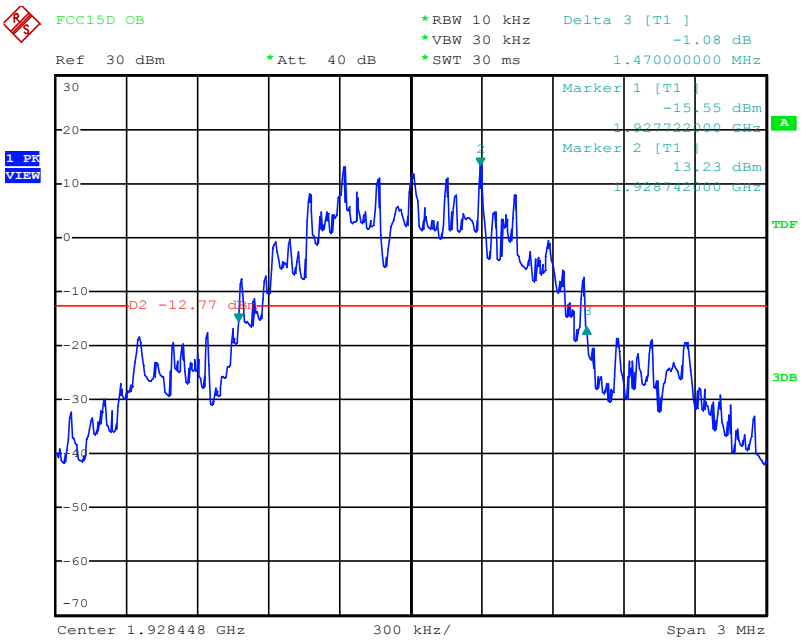
High Channel

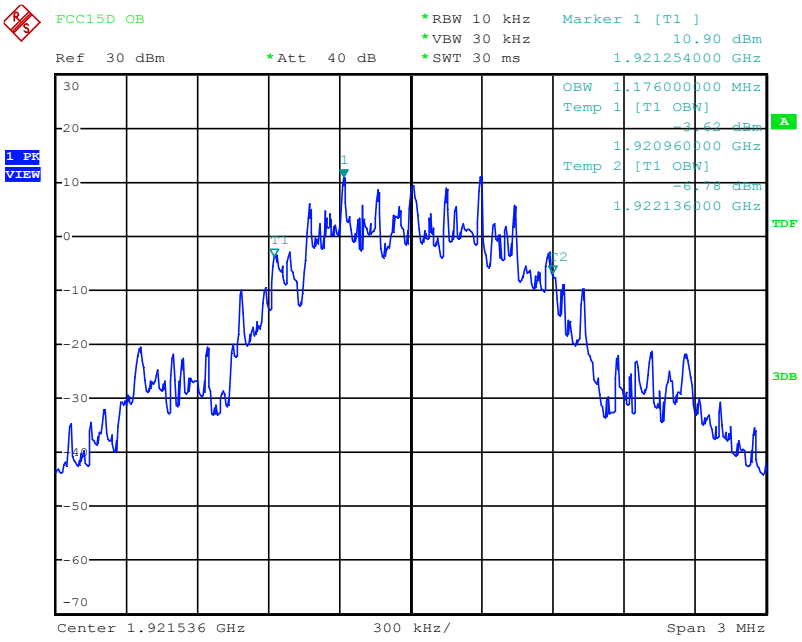


Date: 22.JUL.2018 17:20:28

Channel	Center Frequency (MHz)	99% Occupied Bandwidth (MHz)	Limit
Low	1921.536	1.176	N/A
Middle	1924.992	1.170	N/A
High	1928.448	1.176	N/A

99% Occupied Bandwidth

Low Channel



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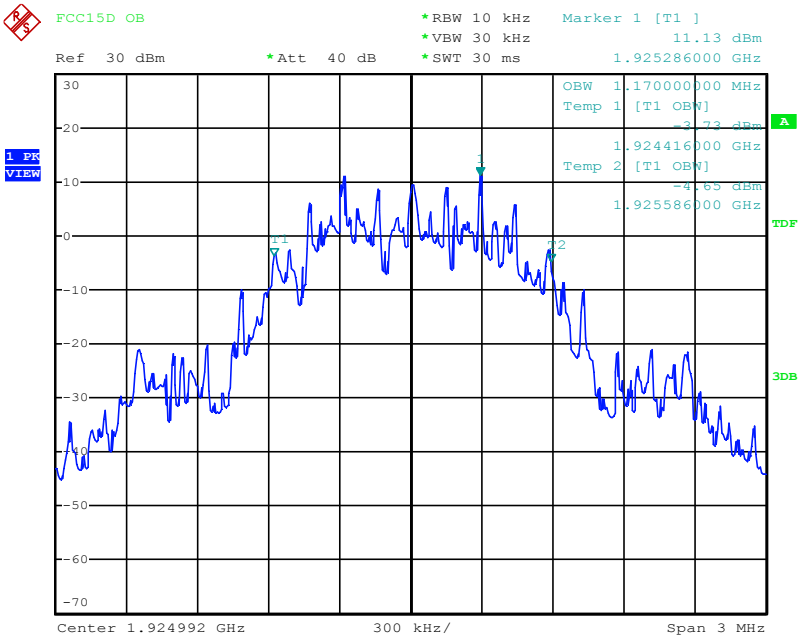

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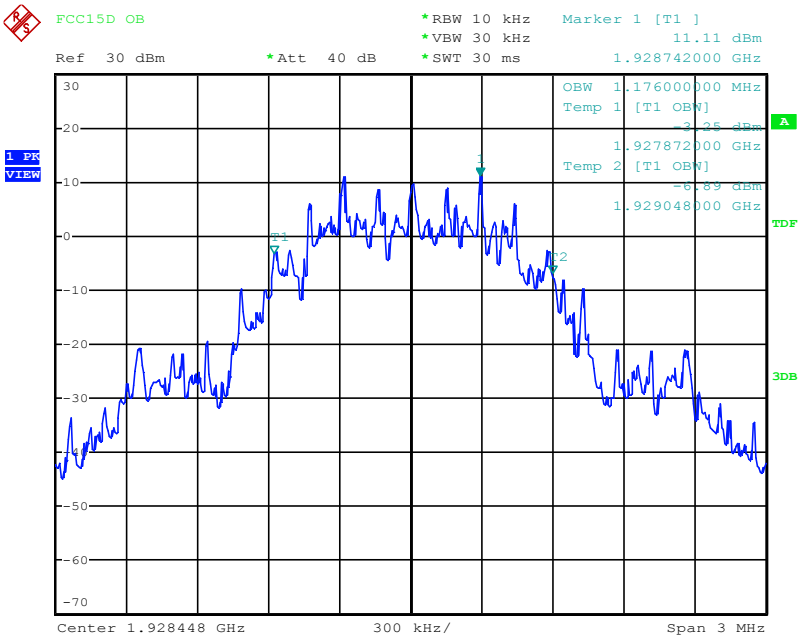
High Channel

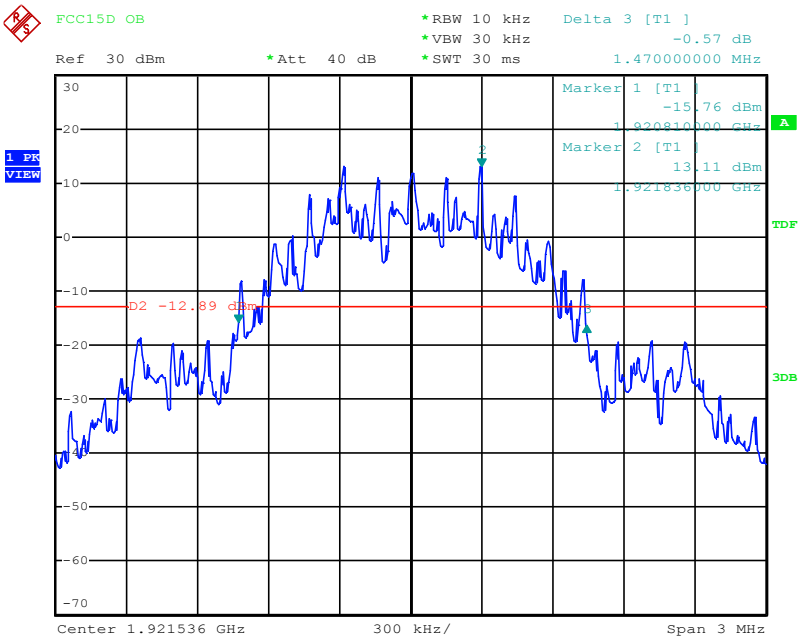


Date: 22.JUL.2018 17:37:16

Ant 1

Channel	Center Frequency (MHz)	26 dB Emission Bandwidth (MHz)	Limit
Low	1921.536	1.470	50 kHz < OBW <2.5 MHz
Middle	1924.992	1.470	50 kHz < OBW <2.5 MHz
High	1928.448	1.470	50 kHz < OBW <2.5 MHz

Low Channel



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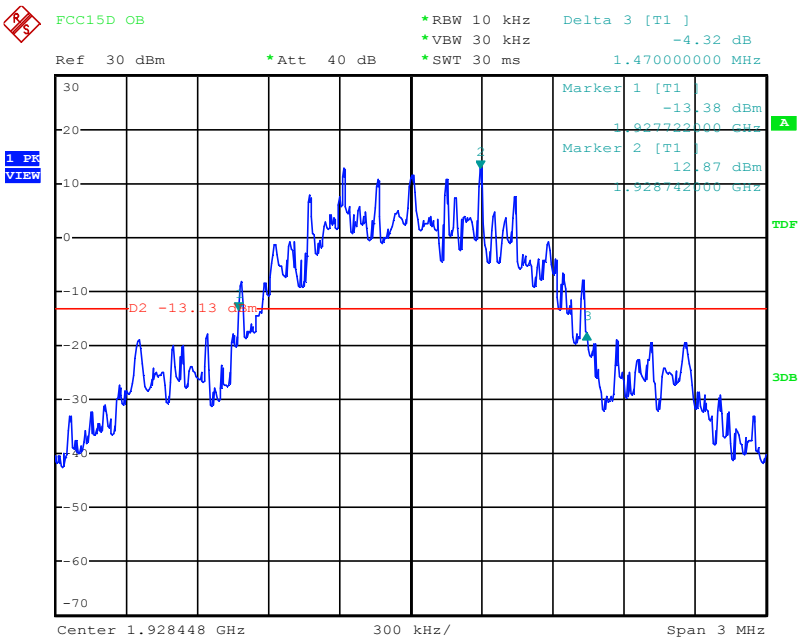
Mid Channel

Date: 22.JUL.2018 18:23:25

High Channel



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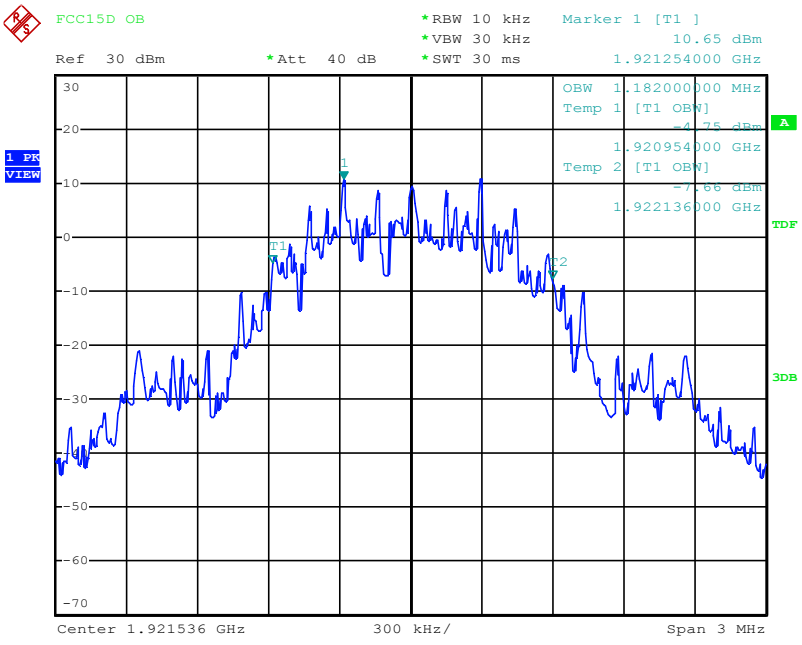
Channel	Center Frequency (MHz)	99% Occupied Bandwidth (MHz)	Limit
Low	1921.536	1.182	N/A
Middle	1924.992	1.182	N/A
High	1928.448	1.182	N/A

99% Occupied Bandwidth

Low Channel



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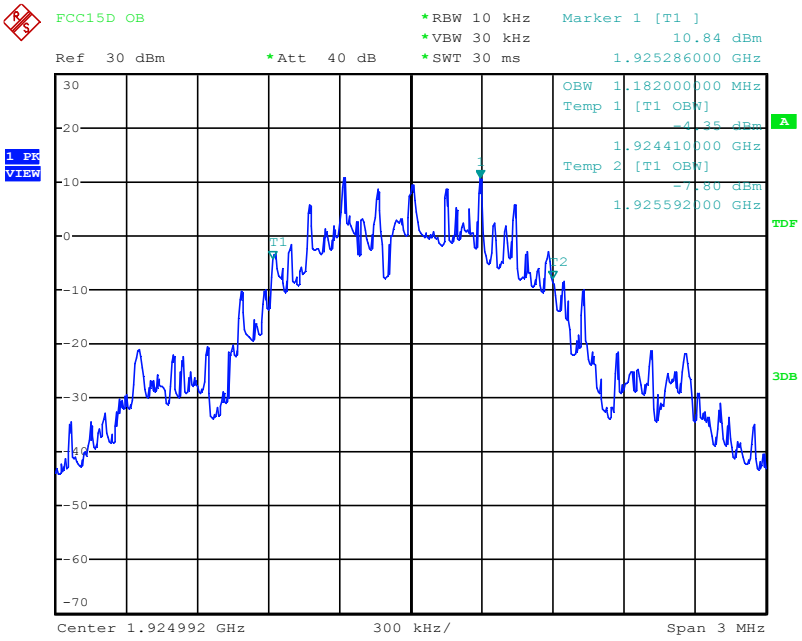
Mid Channel



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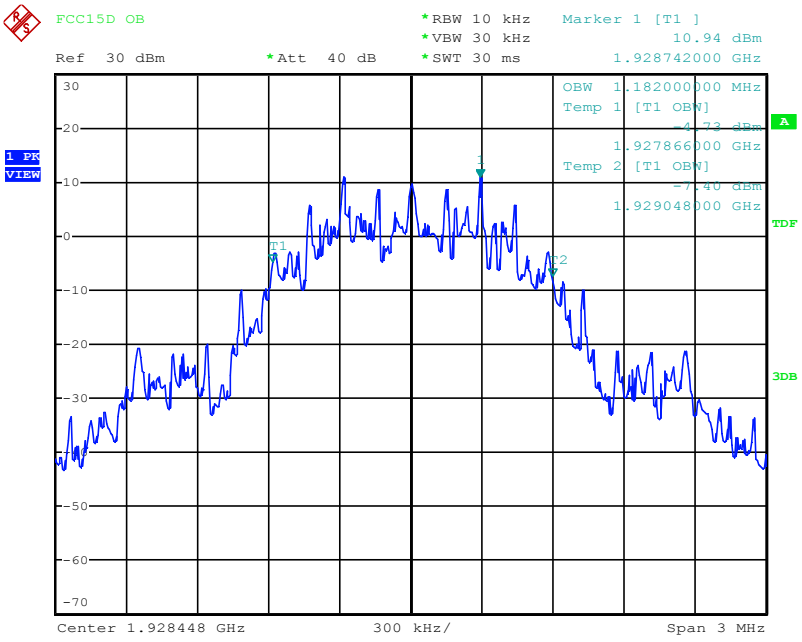
High Channel



Date: 22.JUL.2018 18:12:45

3. 3 RF Output Power

3.3.1 Test Equipment

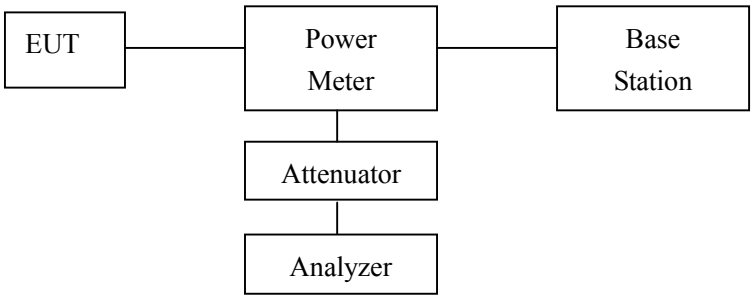
Please refer to section 6 this report.

3.3.2 Test Procedure

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

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

3.3.3 Test Setup



3.3.4 Configuration of The EUT

Same as section 3.1.4 of this report

3.3.5 EUT Operating Condition

Same as section 3.1.5 of this report

3.3.6 Limit

FCC 15.319(c)(e):
Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the Emission Bandwidth in Hertz.
RSS-213 Issue 3, clause 5.6:
Peak transmit power shall not exceed 100 microwatts multiplied by the square root of the Occupied Bandwidth in Hertz.
FCC 15.319(c)(e); RSS-213 Issue 3, clause 5.6:
The peak transmit power shall be reduced by the amount in decibels that the maximum directional gain of the antenna exceeds 3 dBi.

3.3.7 RF Output Power Test Result

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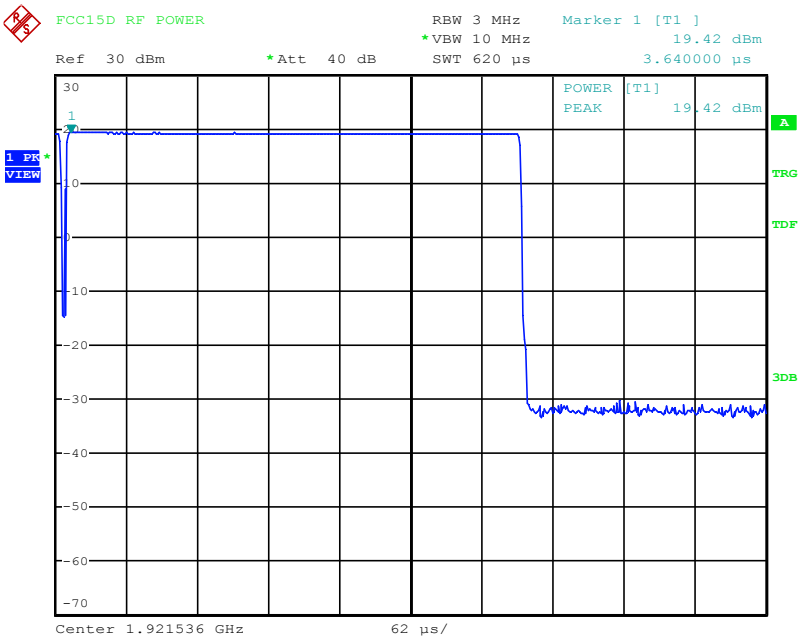
Channel	Frequency (MHz)	Peak Transmit Power (dBm)	FCC/RSS Limit (dBm)
Low	1921.536	19.42	20.84 / 20.35
Middle	1924.992	19.36	20.84 / 20.34
High	1928.448	19.30	20.84 / 20.35
Conducted Peak Transmit Power Limit: 100 μW × SQRT (B) where B is measured Emission BW or Occupied BW in Hz			

Low Channel



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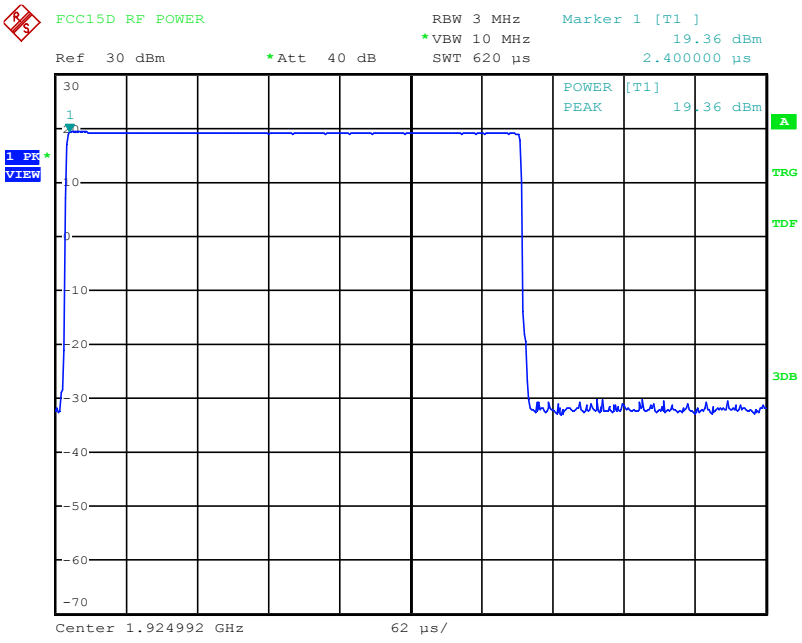
Mid Channel



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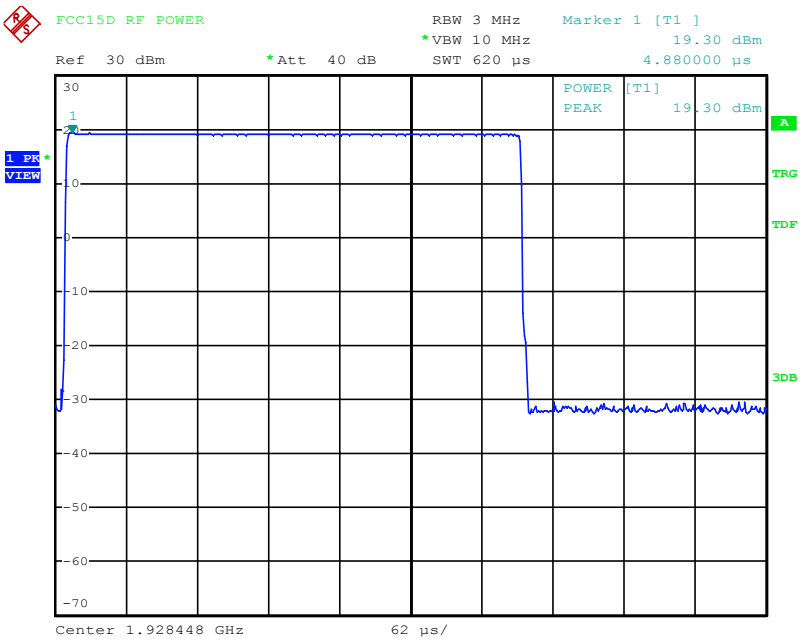
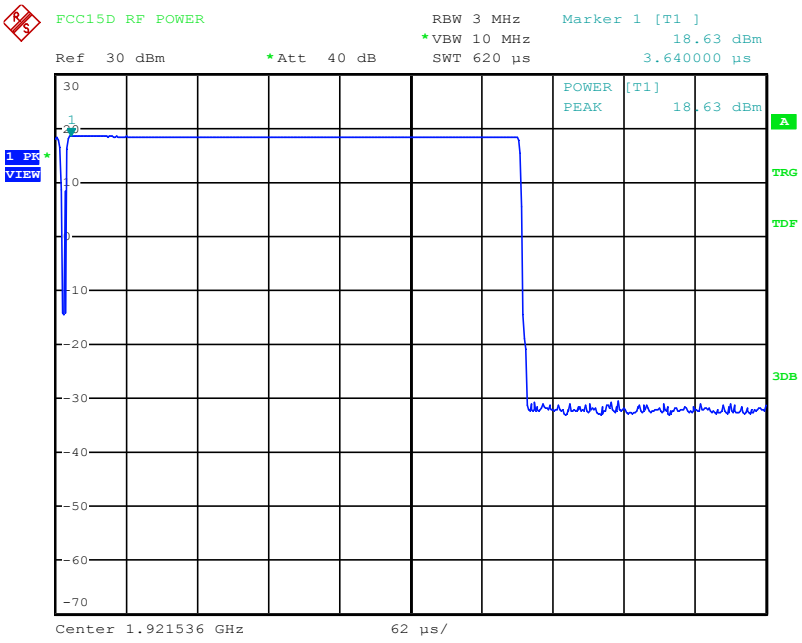
High Channel



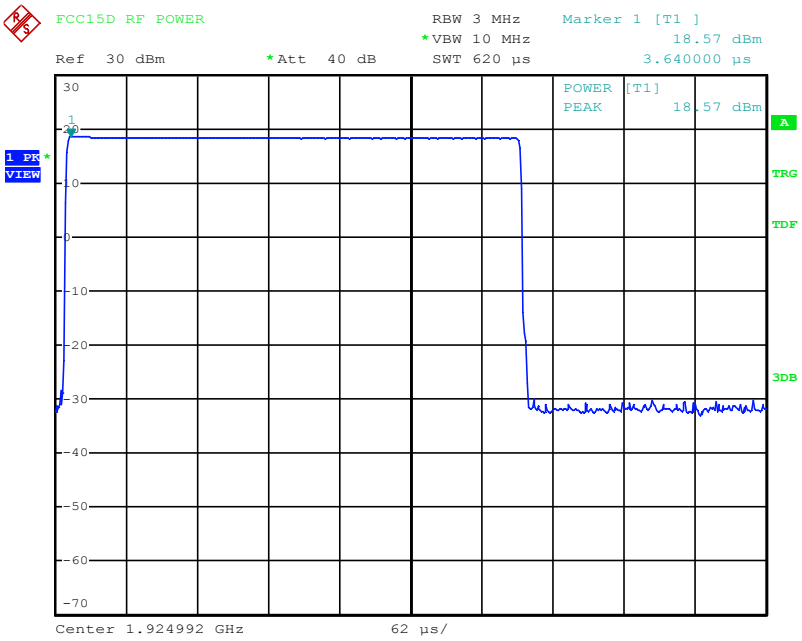
Ant1

Channel	Frequency (MHz)	Peak Transmit Power (dBm)	FCC/RSS Limit (dBm)
Low	1921.536	18.63	20.84 / 20.36
Middle	1924.992	18.57	20.84 / 20.36
High	1928.448	18.60	20.84 / 20.36
Conducted Peak Transmit Power Limit: 100 µW × SQRT (B) where B is measured Emission BW or Occupied BW in Hz			

Low Channel



Mid Channel



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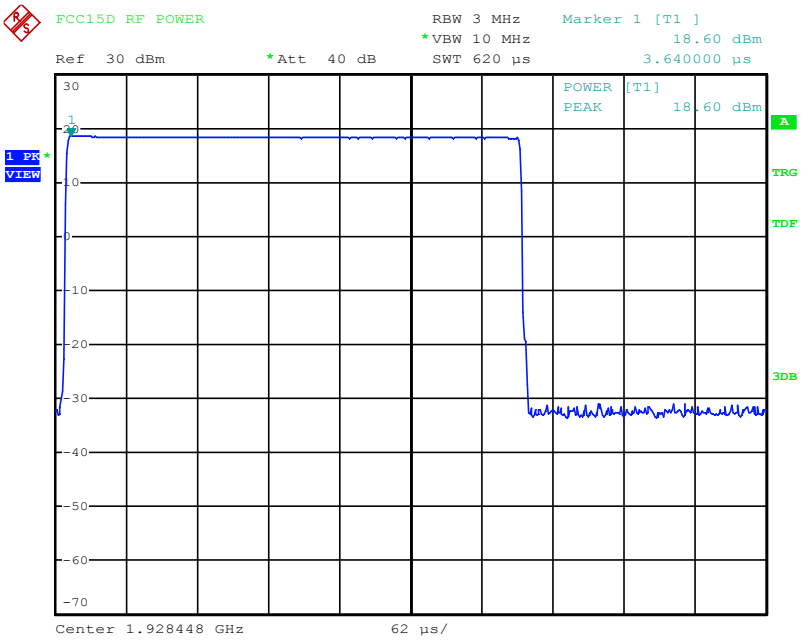
High Channel



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3. 4 Power Spectral Density

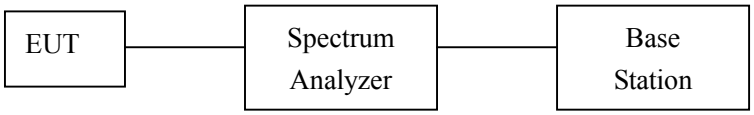
3.4.1 Test Equipment

Please refer to section 6 this report.

3.4.2 Test Procedure

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

3.4.3 Test Setup



3.4.4 Configuration of The EUT

Same as section 3.1.4 of this report

3.4.5 EUT Operating Condition

Same as section 3.1.5 of this report

3.4.6 Limit

Requirements, FCC 15.319(d), RSS-213 Issue 3, clause 5.7
The Power Spectral Density shall be less than 3 mW (4.77 dBm) when averaged over at least 100 sweeps.

3.4.7 Power Spectral Density Test Result

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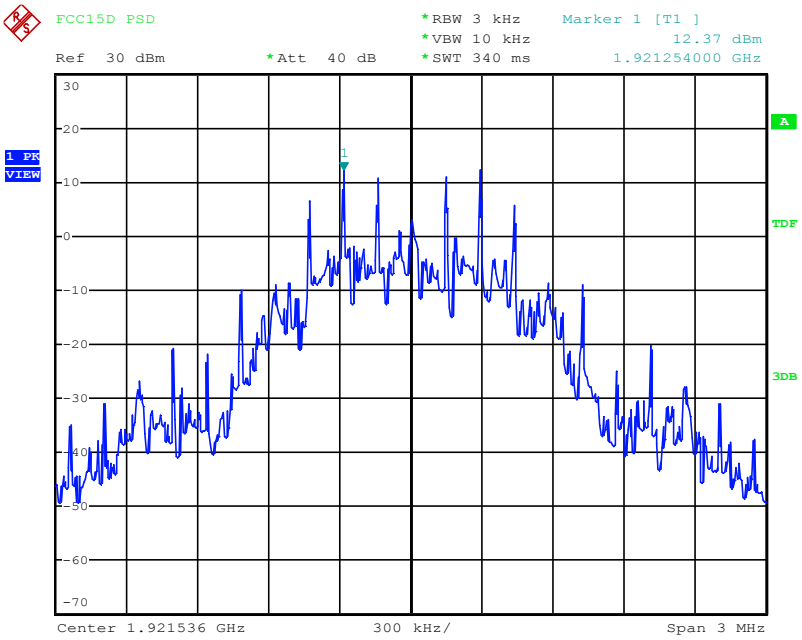
Channel	Frequency(MHz)	Power Spectral Density		Limit(mW/3kHz)	Result
		(dBm/3kHz)	(dBm/3kHz)		
Low	1921.536	12.37	-9.84	3mW/4.77dBm	Pass
Middle	1924.992	13.58	-9.76	3mW/4.77dBm	Pass
High	1928.448	12.27	-8.79	3mW/4.77dBm	Pass

Low Channel



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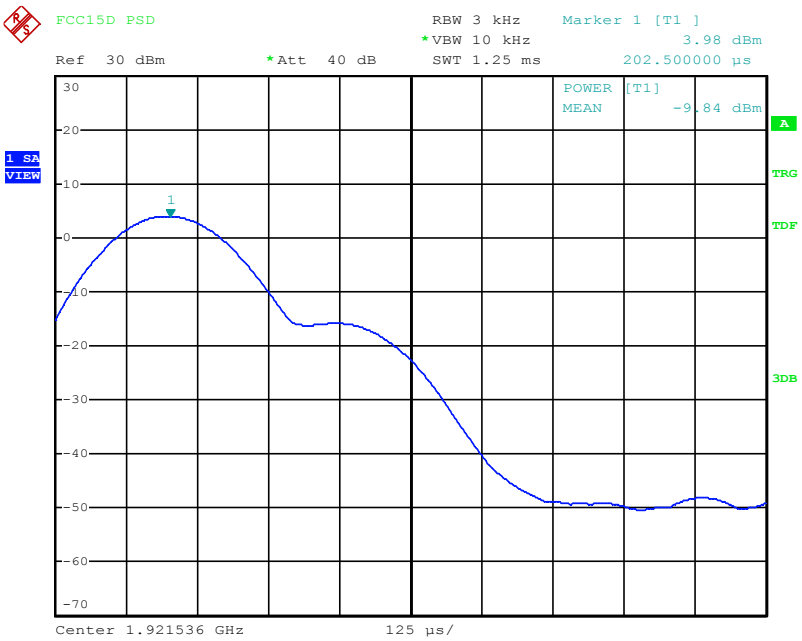

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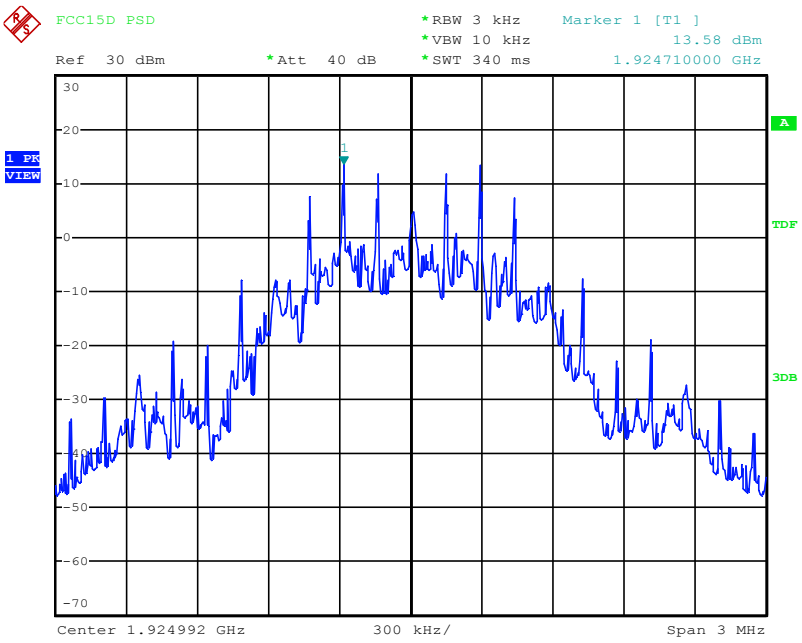
Mid Channel



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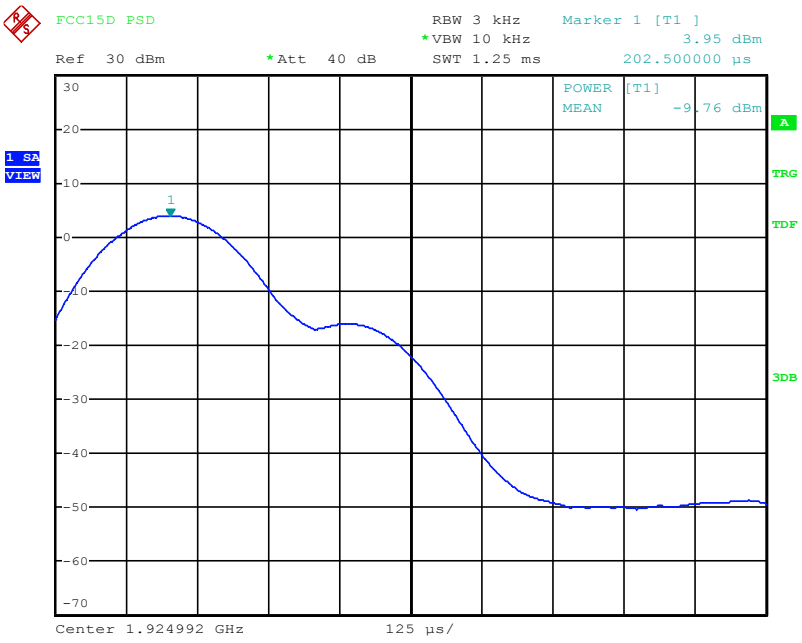

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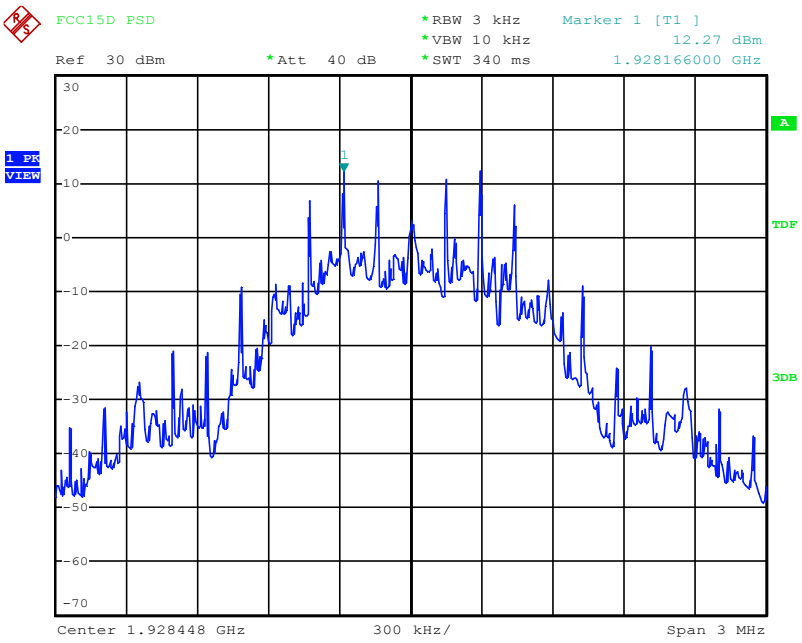
High Channel



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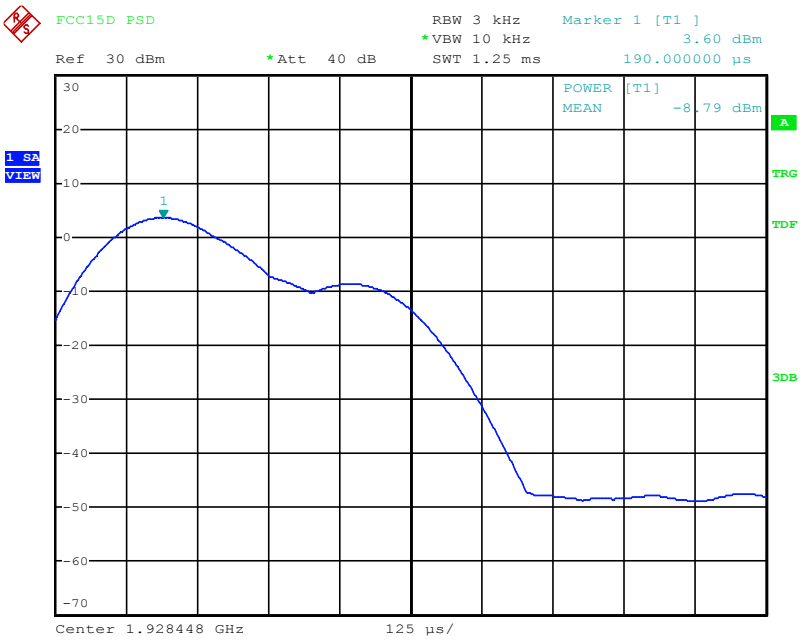

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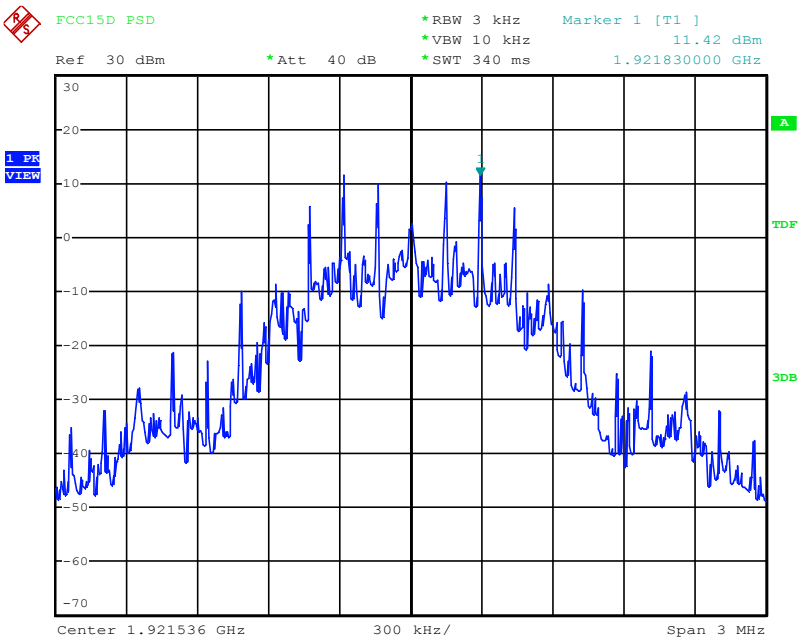
Channel	Frequency(MHz)	Power Spectral Density		Limit(mW/3kHz)	Result
		(dBm/3kHz)	(dBm/3kHz)		
Low	1921.536	11.42	-10.76	3mW/4.77dBm	Pass
Middle	1924.992	12.62	-9.01	3mW/4.77dBm	Pass
High	1928.448	11.54	-9.57	3mW/4.77dBm	Pass

Low Channel



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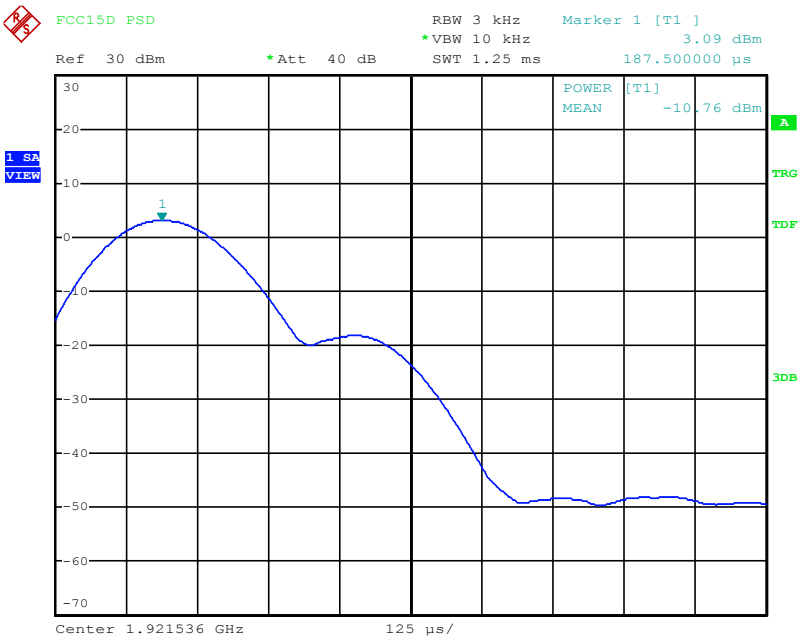

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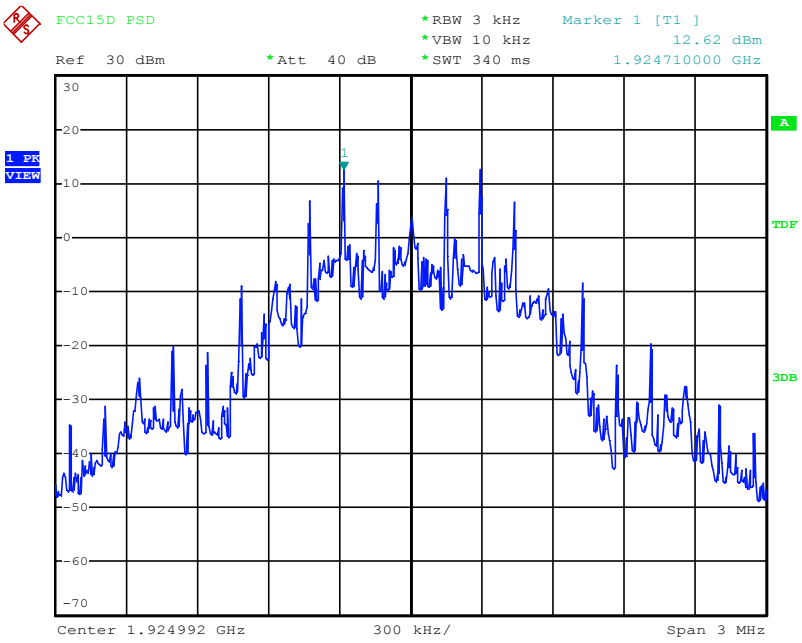
Mid Channel



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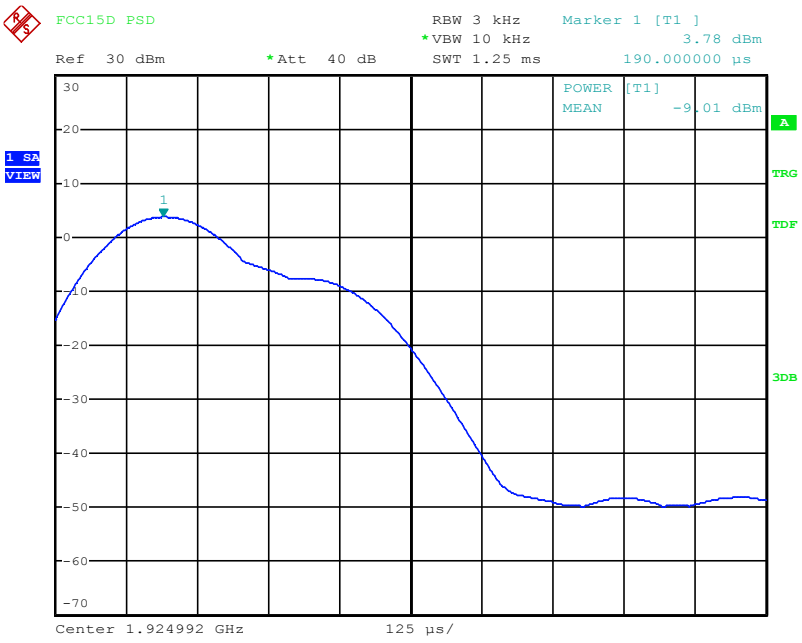

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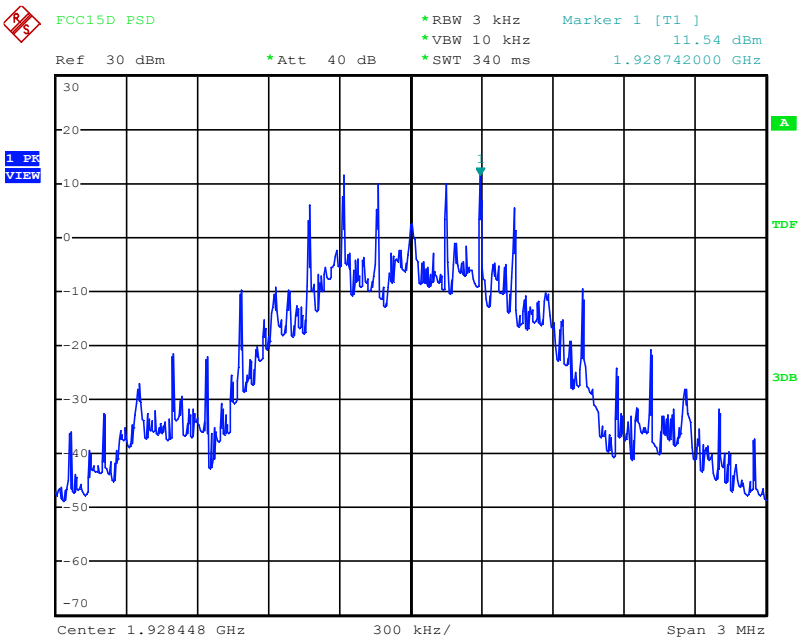
High Channel



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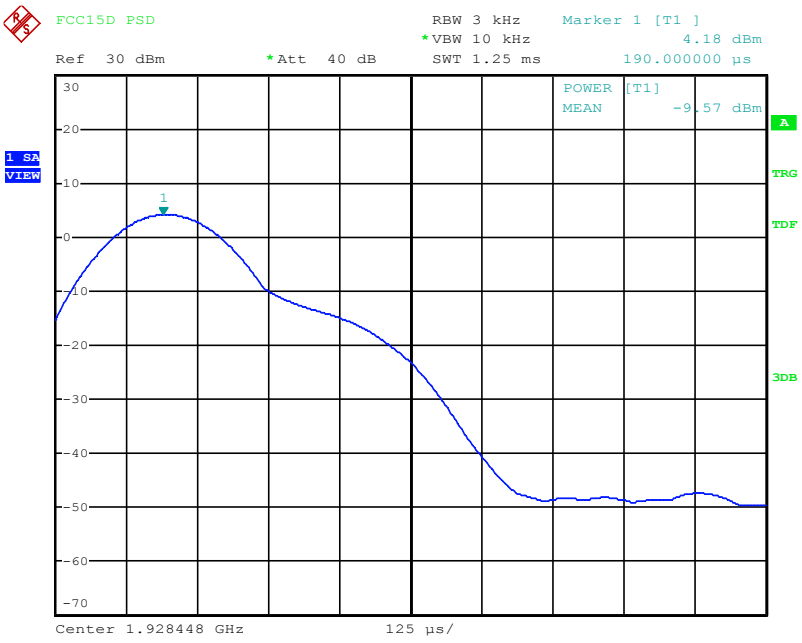

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3.5 Emission Inside and Outside the Sub-band

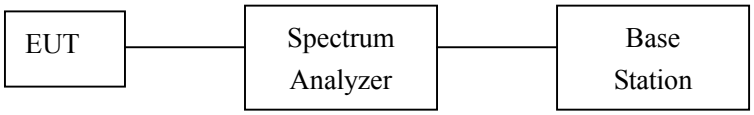
3.5.1 Test Equipment

Please refer to section 6 this report.

3.5.2 Test Procedure

According to ANSI C63.17 Clause 6.1.6.

3.5.3 Test Setup



3.5.4 Configuration of The EUT

Same as section 3.1.4 of this report

3.5.5 EUT Operating Condition

Same as section 3.1.5 of this report

3.5.6 Limit

In-Band Unwanted Emissions, Conducted
Requirements, FCC 15.323(d), RSS-213 Issue 3, clause 5.8.2:
B < f ≤ 2B : at least 30 dB below max. permitted peak power
2B < f ≤ 3B : at least 50 dB below max. permitted peak power
3B < f ≤ UPCS Band Edge : at least 60 dB below max. permitted peak power

Out-of-band Emissions, Conducted
Requirements, FCC 15.323(d), RSS-213 Issue 3, clause 5.8.1:
f ≤ 1.25MHz outside UPCS band : ≤ -9.5dBm
1.25MHz ≤ f ≤ 2.5MHz outside UPCS band : ≤ -29.5 dBm
f ≥ 2.5MHz outside UPCS band : ≤ -39.5 dBm

3.5.7 Emission Inside and Outside the Sub-band Test Result