FCC PART 15.249

TEST REPORT

For

Shenzhen Winext Technology Co. Ltd

No.602,Building E,Shenzhen Creative&Cultural Park,Futian District,Futian Shenzhen, China

FCC ID: 2AFI2GW5000

Report Type:	**Product Type:**
Original Report	LoRa Gateway

Report Number:	RSZ170324008-00D
Report Date:	2017-06-02
Reviewed By:	Oscar Ye Engineer
Prepared By:	Bay Area Compliance Laboratories Corp. (Kunshan) No.248 Chenghu Road, Kunshan, Jiangsu province, China Tel: +86-0512-86175000 Fax: +86-0512-88934268 www.baclcorp.com.cn

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The *Shenzhen Winext Technology Co. Ltd's* product, model number:*GW5000 (FCC ID: 2AFI2GW5000)* or the "EUT" in this report was a *LoRa Gateway,* which was measured approximately:110 mm (L) × 202 mm (W) × 204 mm (H), rated with input voltage: DC 48.0V POE Supply.

Notes: This series products model: GW5000 and GW5000A/GW5000B/GW5000C/GW5000E/GW8000 are identical; they have the identical schematics, only named differently. Model GW5000 was selected for fully testing, the detailed information can be referred to the declaration which was stated and guaranteed by the applicant.

**All measurement and test data in this report was gathered from production sample serial number: 1700489 (Assigned by BACL, Kunshan).The EUT supplied by the applicant was received on 2017-03-24.*

Objective

This report is prepared on behalf of *Shenzhen Winext Technology Co. Ltd* in accordance with Part 2-Subpart J, and Part 15-Subparts A and C of the Federal Communication Commissions rules.

The tests were performed in order to determine compliance with FCC Part 15, Subpart C, and section 15.203, 15.205, 15.209, 15.215 and 15.249 rules.

Related Submittal(s)/Grant(s)

FCC Part 15.247 DTS and FCC Part 22 & 24 & 27 PCB submissions with FCC ID: 2AFI2GW5000.

Test Methodology

All measurements contained in this report were conducted with ANSI C63.10-2013, American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices.

All emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Kunshan). The radiated testing was performed at an antenna-to-EUT distance of 3 meters.

Measurement Uncertainty

Item		Uncertainty
AC Power Lines Conducted Emissions		±3.26 dB
RF conducted test with spectrum		±0.9dB
RF Output Power with Power meter		±0.5dB
Radiated emission	30MHz~1GHz	±5.91dB
	Above 1G	±4.92dB
Occupied Bandwidth		±0.5kHz
Temperature		±1.0℃
Humidity		±6%

Test Facility

The test site used by Bay Area Compliance Laboratories Corp. (Kunshan) to collect test data is located on the No.248 Chenghu Road, Kunshan, Jiangsu province, China.

Test site at Bay Area Compliance Laboratories Corp. (Kunshan) has been fully described in reports submitted to the Federal Communication Commission (FCC). The details of these reports have been found to be in compliance with the requirements of Section 2.948 of the FCC Rules on November 06, 2014. The facility also complies with the radiated and AC line conducted test site criteria set forth in ANSI C63.4-2014.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 815570. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

SYSTEM TEST CONFIGURATION

Justification

The system was configured for testing on homepage.

EUT Exercise Software

No software was used.

Equipment Modifications

No modifications were made to the unit tested.

Support Equipment List and Details

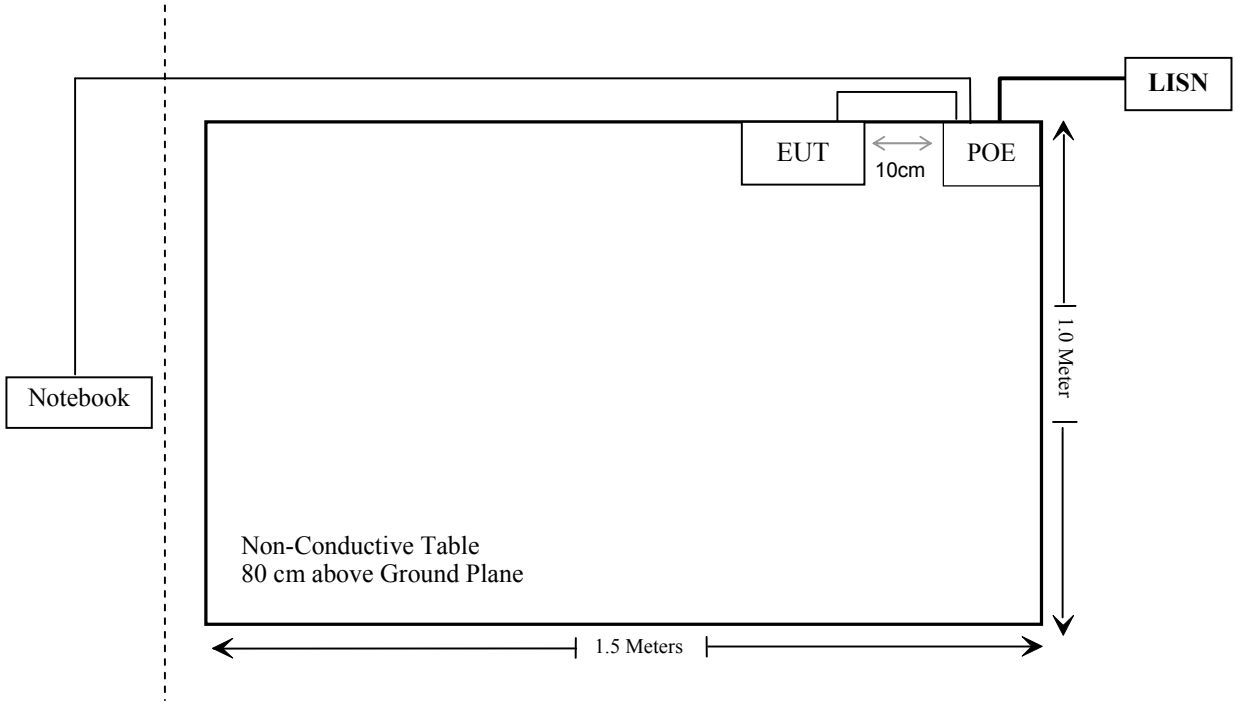
Manufacturer	Description	Model	Serial Number
Lenovo	Notebook	T400	R8-LXAXE 09/12
HUAWEI	POE	PoE35-54A	2102220369ARG6001801

External I/O Cable

Cable Description	Length (m)	From Port	To
Un-shielding detachable RJ45 cable	1.0	POE	EUT
Un-shielding detachable RJ45 cable	3.0	POE	Notebook

Block Diagram of Test Setup

Powered by POE



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207(a)	Conduction Emissions	Compliance
15.205, §15.209, §15.249	Radiated Emissions	Compliance
§15.215 (c)	20 dB Bandwidth	Compliance

TEST EQUIPMENT LIST

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
AC Line Conducted test					
Rohde & Schwarz	EMI Test Receiver	ESCS30	834115/007	2016-11-25	2017-11-25
Rohde & Schwarz	LISN	ESH3-Z5	862770/011	2016-10-10	2017-10-10
Rohde & Schwarz	Pulse limiter	ESH3-Z2	879940/0058	2016-06-19	2017-06-18
MICRO-COAX	Coaxial line	UFB-293B-1-0480-50X50	97F0173	2016-09-08	2017-09-08
Rohde & Schwarz	CE Test software	EMC 32	V 09.10.0	NCR	NCR
Radiation test					
Sonoma Instrunent	Amplifier	330	171377	2016-12-12	2017-12-12
Rohde & Schwarz	EMI Test Receiver	ESCI	100195	2016-11-25	2017-11-25
Sunol Sciences	Broadband Antenna	JB3	A090314-2	2016-01-09	2019-01-08
Narda	Pre-amplifier	AFS42-00101800	2001270	2016-09-08	2017-09-08
EMCO	Horn Antenna	3116	00084159	2016-10-18	2019-10-17
Rohde & Schwarz	Signal Analyzer	FSIQ26	100048	2016-11-25	2017-11-25
ETS	Horn Antenna	3115	6229	2016-01-11	2019-01-10
R&S	Auto test Software	EMC32	V 09.10.0	NCR	NCR
haojintech	Coaxial Cable	Cable-1	001	2016-12-12	2017-12-12
haojintech	Coaxial Cable	Cable-2	002	2016-12-12	2017-12-12
haojintech	Coaxial Cable	Cable-3	003	2016-12-12	2017-12-12
MICRO-COAX	Coaxial Cable	Cable-4	004	2016-12-12	2017-12-12
MICRO-COAX	Coaxial Cable	Cable-5	005	2016-12-12	2017-12-12

*** Statement of Traceability:** Bay Area Compliance Laboratories Corp. (Kunshan) attests that all calibrations have been performed in accordance to requirements that traceable to National Primary Standards and International System of Units (SI).

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

According to § 15.203, an intentional radiator shall be designed to ensure that no antenna other than that furnished by the responsible party shall be used with the device. The use of a permanently attached antenna or of an antenna that uses a unique coupling to the intentional radiator shall be considered sufficient to comply with the provisions of this section. The manufacturer may design the unit so that a broken antenna can be replaced by the user, but the user of a standard antenna jack or electrical connector is prohibited. The structure and application of the EUT were analyzed to determine compliance with section §15.203 of the rules. §15.203 state that the subject device must meet the following criteria:

a. Antenna must be permanently attached to the unit.
b. Antenna must use a unique type of connector to attach to the EUT.

Unit must be professionally installed, and installer shall be responsible for verifying that the correct antenna is employed with the unit.
And according to FCC 47 CFR section 15.247 (b), if the transmitting antennas of directional gain greater than 6dBi are used, the power shall be reduced by the amount in dB that the directional gain of the antenna exceeds 6 dBi.

Antenna Connector Construction

The EUT has a special antenna, which the antenna gain is 1.0 dBi, fulfill the requirement of this section. Please refer to the EUT photos.

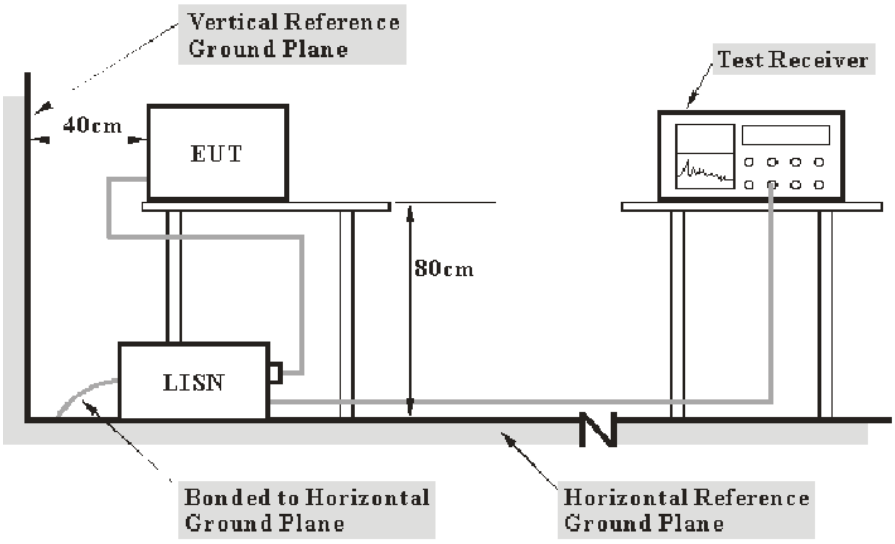
Result: Compliant.

FCC §15.207 – AC LINE CONDUCTED EMISSIONS

Applicable Standard

According to FCC §15.207

EUT Setup



Note: 1. Support units were connected to second LISN.
2. Both of LISNs (AMN) 80 cm from EUT and at the least 80 cm from other units and other metal planes support units.

The measurement procedure of EUT setup is according with per ANSI C63.10-2013. The related limit was specified in FCC Part 15.207.

EMI Test Receiver Setup

The EMI test receiver was set to investigate the spectrum from 150 kHz to 30 MHz.

During the conducted emission test, the EMI test receiver was set with the following configurations:

Frequency Range	IF B/W
150 kHz – 30 MHz	9 kHz

Test Procedure

Maximizing procedure was performed on the six (6) highest emissions of the EUT.

All final data was recorded in the Quasi-peak and average detection mode.

Corrected Factor & Margin Calculation

The Corrected factor is calculated by adding LISN/ISN VDF (Voltage Division Factor), Cable Loss and Transient Limiter Attenuation. The basic equation is as follows:

Correction Factor = LISN VDF + Cable Loss + Transient Limiter Attenuation

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15.207,

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level is in compliance with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL., $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

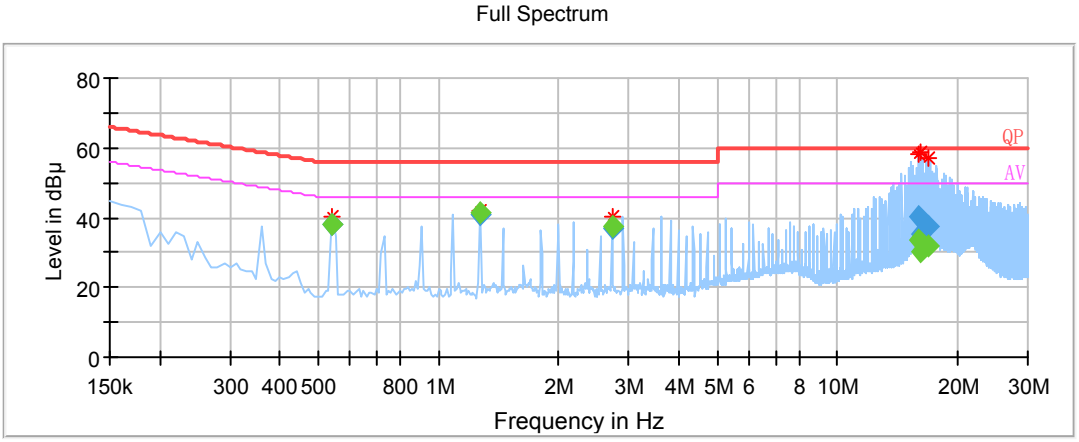
Test Data

Environmental Conditions

Temperature:	22 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

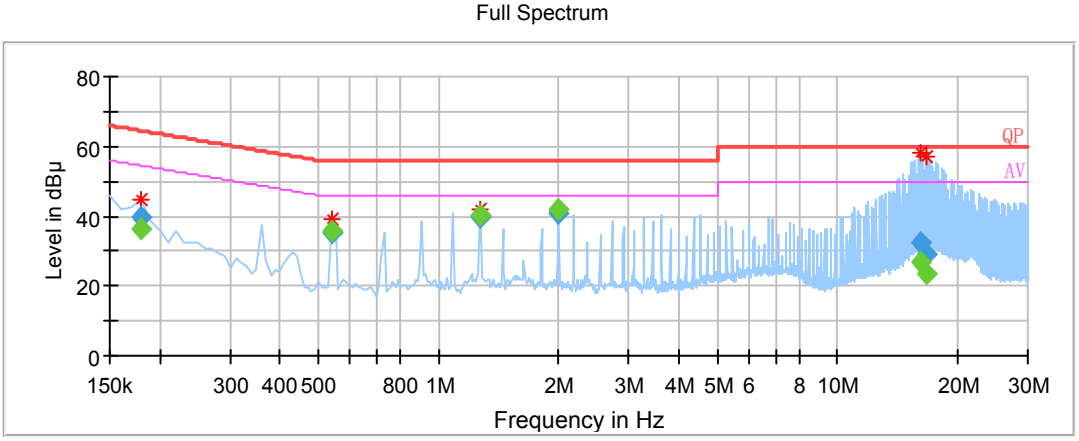
The testing was performed by Layne Li on 2017-06-01.

EUT Operation Mode: Transmitting



Frequency (MHz)	QuasiPeak (dBµV)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.540000	---	37.92	9.000	L1	10.1	8.08	46.00	Compliance
0.540000	38.16	---	9.000	L1	10.1	17.84	56.00	Compliance
1.270000	---	40.81	9.000	L1	9.9	5.19	46.00	Compliance
1.270000	41.49	---	9.000	L1	9.9	14.51	56.00	Compliance
2.720000	---	36.90	9.000	L1	9.9	9.10	46.00	Compliance
2.720000	37.24	---	9.000	L1	9.9	18.76	56.00	Compliance
15.970000	---	33.84	9.000	L1	10.3	16.16	50.00	Compliance
15.970000	40.47	---	9.000	L1	10.3	19.53	60.00	Compliance
16.150000	---	30.15	9.000	L1	10.3	19.85	50.00	Compliance
16.150000	35.28	---	9.000	L1	10.3	24.72	60.00	Compliance
16.880000	---	31.78	9.000	L1	10.3	18.22	50.00	Compliance
16.880000	37.64	---	9.000	L1	10.3	22.36	60.00	Compliance

AC 120V/60 Hz, Neutral



Frequency (MHz)	QuasiPeak (dBµV)	Average (dB µ V)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.180000	---	36.13	9.000	N	10.1	18.36	54.49	Compliance
0.180000	39.76	---	9.000	N	10.1	24.73	64.49	Compliance
0.540000	---	35.20	9.000	N	10.1	10.80	46.00	Compliance
0.540000	35.87	---	9.000	N	10.1	20.13	56.00	Compliance
1.270000	---	39.91	9.000	N	9.9	6.09	46.00	Compliance
1.270000	40.32	---	9.000	N	9.9	15.68	56.00	Compliance
2.000000	---	41.08	9.000	N	9.9	4.92	46.00	Compliance
2.000000	41.71	---	9.000	N	9.9	14.29	56.00	Compliance
16.170000	---	26.78	9.000	N	10.0	23.22	50.00	Compliance
16.170000	32.30	---	9.000	N	10.0	27.70	60.00	Compliance
16.710000	---	23.47	9.000	N	10.1	26.53	50.00	Compliance
16.710000	29.29	---	9.000	N	10.1	30.71	60.00	Compliance

Note:
1) Correction Factor =LISN VDF (Voltage Division Factor) + Cable Loss + Transient Limiter Attenuation
The corrected factor has been input into the transducer of the test software.
2) Corrected Amplitude = Reading + Correction Factor
3) Margin = Limit – Corrected Amplitude

FCC§15.205, §15.209 & §15.249 - RADIATED EMISSIONS

Applicable Standard

As per FCC§15.249 (a), except as provided in paragraph (b) of this section, the field strength of emissions from intentional radiators operated within these frequency bands shall comply with the following:

Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

As per FCC§15.249 (c), Field strength limits are specified at a distance of 3 meters.

Test Equipment Setup

The spectrum analyzer or receiver is set as:

Below 1000MHz:

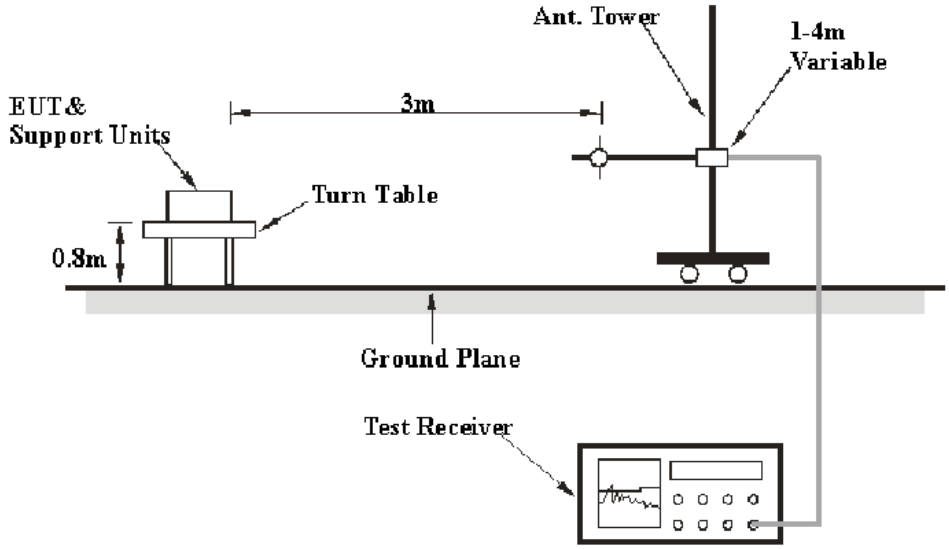
RBW = 100 kHz / VBW = 300 kHz / Sweep = Auto

Above 1000MHz:

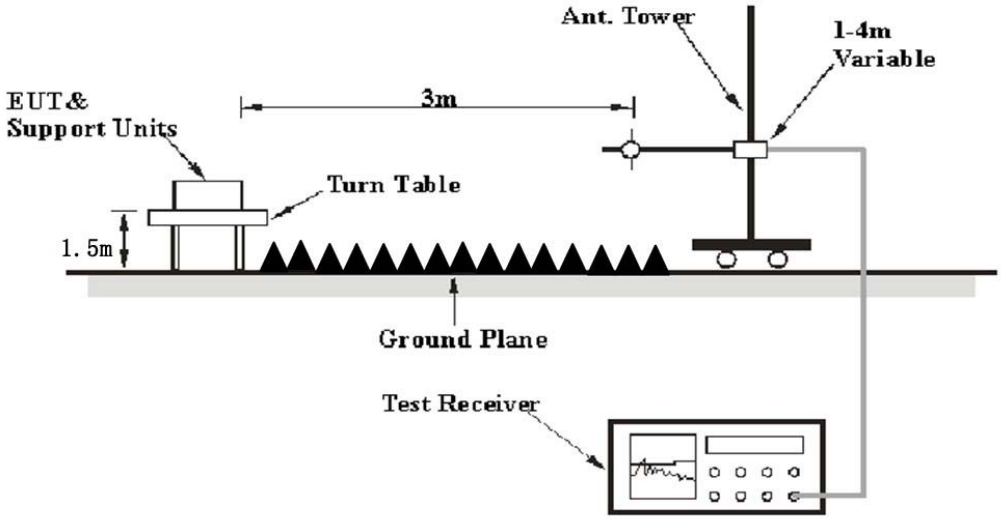
Peak: RBW = 1MHz / VBW = 1MHz / Sweep = Auto
Average: RBW = 1MHz / VBW = 10Hz / Sweep = Auto

EUT Setup

Below 1G:



Above 1GHz:



The radiated emission and out of band emission tests were performed in the 3 meters chamber test site, using the setup accordance with the ANSI C63.10-2013. The specification used was the FCC part 15.209, 15.205 and FCC part 15.249 limits.

Test Procedure

Maximizing procedure was performed on the highest emissions to ensure that the EUT complied with all installation combinations.

The EUT is set 3 meter away from the testing antenna, which is varied from 1-4 meter, and the EUT is placed on a turntable, which is 0.8 meter above ground plane for below 1GHz and 1.5 meter above ground plane for above 1GHz, the table shall be rotated for 360 degrees to find out the highest emission. The receiving antenna should be changed the polarization both of horizontal and vertical.

Corrected Amplitude & Margin Calculation

The Corrected Amplitude is calculated by adding the Antenna Factor and Cable Loss, and subtracting the Amplifier Gain from the Meter Reading. The basic equation is as follows:

Corrected Amplitude = Meter Reading + Antenna Factor + Cable Loss - Amplifier Gain

The "**Margin**" column of the following data tables indicates the degree of compliance with the applicable limit. For example, a margin of 7dB means the emission is 7dB below the limit. The equation for margin calculation is as follows:

Margin = Limit – Corrected Amplitude

Test Results Summary

According to the data in the following table, the EUT complied with the FCC Part 15.205, 15.209 & §15.249

Refer to CISPR16-4-2:2011 and CISPR 16-4-1:2009, the measured level complies with the limit if

$$L_m + U_{(Lm)} \leq L_{lim} + U_{cispr}$$

In BACL, $U_{(Lm)}$ is less than U_{cispr}, if L_m is less than L_{lim}, it implies that the EUT complies with the limit.

Test Data

Environmental Conditions

Temperature:	22 ℃
Relative Humidity:	51 %
ATM Pressure:	101.0 kPa

The testing was performed by Layne Li on 2017-05-02.

30 MHz to 10 GHz:
125 kHz bandwidth

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.249/15.205/15.209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel									
436.53	34.75	QP	188	2.4	H	-8.34	26.41	46	19.59
903.00	80.98	PK	204	1.5	H	-0.86	80.12	114	33.88
903.00	83.45	PK	138	2.4	V	-0.86	82.59	114	31.41
903.00	78.06	Ave.	213	1.6	H	-0.86	77.2	94	16.80
903.00	82.23	Ave.	126	3.5	V	-0.86	81.37	94	12.63
900.58	30.83	QP	183	1.8	V	-0.86	29.97	46	16.03
928.34	29.85	QP	192	3.1	V	-0.86	28.99	46	17.01
1806.00	62.58	PK	325	2.1	V	-8.04	54.54	74	19.46
1806.00	53.72	Ave.	325	2.1	V	-8.04	45.68	54	8.32
2709.00	63.08	PK	16	1.1	V	-4.88	58.20	74	15.80
2709.00	51.39	Ave.	16	1.1	V	-4.88	46.51	54	7.49
3612.00	58.35	PK	324	1.8	V	-1.61	56.74	74	17.26
3612.00	48.88	Ave.	324	1.8	V	-1.61	47.27	54	6.73
Middle Channel									
436.53	35.70	QP	181	2.3	H	-8.34	27.36	46	18.64
915.00	81.21	PK	152	3.3	H	-0.86	80.35	114	33.65
915.00	82.99	PK	151	2.5	V	-0.86	82.13	114	31.87
915.00	79.17	Ave.	153	3.0	H	-0.86	78.31	94	15.69
915.00	81.09	Ave.	151	2.3	V	-0.86	80.23	94	13.77
900.01	29.71	QP	145	2.3	V	-0.86	28.85	46	17.15
930.07	29.40	QP	159	1.6	V	0.7	30.10	46	15.90
1830.00	53.88	PK	70	2.0	V	-0.12	53.76	74	20.24
1830.00	46.19	Ave.	70	2.0	V	-0.12	46.07	54	7.93
2745.00	47.93	PK	11	1.2	V	9.47	57.40	74	16.60
2745.00	37.72	Ave.	11	1.2	V	9.47	47.19	54	6.81
3660.00	45.06	PK	287	2.4	V	12.18	57.24	74	16.76
3660.00	36.24	Ave.	287	2.4	V	12.18	48.42	54	5.58

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.249/15.205/15.209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel									
436.53	35.17	QP	100	2.4	H	-8.34	26.83	46	19.17
927.00	80.93	PK	123	3.2	H	-0.86	80.07	114	33.93
927.00	85.02	PK	158	3.0	V	-0.86	84.16	114	29.84
927.00	78.54	Ave.	171	3.5	H	-0.86	77.68	94	16.32
927.00	81.90	Ave.	187	1.9	V	-0.86	81.04	94	12.96
900.67	30.44	QP	179	1.3	V	-0.86	29.58	46	16.42
930.22	30.13	QP	168	3.0	V	-0.86	29.27	46	16.73
1830.00	63.75	PK	247	1.5	V	-8.04	55.71	74	18.29
1830.00	54.14	Ave.	247	1.5	V	-8.04	46.10	54	7.90
2745.00	61.64	PK	294	1.4	V	-4.88	56.76	74	17.24
2745.00	52.24	Ave.	294	1.4	V	-4.88	47.36	54	6.64
3660.00	58.51	PK	336	1.4	V	-1.28	57.23	74	16.77
3660.00	49.42	Ave.	336	1.4	V	-1.28	48.14	54	5.86

250 kHz bandwidth

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.249/15.205/15.209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel									
436.53	34.75	QP	188	2.4	H	-8.34	26.41	46	19.59
903.00	81.96	PK	159	2.1	H	-0.86	81.1	114	32.90
903.00	85.18	PK	213	2.6	V	-0.86	84.32	114	29.68
903.00	78.47	Ave.	156	3.2	H	-0.86	77.61	94	16.39
903.00	81.94	Ave.	124	2.4	V	-0.86	81.08	94	12.92
899.40	31.13	QP	120	2.4	V	-1.23	29.90	46	16.10
929.92	31.04	QP	193	2.2	V	-0.86	30.18	46	15.82
1806.00	63.53	PK	347	1.5	V	-8.04	55.49	74	18.51
1806.00	53.07	Ave.	347	1.5	V	-8.04	45.03	54	8.97
2709.00	62.74	PK	333	2.5	V	-4.88	57.86	74	16.14
2709.00	50.17	Ave.	333	2.5	V	-4.88	45.29	54	8.71
3612.00	56.76	PK	21	2.5	V	-1.61	55.15	74	18.85
3612.00	47.54	Ave.	21	2.5	V	-1.61	45.93	54	8.07
Middle Channel									
436.53	35.70	QP	181	2.3	H	-8.34	27.36	46	18.64
915.00	80.34	PK	197	3.6	H	-0.86	79.48	114	34.52
915.00	83.31	PK	230	3.0	V	-0.86	82.45	114	31.55
915.00	79.49	Ave.	174	1.9	H	-0.86	78.63	94	15.37
915.00	80.83	Ave.	185	3.4	V	-0.86	79.97	94	14.03
900.29	30.88	QP	179	2.0	V	-0.86	30.02	46	15.98
928.70	29.86	QP	194	3.3	V	-0.86	29.00	46	17.00
1830.00	62.34	PK	28	2.1	V	-8.04	54.30	74	19.70
1830.00	53.65	Ave.	28	2.1	V	-8.04	45.61	54	8.39
2745.00	63.52	PK	200	1.3	V	-4.88	58.64	74	15.36
2745.00	50.81	Ave.	200	1.3	V	-4.88	45.93	54	8.07
3660.00	56.63	PK	74	2.2	V	-1.28	55.35	74	18.65
3660.00	48.79	Ave.	74	2.2	V	-1.28	47.51	54	6.49

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.249/15.205/15.209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel									
436.53	35.17	QP	100	2.4	H	-8.34	26.83	46	19.17
927.00	79.61	PK	164	2.6	H	-0.86	78.75	114	35.25
927.00	83.25	PK	205	2.2	V	-0.86	82.39	114	31.61
927.00	78.42	Ave.	195	2.3	H	-0.86	77.56	94	16.44
927.00	81.88	Ave.	202	2.7	V	-0.86	81.02	94	12.98
901.55	30.39	QP	149	3.3	V	-0.86	29.53	46	16.47
927.70	29.04	QP	175	2.1	V	-0.86	29.74	46	16.26
1854.00	30.6	PK	260	1.3	V	-7.56	57.86	74	16.14
1854.00	65.42	Ave.	260	1.3	V	-7.56	47.53	54	6.47
2781.00	55.09	PK	67	1.4	V	-4.33	58.93	74	15.07
2781.00	63.26	Ave.	67	1.4	V	-4.33	47.69	54	6.31
3708.00	52.02	PK	111	1.4	V	-1.28	57.41	74	16.59
3708.00	58.69	Ave.	111	1.4	V	-1.28	48.13	54	5.87

500 kHz bandwidth

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.249/15.205/15.209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
Low Channel									
436.53	34.75	QP	188	2.4	H	-8.34	26.41	46	19.59
903.00	79.89	PK	176	2.0	H	-0.86	79.03	114	34.97
903.00	83.69	PK	189	1.2	V	-0.86	82.83	114	31.17
903.00	79.56	Ave.	244	2.2	H	-0.86	78.7	94	15.30
903.00	82.02	Ave.	206	2.0	V	-0.86	81.16	94	12.84
901.00	30.75	QP	145	2.9	V	-0.86	29.89	46	16.11
929.77	30.55	QP	202	3.1	V	-0.86	29.69	46	16.31
1830.00	60.16	PK	212	1.2	V	-8.04	52.12	74	21.88
1830.00	51.65	Ave.	212	1.2	V	-8.04	43.61	54	10.39
2745.00	61.24	PK	42	2.2	V	-4.88	56.36	74	17.64
2745.00	48.55	Ave.	42	2.2	V	-4.88	43.67	54	10.33
3660.00	60.3	PK	61	1.8	V	-1.28	59.02	74	14.98
3660.00	49.23	Ave.	61	1.8	V	-1.28	47.95	54	6.05
Middle Channel									
436.53	35.70	QP	181	2.3	H	-8.34	27.36	46	18.64
915.00	78.52	PK	243	2.9	H	-0.86	77.66	114	36.34
915.00	83.15	PK	165	1.4	V	-0.86	82.29	114	31.71
915.00	78.54	Ave.	221	2.8	H	-0.86	77.68	94	16.32
915.00	81.66	Ave.	143	1.7	V	-0.86	80.8	94	13.20
899.53	31.11	QP	184	3.2	V	-1.23	29.88	46	16.12
929.32	30.96	QP	210	1.9	V	-0.86	30.10	46	15.90
1830.00	62.08	PK	291	1.2	V	-8.04	54.04	74	19.96
1830.00	51.92	Ave.	291	1.2	V	-8.04	43.88	54	10.12
2745.00	62.46	PK	242	1.5	V	-4.88	57.58	74	16.42
2745.00	48.62	Ave.	242	1.5	V	-4.88	43.74	54	10.26
3660.00	59.46	PK	240	1.7	V	-1.28	58.18	74	15.82
3660.00	50.2	Ave.	240	1.7	V	-1.28	48.92	54	5.08

Frequency (MHz)	Receiver		Turntable Degree	Rx Antenna		Corrected Factor (dB)	Corrected Amplitude (dBμV/m)	FCC Part 15.249/15.205/15.209	
	Reading (dBμV)	Detector (PK/QP/Ave.)		Height (m)	Polar (H/V)			Limit (dBμV/m)	Margin (dB)
High Channel									
436.53	35.17	QP	100	2.4	H	-8.34	26.83	46	19.17
927.00	79.56	PK	168	2.2	H	-0.86	78.7	114	35.30
927.00	83.71	PK	227	2.4	V	-0.86	82.85	114	31.15
927.00	78.77	Ave.	222	2.8	H	-0.86	77.91	94	16.09
927.00	81.53	Ave.	145	1.8	V	-0.86	80.67	94	13.33
898.84	30.41	QP	204	2.6	V	-1.23	29.18	46	16.82
930.34	30.58	QP	148	2.0	V	-0.86	29.72	46	16.28
1854.00	65.33	PK	193	1.9	V	-7.56	57.77	74	16.23
1854.00	55.28	Ave.	193	1.9	V	-7.56	47.72	54	6.28
2781.00	63	PK	20	1.8	V	-4.33	58.67	74	15.33
2781.00	49.52	Ave.	20	1.8	V	-4.33	45.19	54	8.81
3708.00	59.31	PK	4	1.6	V	-1.28	58.03	74	15.97
3708.00	49.9	Ave.	4	1.6	V	-1.28	48.62	54	5.38

Note:
Corrected Factor = Antenna factor (RX) + Cable Loss – Amplifier Factor
Corrected Amplitude = Corrected Factor + Reading
Margin = Limit - Corrected. Amplitude

FCC§15.215(c) - 20dB EMISSION BANDWIDTH

Applicable Standard

Intentional radiators operating under the alternative provisions to the general emission limits, as contained in § 15.217 through 15.257 and in Subpart E of this part, must be designed to ensure that the 20 dB bandwidth of the emission, or whatever bandwidth may otherwise be specified in the specific rule section under which the equipment operates, is contained within the frequency band designated in the rule section under which the equipment is operated.

Test Procedure

1. Check the calibration of the measuring instrument using either an internal calibrator or a known signal from an external generator.

2. Position the EUT without connection to measurement instrument. Turn on the EUT and connect it to measurement instrument. Then set it to any one convenient frequency within its operating range. Set a reference level on the measuring instrument equal to the highest peak value.

3. Measure the frequency difference of two frequencies that indicated 20dB bandwidth.

4. Repeat above procedures until all frequencies measured were complete.

Test Data

Environmental Conditions

Temperature:	23 ℃
Relative Humidity:	54 %
ATM Pressure:	101.0 kPa

The testing was performed by Echo Wu on 2017-05-11

Please refer to the following table and plots.

Test Mode: Transmitting

125 kHz Bandwidth

Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low Channel	903	0.141
Middle Channel	915	0.141
High Channel	927	0.142

250 kHz Bandwidth

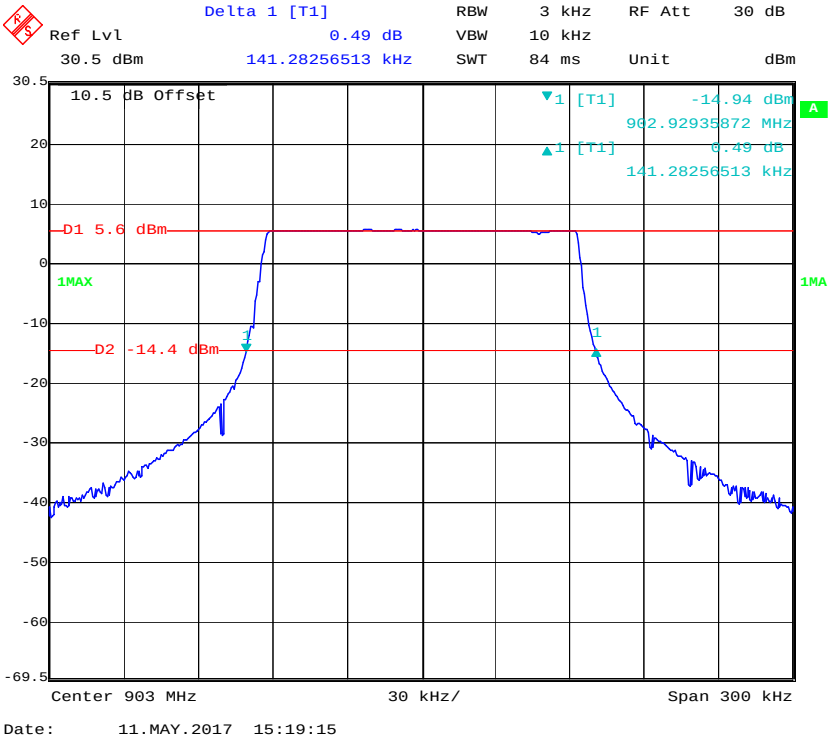
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low Channel	903	0.298
Middle Channel	915	0.299
High Channel	927	0.300

500 kHz Bandwidth

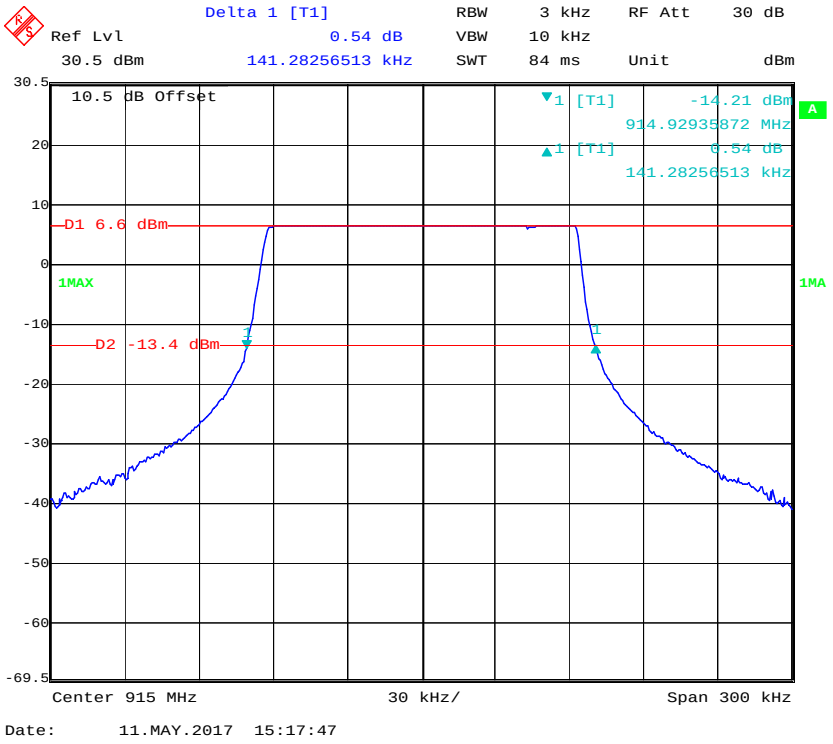
Channel	Frequency (MHz)	20dB Bandwidth (MHz)
Low Channel	903	0.609
Middle Channel	915	0.609
High Channel	927	0.609

125 kHz Bandwidth

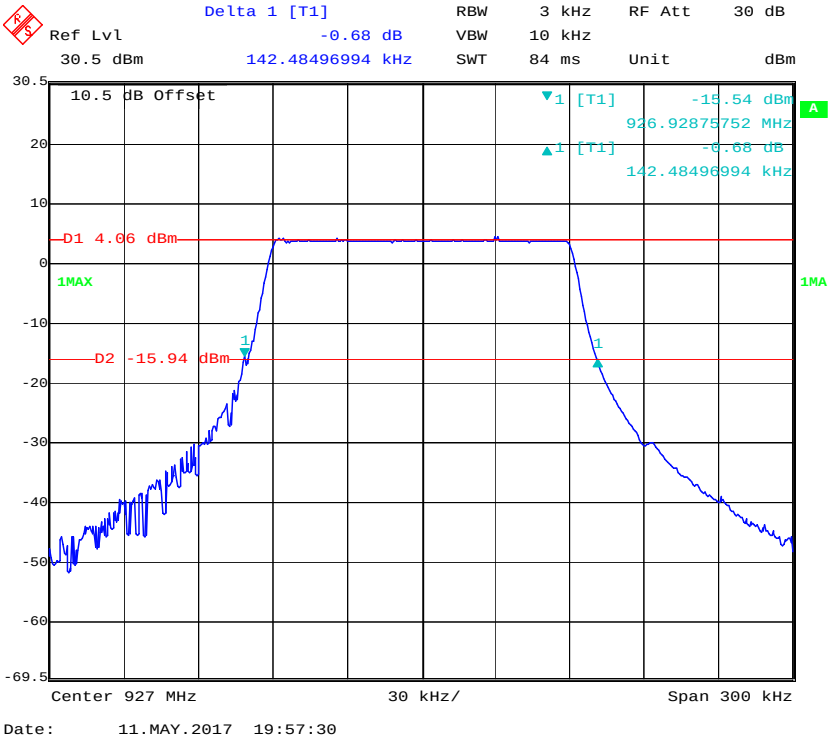
Low Channel



Middle Channel

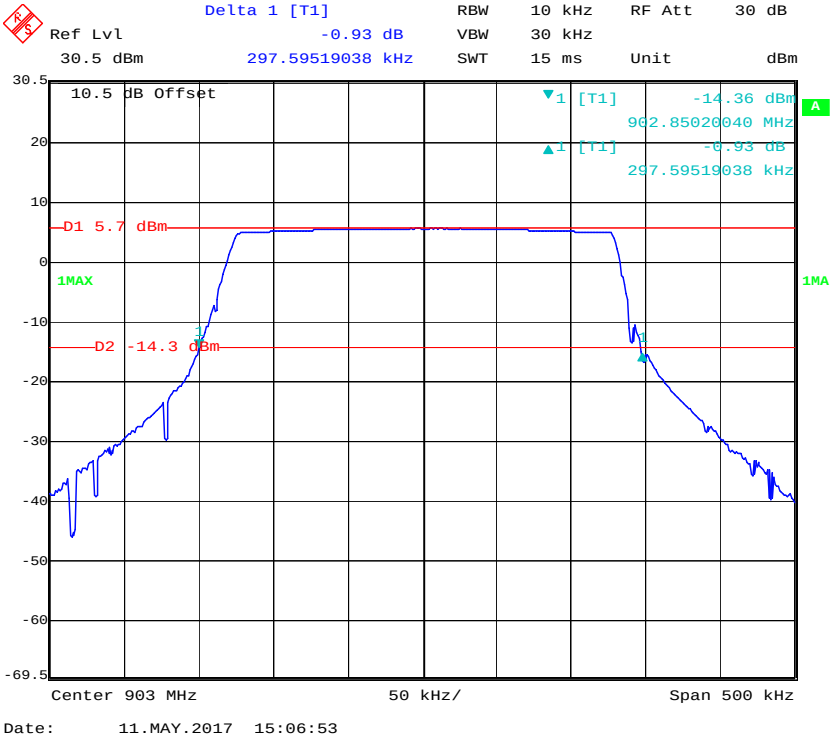


High Channel

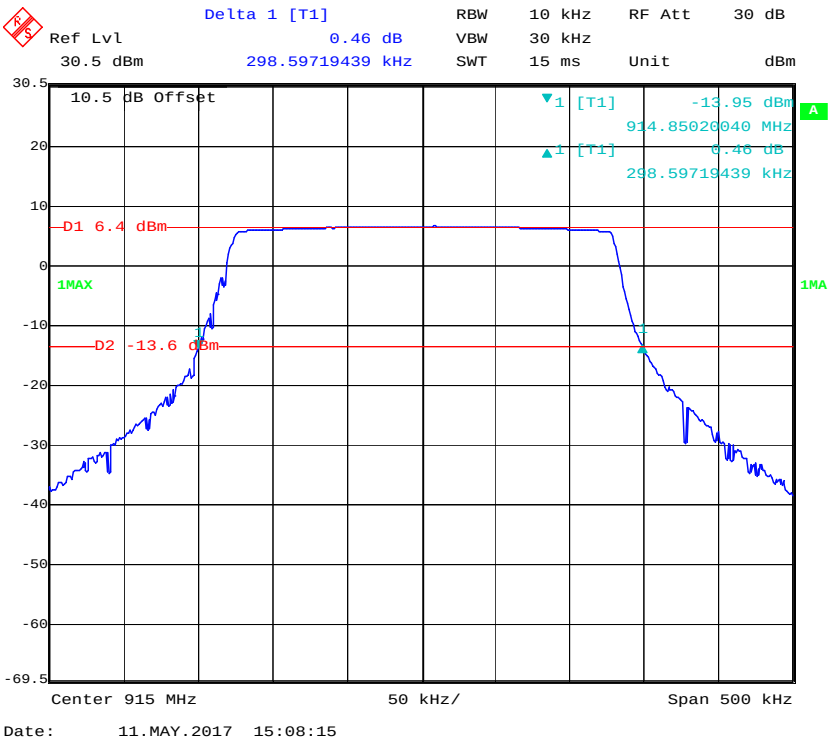


250 kHz Bandwidth

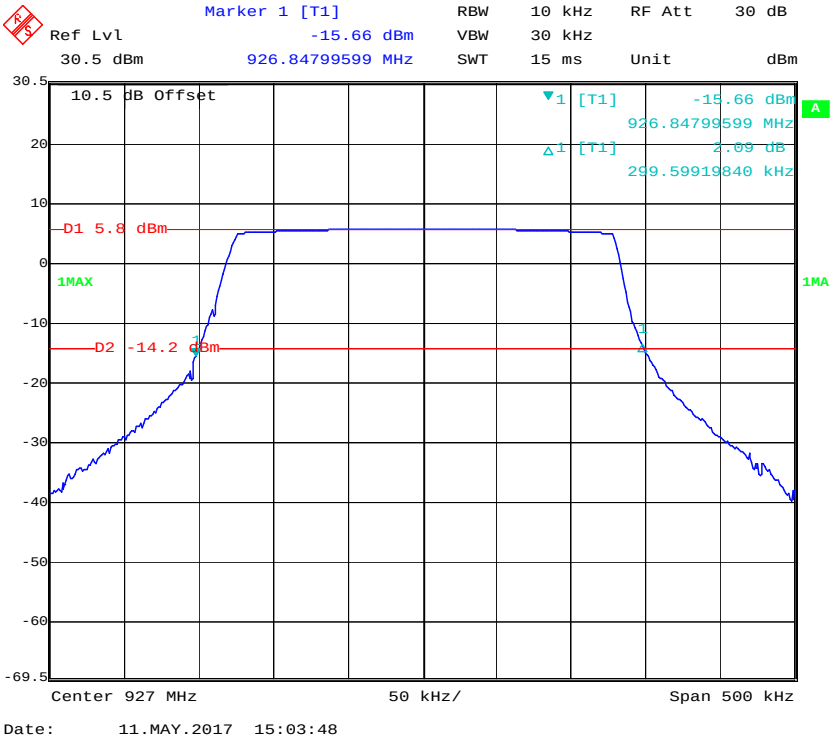
Low Channel



Middle Channel

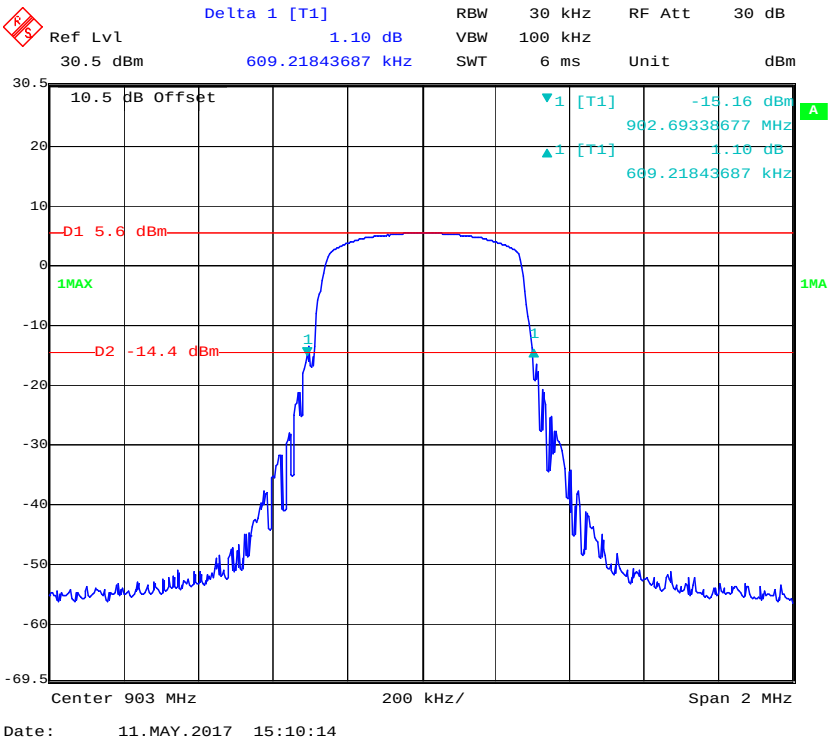


High Channel

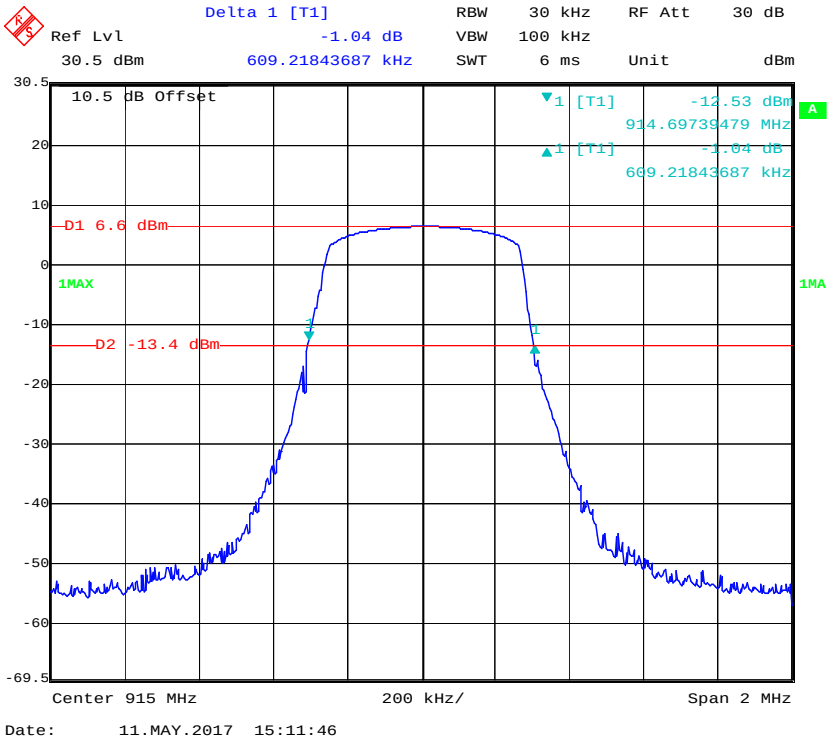


500 kHz Bandwidth

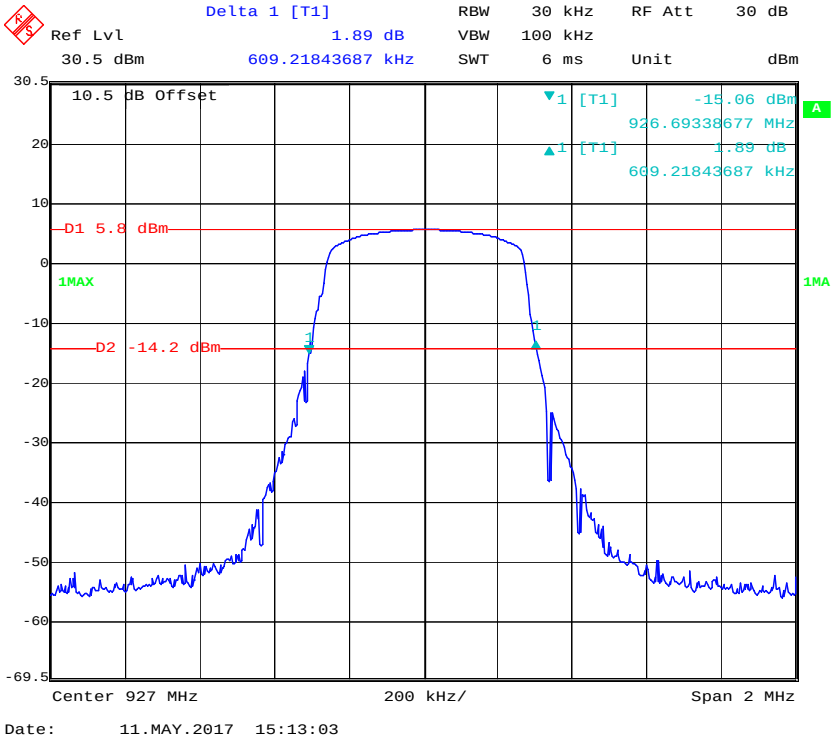
Low Channel



Middle Channel



High Channel



******* END OF REPORT *******