



FCC PART 15.249 TEST REPORT

For

Skyrocket Toys LLC

12910 Culver Blvd, Suite F, Los Angeles, CA 90066, U.S.A

FCC ID: O5301736TX24G

Report Type: Original Report	Product Name: Sky Viper Streaming GPS Remote
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Report Number: <u>RDG170710006</u>	
Report Date: <u>2017-07-14</u>	
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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The **Skyrocket Toys LLC**'s product, model number: **01736TX (FCC ID: O5301736TX24G)** (the "EUT") in this report was a **Sky Viper Streaming GPS Remote**, which was measured approximately: 17 cm (L) x 14 cm (W) x 5.5 cm (H), rated input voltage: DC 4.5V from battery.

**All measurement and test data in this report was gathered from final production sample, serial number: 170710006 (assigned by the BACL, Chengdu). It may have deviation from any other sample. The EUT supplied by the applicant was received on 2017-07-05, and EUT conformed to test requirement.*

Objective

This type approval report is prepared on behalf of **Skyrocket Toys LLC** 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 Rules Part 15, Subpart C, and section 15.203, 15.205, 15.209 and 15.249 rules.

Related Submittal(s)/Grant(s)

Submitted with the part of a system with FCC ID: O5301736RX24G.

Test Methodology

All measurements detailed in this Test Report were performed in accordance with ANSI C63.10-2013 "American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices".

All of the measurements detailed in this Test Report were performed by Bay Area Compliance Laboratories Corp. (Chengdu).

The Bay Area Compliance Laboratories Corp. Chengdu's measurement Uncertainties (calculated for a k=2 Coverage Factor corresponding to approximately 95% Coverage) were as follows:

- For all of the AC Line Conducted Emissions Tests reported herein: ± 3.17 dB.
- For of all of the Direct Antenna Conducted Emissions Tests reported herein: ± 0.56 dB.

- For of all of the direct Radiated Emissions Tests reported herein are:
 - 30 MHz to 200 MHz: ± 4.7 dB;
 - 200 MHz to 1 GHz: ± 6.0 dB;
 - 1 GHz to 6 GHz: ± 5.13 dB; and,
 - 6 GHz to 40 GHz: ± 5.47 dB.

And the uncertainty will not be taken into consideration for all test data recorded in the report.

Test Facility

The test site used by BACL to collect test data is located in the No.5040, Huilongwan Plaza, No.1, Shawan Road, Jinniu District, Chengdu, Sichuan, China.

Test site at BACL 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 April 24, 2015. 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.: 560332. 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 EUT was configured for testing in an engineering mode which was provided by the manufacturer.

The device employs 63 channels as below list:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
1	2409	33	2441
2	2410	34	2442
~	~	~	~
~	~	62	2470
31	2439	63	2471
32	2440	/	/

EUT was tested with Channel 1, 32 and 63.

EUT Exercise Software

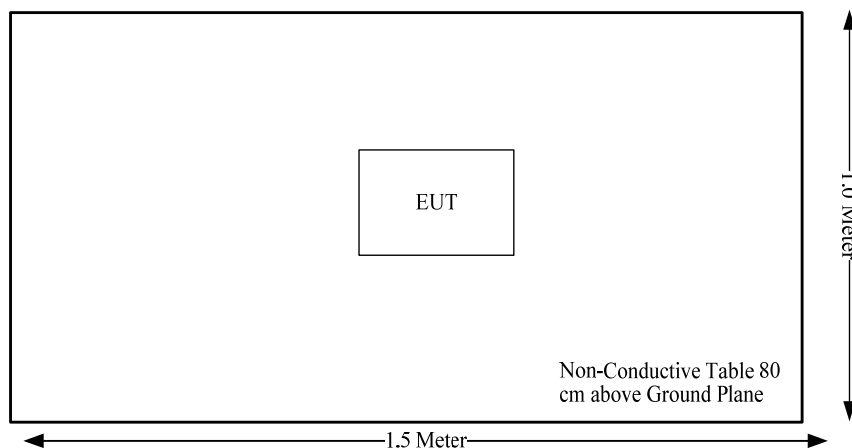
No Test software was used in test, the maximum power was configured by system default setting, the test modes and channels were changed by keys.

Equipment Modifications

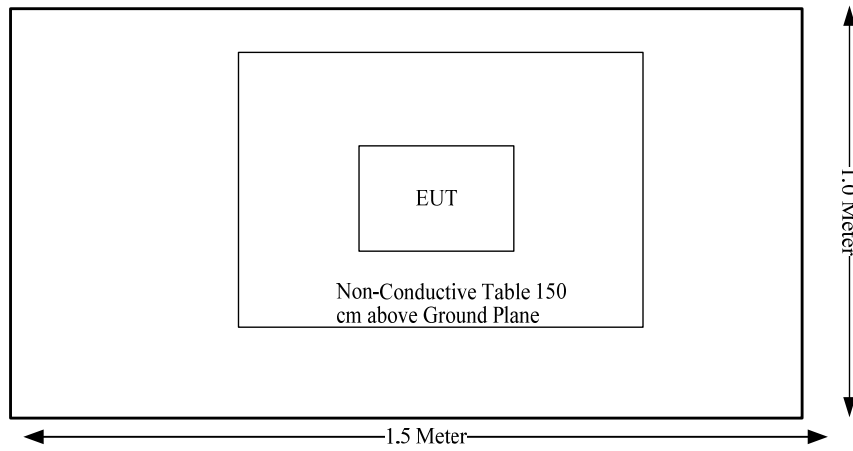
No modifications were made to the EUT.

Block Diagram of Test Setup

Radiation Emission Test Below 1GHz:



Radiation Emission Test Above 1GHz:



SUMMARY OF TEST RESULTS

FCC Rules	Description of Test	Result
§15.203	Antenna Requirement	Compliance
§15.207(a)	Conduction Emissions	Not Applicable
15.205, §15.209, §15.249	Radiated Emissions	Compliance
§15.215 (c)	20 dB Bandwidth	Compliance

Note:

Not Applicable: The EUT is battery operated equipment.

FCC§15.203 - ANTENNA REQUIREMENT

Applicable Standard

For intentional device, 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.

Antenna Connector Construction

The EUT has an Internal antenna, the antenna gain is 0dBi, fulfill the requirement of this section. Please refer to the EUT photos.

Result: Compliant.

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:

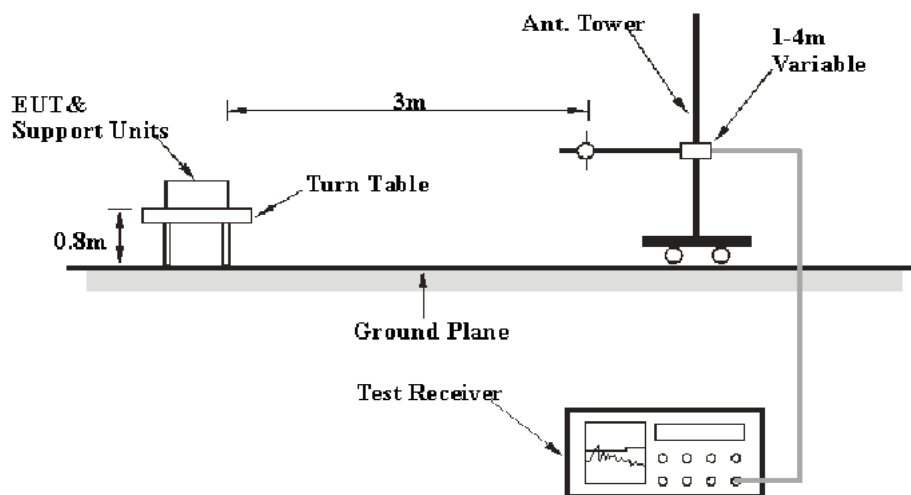
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

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

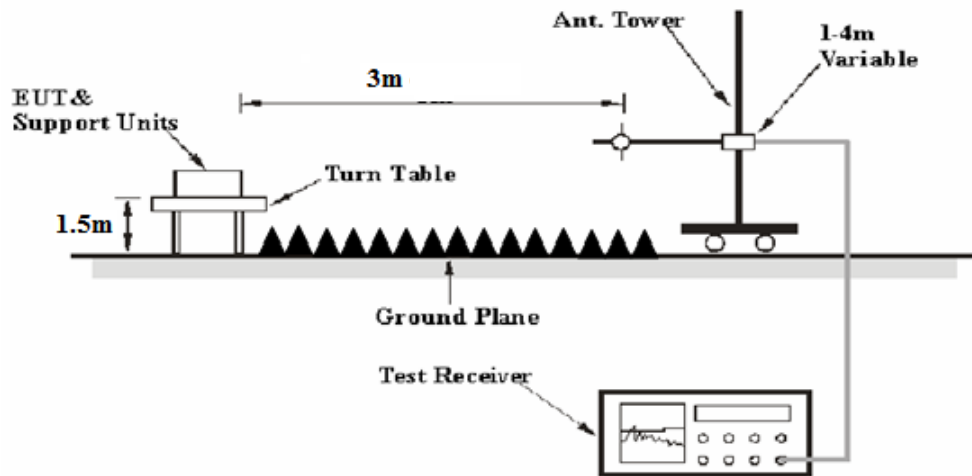
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

EUT Setup

Below 1 GHz:



Above 1 GHz:



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 15.209/15.205 and FCC 15.249 limits.

Test Equipment Setup

The system was investigated from 30 MHz to 25 GHz.

During the radiated emission test, the EMI test receiver & Spectrum Analyzer Setup were set with the following configurations:

Frequency Range	RBW	Video B/W	IF B/W	Detector
30 MHz – 1000 MHz	120 kHz	300 kHz	120 kHz	QP
Above 1 GHz	1MHz	3 MHz	/	PK
	1MHz	10 Hz	/	AV

Test Procedure

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

All data was recorded in the Quasi-peak detection mode from 30 MHz to 1GHz, peak and average detection mode above 1 GHz.

For hand-held device, test was performed with X.Y.Z Axis, the worst axis was reported.

X Axis means: lie down on the table

Y Axis means: Erect on the table

Z Axis means: Stand sideways on the table

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:

$$\text{Corrected Amplitude} = \text{Meter Reading} + \text{Antenna Factor} + \text{Cable Loss} - \text{Amplifier Gain}$$

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:

$$\text{Margin} = \text{Limit} - \text{Corrected Amplitude}$$

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Agilent	Amplifier	8447D	2944A10442	2016-12-02	2017-12-01
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Sunol Sciences	Broadband Antenna	JB3	A121808	2016-04-10	2019-04-09
Rohde & Schwarz	Spectrum Analyzer	FSEM30	100018	2016-12-02	2017-12-01
ETS	Horn Antenna	3115	003-6076	2016-12-02	2017-12-01
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-0113024	2016-11-18	2019-11-18
Mini-circuits	Amplifier	ZVA-183-S+	771001215	2017-05-20	2018-05-19
EMCT	Semi-Anechoic Chamber	966	966-1	2015-04-24	2018-04-23
Unknown	RF Cable (below 1GHz)	Unknown	NO.1	2016-11-10	2017-11-09
Unknown	RF Cable (below 1GHz)	Unknown	NO.4	2016-11-10	2017-11-09
Unknown	RF Cable (above 1GHz)	Unknown	NO.2	2016-11-10	2017-11-09
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-011312	2016-08-18	2017-08-18
Quinstar	Amplifier	QLW-18405536-JO	15964001032	2016-08-18	2017-08-18
Agilent	Spectrum Analyzer	8564E	5943A01752	2016-08-18	2017-08-18

* **Statement of Traceability:** BACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B “Implementation of traceability policy in accredited laboratories”.

Test Data

Environmental Conditions

Temperature:	27.6 °C
Relative Humidity:	52 %
ATM Pressure:	100 kPa

The testing was performed by Jacky Gu on 2017-07-11.

Test Mode: Transmitting(X Axis was the worst)

30MHz-25GHz

Frequency (MHz)	Receiver		Rx Antenna		Cable loss (dB)	Amplifier Gain (dB)	Corrected Amplitude (dBµV/m)	Limit (dBµV/m)	Margin (dB)
	Reading (dBµV)	Detector	Polar (H/V)	Factor (dB(1/m))					
Low Channel: 2409 MHz									
2409	67.29	PK	H	23.51	3.00	0.00	93.80	114.00	20.20
2409	57.93	AV	H	23.51	3.00	0.00	84.44	94.00	9.56
2409	63.87	PK	V	23.51	3.00	0.00	90.38	114.00	23.62
2409	53.61	AV	V	23.51	3.00	0.00	80.12	94.00	13.88
2400	30.48	PK	H	23.57	3.00	0.00	57.05	74.00	16.95
2400	17.86	AV	H	23.57	3.00	0.00	44.43	54.00	9.57
4818	50.71	PK	H	30.82	5.12	26.87	59.78	74.00	14.22
4818	39.92	AV	H	30.82	5.12	26.87	48.99	54.00	5.01
7227	37.65	PK	H	34.75	6.17	26.36	52.21	74.00	21.79
7227	22.89	AV	H	34.75	6.17	26.36	37.45	54.00	16.55
5985	37.50	PK	H	32.88	5.95	26.66	49.67	74.00	24.33
5985	22.56	AV	H	32.88	5.95	26.66	34.73	54.00	19.27
781.75	33.65	QP	H	21.75	2.28	28.48	29.20	46.00	16.80
476.2	36.11	QP	H	18.05	1.61	28.67	27.10	46.00	18.90
Middle Channel: 2440 MHz									
2440	68.98	PK	H	23.40	3.00	0.00	95.38	114.00	18.62
2440	58.61	AV	H	23.40	3.00	0.00	85.01	94.00	8.99
2440	64.27	PK	V	23.40	3.00	0.00	90.67	114.00	23.33
2440	54.13	AV	V	23.40	3.00	0.00	80.53	94.00	13.47
4880	51.33	PK	H	31.02	5.09	26.87	60.57	74.00	13.43
4880	40.02	AV	H	31.02	5.09	26.87	49.26	54.00	4.74
7320	37.38	PK	H	34.94	6.22	26.40	52.14	74.00	21.86
7320	23.15	AV	H	34.94	6.22	26.40	37.91	54.00	16.09
5435	37.39	PK	H	32.18	5.46	26.65	48.38	74.00	25.62
5435	23.38	AV	H	32.18	5.46	26.65	34.37	54.00	19.63
6215	36.66	PK	H	33.12	6.03	26.60	49.21	74.00	24.79
6215	22.43	AV	H	33.12	6.03	26.60	34.98	54.00	19.02
781.75	33.95	QP	H	21.75	2.28	28.48	29.50	46.00	16.50
476.2	35.91	QP	H	18.05	1.61	28.67	26.90	46.00	19.10
High Channel: 2471 MHz									
2471	69.93	PK	H	23.30	2.99	0.00	96.22	114.00	17.78
2471	60.58	AV	H	23.30	2.99	0.00	86.87	94.00	7.13
2471	65.09	PK	V	23.30	2.99	0.00	91.38	114.00	22.62
2471	54.04	AV	V	23.30	2.99	0.00	80.33	94.00	13.67
2483.5	35.94	PK	H	23.26	2.99	0.00	62.19	74.00	11.81
2483.5	18.33	AV	H	23.26	2.99	0.00	44.58	54.00	9.42
4942	49.12	PK	H	31.21	5.06	26.88	58.51	74.00	15.49
4942	37.45	AV	H	31.21	5.06	26.88	46.84	54.00	7.16
7413	37.30	PK	H	35.13	6.26	26.44	52.25	74.00	21.75
7413	22.49	AV	H	35.13	6.26	26.44	37.44	54.00	16.56
5745	36.96	PK	H	32.59	5.74	26.63	48.66	74.00	25.34
5745	22.58	AV	H	32.59	5.74	26.63	34.28	54.00	19.72
781.75	33.65	QP	H	21.75	2.28	28.48	29.20	46.00	16.80
476.2	35.81	QP	H	18.05	1.61	28.67	26.80	46.00	19.20

FCC §15.215(c) – 20 dB BANDWIDTH TESTING

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. Measure the frequency difference of two frequencies that were attenuated 20 dB from the reference level. Record the frequency difference as the emission bandwidth.
3. Repeat above procedures until all frequencies measured were complete.

Test Equipment List and Details

Manufacturer	Description	Model	Serial Number	Calibration Date	Calibration Due Date
Rohde & Schwarz	EMI Test Receiver	ESCI	100028	2016-12-02	2017-12-01
Unknown	RF Cable	Unknown	C-5	Each Time	/

* **Statement of Traceability:** BACL(Chengdu) attests that all of the calibrations on the equipment items listed above were traceable to NIM or to another internationally recognized National Metrology Institute (NMI), and were compliant with the NIST HB 150-2016 Normative Annex B "Implementation of traceability policy in accredited laboratories".

Test Data

Environmental Conditions

Temperature:	25.9 °C
Relative Humidity:	62 %
ATM Pressure:	100.2 kPa

The testing was performed by Jacky Gu on 2017-07-06.

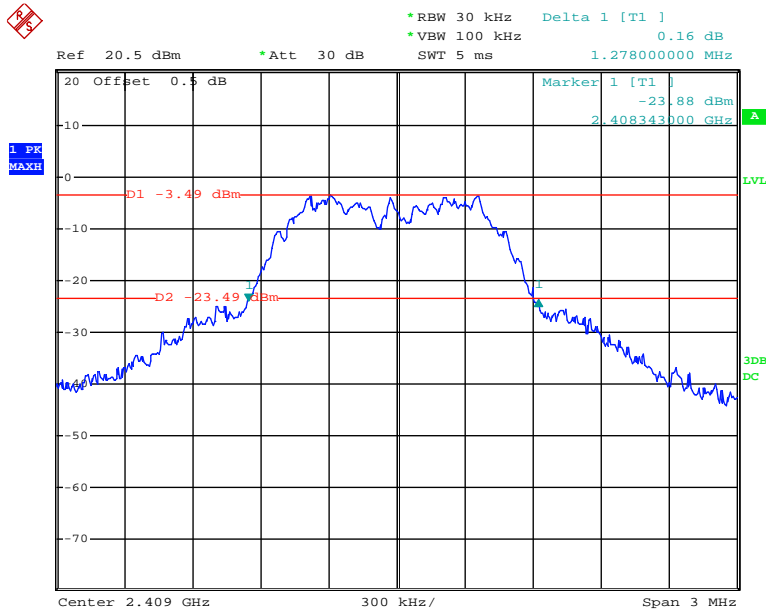
Test Result: Compliant.

Please refer to following tables and plots

Test Mode: Transmitting

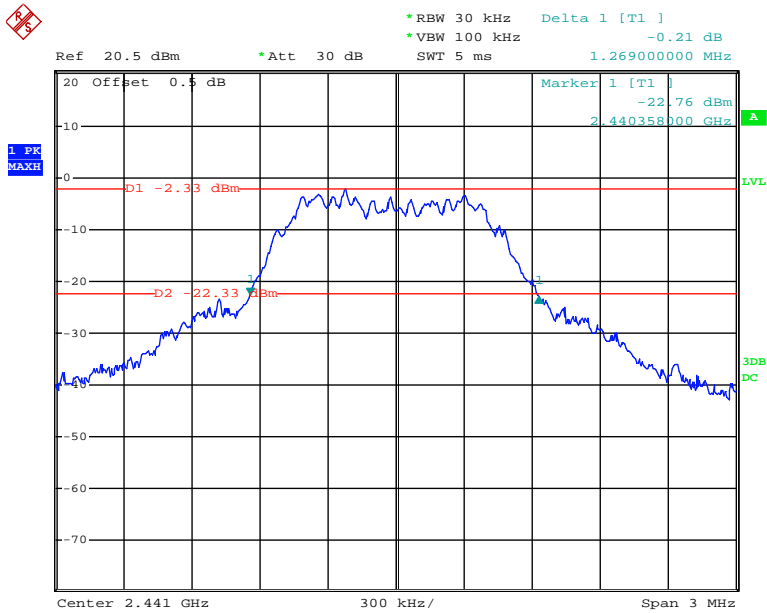
Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2409	1.28
Middle	2440	1.27
High	2471	1.31

Low Channel



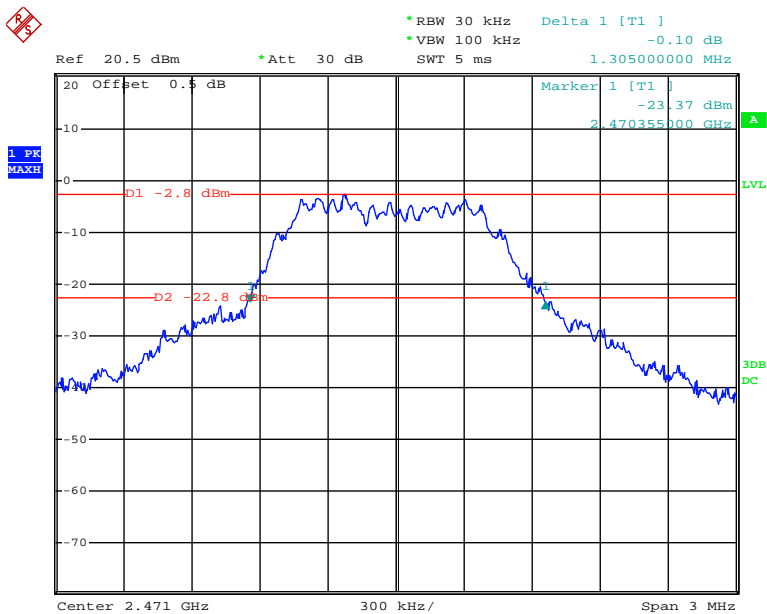
Date: 6.JUL.2017 17:38:10

Middle Channel



Date: 6.JUL.2017 17:36:30

High Channel



Date: 6.JUL.2017 17:42:42

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