

FCC PART 15.249

TEST REPORT

For

NANOGRID LIMITED

ROOM 1405, 135 BONHAM STRAND TRADE CENTRE, 135 BONHAM STRAND, SHEUNG
WAN, HONG KONG

FCC ID: 2AEWY-NL28

Report Type: Original Report	Product Name: Nanoleaf Light Panels Smarter Kit - Rhythm Edition
Report Number: RDG170821055-00	
Report Date: 2018-07-03	
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* This report may contain data that are not covered by the A2LA accreditation and are marked with an asterisk "**".

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GENERAL INFORMATION

Product Description for Equipment under Test (EUT)

The **NANOGRID LIMITED**'s product, model number: **NL28-2003TW(FCC ID: 2AEWY-NL28)** (the "EUT") in this report was a **Nanoleaf Light Panels Smarter Kit - Rhythm Edition**, which was measured approximately: 7.9 cm (L) x 5.0 cm (W) x 1.0 cm (H), rated input voltage: DC24V from adapter.

Note: The series product, models NL28-2XXXXX are electrically identical with the model NL28-2003TW, we selected NL28-2003TW for fully testing. The differences between them were explained in the declaration letter.

**All measurement and test data in this report was gathered from production sample serial number: 1708210055 (Assigned by BACL, Dongguan). The EUT was received on 2017-08-21.*

Objective

This type approval report is prepared on behalf of **NANOGRID LIMITED** 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, 15.207, 15.209 and 15.249 rules.

Related Submittal(s)/Grant(s)

Submitted with the part of a system with FCC ID: 2AEWY-NL26.

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 and Bay Area Compliance Laboratories Corp. (Dongguan).

Measurement Uncertainty

Parameter	Measurement Uncertainty
Occupied Channel Bandwidth	±5 %
Unwanted Emissions, radiated	30M~200MHz: 4.58 dB for Horizontal, 4.59 dB for Vertical 200M~1GHz: 4.83 dB for Horizontal, 5.85 dB for Vertical 1G~6GHz: 4.45 dB, 6G~40GHz: 5.23 dB
Temperature	±1 °C
Humidity	±5%
DC and low frequency voltages	±0.4%
Duty Cycle	1%
AC Power Lines Conducted Emission	3.12 dB (150 kHz to 30 MHz)

Test Facility

The Test site used by Bay Area Compliance Laboratories Corp. (Dongguan) to collect test data is located on the No.69 Pulongcun, Puxinhu Industry Area, Tangxia, Dongguan, Guangdong, China.

The test site has been approved by the FCC under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 897218,the FCC Designation No. : CN1220.

The test site has been registered with ISED Canada under ISED Canada Registration Number 3062D.

SYSTEM TEST CONFIGURATION

Justification

The EUT was configured for testing in an engineering mode which was provided by the manufacturer.

The device operates 2.4GHz band and 5.8GHz band. For 2.4GHz band, total 40 channels employs by the device:

Channel	Frequency (MHz)	Channel	Frequency (MHz)
0	2402	20	2442
1	2404	...	...
...	...	...	...
...	...	...	...
..	...	38	2478
19	2440	39	2480

EUT was tested with channel 0, 19 and 39.

For 5.8GHz band, only employs 5765.55MHz by the device.

EUT Exercise Software

No software was used in test, the device was configured to engineer mode by manufacturer, test channel switched by keys.

Equipment Modifications

No modifications were made to the EUT.

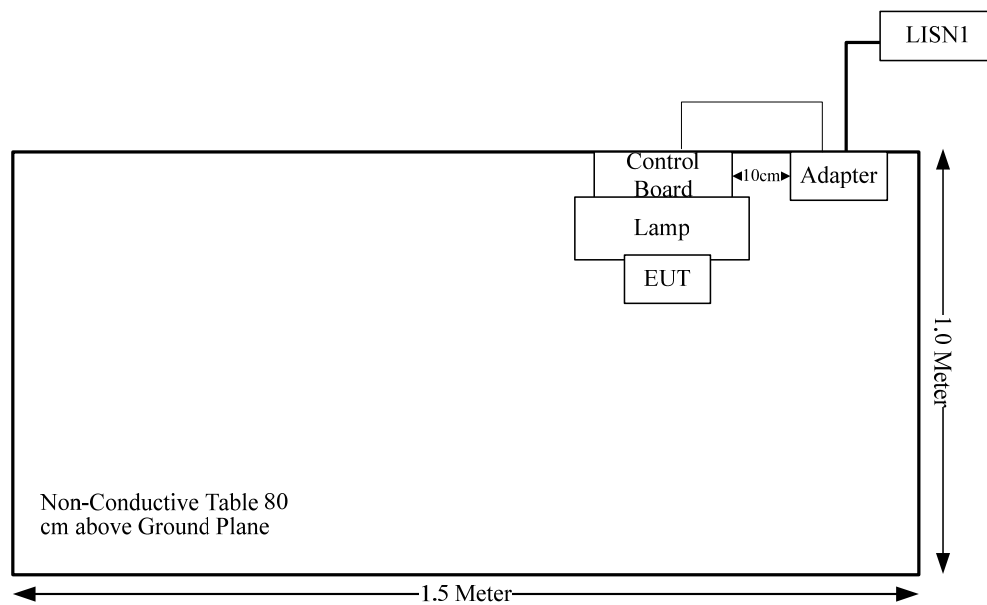
Local Support Equipment List and Details

Manufacturer	Description	Model	Serial Number	FCC ID
NANOGRID	Control Board	NL22-0001TW-9PK	21055-01	FCC ID:2AEWY-NL22
NANOGRID	Lamp	NL22-0001TW-3PK	21055-02	N/A
NANOGRID	Adapter	ATS065T-A240	21055-03	N/A

Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From	To
Adapter Cable	No	No	2.0	Adapter	Control Board

Block Diagram of Test Setup



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

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 two internal antenna arrangement, one for 2.4GHz transmission, one for 5.8GHz transmission, and the antenna gain is 2.15 dBi for 2.4GHz antenna, 0 dBi for 5.8GHz antenna, fulfill the requirement of this section. Please refer to the EUT photos.

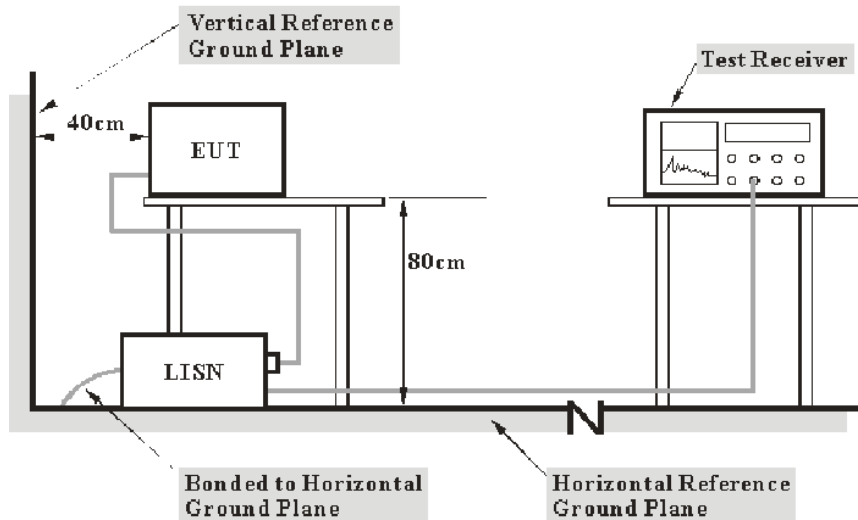
Result: Compliant.

FCC §15.207 (a)– AC LINE CONDUCTED EMISSIONS

Applicable Standard

FCC§15.207(a)

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 setup of EUT is according with per ANSI C63.10-2013 measurement procedure. The specification used was with the FCC Part 15.207.

The spacing between the peripherals was 10 cm.

The adapter was connected to the main LISN with a 120 V/60 Hz AC power source.

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

During the conducted emission test, the adapter was connected to the first LISN.

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

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

Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

$$C_f = A_C + VDF$$

Herein,

V_C (cord. Reading): corrected voltage amplitude

V_R : reading voltage amplitude

A_C : attenuation caused by cable loss

VDF: voltage division factor of AMN

C_f : Correction Factor

The “**Margin**” column of the following data tables indicates the degree of compliance within 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
R&S	EMI Test Receiver	ESCS 30	830245/006	2016-12-08	2017-12-08
R&S	L.I.S.N	ESH2-Z5	892107/021	2017-09-01	2018-09-01
R&S	Two-line V-network	ENV 216	3560.6550.12	2016-12-08	2017-12-08
R&S	Test Software	EMC32	Version8.53.0	N/A	N/A
Unknown	Coaxial Cable	2m	C0200/01	2017-09-05	2018-09-05

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

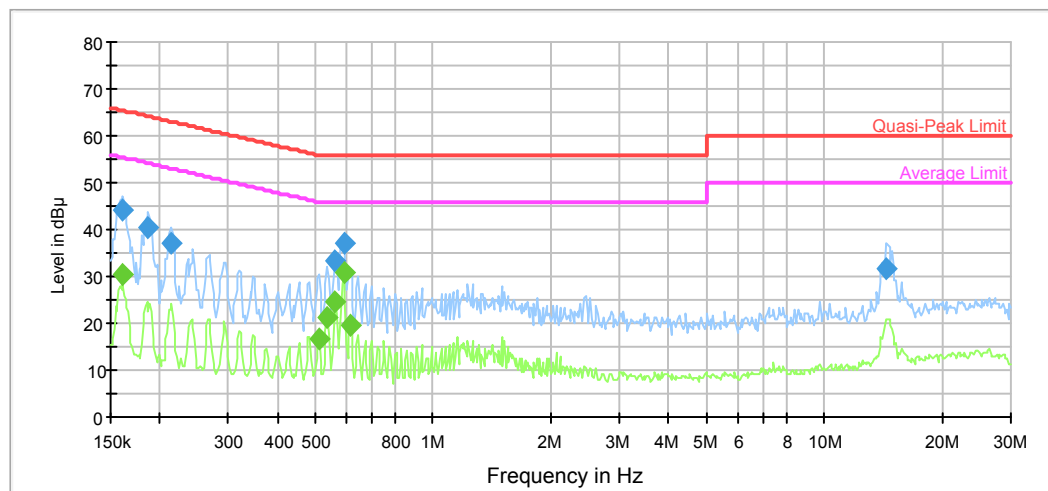
Test Data**Environmental Conditions**

Temperature:	27.1 °C
Relative Humidity:	50 %
ATM Pressure:	100.5 kPa

The testing was performed by Alex You on 2017-10-09.

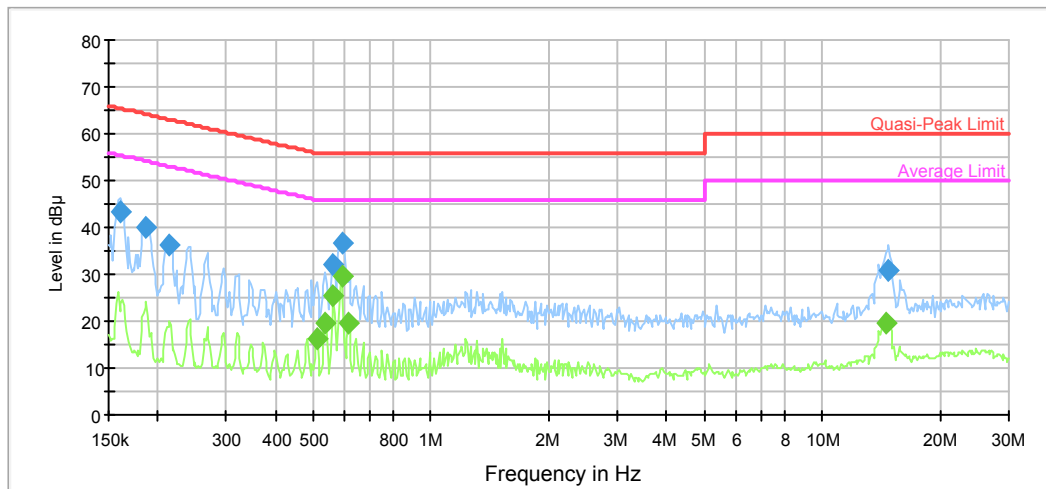
Test Mode: Transmitting(2.4GHz+ 5.8GHz transmitting)

AC120V, 60 Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.161152	44.1	9.000	L1	11.0	21.3	65.4	Compliance
0.187494	40.2	9.000	L1	10.7	23.9	64.1	Compliance
0.212988	37.0	9.000	L1	10.5	26.1	63.1	Compliance
0.563041	33.3	9.000	L1	9.9	22.7	56.0	Compliance
0.590613	37.2	9.000	L1	9.8	18.8	56.0	Compliance
14.420371	31.5	9.000	L1	9.9	28.5	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.161152	30.4	9.000	L1	11.0	25.0	55.4	Compliance
0.511698	16.9	9.000	L1	9.9	29.1	46.0	Compliance
0.536756	21.1	9.000	L1	9.9	24.9	46.0	Compliance
0.563041	24.7	9.000	L1	9.9	21.3	46.0	Compliance
0.590613	31.0	9.000	L1	9.8	15.0	46.0	Compliance
0.614619	19.5	9.000	L1	9.8	26.5	46.0	Compliance

AC120V, 60 Hz, Neutral:

Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.161152	43.3	9.000	N	11.0	22.1	65.4	Compliance
0.187494	39.9	9.000	N	10.7	24.2	64.1	Compliance
0.214692	36.4	9.000	N	10.5	26.6	63.0	Compliance
0.563041	32.0	9.000	N	9.8	24.0	56.0	Compliance
0.590613	36.6	9.000	N	9.8	19.4	56.0	Compliance
14.769236	30.8	9.000	N	9.9	29.2	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.511698	16.2	9.000	N	9.9	29.8	46.0	Compliance
0.536756	19.5	9.000	N	9.9	26.5	46.0	Compliance
0.563041	25.6	9.000	N	9.8	20.4	46.0	Compliance
0.590613	29.7	9.000	N	9.8	16.3	46.0	Compliance
0.614619	19.8	9.000	N	9.8	26.2	46.0	Compliance
14.535734	19.4	9.000	N	9.9	30.6	50.0	Compliance

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:

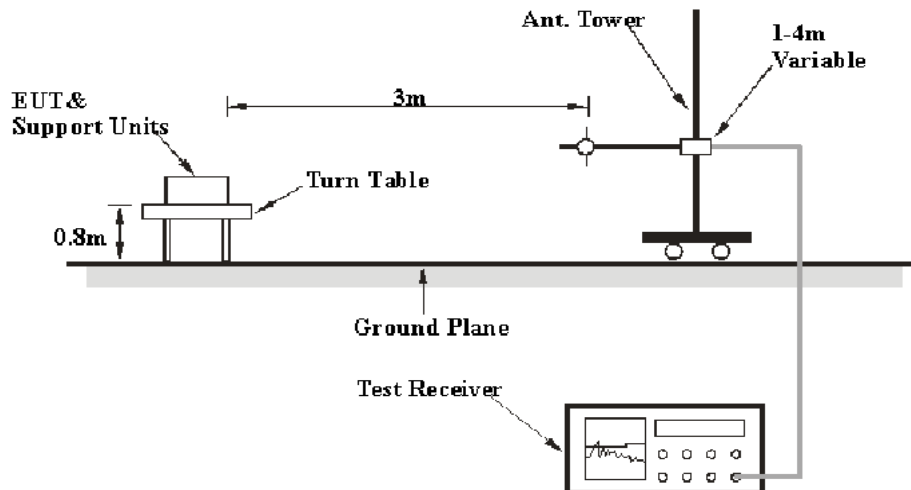
Fundamental frequency	Field strength of fundamental (millivolts/meter)	Field strength of harmonics (microvolts/meter)
902–928 MHz	50	500
2400–2483.5 MHz	50	500
5725–5875 MHz	50	500
24.0–24.25 GHz	250	2500

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

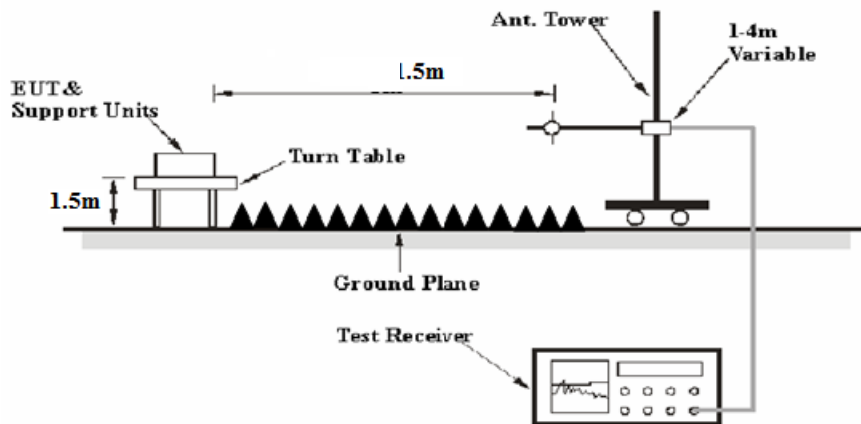
(d) Emissions radiated outside of the specified frequency bands, except for harmonics, shall be attenuated by at least 50 dB below the level of the fundamental or to the general radiated emission limits in §15.209, whichever is the lesser attenuation.

EUT Setup

Below 1 GHz:



Above 1 GHz:



The radiated emission tests were performed in the 3 meters distance, 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 40 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	Measurement
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.

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
R&S	EMI Test Receiver	ESCI	100224	2017-09-01	2018-09-01
Sunol Sciences	Antenna	JB3	A060611-2	2017-08-25	2020-08-25
HP	Amplifier	8447D	2727A05902	2016-09-05	2018-09-05
Agilent	Spectrum Analyzer	E4440A	SG43360054	2016-12-08	2017-12-08
ETS-Lindgren	Horn Antenna	3115	000 527 35	2016-01-05	2019-01-04
MITEQ	Amplifier	AFS42-00101800-25-S-42	2001271	2017-09-05	2018-09-05
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2017-06-27	2018-06-27
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-06-16	2020-06-15
R&S	Spectrum Analyzer	FSP 38	100478	2016-12-08	2017-12-08
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2016-11-18	2019-11-18
Unknown	Coaxial Cable	Chamber A-1	4m	2017-09-01	2018-09-01
Unknown	Coaxial Cable	Chamber B-1	0.75m	2017-09-01	2018-09-01
Unknown	Coaxial Cable	Chamber A-2	10m	2017-09-01	2018-09-01
Unknown	Coaxial Cable	Chamber B-2	8m	2017-09-01	2018-09-01
Farad	Test Software	EZ-EMC	V1.1.4.2	N/A	N/A

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

Test Data

Environmental Conditions

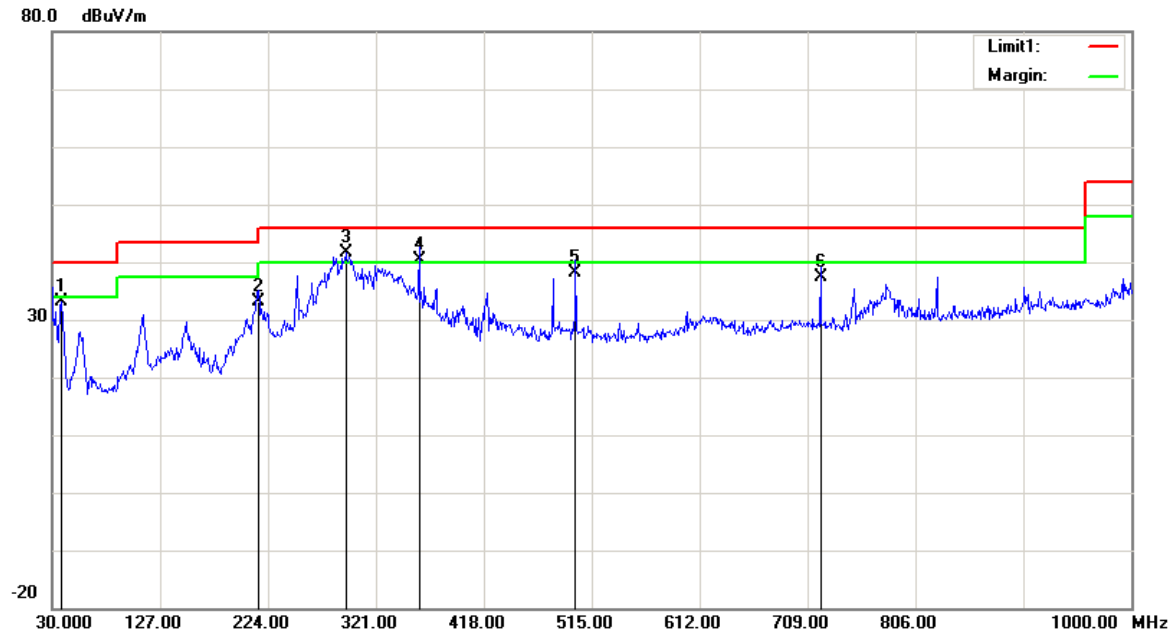
Temperature:	25.9 °C
Relative Humidity:	43 %
ATM Pressure:	101 kPa

The testing was performed by Blake Yang on 2017-11-12.

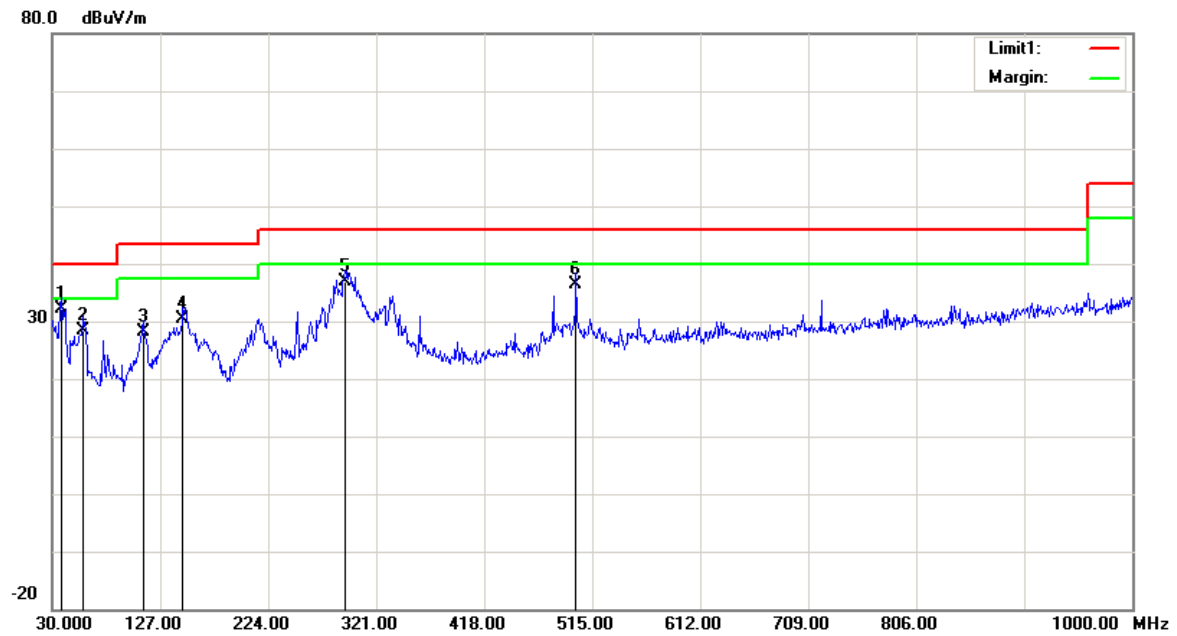
Test Mode: Transmitting

1) 30MHz-1GHz(2.4GHz Middle channel + 5.8GHz transmitting was the worst):

Horizontal:



Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
37.7600	37.25	QP	-4.19	33.06	40.00	6.94
215.2700	40.15	QP	-7.05	33.10	43.50	10.40
293.8400	45.90	QP	-4.16	41.74	46.00	4.26
359.8000	43.25	QP	-2.75	40.50	46.00	5.50
500.4500	39.17	QP	-0.97	38.20	46.00	7.80
720.6400	34.39	QP	3.01	37.40	46.00	8.60

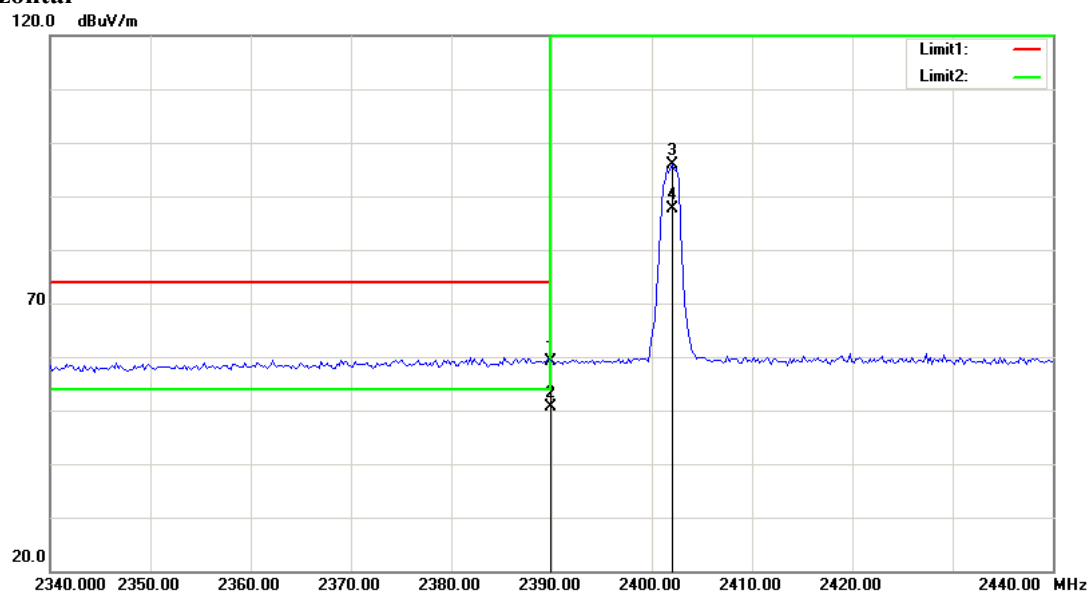
Vertical:

Frequency (MHz)	Receiver Reading (dBuV)	Detector	Correction Factor (dB/m)	Cord. Amp. (dBuV/m)	Limit (dBuV/m)	Margin (dB)
38.7300	37.17	QP	-4.97	32.20	40.00	7.80
57.1600	40.95	QP	-12.55	28.40	40.00	11.60
111.4800	33.83	QP	-5.73	28.10	43.50	15.40
147.3700	36.69	QP	-6.29	30.40	43.50	13.10
292.8700	40.90	QP	-4.10	36.80	46.00	9.20
500.4500	37.27	QP	-0.97	36.30	46.00	9.70

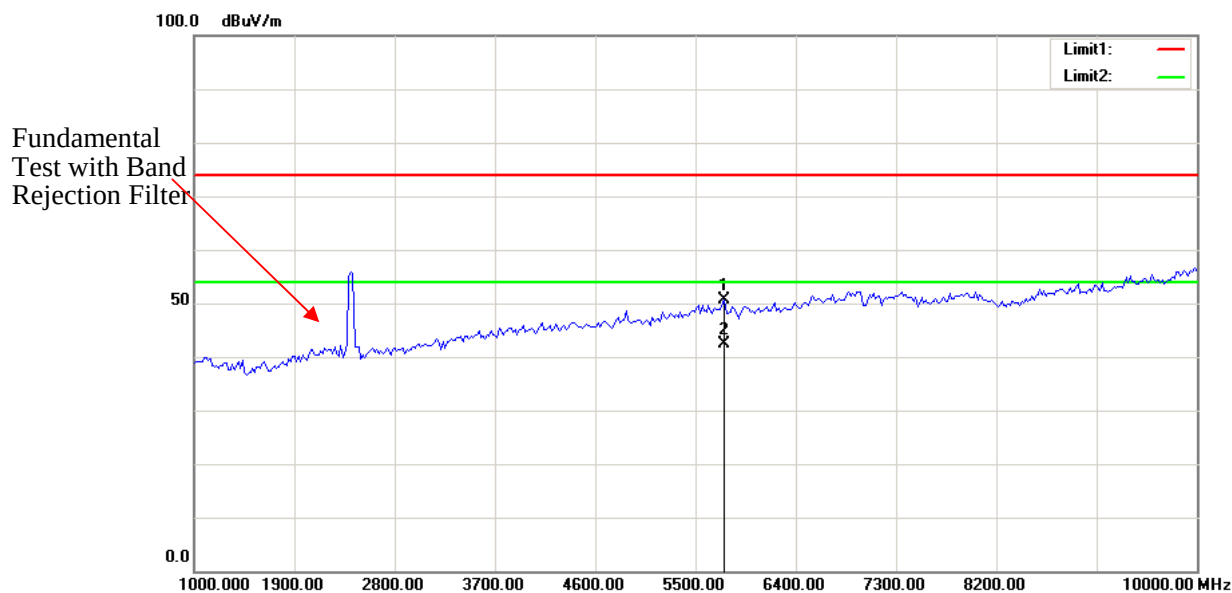
2) 2.4GHz, 1GHz-25GHz

Low Channel

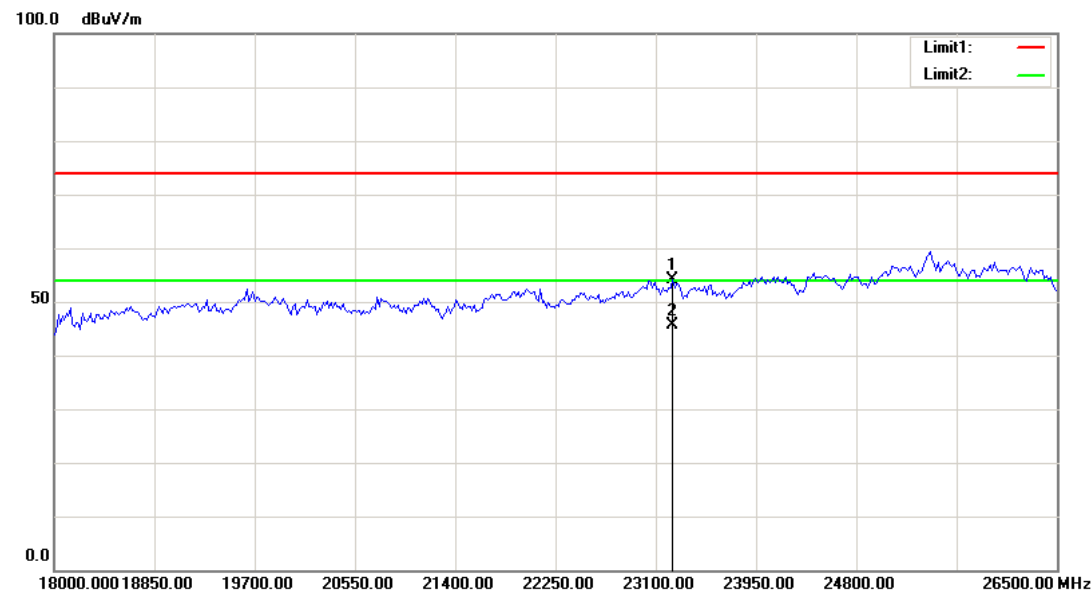
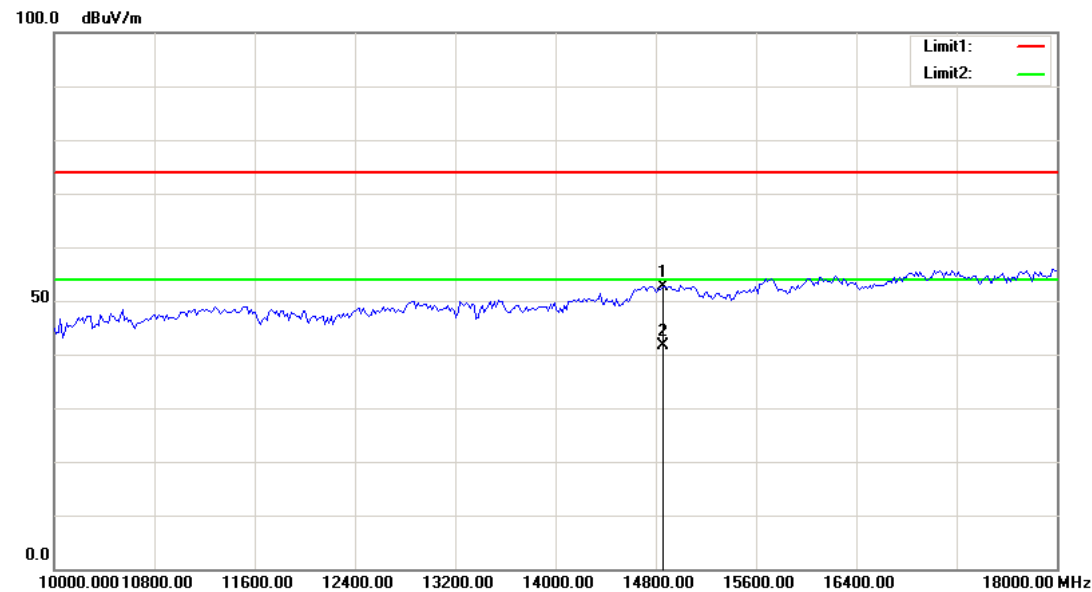
Horizontal

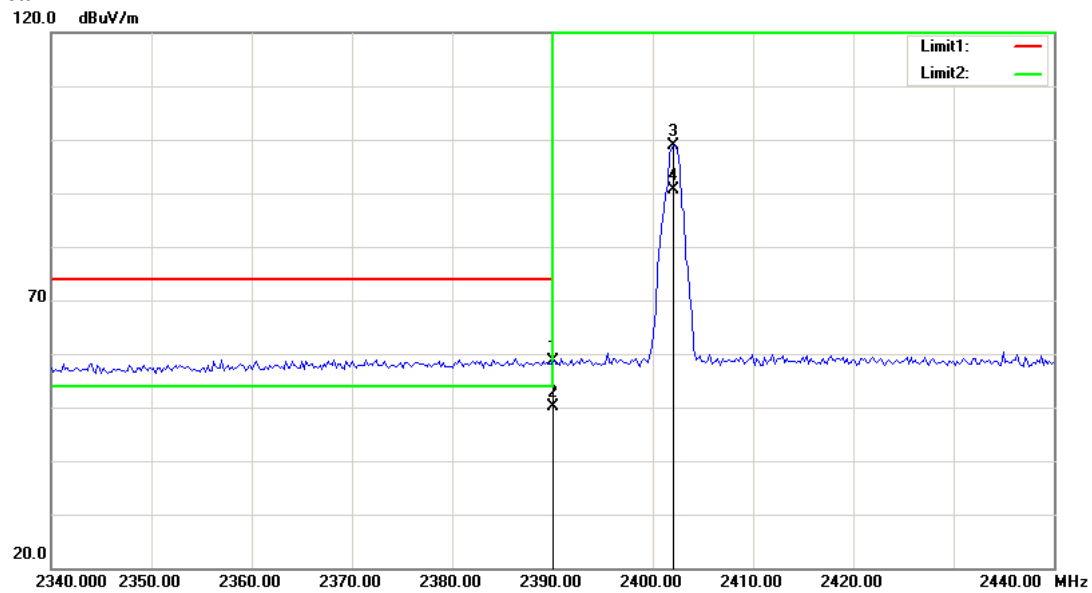


No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	2390.000	28.76	peak	30.48	59.24	74.00	14.76	145	231	
2	2390.000	20.12	AVG	30.48	50.60	54.00	3.40	145	231	
3	2402.124	65.43	peak	30.50	95.93	114	18.07	145	231	Fundamental
4	2402.124	57.20	AVG	30.50	87.70	94	6.3	145	231	Fundamental

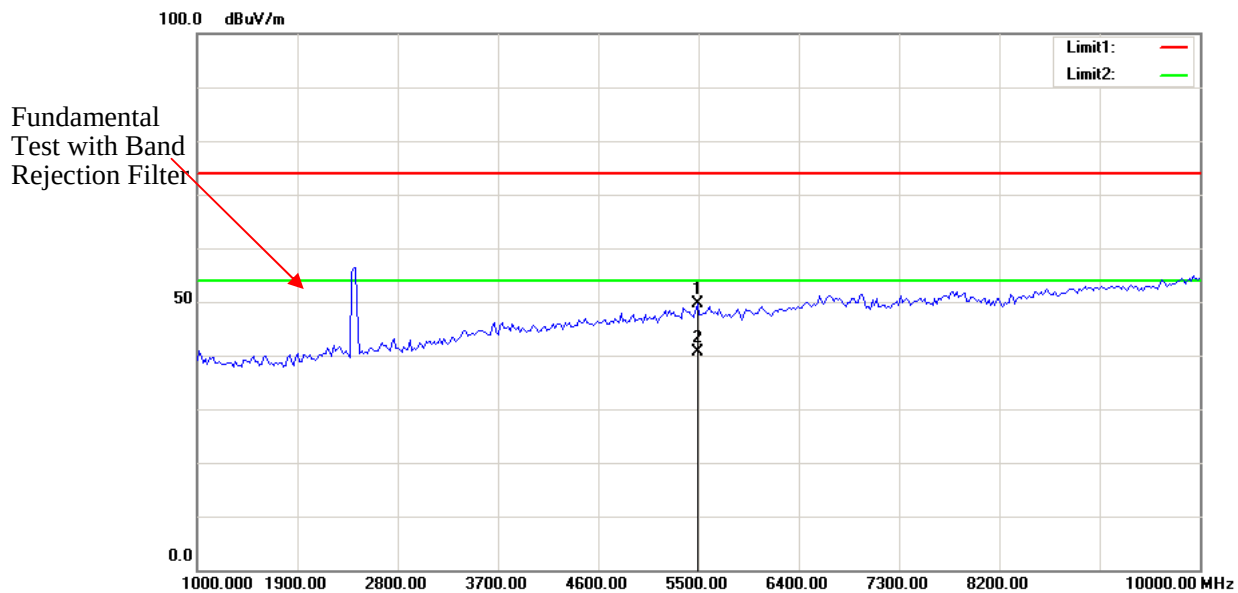


No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	5761.523	36.92	peak	13.76	50.68	74.00	23.32	152	176	
2	5761.523	28.74	AVG	13.76	42.50	54.00	11.50	152	176	

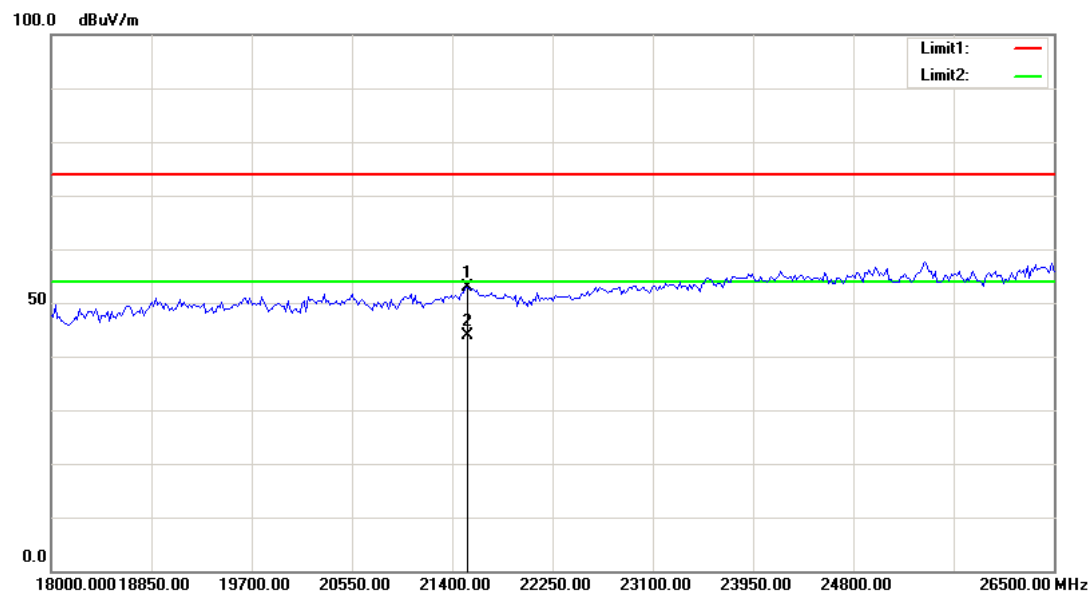
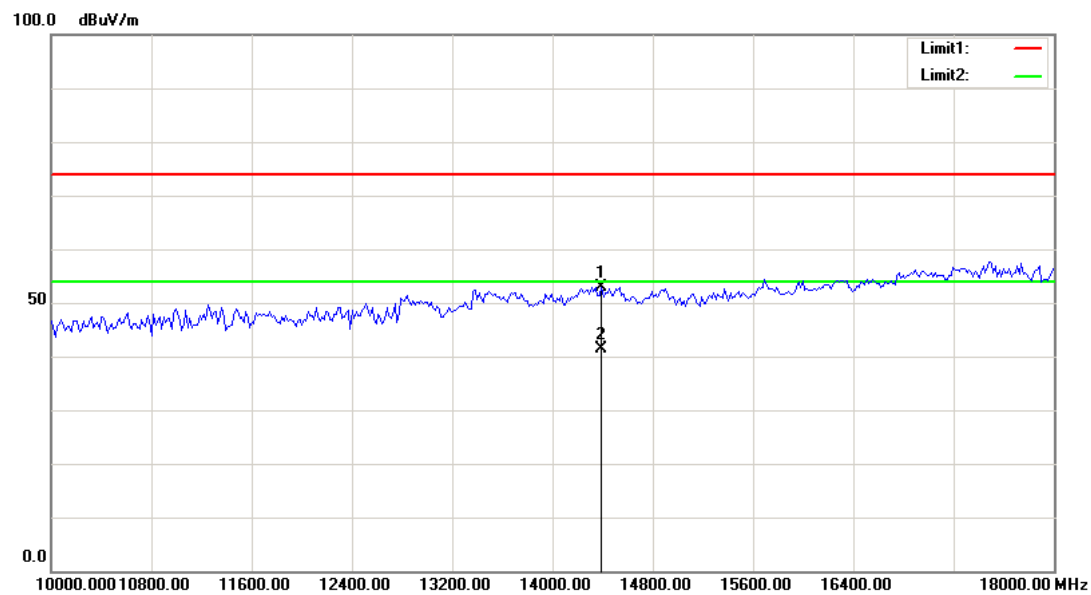


Vertical

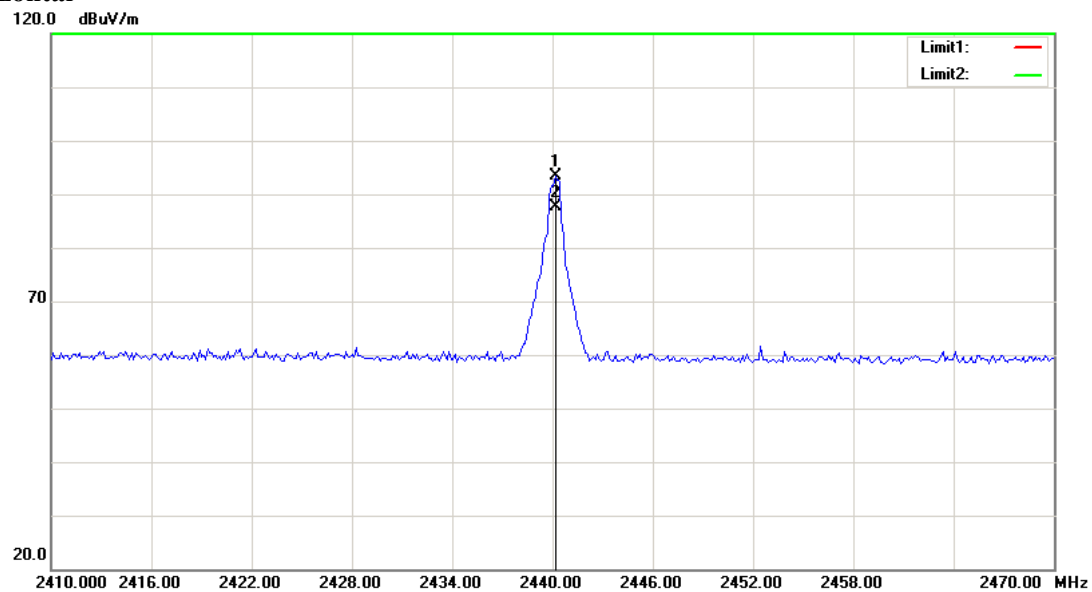
No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	2390.000	28.12	peak	30.48	58.60	74.00	15.40	148	252	
2	2390.000	19.62	AVG	30.48	50.10	54.00	3.90	148	252	
3	2402.124	68.39	peak	30.50	98.89	114	15.11	148	252	Fundamental
4	2402.124	60.10	AVG	30.50	90.6	94	3.4	148	252	Fundamental



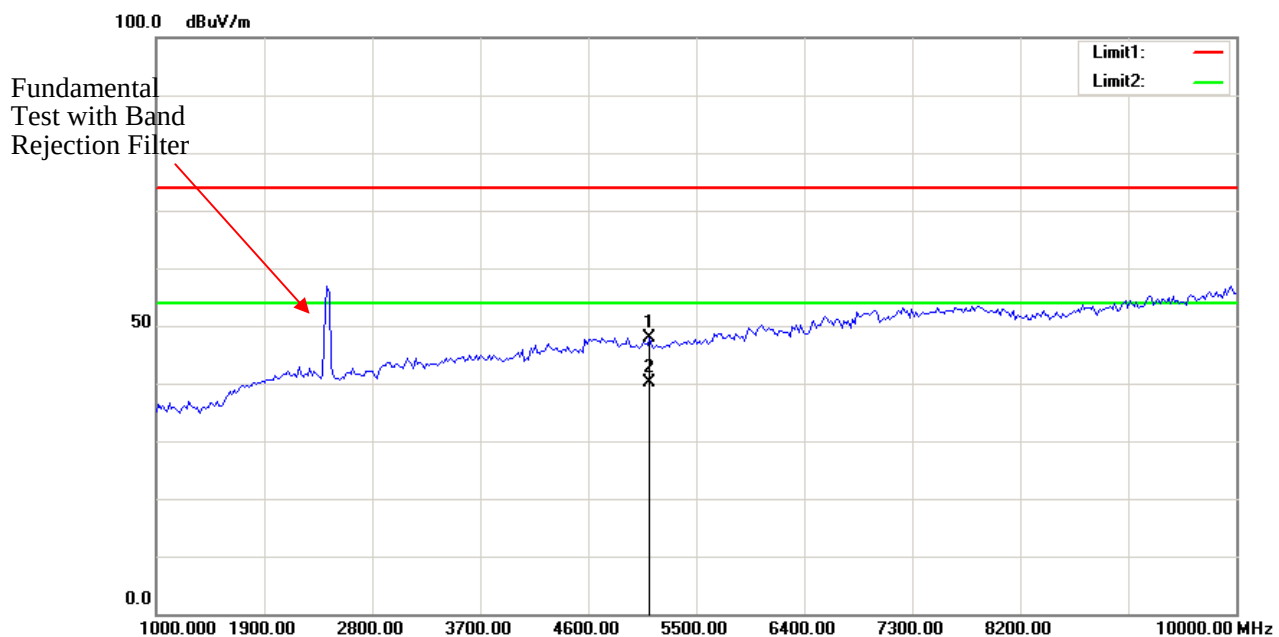
No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	5490.982	36.56	peak	12.95	49.51	74.00	24.49	148	132	
2	5490.982	27.65	AVG	12.95	40.60	54.00	13.40	148	132	



Middle Channel Horizontal

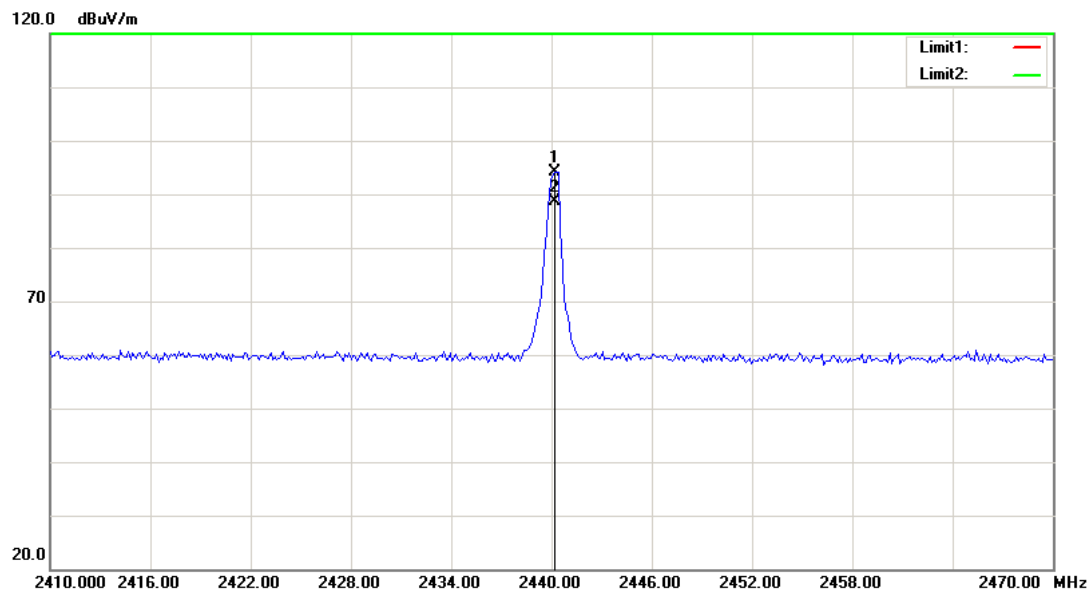


No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	2440.180	62.92	peak	30.58	93.5	114	20.5	149	263	Fundamental
2	2440.180	57.02	AVG	30.58	87.6	94	6.4	149	263	Fundamental

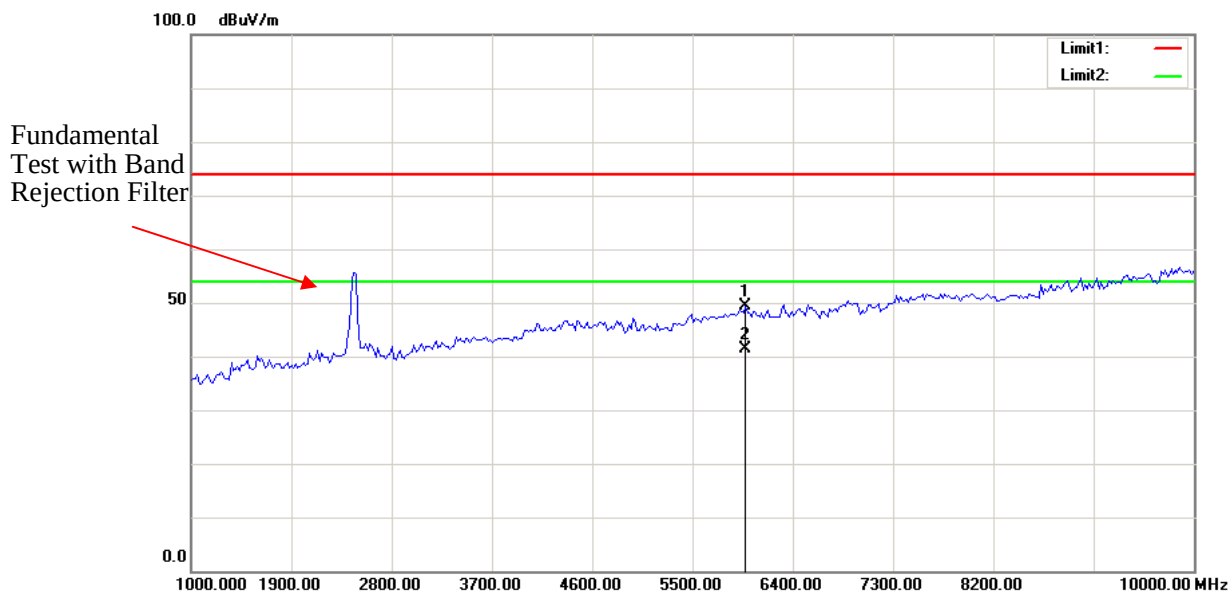


No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	5112.224	36.60	peak	11.25	47.85	74.00	26.15	151	263	
2	5112.224	28.85	AVG	11.25	40.10	54.00	13.90	151	263	

Note: No emission was detected in the range 10-25GHz.

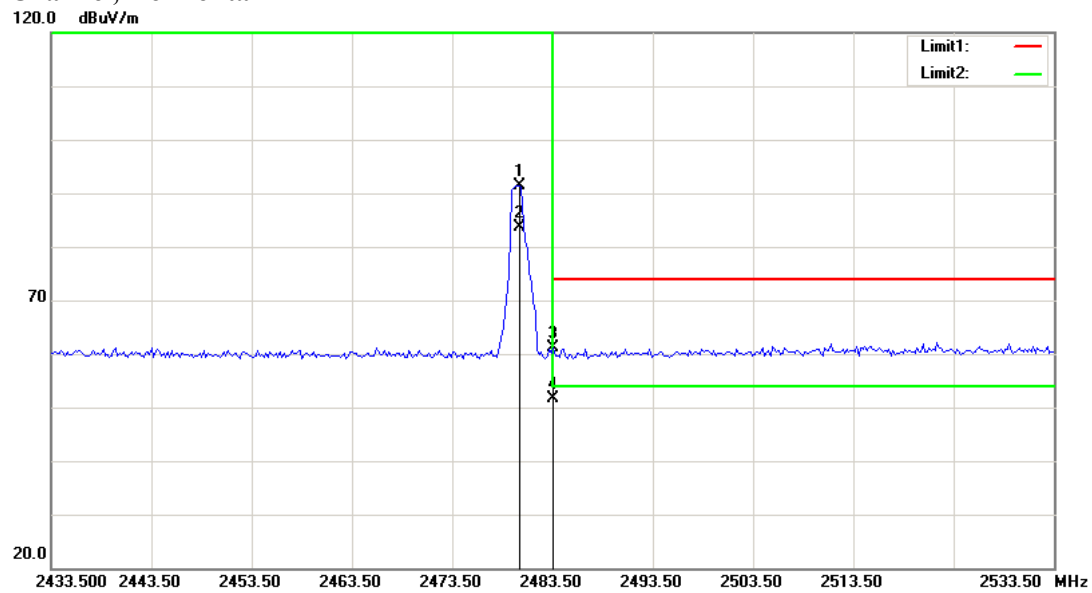
Vertical:

No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	2440.180	63.65	peak	30.58	94.23	114	19.77	152	344	Fundamental
2	2440.180	58.02	AVG	30.58	88.6	94	5.4	152	344	Fundamental

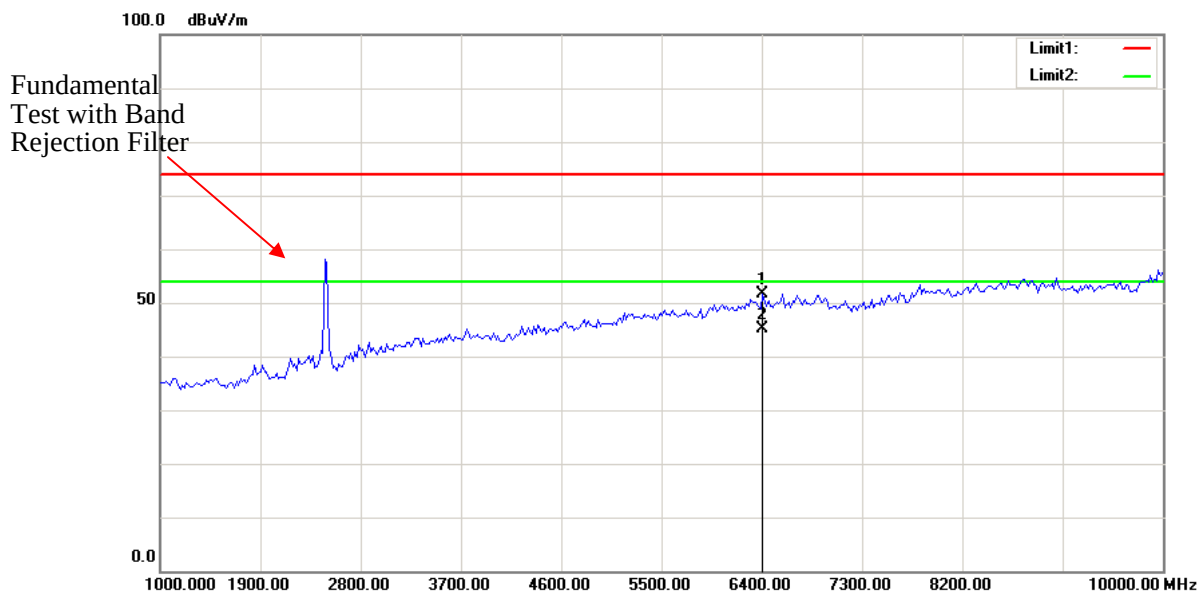


No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	5977.956	34.78	peak	14.50	49.28	74.00	24.72	153	246	
2	5977.956	26.80	AVG	14.50	41.30	54.00	12.70	153	246	

Note: No emission was detected in the range 10-25GHz.

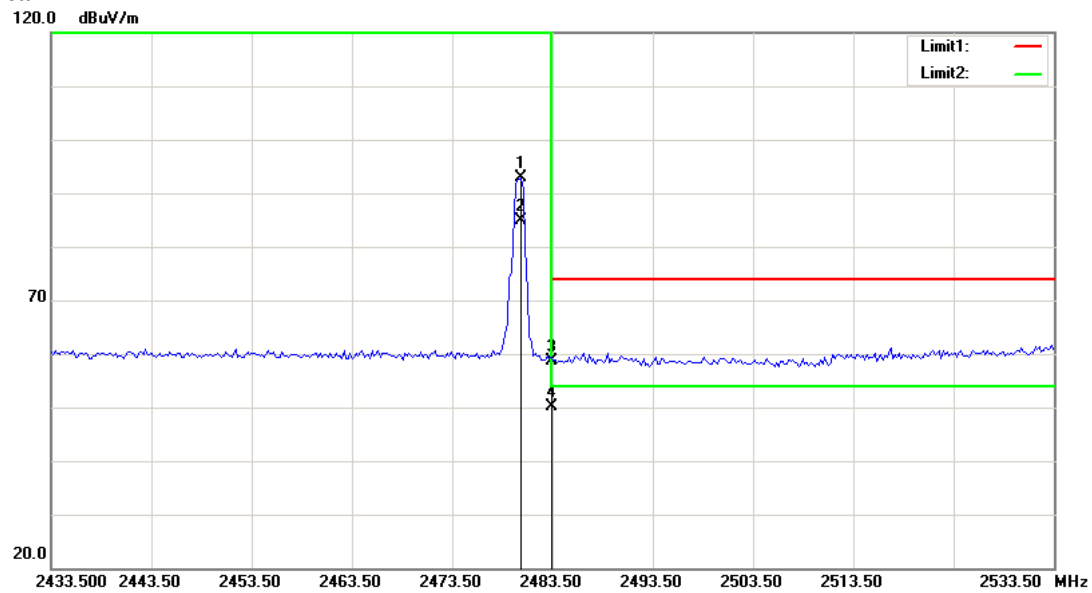
High Channel, Horizontal

No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	2480.193	60.82	peak	30.66	91.48	114	22.52	150	236	Fundamental
2	2480.193	52.94	AVG	30.66	83.6	94	10.4	150	236	Fundamental
3	2483.500	30.50	peak	30.67	61.17	74.00	12.83	150	236	
4	2483.500	20.93	AVG	30.67	51.60	54.00	2.40	150	236	

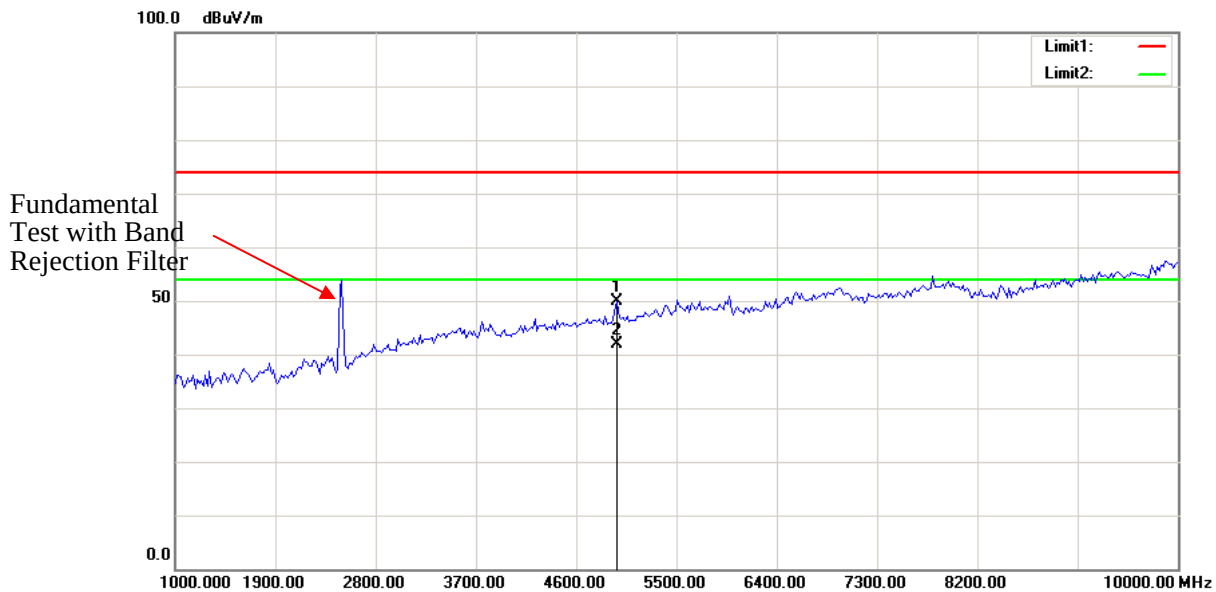


No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	6410.822	36.05	peak	15.46	51.51	74.00	22.49	152	257	
2	6410.822	29.74	AVG	15.46	45.20	54.00	8.80	152	257	

Note: No emission was detected in the range 10-25GHz.

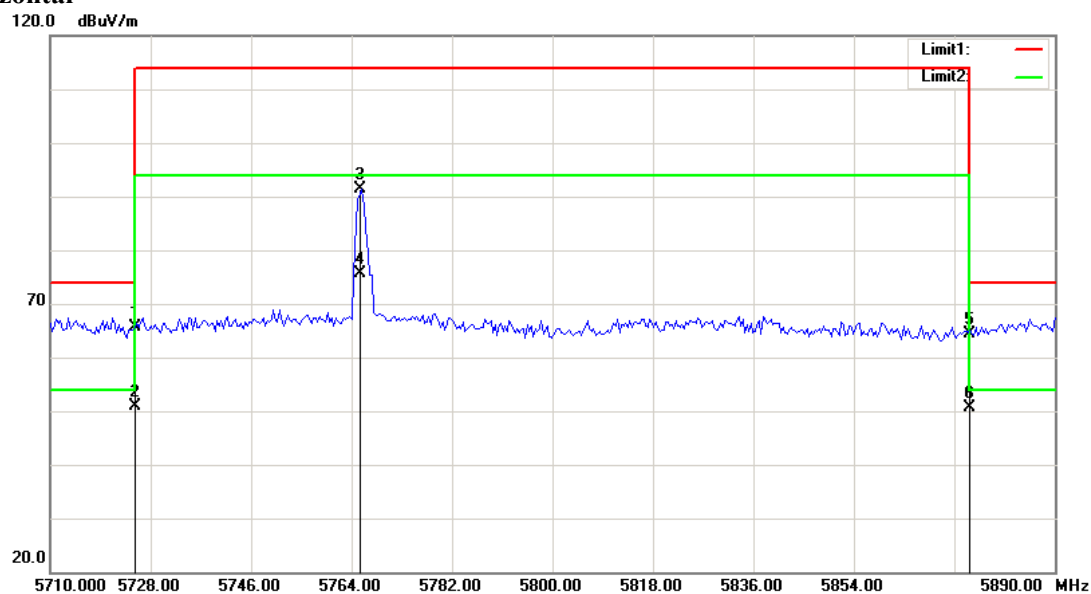
Vertical

No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	2480.394	62.11	peak	30.66	92.77	114	21.23	147	265	Fundamental
2	2480.394	54.14	AVG	30.66	84.8	94	9.2	147	265	Fundamental
3	2483.500	28.03	peak	30.67	58.70	74.00	15.30	147	265	
4	2483.500	19.43	AVG	30.67	50.10	54.00	3.90	147	265	

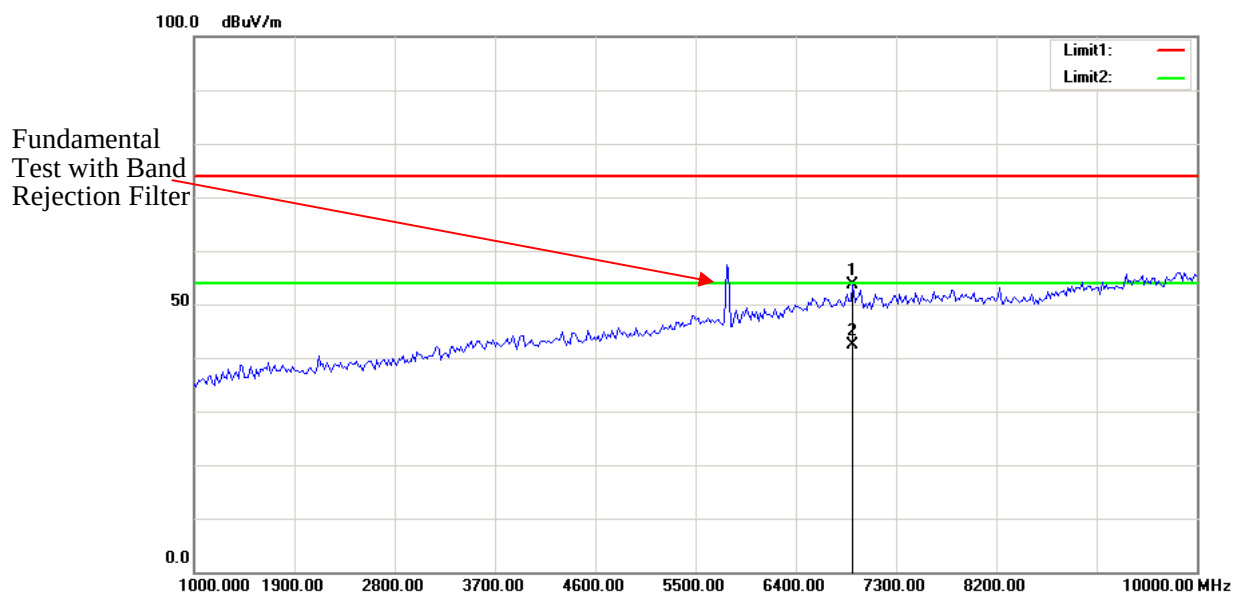


No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	4967.936	39.01	peak	10.80	49.81	74.00	24.19	153	286	
2	4967.936	31.00	AVG	10.80	41.80	54.00	12.20	153	286	

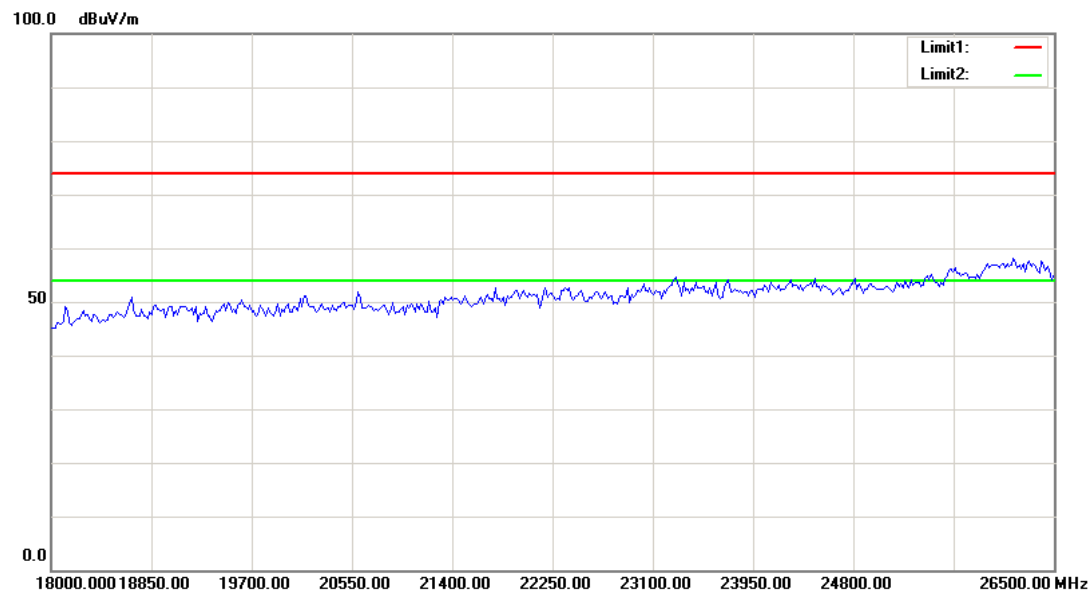
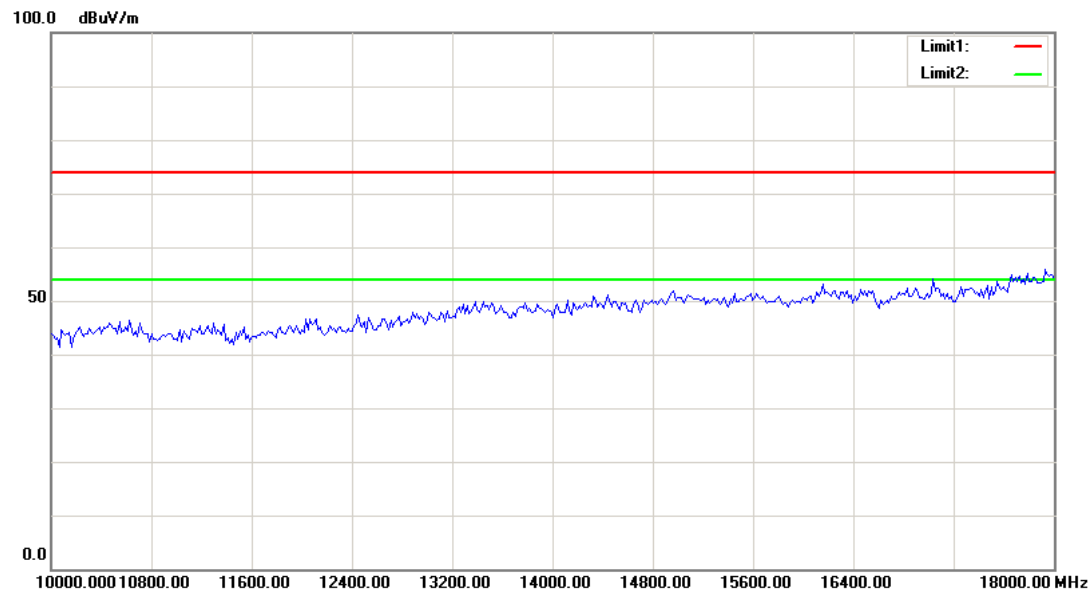
Note: No emission was detected in the range 10-25GHz.

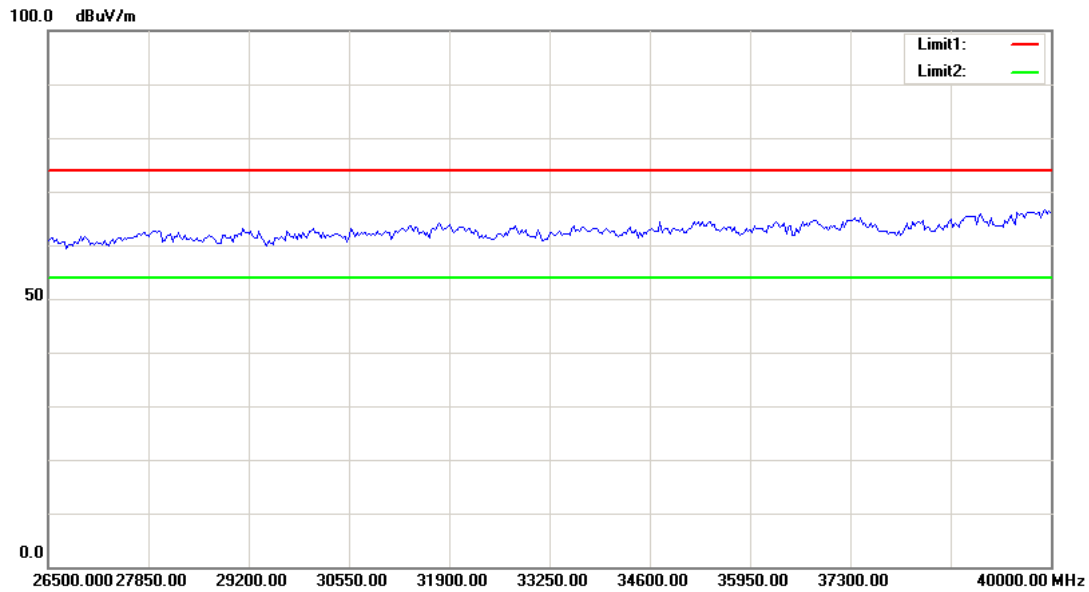
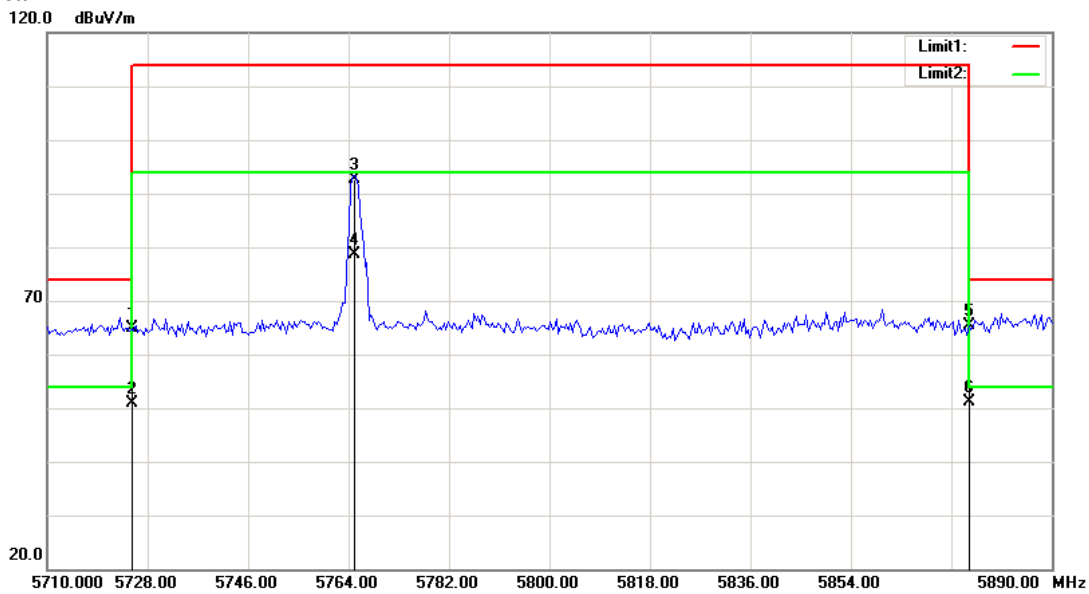
5G Band: 1GHz-40GHz**Horizontal**

No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	5725.000	25.32	peak	40.19	65.51	74.00	8.49	152	341	
2	5725.000	10.61	AVG	40.19	50.80	54.00	3.20	152	341	
3	5765.508	50.99	peak	40.27	91.26	114.00	22.74	152	341	Fundamental
4	5765.508	35.43	AVG	40.27	75.70	94.00	18.30	152	341	Fundamental
5	5875.000	23.76	peak	40.54	64.30	74.00	9.70	152	341	
6	5875.000	10.06	AVG	40.54	50.60	54.00	3.40	152	341	

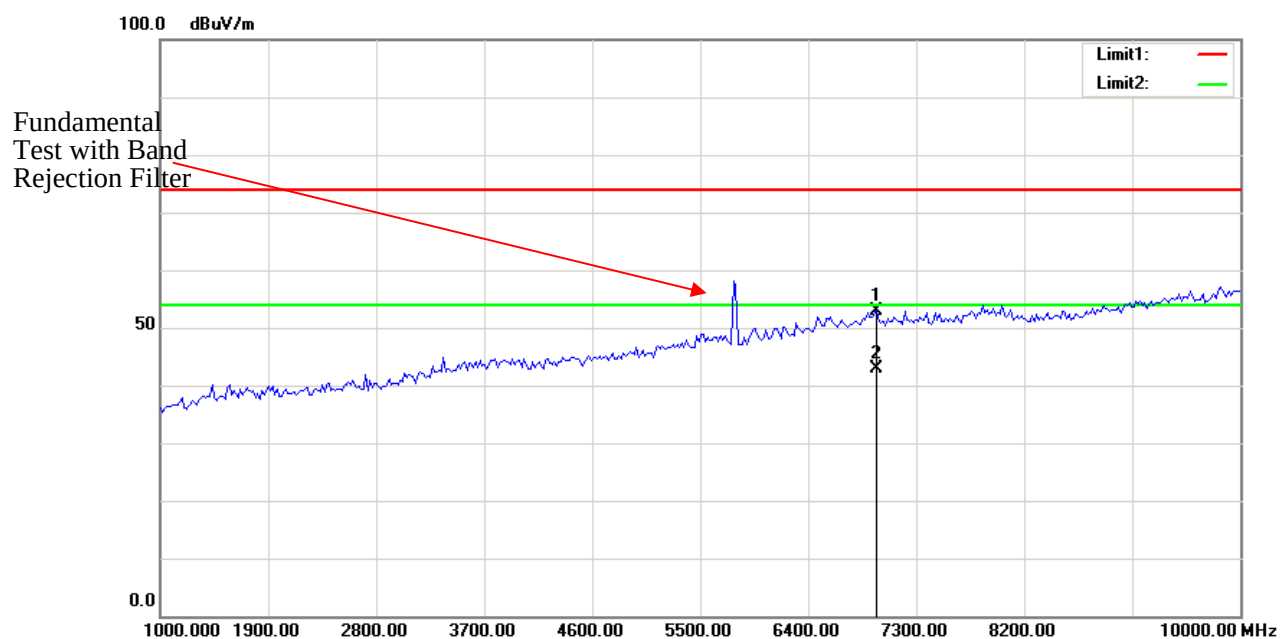


No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	6915.832	37.46	peak	16.15	53.61	74.00	20.39	149	267	
2	6915.832	26.35	AVG	16.15	42.50	54.00	11.50	149	267	

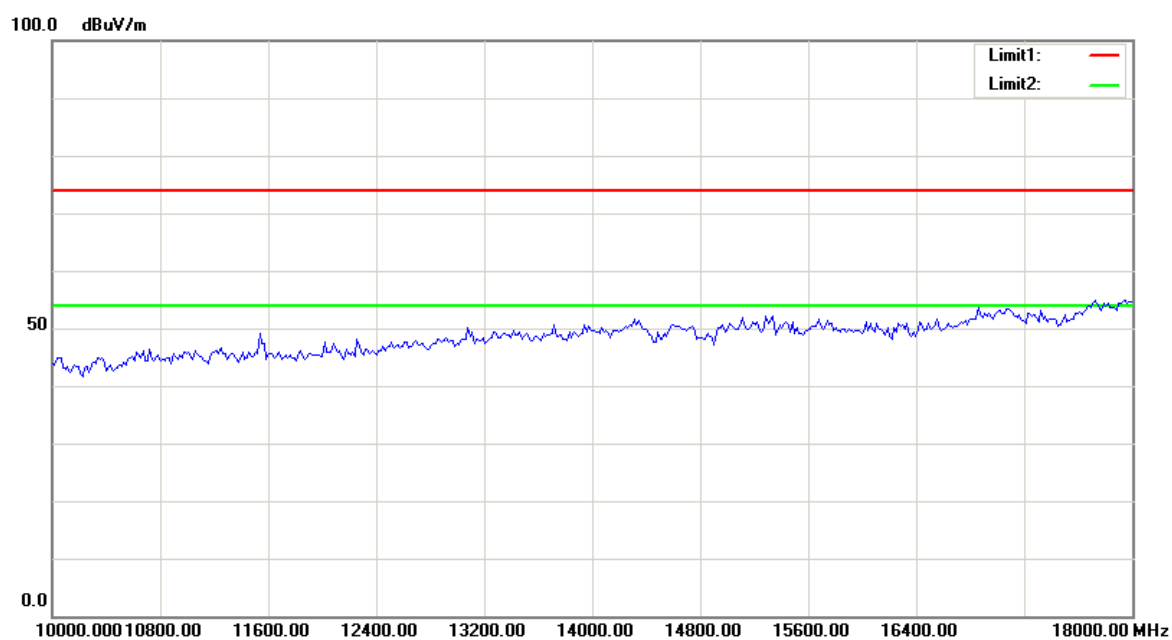


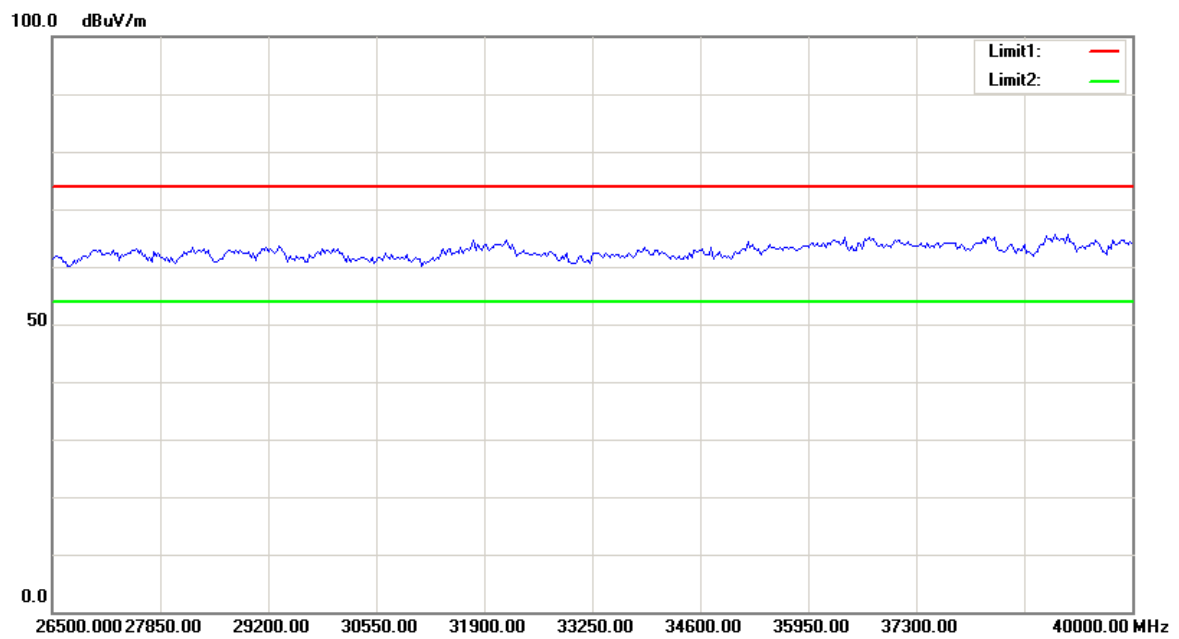
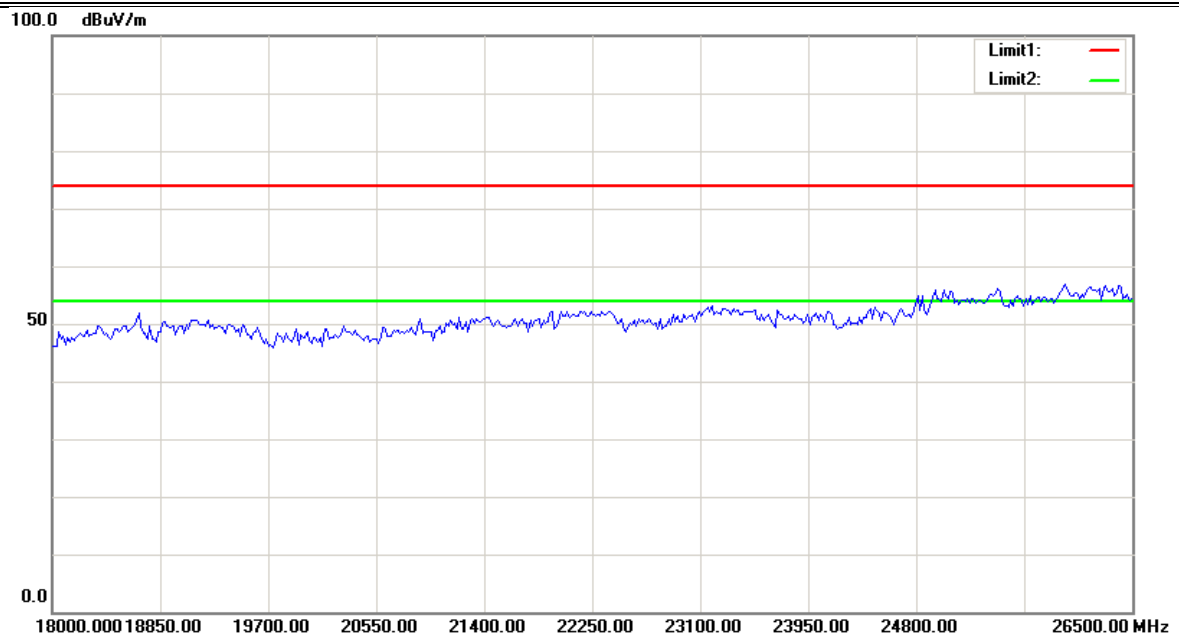
**Vertical**

No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	5725.000	24.67	peak	40.19	64.86	74.00	9.14	150	243	
2	5725.000	10.61	AVG	40.19	50.80	54.00	3.20	150	243	
3	5765.508	52.34	peak	40.27	92.61	114.00	21.39	150	243	Fundamental
4	5765.508	38.33	AVG	40.27	78.60	94.00	15.40	150	243	Fundamental
5	5875.000	24.78	peak	40.54	65.32	74.00	8.68	150	243	
6	5875.000	10.56	AVG	40.54	51.10	54.00	2.90	150	243	



No.	Frequency (MHz)	Reading (dBμV)	Detector	Corrected dB/m	Result (dBμV/m)	Limit (dBμV/m)	Margin (dB)	Height (cm)	Degree (deg.)	Comment
1	6969.940	36.86	peak	16.14	53.00	74.00	21.00	146	276	
2	6969.940	26.66	AVG	16.14	42.80	54.00	11.20	146	276	





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
R&S	Spectrum Analyzer	FSU 26	200256	2016-12-08	2017-12-08
Unknown	Coaxial Cable	0.1m	C-1	Each Time	/

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

Test Data

Environmental Conditions

Temperature:	26.8 ~ 27.5 °C
Relative Humidity:	51 ~ 64 %
ATM Pressure:	100.8 ~ 101.6 kPa

The testing was performed by Costa Dong from 2017-11-05 to 2017-11-16.

Test Result: Compliant.

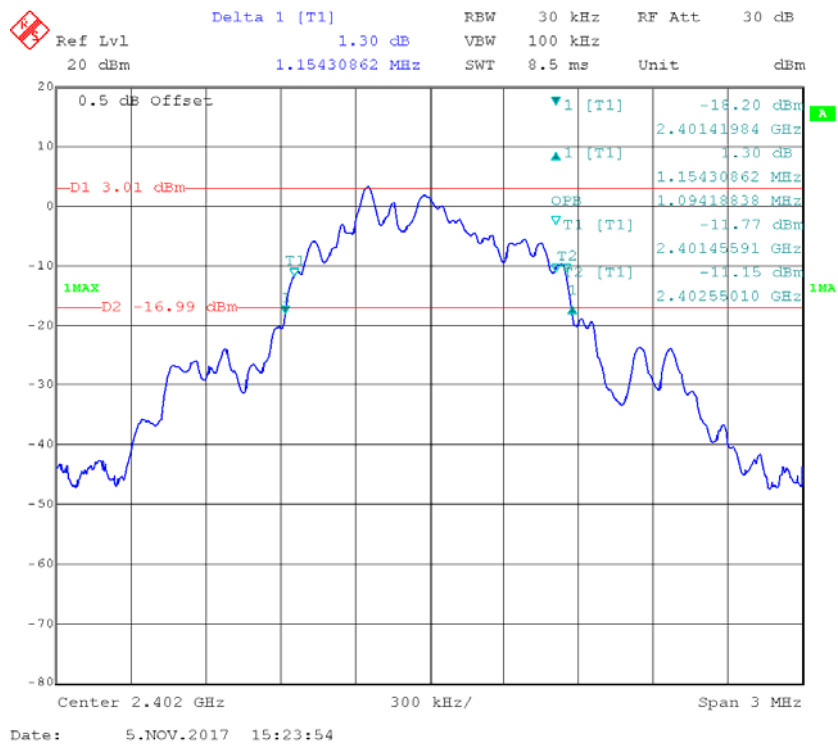
Please refer to following tables and plots

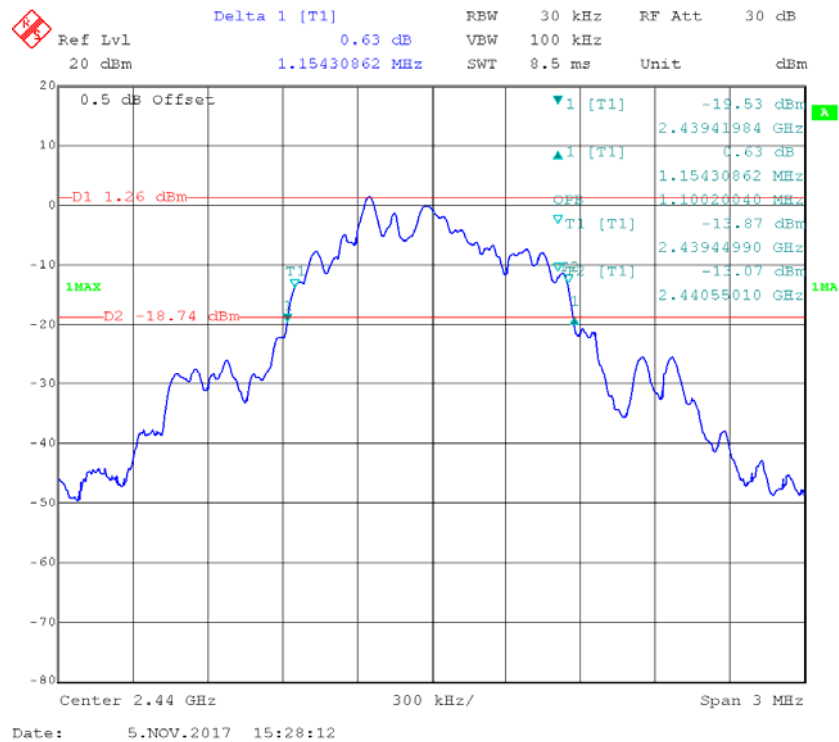
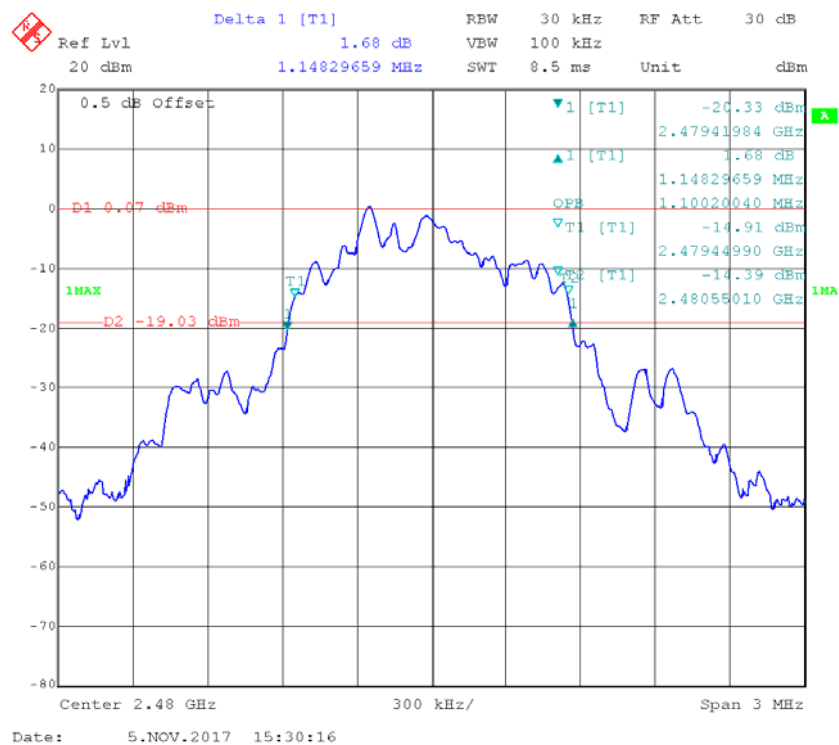
Test Mode: Transmitting

2.4G

Channel	Frequency (MHz)	20 dB Bandwidth (MHz)
Low	2402	1.15
Middle	2440	1.15
High	2480	1.15

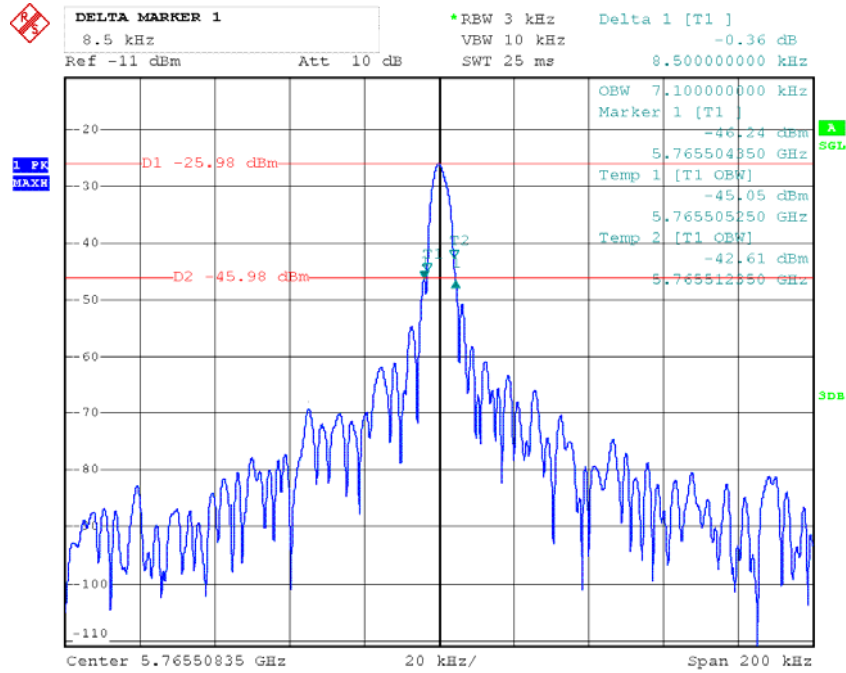
Low Channel



Middle Channel**High Channel**

5.8G

Channel	Frequency (MHz)	20 dB Bandwidth (kHz)
Middle	5765.55	8.50



Date: 16.NOV.2017 21:11:41

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