

## FCC PART 15B

## TEST REPORT

For

### **SZ DJI TECHNOLOGY CO., LTD**

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Nanshan, Shenzhen, Guangdong, China

**FCC ID: SS3-G1P1709**

<b>Report Type:</b> Original Report	<b>Product Type:</b> DJI Goggles Racing Edition
<b>Report Number:</b>	RDG170929005-00A
<b>Report Date:</b>	2017-10-11
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**Note:** This test report is prepared for the customer shown above and for the device described herein. It may not be duplicated or used in part without prior written consent from Bay Area Compliance Laboratories Corp. (Dongguan).

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## GENERAL INFORMATION

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### Product Description for Equipment under Test (EUT)

The *SZ DJI TECHNOLOGY CO., LTD*'s product, model number: *G1P (FCC ID: SS3- G1P1709)* (the "EUT") in this report was a *DJI Goggles Racing Edition*, the DJI Goggles Body was measured approximately: 195mm (L) x 155 mm (W) x 110 mm (H); headband (folded) was measured approximately: 255 mm (L) x 205 mm (W) x 92 mm (H), rated input voltage: DC3.8V Lithium Ion Polymer Rechargeable battery or DC5V~12V charging from adapter.

Adapter Information:

MODEL: QC18-US

INPUT: 100-240V~, 50/60Hz, 0.5A

OUTPUT: DC 5V, 3A/DC 9V, 2A/DC 12V, 1.5A

*\*All measurement and test data in this report was gathered from production sample serial number: 170929005 (Assigned by BACL, Dongguan). The EUT was received on 2017-09-29.*

### Objective

This test report is prepared on behalf of *SZ DJI TECHNOLOGY CO., LTD* in accordance with Part 2, Subpart J, and Part 15-Subparts A and B of the Federal Communications Commission's rules.

The objective of the manufacturer is to determine the compliance of EUT with FCC Part 15 B Class B.

### Related Submittal(s)/Grant(s)

FCC submissions with Part 15C DTS, FCC ID: SS3- G1P1709.

FCC submissions with Part 15E NII, FCC ID: SS3- G1P1709.

Part of system submissions with FCC ID: SS3-OAS11709, IC: 11805A-OAS11709.

### Test Methodology

All measurements contained in this report were conducted with ANSI C63.4-2014, American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the range of 9 kHz to 40 GHz.

All radiated and conducted emissions measurement was performed at Bay Area Compliance Laboratories Corp. (Dongguan).

### Measurement Uncertainty

Parameter	Measurement Uncertainty
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~26.5GHz: 5.23 dB
Temperature	±1°C
Humidity	±5%
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.

Bay Area Compliance Laboratories Corp. (Dongguan) has been accredited to ISO 17025 by CNAS(Lab code: L5662). And accredited to ISO 17025 by NVLAP(Test Laboratory Accreditation Certificate Number 500069-0), the FCC Designation No. CN5002 under the KDB 974614 D01.

The Federal Communications Commission has the reports on file and is listed under FCC Registration No.: 273710. The test site has been approved by the FCC for public use and is listed in the FCC Public Access Link (PAL) database.

Bay Area Compliance Laboratories Corp. (Dongguan) was registered with ISED Canada under ISED Canada Registration Number 3062D.

## SYSTEM TEST CONFIGURATION

### Description of Test Configuration

The system was configured for testing in operating and downloading mode.

### Equipment Modifications

No modification was made to the EUT tested.

### EUT Exercise Software

The software “winthrax.exe” was used during test.

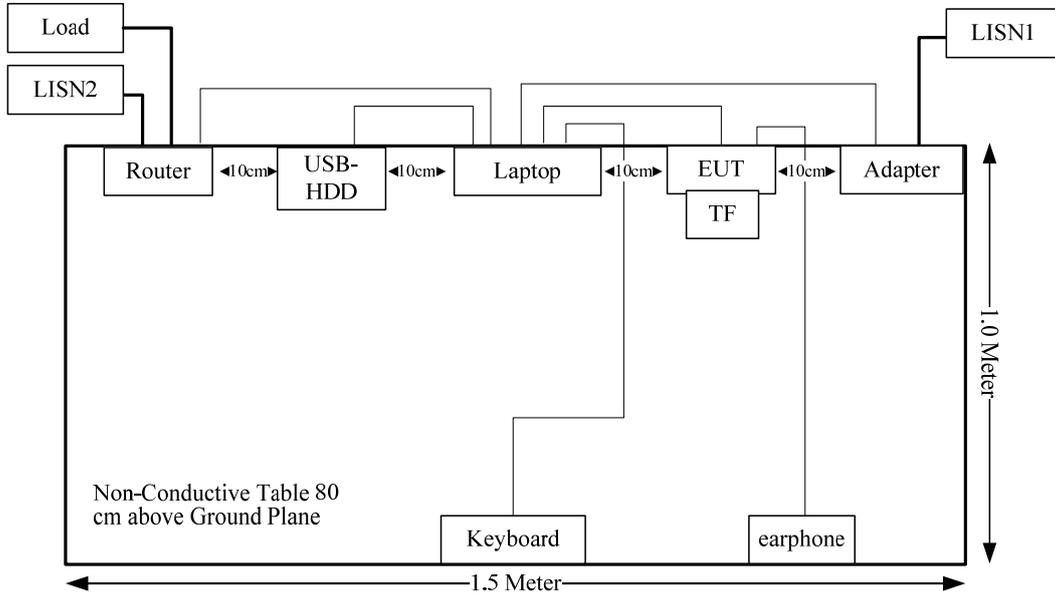
### Support Equipment List and Details

Manufacturer	Description	Model	Serial Number
Lenovo	Laptop	ThinkPad E450	PF-OMR8KV
ZIONCOM	Router	N600R	/
DELL	Keyboard	SK-8115	CN-0J4628-71616-52H-0RT6
TOSHIBA	USB-HDD	v63700-A	7271TGZ1TSJ2

### Support Cable List and Details

Cable Description	Shielding Type	Ferrite Core	Length (m)	From Port	To
USB Cable	No	No	1.25	USB Port of Laptop	EUT
RJ45 Cable	Yes	No	0.8	LAN Port of Laptop	Router
USB Cable	Yes	No	0.5	USB Port of Laptop	USB-HDD
Keyboard Cable	Yes	No	1.5	USB Port of Laptop	Keyboard
Earphone Cable	Yes	No	1.2	EUT	Earphone

### Block Diagram of Test Setup



## SUMMARY OF TEST RESULTS

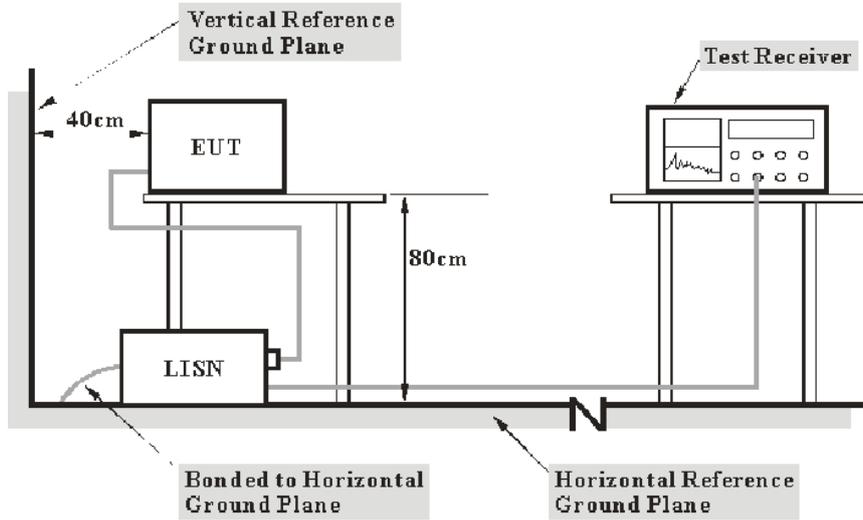
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### FCC Part 15B

Clause	Description of Test	Test Result
§15.107	Conducted emissions	Compliance
§15.109	Radiated emissions	Compliance

**FCC PART 15B §15.107 – CONDUCTED EMISSIONS**

**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 C63.4-2014 measurement procedure. The specification used was with the FCC Part 15 B Class B limits.

The external I/O cables were draped along the test table and formed a bundle 30 to 40 cm long in the middle.

**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 outlet of the first LISN and the other support equipments were connected to the outlet of the second 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.

## 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	Con-1	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).

## Corrected Amplitude & Margin Calculation

The basic equation is as follows:

$$V_C = V_R + A_C + VDF$$

Herein,

$V_C$ : corrected voltage amplitude

$V_R$ : reading voltage amplitude

$A_C$ : attenuation caused by cable loss

$VDF$ : voltage division factor of AMN or ISN

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 Results Summary

According to the recorded data in following table, the EUT complied with the FCC Part 15 B Class B.

**Test Data**

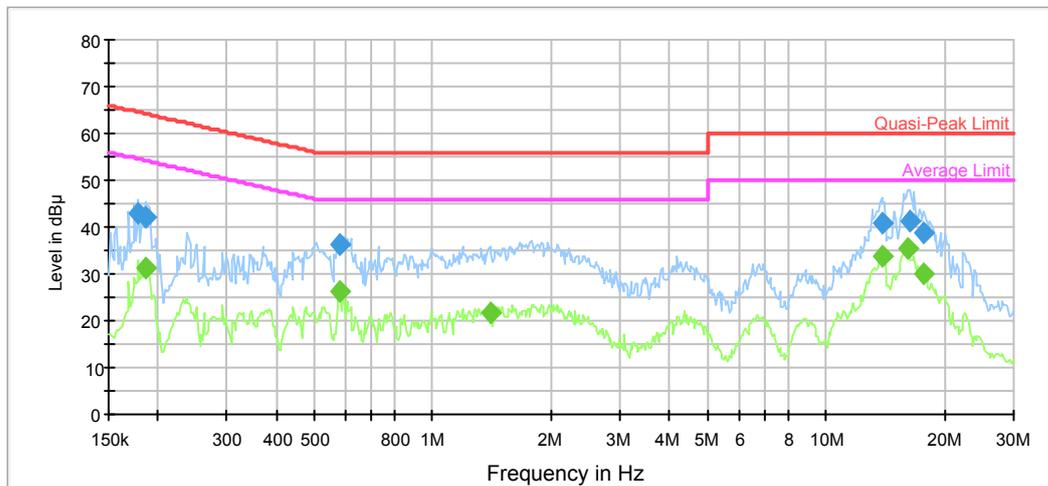
**Environmental Conditions**

<b>Temperature:</b>	27.1 °C
<b>Relative Humidity:</b>	50 %
<b>ATM Pressure:</b>	100.5 kPa

The testing was performed by Gaochao Gong on 2017-10-09.

Test Mode: Downloading

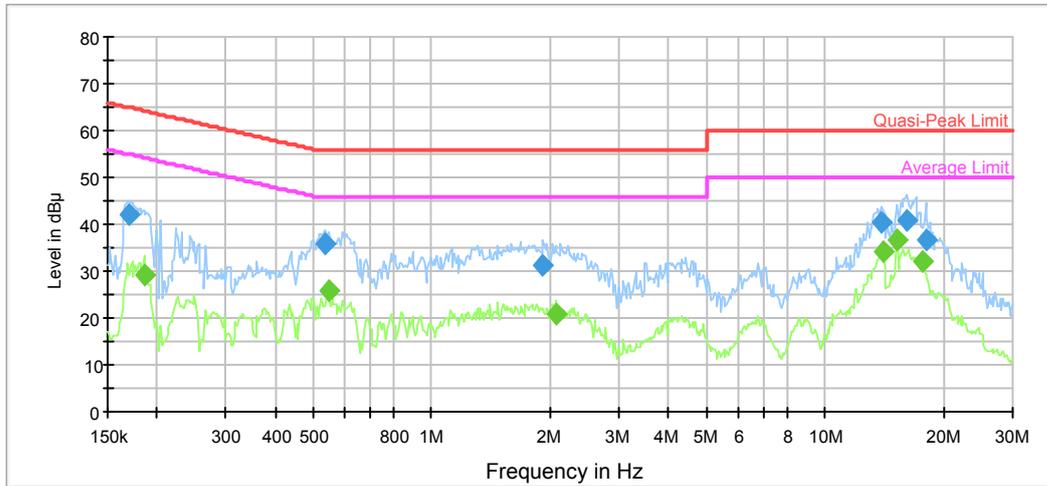
AC120V, 60Hz, Line:



Frequency (MHz)	QuasiPeak (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.178741	43.0	9.000	L1	10.8	21.5	64.5	Compliance
0.187494	41.9	9.000	L1	10.7	22.2	64.1	Compliance
0.581275	36.3	9.000	L1	9.8	19.7	56.0	Compliance
13.857146	40.8	9.000	L1	9.9	19.2	60.0	Compliance
16.381172	41.1	9.000	L1	10.0	18.9	60.0	Compliance
17.739864	38.9	9.000	L1	10.0	21.1	60.0	Compliance

Frequency (MHz)	Average (dBμV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBμV)	Comment
0.186006	31.1	9.000	L1	10.8	23.1	54.2	Compliance
0.581275	26.2	9.000	L1	9.8	19.8	46.0	Compliance
1.396499	21.8	9.000	L1	9.7	24.2	46.0	Compliance
13.968003	33.8	9.000	L1	9.9	16.2	50.0	Compliance
16.122185	35.5	9.000	L1	10.0	14.5	50.0	Compliance
17.739864	29.9	9.000	L1	10.0	20.1	50.0	Compliance

**AC120V, 60Hz, Neutral:**



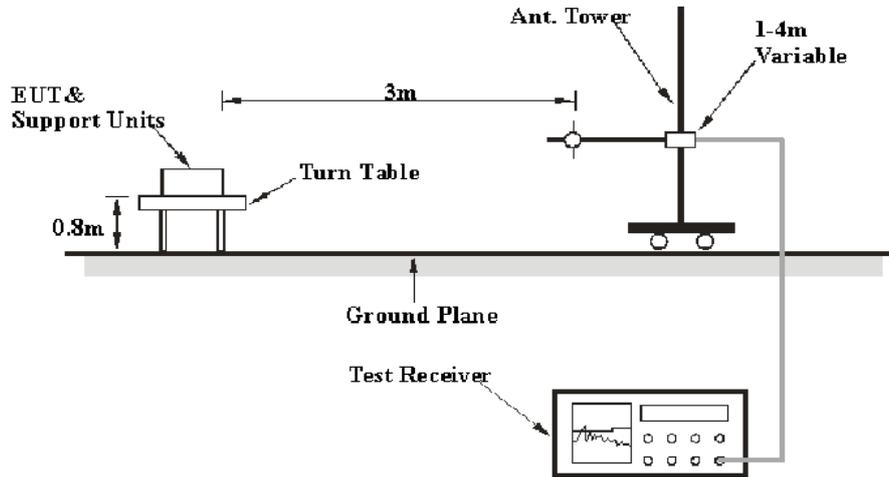
Frequency (MHz)	QuasiPeak (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.170396	41.9	9.000	N	10.9	23.0	64.9	Compliance
0.536756	35.8	9.000	N	9.9	20.2	56.0	Compliance
1.920710	31.4	9.000	N	9.7	24.6	56.0	Compliance
13.857146	40.2	9.000	N	9.9	19.8	60.0	Compliance
16.122185	40.7	9.000	N	10.0	19.3	60.0	Compliance
18.024837	36.7	9.000	N	10.0	23.3	60.0	Compliance

Frequency (MHz)	Average (dBµV)	Bandwidth (kHz)	Line	Corr. (dB)	Margin (dB)	Limit (dBµV)	Comment
0.186006	29.4	9.000	N	10.7	24.8	54.2	Compliance
0.545378	25.7	9.000	N	9.9	20.3	46.0	Compliance
2.063510	20.9	9.000	N	9.8	25.1	46.0	Compliance
14.079747	34.0	9.000	N	9.9	16.0	50.0	Compliance
15.247554	36.8	9.000	N	9.9	13.2	50.0	Compliance
17.739864	32.3	9.000	N	10.0	17.7	50.0	Compliance

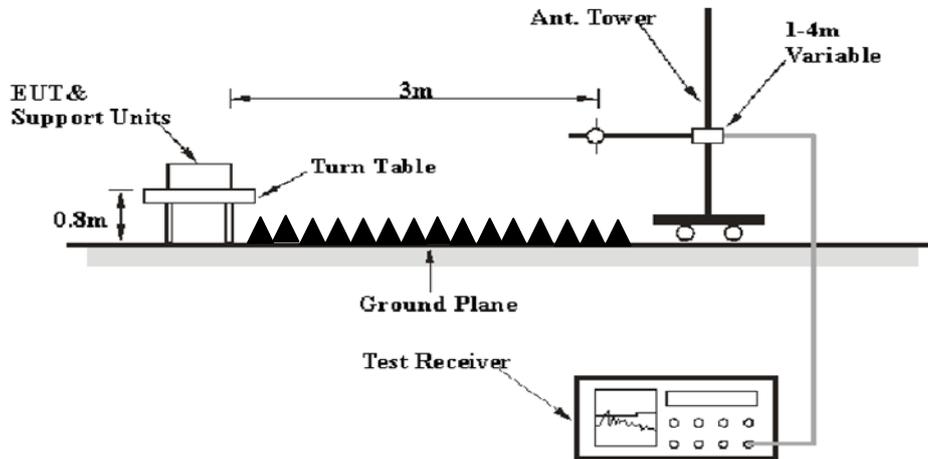
**FCC PART 15B §15.109 – RADIATED EMISSIONS**

**EUT Setup**

**Below 1GHz:**



**Above 1GHz:**



The radiated emission tests were performed in the 3 meters chamber test site for the range 30MHz to 1GHz and the 3 meters chamber test site for above 1GHz, using the setup accordance with the ANSI C63.4-2014. The specification used was the FCC Part 15.109 Class B limits.

## EMI Test Receiver Setup

The system was investigated from 30 MHz to 30 GHz.

During the radiated emission test, the EMI test receiver was 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	1 MHz	3 MHz	/	Peak
	1 MHz	10 Hz	/	AVG

## Test Procedure

During the radiated emissions, the adapter of laptop was connected to the first AC floor outlet and the other support equipments were connected to the second AC floor outlet.

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

The data was recorded in the Quasi-peak detection mode for below 1 GHz, peak and average detection mode above 1 GHz.

## 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	A060611-1	2014-11-06	2017-11-05
HP	Amplifier	8447D	2727A05902	2017-09-05	2018-09-05
unknown	Coaxial Cable	4m	C0400/01	2017-09-05	2018-09-05
unknown	Coaxial Cable	0.75m	C0075/01	2017-09-05	2018-09-05
unknown	Coaxial Cable	10m	C1000/01	2017-09-05	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	2019-01-05
MITEQ	Amplifier	AFS42-00101800-2 5-S-42	2001271	2017-09-05	2018-09-05
Ducommun Technologies	Horn Antenna	ARH-4223-02	1007726-02 1304	2017-06-16	2020-06-15
Ducommun Technologies	Horn Antenna	ARH-2823-02	1007726-01 1302	2016-11-18	2019-11-18
Quinstar	Amplifier	QLW-18405536-JO	15964001001	2017-06-27	2018-06-27
unknown	Coaxial Cable	8m	C0800/01	2017-09-05	2018-09-05
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).

### 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 7 dB means the emission is 7 dB below the limit. The equation for margin calculation is as follows:

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

### Test Data

#### Environmental Conditions

<b>Temperature:</b>	28.8 °C
<b>Relative Humidity:</b>	43 %
<b>ATM Pressure:</b>	100.6 kPa

\* The testing was performed by Sun Zhong on 2017-10-11.

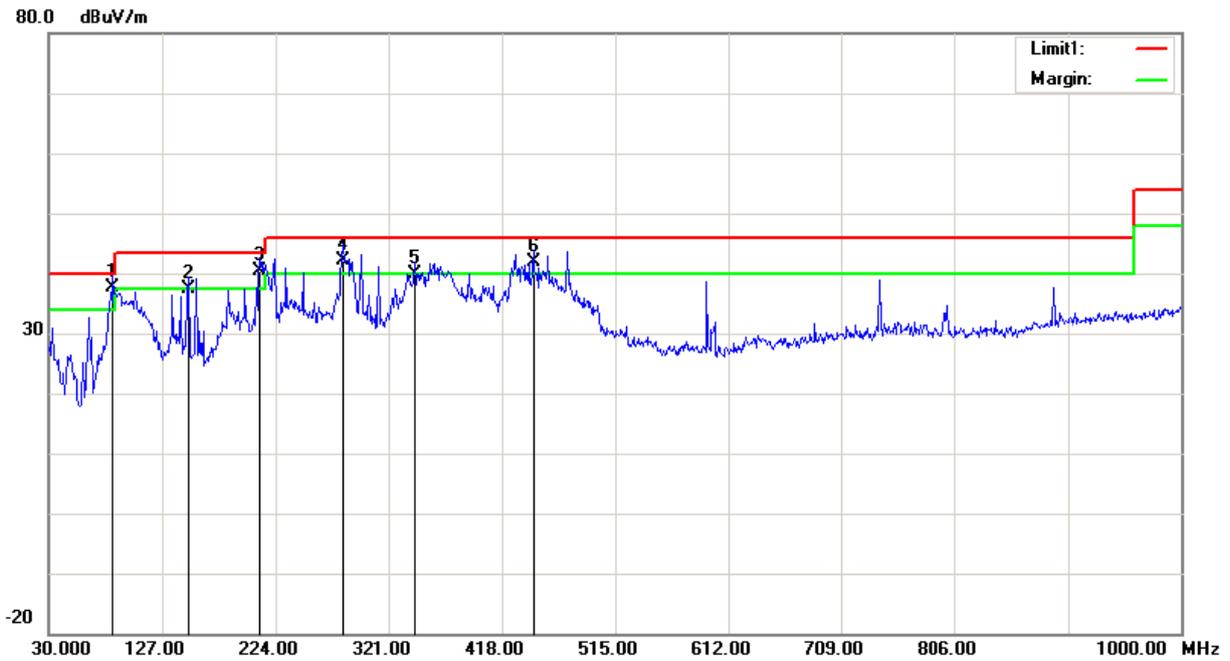
*Test Result: Compliance*

Please refer to following table and plots:

Test Mode: **Downloading**

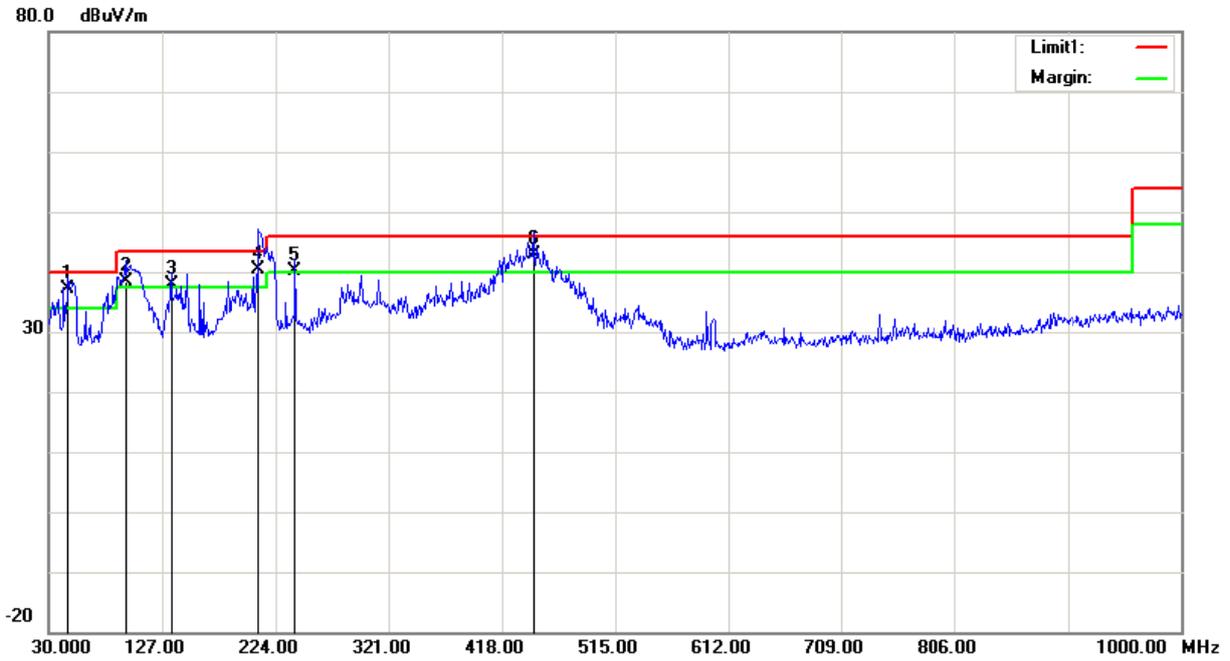
1) Below 1GHz:

**Horizontal**



Frequency (MHz)	Receiver Reading (dBμV)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
85.2900	48.75	QP	-11.15	37.60	40.00	2.40
149.3100	43.86	QP	-6.46	37.40	43.50	6.10
210.4200	47.73	QP	-7.43	40.30	43.50	3.20
281.2300	45.73	QP	-3.63	42.10	46.00	3.90
343.3100	43.21	QP	-3.41	39.80	46.00	6.20
445.1600	43.47	QP	-1.57	41.90	46.00	4.10

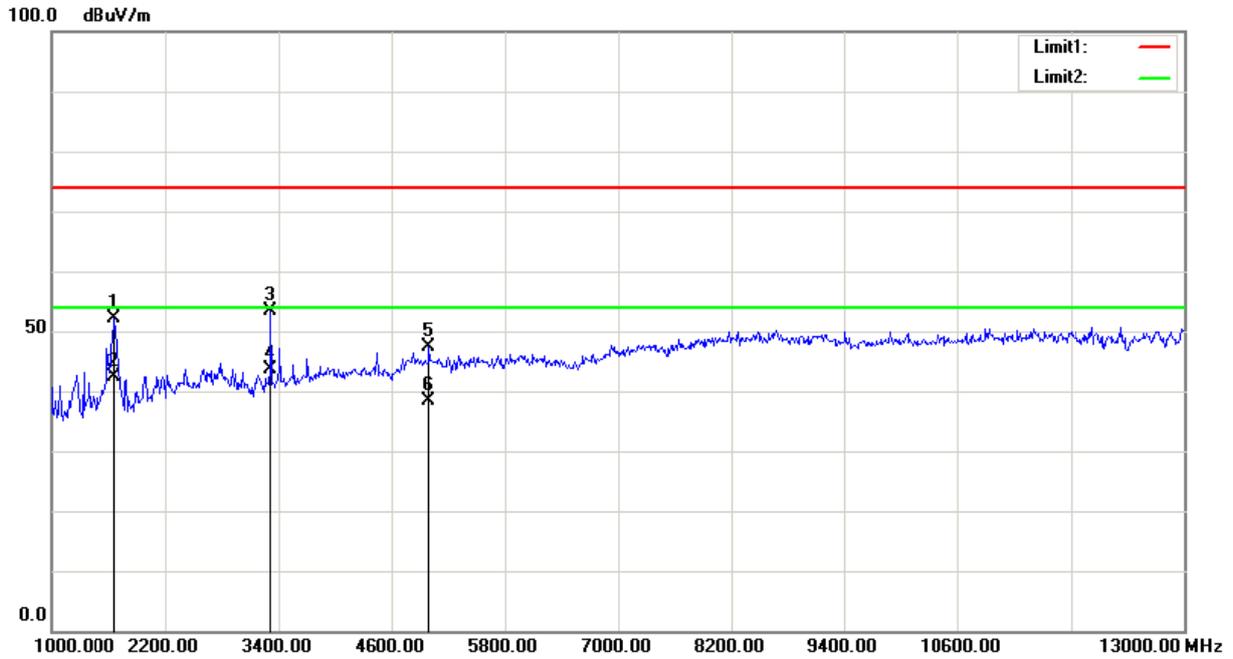
Vertical



Frequency (MHz)	Receiver Reading (dBμV)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
46.4900	47.41	QP	-10.21	37.20	40.00	2.80
95.9600	48.02	QP	-9.52	38.50	43.50	5.00
134.7600	43.30	QP	-5.50	37.80	43.50	5.70
209.4500	47.75	QP	-7.45	40.30	43.50	3.20
240.4900	46.43	QP	-6.23	40.20	46.00	5.80
445.1600	44.37	QP	-1.57	42.80	46.00	3.20

2) Above 1GHz:

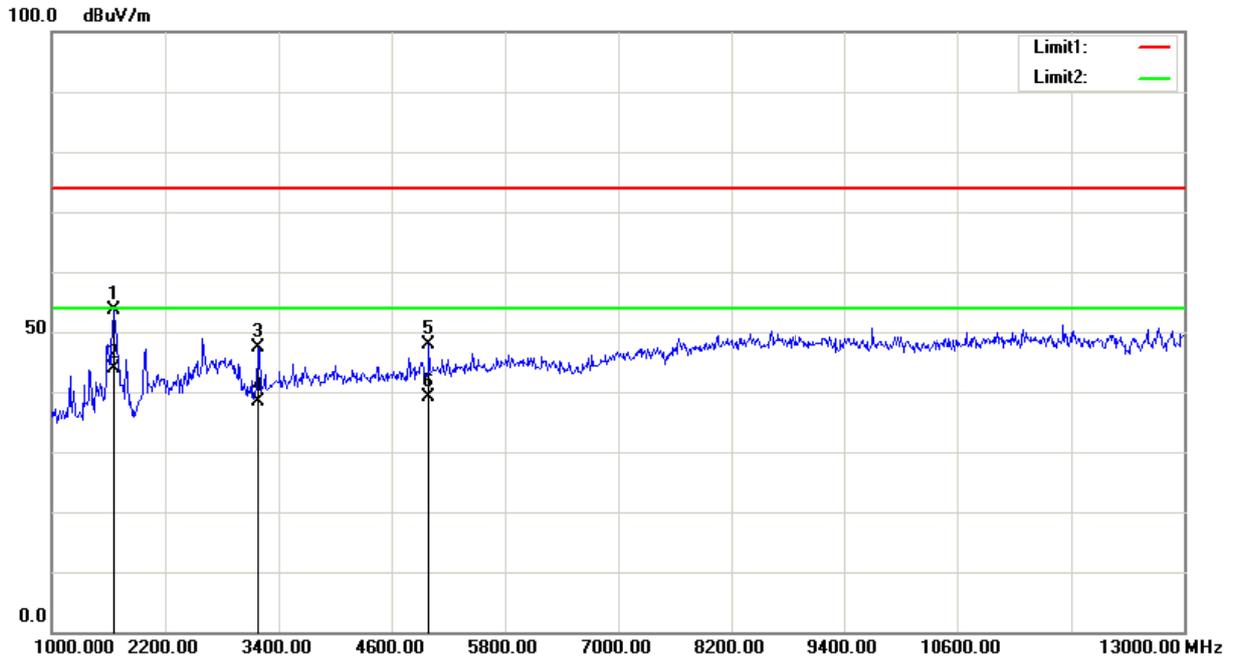
Horizontal



Frequency (MHz)	Receiver Reading (dBμV)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1660.000	60.74	peak	-8.57	52.17	74.00	21.83
1660.000	50.86	AVG	-8.57	42.29	54.00	11.71
3322.000	57.10	peak	-3.82	53.28	74.00	20.72
3322.000	47.38	AVG	-3.82	43.56	54.00	10.44
5002.000	48.11	peak	-0.78	47.33	74.00	26.67
5002.000	39.27	AVG	-0.78	38.49	54.00	15.51

Note: no emission was detected in the range 13-30GHz.

**Vertical**



Frequency (MHz)	Receiver Reading (dBμV)	Measurement	Correction Factor (dB/m)	Cord. Amp. (dBμV/m)	Limit (dBμV/m)	Margin (dB)
1660.000	62.29	peak	-8.57	53.72	74.00	20.28
1660.000	52.37	AVG	-8.57	43.80	54.00	10.20
3190.000	51.64	peak	-4.22	47.42	74.00	26.58
3190.000	42.55	AVG	-4.22	38.33	54.00	15.67
5002.000	48.57	peak	-0.78	47.79	74.00	26.21
5002.000	39.86	AVG	-0.78	39.08	54.00	14.92

Note: no emission was detected in the range 13-30GHz.

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