



**FCC Part15, Subpart B
ICES-003**

TEST REPORT

For

TOY Receiver

MODEL NUMBER: 4MB

FCC ID: G6D4MB

REPORT NUMBER: 4789336703.1

ISSUE DATE: January 13, 2020

Prepared for

**NEW BRIGHT INDUSTRIAL CO., LTD
9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD, KOWLOON BAY,
KOWLOON, HONG KONG.**

Prepared by

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Revision History

Rev.	Issue Date	Revisions	Revised By
V0	01/13/2020	Initial Issue	



Summary of Test Results				
Standard	Test Item	Limit	Result	Remark
FCC Part15, Subpart B ANSI C63.4-2014 ICES-003 Issue 6	Conducted Disturbance	Class B	N/A	NOTE (1) NOTE (2)
	Radiated Disturbance below 1 GHz	Class B	PASS	
	Radiated Disturbance above 1 GHz	Class B	PASS	NOTE (3)
Note: (1) "N/A" denotes test is not applicable in this test report. (2) This test is only applicable for devices which can be charged or powered by AC power cable. (3) If the highest frequency of the internal sources of the EUT is less than 108 MHz, the measurement shall only be made up to 1 GHz. If the highest frequency of the internal sources of the EUT is between 108 MHz and 500 MHz, the measurement shall only be made up to 2 GHz. If the highest frequency of the internal sources of the EUT is between 500 MHz and 1 GHz, measurement shall only be made up to 5 GHz. If the highest frequency of the internal sources of the EUT is above 1 GHz, the measurement shall be made up to 5 times the highest frequency or 40 GHz, whichever is less. This test report is only published to and used by the applicant, and it is not for evidence purpose in China.				



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1. ATTESTATION OF TEST RESULTS

Applicant Information

Company Name: NEW BRIGHT INDUSTRIAL CO., LTD
Address: 9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD,
KOWLOON BAY, KOWLOON, HONG KONG.

Manufacturer Information

Company Name: NEW BRIGHT INDUSTRIAL CO., LTD
Address: 9/F., NEW BRIGHT BUILDING, 11 SHEUNG YUET ROAD,
KOWLOON BAY, KOWLOON, HONG KONG.

EUT Information

EUT Name: TOY Receiver
Model: 4MB
Brand: /
Sample Received Date: January 3, 2020
Sample Status: Normal
Sample ID: 2815142
Date of Tested: January 3, 2020 ~ January 10, 2020

APPLICABLE STANDARDS	
STANDARD	TEST RESULTS
FCC Part15, Subpart B	PASS
ICES-003 Issue 6	PASS

Prepared By:

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2. TEST METHODOLOGY

All tests were performed in accordance with the standard FCC Part15 Subpart B & ICES-003 Issue 6 & ANSI C63.4-2014.

3. FACILITIES AND ACCREDITATION

Accreditation Certificate	A2LA (Certificate No.: 4102.01) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with A2LA. FCC (FCC Recognized No.: CN1187) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. Has been recognized to perform compliance testing on equipment subject to the Commission's Declaration of Conformity (DoC) and Certification rules IC (Company No.: 21320) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been registered and fully described in a report filed with Industry Canada. The Company Number is 21320. VCCI (Registration No.: G-20019, R-20004, C-20012 and T-20011) UL Verification Services (Guangzhou) Co., Ltd. Song Shan Lake Branch. has been assessed and proved to be in compliance with VCCI, the Membership No. is 3793. Facility Name: Chamber D, the VCCI registration No. is G-20019 and R-20004 Shielding Room B , the VCCI registration No. is C-20012 and T-20011
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Note: All tests measurement facilities use to collect the measurement data are located at Building 10, Innovation Technology Park, No. 1, Li Bin Road, Song Shan Lake Hi-Tech Development Zone Dongguan, 523808, People's Republic of China



4. CALIBRATION AND UNCERTAINTY

4.1. MEASURING INSTRUMENT CALIBRATION

The measuring equipment utilized to perform the tests documented in this report has been calibrated in accordance with the manufacturer's recommendations and is traceable to recognized national standards.

4.2. MEASUREMENT UNCERTAINTY

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the apparatus:

Test Item	Measurement Frequency Range	K	U(dB)
Conducted emissions from the AC mains power ports	0.009MHz ~ 0.15MHz	2	4.00
Conducted emissions from the AC mains power ports	0.15MHz ~ 30MHz	2	3.62
Radiated emissions	30MHz ~ 1GHz	2	4.00
Radiated emissions	1GHz ~ 18GHz	2	5.78
Note: This uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.			



5. EQUIPMENT UNDER TEST

5.1. DESCRIPTION OF EUT

EUT Name	TOY Receiver
Model	4MB
Power supply	DC 4.5V by AA battery

5.2. TEST MODE

Test Mode	Description
Mode 1	Running
Mode 2	RX (Bottom Channel 2410MHz)
Mode 3	RX (Middle Channel 2441MHz)
Mode 4	RX (Top Channel 2473MHz)

5.3. EUT ACCESSORY

I/O PORTS AND CABLES

Cable No	Port	Connector Type	Cable Type	Cable Length(m)	Remarks
/	/	/	/	/	/

ACCESSORY

Item	Accessory	Brand Name	Model Name	Description
1	Remote Controller	/	G41HHSBP	2.4GHz Transmitter

5.4. SUPPORT UNITS FOR SYSTEM TEST

The EUT has been tested as an independent unit together with other necessary accessories or support units. The following support units or accessories were used to form a representative test configuration during the tests.

Item	Equipment	Mfr/Brand	Model/Type No.	Specification	Series No.	Note
/	/	/	/	/	/	

The following cables were used to form a representative test configuration during the tests.

Item	Type of cable	Shielded Type	Ferrite Core	Length
/	/	/	/	/



6. MEASURING EQUIPMENT AND SOFTWARE USED

Radiated Emissions					
Equipment	Manufacturer	Model No.	Serial No.	Last Cal.	Due Date
MXE EMI Receiver	KESIGHT	N9038A	MY56400036	Dec. 6, 2019	Dec. 6, 2020
Hybrid Log Periodic Antenna	TDK	HLP-3003C	130959	Sept. 17, 2018	Sept. 17, 2021
Preamplifier	HP	8447D	2944A09099	Dec. 5, 2019	Dec. 5, 2020
EMI Measurement Receiver	R&S	ESR26	101377	Dec. 05, 2019	Dec. 05, 2020
Horn Antenna	TDK	HRN-0118	130939	Sept. 17, 2018	Sept. 17, 2021
Preamplifier	TDK	PA-02-0118	TRS-305-00067	Dec. 05, 2019	Dec. 05, 2020
Software					
Description			Manufacturer	Name	Version
Test Software for Radiated Emissions			Farad	EZ-EMC	Ver. UL-3A1

7. EMISSION TEST

7.1. CONDUCTED EMISSIONS MEASUREMENT

LIMITS

CFR 47 FCC Part15 Subpart B ICES-003 Issue 6				
FREQUENCY (MHz)	Class A (dBµV)		Class B (dBµV)	
	Quasi-peak	Average	Quasi-peak	Average
0.15 -0.5	79.00	66.00	66 - 56 *	56 - 46*
0.50 -5.0	73.00	60.00	56.00	46.00
5.0 -30.0	73.00	60.00	60.00	50.00

Note:

- (1) The tighter limit applies at the band edges.
- (2) The limit of " * " marked band means the limitation decreases linearly with the logarithm of the frequency in the range.

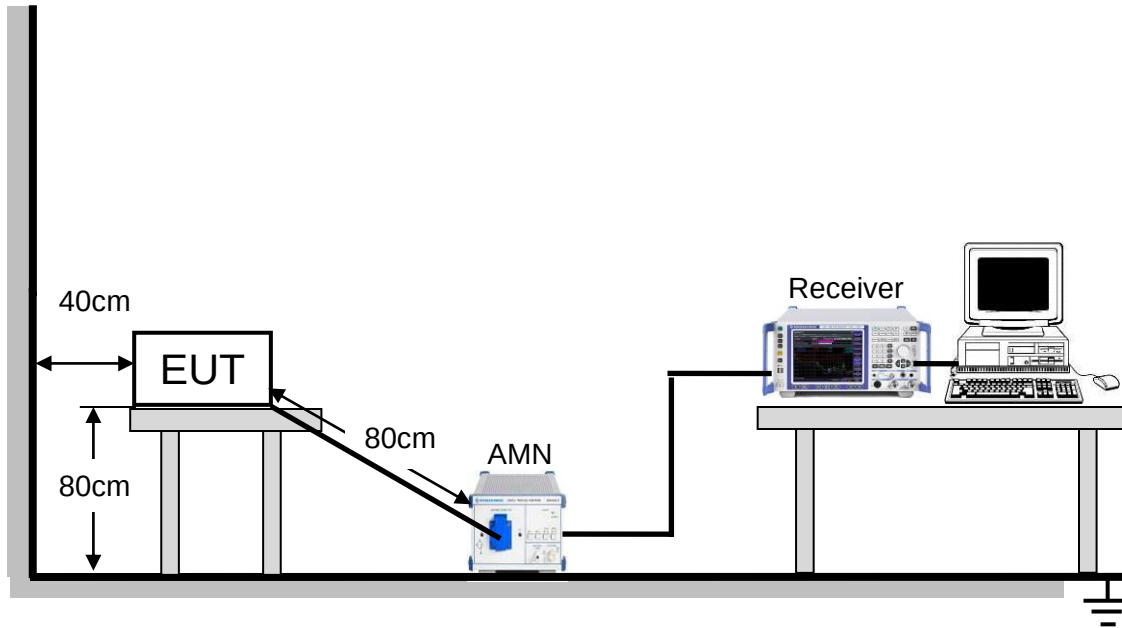
The following table is the setting of the receiver

Receiver Parameters	Setting
Attenuation	10 dB
Start Frequency	0.15 MHz
Stop Frequency	30 MHz
IF Bandwidth	9 kHz

TEST PROCEDURE

1. The testing follows the guidelines in ANSI C63.4-2014.
2. The EUT was placed on the top of a rotating table 0.8 meters above the horizontal ground plane and being connected to the power mains through a line impedance stabilization network (LISN). All other support equipment powered from additional LISN(s). The LISN provide 50 ohm/ 50uH of coupling impedance for the measuring instrument.
3. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
4. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
5. Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal used.
6. LISN at least 80 cm from nearest part of EUT chassis.
7. Conducted emissions from the EUT measured in the frequency range between 0.15 MHz and 30MHz using CISPR Quasi-Peak and average detector mode.

TEST SETUP



For the actual test configuration, please refer to Appendix I: Photographs of Test Configuration.

TEST RESULTS

N/A

7.2. RADIATED EMISSIONS MEASUREMENT

LIMITS

Below 1 GHz

CFR 47 FCC Part15 Subpart B ICES-003 Issue 6			
Frequency (MHz)	Class A		Class B
	Field strength (uV/m) (at 10m)	Field strength (dBuV/m) (at 3m)	Field strength (dBuV/m) (at 3m)
30 - 88	90	49.5	40
88 - 216	150	53.9	43.5
216 - 960	210	56.9	46
Above 960	300	60	54

Above 1 GHz

CFR 47 FCC Part15 Subpart B ICES-003 Issue 6						
Frequency (MHz)	Class A				Class B	
	(dBuV/m) (at 3m)		(dBuV/m) (at 10m)		(dBuV/m) (at 3m)	
	Peak	Average	Peak	Average	Peak	Average
Above 1000	80	60	69.5	49.5	74	54

Test Frequency Range of Radiated Disturbance Measurement

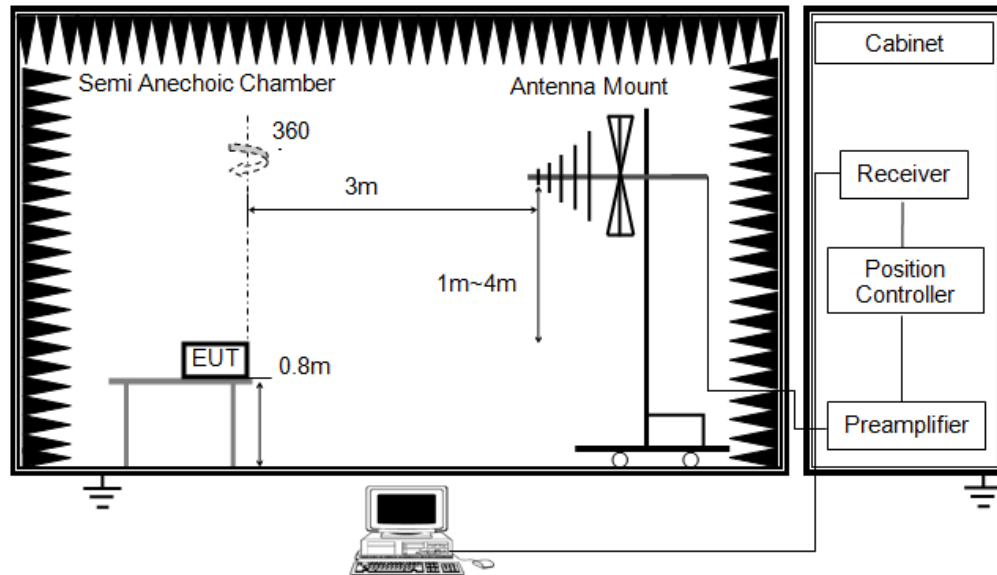
Highest frequency generated or Upper frequency of measurement used in the device or on which the device operates or tunes (MHz)	Range (MHz)
Below 1.705	30
1.705 - 108	1000
108 - 500	2000
500 - 1000	5000
Above 1000	5 th harmonic of the highest frequency or 40 GHz, whichever is lower

NOTE:

- (1) The limit for radiated test was performed according to FCC Part 15, Subpart B;
- (2) The tighter limit applies at the band edges;
- (3) Emission level (dBuV/m) = 20log Emission level (uV/m),
3m Emission level = 10m Emission level + 20log(10m/3m);

TEST SETUP AND PROCEDURE

Below 1G and above 30MHz

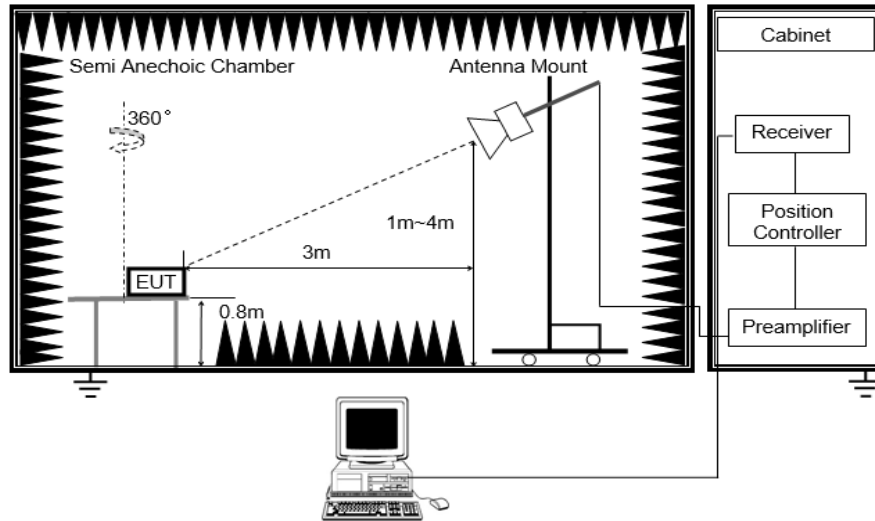


The setting of the spectrum analyser

RBW	120K
VBW	300K
Sweep	Auto
Detector	Peak and QP
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.4-2014.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp was used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80cm above ground.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal used.
7. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
8. For measurement below 1GHz, the initial step in collecting conducted emission data is a spectrum analyzer peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.

Above 1G



The setting of the spectrum analyser

RBW	1M
VBW	3M
Sweep	Auto
Detector	Peak: Peak AVG: RMS
Trace	Max hold

1. The testing follows the guidelines in ANSI C63.4-2014.
2. The EUT was arranged to its worst case and then tune the antenna tower (from 1 m to 4 m) and turntable (from 0 degree to 360 degrees) to find the maximum reading. A pre-amp and a high pass filter are used for the test in order to get better signal level. Both horizontal and vertical polarizations of the antenna are set to make the measurement.
3. The EUT was placed on a turntable with 80cm above ground.
4. Interconnecting cables that hang closer than 40 cm to the ground plane shall be folded back and forth in the center forming a bundle 30 to 40 cm long.
5. I/O cables that are not connected to a peripheral shall be bundled in the center. The end of the cable may be terminated, if required, using the correct terminating impedance. The overall length shall not exceed 1 m.
6. Cables of hand-operated devices, such as keyboards and mice, shall be placed as for normal used.
7. The EUT was set 3 meters from the interference receiving antenna, which was mounted on the top of a variable height antenna tower.
8. For measurement above 1GHz, the peak emission measurement will be measured by the peak detector. This peak level, once corrected, must comply with the peak limit specified in Section 15.109. If peak result complies with average limit, average result is deemed to comply with average limit.
9. The average emission measurement will be measured by the RMS detector and must comply with the average limit specified in Section 15.109.

**TEST ENVIRONMENT**

Radiated Emissions - Below 1 GHz		Radiated Emissions - Above 1 GHz	
Temperature:	23°C	Temperature:	22.5°C
Humidity:	52%	Humidity:	57%
Atmosphere Pressure	101kPa	Atmosphere Pressure	101kPa

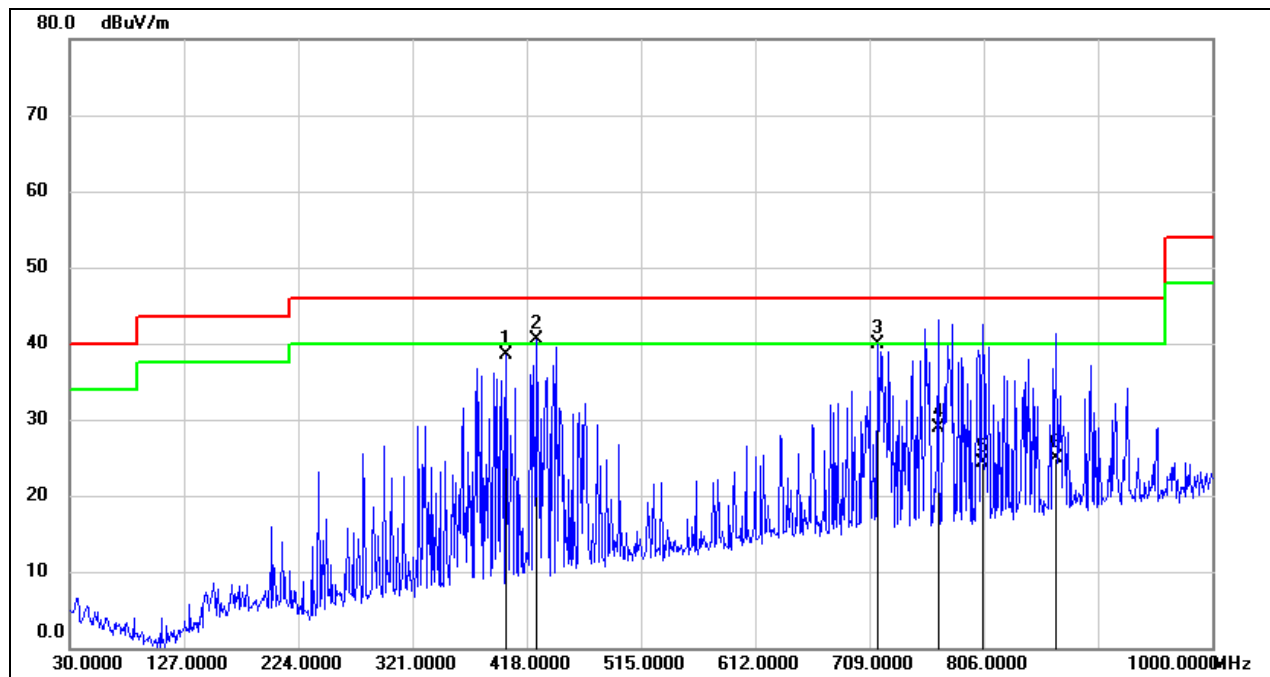
TEST MODE

Radiated Emissions - Below 1 GHz		Radiated Emissions - Above 1 GHz	
Pre-test Mode:	Mode 1 ~ Mode 4	Pre-test Mode:	Mode 1 ~ Mode 4
Final Test Mode:	Mode 1	Final Test Mode:	Mode 1

Note: All test modes have been tested, but only the worst case data recorded in the report.

**TEST RESULTS**

Radiated Emissions – Below 1GHz			
Measurement Method	Radiated	Polar:	Horizontal
Test Mode:	Mode 1	Test Voltage:	DC 4.5V

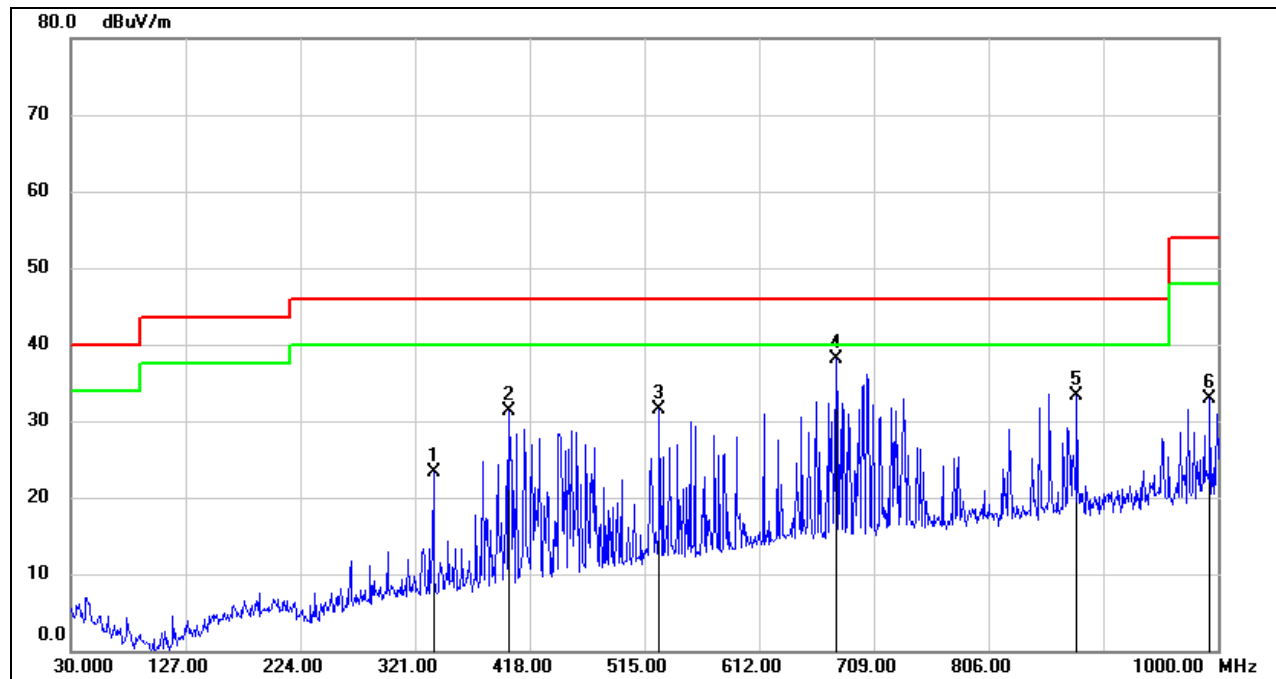


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	400.5400	51.21	-12.79	38.42	46.00	-7.58	QP
2	426.7300	52.76	-12.21	40.55	46.00	-5.45	QP
3	715.7900	46.54	-6.58	39.96	46.00	-6.04	QP
4	767.2000	34.92	-6.11	28.81	46.00	-17.19	QP
5	805.0300	29.86	-5.53	24.33	46.00	-21.67	QP
6	867.1100	29.55	-4.68	24.87	46.00	-21.13	QP

Note: 1. Reading + Correct (Amplifier Factor + Cable Loss + Antenna Factor)
2. Margin = Result - Limit



Radiated Emissions – Below 1GHz			
Measurement Method	Radiated	Polar:	Vertical
Test Mode:	Mode 1	Test Voltage:	DC 4.5V



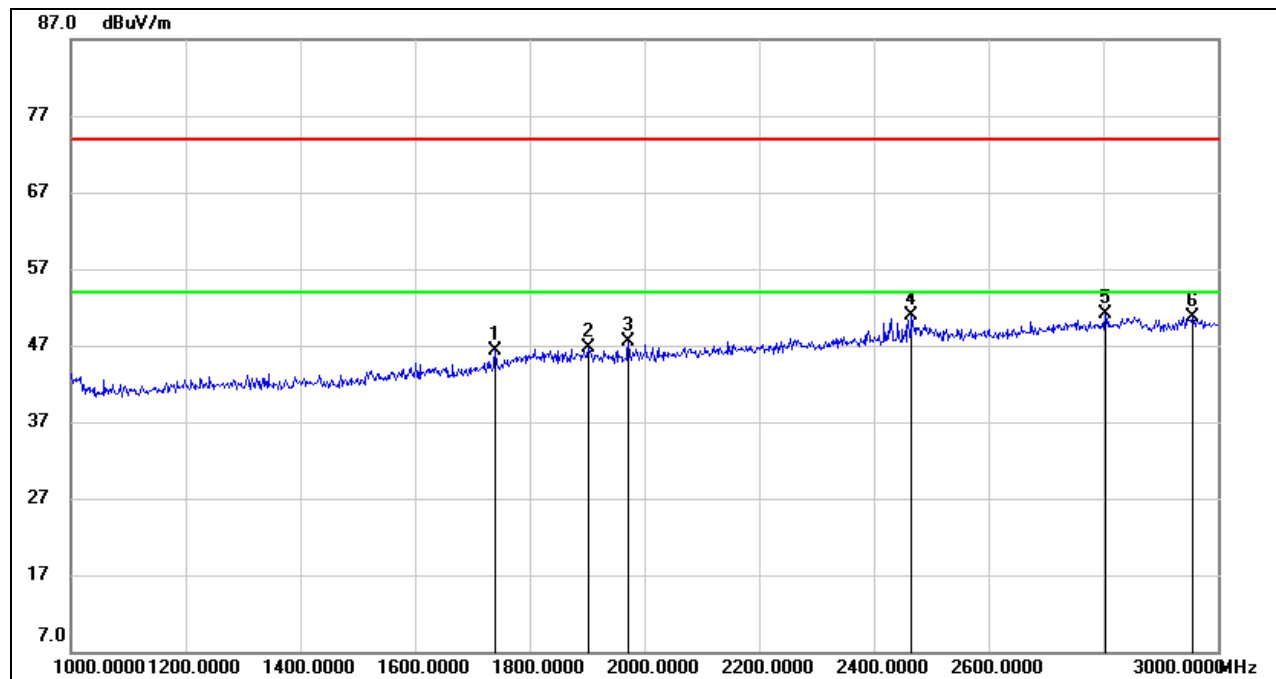
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	336.5200	37.08	-13.79	23.29	46.00	-22.71	QP
2	400.5400	44.04	-12.79	31.25	46.00	-14.75	QP
3	527.6100	41.76	-10.27	31.49	46.00	-14.51	QP
4	676.9900	45.45	-7.43	38.02	46.00	-7.98	QP
5	880.6900	37.66	-4.39	33.27	46.00	-12.73	QP
6	993.2100	35.83	-3.01	32.82	54.00	-21.18	QP

Note: 1. Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)

2. Margin = Result - Limit



Radiated Emissions – Above 1GHz and Below 3GHz			
Measurement Method	Radiated	Polar:	Horizontal
Test Mode:	Mode 1	Test Voltage:	DC 4.5V

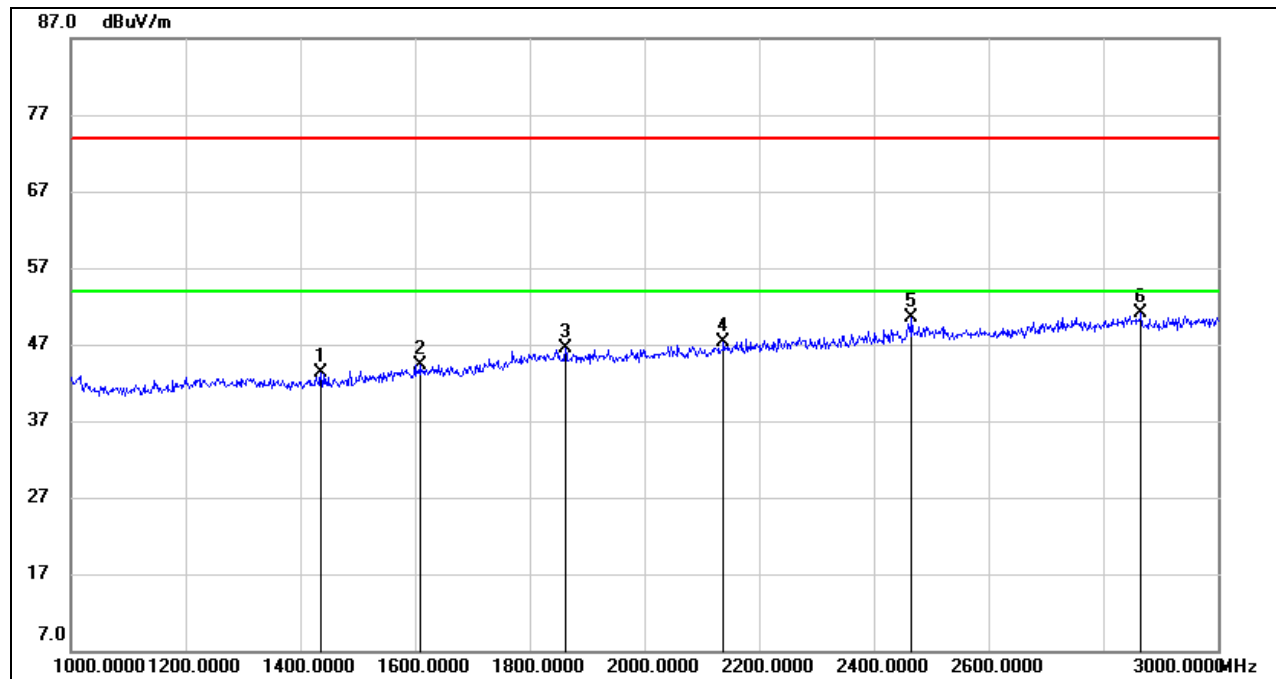


No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1740.000	15.77	30.63	46.40	74.00	-27.60	peak
2	1902.000	15.35	31.39	46.74	74.00	-27.26	peak
3	1972.000	16.18	31.37	47.55	74.00	-26.45	peak
4	2466.000	17.47	33.46	50.93	74.00	-23.07	peak
5	2804.000	16.82	34.33	51.15	74.00	-22.85	peak
6	2956.000	15.73	34.95	50.68	74.00	-23.32	peak

Note: 1. Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)
2. Margin = Result - Limit
3. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
4. Peak: Peak detector.



Radiated Emissions – Above 1GHz and Below 3GHz			
Measurement Method	Radiated	Polar:	Vertical
Test Mode:	Mode 1	Test Voltage:	DC 4.5V



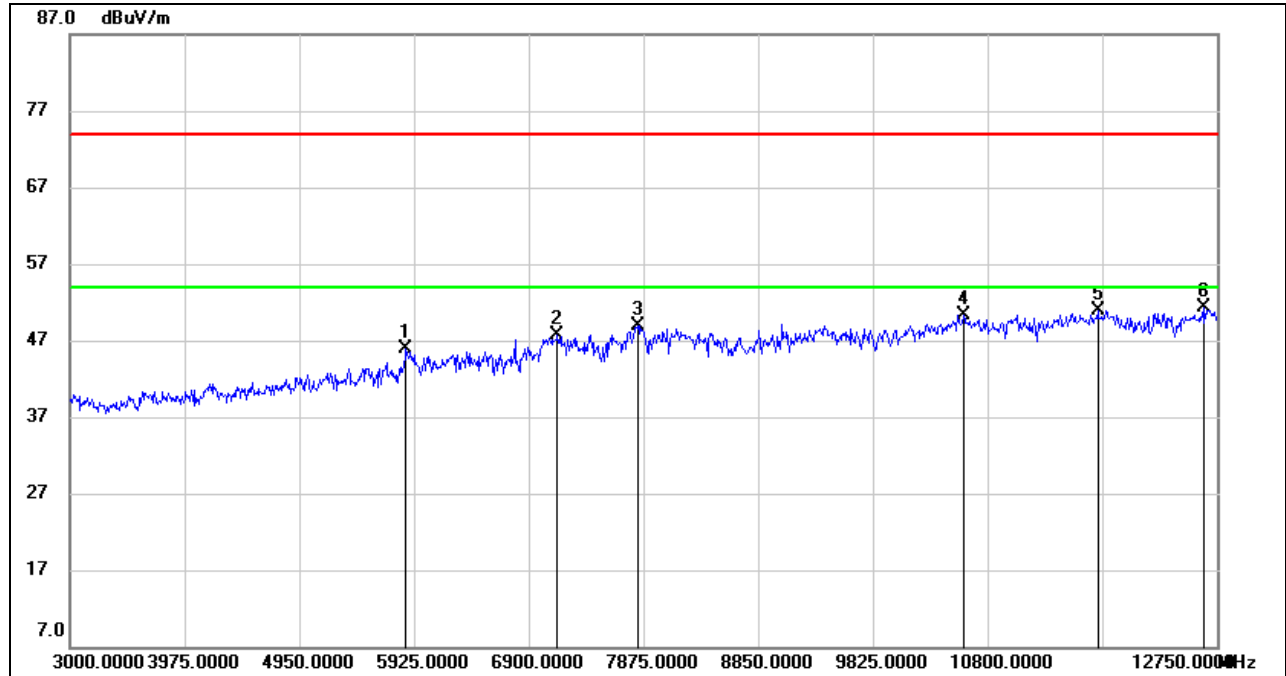
No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	1436.000	14.22	28.99	43.21	74.00	-30.79	peak
2	1608.000	14.31	30.02	44.33	74.00	-29.67	peak
3	1862.000	15.12	31.35	46.47	74.00	-27.53	peak
4	2138.000	15.23	32.12	47.35	74.00	-26.65	peak
5	2466.000	17.00	33.46	50.46	74.00	-23.54	peak
6	2866.000	16.49	34.63	51.12	74.00	-22.88	peak

Note: 1. Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor)
2. Margin = Result - Limit
3. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.
4. Peak: Peak detector.



Radiated Emissions – Above 3GHz

Measurement Method	Radiated	Polar:	Horizontal
Test Mode:	Mode 1	Test Voltage:	DC 4.5V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5856.750	41.30	4.64	45.94	74.00	-28.06	peak
2	7143.750	40.65	7.09	47.74	74.00	-26.26	peak
3	7826.250	39.73	9.24	48.97	74.00	-25.03	peak
4	10595.250	37.38	12.87	50.25	74.00	-23.75	peak
5	11736.000	36.73	14.15	50.88	74.00	-23.12	peak
6	12642.750	36.77	14.55	51.32	74.00	-22.68	peak

Note: 1. Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor + High Pass Filter Loss Factor)

2. Margin = Result - Limit

3. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

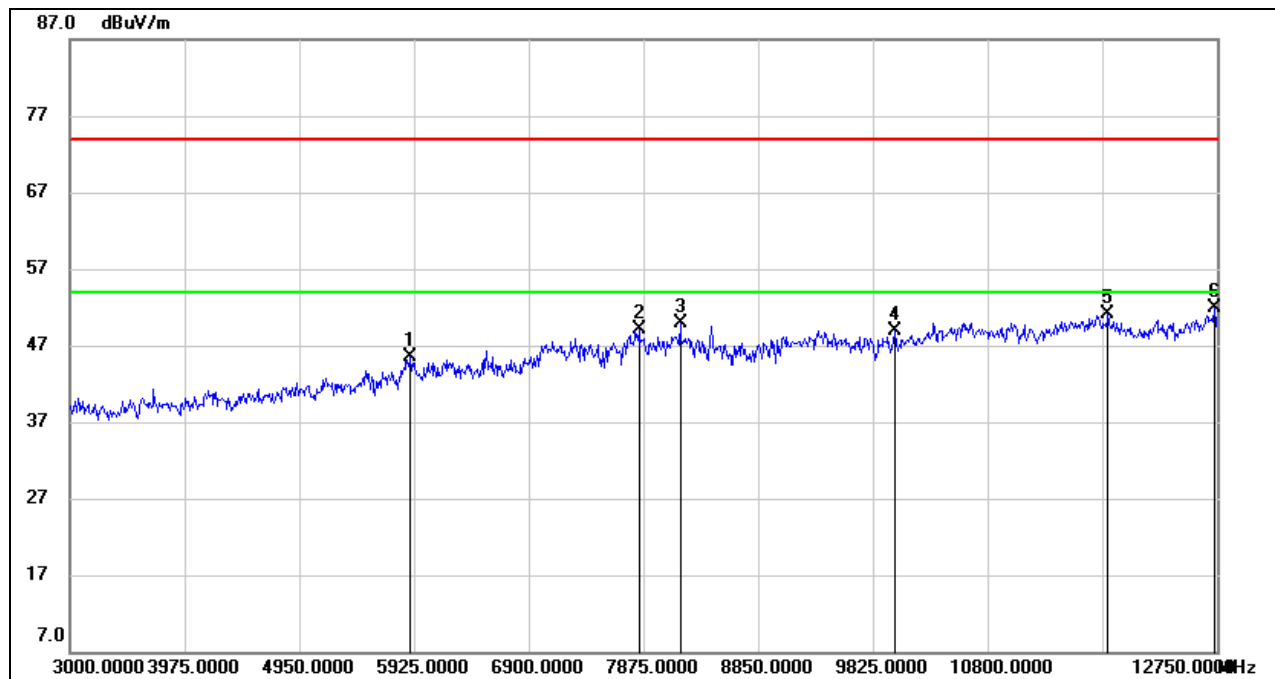
4. Peak: Peak detector.

5. The high pass filter loss factor already add into the correct factor.

6. Proper operation of the transmitter prior to adding the filter to the measurement chain.



Radiated Emissions – Above 3GHz			
Measurement Method	Radiated	Polar:	Vertical
Test Mode:	Mode 1	Test Voltage:	DC 4.5V



No.	Frequency (MHz)	Reading (dBuV)	Correct (dB/m)	Result (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Remark
1	5895.750	40.07	5.41	45.48	74.00	-28.52	peak
2	7836.000	39.95	9.17	49.12	74.00	-24.88	peak
3	8187.000	40.12	9.83	49.95	74.00	-24.05	peak
4	10010.250	37.85	10.99	48.84	74.00	-25.16	peak
5	11823.750	36.85	14.31	51.16	74.00	-22.84	peak
6	12730.500	36.79	15.04	51.83	74.00	-22.17	peak

Note: 1. Reading +Correct (Amplifier Factor + Cable Loss + Antenna Factor + High Pass Filter Loss Factor)

2. Margin = Result - Limit

3. If Peak Result complies with AV limit, AV Result is deemed to comply with AV limit.

4. Peak: Peak detector.

5. The high pass filter loss factor already add into the correct factor.

6. Proper operation of the transmitter prior to adding the filter to the measurement chain.

END OF REPORT