FCC Test Report

Report No.:	RF151106D03
FCC ID:	UMB-5CR11A0
Test Model:	5CR11A0-000-0A
Series Model:	5CR11A0-000-0B
Received Date:	Oct. 27, 2015
Test Date:	Oct. 28 ~ Nov. 6, 2015
Issued Date:	Nov. 11, 2015
Applicant:	Foxconn Technology Co., Ltd.
Address:	No.2, Ziyou St., Tucheng Dist., New Taipei City 236, Taiwan
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan (R.O.C.)

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Release Control Record

Issue No.	Description	Date Issued
RF151106D03	Original release.	Nov. 11, 2015

1 Certificate of Conformity

Product:	Wireless Charger Receiver Module
Test Model:	5CR11A0-000-0A
Series Model:	5CR11A0-000-0B
Sample Status:	Engineering sample
Applicant:	Foxconn Technology Co., Ltd.
Test Date:	Oct. 28 ~ Nov. 6, 2015
Standards:	47 CFR FCC Part 15, Subpart C (Section 15.209) ANSI C63.10: 2013

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's EMC characteristics under the conditions specified in this report.

Prepared by : Jessica Chang , **Date:** Nov. 11, 2015

Jessica Chang / Senior Specialist

Approved by : Rex. Lai , **Date:** Nov. 11, 2015

Rex Lai / Assistant Manager

2 Summary of Test Results

47 CFR FCC Part 15, Subpart C (SECTION 15.209)			
FCC Clause	Test Item	Result	Remarks
15.207	AC Power Conducted Emission	N/A	Without AC power port of the EUT
15.209	Radiated Emission Test	PASS	Meet the requirement of limit. Minimum passing margin is -8.90 dB at 191.65 MHz.
--	26dB bandwidth	PASS	Meet the requirement of limit.

2.1 Measurement Uncertainty

Where relevant, the following measurement uncertainty levels have been estimated for tests performed on the EUT as specified in CISPR 16-4-2:

Measurement	Frequency	Expended Uncertainty (k=2) (±)
Radiated Emissions up to 30 MHz	9kHz ~ 30MHz	4.00 dB
Radiated Emissions up to 1 GHz	30MHz ~ 1000MHz	4.00 dB

2.2 Modification Record

There were no modifications required for compliance.

3 General Information

3.1 General Description of EUT

Product	Wireless Charger Receiver Module
Test Model	5CR11A0-000-0A
Series Model	5CR11A0-000-0B
Status of EUT	Engineering sample
Power Supply Rating	5Vdc
Modulation Type	Load Modulation
Operating Frequency	110-250kHz
Tested Frequency	146kHz
Tested Channel	1
Antenna Type	Loop antenna
Antenna Connector	N/A
Accessory Device	N/A
Data Cable Supplied	Shielded Micro USB cable (0.05m).

Note:

1. The EUT has WPC (Wireless Power Consortium) technology.

2. All models are listed as below.

Model	
5CR11A0-000-0A	Micro USB(180°)
5CR11A0-000-0B	Micro USB(-180°)

3. The above EUT information is declared by manufacturer and for more detailed features description, please refer to the manufacturer's specifications or user's manual.

3.2 Description of Test Modes

1 channel is provided to this EUT of tested:

Channel	Frequency (kHz)
1	146

3.2.1 Test Mode Applicability and Tested Channel Detail

EUT CONFIGURE MODE	APPLICABLE TO			DESCRIPTION
	RE<1G	PLC	BM	
-	√	√	√	-

Where **RE<1G:** Radiated Emission below 1GHz **PLC:** Power Line Conducted Emission
BM: 26dB Bandwidth Measurement

Radiated Emission Test (Below 1GHz):

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED FREQUENCY	TESTED CHANNEL
-	110-250kHz	146kHz	1

26dB Bandwidth Measurement:

☒ Pre-Scan has been conducted to determine the worst-case mode from all possible combinations between available modulations, data rates and antenna ports (if EUT with antenna diversity architecture).
☒ Following channel(s) was (were) selected for the final test as listed below.

EUT CONFIGURE MODE	AVAILABLE CHANNEL	TESTED FREQUENCY	TESTED CHANNEL
-	110-250kHz	146kHz	1

Test Condition:

APPLICABLE TO	ENVIRONMENTAL CONDITIONS	INPUT POWER	TESTED BY
RE<1G	24deg. C, 70% RH	120Vac, 60Hz	Aaron You
BM	24deg. C, 70% RH	120Vac, 60Hz	Aaron You

3.3 Description of Support Units

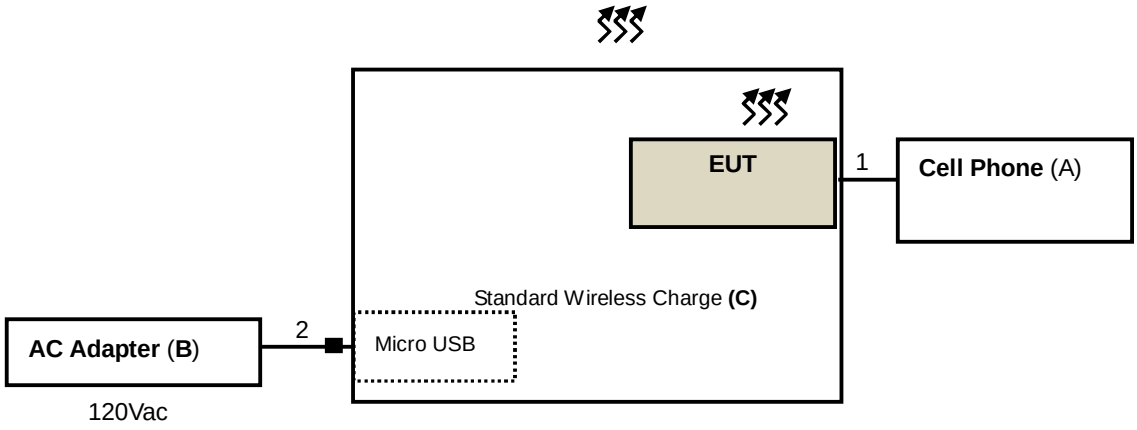
ID	Product	Brand	Model No.	Serial No.	FCC ID	Remarks
A.	Cell phone	Samsung	GALAXY S2	N/A	N/A	Provided by Lab
B.	Adapter	MASS POWER	NBS12E050200VU	N/A	N/A	Supplied by client
C.	Standard Wireless Charge	N/A	5CT11A0-000-0A	N/A	N/A	Supplied by client

Note: All power cords of the above support units are non-shielded (1.8m).

ID	Descriptions	Qty.	Length (m)	Shielding (Yes/No)	Cores (Qty.)	Remarks
1.	Micro USB cable	1	0.05	Y	0	Supplied by client
2.	USB cable	1	1.0	Y	1	Supplied by client

Note: The core(s) is(are) originally attached to the cable(s).

3.3.1 Configuration of System under Test



3.4 General Description of Applied Standards

The EUT is a RF Product. According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

FCC Part 15, Subpart C (15.209)

ANSI C63.10-2013

All test items have been performed and recorded as per the above standards.

NOTE: The EUT has been verified to comply with the requirements of FCC Part 15, Subpart B, Class B (DoC). The test report has been issued separately.

4 Test Types and Results

4.1 Radiated Emission and Bandedge Measurement

4.1.1 Limits of Radiated Emission and Bandedge Measurement

FOR FREQUENCY BELOW 30MHz

FREQUENCY (MHz)	FIELD STRENGTH (dBuV/m)		MEASUREMENT DISTANCE (meters)
	uV/m	dBuV/m	
0.009 – 0.490	2400 / F (kHz)	48.52-13.80	300
0.490 – 1.705	24000 / F (kHz)	33.80-22.97	30
1.705 – 30.0	30	29.54	30

FOR FREQUENCY BETWEEN 30-1000MHz

FREQUENCY (MHz)	Class A (at 10m)		Class B (at 3m)	
	uV/m	dBuV/m	uV/m	dBuV/m
30-88	90	39.1	100	40.0
88-216	150	43.5	150	43.5
216-960	210	46.4	200	46.0
Above 960	300	49.5	500	54.0

4.1.2 Test Instruments

DESCRIPTION & MANUFACTURER	MODEL NO.	SERIAL NO.	CALIBRATED DATE	CALIBRATED UNTIL
HP Preamplifier	8447D	2432A03504	Feb. 26, 2015	Feb. 25, 2016
HP Preamplifier	8449B	3008A01201	Feb. 26, 2015	Feb. 25, 2016
MITEQ Preamplifier	AMF-6F-260400-33-8P	892164	Mar. 01, 2015	Feb. 28, 2016
Agilent Spectrum	E4446A	MY51100009	May 30, 2015	May 29, 2016
Agilent TEST RECEIVER	N9038A	MY51210129	Jan. 20, 2015	Jan. 19, 2016
Schwarzbeck Antenna	VULB 9168	139	Feb. 04, 2015	Feb. 03, 2016
Schwarzbeck Antenna	VHBA 9123	480	May 29, 2015	May 28, 2017
Schwarzbeck Horn Antenna	BBHA-9170	212	Feb. 09, 2015	Feb. 08, 2016
Schwarzbeck Horn Antenna	BBHA 9120-D1	D130	Feb. 10, 2015	Feb. 09, 2016
ADT. Turn Table	TT100	0306	NA	NA
ADT. Tower	AT100	0306	NA	NA
Software	Radiated_V7.6.15.9.4	NA	NA	NA
SUHNER RF cable With 4dB PAD	SF104	CABLE-CH6	Aug. 15, 2015	Aug. 14, 2016
SUHNER RF cable With 3dB PAD	SF102	Cable-CH8-3.6m	Aug. 15, 2015	Aug. 14, 2016
Loop Antenna R & S	HFH2-Z2	100070	Mar. 06, 2014	Mar. 05, 2016

NOTE: 1. The calibration interval of the above test instruments is 12/24 months. And the calibrations are traceable to NML/ROC and NIST/USA.
2. The horn antenna and HP preamplifier (model: 8449B) are used only for the measurement of emission frequency above 1GHz if tested.
3. The test was performed in Chamber No. 6.
4. The Industry Canada Reference No. IC 7450E-6.
5. The FCC Site Registration No. is 447212.

4.1.3 Test Procedures

a. The EUT was placed on the top of a rotating table 0.8 meters (for below 1GHz) / 1.5 meters (for above 1GHz) above the ground at 3 meter chamber room for test. The table was rotated 360 degrees to determine the position of the highest radiation.

b. The EUT was set 3 meters away from the interference-receiving antenna, which was mounted on the top of a variable-height antenna tower.

c. The height of antenna is varied from one meter to four meters above the ground to determine the maximum value of the field strength. Both horizontal and vertical polarizations of the antenna are set to make the measurement.

d. For each suspected emission, the EUT was arranged to its worst case and then the antenna was tuned to heights from 1 meter to 4 meters and the rotatable table was turned from 0 degrees to 360 degrees to find the maximum reading.

e. The test-receiver system was set to quasi-peak detect function and specified bandwidth with maximum hold mode when the test frequency is below 1 GHz.

f. The test-receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1 GHz. If the peak reading value also meets average limit, measurement with the average detector is unnecessary.

Note:

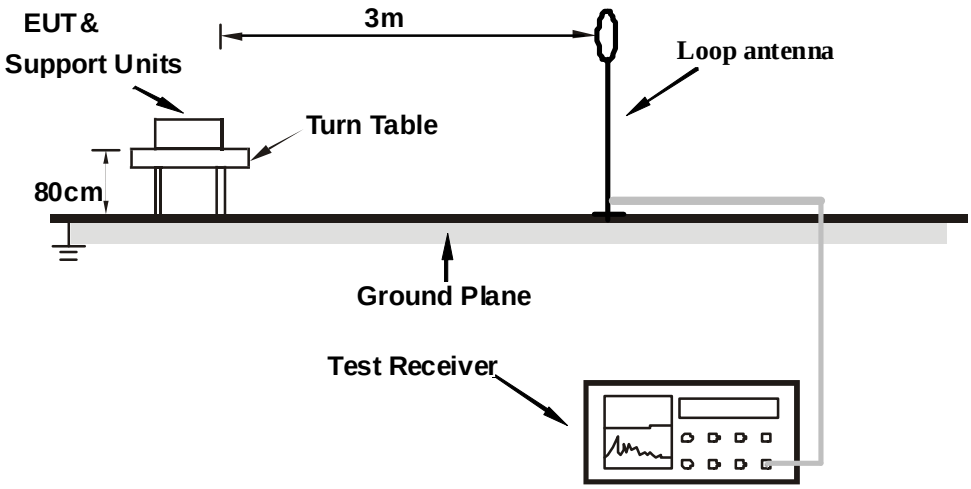
1. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 120kHz for Quasi-peak detection (QP) at frequency below 1GHz.
2. All modes of operation were investigated and the worst-case emissions are reported.

4.1.4 Deviation from Test Standard

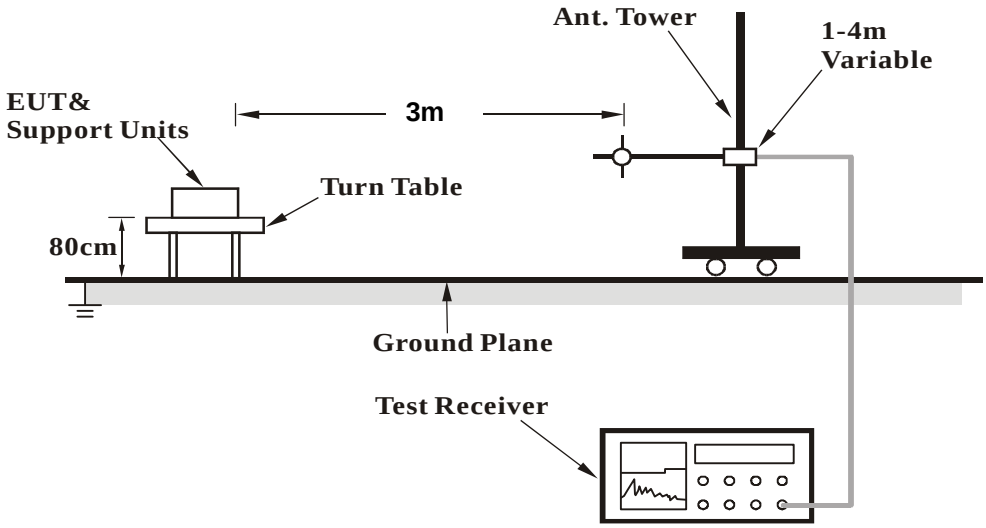
No deviation.

4.1.5 Test Set Up

For Frequency range 9kHz~30MHz



For Frequency range 30 ~ 1000MHz



For the actual test configuration, please refer to the attached file (Test Setup Photo).

4.1.6 EUT Operating Conditions

a. Wireless Charger Receiver Module is connected to the adapter.
b. The EUT is connected to the cell phone.
c. The EUT is placed on top of the Wireless Charger Receiver Module and can start charging to cell phone.

4.1.7 Test Results

Below 30MHz Data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9 kHz ~ 30 MHz		

TEST DISTANCE: AT 3 M (Open)								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.146	81.65 QP	104.32	-22.67	1.00	184	56.23	25.42
2	0.292	64.07 QP	98.30	-34.23	1.00	223	44.93	19.14
3	0.438	59.26 QP	94.77	-35.51	1.00	189	43.10	16.16
4	0.584	45.56 QP	72.28	-26.72	1.00	153	31.27	14.29
5	0.730	45.91 QP	70.34	-24.43	1.00	191	33.05	12.86
6	0.876	51.37 QP	68.75	-17.38	1.00	234	39.44	11.93

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	9 kHz ~ 30 MHz		

TEST DISTANCE: AT 3 M (Close)								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	*0.146	74.66 QP	104.32	-29.66	1.00	197	49.24	25.42
2	0.292	55.15 QP	98.30	-43.15	1.00	315	36.01	19.14
3	0.438	51.23 QP	94.77	-43.54	1.00	111	35.07	16.16
4	0.584	36.39 QP	72.28	-35.89	1.00	203	22.10	14.29
5	0.730	40.13 QP	70.34	-30.21	1.00	208	27.27	12.86
6	0.876	44.26 QP	68.75	-24.49	1.00	63	32.33	11.93

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value
5. " * ": Fundamental frequency.
6. Loop antenna was used for all radiated emission below 30MHz.

Below 1GHz Data:

CHANNEL	TX Channel 1	DETECTOR FUNCTION	Quasi-Peak (QP)
FREQUENCY RANGE	30MHz ~ 1GHz		

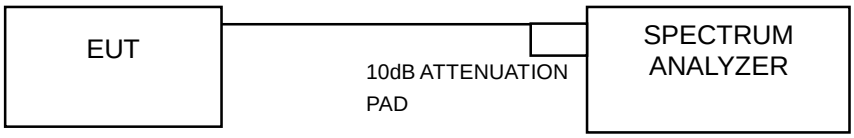
ANTENNA POLARITY & TEST DISTANCE: HORIZONTAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	59.00	24.33 QP	40.00	-15.67	4.00 H	72	33.32	-8.99
2	145.96	28.94 QP	43.50	-14.56	4.00 H	236	37.64	-8.70
3	**191.65**	**34.60 QP**	**43.50**	**-8.90**	**3.55 H**	**266**	**45.53**	**-10.93**
4	257.03	27.57 QP	46.00	-18.43	2.84 H	216	36.03	-8.46
5	333.08	29.71 QP	46.00	-16.29	2.27 H	192	35.84	-6.13
6	820.94	32.78 QP	46.00	-13.22	1.00 H	238	29.79	2.99
ANTENNA POLARITY & TEST DISTANCE: VERTICAL AT 3 M								
NO.	FREQ. (MHz)	EMISSION LEVEL (dBuV/m)	LIMIT (dBuV/m)	MARGIN (dB)	ANTENNA HEIGHT (m)	TABLE ANGLE (Degree)	RAW VALUE (dBuV)	CORRECTION FACTOR (dB/m)
1	33.59	30.62 QP	40.00	-9.38	1.27 V	356	41.05	-10.43
2	59.44	30.46 QP	40.00	-9.54	1.03 V	18	39.45	-8.99
3	114.34	28.60 QP	43.50	-14.90	1.00 V	118	40.38	-11.78
4	189.90	28.19 QP	43.50	-15.31	1.00 V	165	38.97	-10.78
5	296.85	26.04 QP	46.00	-19.96	1.96 V	168	33.00	-6.96
6	803.38	32.46 QP	46.00	-13.54	2.24 V	339	29.68	2.78

REMARKS:

1. Emission Level(dBuV/m) = Raw Value(dBuV) + Correction Factor(dB/m)
2. Correction Factor(dB/m) = Antenna Factor(dB/m) + Cable Factor(dB) – Pre-Amplifier Factor(dB)
3. The other emission levels were very low against the limit.
4. Margin value = Emission Level – Limit value

4.2 26dB Bandwidth Measurement

4.2.1 Test Setup



4.2.2 Test Instruments

Refer to section 4.1.2 to get information of above instrument.

4.2.3 Test Procedure

1) Set RBW = 1kHz
2) Set the VBW > RBW.
3) Detector = Peak.
4) Trace mode = max hold.
5) Measure the maximum width of the emission that is 26 dB down from the peak of the emission. Compare this with the RBW setting of the analyzer.

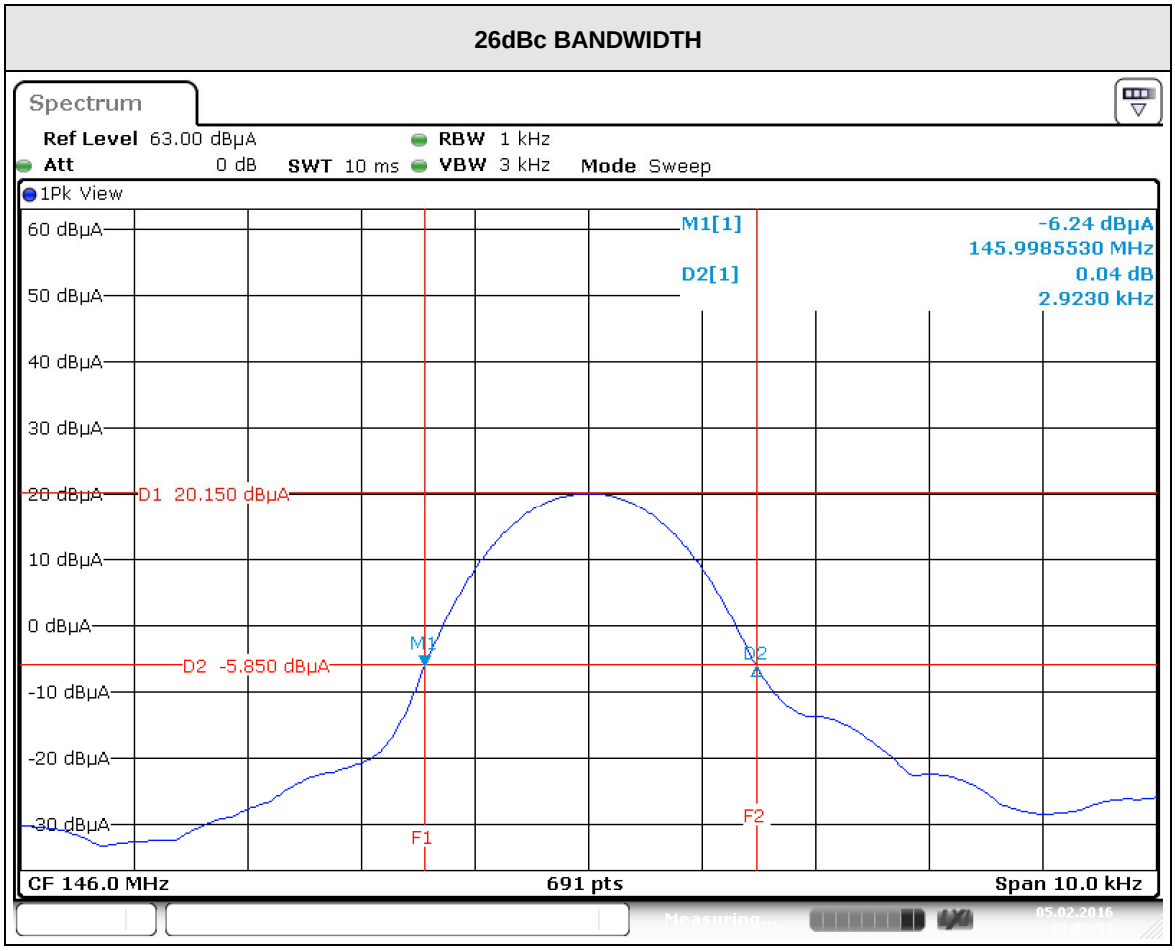
4.2.4 Deviation from Test Standard

No deviation.

4.2.5 EUT Operating Condition

The software provided by client to enable the EUT under transmission condition continuously at lowest, middle and highest channel frequencies individually.

4.2.6 Test Result



5 Pictures of Test Arrangements

Please refer to the attached file (Test Setup Photo).

Appendix – Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

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Email: service.adt@tw.bureauveritas.com
Web Site: www.bureauveritas-adt.com

The address and road map of all our labs can be found in our web site also.

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