TEST REPORT

Application No.:	SHCR2111000688AT
FCC ID:	2A2EZVW15AM9P
Applicant:	Delta Electronics, Inc.
Address of Applicant:	No. 256, Yangguang Street, Neihu District,Taipei 114067, Taiwan
Manufacturer:	Delta Electronics, Inc.
Address of Manufacturer:	No. 256, Yangguang Street, Neihu District,Taipei 114067, Taiwan
Factory:	Delta Electronics, Inc.
Address of Factory:	252, Shangying Road, Guishan District, Taoyuan City 333425, Taiwan
Equipment Under Test (EUT):	
EUT Name:	Wireless Charger Module
Model No.:	PT00050017-C
Standard(s) :	47 CFR Part 18
Date of Receipt:	2021-11-08
Date of Test:	2021-11-13 to 2021-11-17
Date of Issue:	2021-11-18
Test Result:	**Pass***

* In the configuration tested, the EUT complied with the standards specified above.

Parlam Zhan
Laboratory Manager

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards. Any mention of SGS International Electrical Approvals or testing done by SGS International Electrical Approvals in connection with, distribution or use of the product described in this report must be approved by SGS International Electrical Approvals in writing.

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Revision Record			
Version	**Description**	**Date**	**Remark**
00	Original	2021-11-18	/

Authorized for issue by:				
		Bill Wu **Bill Wu / Project Engineer**		
		Parlam Zhan **Parlam Zhan / Reviewer**		

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2 Test Summary

Emission Part				
Item	**Standard**	**Method**	**Requirement**	**Result**
Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)	47 CFR Part 18	FCC OST/MP-5:1986	Class B	Pass
Radiated Emissions (30MHz-1GHz)	47 CFR Part 18	FCC OST/MP-5:1986	Class B	Pass

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4 General Information

4.1 Details of E.U.T.

Power supply: DC 13.5V
Test voltage: DC 13.5V
Operation frequency: 127kHz
Wireless output power: 15W
Antenna type: Inductive Loop Coil Antenna
Modulation Type: Load Modulation

4.2 Description of Support Units

Description	Manufacturer	Model No.
DC power supply	Agilent	E3632A
Load	/	/
Mobilephone	Apple	Iphone 12

4.3 Measurement Uncertainty

No.	Item	Measurement Uncertainty
1	Radiated Spurious Emission Test	4.2dB (Below 30MHz)
		4.5dB (30MHz-1GHz)
		5.1dB (1GHz-18GHz)
		5.4dB (Above 18GHz)
2	Temperature Test	1°C
3	Humidity Test	3%
4	Supply Voltages	1.5%
5	Time	3%

Note: The measurement uncertainty represents an expanded uncertainty expressed at approximately the 95% confidence level using a coverage factor of k=2.

4.4 Deviation from Standards

None

4.5 Abnormalities from Standard Conditions

None

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4.6 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. E&E Lab

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666 Fax: +86 21 6191 5678

No tests were sub-contracted.

4.7 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

• CNAS (No. CNAS L0599)

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. to ISO/IEC 17025:2017 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

• A2LA (Certificate No. 6332.01)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. is accredited by the American Association for Laboratory Accreditation(A2LA).

• FCC (Designation Number: CN1301)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been recognized as an accredited testing laboratory.

• ISED (CAB Identifier: CN0020)

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. EMC Laboratory has been recognized by Innovation, Science and Economic Development Canada (ISED) as an accredited testing laboratory. Company Number: 8617A

• VCCI (Member No.: 3061)

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-13868, C-14336, T-12221, G-10830 respectively.

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5 Equipment List

Equipment	Manufacturer	Model No	Inventory No	Cal Date	Cal Due Date
RF Radiated Test					
EMI test Receiver	R&S	ESU40	SHEM051-1	2020-12-20	2021-12-19
Spectrum Analyzer	R&S	FSP-30	SHEM002-1	2020-12-20	2021-12-19
Communication Tester	R&S	CMW500	SHEM183-2	2021-04-16	2022-04-15
Loop Antenna (9kHz-30MHz)	Schwarzbeck	FMZB1519	SHEM135-1	2020-12-20	2021-12-19
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM048-1	2021-09-11	2023-09-10
Antenna (25MHz-2GHz)	Schwarzbeck	VULB9168	SHEM202-1	2020-04-30	2022-04-29
Horn Antenna (1-18GHz)	Schwarzbeck	HF906	SHEM009-1	2019-10-24	2022-10-23
Horn Antenna (1-18GHz)	Schwarzbeck	BBHA9120D	SHEM050-1	2021-09-18	2023-09-17
Horn Antenna (14-40GHz)	Schwarzbeck	BBHA 9170	SHEM049-1	2021-09-18	2023-09-17
Pre-Amplifier	HP	8447D	SHEM236-1	2021-05-27	2022-05-26
Pre-Amplifier	PANSHAN	LNA 1-18G	SHEM235-1	2021-05-27	2022-05-26
High-amplifier (14-40GHz)	Schwarzbeck	10001	SHEM049-2	2020-12-20	2021-12-19
Band Filter	LORCH	9BRX-875/X150	SHEM156-1	/	/
Band Filter	LORCH	13BRX-1950/X500	SHEM083-2	/	/
Band Filter	LORCH	5BRX-2400/X200	SHEM155-1	/	/
Band Filter	LORCH	5BRX-5500/X1000	SHEM157-2	/	/
High pass Filter	Wainwright	WHK3.0/18G	SHEM157-1	/	/
High pass Filter	Wainwright	WHKS1700	SHEM157-3	/	/
Semi/Fully Anechoic	ST	11*6*6M	SHEM078-2	2020-05-25	2023-05-24
RE test Cable	/	RE01, RE02, RE06	/	2020-12-20	2021-12-19
Test software	ESE	E3	Version: 6.111221a	/	/

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6 Emission Test Results

6.1 Radiated Emissions (Magnetic field Strength) (9kHz-30MHz)

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

Frequency Range: 9kHz to 30MHz

Measurement Distance: 3m

Limit:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any non-ISM frequency	Below 500 500 or more	15 15 × SQRT(power/500)	300 [1]300

[1]Field strength may not exceed 10 μV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.

Frequency band in which device operates (MHz)	Range of frequency measurements	
	Lowest frequency	Highest frequency
Below 1.705	Lowest frequency generated in the device, but not lower than 9 kHz	30 MHz.
1.705 to 30	Lowest frequency generated in the device, but not lower than 9 kHz	400 MHz.
30 to 500	Lowest frequency generated in the device or 25 MHz, whichever is lower	Tenth harmonic or 1,000 MHz, whichever is higher.
500 to 1,000	Lowest frequency generated in the device or 100 MHz, whichever is lower	Tenth harmonic.

6.1.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 48 % RH Atmospheric Pressure: 1010 mbar

Test mode: a:Wireless discharging mode_Keep the EUT discharging continuously,All power rate(15W;7.5W;0W) have been tested and found the worst case mode, Only the data of worst case power rate 15W is recorded in the report.

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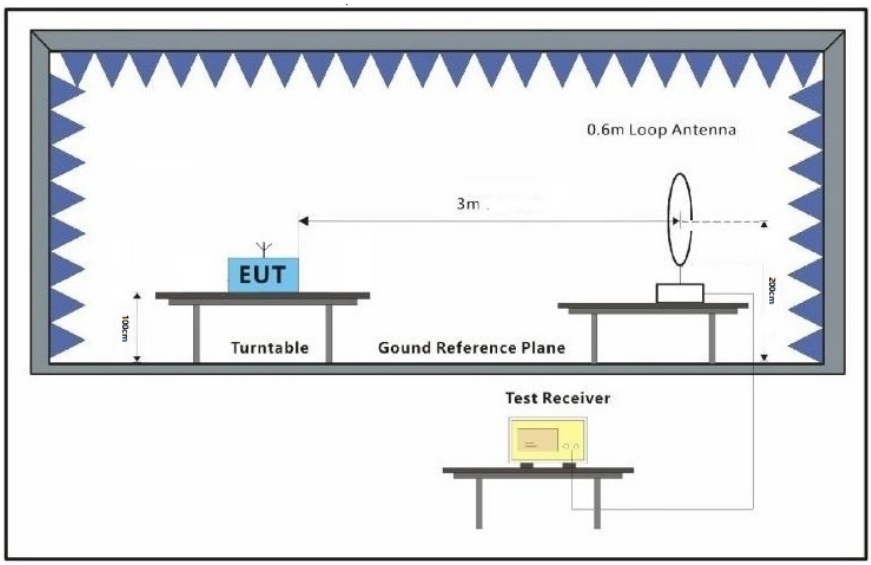
6.1.2 Test Setup Diagram



6.1.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

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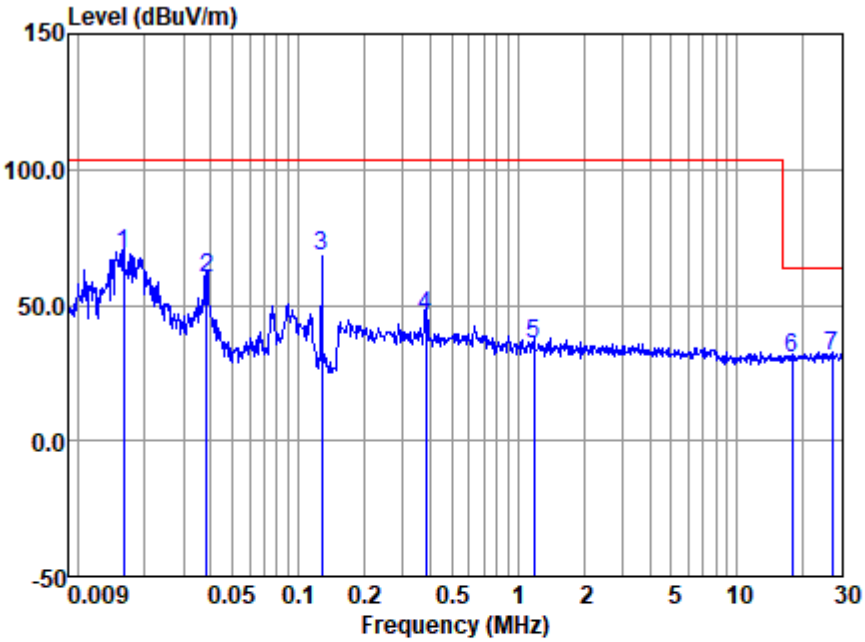

Antenna Polarity :HORIZONTAL
EUT/Project :0688AT
Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dBuv/m	dBuv/m	dB	
1	0.016	48.98	20.00	0.02	69.00	103.50	-34.50	QP
2	0.038	40.09	19.90	0.02	60.01	103.50	-43.49	QP
3	0.128	47.70	20.00	0.04	67.74	103.50	-35.76	Peak
4	0.382	25.68	20.00	0.06	45.74	103.50	-57.76	QP
5	1.179	15.57	20.22	0.12	35.91	103.50	-67.59	QP
6	17.851	9.38	20.16	0.64	30.18	63.50	-33.32	Peak
7	27.217	9.96	20.20	0.77	30.93	63.50	-32.57	QP

Remark:
Emission Level=Read Level+ Antenna Factor+ Cable Loss
Over Limit= Emission Level-Limit line

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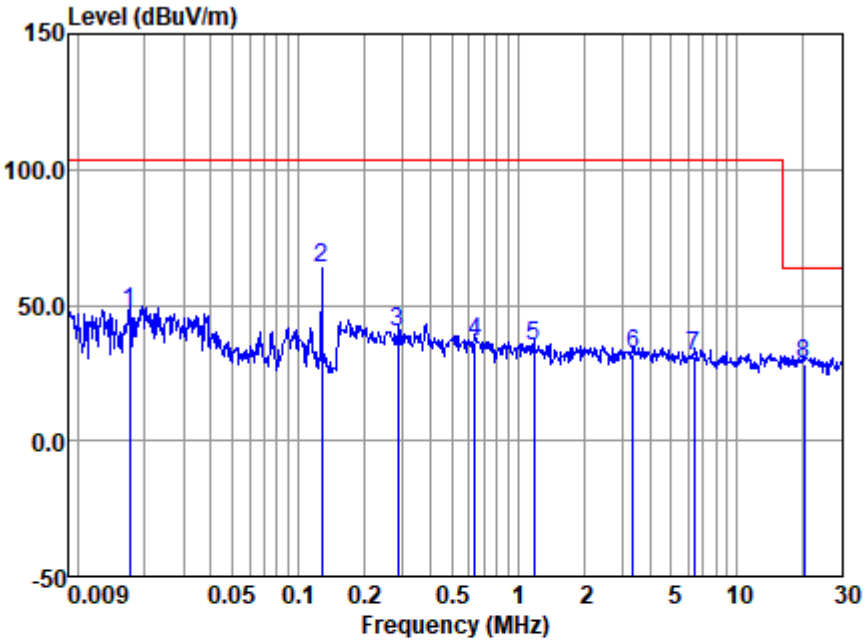

Antenna Polarity :VERTICAL
EUT/Project :0688AT
Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuv	dB/m	dB	dBuv/m	dBuv/m	dB	
1	0.017	27.14	20.00	0.02	47.16	103.50	-56.34	QP
2	0.128	43.70	20.00	0.04	63.74	103.50	-39.76	Peak
3	0.285	19.94	20.00	0.05	39.99	103.50	-63.51	QP
4	0.636	16.04	20.10	0.10	36.24	103.50	-67.26	QP
5	1.179	14.57	20.22	0.12	34.91	103.50	-68.59	QP
6	3.357	11.27	20.30	0.19	31.76	103.50	-71.74	QP
7	6.372	10.72	20.13	0.35	31.20	103.50	-72.30	QP
8	20.160	7.39	20.20	0.68	28.27	63.50	-35.23	QP

Remark:
Emission Level=Read Level+ Antenna Factor+ Cable Loss
Over Limit= Emission Level-Limit line

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6.2 Radiated Emissions (30MHz-1GHz)

Test Requirement: 47 CFR Part 18

Test Method: FCC OST/MP-5:1986

Frequency Range: 9kHz to 30MHz

Measurement Distance: 3m

Limit:

Equipment	Operating frequency	RF Power generated by equipment (watts)	Field strength limit (uV/m)	Distance (meters)
Any type unless otherwise specified (miscellaneous)	Any non-ISM frequency	Below 500 500 or more	15 15 × SQRT(power/500)	300 [1]300

[1]Field strength may not exceed 10 μV/m at 1600 meters. Consumer equipment operating below 1000 MHz is not permitted the increase in field strength otherwise permitted here for power over 500 watts.

Frequency band in which device operates (MHz)	Range of frequency measurements	
	Lowest frequency	Highest frequency
Below 1.705	Lowest frequency generated in the device, but not lower than 9 kHz	30 MHz.
1.705 to 30	Lowest frequency generated in the device, but not lower than 9 kHz	400 MHz.
30 to 500	Lowest frequency generated in the device or 25 MHz, whichever is lower	Tenth harmonic or 1,000 MHz, whichever is higher.
500 to 1,000	Lowest frequency generated in the device or 100 MHz, whichever is lower	Tenth harmonic.

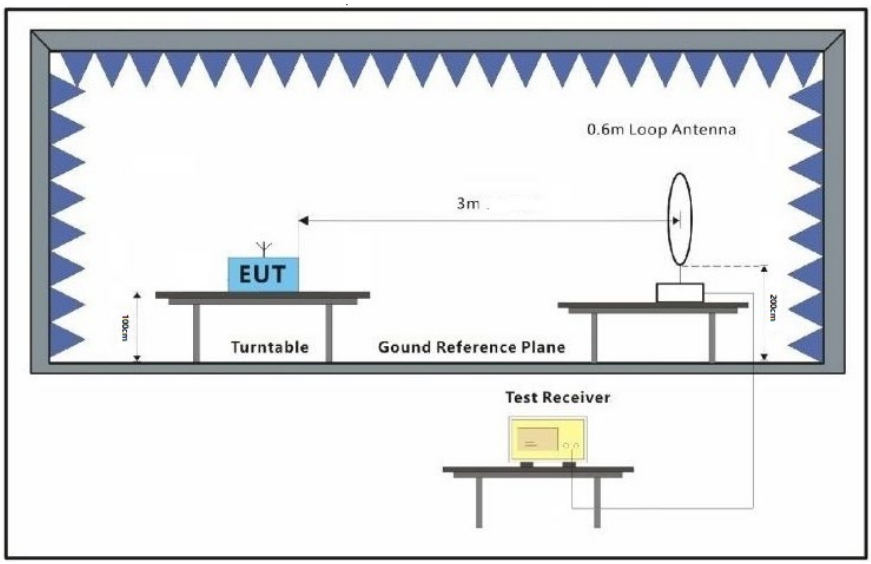
6.2.1 E.U.T. Operation

Operating Environment:

Temperature: 24 °C Humidity: 48 % RH Atmospheric Pressure: 1010 mbar

Test mode: a:Wireless discharging mode_Keep the EUT discharging continuously,All power rate(15W;7.5W;0W) have been tested and found the worst case mode, Only the data of worst case power rate 15W is recorded in the report.

6.2.2 Test Setup Diagram



6.2.3 Measurement Data

An initial pre-scan was performed in the chamber using the spectrum analyser in peak detection mode. Quasi-peak measurements were conducted based on the peak sweep graph. The EUT was measured by BiConiLog antenna with 2 orthogonal polarities.

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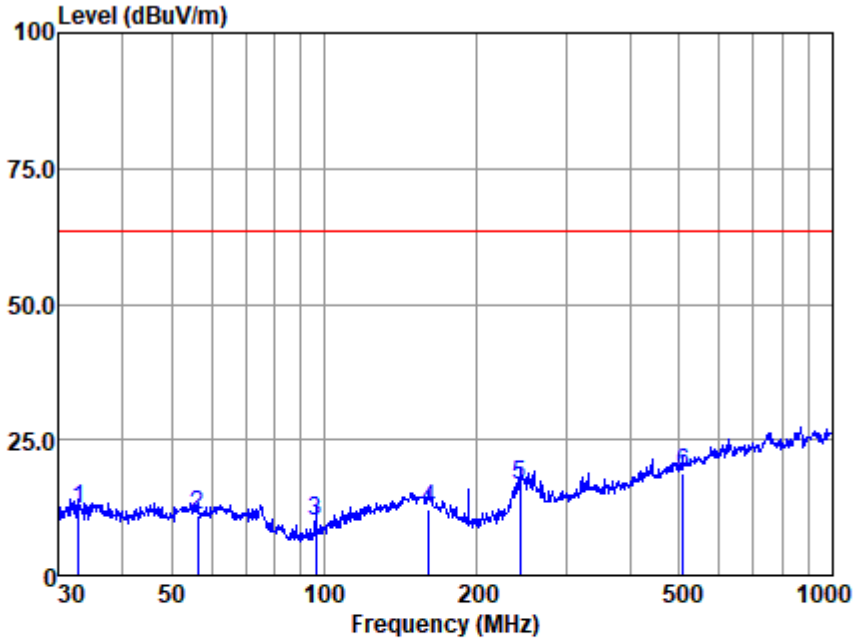

Antenna Polarity :HORIZONTAL
EUT/Project :0689AT
Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	32.749	30.41	12.58	0.81	31.79	12.01	63.50	-51.49	QP
2	56.395	28.30	13.57	1.08	31.80	11.15	63.50	-52.35	QP
3	96.099	31.64	8.33	1.45	31.59	9.83	63.50	-53.67	QP
4	160.346	28.40	13.23	1.93	31.22	12.34	63.50	-51.16	QP
5	242.525	33.46	11.65	2.54	31.09	16.56	63.50	-46.94	QP
6	510.044	27.95	17.93	3.57	30.74	18.71	63.50	-44.79	QP

Remark:

Emission Level=Read Level+ Antenna Factor+ Cable Loss-Preamp Factor

Over Limit= Emission Level-Limit line

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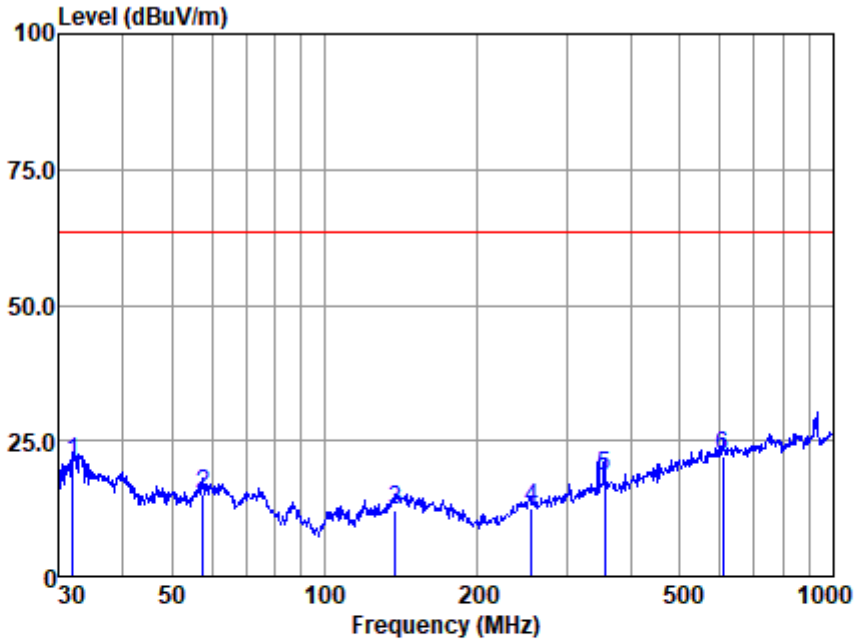

Antenna Polarity :VERTICAL
EUT/Project :0689AT
Test mode :a

	Freq	Read Level	Antenna Factor	Cable Loss	Preamp Factor	Emission Level	Limit Line	Over Limit	Remark
	MHz	dBuV	dB/m	dB	dB	dBuV/m	dBuV/m	dB	
1	31.955	39.57	12.43	0.80	31.80	21.00	63.50	-42.50	QP
2	57.594	32.27	13.48	1.09	31.74	15.10	63.50	-48.40	QP
3	137.903	29.47	12.56	1.77	31.72	12.08	63.50	-51.42	QP
4	255.623	28.97	11.98	2.63	31.05	12.53	63.50	-50.97	QP
5	355.427	32.01	14.61	2.99	31.08	18.53	63.50	-44.97	QP
6	607.787	28.88	20.36	3.92	31.07	22.09	63.50	-41.41	QP

Note:Emission Level=Read Level+Antenna Factor+Cable loss-Preamp Factor

Remark:
Emission Level=Read Level+ Antenna Factor+ Cable Loss-Preamp Factor
Over Limit= Emission Level-Limit line

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7 Test Setup Photographs

Refer to the < Test Setup photos-FCC>.

8 EUT Constructional Details

Refer to the < External Photos > & < Internal Photos >.

- End of the Report -

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