Certificate Certificado شهادة Zertifikat сертификат

VERIFICATION

This is to certify that the product listed in follows was (were) tested in the BTL EMC Laboratory to comply with the criteria limits Class A of conducted and radiated emissions of the Technical Standards FCC Part 15, Subpart B, established by the FCC, USA.

Equipment	**SQ Flash**
Model Name	**SQF-S25 630(S9), SQFS25 630(S9), SQF-S25 630(S9)XXXXXXXXXXXXXXXX, SQFS25 630(S9)XXXXXXXXXXXXXXXX(where X may be any alphanumeric character , blank or "-".)**
Brand Name	**ADVANTECH**
Applicant	**Advantech Co., Ltd.**
Address	**No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.**
Standard(s)	**FCC Part 15, Subpart B** **ANSI C63.4-2014** **ICES-003 Issue 6: 2016** **CISPR 22: 2008** **CAN/CSA-CISPR 22-10**
Report(s)	**BTL-FCCE-1-1606032**

The test data, data evaluation, and equipment configuration contained in our test report(s) above was (were) obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s). The test data contained in the referenced test report relate only to the EUT sample and item(s) tested.

Andy Chiu

Authorized Signatory

BTL INC.

B1, No. 37, Lane 365, Yang-Guang St.,
Nei-Hu District, Taipei City 114, Taiwan.

TEL:+886-2-2657-3299

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Testing Laboratory
0659

FCC Test Report

Project No.	:	1606032
Equipment	:	SQ Flash
Model Name	:	SQF-S25 630(S9), SQFS25 630(S9), SQF-S25 630(S9)XXXXXXXXXXXXXXXX, SQFS25 630(S9)XXXXXXXXXXXXXXXX(where X may be any alphanumeric character , blank or "-".)
Applicant	:	Advantech Co., Ltd.
Address	:	No.1, Alley 20, Lane 26, Rueiguang Road, Neihu District, Taipei 11491, Taiwan, R.O.C.

Date of Receipt	:	Jun. 04, 2016
Date of Test	:	Jun. 04, 2016 ~ Jun. 13, 2016
Issued Date	:	Jun. 14, 2016
Tested by	:	BTL Inc.

Testing Engineer : (Pike Lee)

Technical Manager : (Jeff Yang)

Authorized Signatory : (Andy Chiu)

BTL INC.

B1, No. 37, Lane 365, Yang-Guang St.,
Nei-Hu District, Taipei City 114, Taiwan.
TEL: +886-2-2657-3299 FAX: +886-2-2657-3331

Testing Laboratory
0659

Declaration

BTL represents to the client that testing is done in accordance with standard procedures as applicable and that test instruments used has been calibrated with standards traceable to international standard(s) and/or national standard(s).

BTL's reports apply only to the specific samples tested under conditions. It is manufacture's responsibility to ensure that additional production units of this model are manufactured with the identical electrical and mechanical components. **BTL** shall have no liability for any declarations, inferences or generalizations drawn by the client or others from **BTL** issued reports.

BTL's report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the Federal Government.

This report is the confidential property of the client. As a mutual protection to the clients, the public and **BTL-self**, extracts from the test report shall not be reproduced except in full with **BTL**'s authorized written approval.

BTL's laboratory quality assurance procedures are in compliance with the **ISO Guide 17025** requirements, and accredited by the conformity assessment authorities listed in this test report.

Limitation

For the use of the authority's logo is limited unless the Test Standard(s)/Scope(s)/Item(s) mentioned in this test report is (are) included in the conformity assessment authorities acceptance respective.

Table of Contents Page

REPORT ISSUED HISTORY

Issue No.	Description	Issued Date
BTL-FCCE-1-1606032	Original Issue.	Jun. 14, 2016

1. VERIFICATION

Equipment	:	SQ Flash
Brand Name	:	ADVANTECH
Model Name	:	SQF-S25 630(S9), SQFS25 630(S9), SQF-S25 630(S9)XXXXXXXXXXXXXXXX, SQFS25 630(S9)XXXXXXXXXXXXXXXX(where X may be any alphanumeric character , blank or "-".)
Applicant	:	Advantech Co., Ltd.
Date of Test	:	Jun. 04, 2016 ~ Jun. 13, 2016
Test Sample	:	Engineering Sample
Standard(s)	:	FCC Part 15, Subpart B Class A ICES-003 Issue 6: 2016 Class A CAN/CSA-CISPR 22-10 Class A CISPR 22: 2008 Class A ANSI C63.4-2014

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.
The test data, data evaluation, and equipment configuration contained in our test report (Ref No. BTL-FCCE-1-1606032) were obtained utilizing the test procedures, test instruments, test sites that has been accredited by the Authority of TAF according to the ISO-17025 quality assessment standard and technical standard(s).

2. SUMMARY OF TEST RESULTS

Test procedures according to the technical standards:

Emission				
Standard(s)	Test Item	Limit	Judgment	Remark
FCC Part 15, Subpart B ICES-003 Issue 6: 2016 CAN/CSA-CISPR 22-10 CISPR 22: 2008	Conducted emission	Class A	N/A	**NOTE (1)**
	Radiated emission Below 1 GHz	Class A	PASS	
	Radiated emission Above 1 GHz	Class A	PASS	**NOTE (2)**

NOTE:

(1) ”N/A” denotes test is not applicable in this test report.

(2) The EUT’s max operating frequency is 1.6 GHz which exceeds 108 MHz, so the test will be performed.

2.1 TEST FACILITY

The test facilities used to collect the test data in this report:

Radiated emission Test (Below 1 GHz):

CB08: (VCCI RN: R-4259, FCC RN:965108, FCC DN:TW1082, IC Assigned Code:20088)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

Radiated emission Test (Above 1 GHz):

CB08: (VCCI RN: G-867, FCC RN:965108, FCC DN:TW1082, IC Assigned Code:20088)
No. 68-1, Ln. 169, Sec.2, Datong Rd., Xizhi Dist., New Taipei City 221, Taiwan

2.2 MEASUREMENT UNCERTAINTY

The measurement uncertainty is not specified by FCC/ Industry Canada rules and for reference only.

The reported uncertainty of measurement **y** ± **U**, where expanded uncertainty **U** is based on a standard uncertainty multiplied by a coverage factor of **k=2**, providing a level of confidence of approximately **95**%.

The measurement instrumentation uncertainty considerations contained in CISPR 16-4-2. The BTL measurement uncertainty is less than the CISPR 16-4-2 U_{cispr} requirement.

A. Radiated emission test:

Test Site	Method	Measurement Frequency Range	Ant. H / V	U, (dB)
CB08 (10m)	CISPR	30 MHz ~ 200 MHz	V	4.04
		30 MHz ~ 200 MHz	H	4.04
		200 MHz ~ 1, 000 MHz	V	4.08
		200 MHz ~ 1, 000 MHz	H	4.02

Test Site	Method	Measurement Frequency Range	U, (dB)
CB08 (3m)	CISPR	1 ~ 6 GHz	4.62
		6 ~18 GHz	4.88

Our calculated Measurement Instrumentation Uncertainty is shown in the tables above.
These are our U_{lab} values in CISPR 16-4-2 terminology.
Since Table 1 of CISPR 16-4-2 has values of measurement instrumentation uncertainty, called U_{CISPR}, as follows:

Conducted Disturbance (mains port) - 150 kHz - 30 MHz: 3.6 dB
Radiated Disturbance (electric field strength on an open area test site or alternative test site) - 30 MHz - 1000 MHz: 5.2 dB

It can be seen that our U_{lab} values are smaller than U_{CISPR}.

Note: Unless specifically mentioned, the uncertainty of measurement has not been taken into account to declare the compliance or non-compliance to the specification.

3. GENERAL INFORMATION

3.1 GENERAL DESCRIPTION OF EUT

Equipment	SQ Flash
Brand Name	ADVANTECH
Model Name	SQF-S25 630(S9), SQFS25 630(S9), SQF-S25 630(S9)XXXXXXXXXXXXXXX, SQFS25 630(S9)XXXXXXXXXXXXXXX(where X may be any alphanumeric character , blank or “-”.)
Model Difference	Different model distribute to different area.
Power Source	Supplied from DC power.
Power Rating	DC 9V~36V
Products overed	N/A

Note:

1. For a more detailed features description, please refer to the manufacturer’s specifications or the user’s manual.
2. The main board of this EUT is tested with the system which model is ARK-3405.

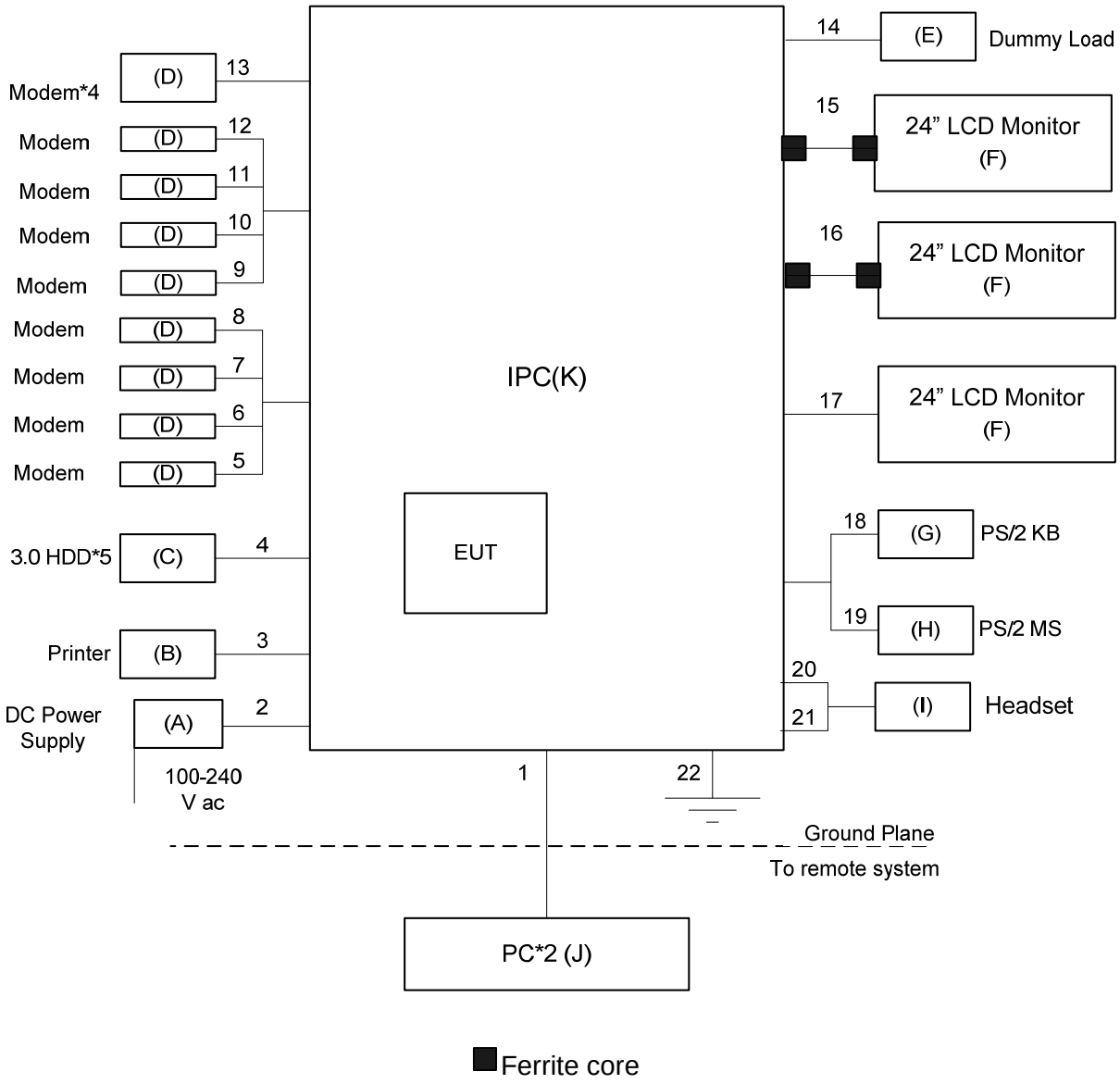
3.2 DESCRIPTION OF TEST MODES

To investigate the maximum EMI emission characteristics generates from EUT, the test system was pre-scanning tested base on the consideration of following EUT operation mode or test configuration mode which possible have effect on EMI emission level. Each of these EUT operation mode(s) or test configuration mode(s) mentioned above was evaluated respectively.

Pretest Mode	Description
Mode 1	FULL SYSTEM D-SUB+HDMI+DVI 1920*1200/60Hz (DC 36V)
Mode 2	FULL SYSTEM D-SUB+HDMI+DVI 1920*1200/60Hz (DC 9V)

Radiated emission test	
Final Test Mode	Description
Mode 1	FULL SYSTEM D-SUB+HDMI+DVI 1920*1200/60Hz (DC 36V)

3.3 BLOCK DIAGRAM SHOWING THE CONFIGURATION OF SYSTEM TESTED



3.4 DESCRIPTION OF SUPPORT UNITS

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	Brand	Model/Type No.	FCC ID	Series No.
A	DC Power Supply	Twintex	TPS-6015	N/A	G271200159
B	Printer	HP	VCVRA-1004	DOC	CN17511HHK
C	3.0 HDD	WD	WD1600AAJS	DOC	WCAP90876779
D	Modem	ACEEX	DM-1414V	DOC	8041708
E	Dummy Load	N/A	N/A	N/A	N/A
F	24” LCD Monitor	DELL	U2410f	DOC	CN-OJ257M-72872-09J-067L
G	PS/2 K/B	Logitech	Y-SJ17(ACK260A)	DOC	SYU44664880
H	PS/2 Mouse	Logitech	M-SBF69	DOC	HCA44601156
I	Compact Earphone Mic	CJ	CJ-323	N/A	N/A
J	PC	DELL	OptiPlex 790 MT	DOC	64NJVBX
K	IPC	ADVANTECH	ARK-3405	N/A	N/A

Item	Shielded Type	Ferrite Core	Length	Note
1	NO	NO	10m	RJ-45 cable*2
2	NO	NO	1.8m	Power cable
3	YES	NO	1.8m	USB cable
4	YES	NO	1.2m	USB cable*5
5	YES	NO	2.1m	RS-232 cable
6	YES	NO	2.1m	RS-232 cable
7	YES	NO	2.1m	RS-232 cable
8	YES	NO	2.1m	RS-232 cable
9	YES	NO	2.1m	RS-232 cable
10	YES	NO	2.1m	RS-232 cable
11	YES	NO	2.1m	RS-232 cable
12	YES	NO	2.1m	RS-232 cable
13	YES	NO	1.8m	RS-232 cable*4
14	YES	NO	1.5m	Data cable
15	YES	YES	1.8m	D-SUB cable
16	YES	YES	1.8m	DVI cable
17	YES	NO	1.5m	HDMI cable
18	YES	NO	2m	PS/2 cable
19	YES	NO	2m	PS/2 cable
20	NO	NO	1.8m	Audio cable
21	NO	NO	1.8m	Audio cable
22	NO	NO	1.5m	GND cable

4. EMC EMISSION TEST

4.1 RADIATED EMISSION TEST

4.1.1 LIMITS

Below 1 GHz
Measurement Method and Applied Limits:
ANSI C63.4:

Frequency (MHz)	Class A (at 10m)		Class B (at 3m)	
	(uV/m) Field strength	(dBuV/m) Field strength	(uV/m) Field strength	(dBuV/m) Field strength
30 - 88	90	39	100	40
88 - 216	150	43.5	150	43.5
216 - 960	210	46.4	200	46
Above 960	300	49.5	500	54

CISPR 22 or CAN/CSA-CISPR 22-10:

Frequency (MHz)	Class A (at 10m)	Class B (at 10m)
	dBuV/m	dBuV/m
30 - 230	40	30
230 - 1000	47	37

Above 1 GHz
Measurement Method and Applied Limits:
ANSI C63.4:

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

FREQUENCY RANGE OF RADIATED MEASUREMENT (FOR UNINTENTIONAL RADIATORS)

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	5th harmonic of the highest frequency or 40 GHz, whichever is lower

NOTE:
(1) The limit for radiated test was performed according to as following:
FCC Part 15, Subpart B, ICES-003 Issue 6: 2016.
(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).
(4) The test result calculated as following:
Measurement Value = Reading Level + Correct Factor
Correct Factor = Antenna Factor + Cable Loss - Amplifier Gain(if use)
Margin Level = Measurement Value - Limit Value

4.1.2 MEASUREMENT INSTRUMENTS LIST

Below 1 GHz and Above 1 GHz:

Item	Kind of Equipment	Manufacturer	Type No.	Serial No.	Calibrated until
1	Log-Bicon Antenna	Schwarzbeck	VULB 9168	9168-641	Sep. 10, 2016
2	Log-Bicon Antenna	Schwarzbeck	VULB 9168	9168-642	Sep. 10, 2016
3	Attenuator	Inmet	AT-N0507	01	Sep. 10, 2016
4	Attenuator	Inmet	AT-N0508	02	Sep. 10, 2016
5	Pre-Amplifier	EMCI	EMC9135	980281	Oct. 05, 2016
6	Pre-Amplifier	EMCI	EMC9135	980282	Oct. 05, 2016
7	Test Cable	EMCI	EMC8D-NM-NM-5000	150105	Jan. 22, 2017
8	Test Cable	EMCI	EMC8D-NM-NM-5000	150106	Jan. 22, 2017
9	Test Cable	EMCI	EMC8D-NM-NM-10000	150107	Jan. 22, 2017
10	Test Cable	EMCI	EMC8D-NM-NM-20000	150116	Jan. 22, 2017
11	Test Cable	EMCI	EMC104-SM-SM-800	150332	Jan. 22, 2017
12	Test Cable	EMCI	EMC104-SM-SM-600	150333	Jan. 22, 2017
13	Test Cable	EMCI	EMC104-SM-SM-1000	150330	Jan. 22, 2017
14	Test Cable	EMCI	EMC104-SM-SM-1000	150331	Jan. 22, 2017
15	EXA Spectrum Analyzer	Keysight Technologies	N9010A	MY54200483	Sep. 21, 2016
16	EMI Receiver	Keysight Technologies	N9038A	MY54130009	Oct. 02, 2016
17	Measurement Software	EZ	EZ_EMC (Version NB-03A)	N/A	N/A
18	Horn Antenna	Schwarzbeck	BBHA-9120D	120D-1297	Aug. 03, 2016
19	Pre-Amplifier	Agilent	8449B	3008A02331	Jan. 22, 2017
20	Test Cable	EMCI	EMC104-SM-SM-800	150110	Jan. 22, 2017
21	Test Cable	EMCI	EMC104-SM-SM-15000	150111	Jan. 22, 2017

Remark: “N/A” denotes no model name, no serial no. or no calibration specified.
All calibration period of equipment list is one year.

4.1.3 TEST PROCEDURE

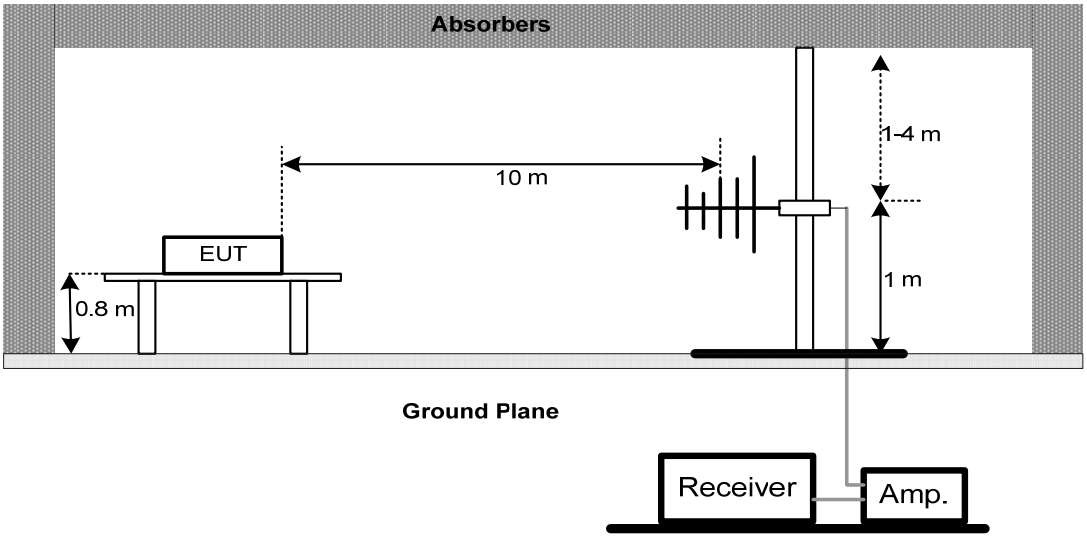
a. The measuring distance of 10 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(below 1GHz)
b. The measuring distance of 3 m shall be used for measurements. The EUT was placed on the top of a rotating table 0.8 meter above the ground at a 10 meter semi-anechoic chamber. The table was rotated 360 degrees to determine the position of the highest radiation.(above 1GHz)
c. The height of the equipment or of the substitution antenna shall be 0.8 m, the height of the test antenna shall vary between 1 m to 4 m. 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 find the maximum reading (used Bore sight function).
e. The receiver system was set to peak and average detect function and specified bandwidth with maximum hold mode when the test frequency is above 1GHz.
f. The initial step in collecting radiated emission data is a receiver peak detector mode pre-scanning the measurement frequency range. Significant peaks are then marked and then Quasi Peak detector mode re-measured.
g. All readings are Peak unless otherwise stated QP in column of Note. Peak denotes that the Peak reading compliance with the QP Limits and then QP Mode measurement didn‘t perform. (below 1GHz)
h. All readings are Peak Mode value unless otherwise stated AVG in column of Note. If the Peak Mode Measured value compliance with the Peak Limits and lower than AVG Limits, the EUT shall be deemed to meet both Peak & AVG Limits and then only Peak Mode was measured, but AVG Mode didn‘t perform. (above 1GHz)
i. For the actual test configuration, please refer to the related Item –EUT Test Photos.

4.1.4 DEVIATION FROM TEST STANDARD

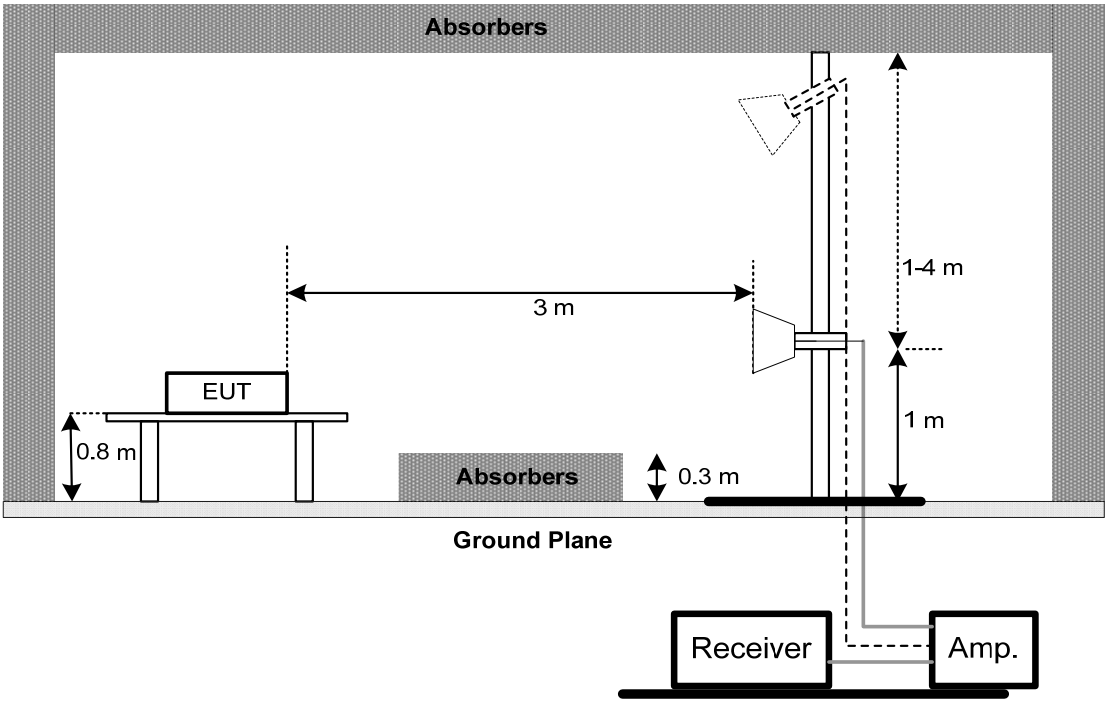
No deviation

4.1.5 TEST SETUP

Below 1 GHz



Above 1 GHz



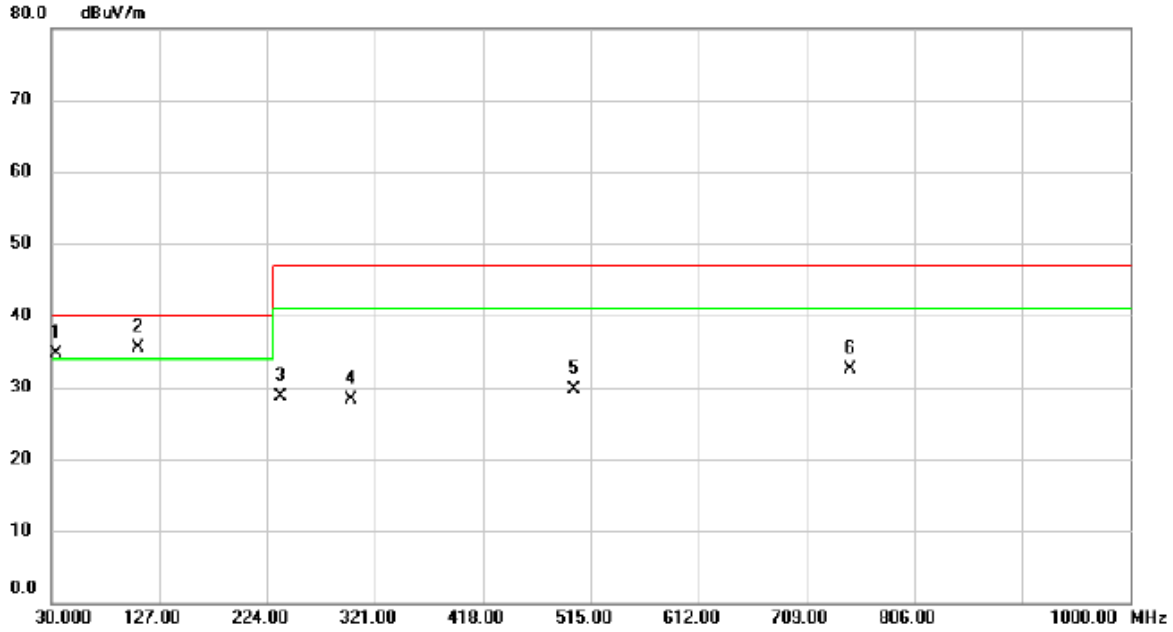
4.1.6 EUT OPERATING CONDITIONS

The system exercise program (BurninTEST V8.0) used during radiated and/or conducted emission measurement was designed to exercise the various system components in a manner similar to a typical use.

4.1.7 TEST RESULTS-BELOW 1 GHZ

EUT	SQ Flash	Model Name	SQF-S25 630(S9)
Temperature	22°C	Relative Humidity	55%
Test Voltage	DC 36V		
Test Mode	Mode 1		

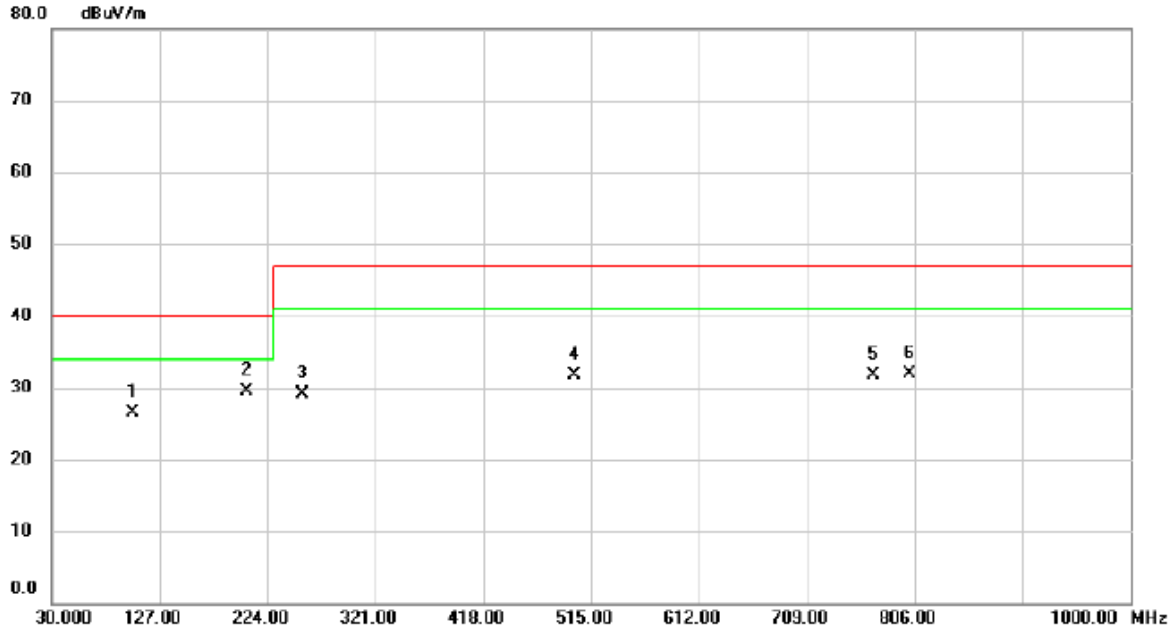
Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1	!	34.8500	52.81	-18.14	34.67	40.00	-5.33	QP	100	359	
2	*	107.6000	55.41	-19.84	35.57	40.00	-4.43	QP	120	360	
3		236.1250	46.34	-17.71	28.63	47.00	-18.37	QP	100	359	
4		299.1750	43.35	-15.03	28.32	47.00	-18.68	QP	100	359	
5		500.4500	40.14	-10.41	29.73	47.00	-17.27	QP	100	307	
6		747.8000	38.25	-5.66	32.59	47.00	-14.41	QP	100	359	

EUT	SQ Flash	Model Name	SQF-S25 630(S9)
Temperature	22°C	Relative Humidity	55%
Test Voltage	DC 36V		
Test Mode	Mode 1		

Polarization: Horizontal

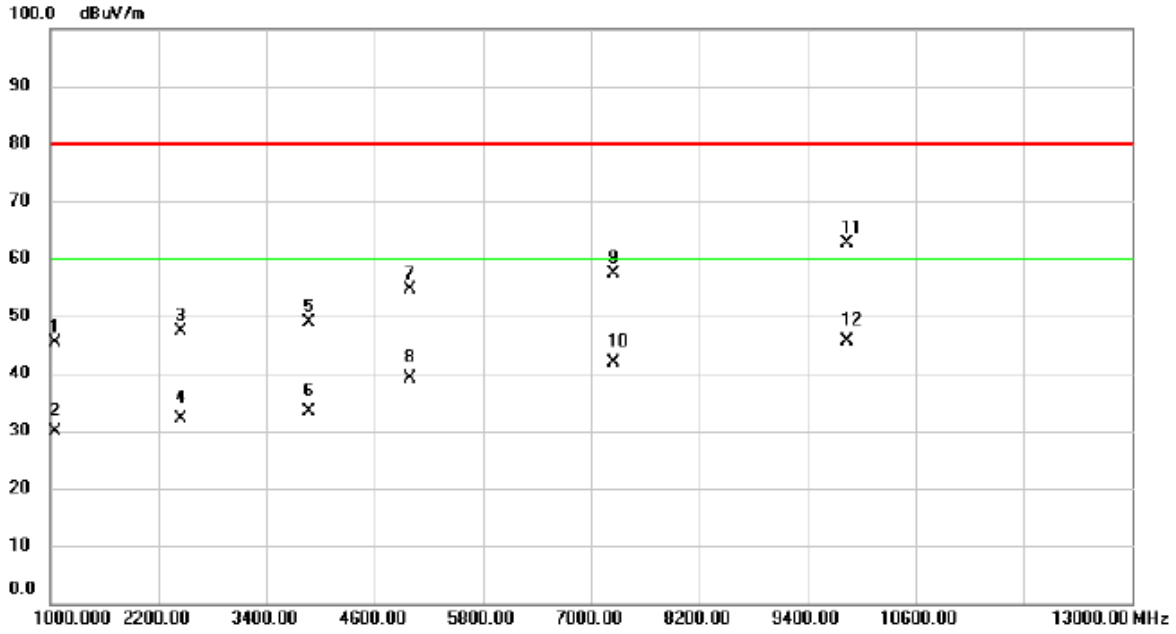


No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		102.7500	48.25	-21.68	26.57	40.00	-13.43	QP	400	83	
2	*	204.6000	49.58	-20.07	29.51	40.00	-10.49	QP	400	360	
3		255.5250	47.06	-17.95	29.11	47.00	-17.89	QP	300	344	
4		500.4500	43.64	-11.85	31.79	47.00	-15.21	QP	200	345	
5		769.6250	39.08	-7.29	31.79	47.00	-15.21	QP	100	232	
6		801.1500	39.07	-7.18	31.89	47.00	-15.11	QP	100	179	

4.1.8 TEST RESULTS-ABOVE 1 GHZ

EUT	SQ Flash	Model Name	SQF-S25 630(S9)
Temperature	22°C	Relative Humidity	55%
Test Voltage	DC 36V		
Test Mode	Mode 1		

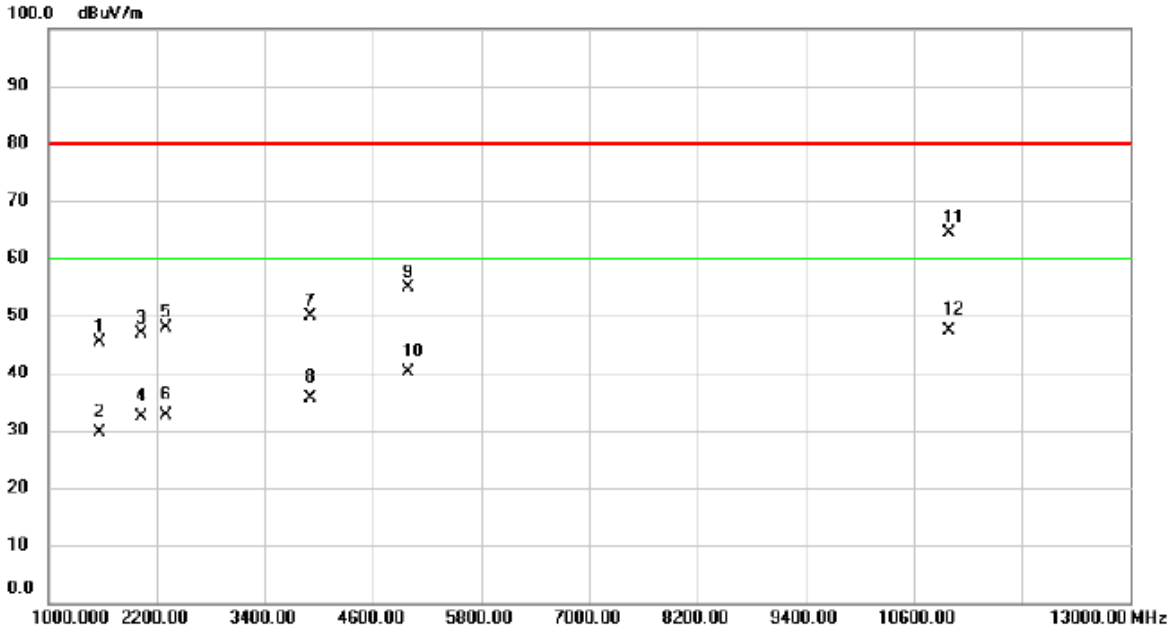
Polarization: Vertical



No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1048.000	50.92	-5.42	45.50	80.00	-34.50	peak	100	157	
2		1048.000	35.26	-5.42	29.84	60.00	-30.16	AVG	100	157	
3		2452.000	46.45	0.91	47.36	80.00	-32.64	peak	139	360	
4		2452.000	31.25	0.91	32.16	60.00	-27.84	AVG	139	360	
5		3868.000	43.55	5.25	48.80	80.00	-31.20	peak	300	204	
6		3868.000	28.03	5.25	33.28	60.00	-26.72	AVG	300	204	
7		4996.000	45.57	8.95	54.52	80.00	-25.48	peak	100	164	
8		4996.000	30.25	8.95	39.20	60.00	-20.80	AVG	100	164	
9		7240.000	41.79	15.66	57.45	80.00	-22.55	peak	100	137	
10		7240.000	26.14	15.66	41.80	60.00	-18.20	AVG	100	137	
11		9844.000	42.26	20.44	62.70	80.00	-17.30	peak	100	160	
12	*	9844.000	25.17	20.44	45.61	60.00	-14.39	AVG	100	160	

EUT	SQ Flash	Model Name	SQF-S25 630(S9)
Temperature	22°C	Relative Humidity	55%
Test Voltage	DC 36V		
Test Mode	Mode 1		

Polarization: Horizontal

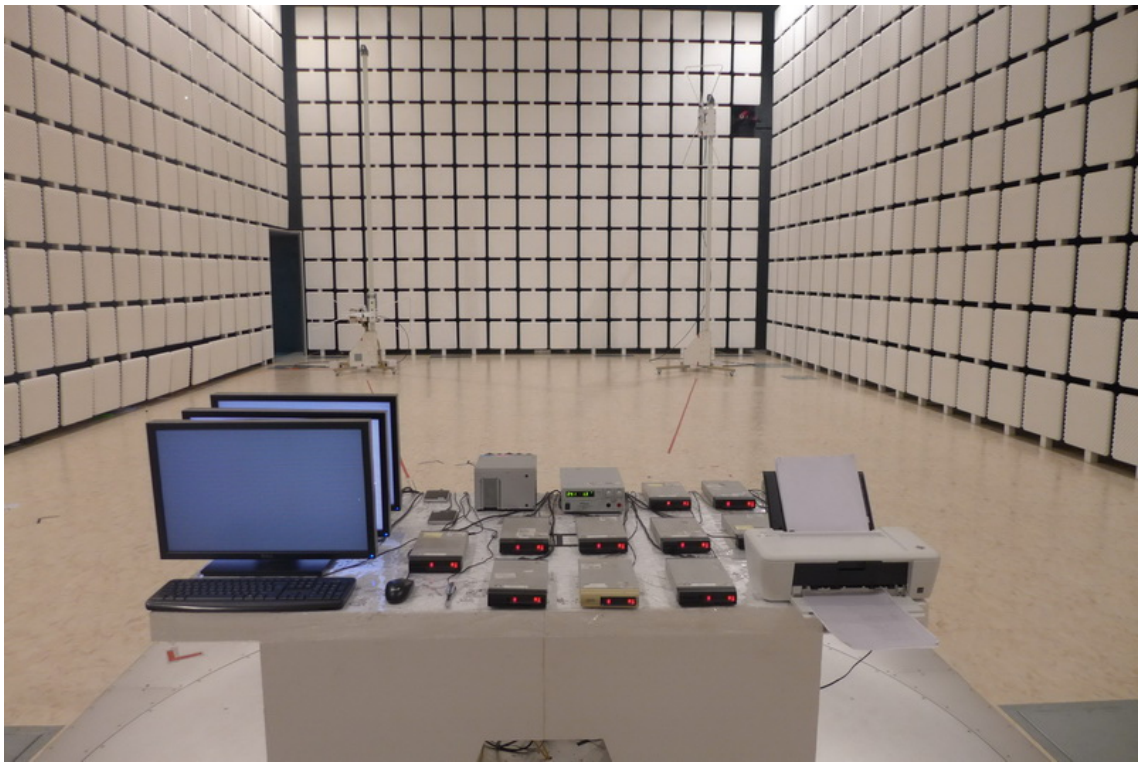


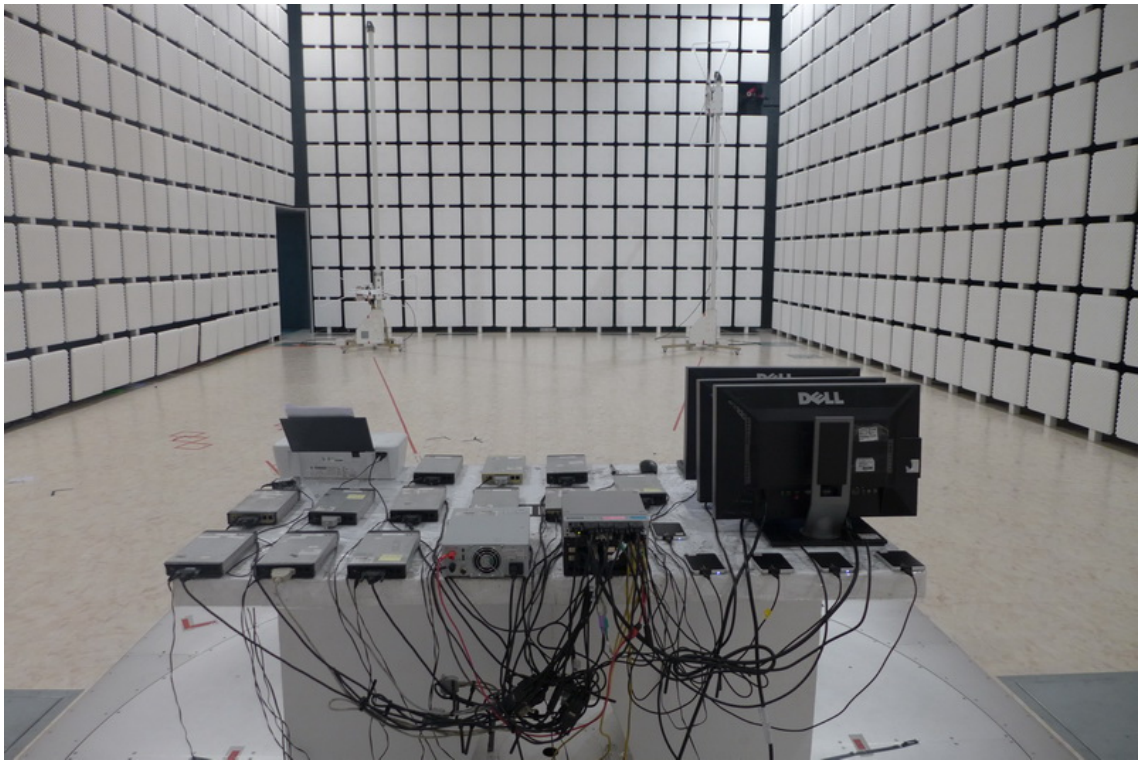
No.	Mk.	Freq.	Reading Level	Correct Factor	Measure-ment	Limit	Margin		Antenna Height	Table Degree	
		MHz	dBuV	dB	dBuV/m	dBuV/m	dB	Detector	cm	degree	Comment
1		1564.000	47.86	-2.54	45.32	80.00	-34.68	peak	100	196	
2		1564.000	32.26	-2.54	29.72	60.00	-30.28	AVG	100	196	
3		2032.000	47.79	-0.84	46.95	80.00	-33.05	peak	100	196	
4		2032.000	33.25	-0.84	32.41	60.00	-27.59	AVG	100	196	
5		2308.000	47.68	0.30	47.98	80.00	-32.02	peak	100	228	
6		2308.000	32.25	0.30	32.55	60.00	-27.45	AVG	100	228	
7		3904.000	44.55	5.37	49.92	80.00	-30.08	peak	300	3	
8		3904.000	30.25	5.37	35.62	60.00	-24.38	AVG	300	3	
9		4996.000	45.96	8.95	54.91	80.00	-25.09	peak	100	136	
10		4996.000	31.25	8.95	40.20	60.00	-19.80	AVG	100	136	
11		10984.00	40.99	23.28	64.27	80.00	-15.73	peak	300	286	
12	*	10984.00	24.14	23.28	47.42	60.00	-12.58	AVG	300	286	

5. EUT TEST PHOTO

Radiated emission below 1 GHz test photos

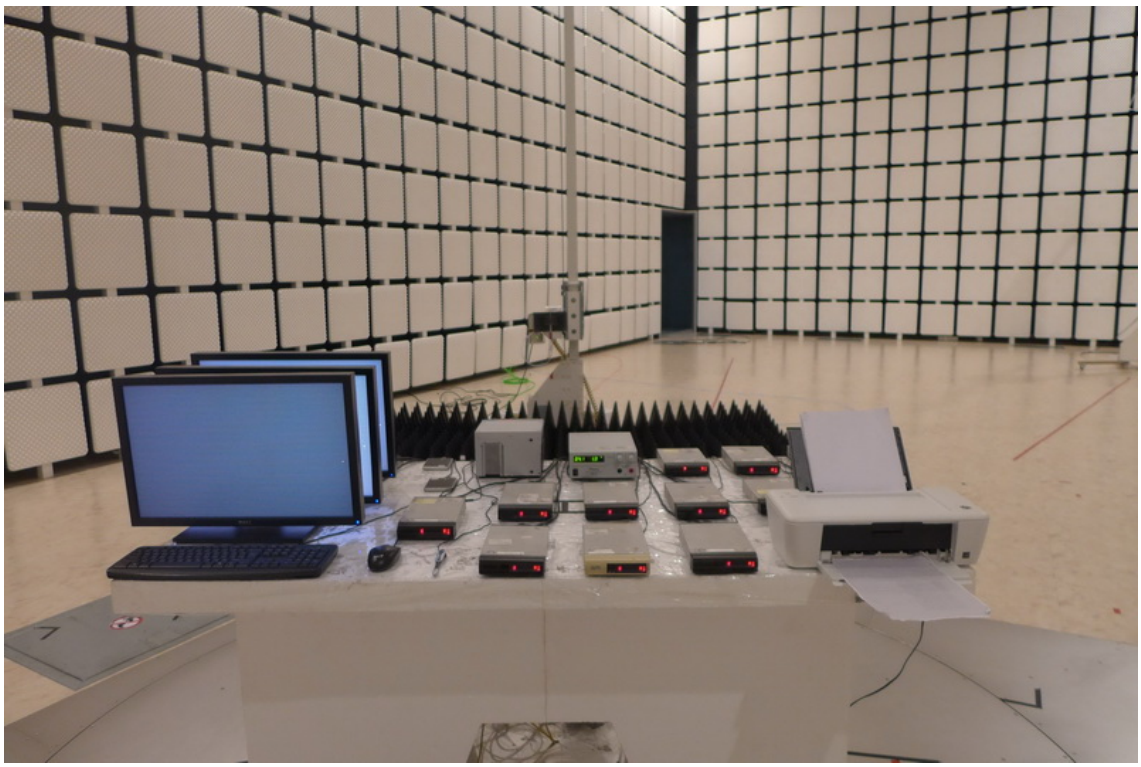
Mode 1

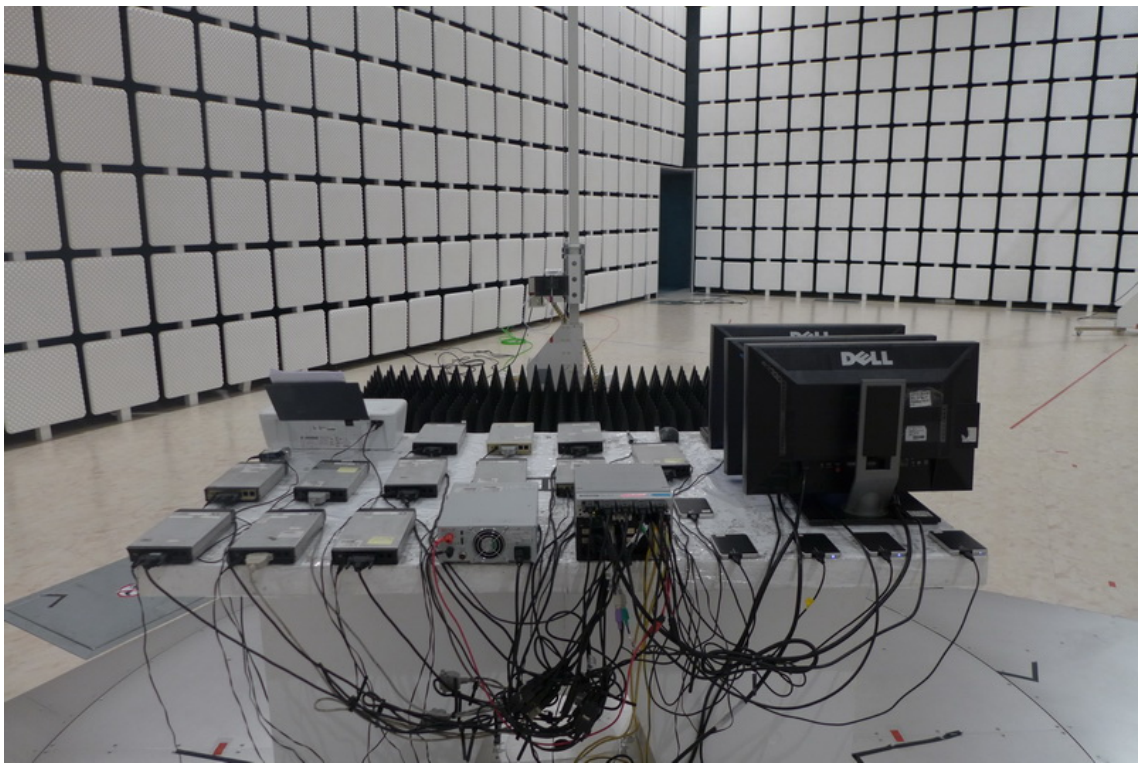




Radiated emission above 1 GHz test photos

Mode 1





ATTACHMENT

PHOTOGRAPHS OF EUT


ADVANTECH
SQFlash
SATA III 6Gbs Industrial SSD
630


630 Series 2.5" SATA III SSD
ADVANTECH


ADVANTECH
630 Series 2.5" SATA III SSD
SQF-S25M4-256G-S9C
51116030206500014
256GB (LBA 500.118.192)
F/W: S9FMA026
MLC
DC+5V⎓2.0A
WARNING
• Contains parts susceptible to damage by Electrostatic Discharge (ESD)
• Product warranty will be void if label or cover is removed
RoHS COMPLIANT