Form No.: FM/081-16



ELECTRONICS TEST AND DEVELOPMENT CENTRE

(STQC Directorate, Ministry of Communications & Information Technology) 100 ft Road, Peenya Industrial Estate, Bengaluru-560 058 (Phone: (080) 2839 4252/4647/4766/5992; Telefax: +91-080- 23722314)



E-mail: etdcbg@stqc.gov.in

Report No.: TR/EMC/64135-1

TEST REPORT

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1.	Service request number:	64135	Date:24/04/2017	Job No.: 01		
2.	Test requested by (Name & Address of the Organization)	M/s. CEM Solutions Pvt. Ltd. #143/A1, Bommasandra Industrial Area, Hebagodi Village, Bangalore-560099.				
3.						
	a) Nomenclature	STM/BLC	X eSBC			
	b) Manufactured by	ALLO.CC)M			
	c) Model / type no.	ALLO-ST	M/eSBC			
	d) No. of items submitted	01 Sampling :Not applicable				
	e) Serial no.	SP23001910816				
4.	Date of submission of test samples	24/04/2017				
5.	Condition of test samples on receipt	Good				
6.	Test carried out at	In-house/ On-site				
7.	Date of start of tests	24/04/2017				
8.	Date of completion of tests	26/04/201	7			
9.	Date of issue of test report	28/04/2017				
10.	Applicable standard/test specification	CISPR 22:2008 Class B , IEC 61000-4-Series, IEC 61000-3-2:2009 & IEC 61000-3-3:2008.				
11.	Test category	Performan	ce Test			
12.	Laboratory Environment condition	Temp: 15 to 35°C RH: 45 to 70% except for ESD test For ESD test RH: <60%. Atm pressure: 860-1060mbar				

2. Major equipment used

SN	Nomenclature	Make	Model	Cal. Due
1.	EMI test receiver	R&S	ESCI7	19/10/2017
2.	Bi-Log Antenna	Electro metrics	EM-6917B-1	04/06/2017
3.	Horn Antenna	R&S	HF 906	20/10/2017
4.	V-Network	R&S	ESH3Z5	02/05/2017
5.	ESD generator	EM Test	ESD30N	20/03/2018
6.	Signal Generator	R&S	SML03	10/01/2018
7.	EFT Generator	EM Test	UCS500-M4	23/03/2018
8.	Continuous Wave Simulator	EM Test	CWS500C	02/09/2017
9.	Field strength meter	Holaday	HI3604	20/10/2017
10.	AC power source	Pacific	140 TMX	21/03/2018

 This report refers only to the item tested and shall not be reproduced except in full without the written approval from Director, ETDC, Bengaluru. Refer to information contained on the cover.

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Date of Release: 15.06.16



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Report No.: TR/EMC/64135-1

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Test Parameter

: 1) Conducted disturbance at the mains ports

2) Radiated disturbance measurement @ 3 meter measuring distance

Test Specification

: CISPR22:2008 Class B

Detector Used

: Quasi Peak (QP) / Average (Avg)

Detector Bandwidth

Frequency (MHz)	Detector Bandwidth (kHz)	
0.15 - 30	9	
30 - 1000	120	

Limits:

		Cla	ss B	
Conducted di	sturbance at the	mains ports		measurement @3 meterng distance
Freq. Range (MHz)	QP (dBμV)	AVG (dBμV)	Freq. Range (MHz)	QP (dBμV/m)
0.15 - 0.5	66 - 56	56 - 46	20 220	40
0.5 - 5	56	46	30 - 230 230 - 1000	40 47
5 - 30	60	50		47

EUT Configuration: The EUT is a STM/BLOX eSBC, powered by 5V DC through 230V AC to 5V DC adaptor (Make: XING YUAN, Model No: XY24S-0503000Q-U, Serial No: 1620).

Remark: The Image of EUT and test setup for Radiated disturbance measurement @3 meter measuring distance are shown in Annexure 'A' and 'B' respectively. The graphs for Conducted disturbance at the mains ports and Radiated disturbance measurement @3 meter measuring distance tests are shown in Annexure 'C' and 'D' respectively.

Summary of test results:

Conducted disturbance at the mains ports:

Meets the Class B Limits of CISPR 22:2008

Few Significant emission are reported in page no. 04

Radiated disturbance measurement @ 3 meter measuring distance:

Meets the Class B Limits of CISPR 22:2008

Few Significant emission are reported in page no. 05

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Report No.: TR/EMC/64135-1

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Performance Criteria

<u>Performance criterion A</u>: The apparatus shall continue to operate as intended during and after the test. No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended.

<u>Performance criterion B:</u> The apparatus shall continue to operate as intended **after the test.** No degradation of performance or loss of function is allowed below a performance level specified by the manufacturer, when the apparatus is used as intended. During the test, degradation of performance is however allowed. No change of actual operating state or stored data is allowed.

<u>Performance criterion C:</u> Temporary loss of function is allowed, provided the function is self-recoverable or can be restored by the operation of the controls.

Performance level specified by the manufacturer:

- -1) Power LED (Green) should glow continuously.
- 2) Boot LED (Blue) should glow continuously.

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Report No.: TR/EMC/64135-1

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Results: (1) Conducted disturbance at the mains ports.

Frequency	Qp Reading	Qp Limit	Avg Reading	Avg Limit
(MHz)	(dBµV)	(dBµV)	(dBµV)	(dBµV)
On Line				
0.154	43.21	66.00	31.79	59.00
0.194	37.52	64.86	26.02	57.52
0.226	36.65	63.71	26.04	56.04
0.246	35.25	63.14	24.98	55.30
0.422	36.49	58.29	29.70	49.01
1.226	29.74	56.00	20.68	46.00
On Neutral				
0.154	44.45	66.00	33.03	59.00
0.178	41.33	65.14	29.87	57.89
0.190	39.13	64.86	28.08	57.52
0.202	37.34	64.57	26.50	57.15
0.214	36.45	64.29	27.04	56.78
1.242	30.76	56.00	21.26	46.00

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Results: (2) Radiated disturbance measurement @ 3 meter measuring distance

Frequency (MHz)	Quasi-peak emission level* (dBµV/m)	Angle (deg)	Polarisation (H/V)**	Quasi-peak Limit (dBµV/m)
30.20	27.32	180	Н	40
250.00	23.91	180	Н	47
422.64	24.50	0	Н	47
500.00	31.79	270	V	47
676.16	30.30	180	Н	47
754.84	31.84	0	Н	47

*-The antenna height adjusted between 1 m and 4 m above the ground plane for maximum emission level at each test frequency.

** (H/V): H-Horizontal polarization, V-Vertical polarization

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Results:

Test parameter : Electrostatic discharge immunity

Test specification : IEC 61000-4-2:2008 EUT Configuration : Refer Page No.02

Wave shape / severity	Performance criteria	Test results		
Storage Capacitance:150pf Discharge Resistance:330Ω	Performance criterion "B"	Meets the performance criteria "B".		
Discharge Mode: Contact Discharge: : Direct Application : Indirect Application (i) HCP (ii) VCP				
Test Level : 1 to 2 Test Voltage : 2 kV to 4 kV Polarity: + Ve & -Ve				
Air Discharge: Test Level : 1 to 3 Test Voltage: 2 kV to 8 kV Polarity: + Ve & -Ve				
No of discharges: 10 single discharges of each polarity at selected points.		 After the test, 1) Power LED (Green) was glowing continuously. 2) Boot LED (Blue) was glowing continuously. 		

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Results:

Test Parameter : Radio-frequency, electromagnetic field immunity

Test Specification : IEC 61000-4-3:2010 EUT Configuration : Refer Page No.02

Wave shape / severity	Performance criteria	Test results
R.F Freq: 80 MHz-3 GHz Sweep rate:1% Dwell time :3Sec Mod Freq: 1kHz Amplitude modulation : 80% in depth Angle: 0°/90°/180° / 270°	Performance criterion "A"	Meets the performance criteria "A".
Polarization: 1) Horizontal 2) Vertical		
Test Level : 2 Field Strength : 3 V/m	 -During and after the test, 1) Power LED (Green) should glow continuously. 2) Boot LED (Blue) should glow continuously. 	-During and after the test, 1) Power LED (Green) was glowing continuously. 2) Boot LED (Blue) was glowing continuously.

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Report No.: TR/EMC/64135-1

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Results:

Test Parameter

: Electrical fast transient / burst immunity

Test Specification

: IEC 61000-4-4:2012

EUT Configuration

: Refer page 02.

Wave shape / severity	Performance criteria	Test Results
Pulse Rise time: 5nS Pulse Duration: 50nS Burst Duration: 15mS Burst period: 300mS Repetition rate of impulse:5kHz	Performance criterion "B"	Meets the performance criteria "B".
Coupling on AC Power supply port Coupling Type: Common mode		
Test Level: 2 Test Voltage: 1 kV Peak	A Courthy toot	-After the test,
Polarity: +ve & -ve Test duration: 1 minute in each polarity.	-After the test, 1) Power LED (Green) should glow continuously. 2) Boot LED (Blue) should glow continuously.	1) Power LED (Green) was glowing continuously. 2) Boot LED (Blue) was glowing continuously.

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Results:

Test Parameter : Immunity to conducted disturbances, induced by RF fields

Test Specification : IEC 61000-4-6:2013 EUT Configuration : Refer Page No.02

Wave shape / severity	Performance criteria	Test results
R.F Freq: 150kHz-80MHz Sweep rate: 1% Dwell time: 3Sec Mod Freq: 1kHz Amplitude Modulation:80% in depth	Performance criterion "A"	Meets the performance criteria "A".
Coupling on AC Power Supply Coupling type: CDN		
Test Level: 2		
Test Voltage: 3 Vrms	-During and after the test, 1) Power LED (Green) should glow continuously. 2) Boot LED (Blue) should glow continuously.	-During and after the test, 1) Power LED (Green) was glowing continuously. 2) Boot LED (Blue) was glowing continuously.

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Results:

Test Parameter

: Power frequency magnetic field immunity.

Test Specification

: IEC 61000-4-8:2009

EUT Configuration

: Refer Page No.02

Wave shape / severity	Performance criteria	Test Results
Coupling on Enclosure port Continuous field:	Performance criterion "A"	Meets the performance criteria "A".
Test Level: 1 Magnetic Field Strength: 1 A/m Axis: X, Y & Z		
Duration: 1 min each axis	-During and after the test, 1) Power LED (Green) should glow continuously. 2) Boot LED (Blue) should glow continuously.	-During and after the test, 1) Power LED (Green) was glowing continuously. 2) Boot LED (Blue) was glowing continuously.







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Results:

Test Parameter : Voltage dips and short interruptions.

Test Specification : IEC 61000-4-11:2004 EUT Configuration : Refer Page No.02

Wave shape / severity		Performance criteria	Test Results	
Test Conditions: Standard Test Frequency: 50.00 Hz Test Voltage: 230.00 V Waveform: Sine No. of Dips: 3 Interval between Dips: 10 sec Mode: Synchronous Angle: 0 deg		Performance criterion "B"	Meets the performance criter"B".	ria
Test Level: Cla Voltage Dips: Voltage Dips 0 40				
70 80	25 250			
Voltage interrup	tion:			
Test Level %	Cycle	-After the test,	-After the test,	
0	250	 Power LED (Green) should glow continuously. Boot LED (Blue) should glow continuously. 	Power LED (Green) was glowing continuously. Boot LED (Blue) was glowing continuously.	1









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Results:

Test Parameter : Harmonic Current Emission

Test Specification : IEC 61000-3-2:2009 EUT Configuration : Refer Page No.02

Classification : CLASS A Test Volts : 230.00 V

Test type : Steady State Test Frequency: 50Hz

Test time : 2.5 min Waveform : Sine

Harmonic Amps Limit Results Harmonic Amps Limit Results No. No. 21 PASS PASS 0.011 0.107 1 0.027 0.000 0.084 **PASS PASS** 22 2 0.000 1.080 23 0.010 0.098 **PASS** 3 0.016 2.300 PASS 0.000 0.430 PASS 24 0.000 0.077 PASS 4 PASS 5 0.016 1.140 PASS 25 0.010 0.090 **PASS** 0.000 0.300 PASS 26 0.000 0.071 6 0.009 0.083 PASS 7 0.016 0.770 PASS 27 PASS 8 0.000 0.230 PASS 28 0.000 0.066 9 0.015 0.400 PASS 29 0.008 0.078 PASS 10 PASS 30 0.000 0.061 PASS 0.000 0.184 0.007 0.073 PASS 0.330 PASS 31 11 0.015 PASS 12 PASS 32 0.000 0.058 0.000 0.153 PASS 0.006 0.068 PASS 13 0.014 0.210 33 0.000 PASS 34 0.000 0.054 PASS 14 0.131 **PASS** PASS 15 0.014 0.150 35 0.005 0.064 PASS 16 0.000 0.115 PASS 36 0.000 0.051 37 0.005 0.061 PASS 17 0.013 0.132 PASS **PASS** PASS 38 0.000 0.048 18 0.000 0.102 PASS 39 0.004 0.058 PASS 19 0.012 0.118 0.046 **PASS** 20 0.000 0.092 PASS 40 0.000

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Report No.: TR/EMC/64135-1

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Results:

Test parameter

: Voltage fluctuation and flicker

Test Specification

: IEC 61000-3-3:2008

Test Voltage

: 230.00 V

Test Frequency

: 50.00 Hz

Waveform

: Sine

Test time

T-short

: 120 min

: 10 min

EUT Configuration

: Refer page 02

. Refer page 02			
EUT DATA	LIMIT	RESULT	
0.008	1.00	PASS	
0.008	0.65	PASS	
0.000	3.00	PASS	
0.000	4.00	PASS	
0.000	0.50	PASS	
	0.008 0.008 0.000 0.000	EUT DATA LIMIT 0.008 1.00 0.008 0.65 0.000 3.00 0.000 4.00	

Tested By (Neeraj Gupta) (SA 'A')

Scientist'E Electronics Test & Development Centre Ministry of Comm. & IT., STQC Directorate. Govt. of India, Bangalore

Issued By

CO-ORDINATOR TESTING SERVICES, E.T.D.C., BENGALURU

ELECTRONICS TEST AND DEVELOPMENT CENTRE (STQC Directorate, Ministry of Communications & Information Technology)



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Report No.: TR/EMC/64135-1

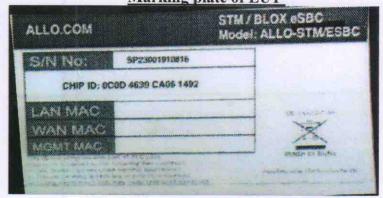
Annexure "A"

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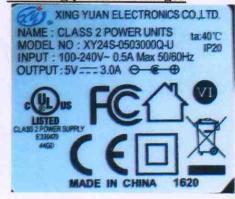
Image of EUT



Marking plate of EUT



Marking plate of Charger



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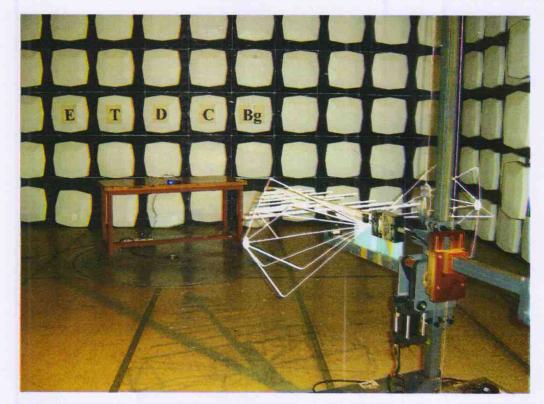
E-mail: etdcbg@stqc.gov.in

Report No.: TR/EMC/64135-1

Annexure "B"

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EUT Test Setup for Radiated disturbance measurement @3 meter measuring distance





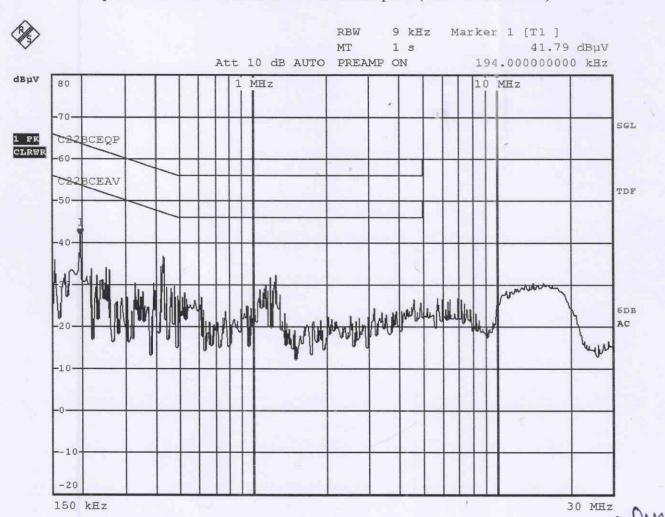
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Annexure 'C' (Continued...)

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Graphs of Conducted disturbance at the mains ports (Peak measurement)



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SRF: 64135, CE Test on STM/BLOX eSBC, Make: ALLO.COM, Model:

ALLO- STM/eSBC, S/N: SP23001910816, on Line

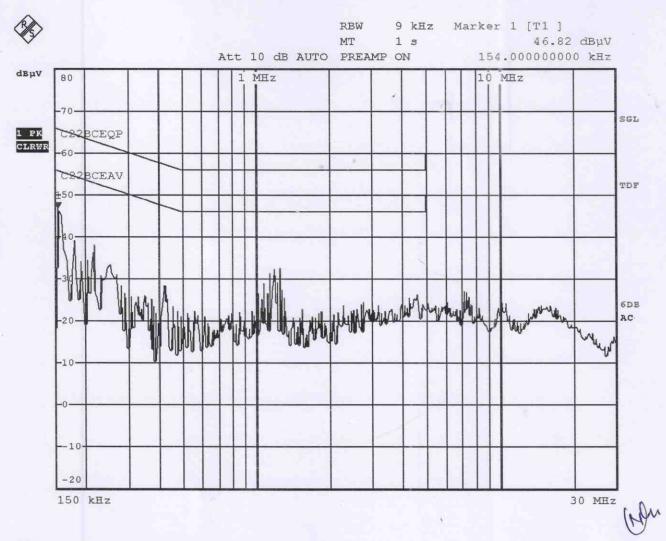
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Annexure 'C'

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Graphs of Conducted disturbance at the mains ports (Peak measurement)



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SRF:64135, CE Test on STM/BLOX eSBC, Make: ALLO.COM, Model:

ALLO- STM/eSBC, S/N: SP23001910816, on Neutral

Date: 25.APR.2017 10:40:46



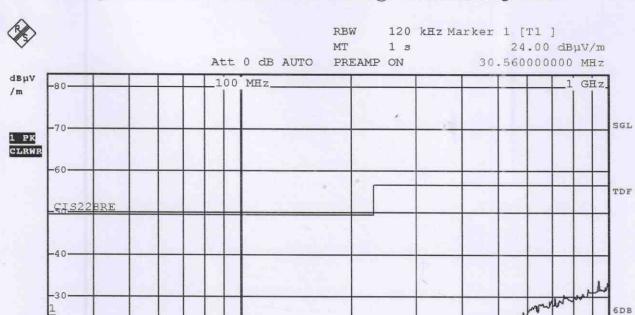
Annexure 'D' (Continued...)

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AC

1 GHz

Graphs of Radiated disturbance measurement @3 meter measuring distance



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-10

30 MHz

SRF: 64135, RE Test on STM/BLOX eSBC, Make: ALLO.COM, Model: ALLO-STM/eSBC, S/N: SP23001910816, EUT: 0 Deg, Antenna: HP

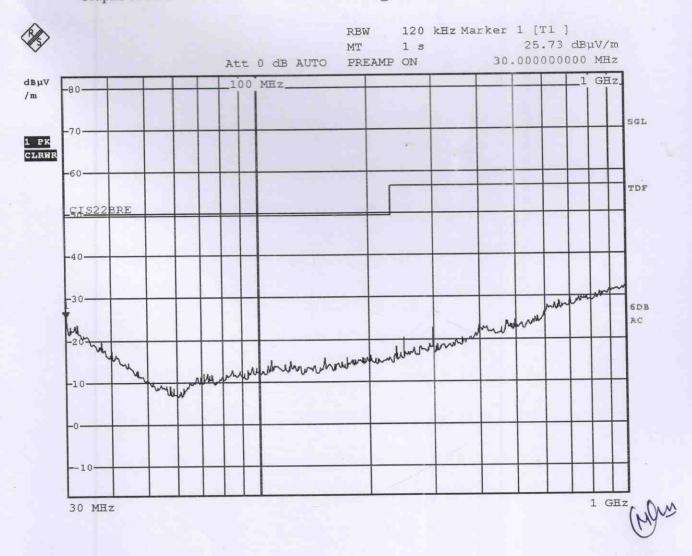
Date: 26.FEB.2017 15:29:11



Annexure 'D' (Continued...)

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Graphs of Radiated disturbance measurement @3 meter measuring distance



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SRF: 64135, RE Test on STM/BLOX eSBC, Make: ALLO.COM, Model:

ALLO-STM/eSBC, S/N: SP23001910816, EUT: 90 Deg, Antenna: HP

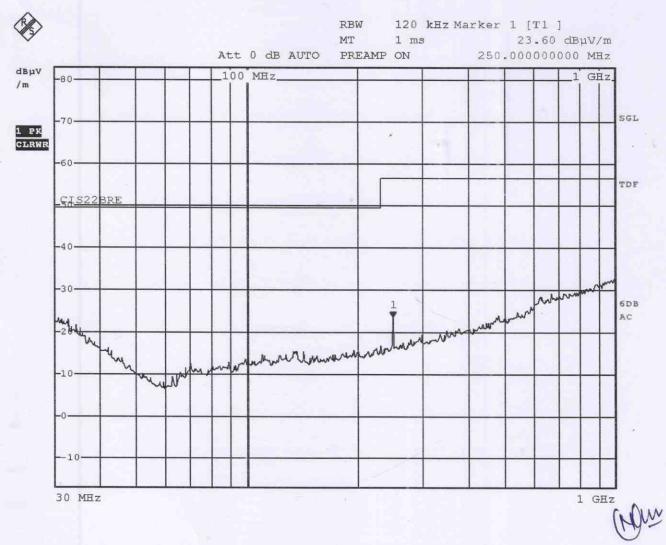
Date: 26.FEB.2017 15:33:34



Annexure 'D' (Continued...)

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Graphs of Radiated disturbance measurement @3 meter measuring distance



Gupta

SRF: 64135, RE Test on STM/BLOX eSBC, Make: ALLO.COM, Model:

ALLO-STM/eSBC, S/N: SP23001910816, EUT: 180 Deg, Antenna: HP

Date: 26.FEB.2017 15:46:01



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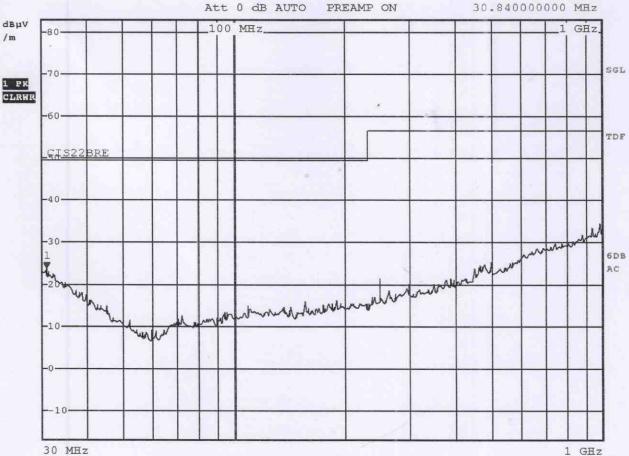
Graphs of Radiated disturbance measurement @3 meter measuring distance



/m

RBW 120 kHz Marker 1 [T1] 23.90 dBµV/m MT 1 s

Att 0 dB AUTO



Gupta

SRF: 64135, RE Test on STM/BLOX eSBC, Make: ALLO.COM, Model:

ALLO-STM/eSBC, S/N: SP23001910816, EUT: 270 Deg, Antenna: HP

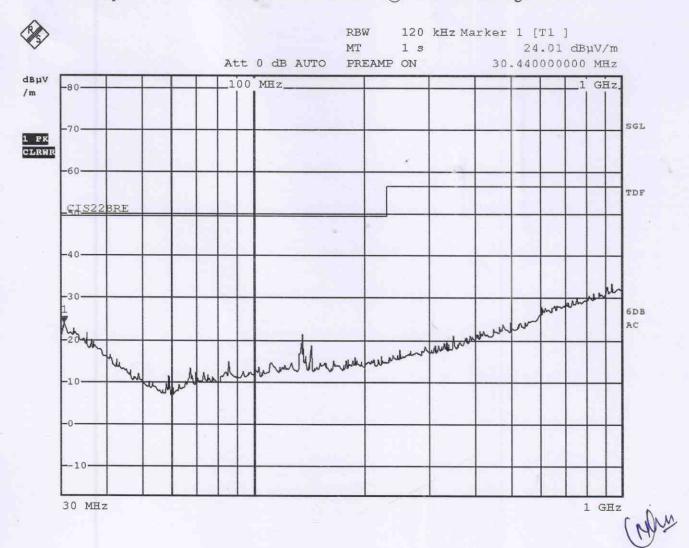
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Report No.: TR/EMC/64135-1 Annexure 'D' (Continued...)

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Graphs of Radiated disturbance measurement @3 meter measuring distance



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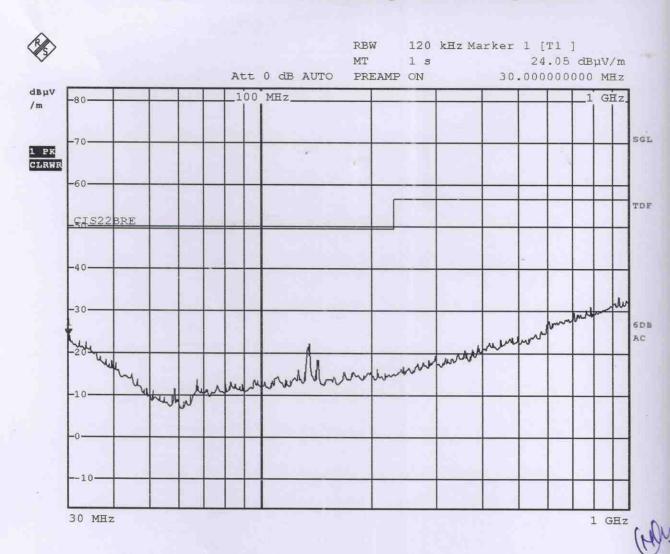
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ALLO-STM/eSBC, S/N: SP23001910816, EUT: 0 Deg, Antenna: VP

Date: 26.FEB.2017 15:49:47



Graphs of Radiated disturbance measurement @3 meter measuring distance



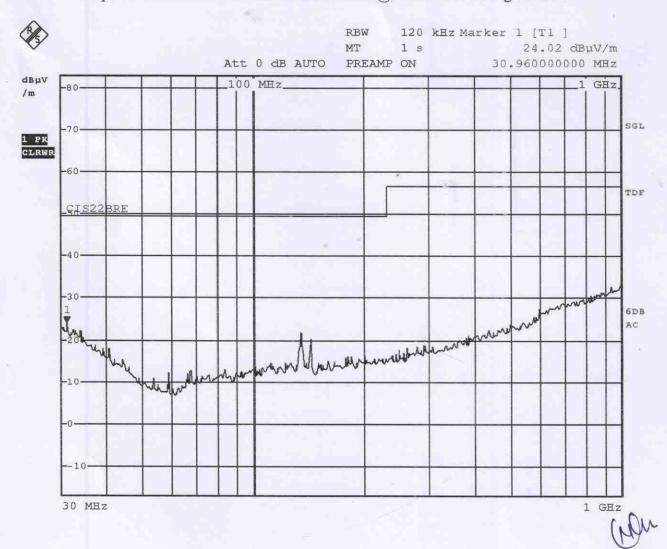
Cupta

SRF: 64135, RE Test on STM/BLOX eSBC, Make: ALLO.COM, Model: ALLO-STM/eSBC, S/N: SP23001910816, EUT: 90 Deg, Antenna: VP

Date: 26.FEB.2017 15:53:16



Graphs of Radiated disturbance measurement @3 meter measuring distance



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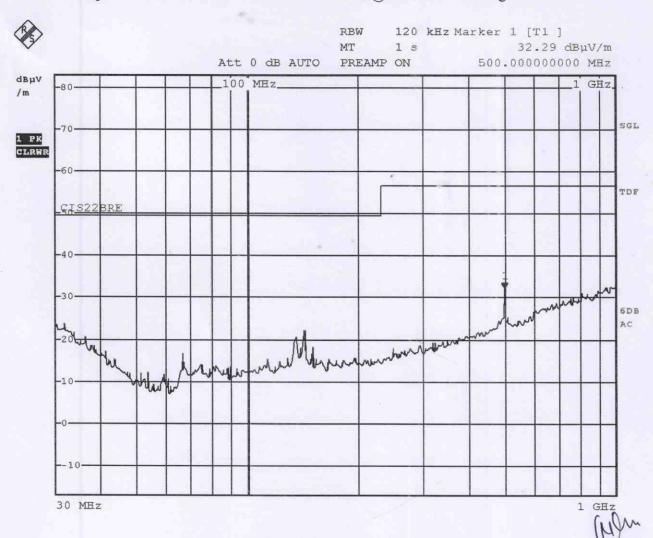
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ALLO-STM/eSBC, S/N: SP23001910816, EUT: 180 Deg, Antenna: VP

Date: 26.FEB.2017 15:55:56



Graphs of Radiated disturbance measurement @3 meter measuring distance



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SRF: 64135, RE Test on STM/BLOX eSBC, Make: ALLO.COM, Model:

ALLO-STM/eSBC, S/N: SP23001910816, EUT: 270 Deg, Antenna: VP

Date: 26.FEB.2017 16:00:24

