



EMC TEST REPORT

PRODUCT NAME	Identive Cloud 47X0F
PRODUCT MODEL NUMBER	Identive Cloud 4700F & Identive Cloud 4710F
FCC ID	MBPCLOUD47X0F-001
MANUFACTURER	Identive GmbH Oskar-Messter-Str. 13, 85737 Ismaning, Germany
TEST REPORT NUMBER	JHN 1243ITE334
TEST REPORT DATE	15 th Nov 2012
TEST REPORT VERSION	1.0
ISSUED TO	Stefan Trautner Identive GmbH Oskar-Messter-Str. 13, 85737 Ismaning, Germany.
ISSUED BY	TARANG Wipro Technologies, SJP2, Survey#70,77,78/8A, Dodda Kanelli, Sarjapur road, Bangalore-560 035. Karnataka. India. Tel: +91-80-30292929 Fax: +91-80-30298200 Email: tarang.planet@wipro.com Web: www.wipro.com

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Date	15 th Nov 2012

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1 TEST DESCRIPTION & RESULT

Applicant	Stefan Trautner, Identive GmbH Oskar-Messter-Str. 13, 85737 Ismaning, Germany
Manufacturer	Identive GmbH Oskar-Messter-Str. 13, 85737 Ismaning, Germany
Equipment Under Test	Identive Cloud 47X0F
Model	Identive Cloud 4700F & Identive Cloud 4710F
Serial Number	Identive Cloud 4700F: 53201237200001 Identive Cloud 4710F: 53241237200003
EUT Arrived on	04 th Oct 2012
Condition of EUT when received	Good
Date of Test	04 th Oct 2012 to 02 nd Nov 2012
Test Venue	TARANG

Applicable Standard: Version, Ed. x.x, Section	Description	Criteria / Class	Results
FCC part 15: 10 th July 2008: Section 15.203	Antenna Requirement	As specified in 15.203	Complies
FCC part 15: 10 th July 2008: Section 15.204	External Radio frequency power amplifiers & Antenna modifications	As specified in 15.204 (c)	Complies
FCC part 15: 10 th July 2008: Section 15.207	Conducted Emission	Class B	Pass
FCC part 15: 10 th July 2008: Section 15.209	Radiated Emission	Class B	Pass
FCC part 15: 10 th July 2008: Section 15.215 (c)	20dB Bandwidth measurement	As specified in 15.215 (c)	Pass
FCC part 15: 10 th July 2008: Section 15.225 (a) & (d)	Carrier field strength & Radiated Emission limits	As specified in 15.225 (a) & (d)	Pass
FCC part 15: 10 th July 2008: Section 15.225 (e)	Frequency stability	As specified in 15.225 (e)	Pass

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Identive Cloud 4700F & Identive Cloud 4710F were tested by Tarang Lab as per the standards that are listed in the table above. Based on the observations during the test and interpretations by Tarang lab, results have been indicated. The test results produced in this report shall apply only to the sample that has been tested under the specific conditions and modes of testing as described in the report. Any measurement uncertainties listed in this report are for information only and have not been taken into account in the results.

The results shall stand invalid, in case there are any modifications / additions / removals to the hardware or software or end use atmosphere to the product tested. This report shall not be modified or in any way revised unless it is expressly permitted and endorsed by Tarang through a duly authorized representative. Particulars on Manufacturer / Supplier / EUT configuration / performance criteria, given in this report, are based on the information given by the customer, along with test request. Tarang does not assume any responsibility for the correctness of that information for the above mentioned equipment under test.

Customer acknowledges that this is a test report and not a certificate to gain market access for the product. To gain market access, Customer needs appropriate clearance from the Government or authorized agency for the target market. For markets that allow self-declaration, customer needs to follow the procedure defined by the target market.

Prepared by	Reviewed by	Approved by
Harsha K	Daniel E	Satheesh I
		
Test Engineer	Test Engineer	Technical Manager

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2 SUMMARY

2.1 APPLICANT INFORMATION

Identive GmbH

2.2 TEST STANDARDS

Applicable Standard: Version, Ed., Section	Description	Test level / Test Voltage
FCC part 15: 10 th July 2008: Section 15.203	Antenna Requirement	As specified in 15.203
FCC part 15: 10 th July 2008: Section 15.204	External Radio frequency power amplifiers & Antenna modifications	As specified in 15.204 (c)
FCC part 15: 10 th July 2008: Section 15.207	Conducted Emission	Class B
FCC part 15: 10 th July 2008: Section 15.209	Radiated Emission	Class B
FCC part 15: 10 th July 2008: Section 15.215 (c)	20dB Bandwidth measurement	As specified in 15.215 (c)
FCC part 15: 10 th July 2008: Section 15.225 (a) & (d)	Carrier field strength & Radiated Emission limits	As specified in 15.225 (a) & (d)
FCC part 15: 10 th July 2008: Section 15.225 (e)	Frequency stability	As specified in 15.225 (e)

2.3 DEVIATION FROM STANDARD

NA

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2.4 TEST FACILITY

All the tests were carried out at Tarang – Product Qualification and Compliance Planet located at Wipro Limited, SJP2, Dodda Kanelli, Sarjapur road, Bangalore, Karnataka. India 560035.

Following are the accreditation and listing details for Tarang.

Accreditation / Listing body / Alliances	Registration / Company / Certificate Number
ISO17025 Accreditation	Certificate Number: T-1533 and T-1534 http://www.nabl-india.org/nabl/file_download.php?filename=181.docx http://www.nabl-india.org/nabl/file_download.php?filename=182.docx
FCC (Federal Communications Commission)	Registration Number: 799247 http://www.fcc.gov/
IC (Industry Canada)	Company Number: 9023A http://www.ic.gc.ca
CSA Alliance	http://www.csa-international.org/news/releases/Default.asp?articleID=9702&language=english

2.5 DOCUMENT HISTORY

S. No	Version	Date	Change History	Remarks
1	0.01	09 th Nov 2012	Initial Version by Harsha K	
2	0.02	14 th Nov 2012	Reviewed by Daniel E	
3	0.03	15 th Nov 2012	Updated report after review	
4				

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Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

3 EUT CONFIGURATION

3.1 EUT DESCRIPTION

Product	Identive Cloud 47X0F
Model Number	Identive Cloud 4700F & Identive Cloud 4710F
Serial Number	Identive Cloud 4700F: 53201237200001 Identive Cloud 4710F: 53241237200003
Product Category / Type of Equipment	ITE
EUT Operating Voltage	USB powered (5VDC)
EUT Power Rating	2.5 W max
EUT Operating Current	500 mA max

3.2 EUT CONFIGURATION (FULL OPERATION OF THE EUT DURING THE TEST)

The EUT is a USB based desktop Smart card/SAM reader. It is a dual interface reader and has a contact interface (Smart card/SAM) and a 13.56 MHz RFID contactless interface to communicate with the user card. The reader communicates to the Host PC using an USB interface cable with a snap-on ferrite on it.

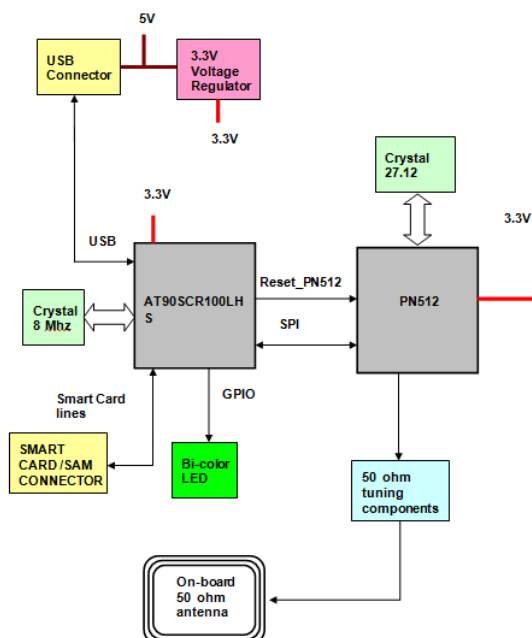


Figure 1: Block diagram of Identive Cloud 47X0F

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3.3 MODIFICATION OF EUT (IF ANY)

NA

3.4 EXERCISE SOFTWARE

Application name: TestResMan.exe, Version 1.48.0.0.

3.5 MODE OF OPERATION

The EUT was kept in continuous communication with the PC and operated continuously.

3.6 ACCESSORIES USED

S. No	Accessory Name	Make	Model Number	Serial Number
1	Ferrite clamp	Rohde & Schwarz	EZ-24	100098
2	CPU	Wipro	WSG5M05W7	11FQF03300004-CPU
3	CPU	HP	HP Compaq dx2280MT	INA816024T
4	Monitor	AOC	TFT1560PSA+	AOC6UXH63101637
5	Keyboard	Wipro	K7903F	1108015616
6	Mouse	Wipro	MS608A	1109002112

3.7 ENVIRONMENTAL CONDITION

Temperature	15 to 35 DegC
Relative Humidity	30 to 70%

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4 INSTRUMENTATION AND CALIBRATION

4.1 TEST AND MEASURING EQUIPMENT

The following list contains the measuring equipment used for testing. The equipment conforms to the required standards. Calibration of all test and measuring equipment including any accessories that may affect such calibration are checked frequently to ensure the accuracy. Adjustments are made and correction factors are applied in accordance with the instructions contained in the respective manual.

4.2 EQUIPMENTS USED

Name of Equipment	Manufacturer	Model No	Serial No	Calibration Due
EMI Test Receiver	R&S	ESIB40	100306	11 th Sep 2013
EMI Test Receiver	R&S	ESU8	100324	30 th Jan 2013
Hybrid Log Periodic Antenna	TDK RF Solutions	HLP 3003C	130334	21 st Mar 2013
Pre amplifier	Sonoma	310	270817	21 st Mar 2013
Active loop antenna	ETS-Lindgren	6507	00104711	10 th Oct 2012
V-LISN	Schwarzbeck Mess Elektronik	NSLK-8128	8128-243	24 th Oct 2012
Spectrum Analyzer	Agilent Technologies	E4407B	MY45112947	15 th Mar 2013

Figure 2: List of equipment used for testing

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5 ANTENNA REQUIREMENT AS PER SECTION 15.203

5.1 DESCRIPTION

Identive Cloud 4700F & Identive Cloud 4710F use a permanently fixed on board antenna. The antenna is a part of PCB of the EUT and as shown in figure below:



Figure 3: Photograph showing onboard antenna for Intentional Radiation

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6 EXTERNAL RADIO FREQUENCY POWER AMPLIFIERS AND ANTENNA MODIFICATIONS AS PER SECTION 15.204

6.1 DESCRIPTION

Identive Cloud 4700F & Identive Cloud 4710F use a permanently fixed on board antenna. The antenna is a part of PCB of the EUT and as shown in figure below. Hence no antenna modifications are possible for this equipment.



Figure 4: Photograph showing onboard antenna for Intentional Radiation

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7 CONDUCTED EMISSION AS PER SECTION 15.207

7.1 TEST SPECIFICATION

Standard : Version, Ed. x.x	FCC part 15 Subpart C: 10 th July 2008
Frequency Range	150kHz to 30MHz
Class	Class B
Test Procedure	As per ANSI C63.4-2009
Detector Function	Peak, Quasi-peak and Average
Input Voltage	5VDC (USB powered)
Temperature	22.0°C
Humidity	50.0%
Test result	Pass
Tested by	Harsha K
Test date	16 th Oct 2012

7.2 LIMITS

Maximum permissible level of Conducted Emission on power lines as per Section 15.207 of FCC part 15 Subpart C is as shown below:

Frequency (MHz)	Quasi-peak limit (dBμV)	Average limit (dBμV)
0.15 to 0.50	66 to 56*	56 to 46*
0.5 to 5	56	46
5 to 30	60	50

* Decreases with the logarithm of the frequency.

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7.3 TEST SETUP

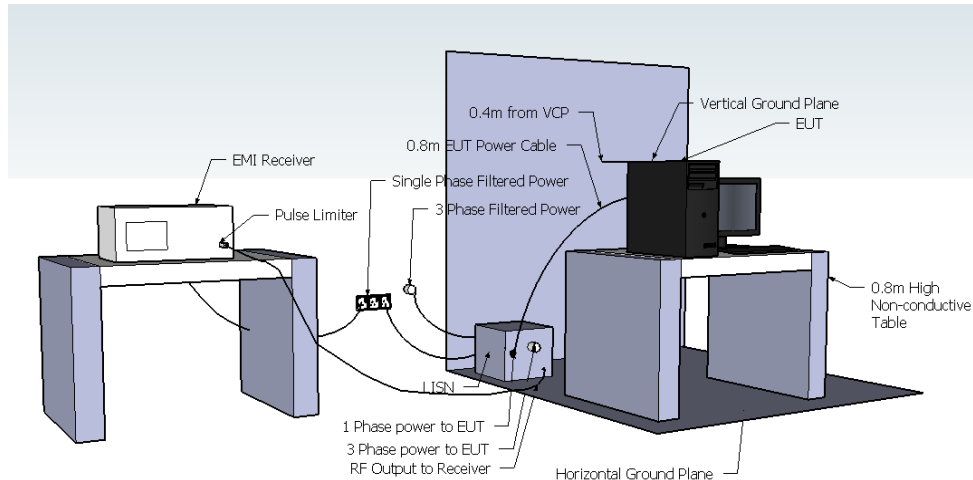


Figure 5: Sample test setup for Conducted Emission test on table top equipment

7.4 TEST PROCEDURE

The test procedure is in accordance with ANSI C63.4-2009.

The test was performed in Conducted Emission test site. The EUT was placed on a 0.8m table high as described in the standard. Connections were made as defined in the test standard. Power was provided to EUT through a LISN. EMI receiver was connected to LISN through Pulse limiter. Test system was configured through software for CE test as per standard and EUT was operated as shown in section 3.2. A pre-scan was taken and peaks were identified through peak search. Quasi-peak and Average measurements at these peaks (frequencies) were taken.

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Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

7.5 MEASUREMENT DATA

7.5.1 Identive Cloud 4700F

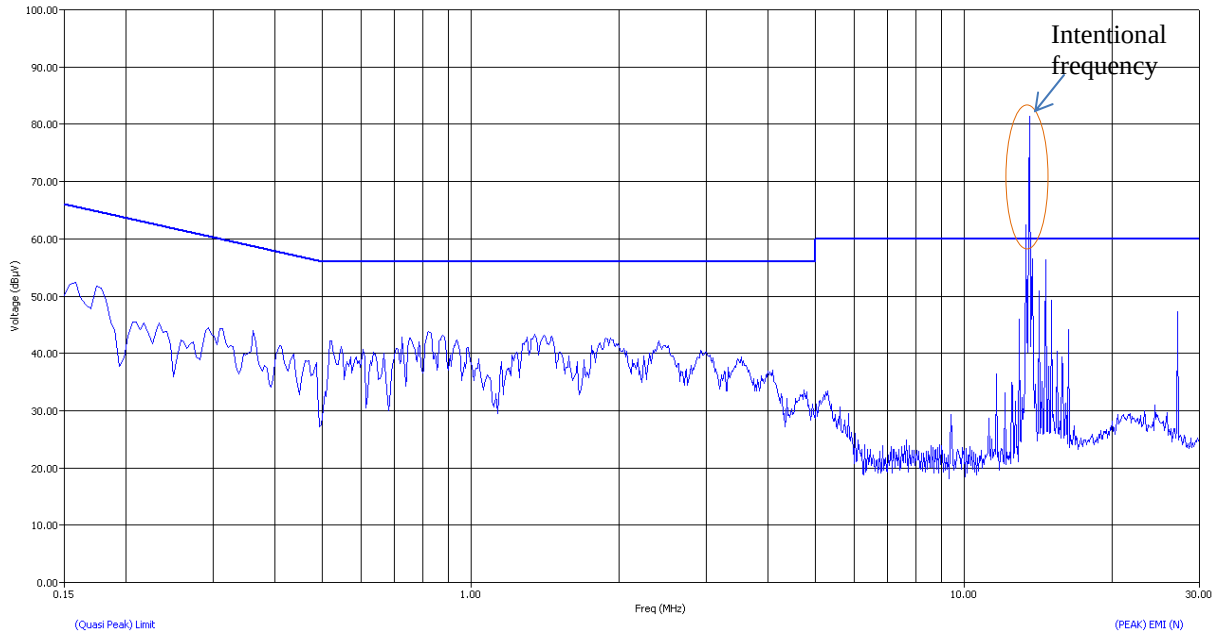


Figure 6: Peak measurement for CE - 150 kHz to 30MHz – Neutral – Identive Cloud 4700F

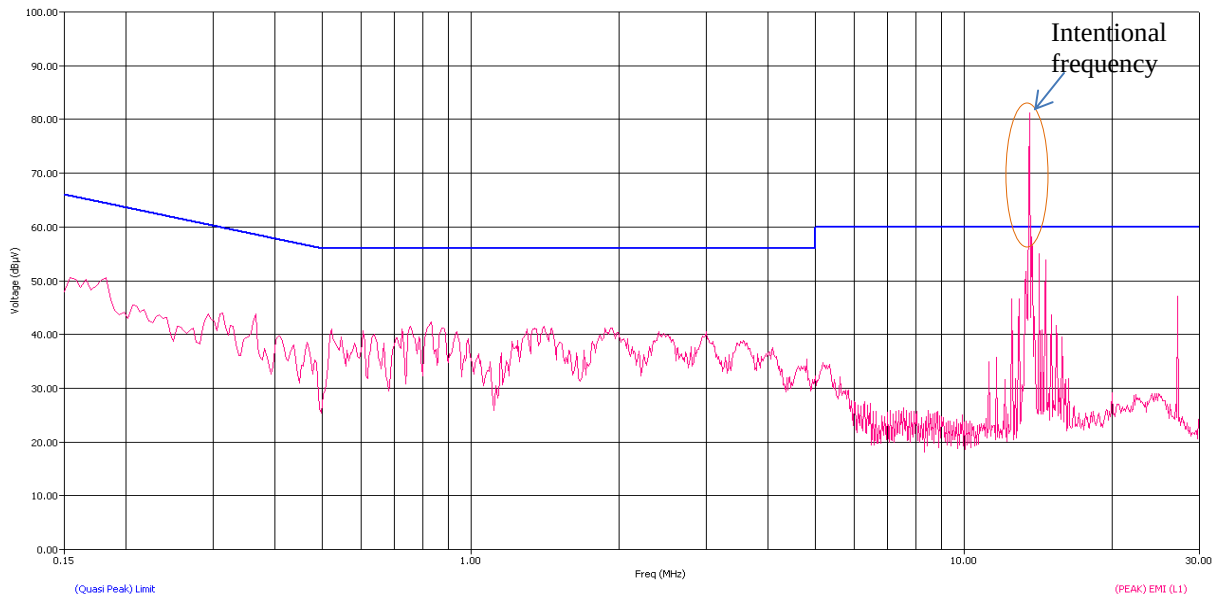


Figure 7: Peak measurement for CE - 150 kHz to 30MHz – Line – Identive Cloud 4700F

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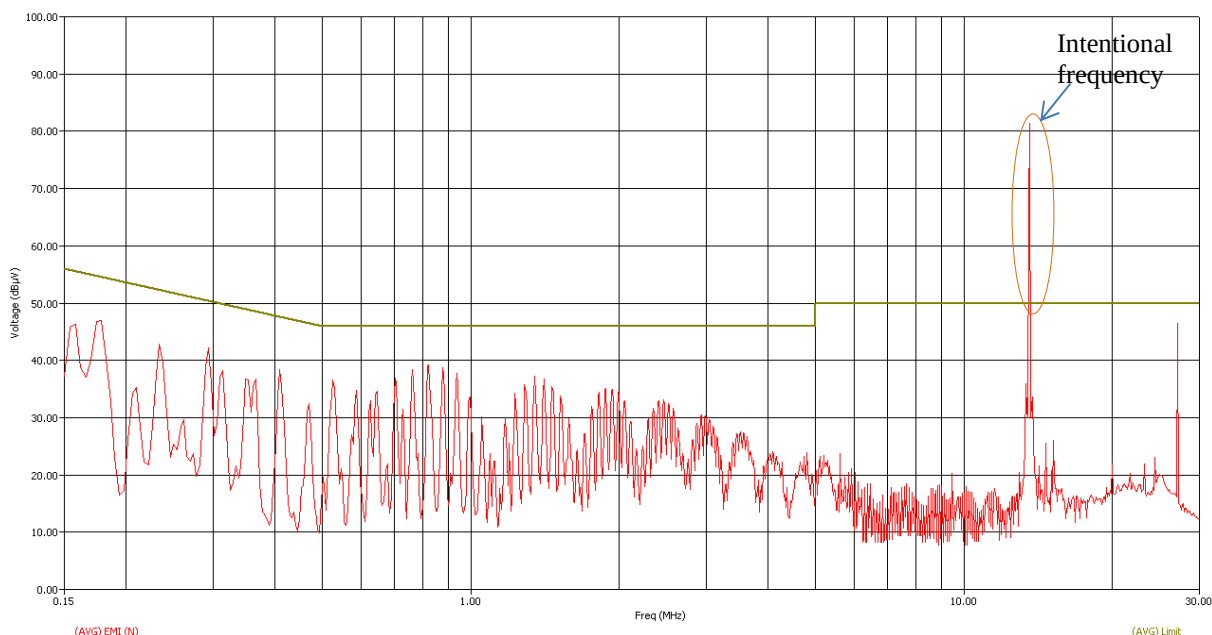


Figure 8: Average measurement for CE - 150 kHz to 30MHz – Neutral – Identive Cloud 4700F

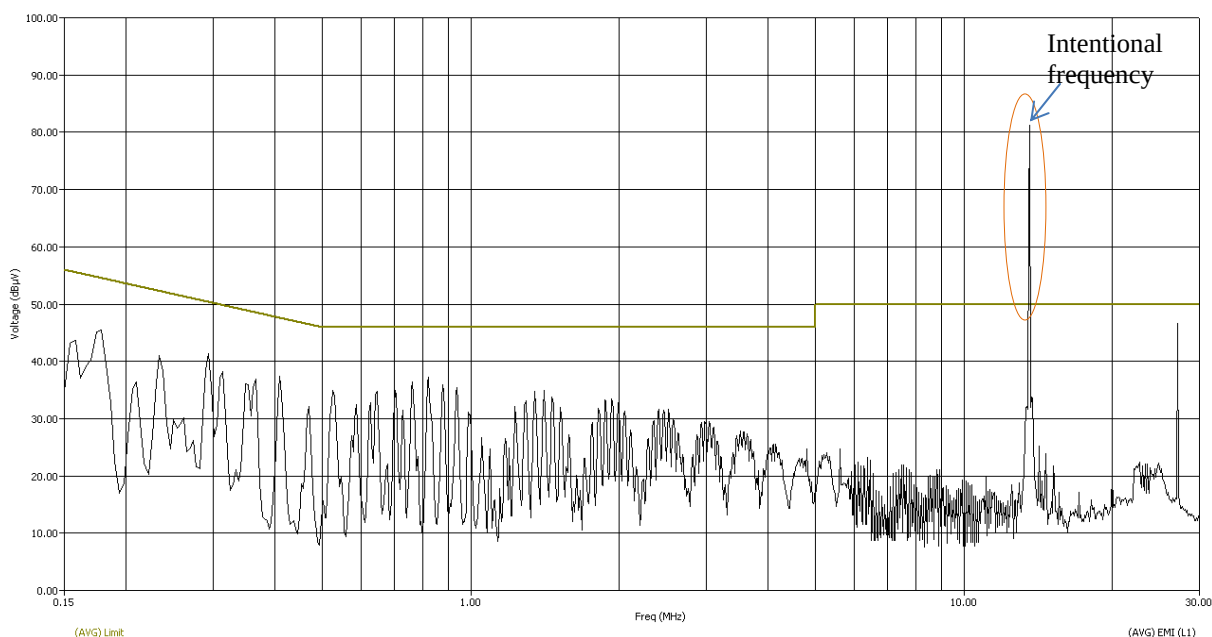


Figure 9: Average measurement for CE - 150 kHz to 30MHz – Line – Identive Cloud 4700F

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Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

Freq (MHz)	Freq (Max) (MHz)	Line	(AVG) Trace (dBμV)	Cable + Pulse Limier (dB)	Transducer (N) (dB)	Transducer (L1) (dB)	(AVG) EMI (dBμV)	(AVG) Limit (dBμV)	(AVG) Margin AVL (dB)
13.35	13.34	N	-1.38	10.20	0.36	0.00	9.19	50.00	-40.81
13.71	13.71	L1	5.71	10.21	0.00	0.32	16.24	50.00	-33.76
13.74	13.75	L1	4.07	10.21	0.00	0.31	14.60	50.00	-35.40
13.74	13.74	N	0.32	10.21	0.37	0.00	10.89	50.00	-39.11
14.19	14.19	L1	7.54	10.22	0.00	0.31	18.07	50.00	-31.93
14.62	14.62	N	0.35	10.23	0.41	0.00	11.00	50.00	-39.00
27.12	27.12	L1	36.18	10.53	0.00	0.47	47.18	50.00	-2.82
27.12	27.12	N	35.47	10.53	0.53	0.00	46.53	50.00	-3.47

Table 1: Average measurement table for CE - 150 kHz to 30MHz – Identive Cloud 4700F

Freq (MHz)	Freq (Max) (MHz)	Line	(QF) Trace (dBμV)	Cable + Pulse Limier (dB)	Transducer (N) (dB)	Transducer (L1) (dB)	(QF) EMI (dBμV)	(QF) Limit (dBμV)	(QF) Margin QPL (dB)
13.35	13.34	N	28.31	10.20	0.36	0.00	38.87	60.00	-21.13
13.71	13.71	L1	24.35	10.21	0.00	0.32	34.87	60.00	-25.13
13.74	13.75	L1	22.77	10.21	0.00	0.31	33.29	60.00	-26.71
13.74	13.74	N	23.35	10.21	0.37	0.00	33.92	60.00	-26.08
14.19	14.19	L1	27.42	10.22	0.00	0.31	37.95	60.00	-22.05
14.62	14.62	N	24.18	10.23	0.41	0.00	34.82	60.00	-25.18
27.12	27.12	L1	36.30	10.53	0.00	0.47	47.30	60.00	-12.70
27.12	27.12	N	35.60	10.53	0.53	0.00	46.67	60.00	-13.33

Table 2: Quasi Peak measurement table for CE - 150 kHz to 30MHz – Identive Cloud 4700F

7.5.2 Identive Cloud 4710F

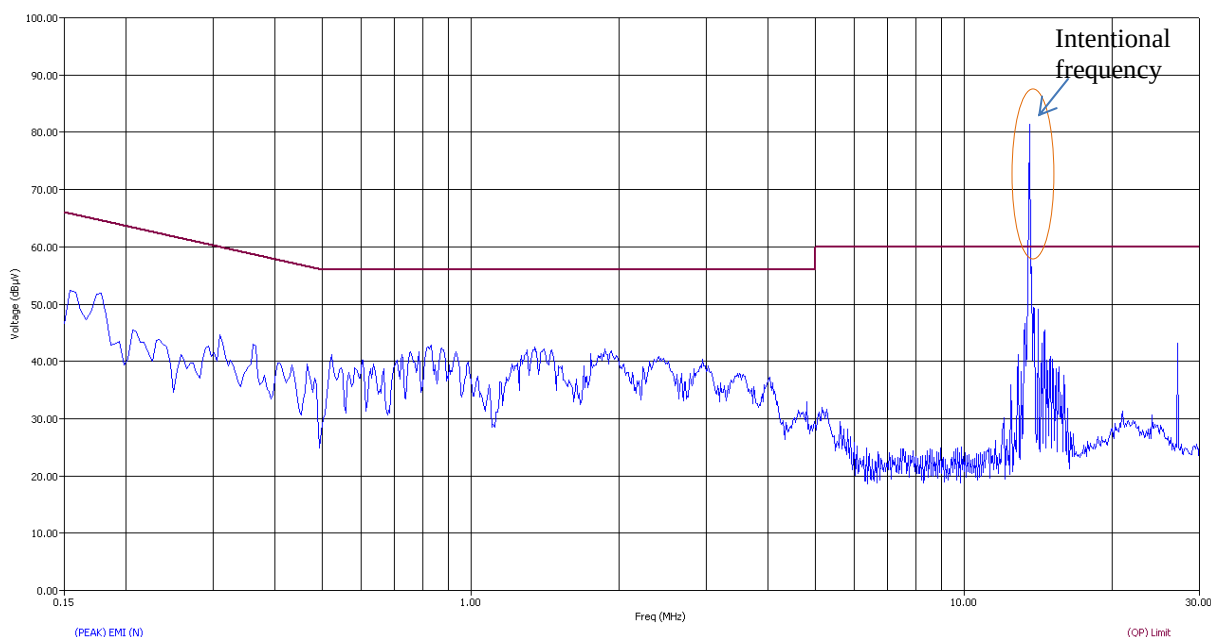


Figure 10: Peak measurement for CE - 150 kHz to 30MHz – Neutral – Identive Cloud 4710F

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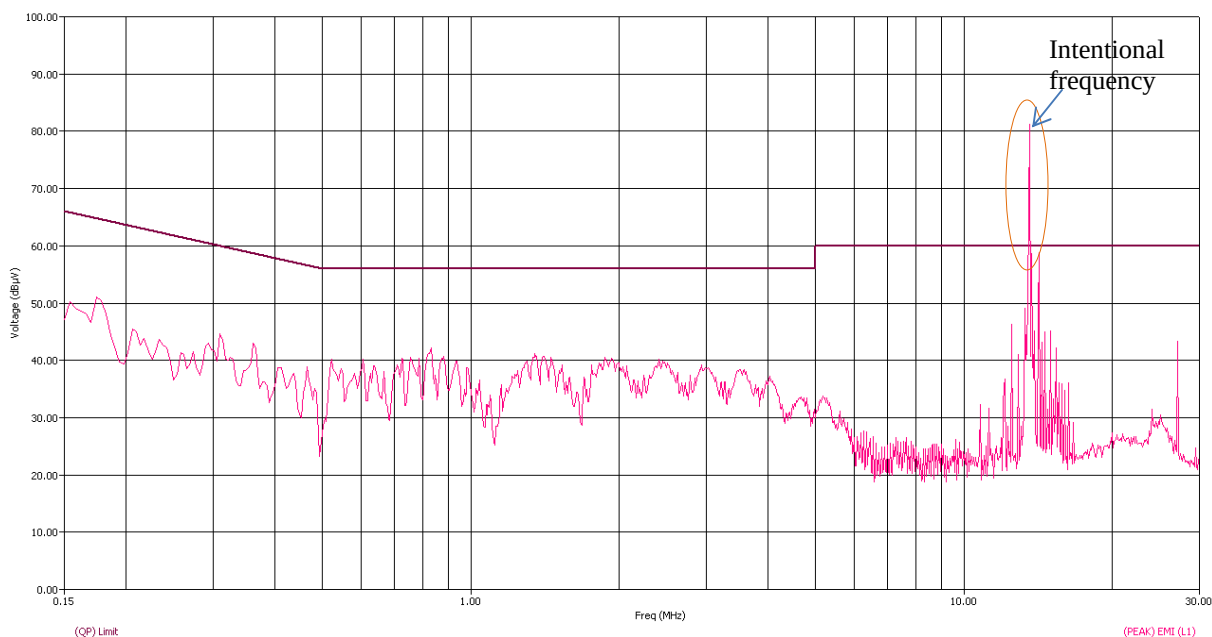


Figure 11: Peak measurement for CE - 150 kHz to 30MHz – Line – Identive Cloud 4710F

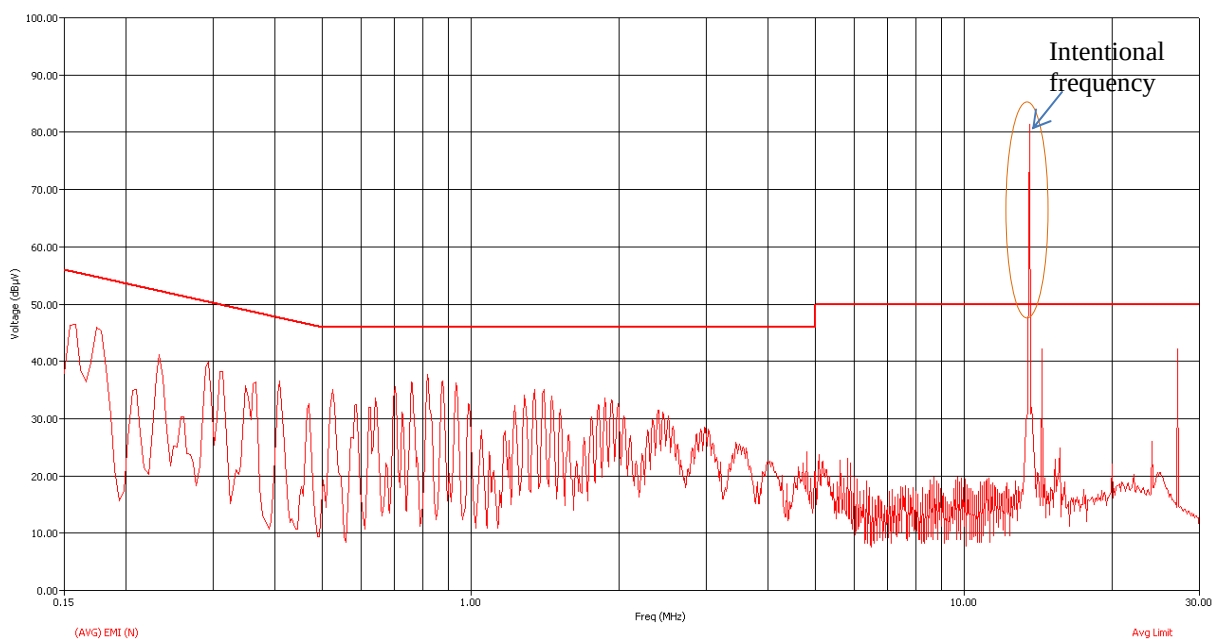


Figure 12: Average measurement for CE - 150 kHz to 30MHz – Neutral – Identive Cloud 4710F

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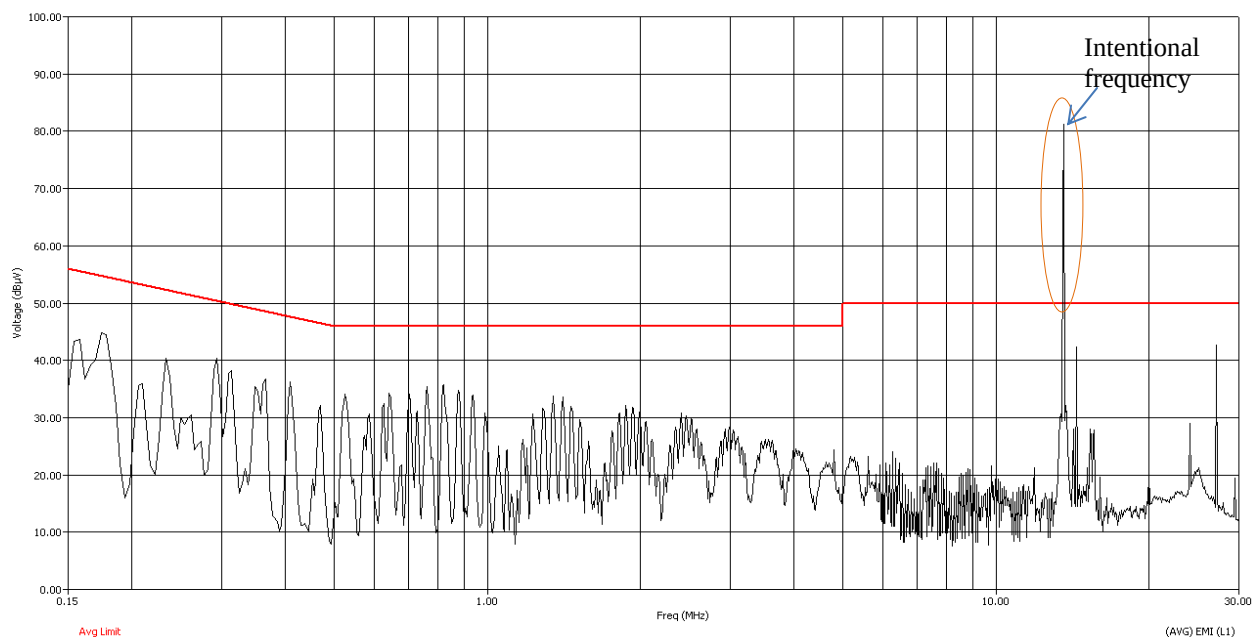


Figure 13: Average measurement for CE - 150 kHz to 30MHz – Line – Identive Cloud 4710F

Freq (MHz)	Freq (Max) (MHz)	Line	(AVG) Trace (dBμV)	Cable + Pulse limiter (dB)	Transducer (N) (dB)	Transducer (L1) (dB)	(AVG) EMI (dBμV)	(AVG) Limit (dBμV)	(AVG) Margin AvL (dB)
13.45	13.44	N	4.67	10.20	0.36	0.00	15.24	50.00	-34.76
13.46	13.45	N	0.32	10.21	0.36	0.00	10.69	50.00	-39.11
13.50	13.50	L1	7.99	10.21	0.00	0.33	18.52	50.00	-31.48
13.65	13.65	N	-0.50	10.21	0.37	0.00	10.08	50.00	-39.92
13.66	13.66	N	1.54	10.21	0.37	0.00	12.12	50.00	-37.88
13.68	13.69	N	-0.27	10.21	0.37	0.00	10.31	50.00	-39.69
13.69	13.69	L1	4.83	10.21	0.00	0.32	15.36	50.00	-34.64
13.70	13.71	L1	4.83	10.21	0.00	0.32	15.36	50.00	-34.64
13.71	13.71	L1	-0.19	10.21	0.00	0.32	10.33	50.00	-39.67
14.19	14.19	L1	0.68	10.22	0.00	0.31	11.21	50.00	-38.79

Table 3: Average measurement table for CE - 150 kHz to 30MHz – Identive Cloud 4710F

Freq (MHz)	Freq (Max) (MHz)	Line	(QP) Trace (dBμV)	Cable + Pulse limiter (dB)	Transducer (N) (dB)	Transducer (L1) (dB)	(QP) EMI (dBμV)	(QP) Limit (dBμV)	(QP) Margin QPL (dB)
13.45	13.44	N	22.53	10.20	0.36	0.00	33.10	60.00	-26.90
13.46	13.45	N	19.78	10.21	0.36	0.00	30.34	60.00	-29.66
13.50	13.50	L1	26.32	10.21	0.00	0.33	36.86	60.00	-23.14
13.65	13.65	N	21.20	10.21	0.37	0.00	31.78	60.00	-28.22
13.66	13.66	N	21.93	10.21	0.37	0.00	32.51	60.00	-27.49
13.68	13.69	N	22.00	10.21	0.37	0.00	32.58	60.00	-27.42
13.69	13.69	L1	22.50	10.21	0.00	0.32	33.03	60.00	-26.97
13.70	13.71	L1	19.87	10.21	0.00	0.32	30.40	60.00	-29.60
13.71	13.71	L1	23.25	10.21	0.00	0.32	33.78	60.00	-26.22
14.19	14.19	L1	27.46	10.22	0.00	0.31	37.99	60.00	-22.01

Table 4: Quasi Peak measurement table for CE - 150 kHz to 30MHz – Identive Cloud 4710F

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Date	15th Nov 2012

Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

Note:

Quasi Peak EMI (dBμV) = Quasi Peak Trace (dBμV) + Transducer (dB) + Cable (dB)

Quasi Peak Margin (dB) = Quasi Peak EMI (dBμV) – Quasi Peak Limit (dBμV)

Average EMI (dBμV) = Average Trace (dBμV) + Transducer (dB) + Cable (dB)

Average Margin (dB) = Average EMI (dBμV) – Average Limit (dBμV)

7.6 MEASUREMENT UNCERTAINTY

Following uncertainty level has been estimated for tests performed on the EUT as per CISPR 16-4:

Measurement for	Measurement Uncertainty
Conducted Emission 150kHz to 30MHz	±3.248dB

7.7 RESULT

Conducted Emissions are within the specified limits except for the intentional radiator frequency (13.56MHz).

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Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

8 RADIATED EMISSION AS PER SECTION 15.209 & 15.225 (D)

8.1 TEST SPECIFICATION

Standard: Version, Ed. x.x	FCC part 15 Subpart C: 10 th July 2008
Frequency Range	9 kHz to 30MHz & 30MHz to 1GHz
Test Procedure	As per ANSI C63.4-2009
Class	Class B
Detector Function	Peak and Quasi-peak
Antenna polarization	Horizontal and Vertical
Test Distance	9 kHz to 30MHz: 3 meters 30MHz to 1GHz: 10 meters
Input Voltage	5VDC
Temperature	23.0°C
Humidity	58.0%
Tested by	Sabarinath .T.J
Test date	RE from 9 kHz to 30 MHz – 04 th Oct 2012 RE from 30 MHz to 1 GHz – 15 th Oct 2012

8.2 LIMITS

Maximum permissible level of Radiated Emission from 9 kHz to 30MHz at 3 meter distance as per FCC part 15 is as shown below:

Frequency (MHz)	Quasi-peak limit (dBμV/m)
0.009 to 0.49	128.52 to 93.8
0.49	73.8
0.49 to 1.705	73.8 to 62.97
1.705 to 30	69.54

Maximum permissible level of Radiated Emission from 30MHz to 1GHz at 10 meter distance as per FCC part 15 is as shown below:

Frequency (MHz)	Quasi-peak limit (dBμV/m)
30 to 88	29.54
88 to 216	33.06
216 to 960	35.56
960 to 1000	43.52

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Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

8.3 TEST SETUP

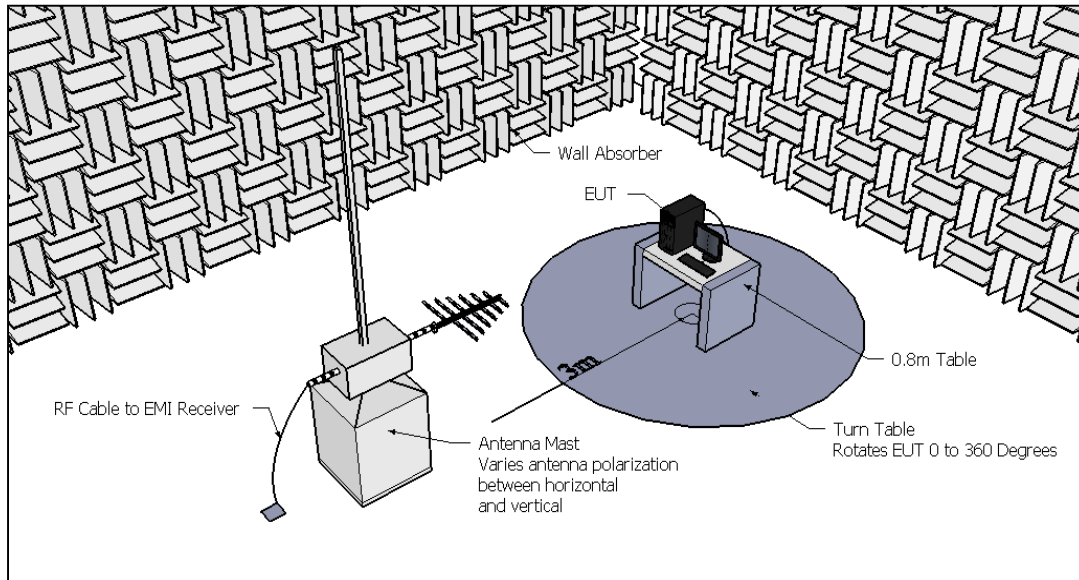


Figure 14: Sample test setup for Radiated Emissions test from 9 kHz to 30MHz at 3m distance

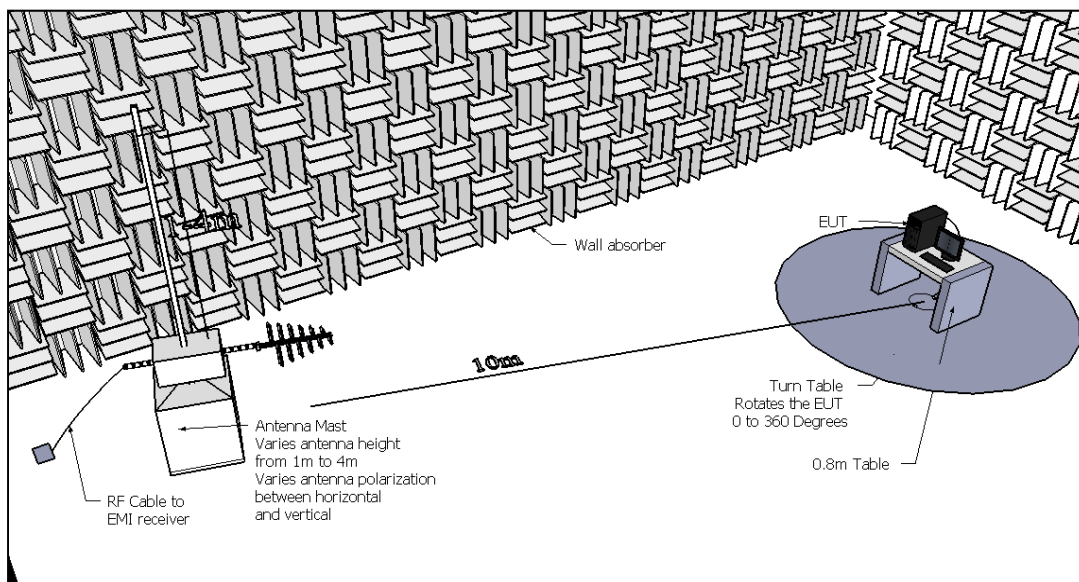


Figure 15: Sample test setup for Radiated Emissions test from 30MHz to 1GHz at 10m distance

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FCC ID	MBPCLOUD47X0F-001

8.4 TEST PROCEDURE

The test procedure is in accordance with ANSI C63.4-2009.

The test was performed in a semi-anechoic chamber. The EUT was placed on a table of 0.8m high as described in the standard. The whole setup was placed on a turn table to enable 0 to 360 degree rotation. The edge of the EUT was located 10 meter away from the receiving antenna mounted on an antenna mast to enable height variation from 1.0 m to 4.0m above the ground plane for 30MHz to 1GHz & at 3m distance for 9 kHz to 30MHz measurement without any height variation. The USB cable of the EUT was extended and connected to USB port of accessory PC placed in the support room through a ferrite clamp (Model: EZ-24, mentioned in [Section 3.6](#)) with 2 turns (closer to the accessory PC) to avoid any noise from PC in the Radiated Emission measurement.

The radiated emission measurement test system was configured through software as per standard. Pre-scan (peaks) was taken at different angles by rotating the turn table from 0 to 360 degree and by varying the antenna height from 1.0m to 4.0m in both vertical and horizontal polarization. Highest levels of RE were recorded by measuring in the worst case orientation of the EUT. Peaks were identified using peak search software. Later Quasi-peak measurements at these peaks were taken and compared with limits specified in standard.

For measurement in the frequency band of 9kHz to 30MHz, the limit line was extrapolated by using the provision in the standard. This was done by using the square of an inverse linear distance extrapolation factor of 40 dB/decade, as per CFR 47 part 15.31(f)(2).

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8.5 MEASUREMENT DATA

8.5.1 Identive Cloud 4700F

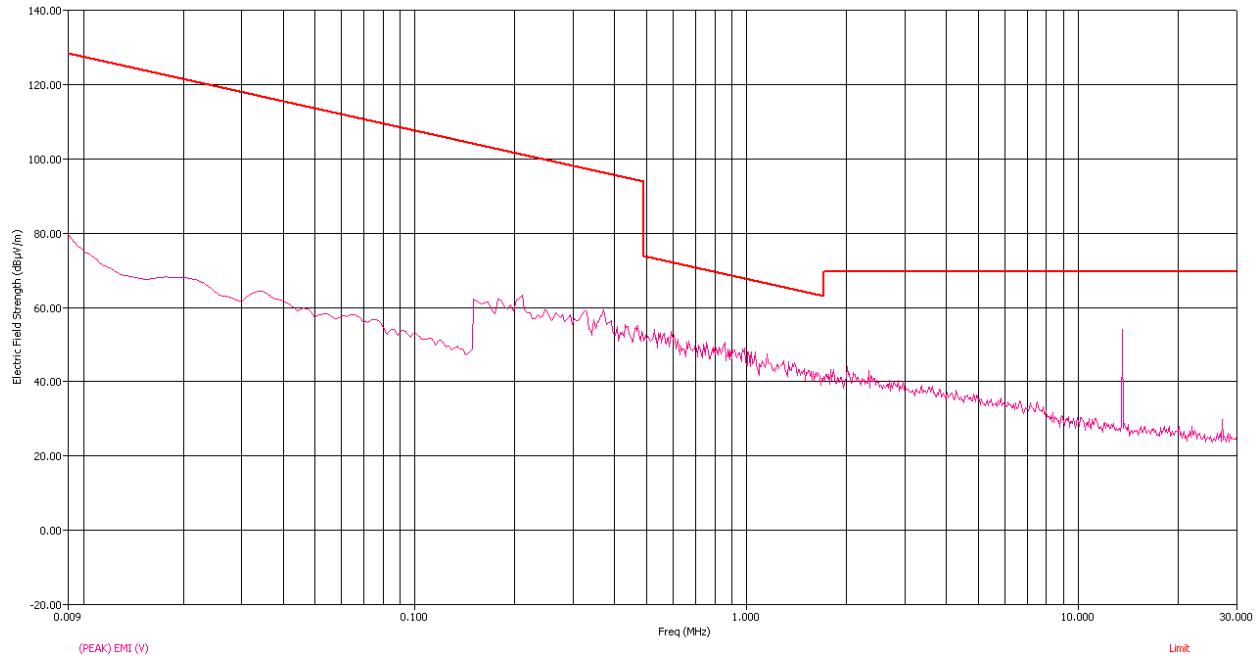


Figure 16: Peak RE from 9 kHz to 30MHz_Parallel – Identive Cloud 4700F

Freq (MHz)	Freq (Max) (MHz)	EUT Ttbl Agl (deg)	Pol	(QP) Trace (dBμV)	Cable (dB)	Transducer (dB)	(QP) EMI (dBμV/m)	Limit (dBμV/m)	(QP) Margin (dB)
13.56	13.56	115.50	V	39.53	1.11	15.67	56.32	69.54	-13.22

Table 5: Quasi Peak table for RE from 9 kHz to 30MHz_Parallel – Identive Cloud 4700F

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FCC ID	MBPCLOUD47X0F-001

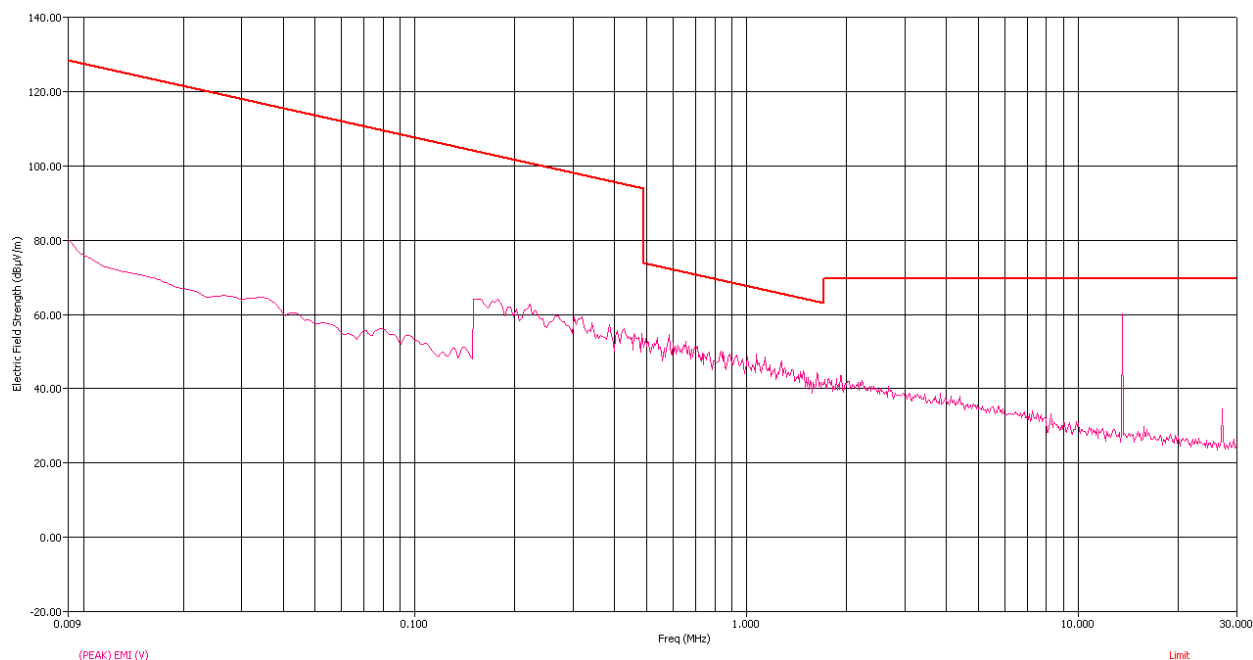


Figure 17: Peak RE from 9 kHz to 30MHz_Perpendicular – Identive Cloud 4700F

Freq (MHz)	Freq (Max) (MHz)	EUT Ttbt Agt (deg)	Pol	(QP) Trace (dBμV)	Cable (dB)	Transducer (dB)	(QP) EMI (dBμV/m)	Limit (dBμV/m)	(QP) Margin (dB)
13.56	13.56	180.10	V	43.51	1.11	15.67	60.30	69.54	-9.24

Table 6: Quasi Peak table for RE from 9 kHz to 30MHz_Perpendicular – Identive Cloud 4700F

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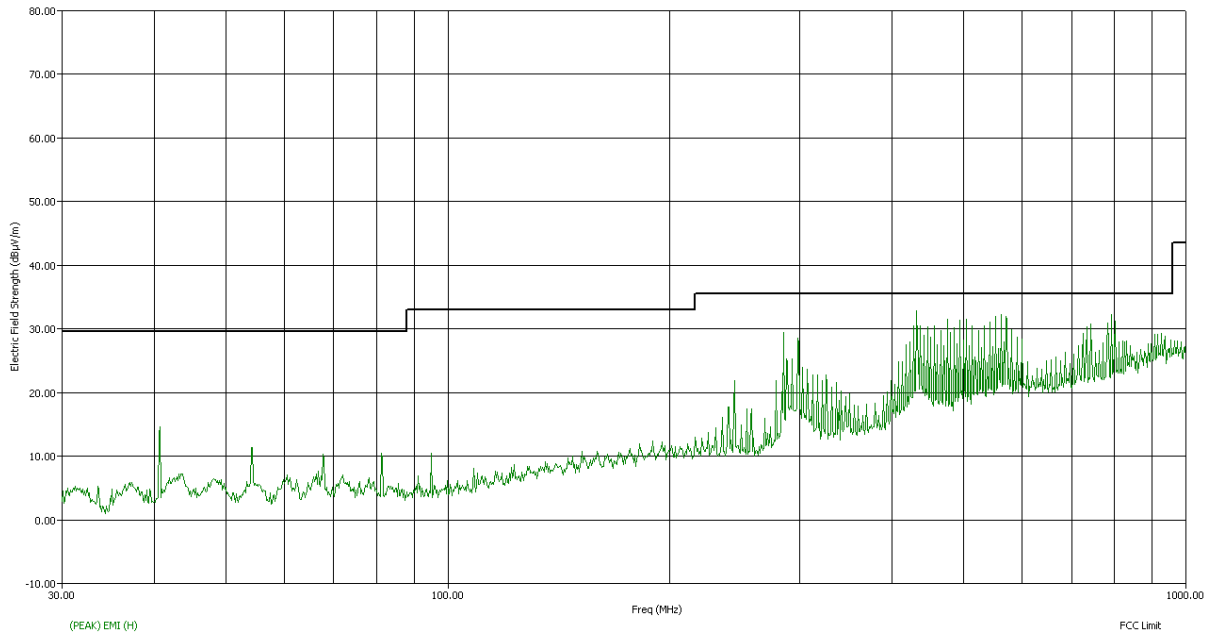


Figure 18: Peak RE from 30MHz to 1GHz - Horizontal polarization – Identive Cloud 4700F

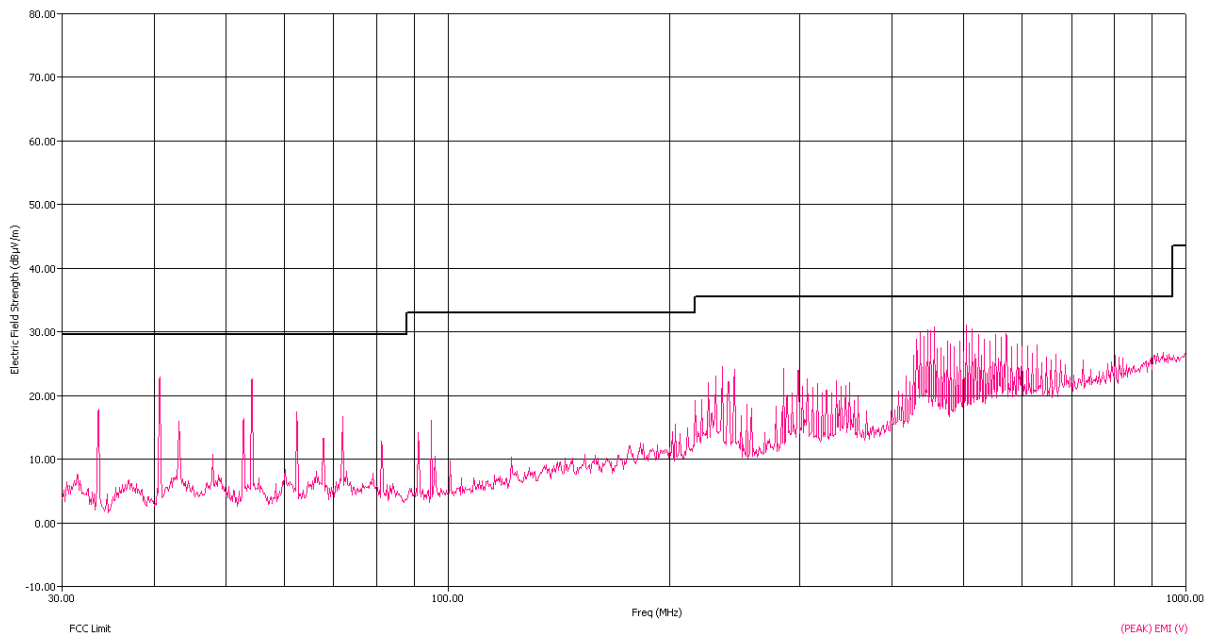


Figure 19: Peak RE from 30MHz to 1GHz - Vertical polarization – Identive Cloud 4700F

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FCC ID	MBPCLOUD47X0F-001

Freq (MHz)	Freq (Max) (MHz)	Pol	EUT Ttbl Agl (deg)	Twir Ht (cm)	(QP) Trace (dBμV)	Cable (dB)	Transducer (dB)	Preamplifier (dB)	(QP) EMI (dBμV/m)	FCC Limit (dBμV/m)	(QP) Margin FCC (dB)
40.71	40.69	V	308.70	100.00	43.49	1.32	10.09	32.34	22.56	29.54	-6.98
54.27	54.23	V	317.60	363.00	42.79	1.50	9.44	32.33	21.40	29.54	-8.14
432.04	432.03	H	74.30	183.00	43.80	4.48	16.32	32.39	32.21	35.56	-3.35
432.04	432.01	V	314.20	100.00	41.10	4.48	16.32	32.39	29.51	35.56	-6.05
446.44	446.42	V	312.10	100.00	40.48	4.66	16.69	32.28	29.56	35.56	-6.00
451.20	451.23	V	318.50	100.00	39.00	4.63	16.82	32.36	28.09	35.56	-7.47
456.00	456.02	V	322.40	100.00	39.79	4.84	16.94	32.40	29.17	35.56	-6.39
475.20	475.22	H	92.20	219.00	40.86	5.06	17.40	32.36	30.96	35.56	-4.60
504.00	504.04	V	328.70	100.00	35.88	4.88	18.06	32.38	26.44	35.56	-9.12
504.04	504.03	H	253.20	201.00	40.09	4.88	18.06	32.38	30.65	35.56	-4.91
513.64	513.61	V	316.90	100.00	34.88	5.12	18.24	32.39	25.85	35.56	-9.71
552.00	552.03	H	264.60	195.00	37.59	5.02	18.95	32.37	29.20	35.56	-6.36
561.60	561.62	H	264.70	184.00	38.39	5.33	19.12	32.29	30.55	35.56	-5.01
571.24	571.24	H	94.00	158.00	37.55	5.17	19.29	32.74	29.27	35.56	-6.29
792.04	792.03	H	256.00	116.00	35.63	6.24	21.07	32.28	30.66	35.56	-4.90

Table 7: Quasi-peak table for RE from 30MHz to 1GHz – Identive Cloud 4700F

8.5.2 Identive Cloud 4710F

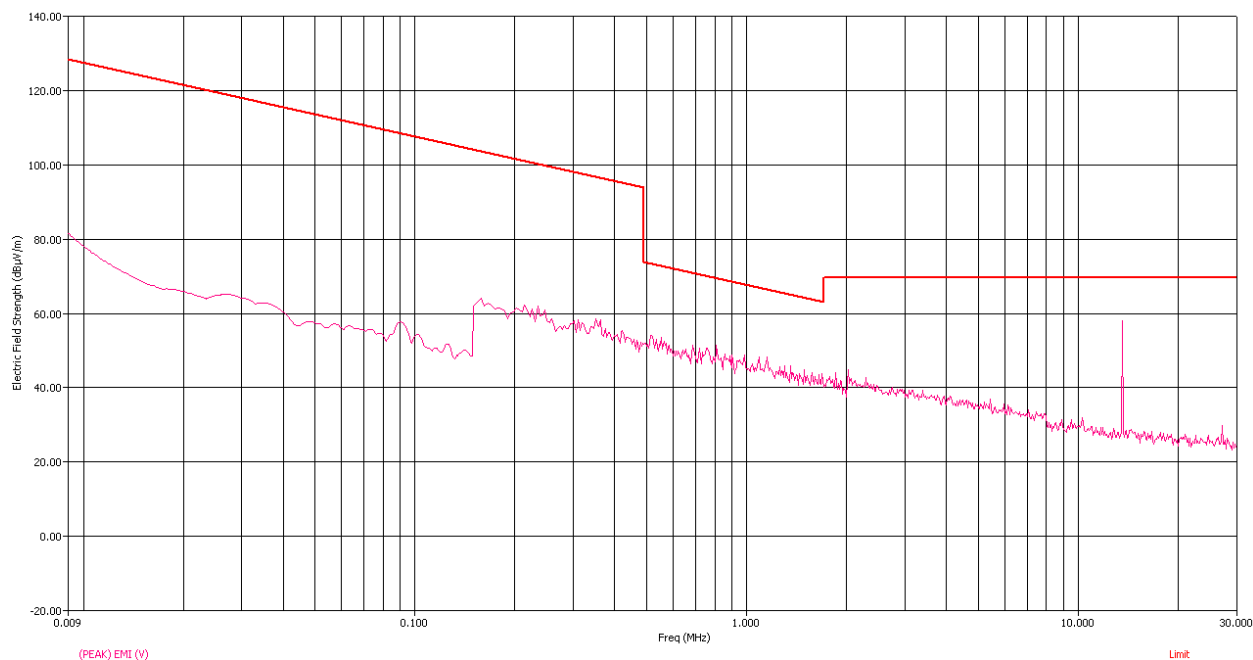


Figure 20: Peak RE from 9 kHz to 30MHz_Parallel – Identive Cloud 4710F

Freq (MHz)	Freq (Max) (MHz)	EUT Ttbl Agl (deg)	Pol	(QP) Trace (dBμV)	Cable (dB)	Transducer (dB)	(QP) EMI (dBμV/m)	Limit (dBμV/m)	(QP) Margin (dB)
13.56	13.56	100.10	V	43.51	1.11	15.67	60.30	69.54	-9.24

Table 8: Quasi Peak table for RE from 9 kHz to 30MHz_Parallel – Identive Cloud 4710F

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FCC ID	MBPCLOUD47X0F-001

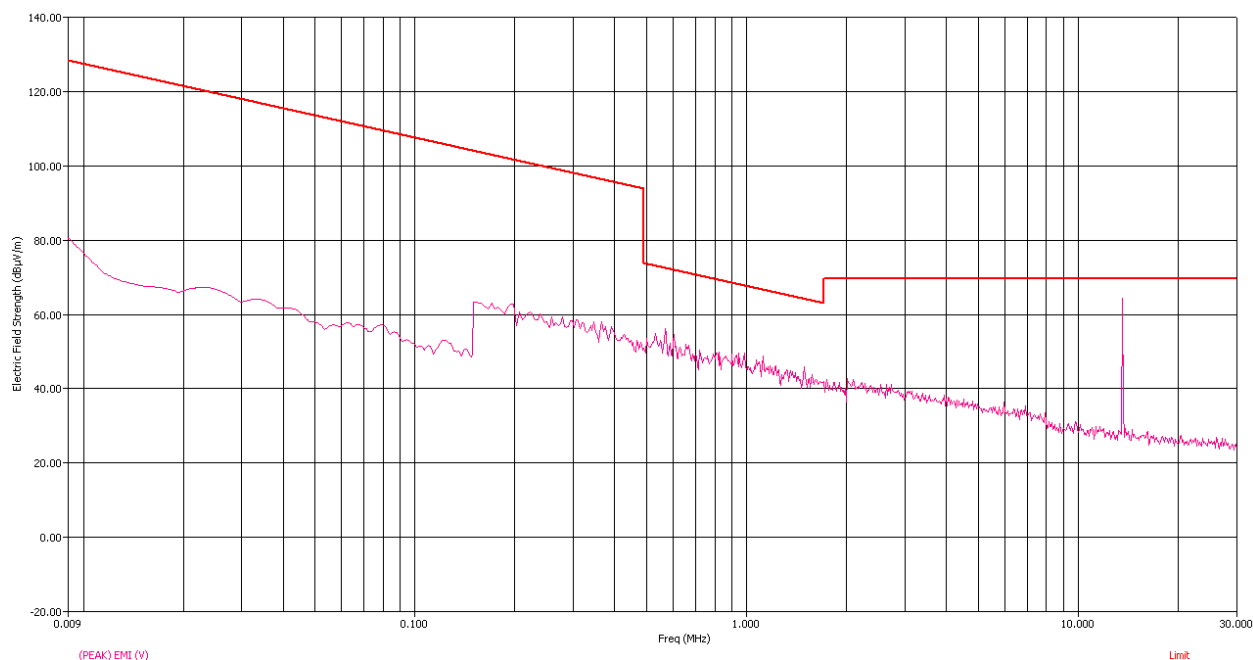


Figure 21: Peak RE from 9 kHz to 30MHz_Perpendicular – Identive Cloud 4710F

Freq (MHz)	Freq (Max) (MHz)	Pol	EUT Ttbl Agl (deg)	(QP) Trace (dBμV)	Cable (dB)	Transducer (dB)	(QP) EMI (dBμV/m)	Limit (dBμV/m)	(QP) Margin (dB)
13.56	13.56	V	199.90	49.56	1.11	15.67	66.35	69.54	-3.19

Table 9: Quasi Peak table for RE from 9 kHz to 30MHz_Perpendicular – Identive Cloud 4710F

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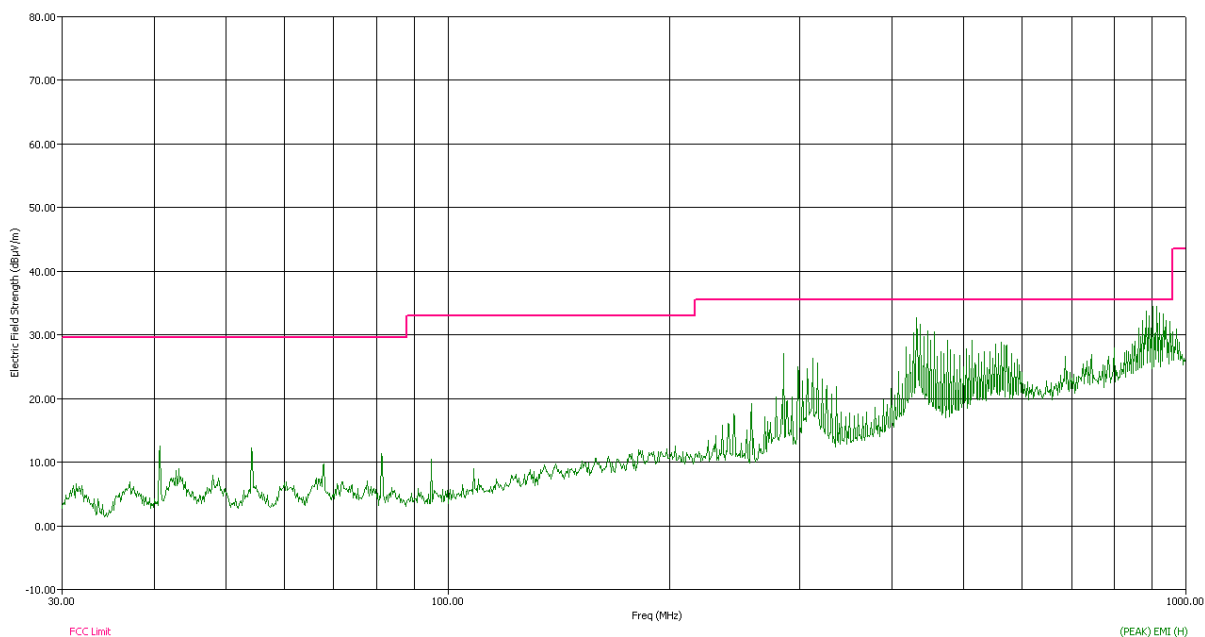


Figure 22: Peak RE from 30MHz to 1GHz - Horizontal polarization – Identive Cloud 4710F

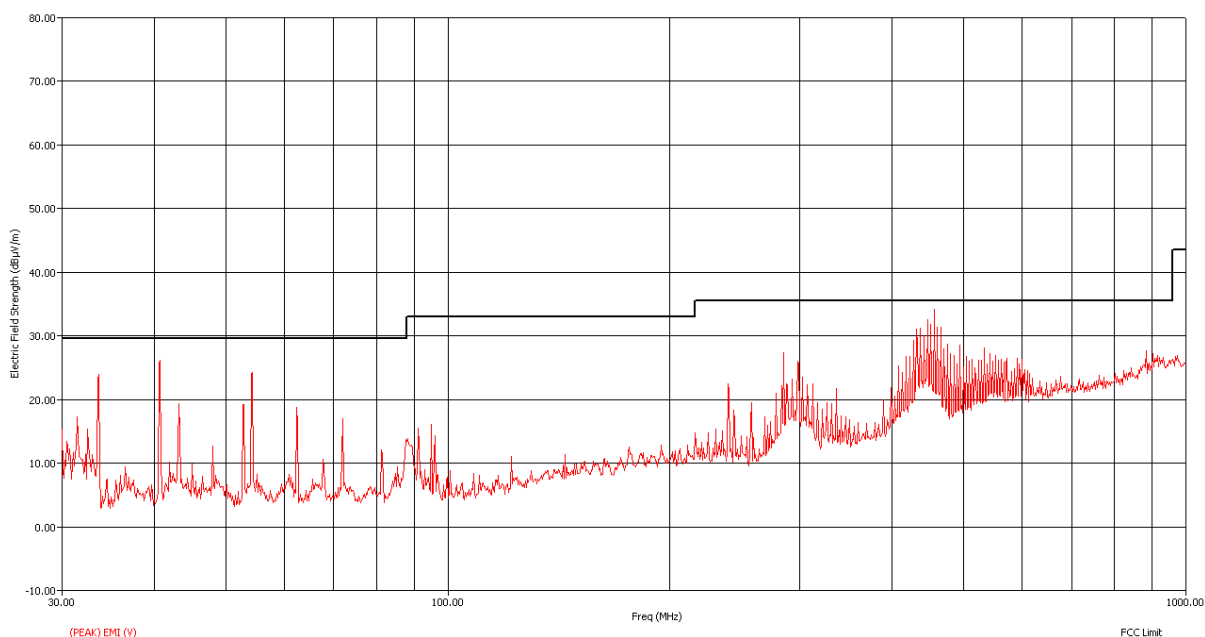


Figure 23: Peak RE from 30MHz to 1GHz - Vertical polarization – Identive Cloud 4710F

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Freq (MHz)	Freq (Max) (MHz)	Pol	EUT Test Angl (deg)	Twr Ht (cm)	(QP) Trace (dBμV)	Cable (dB)	Transducer (dB)	Preamp (dB)	(QP) EMI (dBμV/m)	(Z) Limit (dBμV/m)	(QP) Margin Lim2 (dB)
40.68	40.67	V	295.10	100.00	46.31	1.32	10.09	32.34	25.38	29.54	-4.16
54.23	54.24	V	24.00	314.00	43.52	1.50	9.44	32.33	22.13	29.54	-7.41
284.77	284.74	V	84.00	100.00	46.37	3.70	12.26	32.13	30.19	35.56	-5.37
432.00	432.02	H	59.00	194.00	43.35	4.48	16.32	32.39	31.76	35.56	-3.80
432.00	432.04	V	193.80	100.00	40.29	4.48	16.32	32.39	28.70	35.56	-6.86
446.44	446.42	V	311.40	100.00	41.33	4.66	16.69	32.28	30.41	35.56	-5.15
456.00	456.02	V	319.80	100.00	40.82	4.84	16.94	32.40	30.20	35.56	-5.36
683.24	683.24	H	278.10	104.00	35.84	6.64	22.77	31.74	33.51	35.56	-2.05
892.84	892.83	H	283.90	118.00	35.50	6.28	22.95	32.11	32.62	35.56	-2.94
902.44	902.43	H	281.90	100.00	36.44	6.46	23.08	31.95	34.02	35.56	-1.54
912.04	912.04	H	286.20	100.00	36.01	6.57	23.09	31.56	34.12	35.56	-1.44
921.64	921.66	H	299.50	103.00	35.15	6.54	23.10	31.51	33.29	35.56	-2.27
931.24	931.25	H	293.50	100.00	34.99	6.71	23.12	31.60	33.21	35.56	-2.35

Table 10: Quasi-peak table for RE from 30MHz to 1GHz – Identive Cloud 4710F

Note:

Quasi peak EMI (dBμV/m) = Quasi peak Trace (dBμV) + Cable (dB) + Transducer (dB/m) - Preamp (dB)

Quasi peak Margin (dB) = Quasi peak EMI (dBμV/m) – Quasi peak Limit (dBμV/m)

8.6 MEASUREMENT UNCERTAINTY

Following uncertainty level has been estimated for tests performed on the EUT as per CISPR 16-4:

Name of the test	Measurement Uncertainty
Radiated Emission: 9 kHz to 30MHz at 3 meter	±3.9808dB
Radiated Emission: 30 MHz to 1 GHz at 10 meter	±4.0882dB

8.7 RESULT

Radiated emissions are within the specified limits.

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Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

9 20DB BANDWIDTH MEASUREMENT

9.1 REFERENCE SECTION AND LIMITS

Standard	Reference section	Limits
FCC part 15 Subpart C: 10 th July 2008	15.215 (c)	Bandwidth to be restricted between 13.110 to 14.010 MHz

9.2 TEST SETUP

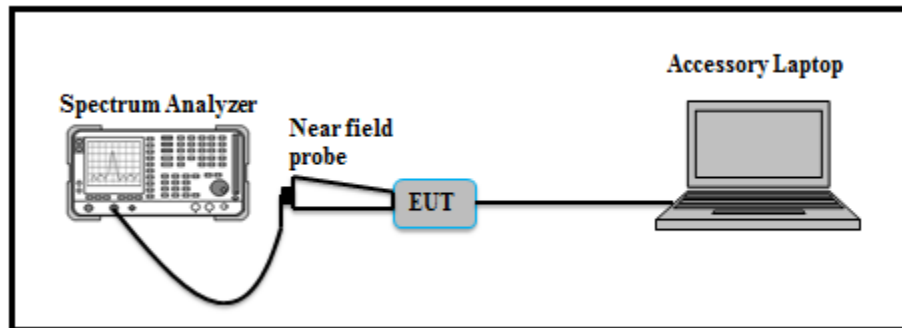


Figure 24: Sample test setup for 20dB Bandwidth measurement test

9.3 TEST PROCEDURE

The test procedure is in accordance with FCC part 15 Subpart C: 10th July 2008 & ANSI C63.4-2009. The near field probe output was connected to Spectrum Analyzer and the probe was kept in proximity to the EUT and the measurement was done at Max peak mode.

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Product Name	Identive CLOUD 47X0F
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9.4 MEASUREMENT DATA FOR IDENTIVE CLOUD 4700F

9.4.1 Test Conditions and supporting plots

Temperature (°C)	Input voltage (VDC)
20	5

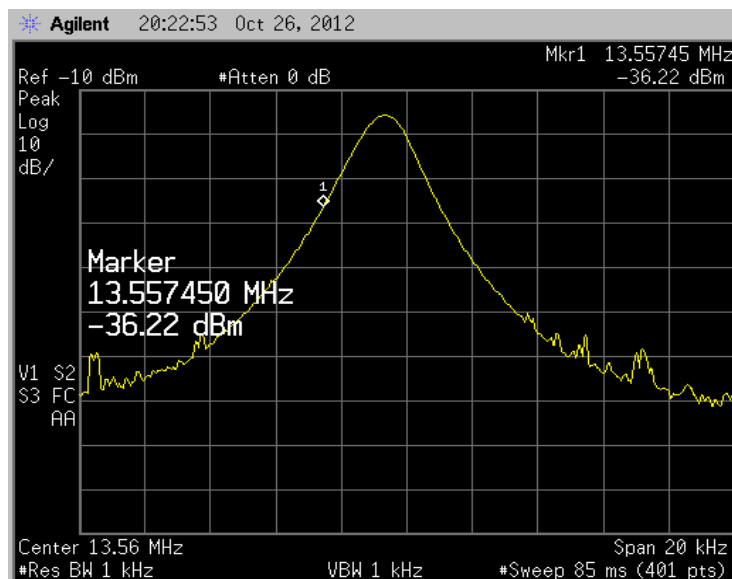


Figure 25: Measured f_L for 20dB Bandwidth

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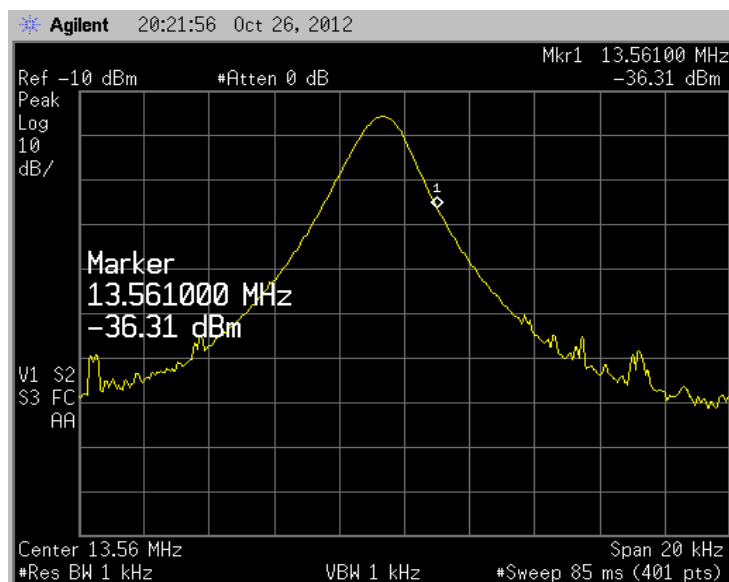


Figure 26: Measured f_H for 20dB Bandwidth

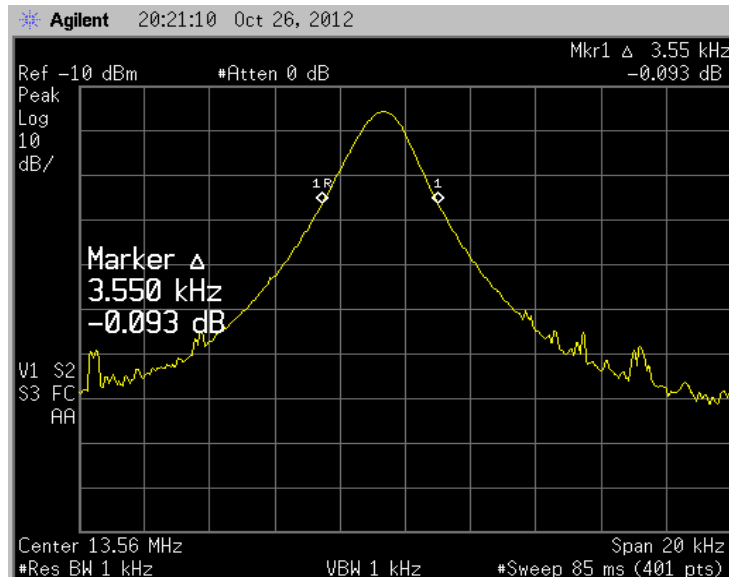


Figure 27: 20dB Bandwidth plot

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Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

9.5 MEASUREMENT DATA FOR IDENTIVE CLOUD 4710F

9.5.1 Test conditions and supporting plots

Temperature (°C)	Input voltage (VDC)
20	5



Figure 28: Measured f_L for 20dB Bandwidth

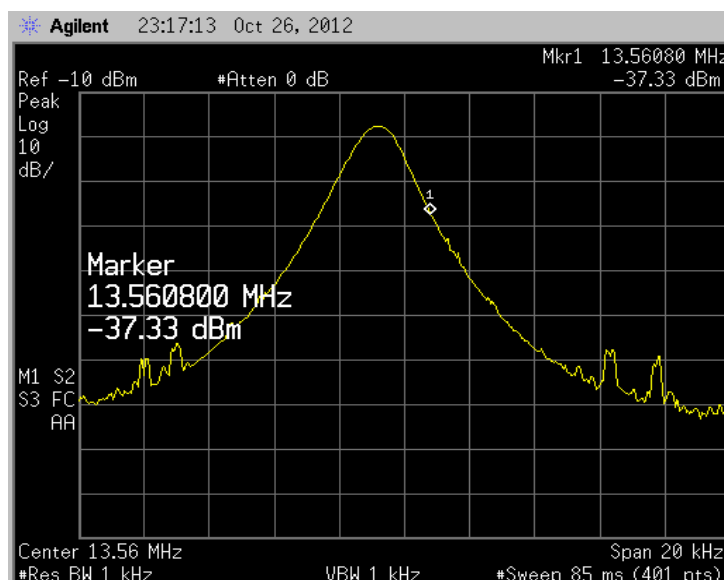


Figure 29: Measured f_H for 20dB Bandwidth

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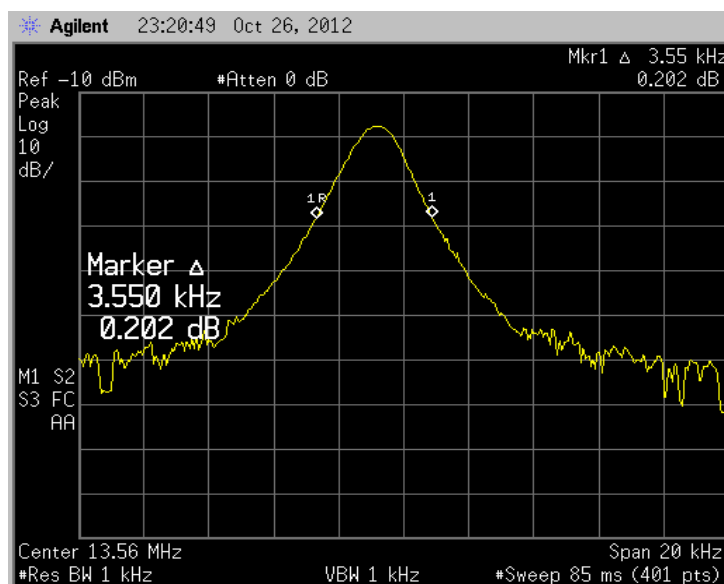


Figure 30: 20dB Bandwidth plot

9.6 RESULT

9.6.1 Identive Cloud 4700F

Frequency	20dB measured BW	Lower cut off frequency (f_L)	Higher cut off frequency (f_H)	Test Result
13.56MHz	3.550 kHz	13.55735MHz	13.561	Complies

9.6.2 Identive Cloud 4710F

Frequency	20dB measured BW	Lower cut off frequency (f_L)	Higher cut off frequency (f_H)	Test Result
13.56MHz	3.550 kHz	13.55735MHz	13.5608	Complies

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Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

10 OPERATION WITHIN THE BAND 13.110 – 14.010MHZ

10.1 CARRIER FIELD STRENGTH

10.1.1 Reference Section and Limits

Standard	Reference section
FCC part 15 Subpart C: 10 th July 2008	15.225 (a)

Limits

Frequency (MHz)	Limit (dB μ V/m) at 3m distance
13.553 to 13.567	123.99

10.1.2 Test setup

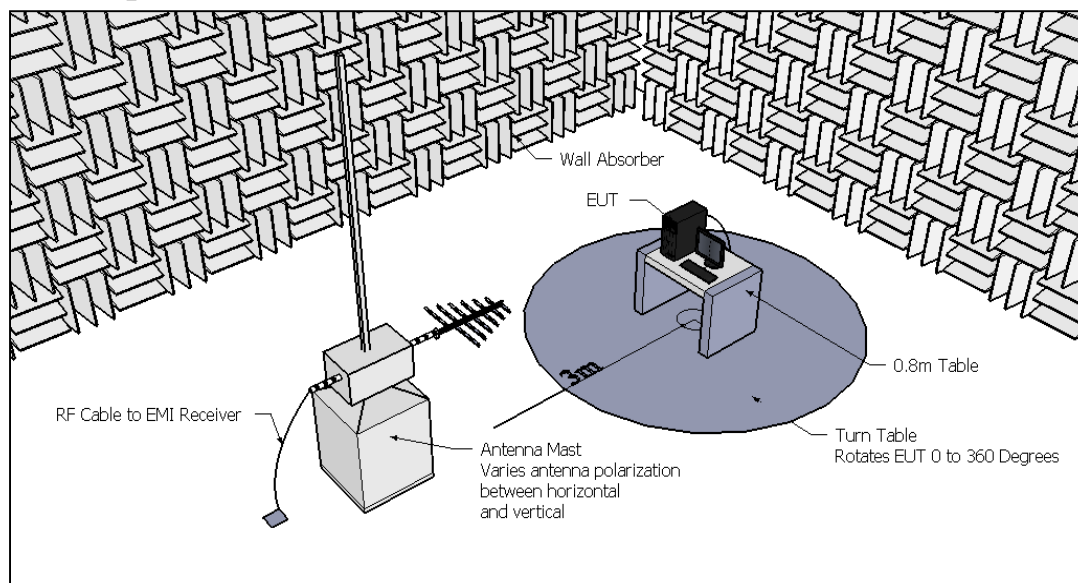


Figure 31: Sample test setup

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Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

10.1.3 Test procedure

The test procedure is in accordance with ANSI C63.4-2009.

The test was performed in a semi-anechoic chamber. The EUT was placed on a table of 0.8m high as described in the standard. The whole setup was placed on a turn table to enable 0 to 360 degree rotation. The edge of the EUT was located 3 meter away from the receiving antenna. The USB cable of the EUT was extended and connected to USB port of Accessory PC placed in the basement through a ferrite clamp (Model: EZ-24, mentioned in [Section 3.6](#)) with 2 turns (placed closer to the accessory PC) to avoid any noise from PC in the Radiated Emission measurement.

The radiated emission measurement test system was configured through software as per standard. The receiver is set to Quasi Peak detector and compared with the limits specified in the standard.

10.1.4 Measurement data for Identive Cloud 4700F

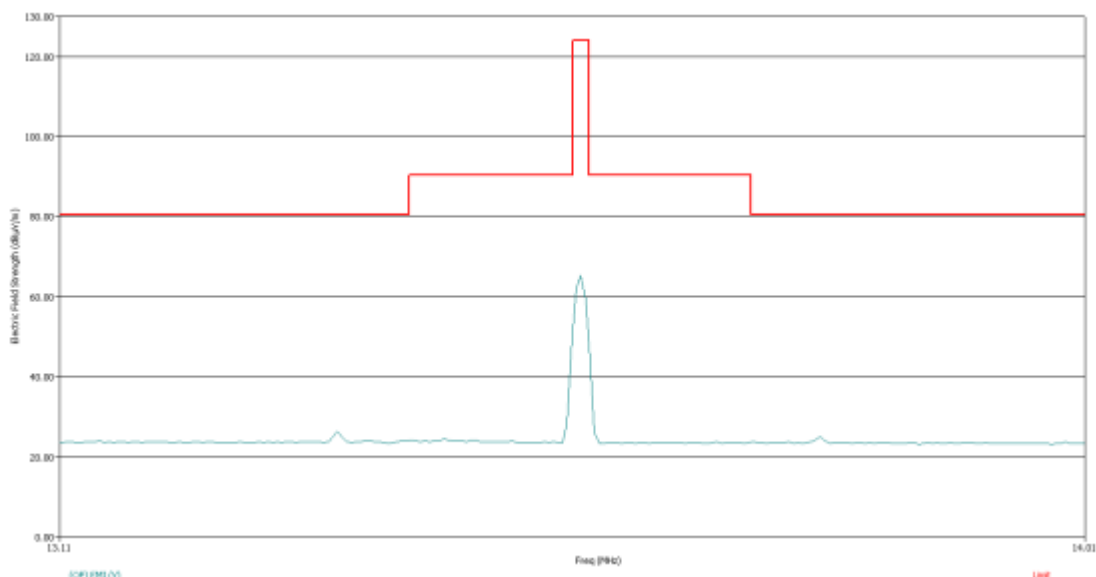


Figure 32: Carrier field strength measurement for Identive Cloud 4700F

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10.1.5 Measurement data for Identive Cloud 4710F

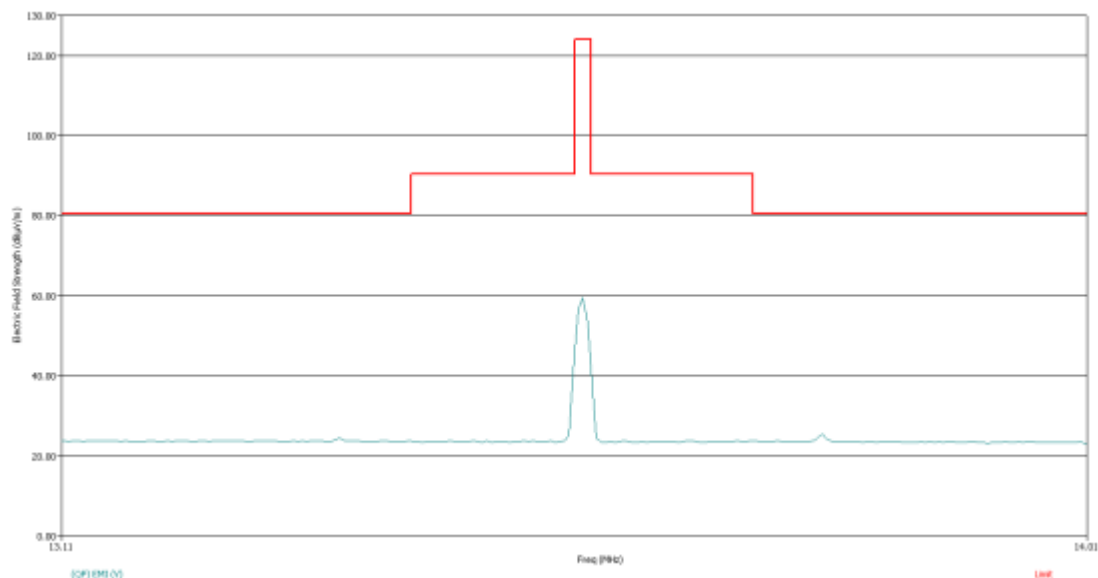


Figure 33: Carrier field strength measurement for Identive Cloud 4710F

10.1.6 Measurement Uncertainty

Following uncertainty level has been estimated for tests performed on the EUT as per CISPR 16-4:

Name of the test	Measurement Uncertainty
Radiated Emission: 9 kHz to 30MHz at 3meter	$\pm 3.9808\text{dB}$

10.1.7 Result

The carrier field strength from both Identive Cloud 4700F & Identive Cloud 4710F are within the limits specified in the standard.

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Product Name	Identive CLOUD 47X0F
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10.2 FREQUENCY STABILITY OF THE CARRIER

10.2.1 Reference Section and Limits

Standard	Reference section
FCC part 15 Subpart C: 10 th July 2008	15.225 (e)

Limit:

The frequency tolerance of the carrier signal shall be maintained within $\pm 0.01\%$ of the operating frequency over a temperature variation of -20 degrees to $+50$ degrees C at normal supply voltage, and for a variation in the primary supply voltage from 85% to 115% of the rated supply voltage at a temperature of 20 degrees C.

Note: Manufacturer specified the EUT operating temperature range as 0°C to 50°C . So the above test has been performed only from 0°C to 50°C .

10.2.2 Test Setup

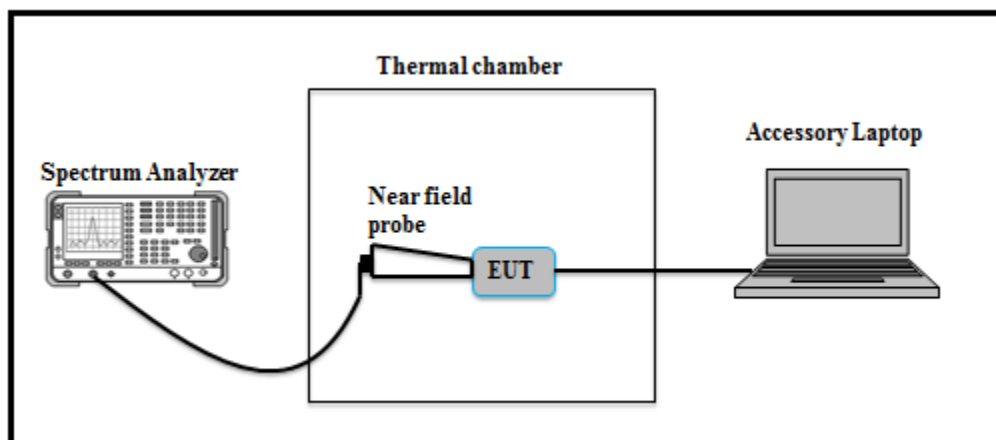


Figure 34: Sample test setup for Frequency stability measurement

10.2.3 Test procedure

The test procedure is in accordance with FCC part 15: 10th July 2008 & ANSI C63.4-2009. The EUT was placed in a thermal chamber with required specifications. The EUT was initially configured to fully working condition and the temperature was set to 20°C . The carrier frequency was measured in the Spectrum Analyzer at 5VDC (Nominal), 4.25VDC (85% of nominal) & 5.75VDC (115% of nominal) as specified in the standard.

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Later the input voltage was fixed to nominal (5VDC) and the carrier frequency measurement was taken at 0°C, 20°C & 50°C as specified in the standard. The same procedure has been followed for both Identive Cloud 4700F & Identive Cloud 4710F.

10.2.4 Measurement data for Identive Cloud 4700F



Figure 35: Carrier Frequency at 20°C for 5VDC input voltage

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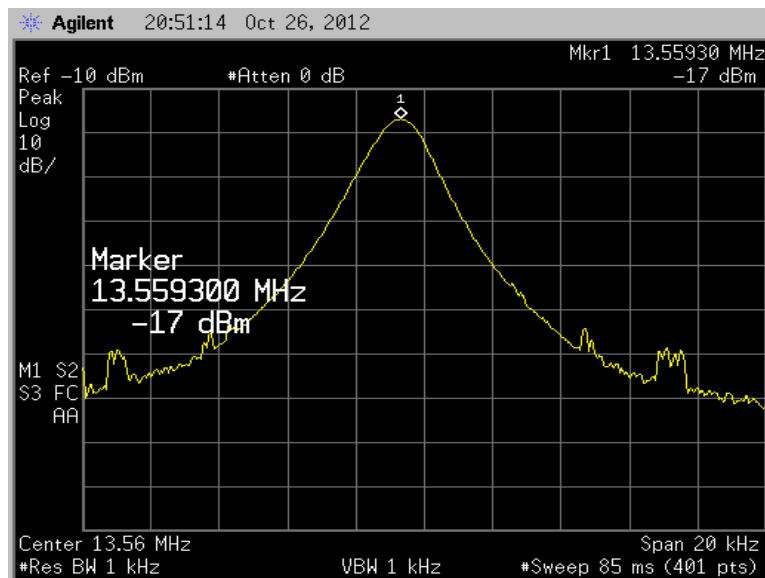


Figure 36: Carrier Frequency at 50°C for 5VDC input voltage

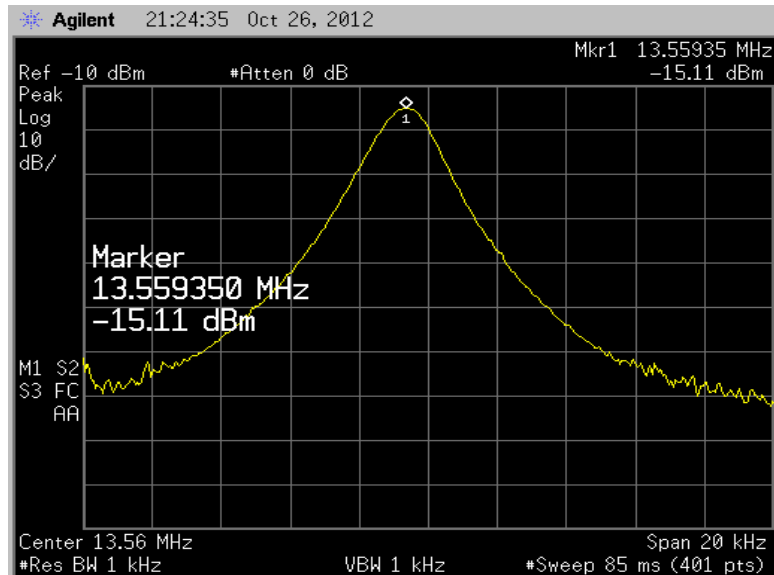


Figure 37: Carrier Frequency at 0°C for 5VDC input voltage

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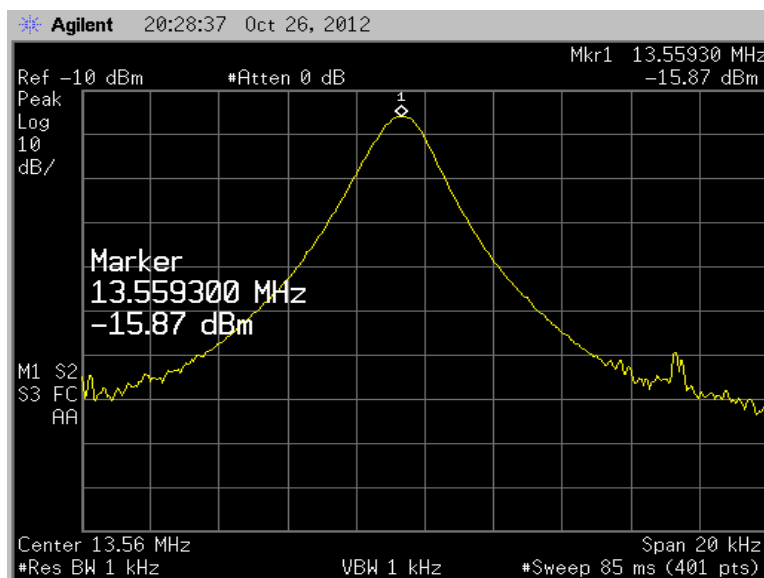


Figure 38: Carrier Frequency at 20°C for 4.25VDC input voltage

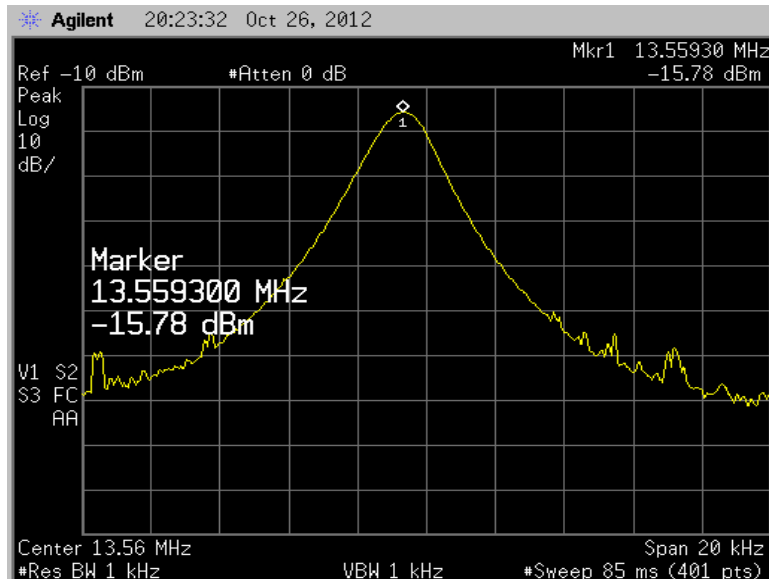


Figure 39: Carrier Frequency at 20°C for 5VDC input voltage

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Figure 40: Carrier Frequency at 20°C for 5.75VDC input voltage

10.2.5 Measurement data for Identive Cloud 4710F



Figure 41: Carrier Frequency at 20°C for 5VDC input voltage

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Figure 42: Carrier Frequency at 50°C for 5VDC input voltage

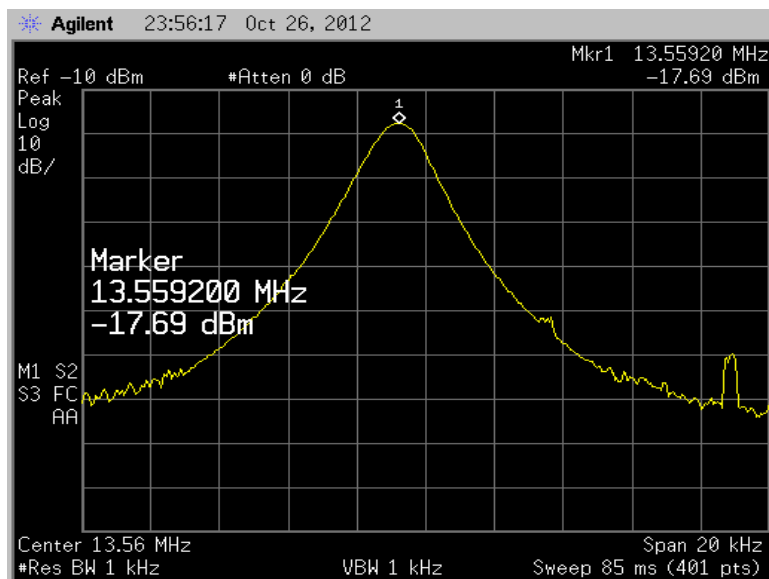


Figure 43: Carrier Frequency at 0°C for 5VDC input voltage

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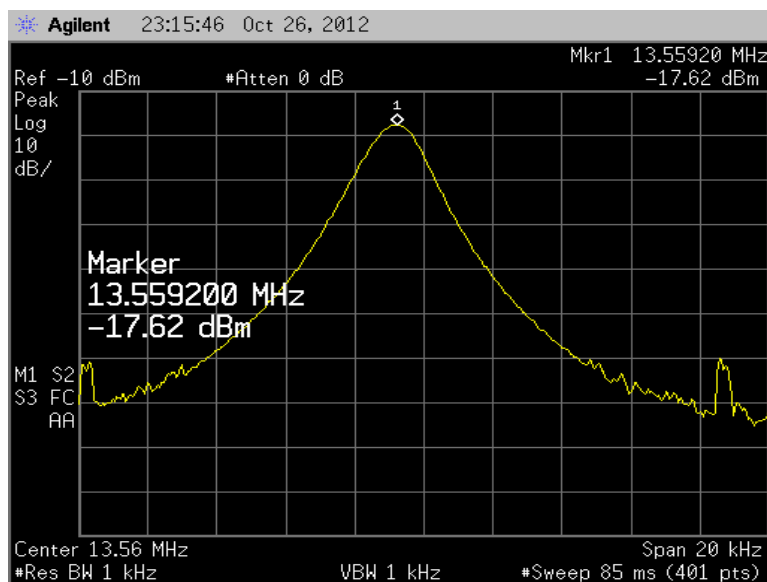


Figure 44: Carrier Frequency at 20°C for 5VDC input voltage

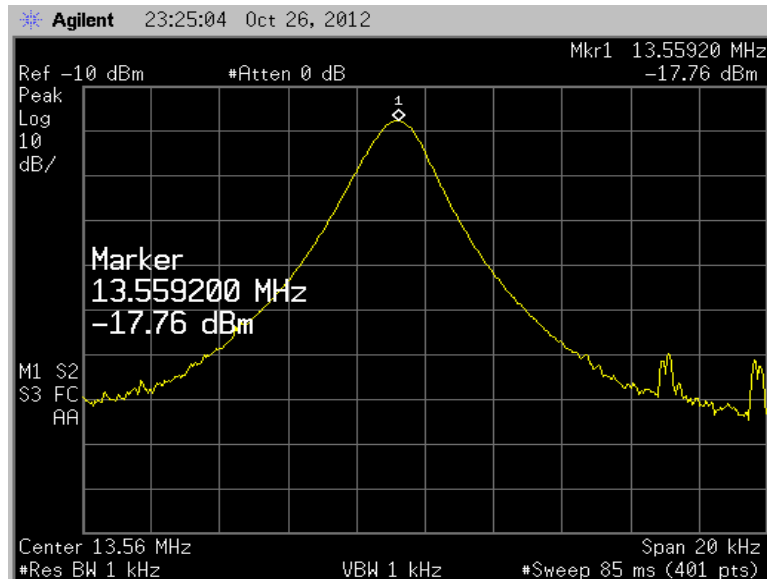


Figure 45: Carrier Frequency at 20°C for 4.25VDC input voltage

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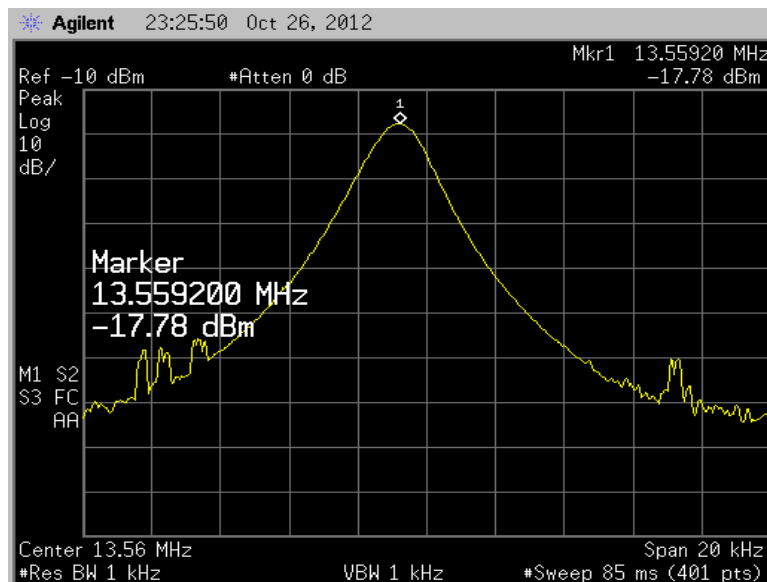


Figure 46: Carrier Frequency at 20°C for 5.75VDC input voltage

10.2.6 Result

Identive Cloud 4700F Voltage vs Frequency stability at 20°C

Input voltage (VDC)	Carrier frequency (MHz)
4.25	13.5593
5.00	13.5593
5.75	13.5593

Identive Cloud 4700F Temperature vs Frequency stability at 5VDC

Temperature (°C)	Carrier frequency (MHz)
0	13.55935
20	13.5593
50	13.5593

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FCC ID	MBPCLOUD47X0F-001

Identive Cloud 4710F Voltage vs Frequency stability at 20°C

Input voltage (VDC)	Carrier frequency (MHz)
4.25	13.5592
5.00	13.5592
5.75	13.5592

Identive Cloud 4710F Temperature vs Frequency stability at 5VDC

Temperature (°C)	Carrier frequency (MHz)
0	13.5592
20	13.5592
50	13.55915

The frequency stability of Identive Cloud 4700F & Identive Cloud 4710F are within the limits specified in the standard.

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Report Number	JHN 1243ITE334
Date	15th Nov 2012

Product Name	Identive CLOUD 47X0F
FCC ID	MBPCLOUD47X0F-001

11 ANNEXURE I: ABBREVIATIONS AND ACRONYMS

A	Ampere
ANSI	American National Standards Institute
BW	Bandwidth
CE	Conducted Emission
CISPR	International Special Committee On Radio Interference
CSA	Canadian Standards Association
dB	Decibel
EMC	Electromagnetic Compatibility
EMI	Electro Magnetic Interference
EUT	Equipment Under Test
FCC	Federal Communications Commission
GRP	Ground Reference Plane
NA	Not Applicable
PC	Personal Computer
QP	Quasi-peak
RE	Radiated Emission
USB	Universal Serial Bus
VDC	Volts Direct Current
W	Watts

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