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Report On

FCC Testing of the
Broadcast Sports Inc IDT-4349-3U
In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 90

COMMERCIAL-IN-CONFIDENCE

FCC ID: KTB-IDT43493U

Document 75925552 Report 01 Issue 1

April 2014



Product Service

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COMMERCIAL-IN-CONFIDENCE

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FCC Testing of the
Broadcast Sports Inc IDT-4349-3U
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Document 75925552 Report 01 Issue 1

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PREPARED FOR

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PREPARED BY

Natalie Bennett
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APPROVED BY

Ryan Henley
Authorised Signatory

DATED

16 April 2014

ENGINEERING STATEMENT

The measurements shown in this report were made in accordance with the procedures described on test pages. All reported testing was carried out on a sample equipment to demonstrate limited compliance with FCC CFR 47 Part 2 and FCC CFR 47 Part 90. The sample tested was found to comply with the requirements defined in the applied rules.

Test Engineer(s);

G Lawler

S Milliken





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Product Service

SECTION 1

REPORT SUMMARY

FCC Testing of the
Broadcast Sports Inc IDT-4349-3U
In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 90



Product Service

1.1 INTRODUCTION

The information contained in this report is intended to show verification of the FCC Testing of the Broadcast Sports Inc IDT-4349-3U to the requirements of FCC CFR 47 Part 2 and FCC CFR 47 Part 90.

Objective	To perform FCC Testing to determine the Equipment Under Test's (EUT's) compliance with the Test Specification, for the series of tests carried out.
Manufacturer	Broadcast Sports Inc
Model Number(s)	IDT-4349-3U
Serial Number(s)	900802 900801
Number of Samples Tested	2
Test Specification/Issue/Date	FCC CFR 47 Part 2 (2013) FCC CFR 47 Part 90 (2013)
Incoming Release Date	Application Form 27 March 2014
Disposal Reference Number Date	Held Pending Disposal Not Applicable Not Applicable
Order Number Date	UK00000 30 January 2014
Start of Test	3 March 2014
Finish of Test	19 March 2014
Name of Engineer(s)	G Lawler S Milliken
Related Document(s)	ANSI C63.4: 2009



1.2 BRIEF SUMMARY OF RESULTS

A brief summary of the tests carried out in accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 90 is shown below.

Section	Spec Clause		Test Description	Result	Comments/Base Standard
	Pt 2	Pt 90			
Transmit					
2.1	2.1046	90.205	Effective Radiated Power	Pass	
2.2	2.1047	90.207	Type of Emissions	Pass	
2.3	2.1049	90.209	Bandwidth Limitations	Pass	
2.4	2.1051	90.210	Emission Mask	Pass	
2.5	2.1055	90.213	Frequency Stability	Pass	
2.6	2.1046	90.205	Power and Antenna Height Limits	Pass	
2.7	-	90.214	Transient Frequency Behaviour	Pass	



1.3 APPLICATION FORM

APPLICANT'S DETAILS			
COMPANY NAME :	Broadcast Sports Inc		
ADDRESS :	Axis 3, Rhodes Way, Watford Hertfordshire WD24 4YW		
NAME FOR CONTACT PURPOSES :	David Witts		
TELEPHONE NO:	01932 233406	FAX NO:	01932 750565
		E-MAIL:	davidw@bsiuk.com

EQUIPMENT INFORMATION			
Model name/number	IDT-4349-3U	Identification/Part number	900800,900801
Hardware Version	Rev C	Software Version	1.0
Manufacturer	Broadcast Sports Inc	Country of Origin	UK
FCC ID	KTB-IDT43493U.	Industry Canada ID	N/A
Technical description (a brief description of the intended use and operation)			
Allows remote control of up to 6 Remote wireless Cameras via the Receiver			
<u>Supply Voltage:</u>			
<input type="checkbox"/>	AC mains	State AC voltage	V and AC frequency
<input checked="" type="checkbox"/>	DC (external)	State DC voltage	24 V and DC current 0.9 A
<input type="checkbox"/>	DC (internal)	State DC voltage	V and Battery type
<u>Frequency characteristics:</u>			
Transmitter Frequency range	430 MHz to 490 MHz	Channel spacing	(if channelized)
Receiver Frequency range		Channel spacing	(if channelized)
Designated test frequencies:			
Bottom: 430 MHz	Middle: 450 MHz	Top: 490 MHz	
Intermediate Frequencies :	n/a		
Highest Internally Generated Frequency :	490 MHz		
<u>Power characteristics:</u>			
Maximum transmitter power	4W	Minimum transmitter power	100mW (if variable)
<input checked="" type="checkbox"/>	Continuous transmission	State duty cycle	
<input type="checkbox"/>	Intermittent transmission	State duty cycle	
	If intermittent, can transmitter be set to continuous transmit test mode? Y/N		
<u>Antenna characteristics:</u>			
<input checked="" type="checkbox"/>	Antenna connector	State impedance	50 ohm
<input type="checkbox"/>	Temporary antenna connector	State impedance	ohm
<input type="checkbox"/>	Integral antenna Type	State gain	dBi
<input checked="" type="checkbox"/>	External Antenna Type : Omni directional	State gain	0 dBi
<u>Modulation characteristics:</u>			
<input type="checkbox"/>	Amplitude	<input type="checkbox"/>	Other
<input checked="" type="checkbox"/>	Frequency	Details: GMSK.	
<input type="checkbox"/>	Phase	(GMSK, QSPK etc)	
Can the transmitter operate un-modulated?	NO		
ITU Class of emission: 11K2F1D			
<u>Battery/Power Supply</u>			
Model name/number	.....	Identification/Part number	.....
Manufacturer	.....	Country of Origin	.....
<u>Ancillaries (if applicable)</u>			
Model name/number	.....	Identification/Part number	.....
Manufacturer	.....	Country of Origin	.....
<u>Extreme conditions:</u>			
Maximum temperature	+55°C	Minimum temperature	-10°C
Maximum supply voltage	36 V	Minimum supply voltage	9 V



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I hereby declare that I am entitled to sign on behalf of the applicant and that the information supplied is correct and complete.

Signature : 

Name : ADAM TENDER

Position held : ENGINEERING DIRECTOR

Date : 27 MARCH 2014



Product Service

1.4 PRODUCT INFORMATION

1.4.1 Technical Description

The Equipment Under Test (EUT) was a Broadcast Sports Inc IDT-4349-3U. A full technical description can be found in the manufacturer's documentation.

1.5 TEST CONDITIONS

For all tests the EUT was set up in accordance with the relevant test standard and to represent typical operating conditions. Tests were applied with the EUT situated in a shielded enclosure.

The EUT was powered from a 24 V DC supply.

FCC Measurement Facility Registration Number 90987 Octagon House, Fareham Test Laboratory

1.6 DEVIATIONS FROM THE STANDARD

No deviations from the applicable test standard were made during testing.

1.7 MODIFICATION RECORD

Modification State	Description of Modification still fitted to EUT	Modification Fitted By	Date Modification Fitted
Serial Number: 900802			
0	As supplied by manufacturer.	N/A	N/A
1	The data packet preamble has been disabled in the product's software.	Broadcast Sports Inc	14 March 2014
Serial Number: 900801			
0	As supplied by manufacturer.	N/A	N/A
1	The product software has been modified to amplify the RF output power consistently when the transmitter is switched on.	Broadcast Sports Inc	03 March 2014

The table above details modifications made to the EUT during the test programme. The modifications incorporated during each test are recorded on the appropriate test pages.



Product Service

SECTION 2

TEST DETAILS

FCC Testing of the
Broadcast Sports Inc IDT-4349-3U
In accordance with FCC CFR 47 Part 2 and FCC CFR 47 Part 90



Product Service

2.1 EFFECTIVE RADIATED POWER

2.1.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 90, Clause 90.205

2.1.2 Equipment Under Test and Modification State

IDT-4349-3U S/N: 900802 - Modification State 1

2.1.3 Date of Test

19 March 2014

2.1.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.1.5 Test Procedure

Measurements of the fundamental from the EUT were obtained with the Measurement Antenna in both Horizontal and Vertical Polarisation. The fundamental frequency was maximised by adjusting the antenna height, antenna polarisation and turntable azimuth. A peak detector was used with the trace set to max hold. The maximum result was recorded.

The EUT was then removed from the chamber and replaced with a substitution antenna. Using a signal generator the level was adjusted to achieve the same value on the measuring instrument as previously recorded with the EUT. The final result (ERP) was determined by a calculation using the signal generator level, antenna gain and cable loss.

The measurements were performed at a 3m distance unless otherwise stated.

2.1.6 Environmental Conditions

Ambient Temperature	21.2°C
Relative Humidity	33.0%



Product Service

2.1.7 Test Results

24 V DC Supply

Frequency	Result (dBm)	Result (W)
430 MHz	30.94	1.242
450 MHz	27.65	0.582
490 MHz	24.36	0.273

Limit

There is not an RF power limit for portable devices under Part 90 in the 450-470 MHz band. The limit will be based on compliance with SAR requirements. This could range from 200 mW up to 5 watts depending upon the design used to meet SAR limits. But this is not an RF power limit by rule, but it is a limit by circumstance.



Product Service

2.2 TYPE OF EMISSIONS

2.2.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1047
FCC CFR 47 Part 90, Clause 90.207

2.2.2 Equipment Under Test and Modification State

IDT-4349-3U S/N: 900801 - Modification State 0

2.2.3 Date of Test

11 March 2014

2.2.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.2.5 Test Procedure

The EUT antenna port was connected to a spectrum analyser through a 30dB attenuator and configured to transmit with modulation. The transmitted signals from the EUT were demodulated using a frequency demodulation function on the spectrum analyser; which allows the frequency deviation to be measured in time. The observed modulation measurements were recorded and assessed against the requirements of FCC CFR 47 90.207.

2.2.6 Environmental Conditions

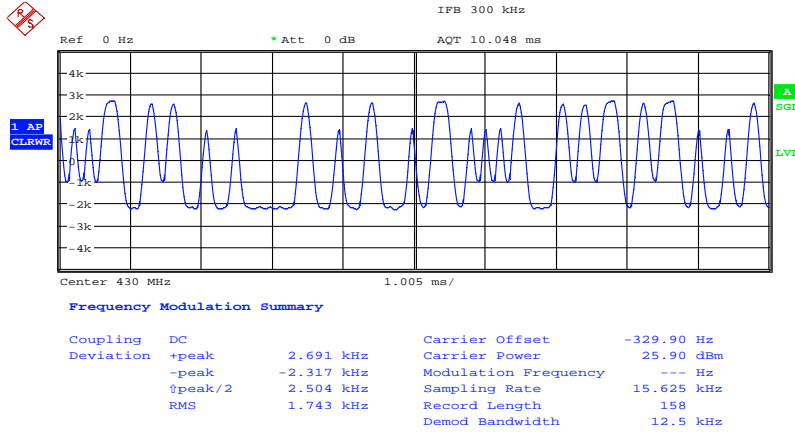
Ambient Temperature	24.1°C
Relative Humidity	32.7%



Product Service

2.2.7 Test Results

24 V DC Supply



Date: 11.MAR.2014 16:30:48

The class of the emission has been declared as 11K2F1D and has been authorised for use in accordance with 90.207.



Product Service

2.3 BANDWIDTH LIMITATIONS

2.3.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1049
FCC CFR 47 Part 90, Clause 90.209

2.3.2 Equipment Under Test and Modification State

IDT-4349-3U S/N: 900801 - Modification State 0

2.3.3 Date of Test

11 March 2014

2.3.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.3.5 Test Procedure

The EUT antenna port was connected to a spectrum analyser through a 30dB attenuator and configured to transmit with modulation on its maximum power setting. An occupied bandwidth measurement function of the spectrum analyser was used to measure the 99% occupied bandwidth of the fundamental emission in conjunction with the spectrum analyser set to peak hold, 500 Hz resolution bandwidth and 2 kHz video bandwidth. The observed occupied bandwidth measurements were recorded and assessed against the requirements of FCC CFR 47 90.209.

2.3.6 Environmental Conditions

Ambient Temperature	23.7°C
Relative Humidity	25.0%



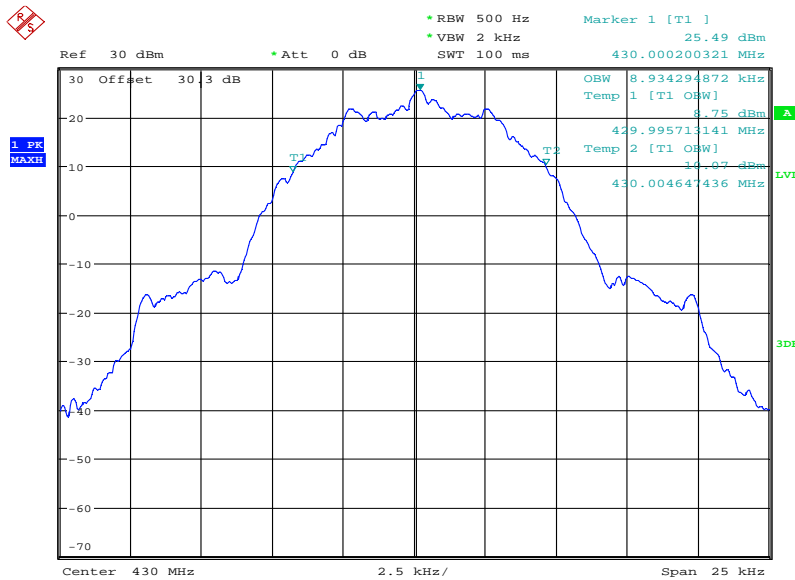
Product Service

2.3.7 Test Results

24 V DC Supply

Frequency	Occupied Bandwidth (kHz)
430 MHz	8.934
450 MHz	8.934
490 MHz	8.974

430 MHz

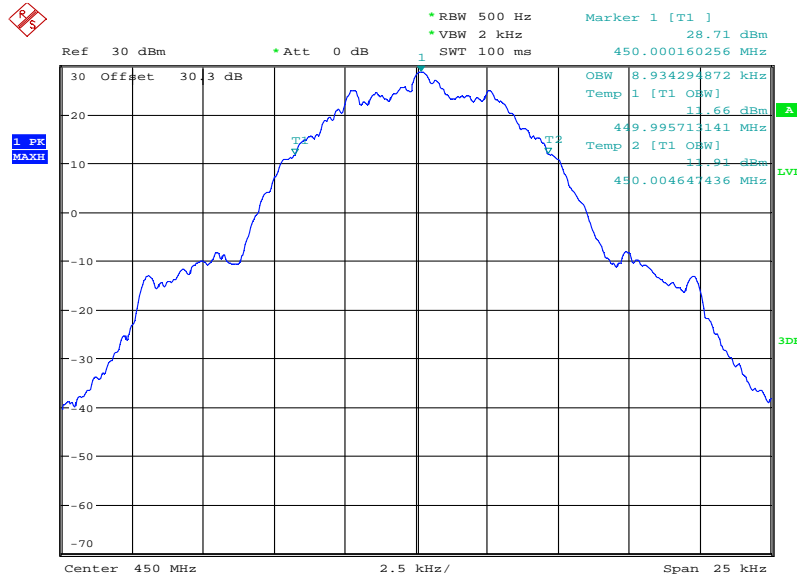


Date: 11.MAR.2014 17:53:32



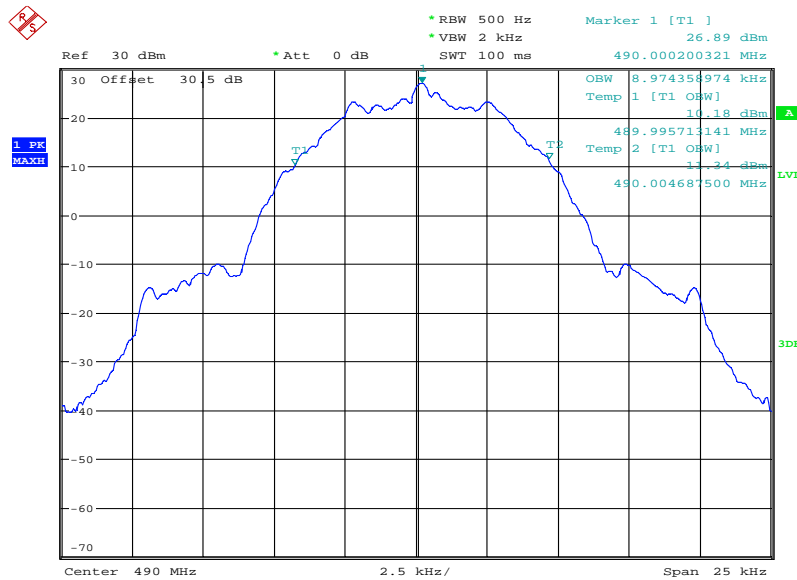
Product Service

450 MHz



Date: 11.MAR.2014 17:52:31

490 MHz



Date: 11.MAR.2014 17:50:59

Limit

< 11.25 kHz



Product Service

2.4 EMISSION MASK

2.4.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1051
FCC CFR 47 Part 90, Clause 90.210

2.4.2 Equipment Under Test and Modification State

IDT-4349-3U S/N: 900802 - Modification State 1

2.4.3 Date of Test

14 March 2014 & 19 March 2014

2.4.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.4.5 Test Procedure

The EUT antenna port was connected to a spectrum analyser through a 30dB attenuator and configured to transmit with modulation at its maximum power setting. The path loss between the EUT and the spectrum analyser was entered as an amplitude offset in the spectrum analyser. The resulting emissions measurements were peak EIRP measurements. Emissions measurements were conducted between a frequency range of 9 kHz and 5 GHz inclusive.

Emissions contained within ± 50 kHz removed from the authorised band edge were measured with 100 Hz and 300 Hz resolution and video bandwidths respectively.

Emissions less than 1 GHz and outside ± 50 kHz removed from the authorised band edge were measured with 100 kHz and 300 kHz resolution and video bandwidths respectively.

Emissions greater than 1 GHz and outside ± 50 kHz removed from the authorised band edge were measured with 1 MHz and 3 MHz resolution and video bandwidths respectively.

The observed peak emissions measurements were recorded and assessed against the requirements of FCC CFR 47 90.210.

2.4.6 Environmental Conditions

Ambient Temperature	21.2 - 22.9°C
Relative Humidity	29.3 - 33.0%



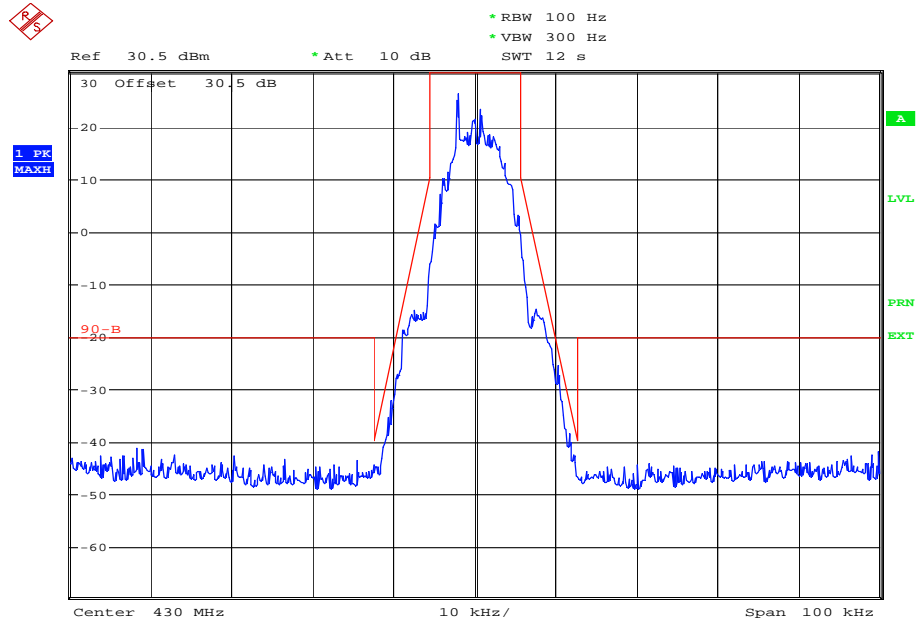
Product Service

2.4.7 Test Results

24 V DC

Conducted

430 MHz

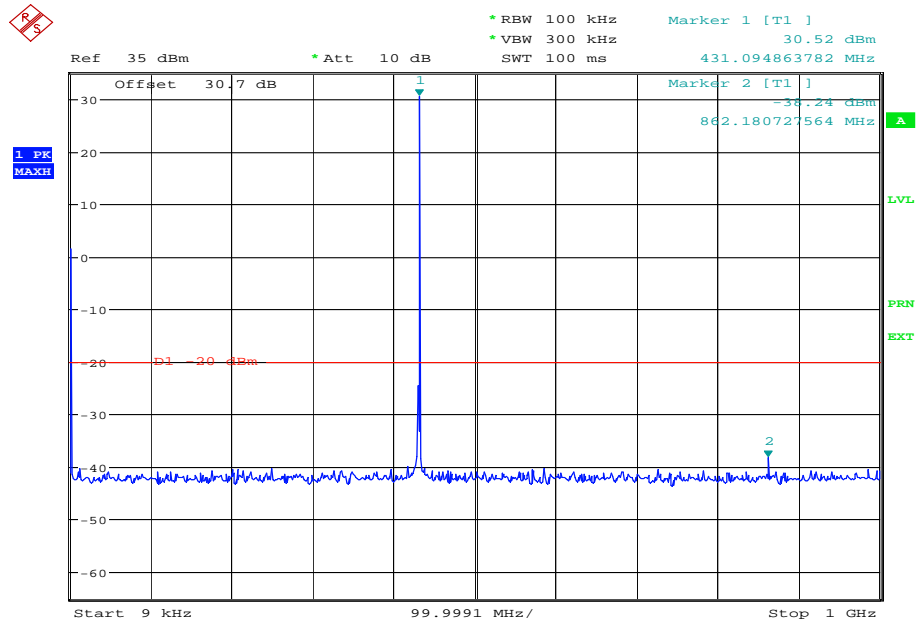


Date: 14.MAR.2014 11:17:29



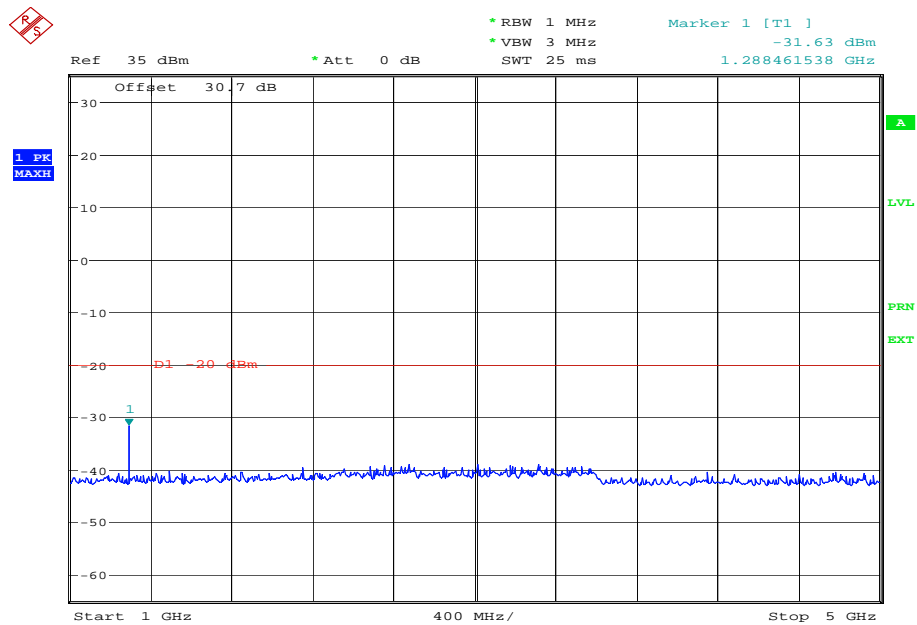
Product Service

30 MHz to 1 GHz



Date: 14.MAR.2014 11:35:31

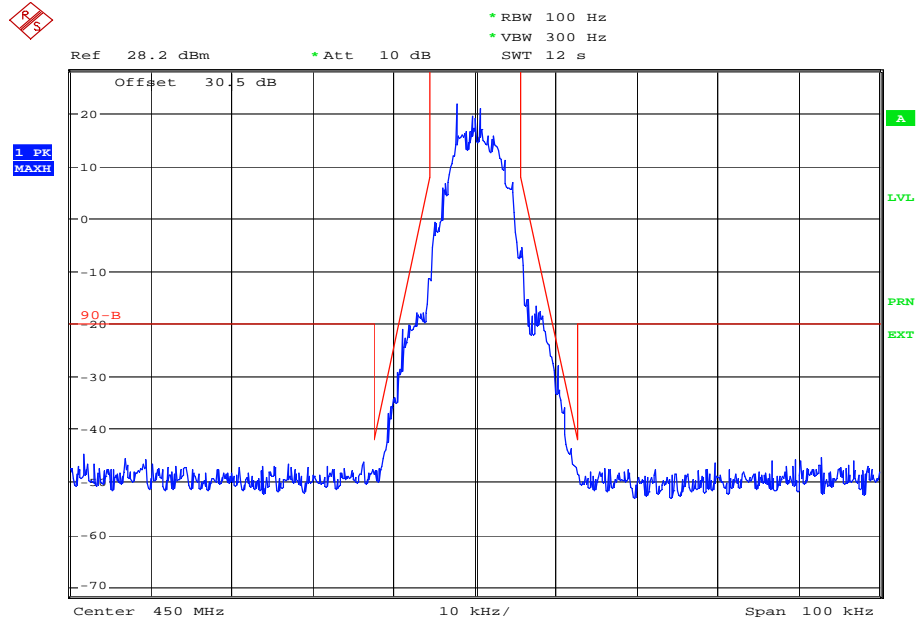
1 GHz to 5 GHz



Date: 14.MAR.2014 11:39:45

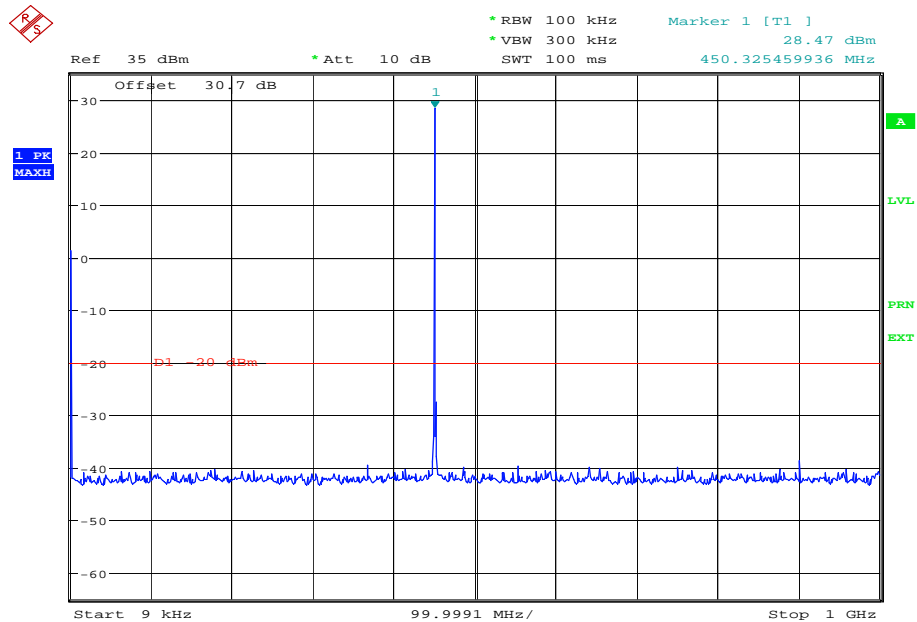


450 MHz



Date: 14.MAR.2014 11:23:12

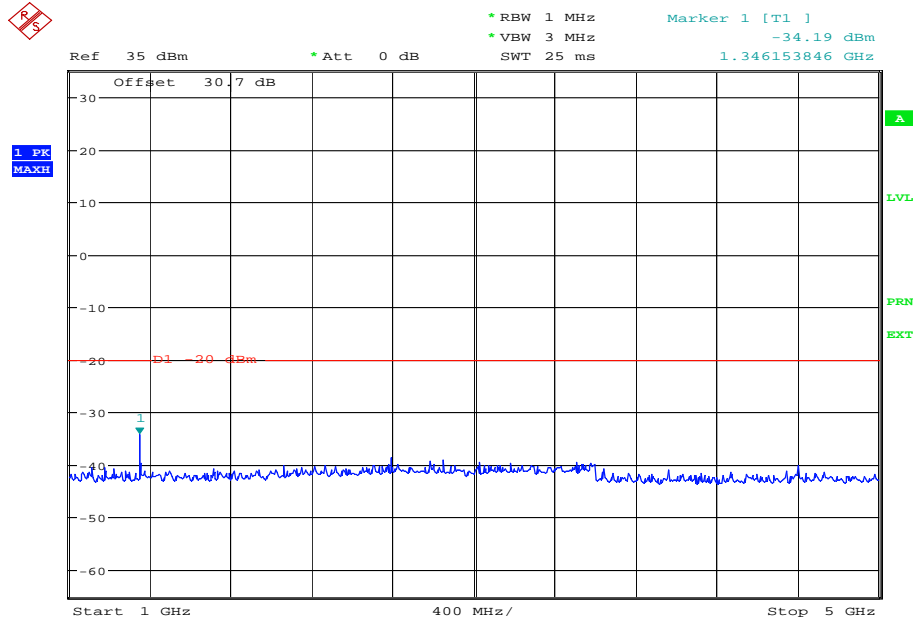
30 MHz to 1 GHz



Date: 14.MAR.2014 11:36:14

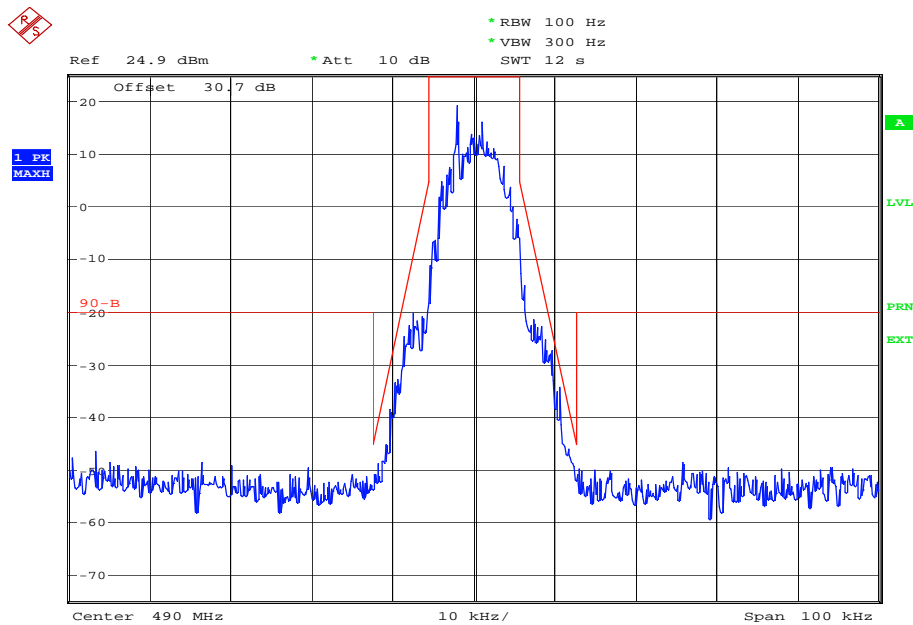


1 GHz to 5 GHz



Date: 14.MAR.2014 11:39:03

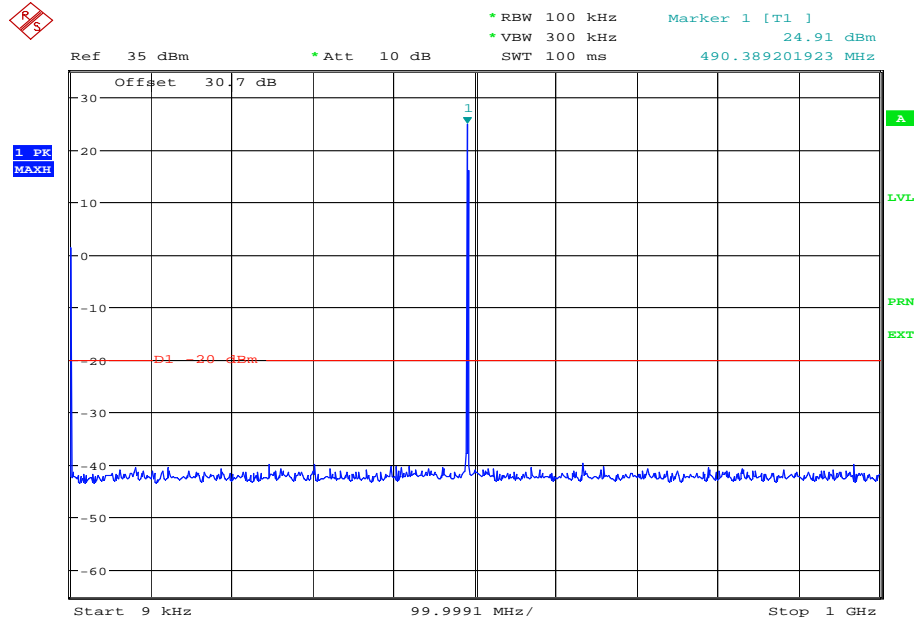
490 MHz



Date: 14.MAR.2014 11:28:04

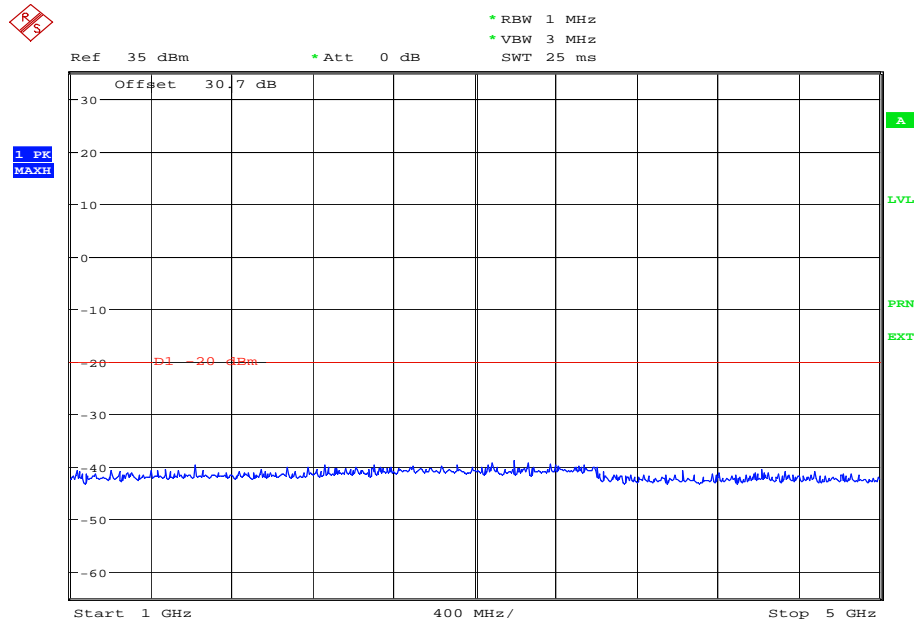


30 MHz to 1 GHz



Date: 14.MAR.2014 11:37:30

1 GHz to 5 GHz



Date: 14.MAR.2014 11:38:32

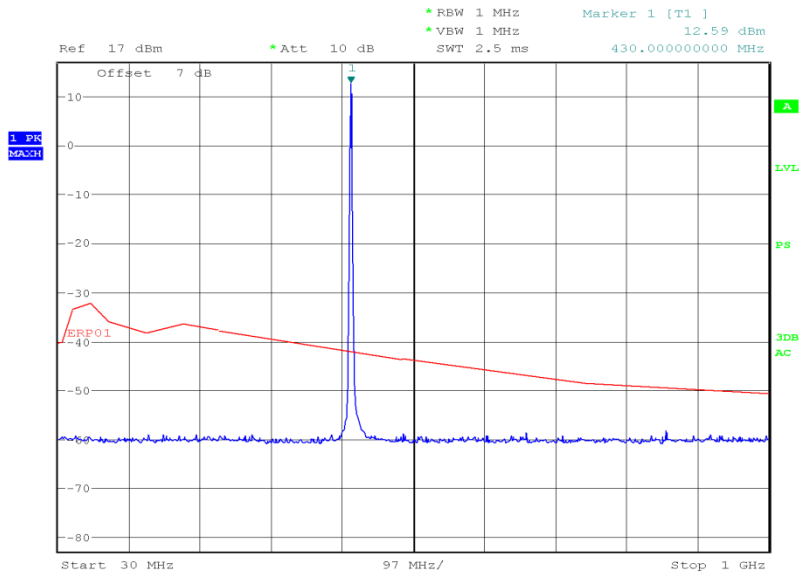


Product Service

Radiated

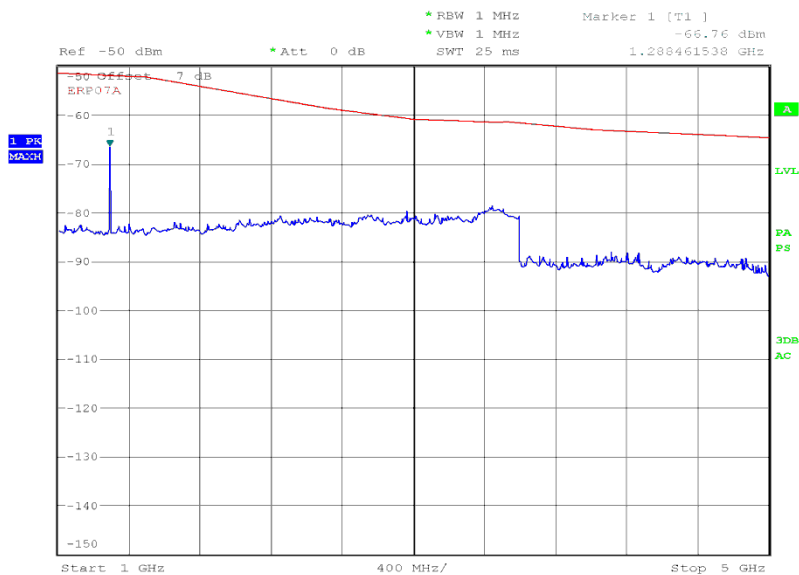
430 MHz

30 MHz to 1 GHz



Date: 19.MAR.2014 20:09:23

1 GHz to 5 GHz

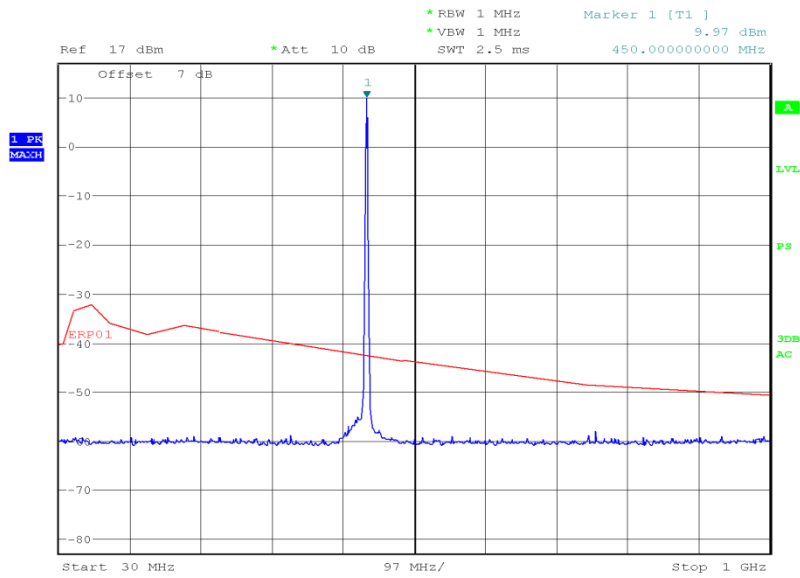


Date: 19.MAR.2014 19:23:10



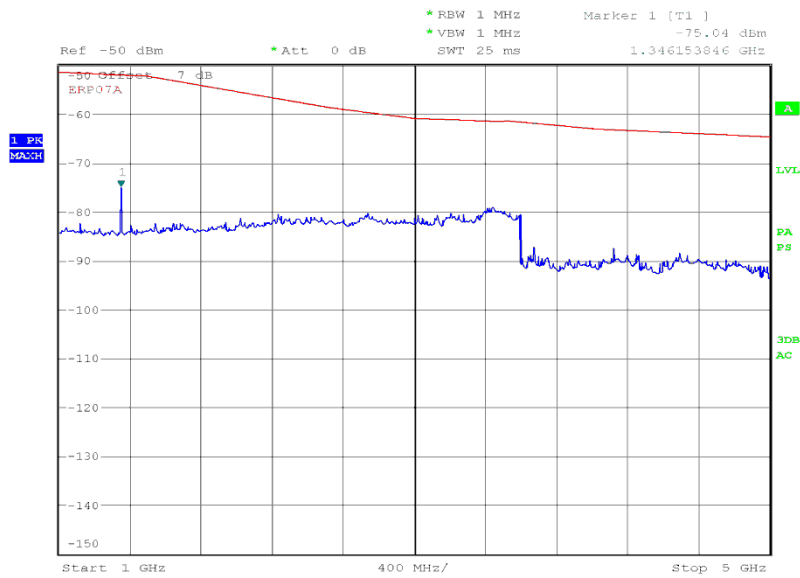
450 MHz

30 MHz to 1 GHz



Date: 19.MAR.2014 20:21:39

1 GHz to 5 GHz

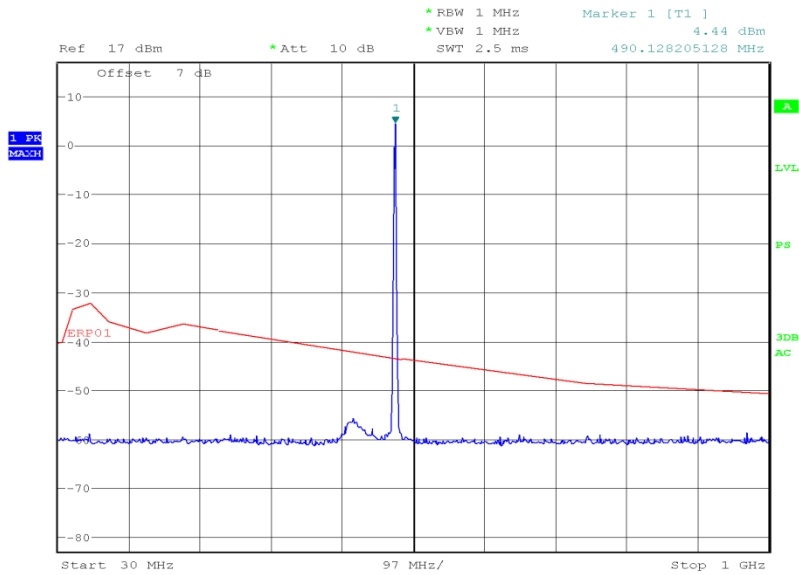


Date: 19.MAR.2014 19:09:16



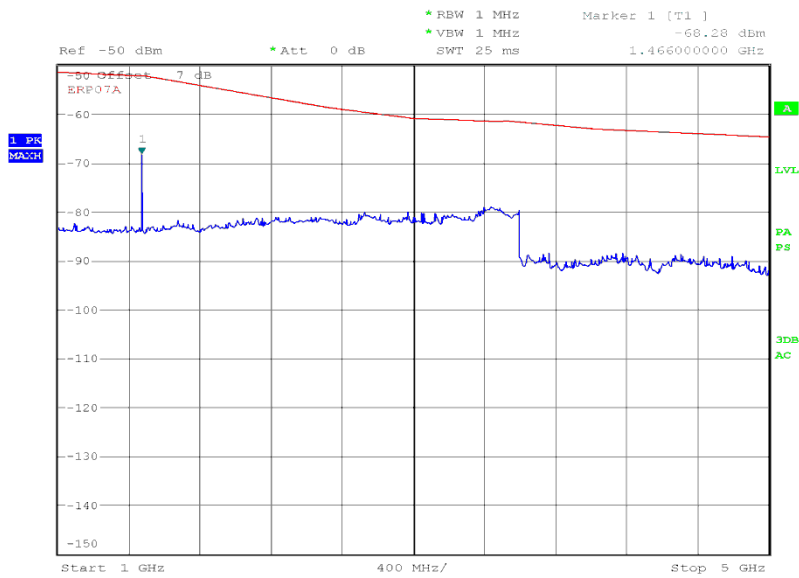
490 MHz

30 MHz to 1 GHz



Date: 19.MAR.2014 20:35:40

1 GHz to 5 GHz



Date: 19.MAR.2014 21:41:21



Product Service

Limit

- (1) On any frequency from the center of the authorized bandwidth f_0 to 5.625 kHz removed from f_0 : Zero dB.
- (2) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 5.625 kHz but no more than 12.5 kHz: At least $7.27(f_d - 2.88 \text{ kHz})$ dB.
- (3) On any frequency removed from the center of the authorized bandwidth by a displacement frequency (f_d in kHz) of more than 12.5 kHz: At least $50 + 10 \log (P)$ dB or 70 dB, whichever is the lesser attenuation..



Product Service

2.5 FREQUENCY STABILITY

2.5.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1055
FCC CFR 47 Part 90, Clause 90.213

2.5.2 Equipment Under Test and Modification State

IDT-4349-3U S/N: 900801 - Modification State 0

2.5.3 Date of Test

14 March 2014

2.5.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.5.5 Test Procedure

The EUT antenna port was connected to a frequency counter through a 30dB attenuator and configured to transmit without modulation on its maximum power setting. The carrier frequency was measured using the frequency counter. The EUT was initially temperature stabilised at 50°C measurements were conducted from this temperature and in 10°C intervals until -30°C inclusive. At each stabilised temperature measurements were made with the EUT supply voltage set to 85% and 115% of the declared nominal operating supply voltage. The observed carrier frequency measurements were recorded and assessed against the requirements of FCC CFR 47 90.213.

2.5.6 Environmental Conditions

Ambient Temperature	22.9°C
Relative Humidity	29.3%



Product Service

2.5.7 Test Results

24 V DC Supply

Other

Temperature Interval	Supply Voltage	Frequency Error (ppm)		
		430 MHz	450 MHz	490 MHz
-30°C	20.4 V DC	-0.25	-0.25	-0.25
	27.6 V DC	-0.25	-0.25	-0.25
-20°C	20.4 V DC	-0.23	-0.20	-0.19
	27.6 V DC	-0.23	-0.20	-0.19
-10°C	20.4 V DC	-0.10	-0.09	-0.08
	27.6 V DC	-0.10	-0.09	-0.09
0°C	20.4 V DC	0.24	0.19	0.15
	27.6 V DC	0.23	0.19	0.15
+10°C	20.4 V DC	0.75	0.76	0.77
	27.6 V DC	0.76	0.76	0.76
+20°C	20.4 V DC	0.73	0.75	0.77
	27.6 V DC	0.74	0.75	0.77
-30°C	20.4 V DC	0.77	0.76	0.77
	27.6 V DC	0.77	0.76	0.77
+40°C	20.4 V DC	0.76	0.77	0.77
	27.6 V DC	0.76	0.77	0.77
+50°C	20.4 V DC	0.76	0.77	0.78
	27.6 V DC	0.76	0.77	0.78
Maximum Frequency Error (Hz)		0.77	0.77	0.78

Limit

The frequency error shall not exceed 2.5ppm



Product Service

2.6 POWER AND ANTENNA HEIGHT LIMITS

2.6.1 Specification Reference

FCC CFR 47 Part 2, Clause 2.1046
FCC CFR 47 Part 90, Clause 90.205

2.6.2 Equipment Under Test and Modification State

IDT-4349-3U S/N: 900801 - Modification State 0

2.6.3 Date of Test

13 March 2014

2.6.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.6.5 Test Procedure

The EUT antenna port was connected to a power meter through a 30dB attenuator and configured to transmit with modulation on its maximum power setting. The path loss between the EUT and the power sensor was entered as an amplitude offset in the power meter. The resulting peak power measurements were e.i.r.p. measurements. The observed peak power measurements were recorded and assessed against the requirements of FCC CFR 47 90.205.

2.6.6 Environmental Conditions

Ambient Temperature	23.7°C
Relative Humidity	25.0%



Product Service

2.6.7 Test Results

24 V DC

430 MHz

Result (dBm)	Result (W)
27.41	0.551

450 MHz

Result (dBm)	Result (W)
27.63	0.579

490 MHz

Result (dBm)	Result (W)
27.14	0.517

Limit

	Service Area Radius (km)									
	3	8	13	16	24	32	40	48	64	80
Maximum ERP (W) ¹	2	100	² 500	² 500	² 500	² 500	² 500	² 500	² 500	² 500
Up to reference HAAT (m) ³	15	15	15	27	63	125	250	410	950	2700

¹ Maximum ERP indicated provides for a 39 dBu signal strength at the edge of the service area per FCC Report R-6602, Fig.29 (see §73.699, Fig 10b).

² Maximum ERP of 500 watts allowed. Signal strength at the service area contour may be less than 39 dBu.

³ When the actual antenna HAAT is greater than the reference HAAT, the allowable ERP will be reduced in accordance with the following equation: $ERP_{allow} = ERP_{max} \times (HAAT_{ref} / HAAT_{actual})^2$.

⁴ Applications for this service area radius may be granted upon specific request with justification and must include a technical demonstration that the signal strength at the edge of the service area does not exceed 39 dBu.



2.7 TRANSIENT FREQUENCY BEHAVIOUR

2.7.1 Specification Reference

FCC CFR 47 Part 90, Clause 90.214

2.7.2 Equipment Under Test and Modification State

IDT-4349-3U S/N: 900801 - Modification State 1

2.7.3 Date of Test

3 March 2014

2.7.4 Test Equipment Used

The major items of test equipment used for the above tests are identified in Section 3.1.

2.7.5 Test Procedure

Frequency versus time domain was measured using a Frequency Demodulation Measurement function on a Rohde and Schwarz FSQ Signal Analyser. The signal analyser was connected to the EUT and a Signal Generator via a combination network. A 30 dB RF attenuator was situated immediately after the EUT transmitting port to prevent overloading the measurement equipment.

A signal generator was used to generate a reference signal for the spectrum analyser at which point, when the signal generator level at the spectrum analyser was exceeded upon the EUT transmitting level, the spectrum analyser triggers the measurement sweep. The frequency deviation of the transmitting carrier from the EUT was observed using the frequency demodulation measurement function on the signal analyser. The observed frequency deviation in time was recorded and assessed against the requirements of FCC CFR 47 90.214.

2.7.6 Environmental Conditions

Ambient Temperature	21.8°C
Relative Humidity	30.2%



Product Service

2.7.7 Test Results

24 V DC

Transient Period	Frequency Difference (kHz)		
	430 MHz	450 MHz	490 MHz
T ₁	0.4	0.4	1.1
T ₂	0.4	0.4	2.4
T ₃	0.4	0.4	2.6

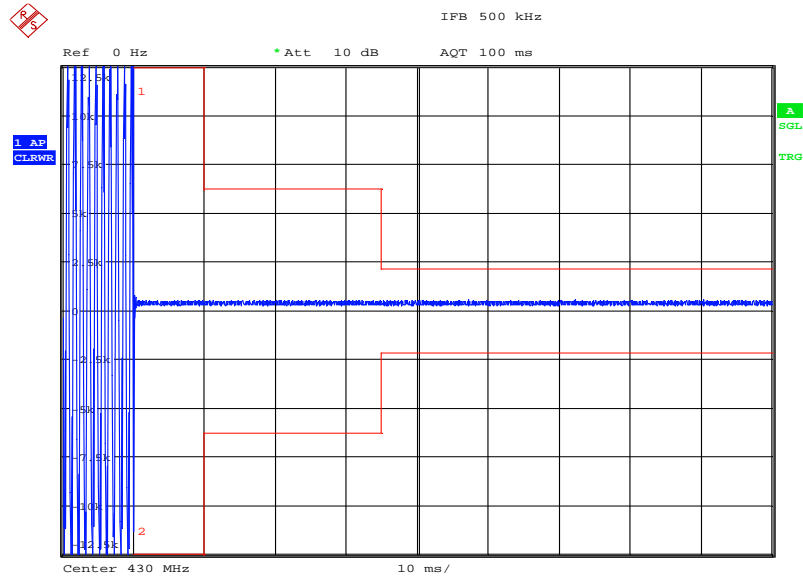
Limit

Time Interval	Maximum Frequency Difference	421 to 512 MHz, 25 kHz Channels
T ₁	± 25.0 kHz	10.0ms
T ₂	± 12.5 kHz	25.0ms
T ₃	± 25.0 kHz	10.0ms



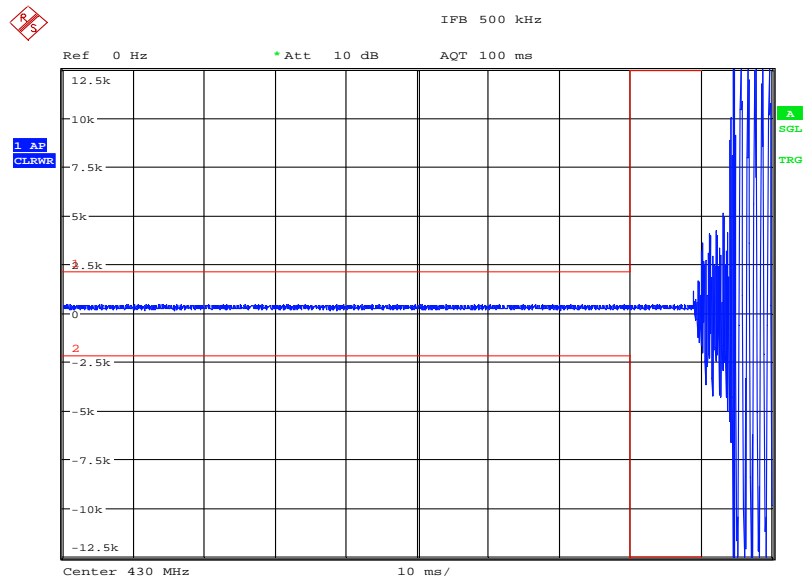
430 MHz

I_1 and I_2



Date: 3.MAR.2014 16:41:41

I_3

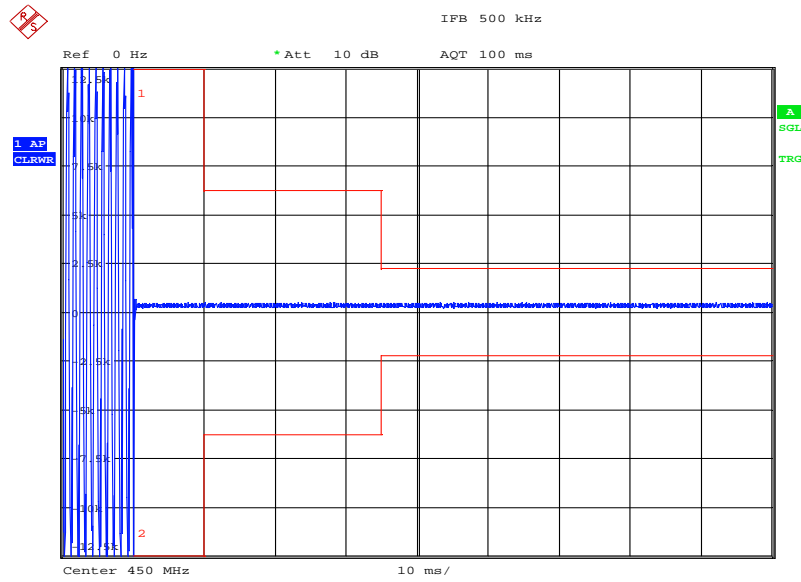


Date: 3.MAR.2014 16:49:11



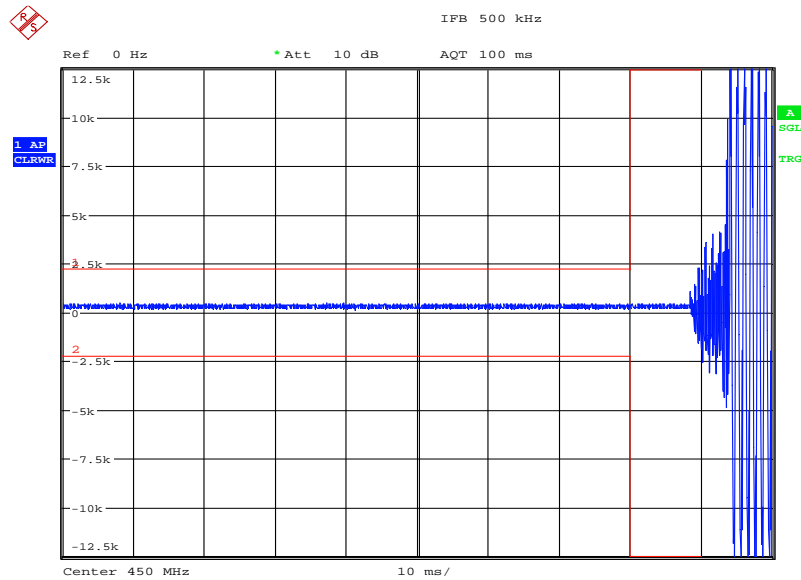
450 MHz

T_1 and T_2



Date: 3.MAR.2014 16:43:13

T_3

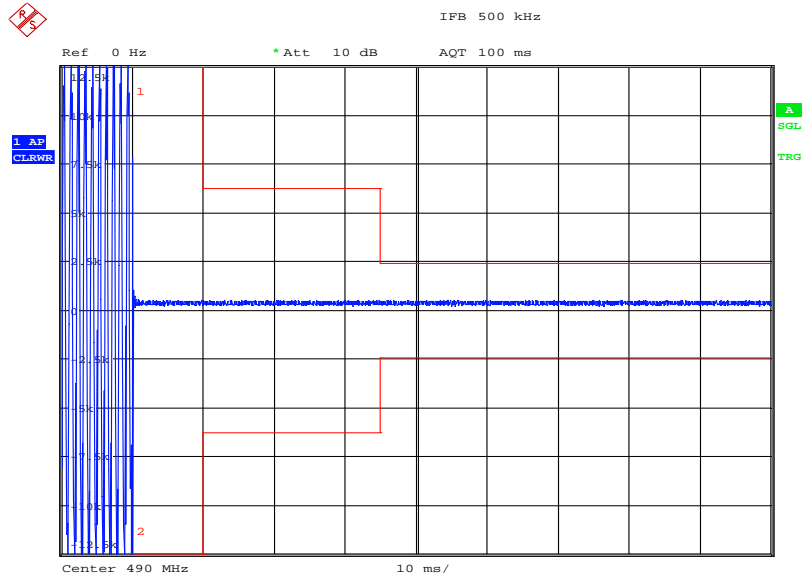


Date: 3.MAR.2014 16:48:06



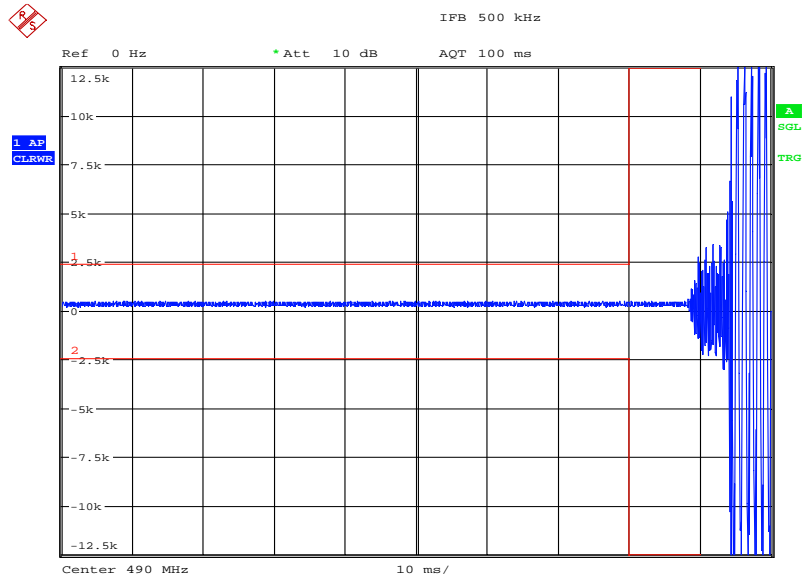
490 MHz

T_1 and T_2



Date: 3.MAR.2014 16:44:59

T_3



Date: 3.MAR.2014 16:46:16



Product Service

SECTION 3

TEST EQUIPMENT USED



3.1 TEST EQUIPMENT USED

List of absolute measuring and other principal items of test equipment.

Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.1 - Effective Radiated Power					
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	1002	12	18-Sep-2014
Screened Room (5)	Rainford	Rainford	1545	24	10-Jan-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Antenna (Bilog)	Chase	CBL6143	2904	24	10-Jun-2015
Antenna (Log Periodic)	Schaffner	UPA6108	3109	12	3-Apr-2014
Signal Generator, 9kHz to 3GHz	Rohde & Schwarz	SMA 100A	3494	12	06-Mar-2015
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Oct-2014
7m Armoured RF Cable	SSI Cable Corp.	1501-13-13-7m WA(-)	3600	-	TU
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	TU
Tilt Antenna Mast	matur GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	matur GmbH	NCD	3917	-	TU
Section 2.2 - Type of Emissions					
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	22-Jul-2014
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Multimeter	Fluke	79 Series II	3057	12	24-Sep-2014
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	4-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
DC - 8 GHz Attenuator	Lucas Weinschel	24-30-33	3963	12	27-Jun-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	22-Jul-2014
Section 2.3 - Bandwidth Limitations					
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	22-Jul-2014
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Multimeter	Fluke	79 Series II	3057	12	24-Sep-2014
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	4-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
DC - 8 GHz Attenuator	Lucas Weinschel	24-30-33	3963	12	27-Jun-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	22-Jul-2014



Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.4 - Emission Mask					
Antenna (Double Ridge Guide, 1GHz-18GHz)	EMCO	3115	234	12	3-Apr-2014
Signal Generator (10MHz to 40GHz)	Rohde & Schwarz	SMR40	1002	12	18-Sep-2014
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	22-Jul-2014
Screened Room (5)	Rainford	Rainford	1545	24	10-Jan-2015
Turntable Controller	Inn-Co GmbH	CO 1000	1606	-	TU
Filter (Hi Pass)	Mini-Circuits	NHP-800	2835	12	22-Oct-2014
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Antenna (Bilog)	Chase	CBL6143	2904	24	10-Jun-2015
Multimeter	Fluke	79 Series II	3057	12	24-Sep-2014
Antenna (Log Periodic)	Schaffner	UPA6108	3109	12	3-Apr-2014
Antenna (DRG Horn)	ETS-LINDGREN	3115	3125	12	17-Jul-2014
EMI Test Receiver	Rohde & Schwarz	ESU40	3506	12	22-Oct-2014
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	4-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
7m Armoured RF Cable	SSI Cable Corp.	1501-13-13-7m WA(-)	3600	-	TU
9m RF Cable (N Type)	Rhophase	NPS-2303-9000-NPS	3791	-	TU
Tilt Antenna Mast	maturo GmbH	TAM 4.0-P	3916	-	TU
Mast Controller	maturo GmbH	NCD	3917	-	TU
DC - 8 GHz Attenuator	Lucas Weinschel	24-30-33	3963	12	27-Jun-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	22-Jul-2014
Section 2.5 - Frequency Stability					
Counter	Hewlett Packard	53181A	159	12	28-May-2014
Climatic Chamber	Votsch	VT4002	161	-	O/P Mon
Multimeter	White Gold	WG022	190	12	28-Oct-2014
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	22-Jul-2014
Digital Temperature Indicator	Fluke	51	2267	12	11-Sep-2014
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
DC - 8 GHz Attenuator	Lucas Weinschel	24-30-33	3963	12	27-Jun-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	22-Jul-2014
Section 2.6 - Power and Antenna Height Limits					
Climatic Chamber	Votsch	VT4002	161	-	O/P Mon
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Digital Temperature Indicator	Fluke	51	2267	12	11-Sep-2014
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
DC - 8 GHz Attenuator	Lucas Weinschel	24-30-33	3963	12	27-Jun-2014
P-Series Power Meter	Agilent Technologies	N1911A	3981	12	18-Sep-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014



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Instrument	Manufacturer	Type No.	TE No.	Calibration Period (months)	Calibration Due
Section 2.7 - Transient Frequency Behaviour					
Signal Generator	Rohde & Schwarz	SMY 01	49	12	11-Sep-2014
Power Supply Unit	Farnell	H60-25	1092	-	O/P Mon
Rubidium Standard	Rohde & Schwarz	XSRM	1316	6	22-Jul-2014
Hygrometer	Rotronic	I-1000	2891	12	8-Jul-2014
Power Divider (N) 1W	Weinschel	1506A	3344	12	28-Jun-2014
Signal Analyser	Rohde & Schwarz	FSQ 26	3545	12	4-Jul-2014
Network Analyser	Rohde & Schwarz	ZVA 40	3548	12	13-Sep-2014
DC - 8 GHz Attenuator	Lucas Weinschel	24-30-33	3963	12	27-Jun-2014
1 Metre SMA Cable	Rhophase	3PS-1801A-1000-3PS	4099	12	5-Nov-2014
1 Metre N Type Cable	Rhophase	NPS-1601A-1000-NPS	4102	12	11-Jun-2014
2 Metre SMA Type Cable	Rhophase	3PS-1801A-2000-3PS	4113	12	5-Nov-2014
Calibration Unit	Rohde & Schwarz	ZV-Z54	4368	12	18-Sep-2014
Frequency Standard	Spectracom	Secure Sync 1200-0408-0601	4393	6	22-Jul-2014

TU – Traceability Unscheduled

O/P MON – Output Monitored with Calibrated Equipment



3.2 MEASUREMENT UNCERTAINTY

For a 95% confidence level, the measurement uncertainties for defined systems are:-

Test Discipline	MU
Emission Mask	Radiated: ± 3.08 dB Conducted: ± 3.454 dB
Effective Radiated Power	30MHz to 1GHz: ± 5.1 dB 1GHz to 40GHz: ± 6.3 dB
Power and Antenna Height Limits	± 0.70 dB
Transient Frequency Behaviour	± 0.2 Hz
Type of Emissions	N/A
Bandwidth Limitations	± 16.74 kHz
Frequency Stability	± 42.47 Hz



Product Service

SECTION 4

ACCREDITATION, DISCLAIMERS AND COPYRIGHT



Product Service

4.1 ACCREDITATION, DISCLAIMERS AND COPYRIGHT



This report relates only to the actual item/items tested.

Our UKAS Accreditation does not cover opinions and interpretations and any expressed are outside the scope of our UKAS Accreditation.

Results of tests not covered by our UKAS Accreditation Schedule are marked NUA (Not UKAS Accredited).

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