TEST REPORT

Test Report No. : UL-RPT-RP93037JD09B

Manufacturer	:	Cambium Networks Ltd
Model No.	:	PTP 50650 Integrated ODU PTP 50650 Connectorized ODU
FCC ID	:	QWP-50650
IC Certification No.	:	109AO-50650
Test Standard(s)	:	FCC Part 15.407(h)(2) and Industry Canada RSS-210 A9.3(b)(ii),(b)(iii),(b)(iv) & (b)(v)

1. This test report shall not be reproduced in full or partial, without the written approval of UL VS LTD.
2. The results in this report apply only to the sample(s) tested.
3. The sample tested is in compliance with the above standard(s).
4. The test results in this report are traceable to the national or international standards.
5. Version 2.0 supersedes all previous versions.

Date of Issue: 12 SEPTEMBER 2013

Checked by:

Ian Watch
Senior Engineer, Radio Laboratory

Issued by :

pp

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Group Quality Manager,
WiSE Basingstoke,
UL VS LTD

0644

This laboratory is accredited by UKAS. The tests reported herein have been performed in accordance with its' terms of accreditation.

UL VS LTD

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1. Customer Information

Company Name:	Cambium Networks Ltd
Address:	Unit B2/3, Linhay Business Park Eastern Road Ashburton Devon TQ13 7UP United Kingdom

2. Summary of Testing

2.1. General Information

Specification Reference:	47CFR15.407
Specification Title:	Code of Federal Regulations Volume 47 (Telecommunications): Part 15 Subpart E (Unlicensed National Information Infrastructure Devices) - Section 15.407
Specification Reference:	Industry Canada RSS-210 Issue 8 December 2010
Specification Title:	Low-power Licence-exempt Radio communication Devices (All Frequency Bands): Category I Equipment.
Site Registration:	FCC: 209735; Industry Canada: 3245B-2
Location of Testing:	UL VS LTD, Unit 3 Horizon, Wade Road, Kingsland Business Park, Basingstoke, Hampshire, RG24 8AH, United Kingdom
Test Dates:	14 June 2013 to 02 July 2013

2.2. Summary of Test Results

FCC Reference (47CFR)	IC Reference	Measurement	Result
Part 15.407(h)(2)	RSS-210 A9.3(a)	U-NII Detection Bandwidth	✓
Part 15.407(h)(2)(ii)	RSS-210 A9.3(b)(ii)	Initial Channel Availability Check Time	✓
Part 15.407(h)(2)(ii)	RSS-210 A9.3(b)(ii)	Radar Burst at the Beginning of the Channel Availability Check Time	✓
Part 15.407(h)(2)(ii)	RSS-210 A9.3(b)(ii)	Radar Burst at the End of the Channel Availability Check Time	✓
Part 15.407(h)(2)(iii)	RSS-210 A9.3(b)(iii)(iv)	Channel Closing Transmission Time and Channel Move Time	✓
Part 15.407(h)(2)(iv)	RSS-210 A9.3(b)(v)	Non-occupancy Period	✓
Part 15.407(h)(2)	RSS-210 A9.3(a)	Statistical Performance Check – Short Pulse Radar Types 1-4	✓
Part 15.407(h)(2)	RSS-210 A9.3(a)	Statistical Performance Check – Long Pulse Radar Type 5	✓
Part 15.407(h)(2)	RSS-210 A9.3(a)	Statistical Performance Check – Frequency Hopping Radar Type 6	✓

Key to Results

✓ = Complied ✗ = Did not comply

Note(s):

1. The EUT operates in the 5250 to 5350 MHz and 5470 to 5725 MHz bands. It was tested operating on a representative channel in the 5470-5725 MHz band.
2. The EUT was tested on the smallest operating bandwidth only (worst-case), in accordance with clause 8.3 18) of FCC 06-96. An additional U-NII Detection Bandwidth test was also performed at maximum EUT operating bandwidth to ensure it would detect radars across a wider frequency spread for larger operating bandwidths.
3. The manufacturer confirms that information regarding the parameters of the radar waveforms is not available to, or configurable by the end user.

2.3. Methods and Procedures

Reference:	FCC 06-96
Title:	Compliance Measurement Procedures for Unlicensed-National Information Infrastructure Devices Operating in the 5250-5350 MHz and 5470-5725 MHz Bands Incorporating Dynamic Frequency Selection

2.4. Deviations from the Test Specification

For the measurements contained within this test report, there were no deviations or exclusions from the test specification identified above. Additional tests of Detection Bandwidth were performed at maximum operating bandwidth.

3. Equipment Under Test (EUT)

3.1. Identification of Equipment Under Test (EUT)

Brand Name:	Cambium Networks Ltd
Model Name or Number:	PTP 50650
Serial Number:	0004565000A3
Hardware Version Number:	Production Revision 4
Software Version Number:	50650-G7-B983
FCC ID:	QWP-50650
Industry Canada Certification Number:	109AO-50650

3.2. Description of EUT

The Equipment Under Test was a point to point transceiver operating in the 5250 to 5350 MHz and 5470 to 5725 MHz bands. The EUT is available in two configurations:

1. Connectorised with two external antenna ports. Cambium Part No. C050065B002A.
2. Integrated flat plate antenna. Cambium Part No. C050065B001A.

Power is provided by a PoE supply..

3.3. Modifications Incorporated in the EUT

No modifications were made to the EUT during testing.

3.4. Additional Information Related to Testing

Technology Tested:	Unlicensed National Information Infrastructure Devices (U-NII) / Licence-exempt Local Area Network Device (LE-LAN)	
Type of Unit:	Transceiver	
Modulation Type:	ACQ, BPSK, QPSK, 16QAM, 64QAM, 256QAM	
Channel Spacing:	5, 10, 15, 20, 30, 40 & 45 MHz	
Power Supply Requirement(s):	Nominal	PoE supply input 120 VAC 60 Hz. PoE output 48 VDC.
Transmit & Receive Frequency Range:	5250 to 5350 MHz 5470 to 5725 MHz (excluding 5600 – 5650 MHz)	
Transmit / Receive Channels Tested at 5 MHz Bandwidth setting:	**Bandwidth (MHz)**	**Channel Frequency (MHz)**
	5	5583
	45	5573

3.5. Support Equipment

The following support equipment was used to exercise the EUT during testing:

Description:	Point-to-Point Transceiver
Brand Name:	Cambium Networks Ltd
Model Name or Number:	PTP 50650
Serial Number:	0004565000D0

Description:	Laptop PC
Brand Name:	Dell
Model Name or Number:	Latitude D610
Serial Number:	UL Asset No. 00062

Description:	Laptop PC
Brand Name:	Dell
Model Name or Number:	Latitude D610
Serial Number:	UL Asset No. 00234

4. Operation and Monitoring of the EUT during Testing

4.1. Operating Modes

The EUT was tested in the following operating modes, unless otherwise stated:

- As a Master or Client device.
- The EUT has radar detection in both Master and Client modes.
- The allowed maximum transmit power of the device was related to the operating bandwidth. For most testing at the minimum bandwidth (5 MHz) it was tested with a power level of '12 dBm'. This was designed to simulate the use of an antenna with the minimum specified gain of 13 dBi in conjunction with 1.5 dB cable loss.
- The more sensitive DFS detection threshold of -64 dBm was used throughout as the maximum transmit power is >200 mW.
    - The customer declared the lowest gain antenna (including cable loss) used in the product to be 11.5 dBi for U-NII Bands 3. Since the test is performed conducted this additional gain in signal which would normally be present is added to the radar test level.
    - The radar level to be presented at the antenna ports was calculated as: -64 dBm +11.5 dBi antenna gain +1 dB to account for variations = -51.5 dBm radar level at antenna ports. This was equivalent to -10.5 dB at the output of the signal generator.

FCC 06-96 Table 3: DFS Detection Thresholds for Master Devices and Client Devices With Radar Detection

Maximum Transmit Power	**Value (See Notes 1 and 2)**
≥ 200 milliwatt	-64 dBm
Note 1: This is the level at the input of the receiver assuming a 0 dBi receive antenna. Note 2: Throughout these test procedures an additional 1 dB has been added to the amplitude of the test transmission waveforms to account for variations in measurement equipment. This will ensure that the test signal is at or above the detection threshold level to trigger a DFS response.	

4.2. Configuration and Peripherals

The EUT was tested in the following configuration(s):

- All measurements were made using a conducted link. The antenna ports gave independent access to horizontal and vertical antenna connections.
- A laptop PC was used to configure the EUT parameters during the testing using a standard web browser. The laptop was connected to the EUT via Ethernet to set EUT parameters.
- A laptop PC was used to report radar detection events using a debug option of its internal software and a telnet application.
- When the system required channel loading, a MPEG video file that streamed full motion video at 30 frames per second was downloaded from http://ntiacsd.ntia.doc.gov/dfs/ and played between 2 laptops. The file was transferred from the master device to the client device during this testing.

5. Measurements, Examinations and Derived Results

5.1. General Comments

Measurement uncertainties are evaluated in accordance with current best practice. Our reported expanded uncertainties are based on standard uncertainties, which are multiplied by an appropriate coverage factor to provide a statistical confidence level of approximately 95%. Please refer to *Section 6. Measurement Uncertainty* for details.

5.2. Test Results

5.2.1. U-NII Detection Bandwidth

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	17 June 2013
Test Sample Serial No:	0004565000A3		

FCC Part:	Part 15.407(h)(2) & Industry Canada RSS-210 A9.3(a)
Test Method Used:	FCC 06-96 Section 7.8.1

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	41

Results: 5 MHz Master

Bandwidth setting (MHz)	Measured 99% Bandwidth (MHz)
5	4.530

FCC 06-96 requests testing detection bandwidth at 1 MHz steps out from centre frequency until entire 99% bandwidth is covered. However, due to the narrow operating bandwidth of the EUT, smaller steps were used to give a more accurate result at the channel edges:

Maximum Offsets from centre frequency as tested (MHz)	Detection attempts successful from 10 attempts at each frequency	Detection Rate (%)
±2	10	100
±2.5	10	100
±3	0	0

The EUT therefore exceeded the requirement of ≥80% aggregate detection probability over greater than 80% of the measured 99% bandwidth.

Results: 45 MHz Master

Bandwidth setting (MHz)	Measured 99% Bandwidth (MHz)
45	41.73

Test at 1 MHz steps out from centre frequency until entire 99% bandwidth is covered:

Maximum Offsets from centre frequency as tested (MHz)	Detection attempts successful from 10 attempts at each frequency	Detection Rate (%)
-20	10	100
+20	10	100
-21	0	0
+21	0	0

The EUT therefore exceeded the requirement of ≥80% aggregate detection probability over greater than 80% of the measured 99% bandwidth.

U-NII Detection Bandwidth (continued)

Results: 5 MHz Client

Bandwidth setting (MHz)	Measured 99% Bandwidth (MHz)
5	4.530

FCC 06-96 requests testing detection bandwidth at 1 MHz steps out from centre frequency until entire 99% bandwidth is covered. However, due to the narrow operating bandwidth of the EUT, smaller steps were used to give a more accurate result at the channel edges:

Maximum Offsets from centre frequency as tested (MHz)	Detection attempts successful from 10 attempts at each frequency	Detection Rate (%)
±2	10	100
±2.5	10	100
±3	0	0

The EUT therefore exceeded the requirement of ≥80% aggregate detection probability over greater than 80% of the measured 99% bandwidth.

Results: 45 MHz Client

Bandwidth setting (MHz)	Measured 99% Bandwidth (MHz)
45	41.73

Test at 1 MHz steps out from centre frequency until entire 99% bandwidth is covered:

Maximum Offsets from centre frequency as tested (MHz)	Detection attempts successful from 10 attempts at each frequency	Detection Rate (%)
-20	10	100
+20	10	100
-21	0	0
+21	0	0

The EUT therefore exceeded the requirement of ≥80% aggregate detection probability over greater than 80% of the measured 99% bandwidth.

Limits:

Table 4: DFS Response Requirement Values

Parameter	Value
U-NII Detection Bandwidth	Minimum 80% of the U-NII 99% transmission power bandwidth. See Note 3.
Note 3: During the U-NII Detection Bandwidth detection test, radar type 1 is used and for each frequency step the minimum percentage of detection is 90 percent. Measurements are performed with no data traffic.	

5.2.2. Initial Channel Availability Check Time

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	17 June 2013
Test Sample Serial No:	0004565000A3		

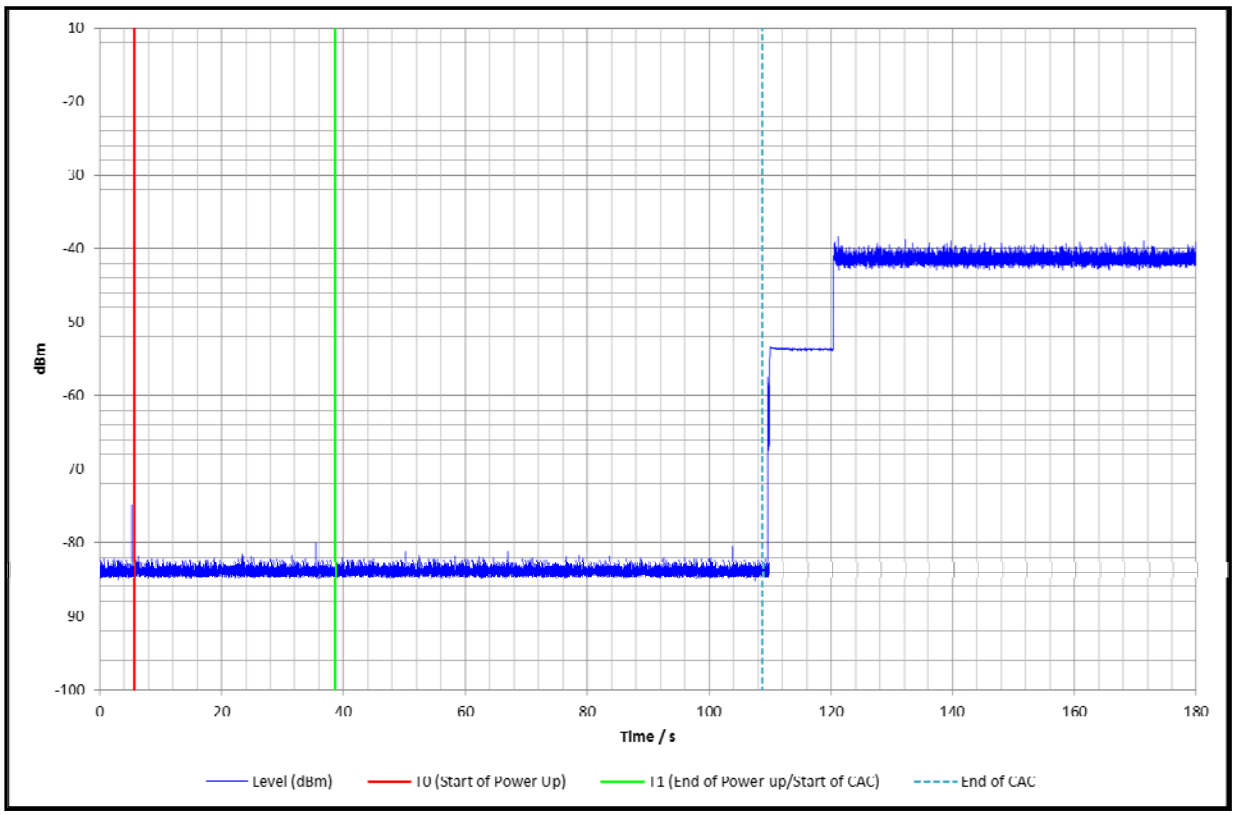
FCC Part:	Part 15.407(h)(2)(ii) & Industry Canada RSS-210 A9.3(b)(ii)
Test Method Used:	FCC 06-96 Section 7.8.2.1

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	41

Results: 5 MHz Master

No beacon or data transmission seen during channel availability check time.



Initial Channel Availability Check Time (continued)

Note:

1. The EUT had a power up time of 33 seconds. The customer declared the EUT to have a CAC time of 70 seconds.
2. The EUT was powered up as shown on the plots. The EUT did not transmit any data or beacon transmissions until approximately 103 seconds after this power up procedure.

Limits:

Parameter	Value
Channel Availability Check Time	60 seconds

5.2.3. Radar Burst at the Beginning of the Channel Availability Check Time

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	17 June 2013
Test Sample Serial No:	0004565000A3		

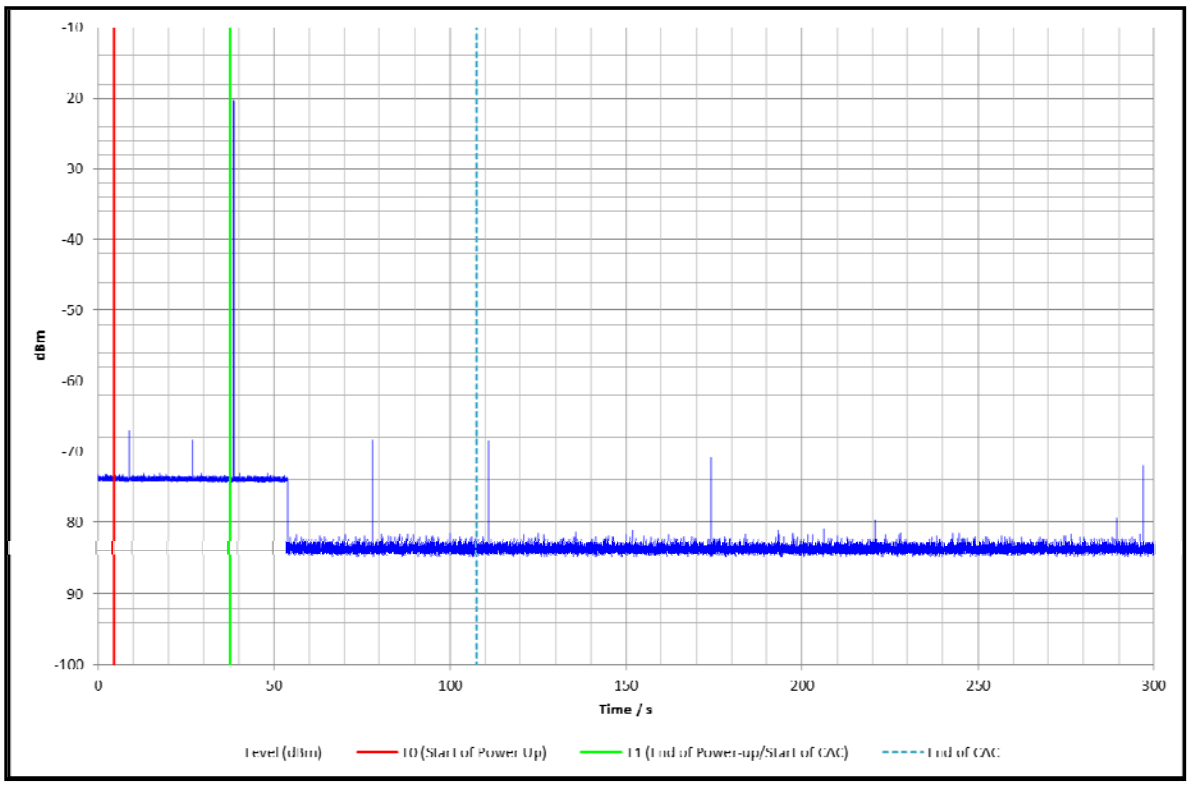
FCC Part:	Part 15.407(h)(2)(ii) & Industry Canada RSS-210 A9.3(b)(ii)
Test Method Used:	FCC 06-96 Section 7.8.2.2

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	41

Results: 5 MHz Master

Radar burst type 1 was detected and no beacon or data transmission seen.



Plot showing the Type 1 Radar fired 1 second after the beginning of CAC

Radar Burst at the Beginning of the Channel Availability Check Time (continued)

Notes:

1. Observation of Ch_r continued for 2.5 minutes after the radar burst was generated.
2. No transmissions occurred. The small spikes on the plot were shown to be ambient and also occurred with the EUT switched off.
3. The raised section of the noise floor was a function of the radar signal generator.

Limits:

Parameter	Value
Channel Availability Check Time	60 seconds

5.2.4. Radar Burst at the End of the Channel Availability Check Time

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	17 June 2013
Test Sample Serial No:	0004565000A3		

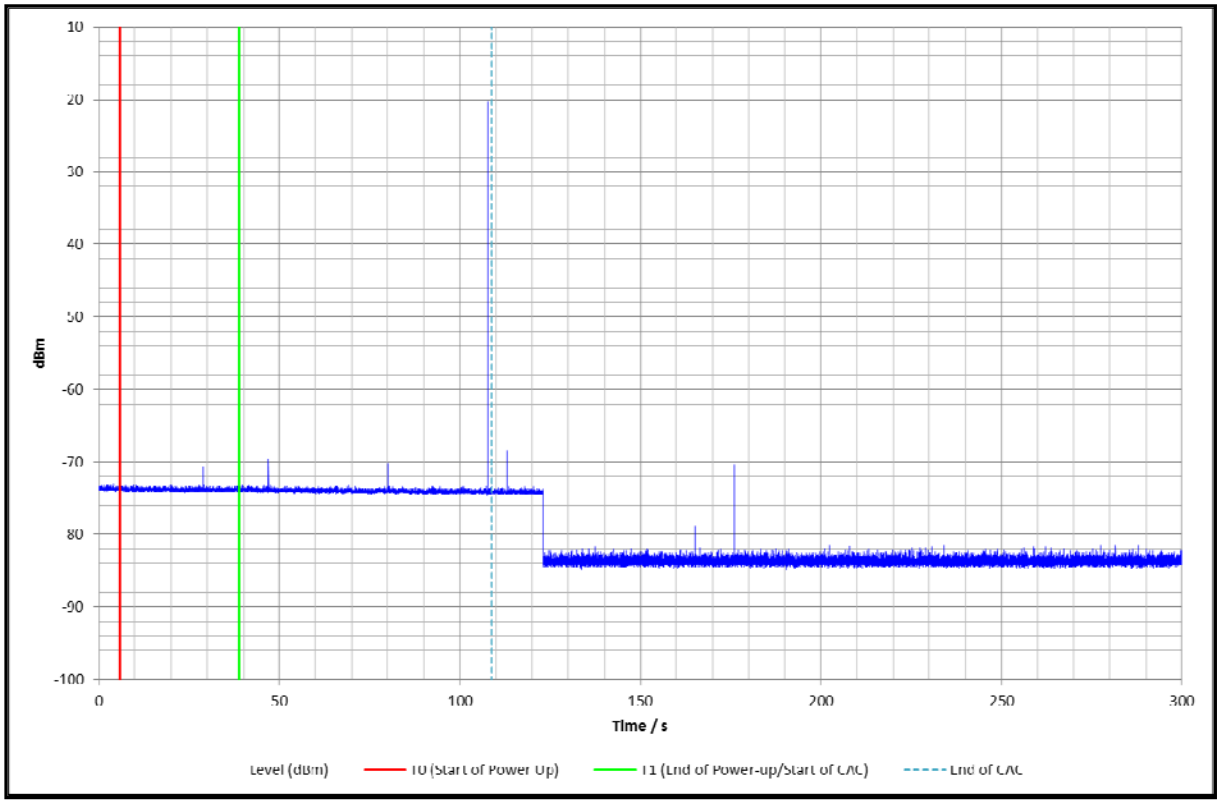
FCC Part:	Part 15.407(h)(2)(ii) & Industry Canada RSS-210 A9.3(b)(ii)
Test Method Used:	FCC 06-96 Section 7.8.2.3

Environmental Conditions:

Temperature (°C):	24
Relative Humidity (%):	41

Results: 5 MHz Master

Radar burst type 3 was detected and no beacon or data transmission seen.



Plot showing the Type 1 Radar fired 1 second after the beginning of CAC

Radar Burst at the End of the Channel Availability Check Time (continued)

Notes:

1. Observation of Ch_r continued for 2.5 minutes after the radar burst was generated.
2. No transmissions occurred. The small spikes on the plot were shown to be ambient and also occurred with the EUT switched off.
3. The raised section of the noise floor was a function of the radar signal generator.

Limits:

Parameter	Value
Channel Availability Check Time	60 seconds

5.2.5. Channel Closing Transmission Time and Channel Move Time

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	14 June 2013
Test Sample Serial No:	0004565000A3		

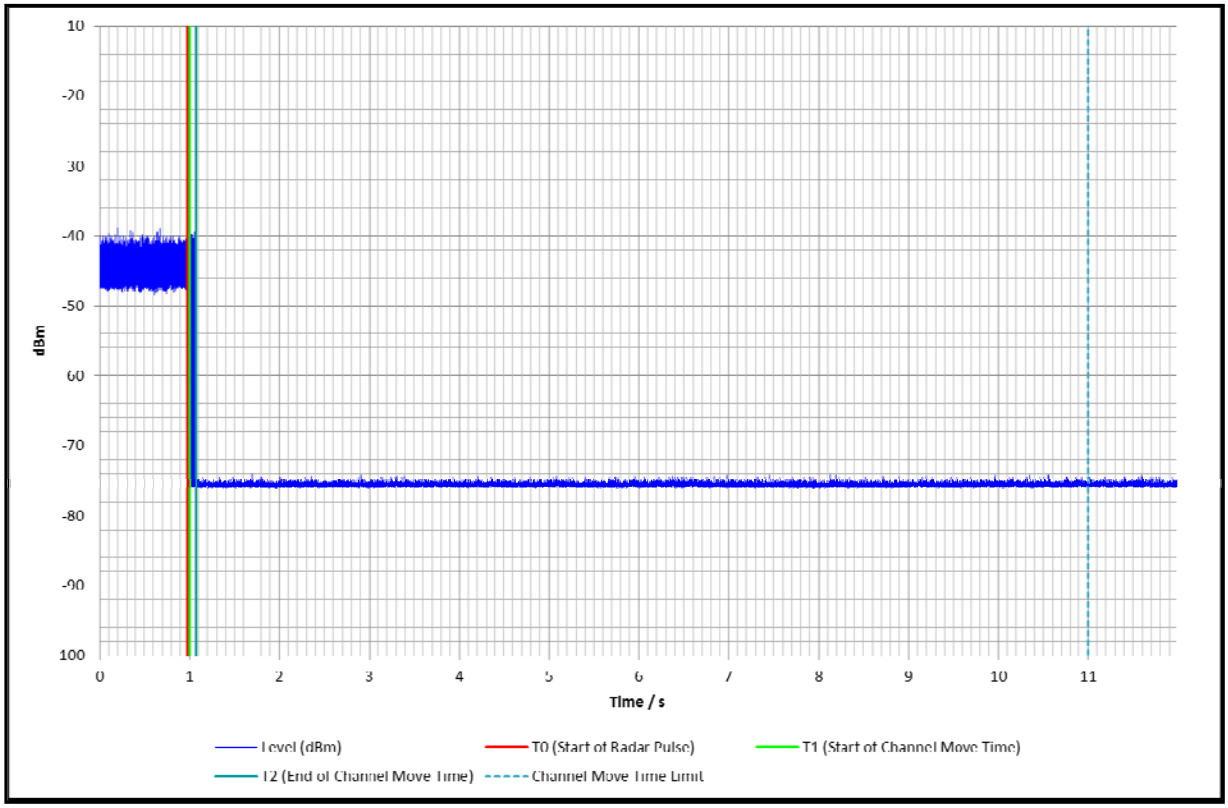
FCC Part:	Part 15.407(h)(2)(iii) & Industry Canada RSS-210 A9.3(b)(iii)(iv)
Test Method Used:	FCC 06-96 Section 7.8.3

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	44

Results: 5 MHz Master – Type 1 Radar

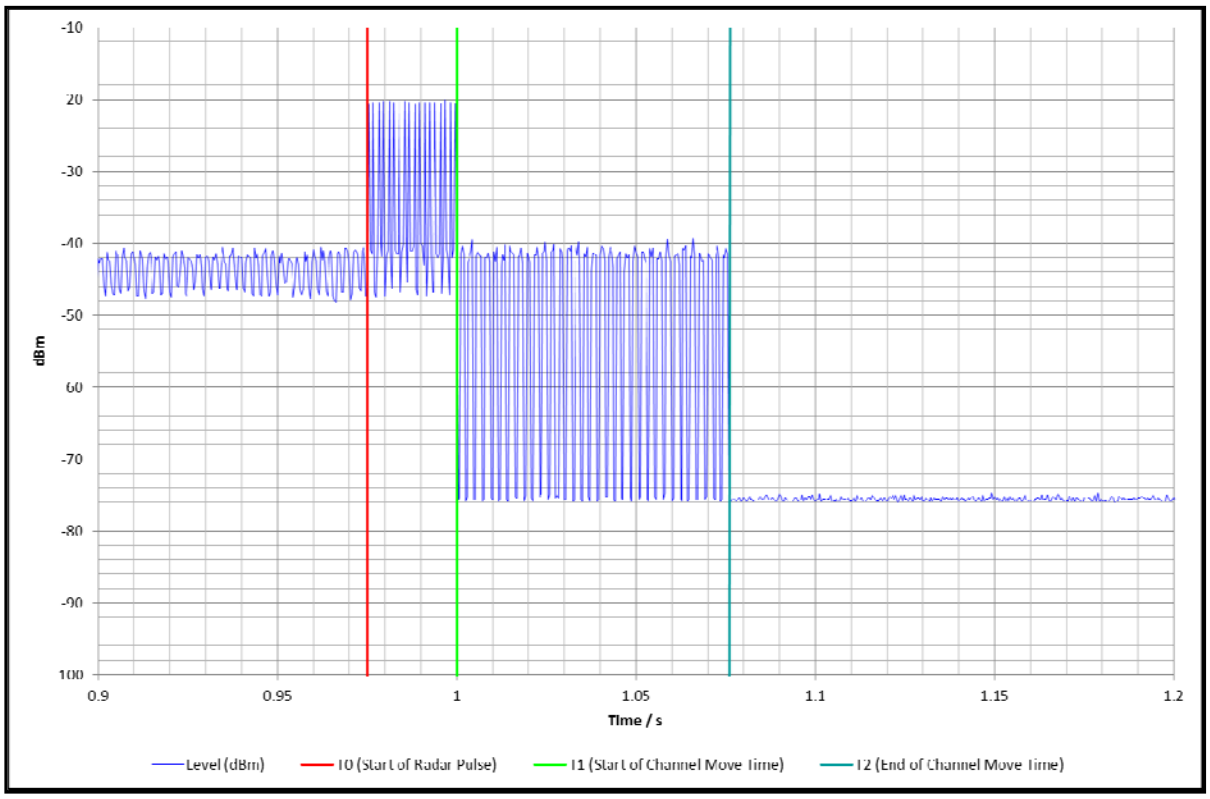
Radar burst type 1 was detected and channel move occurred.



Plot showing the 10 second shutdown limit – Type 1 Radar

Channel Closing Transmission Time and Channel Move Time (continued)

Results: 5 MHz Master (continued)



Plot showing the first 200 ms after the radar – Type 1 Radar

Channel Move Time

Channel (MHz)	BW (MHz)	Trial	Radar	PW (uS)	PRF 1 (pps)	PPB	Move Time (ms)	Limit (ms)	Margin (ms)	Detected
5583	5	1	1	1	700	18	76	10000	9924	Yes

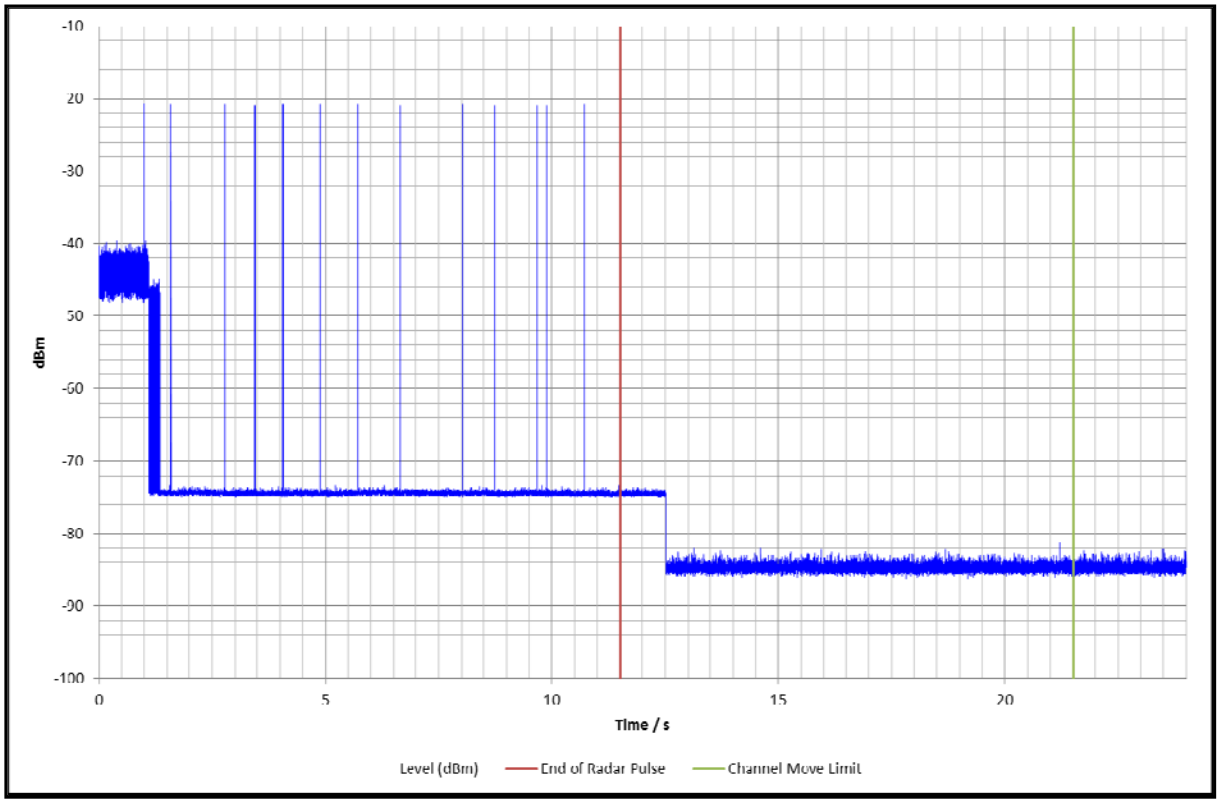
Results: Channel Closing Transmission Time

Channel (MHz)	BW (MHz)	Trial	Radar Type	PW (uS)	PRF 1 (pps)	PPB	Total Aggre-gate Tx Time (ms)	Limit (ms)	Margin (ms)	Tx Time >200 ms after end of radar (ms)	Limit (ms)	Margin (ms)
5583	5	1	1	1	700	18	48.8	260	211.2	0	60	60

Channel Closing Transmission Time and Channel Move Time (continued)

Results: 5 MHz Master – Type 5 Radar

Radar burst type 5 was detected and channel move occurred.



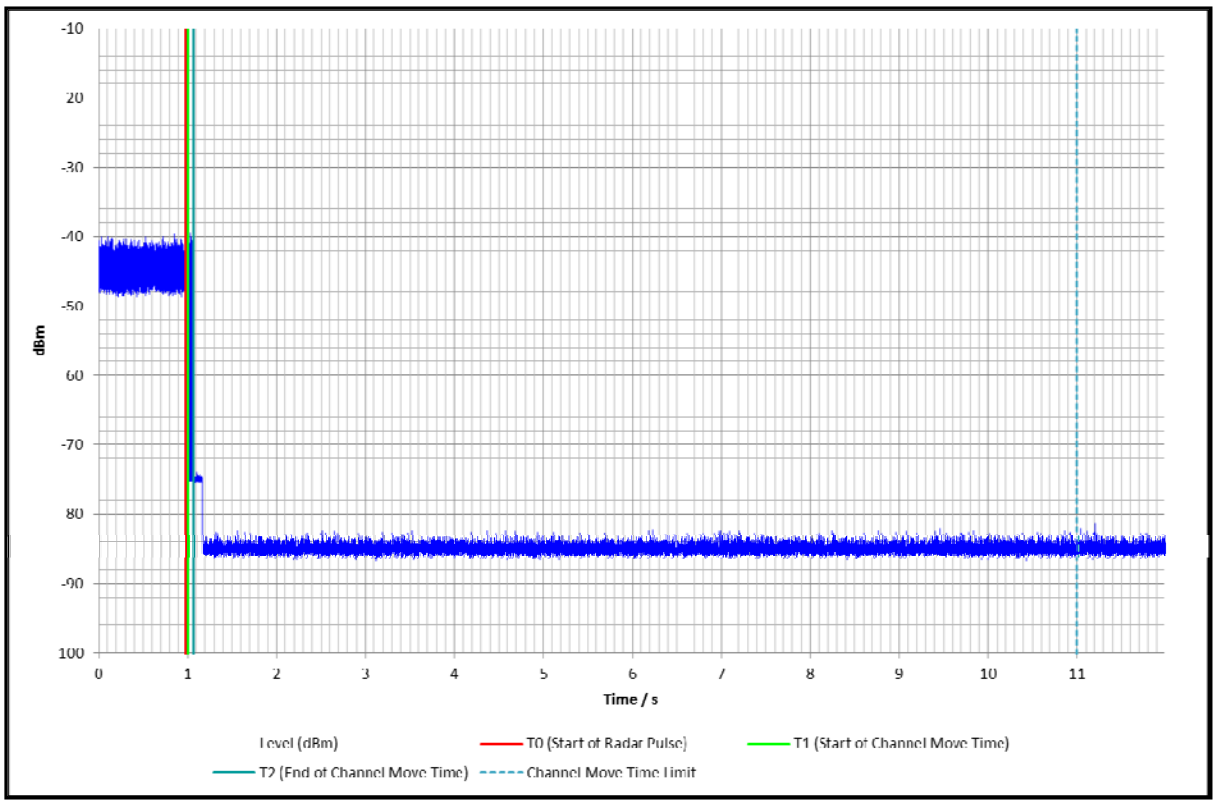
Plot showing the 10 second shutdown limit – Type 5 Radar

Aggregate transmission times are calculated from the short radar type data only. Therefore no channel closing transmission time is given for the Type 5 Radar test. The channel move occurred before the end of the radar and hence the channel move time is zero for the Type 5 Radar.

Channel Closing Transmission Time and Channel Move Time (continued)

Results: 5 MHz Client – Type 1 Radar Fired at Client

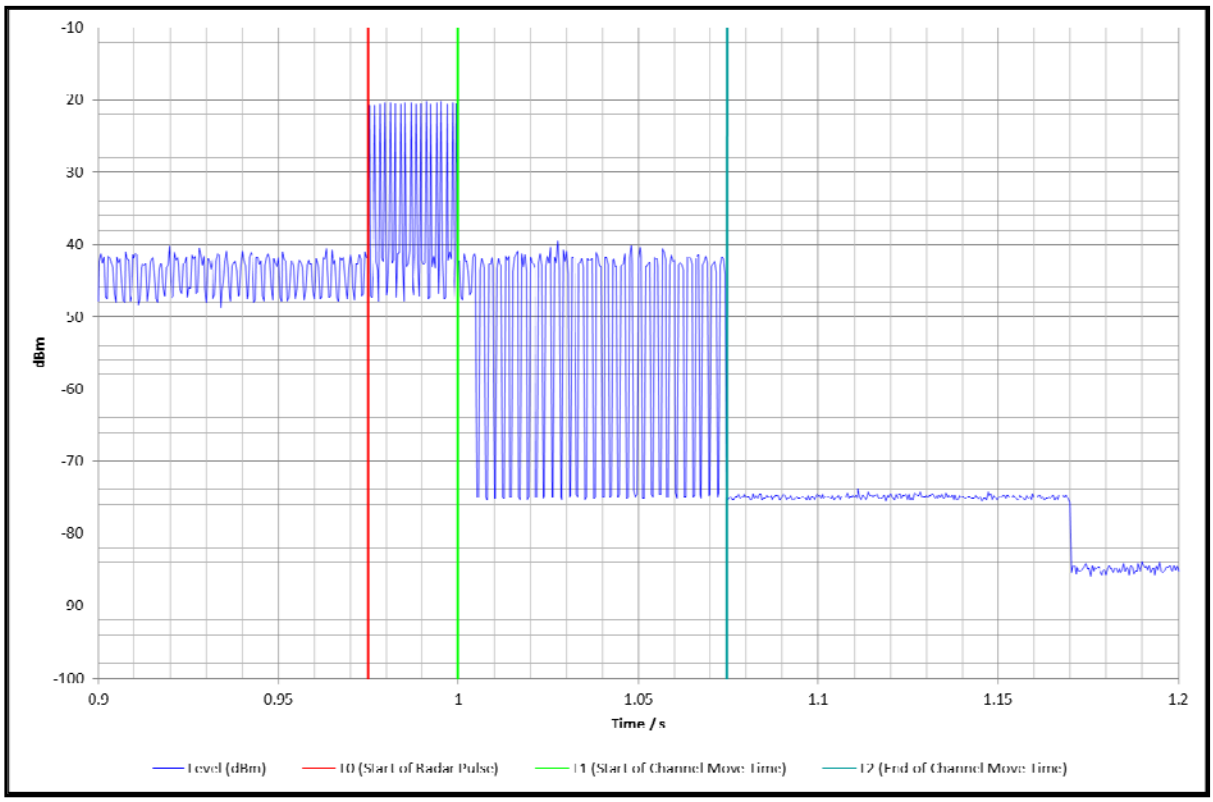
Radar burst type 1 was detected and channel move occurred.



Plot showing the 10 second shutdown limit – Type 1 Radar

Channel Closing Transmission Time and Channel Move Time (continued)

Results: 5 MHz Client – Type 1 Radar fired at Client (continued)



Plot showing the first 200 ms after the radar – Type 1 Radar

Channel Move Time

Channel (MHz)	BW (MHz)	Trial	Radar	PW (uS)	PRF 1 (pps)	PPB	Move Time (ms)	Limit (ms)	Margin (ms)	Detected
5583	5	1	1	1	700	18	74.4	10000	9925.6	Yes

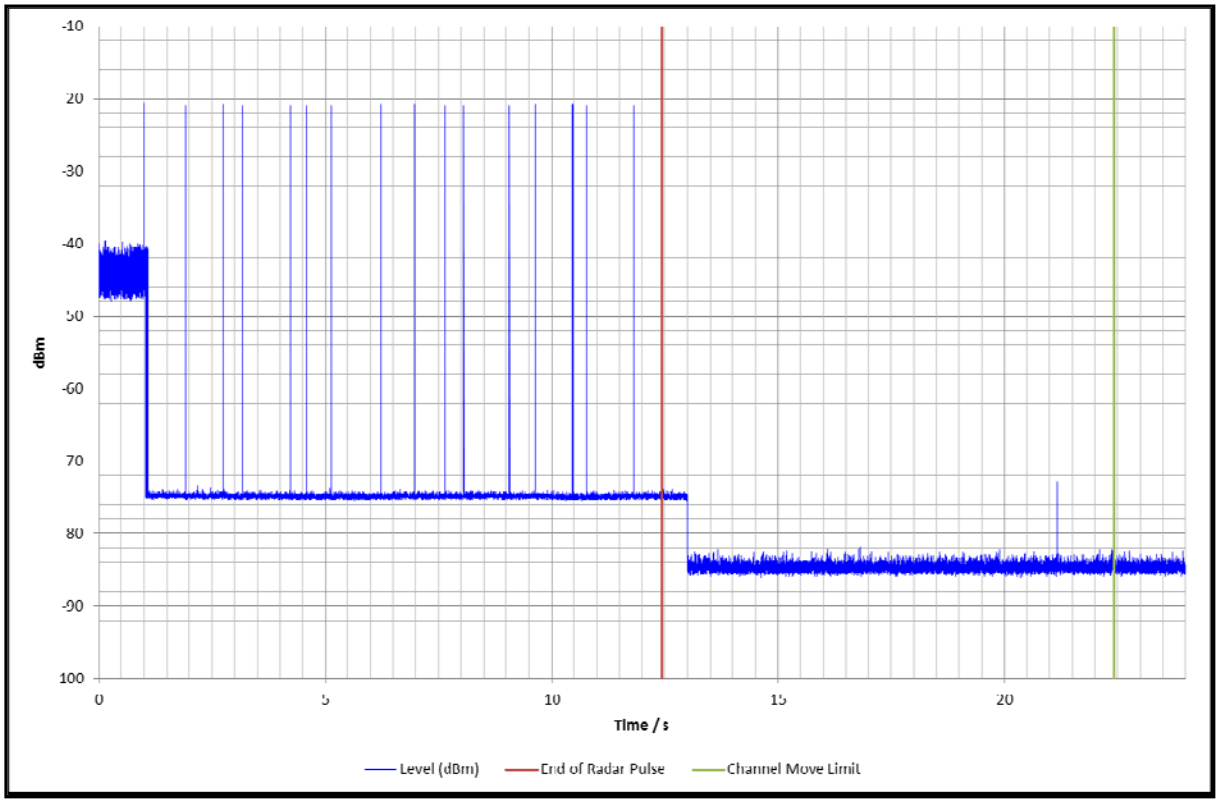
Results: Channel Closing Transmission Time

Channel (MHz)	BW (MHz)	Trial	Radar Type	PW (uS)	PRF 1 (pps)	PPB	Total Aggre-gate Tx Time (ms)	Limit (ms)	Margin (ms)	Tx Time >200 ms after end of radar (ms)	Limit (ms)	Margin (ms)
5583	5	1	1	1	700	18	47	260	213	0	60	60

Channel Closing Transmission Time and Channel Move Time (continued)

Results: 5 MHz Client – Type 5 Radar Fired at Client

Radar burst type 5 was detected and channel move occurred.



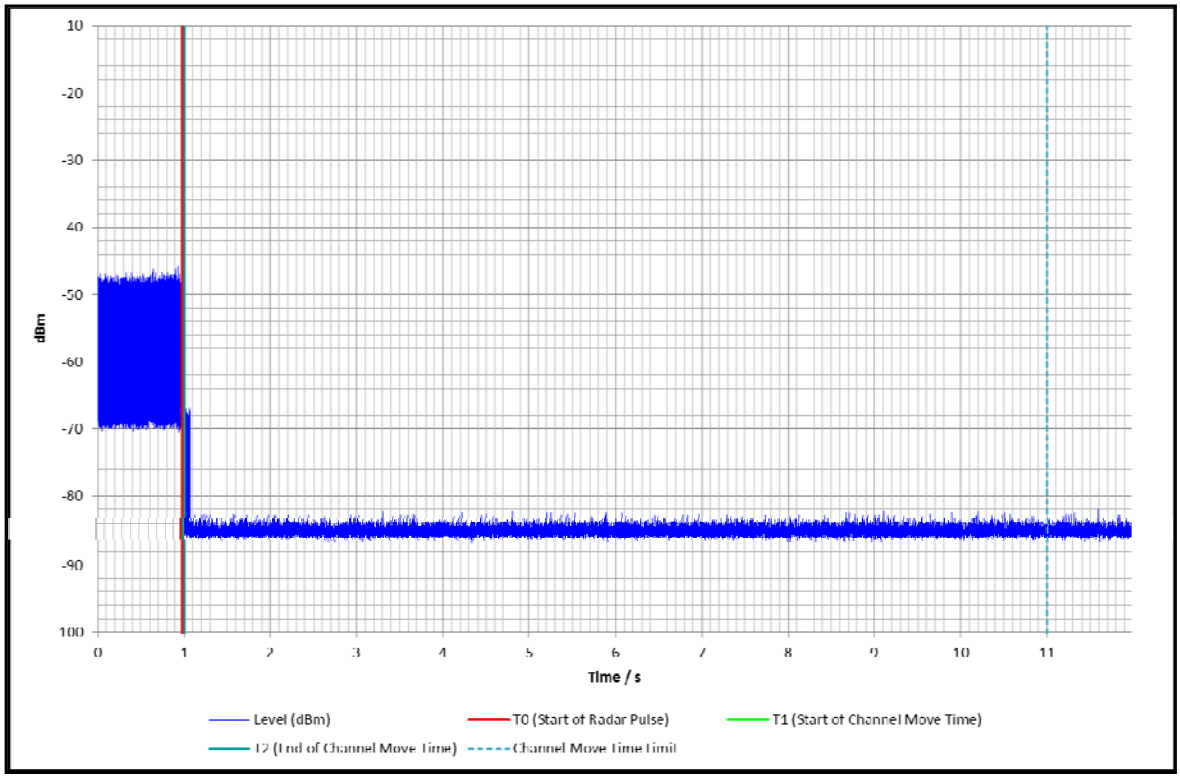
Plot showing the 10 second shutdown limit – Type 5 Radar

Aggregate transmission times are calculated from the short radar type data only. Therefore no channel closing transmission time is given for the Type 5 Radar test. The channel move occurred before the end of the radar and hence the channel move time is zero for the Type 5 Radar.

Channel Closing Transmission Time and Channel Move Time (continued)

Results: 5 MHz Client – Type 1 Radar Fired at Master

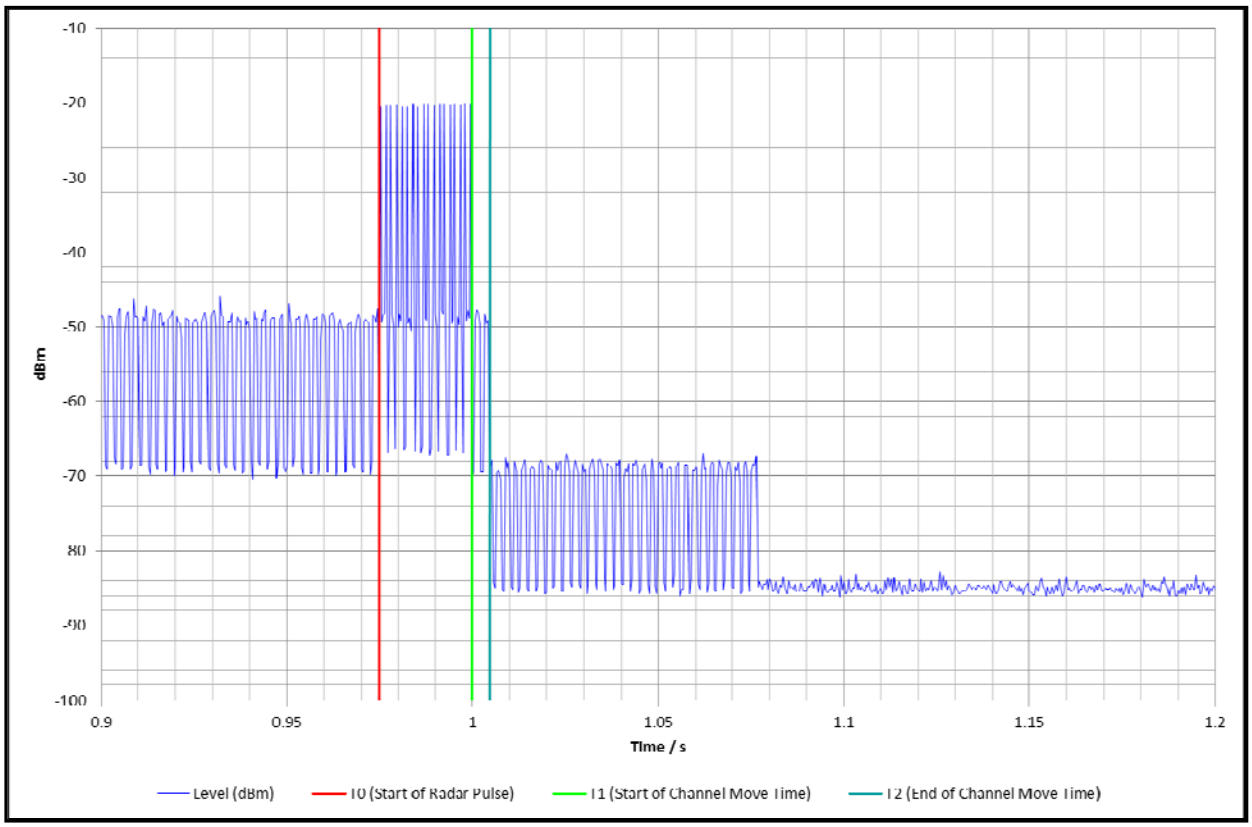
Radar burst type 1 was detected and channel move occurred.



Plot showing the 10 second shutdown limit – Type 1 Radar

Channel Closing Transmission Time and Channel Move Time (continued)

Results: 5 MHz Client – Type 1 Radar Fired at Master (continued)



Plot showing the first 200 ms after the radar – Type 1 Radar

Channel Move Time

Channel (MHz)	BW (MHz)	Trial	Radar	PW (uS)	PRF 1 (pps)	PPB	Move Time (ms)	Limit (ms)	Margin (ms)	Detected
5583	5	1	1	1	700	18	4.4	10000	9995.6	Yes

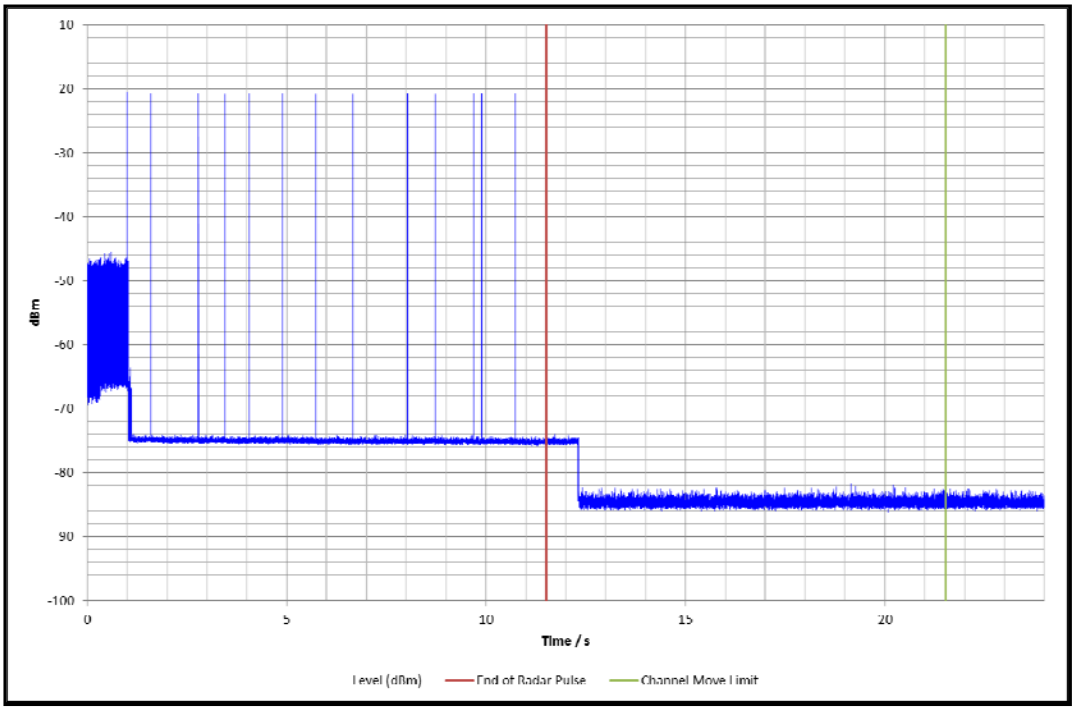
Results: Channel Closing Transmission Time

Channel (MHz)	BW (MHz)	Trial	Radar Type	PW (uS)	PRF 1 (pps)	PPB	Total Aggre-gate Tx Time (ms)	Limit (ms)	Margin (ms)	Tx Time >200 ms after end of radar (ms)	Limit (ms)	Margin (ms)
5583	5	1	1	1	700	18	2.8	260	257.2	0	60	60

Channel Closing Transmission Time and Channel Move Time (continued)

Results: 5 MHz Client – Type 5 Radar Fired at Master

Radar burst type 5 was detected and channel move occurred.



Plot showing the 10 second shutdown limit – Type 5 Radar

Aggregate transmission times are calculated from the short radar type data only. Therefore no channel closing transmission time is given for the Type 5 Radar test. The channel move occurred before the end of the radar and hence the channel move time is zero for the Type 5 Radar.

Channel Closing Transmission Time and Channel Move Time (continued)

Limits:

Table 4: DFS Response Requirement Values

Parameter	Value
Channel Move Time	10 seconds See Note 1.
Channel Closing Transmission Time	200 milliseconds + an aggregate of 60 milliseconds over remaining 10 second period. See Notes 1 and 2.

Note 1: The instant that the *Channel Move Time* and the *Channel Closing Transmission Time* begins is as follows:

- For the Short Pulse Radar Test Signals this instant is the end of the *Burst*.
- For the Frequency Hopping radar Test Signal, this instant is the end of the last radar *Burst* generated.
- For the Long Pulse Radar Test Signal this instant is the end of the 12 second period defining the *Radar Waveform*.

Note 2: The *Channel Closing Transmission Time* is comprised of 200 milliseconds starting at the beginning of the *Channel Move Time* plus any additional intermittent control signals required to facilitate a *Channel* move (an aggregate of 60 milliseconds) during the remainder of the 10 second period. The aggregate duration of control signals will not count quiet periods in between transmissions.

5.2.6. Non-occupancy Period

Test Summary:

Test Engineer:	Philip Harrison	**Test Dates:**	17 June 2013 to 02 July 2013
Test Sample Serial No:	0004565000A3		

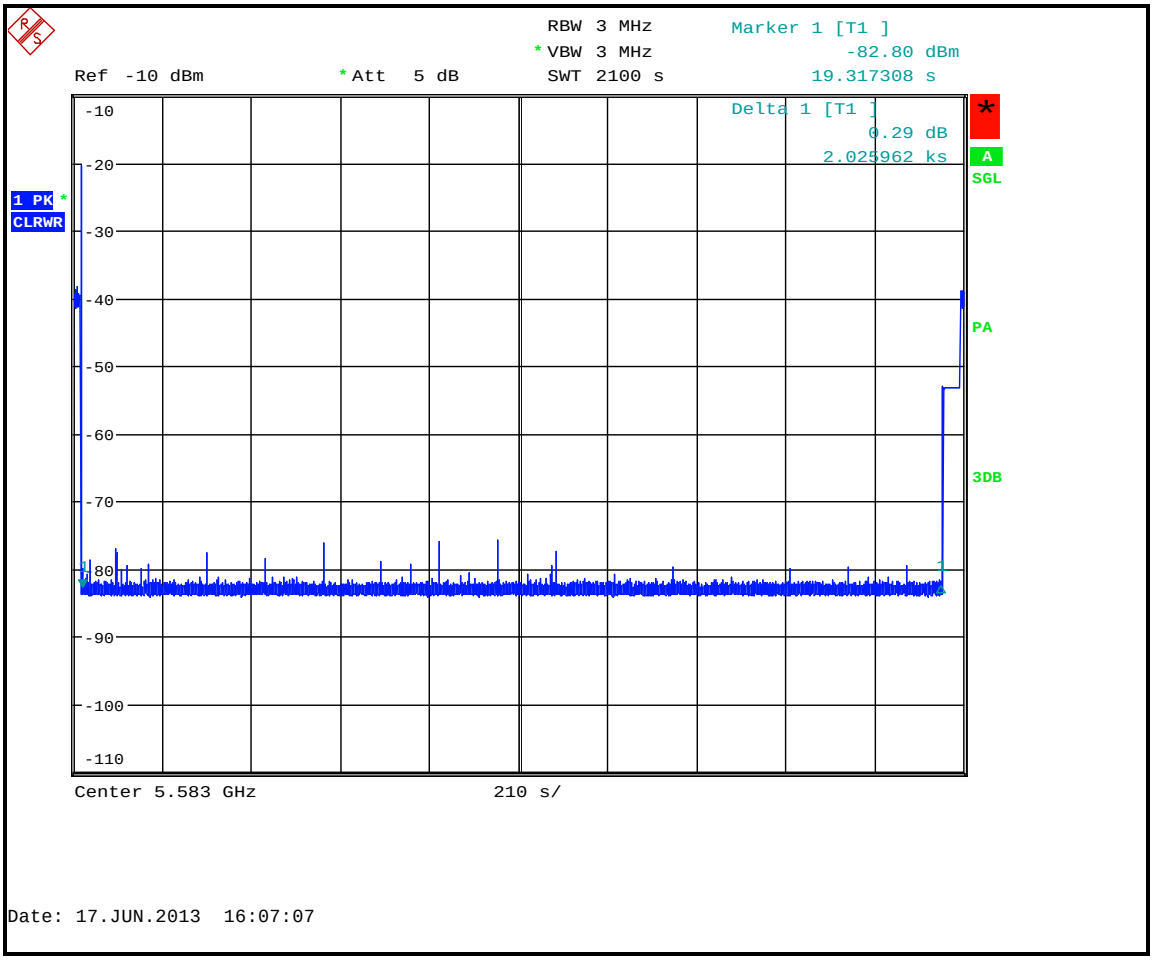
FCC Part:	Part 15.407(h)(iv) & Industry Canada RSS-210 A9.3(b)(v)
Test Method Used:	FCC 06-96 Section 7.8.3

Environmental Conditions:

Temperature (°C):	24 to 28
Relative Humidity (%):	35 to 41

Results: 5 MHz Master – Type 1 Radar

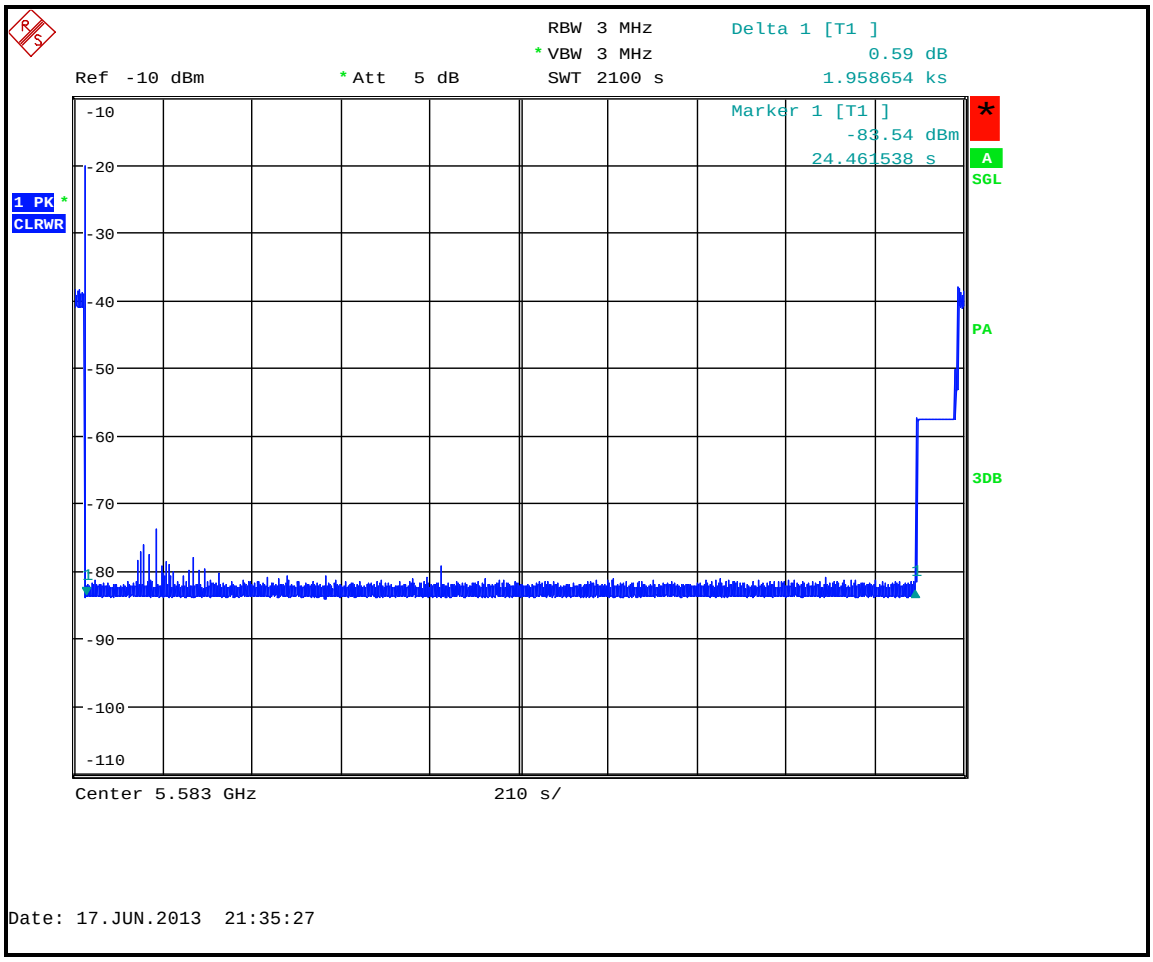
Radar burst type 1 detected and channel was vacated for >30 minutes.



Non-occupancy Period (continued)

Results: 5 MHz Client – Type 1 Radar Fired At Client

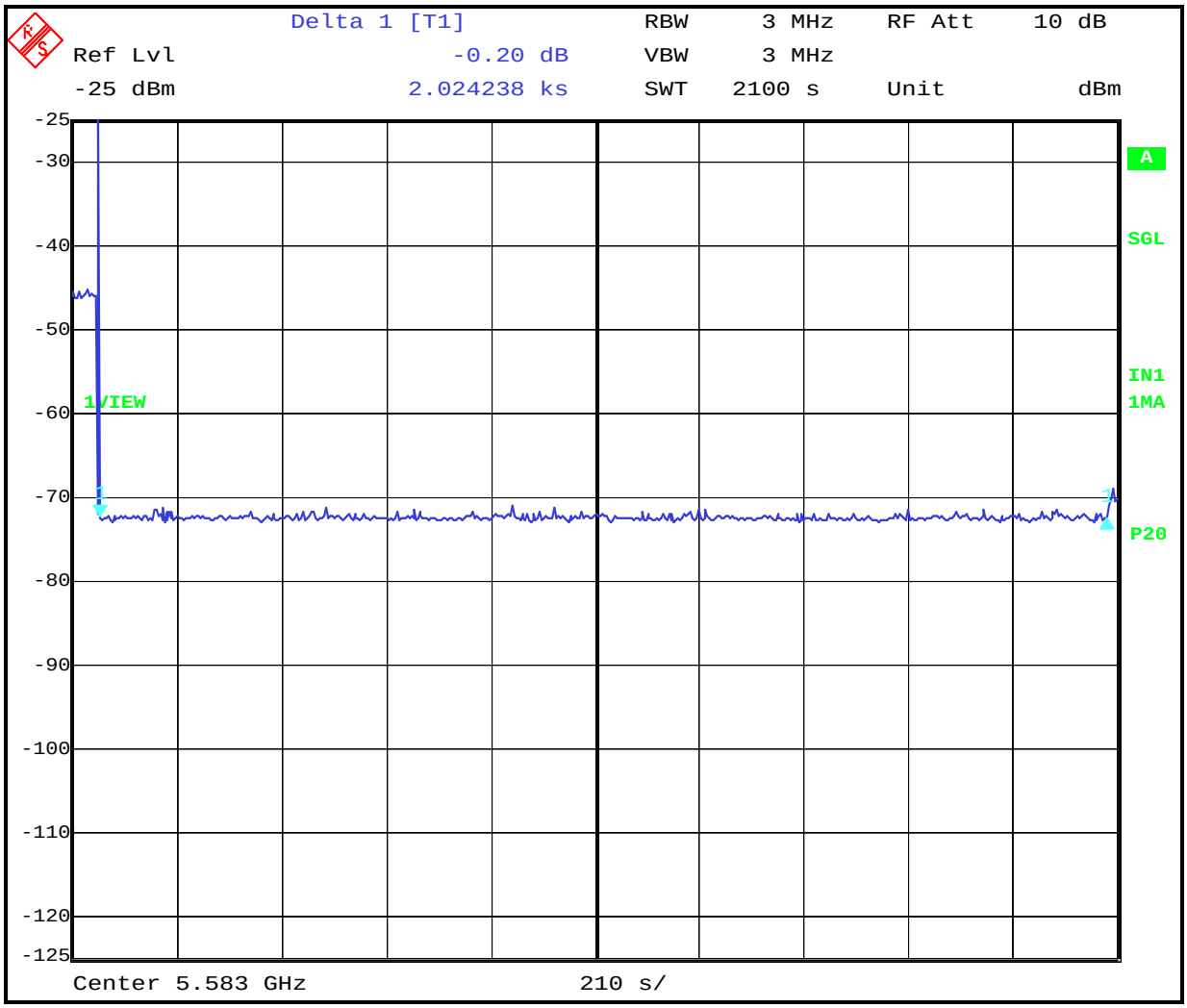
Radar burst type 1 detected and channel was vacated for >30 minutes.



Non-occupancy Period (continued)

Results: 5 MHz Client – Type 1 Radar Fired At Master

Radar burst type 1 detected and channel was vacated for >30 minutes.



Limits:

Table 4: DFS Response Requirement Values

Parameter	Value
Non-occupancy period	Minimum 30 minutes

5.2.7. Statistical Performance Check – Short Pulse Radar Types 1 - 4

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	14 June 2013
Test Sample Serial No:	0004565000A3		

FCC Part:	Part 15.407(h)(2) & RSS-210 A9.3(a)
Test Method Used:	FCC 06-96 Section 7.8.4.1

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	44

Results: 5 MHz Master - Radar Type 1

Radar Type	Trial Number	Detected?	Trial Number	Detected?
1	1	Yes	16	Yes
	2	Yes	17	Yes
	3	Yes	18	Yes
	4	Yes	19	Yes
	5	Yes	20	Yes
	6	Yes	21	Yes
	7	Yes	22	Yes
	8	Yes	23	Yes
	9	Yes	24	Yes
	10	Yes	25	Yes
	11	Yes	26	Yes
	12	Yes	27	Yes
	13	Yes	28	Yes
	14	Yes	29	Yes
	15	Yes	30	Yes
	Detection level		100%	

Statistical Performance Check – Short Pulse Radar Types 1 - 4 (continued)

Results: 5 MHz Master - Radar Type 2

Radar Type	Trial Number	Number Pulses per Burst	Pulse Width (µs)	PRI (µs)	Detected?
2	1	29	1.0	154	Yes
	2	23	1.0	187	Yes
	3	29	1.1	173	Yes
	4	24	1.2	197	Yes
	5	26	1.4	159	Yes
	6	27	1.4	160	Yes
	7	23	1.6	186	Yes
	8	23	1.7	153	Yes
	9	29	1.9	201	Yes
	10	26	2.2	209	Yes
	11	24	2.3	164	Yes
	12	29	2.3	190	Yes
	13	24	2.5	173	Yes
	14	28	2.9	222	Yes
	15	24	3.2	174	Yes
	16	24	3.3	202	Yes
	17	26	3.4	209	Yes
	18	27	3.5	163	Yes
	19	29	3.5	206	Yes
	20	26	3.6	215	Yes
	21	29	3.9	169	Yes
	22	29	4.0	167	Yes
	23	26	4.0	180	Yes
	24	26	4.1	169	Yes
	25	25	4.3	186	Yes
	26	25	4.7	206	Yes
	27	28	4.9	212	Yes
	28	27	4.9	228	Yes
	29	29	5.0	201	Yes
	30	26	5.0	213	Yes
	Detection Level			100%	

Statistical Performance Check – Short Pulse Radar Types 1 - 4 (continued)

Results: 5 MHz Master - Radar Type 3

Radar Type	Trial Number	Number Pulses per Burst	Pulse Width (µs)	PRI (µs)	Detected?
3	1	17	6.3	263	Yes
	2	17	6.5	212	Yes
	3	16	6.5	500	Yes
	4	18	6.7	252	Yes
	5	18	6.9	328	Yes
	6	18	6.9	420	Yes
	7	17	7.1	351	Yes
	8	18	7.2	245	Yes
	9	16	7.2	486	Yes
	10	18	7.6	239	Yes
	11	17	7.6	269	Yes
	12	18	7.6	448	Yes
	13	16	8.0	281	Yes
	14	18	8.1	479	Yes
	15	17	8.2	273	Yes
	16	18	8.3	421	Yes
	17	16	8.4	430	Yes
	18	17	8.5	322	Yes
	19	17	8.5	328	Yes
	20	18	8.7	305	Yes
	21	16	8.8	309	Yes
	22	16	8.8	343	Yes
	23	18	9.0	339	Yes
	24	17	9.0	356	Yes
	25	17	9.1	296	Yes
	26	17	9.1	446	Yes
	27	16	9.2	442	Yes
	28	16	9.4	241	Yes
	29	17	9.4	317	Yes
	30	18	9.8	379	Yes
	Detection Level			100%	

Statistical Performance Check – Short Pulse Radar Types 1 - 4 (continued)

Results: 5 MHz Master - Radar Type 4

Radar Type	Trial Number	Number Pulses per Burst	Pulse Width (µs)	PRI (µs)	Detected?
4	1	16	11.2	281	Yes
	2	15	11.3	426	Yes
	3	16	11.8	283	Yes
	4	14	12.2	483	Yes
	5	16	12.4	352	Yes
	6	15	12.6	219	Yes
	7	13	13	204	Yes
	8	16	13	442	Yes
	9	14	13.9	362	Yes
	10	16	14.9	432	Yes
	11	14	15	285	Yes
	12	16	15.7	497	Yes
	13	14	16.7	383	Yes
	14	13	16.7	492	Yes
	15	13	16.8	397	Yes
	16	14	16.9	247	Yes
	17	15	17	212	Yes
	18	13	17.5	293	Yes
	19	16	17.9	236	Yes
	20	13	17.9	335	Yes
	21	16	18	313	Yes
	22	16	18.1	340	Yes
	23	13	18.1	469	Yes
	24	12	18.3	354	Yes
	25	16	18.8	256	Yes
	26	15	19.4	418	Yes
	27	16	19.6	493	Yes
	28	12	19.8	302	Yes
	29	14	19.8	482	Yes
	30	16	19.9	262	Yes
	Detection Level			100%	

Statistical Performance Check – Short Pulse Radar Types 1 - 4 (continued)

Results: 5 MHz Client - Radar Type 1

Radar Type	Trial Number	Detected?	Trial Number	Detected?
1	1	Yes	16	Yes
	2	Yes	17	Yes
	3	Yes	18	Yes
	4	Yes	19	Yes
	5	Yes	20	Yes
	6	Yes	21	Yes
	7	Yes	22	Yes
	8	Yes	23	Yes
	9	Yes	24	Yes
	10	Yes	25	Yes
	11	Yes	26	Yes
	12	Yes	27	Yes
	13	Yes	28	Yes
	14	Yes	29	Yes
	15	Yes	30	Yes
	Detection level		100%	

Statistical Performance Check – Short Pulse Radar Types 1 - 4 (continued)

Results: 5 MHz Client - Radar Type 2

Radar Type	Trial Number	Number Pulses per Burst	Pulse Width (µs)	PRI (µs)	Detected?
2	1	29	1	228	Yes
	2	29	1.1	198	Yes
	3	26	1.3	189	Yes
	4	24	1.5	172	Yes
	5	23	1.8	169	Yes
	6	26	2	162	Yes
	7	24	2	165	Yes
	8	29	2	188	Yes
	9	23	2.3	212	Yes
	10	26	2.4	194	Yes
	11	23	2.7	156	Yes
	12	24	2.9	175	Yes
	13	29	3	161	Yes
	14	28	3.1	151	Yes
	15	23	3.1	218	Yes
	16	24	3.1	222	Yes
	17	29	3.2	199	Yes
	18	26	3.4	161	Yes
	19	25	3.4	199	Yes
	20	25	3.4	229	Yes
	21	25	3.5	172	Yes
	22	26	3.5	200	Yes
	23	25	3.6	188	Yes
	24	26	4.1	156	Yes
	25	28	4.1	224	Yes
	26	29	4.1	228	Yes
	27	25	4.5	170	Yes
	28	29	4.8	166	Yes
	29	28	5	153	Yes
	30	24	5	227	Yes
	Detection Level			100%	

Statistical Performance Check – Short Pulse Radar Types 1 - 4 (continued)

Results: 5 MHz Client - Radar Type 3

Radar Type	Trial Number	Number Pulses per Burst	Pulse Width (µs)	PRI (µs)	Detected?
3	1	17	10	201	Yes
	2	18	6.1	216	Yes
	3	16	6.1	330	Yes
	4	17	6.1	482	Yes
	5	16	6.2	459	Yes
	6	16	6.4	369	Yes
	7	16	6.7	252	Yes
	8	16	6.9	438	Yes
	9	17	7.1	204	Yes
	10	17	7.1	342	Yes
	11	16	7.4	481	Yes
	12	18	7.6	331	Yes
	13	16	7.6	367	Yes
	14	18	7.7	399	Yes
	15	16	7.8	264	Yes
	16	16	7.9	361	Yes
	17	18	7.9	498	Yes
	18	17	8	201	Yes
	19	16	8	241	Yes
	20	17	8.3	333	Yes
	21	17	8.6	237	Yes
	22	18	8.6	245	Yes
	23	17	8.6	438	Yes
	24	18	9.1	463	Yes
	25	16	9.5	462	Yes
	26	16	9.6	483	Yes
	27	18	9.7	223	Yes
	28	16	9.7	300	Yes
	29	17	9.8	404	Yes
	30	17	9.9	318	Yes
	Detection Level			100%	

Statistical Performance Check – Short Pulse Radar Types 1 - 4 (continued)

Results: 5 MHz Client - Radar Type 4

Radar Type	Trial Number	Number Pulses per Burst	Pulse Width (µs)	PRI (µs)	Detected?
4	1	12	11.2	408	Yes
	2	13	11.6	361	Yes
	3	13	11.7	424	Yes
	4	12	11.7	500	Yes
	5	15	12.2	437	Yes
	6	14	12.7	326	Yes
	7	16	12.8	394	Yes
	8	12	12.9	411	Yes
	9	16	13.1	258	Yes
	10	15	14	293	Yes
	11	13	14.3	234	Yes
	12	16	14.3	401	Yes
	13	16	14.8	391	Yes
	14	15	14.8	412	Yes
	15	16	14.8	417	Yes
	16	12	14.9	284	Yes
	17	16	15	205	Yes
	18	13	15	207	Yes
	19	13	16	330	Yes
	20	15	16	345	Yes
	21	14	16.3	444	Yes
	22	16	16.6	245	Yes
	23	12	17.1	391	Yes
	24	15	17.8	439	Yes
	25	15	18	345	Yes
	26	14	18.4	202	Yes
	27	13	19	345	Yes
	28	16	19.3	485	Yes
	29	14	19.5	351	Yes
	30	13	19.5	461	Yes
	Detection Level			100%	

Statistical Performance Check – Short Pulse Radar Types 1 - 4 (continued)

Limits:

Table 5 – Short Pulse Radar Test Waveforms

Radar Type	Pulse Width (µsec)	PRI (µsec)	Number of Pulses	Minimum Percentage of Successful Detection	Minimum Number of Trials
1	1	1428	18	60%	30
2	1-5	150-230	23-29	60%	30
3	6-10	200-500	16-18	60%	30
4	11-20	200-500	12-16	60%	30
Aggregate (Radar Types 1-4)				80%	120

5.2.8. Statistical Performance Check – Long Pulse Radar Type 5

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	14 June 2013
Test Sample Serial No:	0004565000A3		

FCC Part:	Part 15.407(h)(2) & RSS-210 A9.3(a)
Test Method Used:	FCC 06-96 Section 7.8.4.2

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	44

Results: 5 MHz Master - Radar Type 5

Radar Type	Trial Number	Detected?	Trial Number	Detected?
5	1	Yes	16	Yes
	2	Yes	17	Yes
	3	Yes	18	Yes
	4	Yes	19	Yes
	5	Yes	20	Yes
	6	Yes	21	Yes
	7	Yes	22	Yes
	8	Yes	23	Yes
	9	Yes	24	Yes
	10	Yes	25	Yes
	11	Yes	26	Yes
	12	Yes	27	Yes
	13	Yes	28	Yes
	14	Yes	29	Yes
	15	Yes	30	Yes
	Detection level		100%	

Statistical Performance Check – Long Pulse Radar Type 5 (continued)

Results: 5 MHz Client - Radar Type 5

Radar Type	Trial Number	Detected?	Trial Number	Detected?
5	1	Yes	16	Yes
	2	Yes	17	Yes
	3	Yes	18	Yes
	4	Yes	19	Yes
	5	Yes	20	Yes
	6	Yes	21	Yes
	7	Yes	22	Yes
	8	Yes	23	Yes
	9	Yes	24	Yes
	10	Yes	25	Yes
	11	Yes	26	Yes
	12	Yes	27	Yes
	13	Yes	28	Yes
	14	Yes	29	Yes
	15	Yes	30	Yes
	Detection level		100%	

Notes:

Further details of all parameters on which the trials using Radar Type 5 were created and can be found in Appendix 4: Statistical Performance Check– Radar Type 5 Trial Records.

Limits:

Table 6 – Long Pulse Radar Test Waveform

Radar Type	Pulse Width (µsec)	Chirp Width (MHz)	PRI (µsec)	Number of Pulses per *Burst*	Number of *Bursts*	Minimum Percentage of Successful Detection	Minimum Number of Trials
5	50-100	5-20	1000-2000	1-3	8-20	80%	30

5.2.9. Statistical Performance Check – Frequency Hopping Radar Type 6

Test Summary:

Test Engineer:	Philip Harrison	**Test Date:**	14 June 2013
Test Sample Serial No:	0004565000A3		

FCC Part:	Part 15.407(h)(2) & RSS-210 A9.3(a)
Test Method Used:	FCC 06-96 Section 7.8.4.3

Environmental Conditions:

Temperature (°C):	22
Relative Humidity (%):	44

Results: 5 MHz Master - Radar Type 6

Radar Type	Trial Number	Detected?	Trial Number	Detected?
6	1	Yes	16	Yes
	2	Yes	17	Yes
	3	Yes	18	Yes
	4	Yes	19	Yes
	5	Yes	20	Yes
	6	Yes	21	Yes
	7	Yes	22	Yes
	8	Yes	23	Yes
	9	Yes	24	Yes
	10	Yes	25	Yes
	11	Yes	26	Yes
	12	Yes	27	Yes
	13	Yes	28	Yes
	14	Yes	29	Yes
	15	Yes	30	Yes
	Detection level		100%	

Statistical Performance Check – Frequency Hopping Radar Type 6 (continued)

Results: 5 MHz Client - Radar Type 6

Radar Type	Trial Number	Detected?	Trial Number	Detected?
6	1	Yes	16	Yes
	2	Yes	17	Yes
	3	Yes	18	Yes
	4	Yes	19	Yes
	5	Yes	20	Yes
	6	Yes	21	Yes
	7	Yes	22	Yes
	8	Yes	23	Yes
	9	Yes	24	Yes
	10	Yes	25	Yes
	11	Yes	26	Yes
	12	Yes	27	Yes
	13	Yes	28	Yes
	14	Yes	29	Yes
	15	Yes	30	Yes
	Detection level		100%	

Limits:

Table 7 – Frequency Hopping Radar Test Waveform

Radar Type	Pulse Width (µsec)	PRI (µsec)	Pulses per Hop	Hopping Rate (kHz)	Hopping Sequence Length (msec)	Minimum Percentage of Successful Detection	Minimum Number of Trials
6	1	333	9	0.333	300	70%	30

6. Measurement Uncertainty

No measurement or test can ever be perfect and the imperfections give rise to error of measurement in the results. Consequently the result of a measurement is only an approximation to the value of the measurand (the specific quantity subject to measurement) and is only complete when accompanied by a statement of the uncertainty of the approximation.

The expression of uncertainty of a measurement result allows realistic comparison of results with reference values and limits given in specifications and standards.

The uncertainty of the result may need to be taken into account when interpreting the measurement results.

The reported expanded uncertainties below are based on a standard uncertainty multiplied by an appropriate coverage factor such that a confidence level of approximately 95% is maintained. For the purposes of this document “approximately” is interpreted as meaning “effectively” or “for most practical purposes”.

Measurement Type	Confidence Level (%)	Calculated Uncertainty
DFS CAC Plot Timing	95%	± 918 ms
DFS Channel Shutdown Timing	95%	± 450 us
DFS Non-Occupancy Timing	95%	± 79.25 ms
DFS Radar Amplitude	95%	± 2.17 dB

The methods used to calculate the above uncertainties are in line with those recommended within the various measurement specifications. Where measurement specifications do not include guidelines for the evaluation of measurement uncertainty the published guidance of the appropriate accreditation body is followed.

7. Report Revision History

Version Number	Revision Details		
	Page No(s)	**Clause**	**Details**
1.0	-	-	Initial Version
2.0	1 7	-	Changed Model No. Changed 'Model No.' to 'Cambium Part No.'

Appendix 1. Test Equipment Used

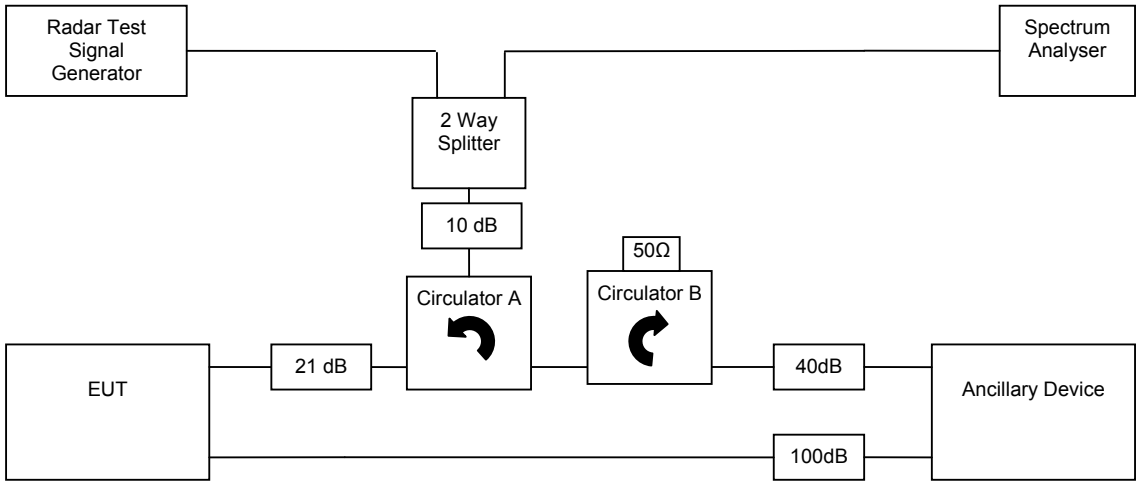
Asset No.	Instrument	Manufacturer	Type No.	Serial No.	Date Calibration Due	Cal. Interval (Months)
M1656	Thermohygrometer	JM Handelspunkt	30.5015.13	None stated	24 May 2014	12
L1101	DFS Test System	Aeroflex	PXI 3000	300110/119	20 May 2014	12
M1631	DFS Test System	Aeroflex	PXI 3000	300110/291	11 Jun 2015	24
L1076	Test Receiver	Rohde & Schwarz	FSU8	101349	29 May 2014	12
A248	Step Attenuator	Narda	743-60	01411	Calibrated Before Use	-
A030	Step Attenuator	Narda	445-69	01544	Calibrated Before Use	-
A163	Step Attenuator	Narda	743-80	01344	Calibrated Before Use	-
A2179	Coaxial Circulator 4-18GHz	Atlantec	ACC-20130-SF-SF-SF	120409230	Calibrated Before Use	-
A2182	Coaxial Circulator 4-18GHz	Atlantec	ACC-20130-SF-SF-SF	120409231	Calibrated Before Use	-
A2183	Coaxial Circulator 4-18GHz	Atlantec	ACC-20130-SF-SF-SF	120409232	Calibrated Before Use	-
A1535	Step Attenuator	Hewlett Packard	8494B/8495B	00007	Calibrated Before Use	-

NB In accordance with UKAS requirements all the measurement equipment is on a calibration schedule.

Appendix 2. Monitoring Methods Diagrams

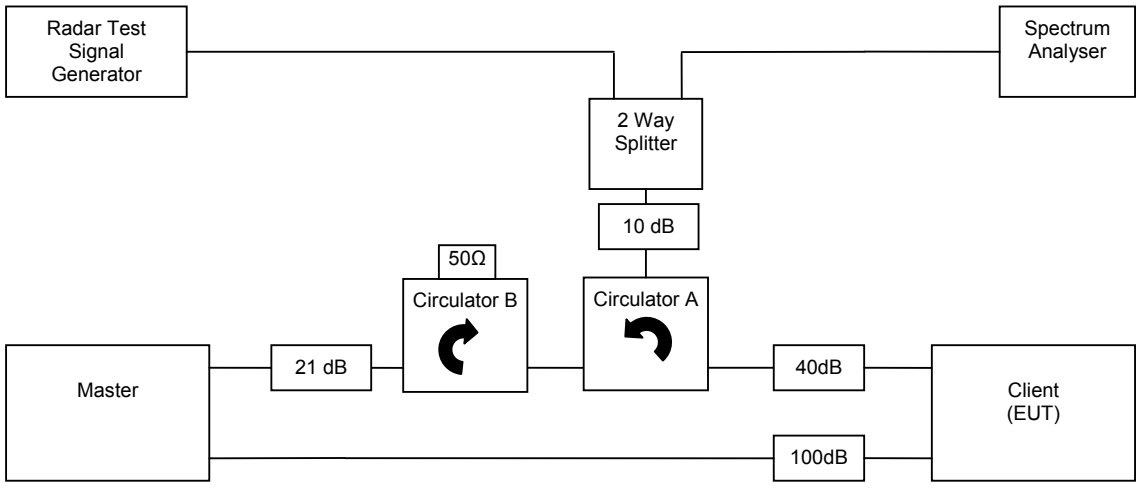
All tests were performed as conducted measurements using the setups as shown below

Setup Diagram – EUT – Master, Radar Injection at Master, or Client with Radar Injection at Client



Note: Circulator A directs the radar pulse towards the device under test. Circulator B provides the same transmit path loss in both directions between the master and client devices. The EUT will appear larger than the ancillary device, and smaller than the radar at the Spectrum Analyser. The radar will be larger at the EUT than at the ancillary device.

Setup Diagram – EUT – Client, Radar Injection at Master



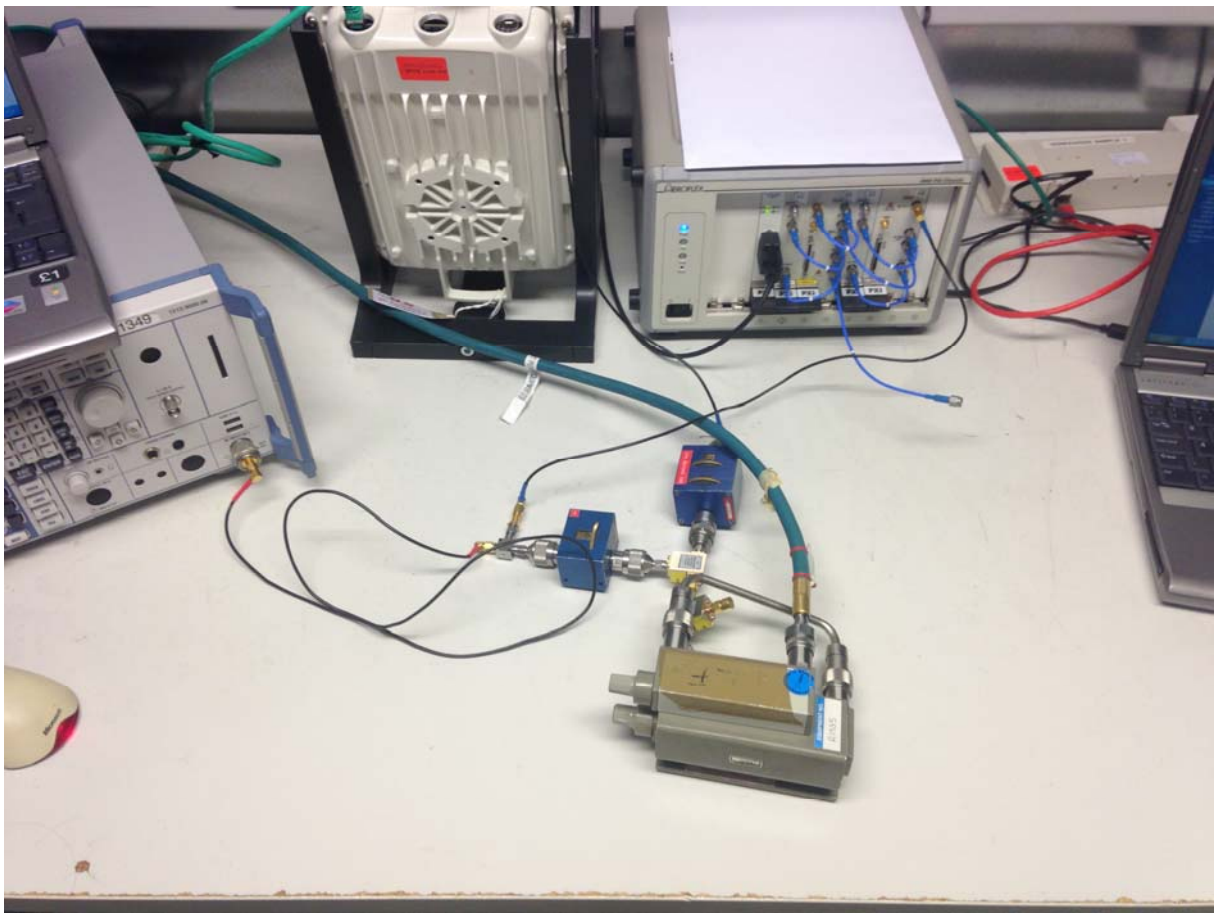
Note: Circulator A directs the radar pulse towards the Master device. Circulator B provides the same transmit path loss in both directions between the master and client devices whilst also attenuating the master relative to the client at the spectrum analyser. The EUT will appear larger than the ancillary device, and smaller than the radar at the Spectrum Analyser. The radar will be larger at the master device than the client.

Appendix 3. Radar Type 1-6 Calibration and Verification Data

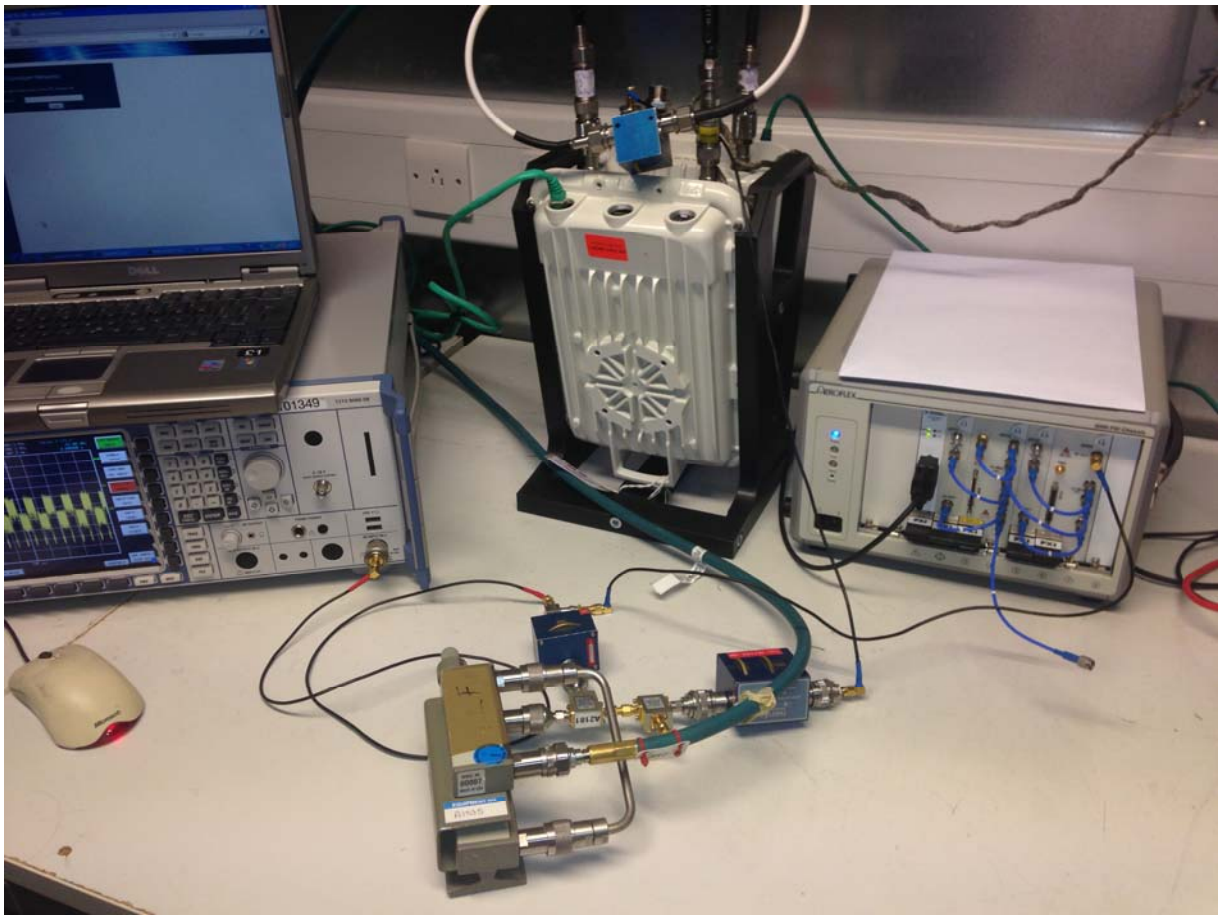
All radars were generated and produced by an Aeroflex DFS test system. The radar pulse generation of this system has previously been verified by the FCC (see Appendix 4).

The radar amplitude was calibrated using the setup diagram above. The spectrum analyser was replaced by a 50Ω load. The EUT was replaced by a spectrum analyser. The radar pulses types 1-4 were then played back by the Aeroflex DFS test system. The amplitude was measured on the spectrum analyser using a 3 MHz RBW/VBW. The output level was adjusted to give the correct level into the EUT, as calculated in section 4.1, before the tests were performed. This level was used as the amplitude parameter for the DFS test system's generation of the pulse 5 & 6 waveforms. The generated pulse 5 & 6 waveforms were then also replayed and verified for amplitude.

Setup Photographs



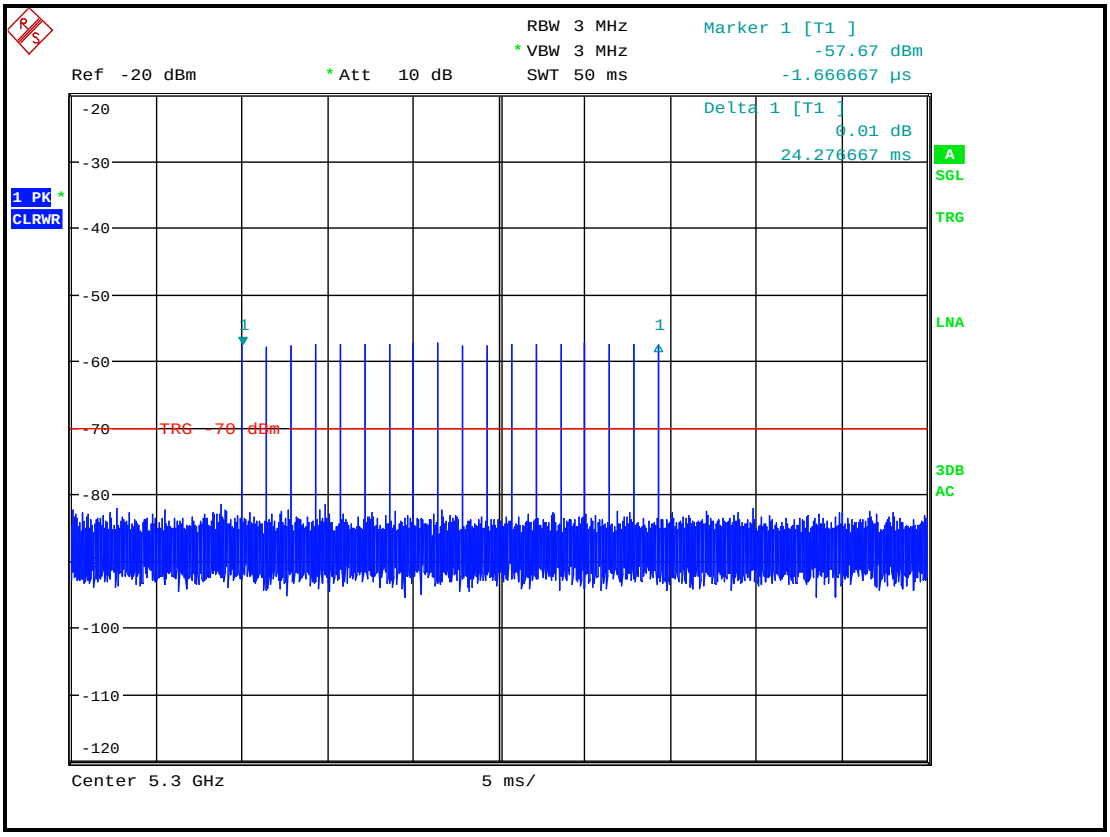
Master or Client with Radar Directed at EUT



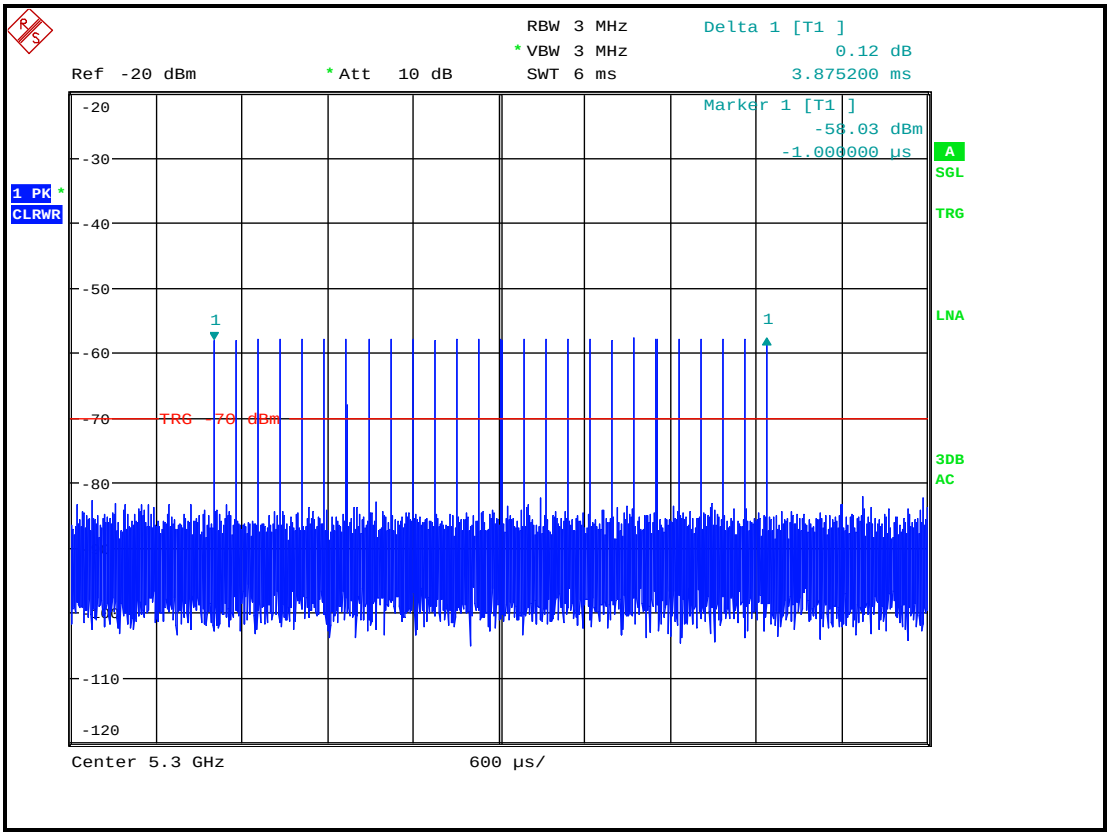
Master or Client with Radar Directed at EUT

Radar Verification

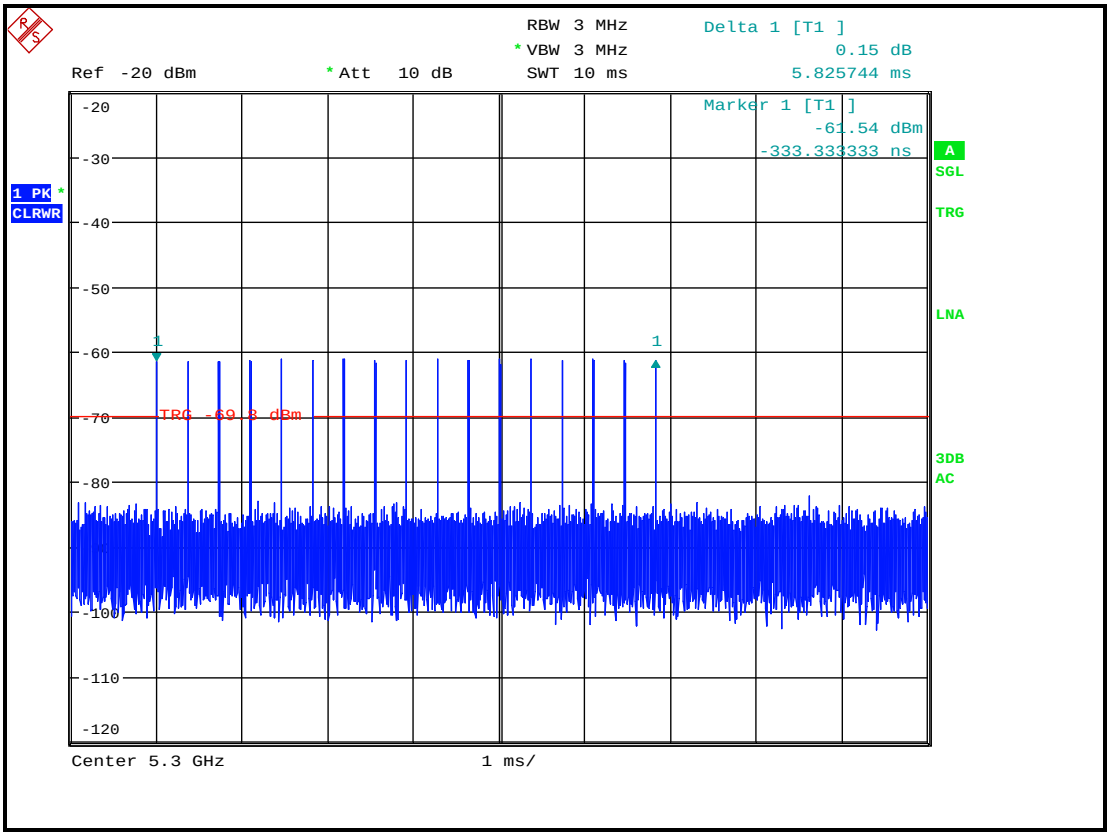
The test system and its waveforms has been validated by the FCC (see Appendix 4). Below are sample plots of the radar waveforms. However, the path loss of the test network was measured and the amplitude was further adjusted to give the correct radar amplitude at the EUT.



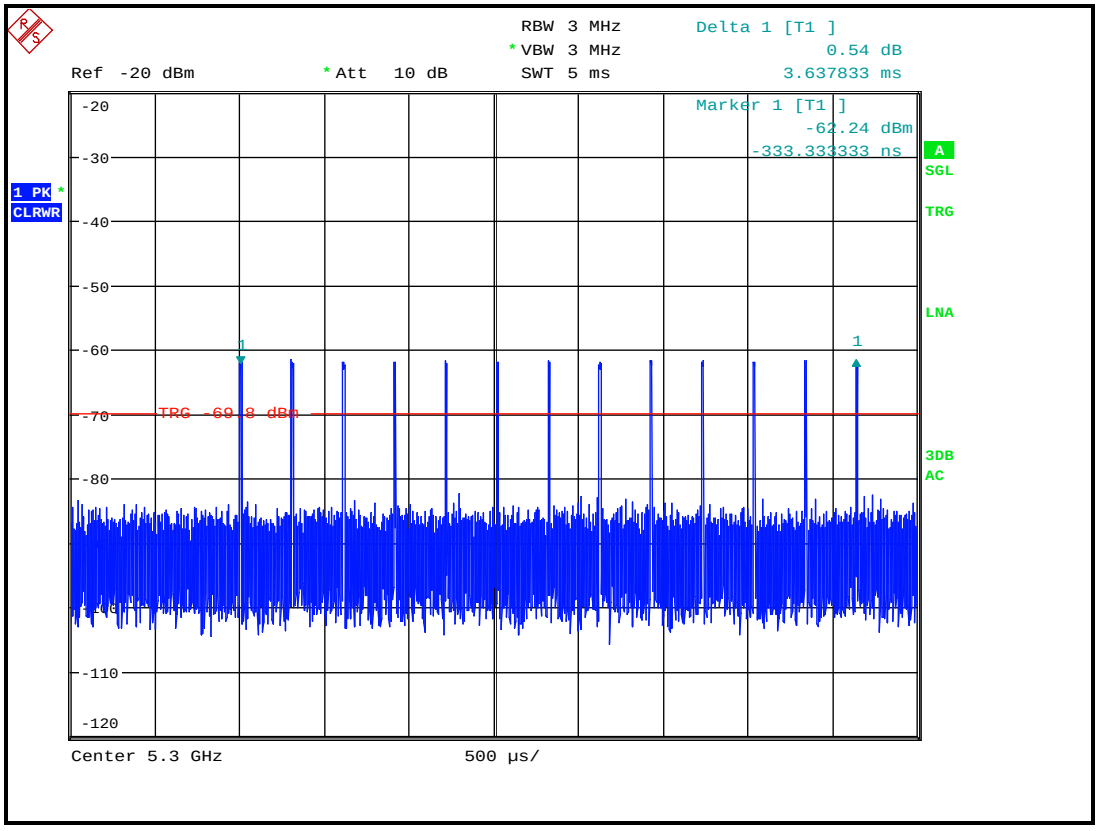
Radar Pulse 1



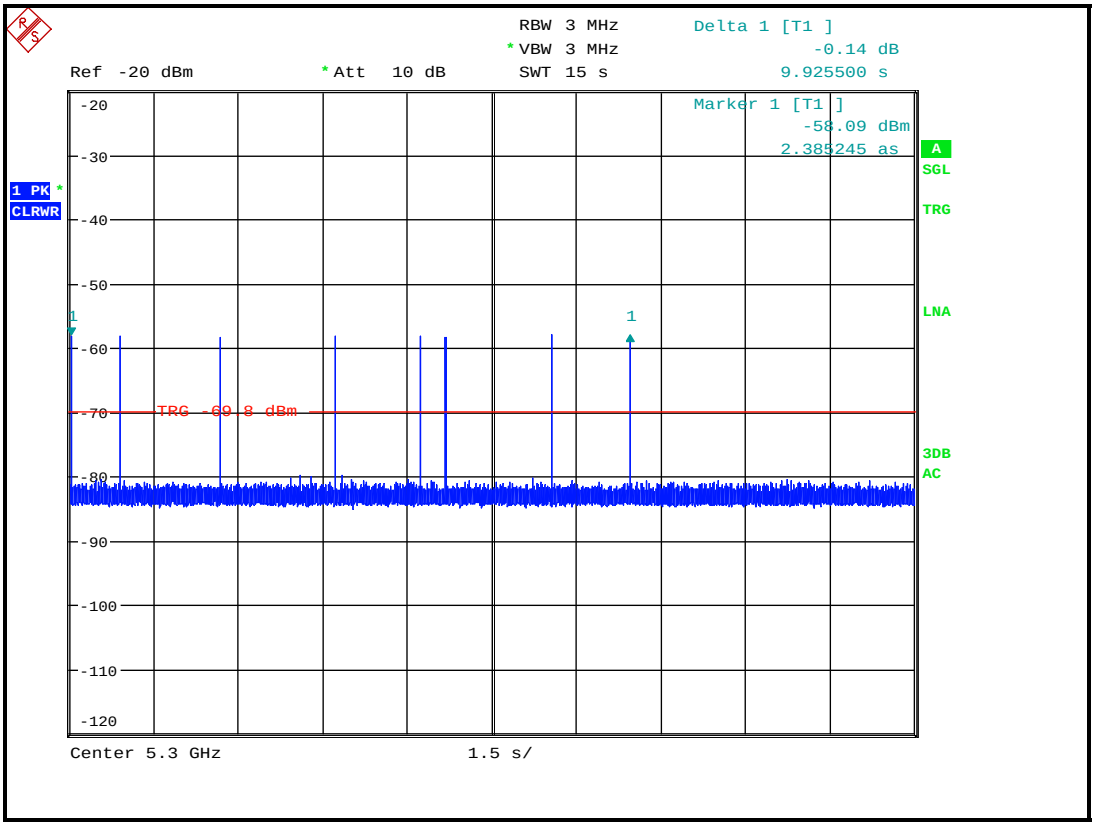
Radar Pulse 2



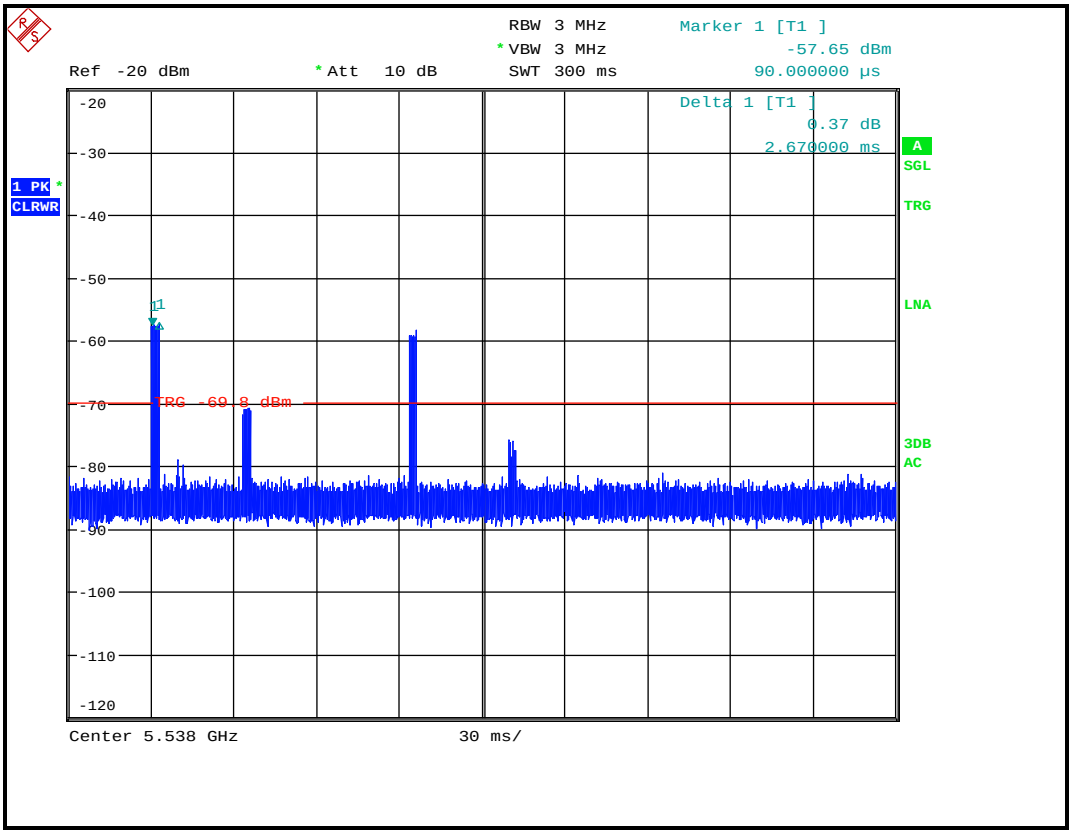
Radar Pulse 3



Radar Pulse 4



Long Radar Pulse 5



Hopping Radar Pulse 6 (Centre Frequency adjusted to first hop frequency)

Appendix 4. Test platform confirmation email

From: Andrew Leimer [mailto:Andrew.Leimer@fcc.gov]
Sent: Friday, September 23, 2011 4:24 PM
To: Chisham, Steve
Cc: Carey, Tim; Hack, Barry; Rashmi Doshi; Joe Dichoso
Subject: RE: Certification for Aeroflex DFS solution

Hello Steve,
The Aeroflex "DXI based DFS test solution" system used for DFS alternative radar signal generation has been approved by the FCC and NTIA.
This approval permits the system to be used by labs in the testing of DFS devices for equipment authorization Certification. It is recommended that applicants that use your system for testing include a statement in the Test Report or a Letter Exhibit stating that the system has FCC and NTIA approval. This E-mail is your record of this approval.
Note that the appropriate term for your system is Approved as the term Certification is reserved for devices gaining equipment authorization through the FCC or a TCB.

Regards,
Andy Leimer

FCC/OET/EACB

Appendix 5. Statistical Performance Check– Radar Type 5 Trial Records

5 MHz Master - Trial 1

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	60	9	-	-	680889
2	1	70	18	-	-	407908
3	2	63	15	1046	-	747226
4	3	96	9	1974	1509	556843
5	2	69	17	1617	-	311046
6	3	59	17	1505	1692	286437
7	2	75	10	1672	-	266743
8	3	97	8	1166	1578	330694
9	2	57	19	1866	-	851489
10	3	93	13	1990	1553	696883
11	3	99	6	1409	1581	789503
12	3	100	14	1314	1784	135058
13	3	59	16	1201	1453	120146
14	2	88	10	1075	-	51934

5 MHz Master - Trial 2

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	87	12	1937	-	183108
2	3	99	16	1782	1524	367242
3	2	78	19	1192	-	8377
4	2	58	20	1072	-	376773
5	3	99	15	1278	1679	242550
6	2	82	17	1474	-	486010
7	3	56	17	1854	1426	552299
8	3	84	10	1080	1376	239838
9	2	67	15	1550	-	567683
10	2	70	7	1114	-	591602
11	2	82	17	1814	-	393384
12	2	76	14	1068	-	588583
13	1	90	12	-	-	259462
14	1	67	14	-	-	258595
15	2	64	16	1549	-	371247
16	2	56	19	1046	-	512971
17	2	64	11	1304	-	417645
18	3	90	7	1090	1613	160010
19	1	57	16	-	-	7228
20	2	67	17	1887	-	119739

5 MHz Master - Trial 3

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	88	20	1686	-	771358
2	1	90	5	-	-	186022
3	3	87	14	1671	1151	712967
4	2	88	6	1549	-	585219
5	3	62	20	1163	1424	111628
6	3	77	8	1210	1357	37668
7	3	72	18	1540	1435	568140
8	3	83	5	1129	1889	844436
9	2	74	12	1597	-	218427
10	3	80	15	1338	1565	408361
11	2	89	17	1262	-	659922
12	1	62	17	-	-	914544
13	2	85	16	1239	-	297775

5 MHz Master - Trial 4

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	56	8	-	-	967725
2	2	93	10	1056	-	680867
3	3	82	11	1299	1415	658947
4	3	85	9	1988	1465	828371
5	2	68	7	1396	-	821415
6	2	95	14	1850	-	810354
7	1	63	5	-	-	726341
8	2	70	12	1938	-	644823
9	1	86	7	-	-	346899
10	1	94	20	-	-	404882
11	2	82	20	1454	-	274197

5 MHz Master - Trial 5

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	76	17	1101	-	309637
2	3	75	12	1476	1776	125711
3	2	55	9	1750	-	81481
4	1	62	10	-	-	249686
5	2	52	12	1037	-	40709
6	2	90	20	1513	-	595480
7	3	64	20	1416	1530	95381
8	3	65	20	1063	1083	340706
9	1	70	6	-	-	435325
10	3	83	14	1256	1344	461784
11	1	93	11	-	-	273008
12	1	87	5	-	-	613168
13	1	77	20	-	-	335037
14	3	96	11	1701	1768	375356
15	2	100	9	1280	-	196587
16	3	90	5	1920	1375	477887
17	1	67	9	-	-	379443
18	1	59	7	-	-	12658
19	1	54	20	-	-	172472

5 MHz Master - Trial 6

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	77	14	1715	1491	123879
2	1	53	19	-	-	14194
3	3	68	12	1831	1544	283554
4	2	50	18	1661	-	125651
5	3	59	16	1930	1784	435747
6	1	84	15	-	-	304025
7	2	86	9	1290	-	458343
8	1	54	13	-	-	426986
9	1	85	9	-	-	195867
10	2	62	15	1348	-	355131
11	2	73	6	1149	-	366352
12	3	53	10	1900	1786	421416
13	2	51	11	1219	-	309446
14	2	83	7	1541	-	465821
15	1	78	12	-	-	63121
16	2	75	15	1861	-	158304
17	3	54	11	1666	1135	125480
18	2	65	6	1524	-	138008
19	2	71	9	1853	-	140554
20	1	66	5	-	-	485713

5 MHz Master - Trial 7

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	77	17	1815	-	595387
2	3	82	5	1033	1271	573220
3	2	82	6	1609	-	141228
4	2	62	5	1091	-	87623
5	2	81	9	1372	-	1077040
6	1	80	18	-	-	796058
7	1	82	5	-	-	309078
8	1	78	14	-	-	1275893

5 MHz Master - Trial 8

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	90	9	-	-	44788
2	1	93	19	-	-	559897
3	1	62	7	-	-	479511
4	1	51	16	-	-	143
5	1	97	12	-	-	312470
6	3	82	5	1174	1502	60602
7	3	72	11	1985	1058	365311
8	2	75	16	1295	-	558107
9	2	68	12	1464	-	651792
10	1	68	16	-	-	600907
11	1	81	10	-	-	145298
12	1	81	6	-	-	287906
13	1	84	17	-	-	64938
14	2	58	6	1460	-	256534
15	1	59	14	-	-	113798
16	2	66	11	1208	-	373626
17	2	51	20	1753	-	405592

5 MHz Master - Trial 9

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	83	20	1122	-	86536
2	1	95	12	-	-	332797
3	1	72	5	-	-	399343
4	3	97	8	1354	1004	419439
5	3	58	6	1690	1528	219440
6	3	100	13	1051	1039	320997
7	1	54	6	-	-	485386
8	3	59	20	1344	1141	235406
9	3	59	5	1131	1292	665838
10	2	80	10	1682	-	729027
11	1	87	13	-	-	252141
12	3	73	18	1206	1225	259860
13	2	70	15	1138	-	702576
14	2	52	5	1009	-	276857
15	2	71	13	1420	-	697161
16	2	70	5	1017	-	367137

5 MHz Master - Trial 10

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	68	12	1114	1364	342324
2	1	98	16	-	-	93571
3	1	96	20	-	-	216823
4	3	68	20	1353	1442	271410
5	2	68	9	1315	-	461955
6	1	54	11	-	-	192972
7	1	92	8	-	-	440925
8	2	86	5	1226	-	14535
9	2	94	16	1073	-	166963
10	1	76	13	-	-	338465
11	1	58	9	-	-	242988
12	2	79	5	1383	-	187298
13	1	57	10	-	-	99317
14	2	96	15	1674	-	196872
15	3	59	14	1652	1728	86014
16	3	89	14	1713	1500	50933
17	1	90	9	-	-	380347
18	1	62	5	-	-	391025
19	1	81	16	-	-	4765
20	2	100	6	1682	-	244689

5 MHz Master - Trial 11

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	72	14	1885	1573	297530
2	3	70	11	1124	1437	800198
3	1	66	19	-	-	210062
4	3	67	6	1532	1451	606924
5	2	51	7	1336	-	443732
6	2	63	16	1058	-	263898
7	2	58	19	1053	-	443180
8	1	61	20	-	-	596285
9	2	91	19	1214	-	284731
10	2	69	6	1168	-	47375
11	3	80	19	1942	1176	800984
12	2	87	8	1842	-	386603
13	1	85	6	-	-	139208

5 MHz Master - Trial 12

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	72	18	1747	1734	108663
2	1	95	18	-	-	723261
3	2	91	18	1732	-	89965
4	2	54	15	1320	-	581704
5	2	61	16	1182	-	768950
6	2	100	6	1226	-	405690
7	1	93	6	-	-	693579
8	3	97	9	1422	1317	522031
9	2	100	6	1332	-	191315
10	3	95	13	1737	1976	54373
11	1	88	12	-	-	6336
12	2	88	15	1849	-	217490
13	1	51	15	-	-	301646
14	3	90	16	1032	1964	149599

5 MHz Master - Trial 13

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	68	16	1204	-	666301
2	1	68	20	-	-	165263
3	2	74	10	1250	-	546576
4	1	55	14	-	-	1069118
5	1	59	15	-	-	764602
6	1	73	12	-	-	443716
7	3	80	12	1030	1860	720730
8	2	92	11	1666	-	50250
9	1	75	12	-	-	502346

5 MHz Master - Trial 14

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	83	15	1665	1409	703056
2	2	84	7	1230	-	597476
3	3	75	6	1297	1242	567568
4	1	67	17	-	-	390911
5	1	87	19	-	-	602107
6	2	50	11	1077	-	244539
7	1	84	17	-	-	719019
8	3	70	17	1780	1924	613577
9	3	89	19	1629	1744	426232
10	1	65	10	-	-	596806
11	2	67	7	1610	-	124976
12	2	97	16	1863	-	736658
13	3	61	14	1825	1936	89975
14	1	77	8	-	-	675357
15	2	99	8	1530	-	604017
16	3	60	6	1192	1232	74608

5 MHz Master - Trial 15

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	64	18	-	-	674033
2	2	60	17	1218	-	322788
3	1	96	20	-	-	630055
4	3	58	5	1693	1623	272629
5	3	53	12	1354	1527	67668
6	2	90	11	1417	-	590688
7	2	82	19	1224	-	116737
8	1	50	20	-	-	408532
9	3	88	5	1442	1372	43390
10	1	82	6	-	-	409852
11	1	70	14	-	-	595478
12	1	82	14	-	-	654575
13	1	93	19	-	-	278927
14	2	90	14	1531	-	202334
15	1	84	14	-	-	608095
16	1	86	5	-	-	284483
17	1	51	5	-	-	693067

5 MHz Master - Trial 16

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	99	16	1832	1259	368920
2	3	90	14	1583	1580	328301
3	3	56	15	1590	1373	191721
4	3	92	17	1250	1969	420522
5	3	55	16	1525	1441	248075
6	2	78	20	1828	-	57147
7	3	83	13	1541	1187	480209
8	2	74	6	1995	-	407846
9	2	80	11	1813	-	560995
10	3	60	7	1691	1541	643
11	1	55	7	-	-	632034
12	2	67	9	1982	-	17211
13	2	95	5	1677	-	795647
14	3	84	15	1278	1274	651275

5 MHz Master - Trial 17

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	62	17	1105	-	78028
2	2	82	17	1357	-	506851
3	1	76	20	-	-	263095
4	2	69	12	1118	-	97335
5	1	55	20	-	-	23973
6	2	77	16	1883	-	522600
7	1	78	18	-	-	263483
8	3	55	16	1871	1382	397199
9	1	86	15	-	-	122322
10	2	82	16	1530	-	448155
11	2	69	9	1185	-	101258
12	1	78	17	-	-	330862
13	1	66	14	-	-	252372
14	3	91	15	1790	1943	451151
15	3	93	15	1563	1007	514043
16	3	72	14	1910	1311	253368
17	3	50	5	1369	1438	526729
18	2	85	9	1229	-	212391
19	1	84	6	-	-	38735

5 MHz Master - Trial 18

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	92	13	1873	1693	18698
2	3	94	18	1829	1286	231260
3	2	84	20	1870	-	133870
4	3	81	14	1387	1375	230160
5	3	70	8	1421	1517	321388
6	2	95	20	1757	-	552069
7	2	87	10	1438	-	447793
8	3	61	7	1527	1609	346858
9	1	67	14	-	-	159142
10	2	50	18	1457	-	311490
11	2	80	12	1720	-	292441
12	2	81	9	1351	-	246241
13	3	67	14	1486	1222	152235
14	2	89	6	1935	-	218180
15	1	93	17	-	-	168060
16	2	95	17	1265	-	27952
17	2	51	12	1262	-	216163
18	3	63	15	1974	1258	41895
19	3	90	7	1677	1207	252234

5 MHz Master - Trial 19

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	50	20	1234	-	489045
2	2	57	9	1751	-	449303
3	2	53	13	1802	-	1423
4	1	98	19	-	-	544027
5	2	57	10	1978	-	531537
6	3	92	18	1393	1439	447002
7	1	53	20	-	-	31117
8	2	62	6	1209	-	160377
9	3	55	5	1111	1552	125699
10	3	86	9	1952	1491	118414
11	3	67	5	1709	1032	20601
12	1	72	20	-	-	413255
13	3	93	5	1634	1394	47213
14	2	69	16	1232	-	465744
15	2	95	8	1096	-	156427
16	2	82	19	1123	-	380069
17	2	98	13	1305	-	449773
18	3	67	11	1222	1950	487267
19	1	65	10	-	-	119605

5 MHz Master - Trial 20

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	91	18	1207	1879	304853
2	1	72	7	-	-	667829
3	3	81	17	1607	1481	804616
4	3	52	9	1909	1517	491018
5	3	56	7	1003	1525	423380
6	3	67	14	1877	1908	264060
7	2	92	6	1917	-	1085638
8	1	85	6	-	-	267338

5 MHz Master - Trial 21

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	87	14	-	-	670699
2	2	62	12	1255	-	51489
3	1	78	14	-	-	137242
4	3	52	18	1679	1976	528526
5	3	93	20	1705	1608	108592
6	2	74	19	1326	-	80328
7	1	72	7	-	-	448919
8	1	72	11	-	-	993089
9	3	86	18	1337	1830	681266
10	2	96	16	1369	-	948589
11	3	78	16	1587	1389	453079

5 MHz Master - Trial 22

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	100	13	-	-	992198
2	3	79	19	1974	1062	132184
3	2	86	16	1612	-	562501
4	3	58	17	1941	1514	131151
5	1	100	7	-	-	1115198
6	1	51	12	-	-	616335
7	2	93	17	1995	-	978330
8	2	71	11	1987	-	1148521
9	1	70	18	-	-	676458
10	2	74	20	1677	-	309749

5 MHz Master - Trial 23

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	78	18	1449	1903	78557
2	3	50	10	1898	1664	547550
3	2	73	13	1253	-	678148
4	3	94	8	1055	1373	174476
5	3	84	6	1254	1515	472550
6	3	97	11	1776	1095	719306
7	3	51	9	1092	1738	465296
8	2	53	6	1295	-	714968
9	3	70	5	1258	1799	278238
10	3	52	10	1419	1378	23965
11	3	90	18	1429	1532	625351
12	3	62	17	1357	1739	607062

5 MHz Master - Trial 24

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	81	7	1735	-	776379
2	1	54	13	-	-	1150240
3	1	93	13	-	-	258883
4	3	83	14	1719	1771	361495
5	2	50	13	1296	-	1094339
6	1	94	11	-	-	147373
7	1	98	14	-	-	788934
8	2	51	11	1653	-	796582
9	1	84	6	-	-	350956
10	2	91	15	1967	-	1100504

5 MHz Master - Trial 25

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	66	14	1055	1587	434879
2	1	60	18	-	-	329892
3	1	85	17	-	-	874185
4	3	73	5	1551	1200	114811
5	1	74	20	-	-	958542
6	2	54	8	1280	-	489584
7	3	83	20	1118	1560	712960
8	3	72	19	1011	1221	357600
9	3	80	10	1441	1625	902067
10	1	66	6	-	-	798983
11	1	89	17	-	-	136307
12	1	66	15	-	-	659016

5 MHz Master - Trial 26

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	88	16	-	-	91405
2	3	64	14	1212	1159	132178
3	1	56	13	-	-	839302
4	3	68	18	1676	1518	658743
5	1	98	20	-	-	363915
6	3	78	7	1315	1424	401632
7	2	89	8	1518	-	836468
8	2	54	12	1643	-	139118
9	1	85	6	-	-	150007
10	1	84	13	-	-	674419
11	1	89	10	-	-	547942
12	1	95	9	-	-	245454
13	3	65	7	1125	1097	225160
14	3	85	15	1226	1903	18825

5 MHz Master - Trial 27

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	63	11	-	-	50145
2	2	86	12	1881	-	1160927
3	2	62	20	1393	-	401995
4	2	55	18	1646	-	509336
5	1	85	17	-	-	1193195
6	1	76	6	-	-	1174114
7	3	69	13	1830	1766	798534
8	3	95	13	1995	1606	1171791

5 MHz Master - Trial 28

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	70	5	1932	1929	151461
2	3	100	7	1591	1809	694104
3	2	91	9	1361	-	560445
4	1	76	9	-	-	1131049
5	2	75	9	1540	-	585039
6	2	80	11	1132	-	125150
7	1	93	7	-	-	481317
8	1	88	18	-	-	459942
9	2	68	17	1762	-	954561
10	3	62	8	1724	1475	634893

5 MHz Master - Trial 29

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	54	12	1219	1220	1364973
2	3	69	12	1662	1097	925895
3	1	74	13	-	-	1076547
4	2	70	5	1599	-	903875
5	3	56	19	1155	1829	1043461
6	2	64	9	1742	-	198158
7	3	54	7	1157	1370	1435003
8	1	69	20	-	-	709240

5 MHz Master - Trial 30

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	63	7	1752	1311	84837
2	2	91	10	1451	-	557549
3	2	62	20	1562	-	38595
4	2	60	8	1101	-	93387
5	3	99	17	1925	1310	241168
6	2	71	8	1650	-	362800
7	1	87	11	-	-	400436
8	3	53	11	1416	1759	278274
9	2	84	19	1642	-	555229
10	1	91	19	-	-	474046
11	1	89	10	-	-	471857
12	3	65	11	1827	1000	440474
13	1	69	6	-	-	481100
14	1	65	13	-	-	341118
15	3	54	10	1828	1796	204179
16	3	75	9	1858	1282	228199
17	1	77	13	-	-	262564
18	2	92	17	1953	-	350818
19	2	80	8	1386	-	405913
20	2	53	10	1879	-	352238

5 MHz Client - Trial 1

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	57	17	1666	-	193521
2	2	78	8	1400	-	415384
3	2	95	18	1535	-	523738
4	1	87	8	-	-	251443
5	3	89	12	1443	1149	609258
6	1	79	5	-	-	251350
7	1	81	5	-	-	92599
8	1	75	17	-	-	475370
9	2	93	18	1081	-	524873
10	3	80	11	1668	1575	478741
11	2	65	5	1215	-	196971
12	1	99	5	-	-	502517
13	2	90	20	1785	-	369265
14	3	63	20	1401	1754	485368
15	1	98	10	-	-	90168
16	2	76	17	1032	-	424044
17	3	88	8	1713	1905	320009

5 MHz Client - Trial 2

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	70	17	-	-	52136
2	1	74	6	-	-	85289
3	3	93	5	1557	1901	867991
4	2	100	19	1884	-	956477
5	2	99	19	1857	-	1133595
6	2	97	11	1873	-	1301145
7	2	64	19	1068	-	1192870
8	1	79	14	-	-	1078958

5 MHz Client - Trial 3

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	93	9	1311	-	430460
2	2	60	7	1021	-	181812
3	3	64	18	1265	1813	60454
4	1	77	5	-	-	595150
5	1	53	8	-	-	161335
6	1	79	7	-	-	418123
7	1	72	5	-	-	321449
8	1	69	6	-	-	675366
9	3	79	10	1283	1140	688885
10	2	83	6	1317	-	381267
11	2	63	16	1921	-	32593
12	2	51	8	1508	-	546762
13	1	54	19	-	-	261616
14	3	51	14	1164	1373	76267

5 MHz Client - Trial 4

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	51	10	-	-	585304
2	1	87	13	-	-	420202
3	2	78	6	1899	-	124639
4	2	61	11	1518	-	9171
5	3	58	7	1562	1149	568807
6	2	72	20	1429	-	718401
7	3	75	16	1228	1008	386134
8	1	68	9	-	-	785658
9	3	74	17	1843	1083	16336
10	1	90	17	-	-	442590
11	2	53	7	1603	-	847047
12	1	82	19	-	-	691346
13	1	88	17	-	-	114758

5 MHz Client - Trial 5

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	53	10	1671	1127	100603
2	1	51	8	-	-	119063
3	3	85	11	1720	1065	448462
4	1	82	8	-	-	712194
5	1	88	10	-	-	108310
6	1	87	17	-	-	265931
7	2	57	6	1108	-	259870
8	1	100	5	-	-	523014
9	2	83	14	1478	-	467513
10	3	100	16	1221	1889	682111
11	3	57	18	1110	1533	130487
12	2	55	16	1176	-	271012
13	2	67	15	1413	-	66724
14	1	90	10	-	-	215710
15	3	52	19	1765	1985	455142
16	2	75	19	1346	-	331974

5 MHz Client - Trial 6

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	94	13	1460	1290	1310875
2	2	58	13	1883	-	407616
3	2	58	9	1268	-	1107297
4	1	87	19	-	-	1209903
5	3	80	7	1770	1245	116152
6	1	97	16	-	-	46132
7	1	68	16	-	-	365731
8	2	74	6	1953	-	1063346
9	1	61	7	-	-	974870

5 MHz Client - Trial 7

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	69	14	1720	1342	402269
2	1	58	11	-	-	338514
3	1	62	16	-	-	488903
4	1	60	18	-	-	412388
5	2	76	16	1935	-	496790
6	3	86	17	1729	1259	593390
7	3	85	16	1870	1335	21735
8	3	74	11	1581	1062	464027
9	1	98	8	-	-	35357
10	1	90	10	-	-	466225
11	2	61	14	1710	-	131823
12	1	90	14	-	-	447354
13	1	77	19	-	-	23844
14	1	78	18	-	-	333455
15	2	68	16	1350	-	450627
16	2	53	11	1784	-	423547
17	3	80	18	1409	1007	251276
18	2	67	15	1125	-	618090
19	2	59	8	1272	-	491211

5 MHz Client - Trial 8

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	57	16	-	-	730189
2	2	67	13	1934	-	397261
3	2	69	19	1764	-	453815
4	1	71	12	-	-	761780
5	3	94	14	1542	1512	475750
6	3	96	16	1547	1713	161372
7	2	53	19	1051	-	36604
8	1	54	19	-	-	530429
9	1	65	12	-	-	531577
10	3	56	12	1874	1633	622848
11	1	85	11	-	-	251803
12	3	91	12	1639	1183	839008
13	2	82	20	1220	-	235805

5 MHz Client - Trial 9

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	98	16	-	-	603882
2	1	67	14	-	-	334197
3	3	78	6	1966	1702	511633
4	2	52	6	1870	-	636456
5	2	54	17	1029	-	324977
6	2	81	19	1970	-	125244
7	2	66	9	1320	-	968028
8	3	76	7	1179	1630	1187838
9	1	58	13	-	-	453087

5 MHz Client - Trial 10

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	97	17	1501	-	324850
2	2	55	16	1776	-	737774
3	2	96	12	1904	-	321974
4	2	82	7	1143	-	179459
5	3	82	20	1562	1888	660728
6	3	62	14	1387	1940	215821
7	3	78	5	1681	1102	349994
8	2	53	8	1513	-	407609
9	3	66	14	1693	1276	148926
10	2	73	5	1373	-	74949
11	3	94	20	1235	1613	409868
12	2	94	7	1388	-	34946
13	1	61	19	-	-	659919
14	3	67	7	1497	1071	17672
15	2	55	8	1245	-	209299
16	1	82	5	-	-	100322

5 MHz Client - Trial 11

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	96	14	1733	1144	429299
2	3	93	6	1440	1345	212187
3	1	85	6	-	-	229556
4	3	70	12	1112	1296	301457
5	1	53	12	-	-	467099
6	3	100	10	1356	2000	494838
7	1	73	6	-	-	179598
8	2	59	16	1030	-	283096
9	1	69	15	-	-	406786
10	3	98	13	1142	1897	246366
11	1	80	5	-	-	378811
12	2	81	13	1262	-	219033
13	3	94	13	1756	1440	307692
14	1	85	14	-	-	481549
15	3	80	15	1419	1640	588969
16	1	84	11	-	-	284719
17	3	59	18	1437	1943	454854
18	1	50	18	-	-	404861
19	3	56	19	1369	1038	356774
20	3	82	8	1162	1665	147851

5 MHz Client - Trial 12

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	57	17	1577	-	103181
2	2	82	10	1944	-	68595
3	3	77	17	1027	1084	485478
4	3	64	10	1868	1911	70151
5	2	84	9	1381	-	25241
6	1	74	12	-	-	141695
7	3	79	8	1508	1287	78052
8	1	53	14	-	-	110735
9	2	87	5	1129	-	501766
10	1	79	16	-	-	490631
11	2	95	10	1380	-	26636
12	1	76	7	-	-	171555
13	3	67	12	1826	1464	524059
14	3	98	14	1519	1798	406472
15	2	60	16	1683	-	329163
16	2	81	13	1453	-	89451
17	2	75	15	1967	-	209970
18	2	60	7	1286	-	455489
19	1	95	9	-	-	167536
20	3	77	9	1129	1152	533810

5 MHz Client - Trial 13

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	96	7	-	-	16210
2	3	81	16	1494	1846	678911
3	2	92	15	1868	-	709407
4	1	75	13	-	-	375997
5	3	69	8	1036	1680	442105
6	3	72	20	1015	1098	364067
7	2	78	12	1421	-	442433
8	2	98	15	1853	-	380834
9	3	72	18	1426	1066	472451
10	2	90	11	1781	-	450330
11	2	57	9	1818	-	649685
12	2	71	16	1191	-	564614
13	2	88	11	1174	-	205169
14	1	72	10	-	-	464262
15	2	93	15	1229	-	522301
16	3	59	9	1525	1304	15120

5 MHz Client - Trial 14

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	66	19	1750	-	537842
2	1	80	16	-	-	104546
3	2	97	15	1755	-	283477
4	3	71	9	1793	1484	1282936
5	2	88	8	1752	-	3217
6	3	78	5	1683	1203	1203434
7	2	58	14	1845	-	571365
8	2	71	18	1920	-	1122753
9	2	77	5	1910	-	1315074

5 MHz Client - Trial 15

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	55	17	1001	-	627097
2	3	52	16	1873	1090	113529
3	3	74	15	1578	1039	747573
4	2	75	12	1153	-	314928
5	1	95	18	-	-	790611
6	2	56	17	1221	-	163393
7	3	50	12	1083	1925	791087
8	1	58	14	-	-	99379
9	3	99	10	1405	1677	335082
10	1	63	14	-	-	570468
11	2	70	12	1321	-	99963
12	3	94	7	1810	1255	797578
13	3	83	19	1291	1733	21561
14	2	83	6	1673	-	374844

5 MHz Client - Trial 16

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	63	11	1925	-	306119
2	1	77	9	-	-	540727
3	1	78	17	-	-	277755
4	2	56	20	1087	-	38260
5	1	68	10	-	-	114805
6	3	66	12	1114	1945	230736
7	3	81	12	1993	1989	318132
8	1	52	16	-	-	576299
9	2	51	9	1950	-	49041
10	3	54	7	1851	1216	561714
11	2	78	5	1645	-	47995
12	2	59	9	1073	-	305380
13	2	60	7	1625	-	154185
14	3	78	17	1933	1391	49691
15	1	58	15	-	-	2828
16	1	70	6	-	-	158083
17	1	65	9	-	-	459716
18	2	53	5	1429	-	219275
19	3	99	19	1749	1648	268809

5 MHz Client - Trial 17

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	55	10	1833	1993	796140
2	2	96	18	1815	-	549365
3	2	68	15	1995	-	196490
4	1	52	18	-	-	269308
5	1	74	16	-	-	832820
6	1	64	8	-	-	1294678
7	3	73	10	1597	1747	1008902
8	1	99	6	-	-	406169

5 MHz Client - Trial 18

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	98	10	1903	1659	764164
2	2	52	16	1919	-	911936
3	3	85	17	1248	1898	370567
4	2	89	15	1699	-	345419
5	2	98	10	1484	-	839057
6	2	85	12	1029	-	52869
7	3	90	7	1234	1765	625211
8	1	93	13	-	-	256813
9	2	98	7	1613	-	692654
10	3	75	17	1846	1537	340671
11	2	78	11	1449	-	425494

5 MHz Client - Trial 19

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	97	5	-	-	309216
2	1	95	17	-	-	24268
3	3	83	5	1133	1766	338801
4	3	54	12	1810	1551	706463
5	3	93	20	1145	1921	519581
6	2	87	7	1236	-	663135
7	3	69	5	1857	1920	455327
8	3	62	5	1337	1585	629116
9	1	74	15	-	-	68149
10	1	70	13	-	-	81916
11	2	95	14	1782	-	279098
12	3	94	12	1645	1396	45918
13	3	83	18	1229	1760	620567
14	2	100	13	1589	-	476274

5 MHz Client - Trial 20

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	58	6	1830	-	565498
2	1	76	10	-	-	290507
3	2	57	8	1888	-	693415
4	1	77	20	-	-	572609
5	2	81	15	1284	-	629988
6	1	63	9	-	-	757306
7	2	80	11	1993	-	433213
8	1	70	6	-	-	524301
9	1	56	8	-	-	139216
10	1	52	16	-	-	185215
11	2	84	10	1949	-	401005
12	1	51	19	-	-	132284
13	3	92	8	1433	1037	477289
14	2	70	7	1753	-	804069

5 MHz Client - Trial 21

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	60	12	1738	-	483306
2	1	92	12	-	-	204065
3	2	81	14	1520	-	412652
4	2	96	19	1884	-	441501
5	2	55	10	1061	-	425567
6	3	59	7	1569	1798	573546
7	3	64	17	1576	1889	350346
8	3	60	18	1695	1200	316416
9	3	73	8	1637	1914	362907
10	3	75	12	1292	1162	430749
11	2	64	7	1917	-	651568
12	2	57	9	1666	-	376925
13	2	66	17	1944	-	496114
14	1	52	16	-	-	45587
15	3	58	15	1470	1604	262093
16	1	63	16	-	-	460950

5 MHz Client - Trial 22

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	83	7	-	-	216286
2	1	80	10	-	-	1025487
3	2	68	13	1934	-	825196
4	2	96	19	1843	-	1055597
5	3	91	11	1735	1231	289592
6	2	93	17	1532	-	616050
7	2	60	12	1652	-	392910
8	1	96	8	-	-	650169
9	3	52	17	1116	1385	767807
10	2	61	19	1091	-	761136
11	2	69	9	1868	-	866441

5 MHz Client - Trial 23

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	71	18	1786	-	118196
2	3	90	10	1698	1152	68565
3	1	70	7	-	-	1071
4	3	62	6	1766	1017	201012
5	2	76	19	1182	-	586215
6	3	92	6	1255	1908	363920
7	3	75	14	1488	1334	509338
8	3	63	20	1742	1687	347335
9	1	98	13	-	-	573179
10	3	89	7	1228	1101	489478
11	2	61	19	1936	-	379740
12	1	53	20	-	-	169589
13	2	62	13	1426	-	570194
14	2	76	10	1436	-	221740
15	2	50	14	1663	-	612839
16	3	61	11	1813	1136	214065
17	1	84	12	-	-	49109
18	3	70	14	1398	1207	287532
19	1	51	12	-	-	154000

5 MHz Client - Trial 24

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	76	14	1343	1183	404191
2	3	94	14	1760	1972	559298
3	3	62	10	1854	1262	830090
4	3	66	14	1052	1348	959340
5	1	96	20	-	-	229345
6	3	66	20	1104	1419	663212
7	3	86	17	1469	1953	931877
8	2	90	19	1318	-	970544
9	3	84	7	1839	1604	921431
10	1	77	19	-	-	741574
11	2	58	15	1174	-	267949
12	2	74	20	1281	-	770954

5 MHz Client - Trial 25

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	62	8	-	-	414771
2	1	90	19	-	-	626812
3	3	88	7	1030	1990	210592
4	1	90	11	-	-	183863
5	2	90	13	1503	-	581640
6	2	77	6	1294	-	431435
7	2	97	18	1598	-	343666
8	1	85	11	-	-	577712
9	1	77	7	-	-	200507
10	2	50	20	1476	-	90354
11	3	92	5	1641	1082	434244
12	3	100	9	1639	1328	563347
13	1	98	12	-	-	123261
14	2	99	20	1575	-	305338
15	3	82	17	1889	1209	476790
16	1	74	5	-	-	317575
17	3	94	11	1453	1454	408136
18	3	93	7	1708	1564	500233
19	1	55	5	-	-	39704

5 MHz Client - Trial 26

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	56	5	1022	-	26316
2	3	83	17	1195	1232	599939
3	3	97	15	1508	1303	108591
4	2	51	16	1495	-	36183
5	2	83	6	1815	-	691377
6	3	54	14	1701	1870	116931
7	1	82	10	-	-	762621
8	2	96	20	1736	-	533589
9	1	71	6	-	-	785806
10	1	54	5	-	-	394834
11	3	86	20	1339	1089	467137
12	2	70	19	1218	-	27842
13	3	85	14	1532	1883	578267
14	3	100	7	1349	1656	373582
15	1	100	18	-	-	629152

5 MHz Client - Trial 27

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	2	57	14	1788	-	1151366
2	2	84	20	1877	-	1075330
3	1	52	17	-	-	734596
4	2	85	19	1999	-	1294108
5	2	95	8	1256	-	586577
6	1	95	7	-	-	346675
7	1	97	10	-	-	350263
8	3	72	18	1760	1600	329052
9	3	55	19	1551	1005	1222072

5 MHz Client - Trial 28

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	3	69	17	1075	1774	89259
2	3	93	7	1243	1335	660353
3	1	86	20	-	-	338031
4	2	87	20	1456	-	616100
5	1	66	16	-	-	614915
6	1	85	6	-	-	652798
7	3	67	8	1338	1770	91678
8	2	67	7	1477	-	612719
9	2	70	15	1205	-	386638
10	3	71	13	1907	1651	382770
11	3	53	12	1848	1712	42845
12	1	63	15	-	-	323647
13	3	100	11	1908	1124	407745
14	2	79	12	1105	-	173232
15	1	56	6	-	-	310994
16	2	56	7	1944	-	503172

5 MHz Client - Trial 29

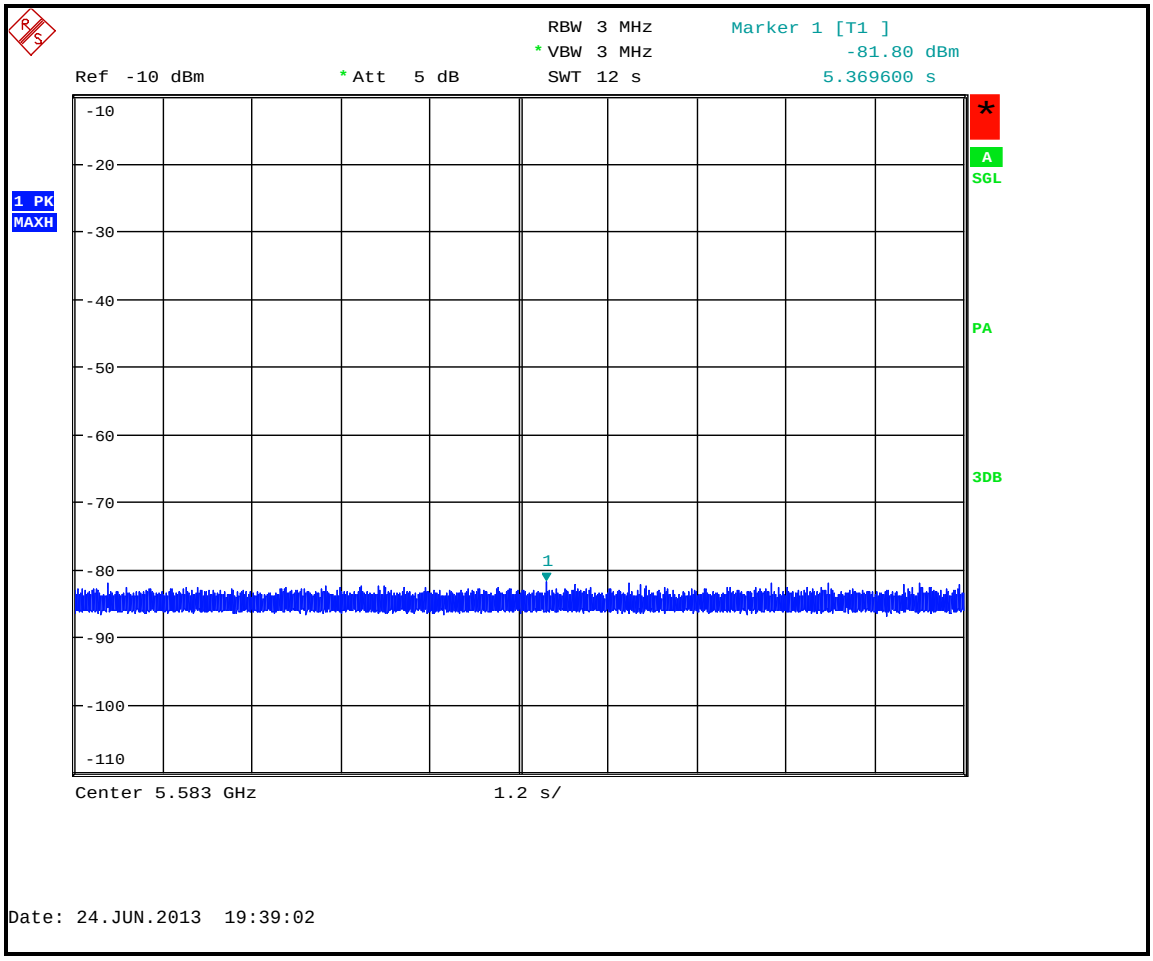
Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	61	8	-	-	685559
2	1	94	19	-	-	547445
3	2	62	19	1800	-	515457
4	2	71	9	1297	-	522158
5	1	50	20	-	-	606540
6	2	64	14	1948	-	490235
7	2	56	19	1916	-	415670
8	1	64	15	-	-	1018705
9	1	70	20	-	-	894059

5 MHz Client - Trial 30

Burst Segment	Number of Pulses	Pulse Width (usec)	Chirp Width (MHz)	Pulse 1-to-2 Spacing (usec)	Pulse 2-to-3 Spacing (usec)	Starting Location Within Interval (usec)
1	1	100	18	-	-	259672
2	2	87	14	1990	-	269354
3	3	90	14	1658	1195	651871
4	3	97	20	1196	1507	417535
5	1	76	10	-	-	528084
6	3	55	18	1661	1069	771935
7	2	83	13	1779	-	393790
8	3	99	6	1214	1772	378436
9	3	55	6	1699	1347	74835
10	3	54	9	1448	1785	139437
11	3	95	12	1528	1687	562800
12	2	87	10	1246	-	787159
13	2	98	7	1416	-	259081
14	3	98	18	1982	1735	38925

Appendix 6. System Noise floor Reference Plots

As required by section 8.3.18(iii) of FCC 06-96, the following plots show the reference noise floor of the system used during measurement.



Noise Floor of Test System

Notes:

1. As noted in some test plots, the radar signal generator increases the noise floor whilst running in some modes.