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TEST REPORT

**ELPRO E2-455-C9
Digital Transceiver**

tested to the

**Code of Federal Regulations (CFR) 47
Part 90 –Private Land Mobile Services**

for

ELPRO Technologies, Australia

This Test Report is issued with the authority of:

A handwritten signature in black ink, appearing to read "Andrew Cutler".

Andrew Cutler- General Manager



All tests reported herein
have been performed in
accordance with the
laboratory's scope of
accreditation

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1. COMPLIANCE STATEMENT

The **ELPRO E2-455-C9 Digital Transceiver** complies with the limits defined in 47 CFR Part 90 and 47 CFR Part 2 when tested in accordance with the test methods described in 47 CFR Part 2, ANSI C63.26 - 2015 and ANSI / TIA-603-E -2016.

2. RESULT SUMMARY

The results of testing carried out between the 18th November 2021 and 1st December 2021 are summarised below.

Clause	Description	Result
90.203	Certification required	Noted
2.1046 90.205	RF power output Power and antenna height limits	Noted Complies
2.1049 2.202	Occupied bandwidth Bandwidths	Noted Noted
90.207 90.209 90.210	Types of emissions Bandwidth limitations Emission masks	Complies Complies Complies
2.1051	Spurious emissions at antenna terminals	Complies
2.1053	Field strength of spurious radiation	Complies
2.1055 90.213	Frequency stability Frequency stability	Noted Complies
90.214	Transient frequency behaviour	Complies
1.1310	Radio frequency exposure limits	Complies

3. ATTESTATION

This report describes the tests and measurements performed for the purpose of determining compliance with the specification with the following conditions:

The client selected the test sample.

The report relates only to the sample tested.

This report does not contain erasures.

This report contains typographical correction for transmitter type on page 5 and replaces report no: 211104_1 issued by date 8th December 2021.

Measurement uncertainties with statistical confidence intervals of 95% are shown below test results. Both Class A and Class B uncertainties have been accounted for, as well as influence uncertainties where appropriate.

In addition this equipment has been tested in accordance with the requirements contained in the appropriate Commission regulations.

All compliance statements have been made with respect of the specification limit with no reference to the measurement uncertainty.

To the best of my knowledge, these tests were performed using measurement procedures that are consistent with industry or Commission standards and demonstrate that the equipment complies with the appropriate standards.

I further certify that the necessary measurements were made by EMC Technologies NZ Ltd, 47 MacKelvie Street, Grey Lynn, Auckland, New Zealand.



Andrew Cutler
General Manager
EMC Technologies NZ Ltd

4. CLIENT INFORMATION

Company Name ELPRO Technologies Pty Ltd

Physical Address 29 Lathe Street
Virginia
Queensland 4014

Country Australia

Contact Mr Eric Zhu/ Mr John White

5. TEST SAMPLE DESCRIPTION

Brand Name ELPRO

Model Number E2-455-C9

Brand Type Digital Transceiver

Manufacturer ELPRO Technologies Pty. Ltd

Serial Number(s) 30057396

FCC ID O9P-E2-455C92

Product Overview:

The E2-455 is a series of digital radio modules that operate over a number of bands.

The C9 model operates between 928 – 960 MHz providing QAM and FSK modulation for high speed data transfer.

The E2-455 transceiver will be used in conjunction with the ELPRO 415U-2 and 415U-E Host devices to provide radio communications.

The transceiver has the following characteristics:

Transmitter Type

This equipment has been classed as a Fixed Transceiver.

Part 90 Certification Bands

928.0 - 930.0 MHz
935.0 - 940.0 MHz

Test frequencies

Frequency (MHz)	Channel Bandwidths (kHz)	Modulation Type
928.500	12.5, 25.0	FSK/QAM
930.000	12.5, 25.0	FSK/QAM
935.000	12.5, 25.0	FSK/QAM
950.000	12.5, 25.0	FSK/QAM

Emission designators

FSK: 11K0F1D 19K0F1D
QAM: 10K0D1D 20K0D1D

Rated Transmitter Output Power

10 mW (+10.0 dBm) to 10 watts (+40.0 dBm)

The output power from the device reduces by 3 dB when the input voltage drops below 9 Vdc.

Power Supply

The product operates with an external DC power supply in the range from 12 Vdc to 30 Vdc
Nominal test voltage is 13.8 Vdc

Standard Temperature and Humidity

Temperature: +15 °C to + 30 °C maintained.
Relative Humidity: 20% to 75% observed.

Standard Test Power Source

Standard Test Voltage: 13.8 Vdc

Extreme Temperature

High Temperature: + 50 °C maintained.
Low Temperature: - 30 °C maintained.

6. TEST RESULTS

The client has stated that the FCC Part 90 certification would be required.

Testing has been carried out on representative frequencies from FCC Part 90 to state compliance of the product.

Part 90.203(j)

(a) Except as specified in paragraphs (b) and (l) of this section, each transmitter utilized for operation under this part and each transmitter marketed as set forth in § 2.803 of this chapter must be of a type which has been certificated for use under this part.

The product is not exempt and would need certification.

(g) Transmitters having frequency programming capability and that are designed to operate above 25 MHz are exempt from paragraphs (e) and (f) of this section if the design of such transmitters:

(1) Is such that transmitters with external controls normally available to the operator must be internally modified to place the equipment in the programmable mode. Further, while in the programmable mode, the equipment shall not be capable of transmitting. The procedures for making the modification and altering the frequency program shall not be made available with the operating information normally supplied to the end user of the equipment;

or

(2) Requires the transmitter to be programmed for frequencies through controls normally inaccessible to the operator;

or

(3) Requires equipment to be programmed for frequencies through use of external devices or specifically programmed modules made available only to service/maintenance personnel; or

(4) Requires equipment to be programmed through cloning (copying a program directly from another transmitter) using devices and procedures made available only to service/maintenance personnel.

The client will supply Power and Frequency tuning procedures during certification process to TCB.

Part 90.203(j) (m) and (n) is not applicable.

Part 90 (j) Certification will be required for this device.

Result: Complies.

RF power output

Measurements were carried out at the RF output terminals of the transmitter using a 30 dB power attenuator and a 50 Ω dummy load.

Measurements were carried out when the transmitter was not being modulated.

Testing was carried out at maximum power output.

Maximum transmitter power (CW) - Rated 10.0 W (+40.0 dBm)

Frequency (MHz)	Voltage (Vdc)	Carrier Power (dBm)		
		+22° C	+55° C	-30° C
928.500	9.0	38.5	37.9	38.9
	13.8	39.9	39.3	39.3
	30.0	39.3	39.3	39.2
930.000	9.0	38.5	37.9	38.9
	13.8	39.8	39.4	39.4
	30.0	39.9	39.4	39.3

Limits:

Part 90 does not specify the transmitter output power

Result: Complies.

Measurement Uncertainty: ± 0.5 dB

Emission types and bandwidth limitations:

The following emission types and designators have been declared by the client:

FSK: 11K0F1D for 12.5 kHz channels and 19K0F1D for 25.0 kHz channels

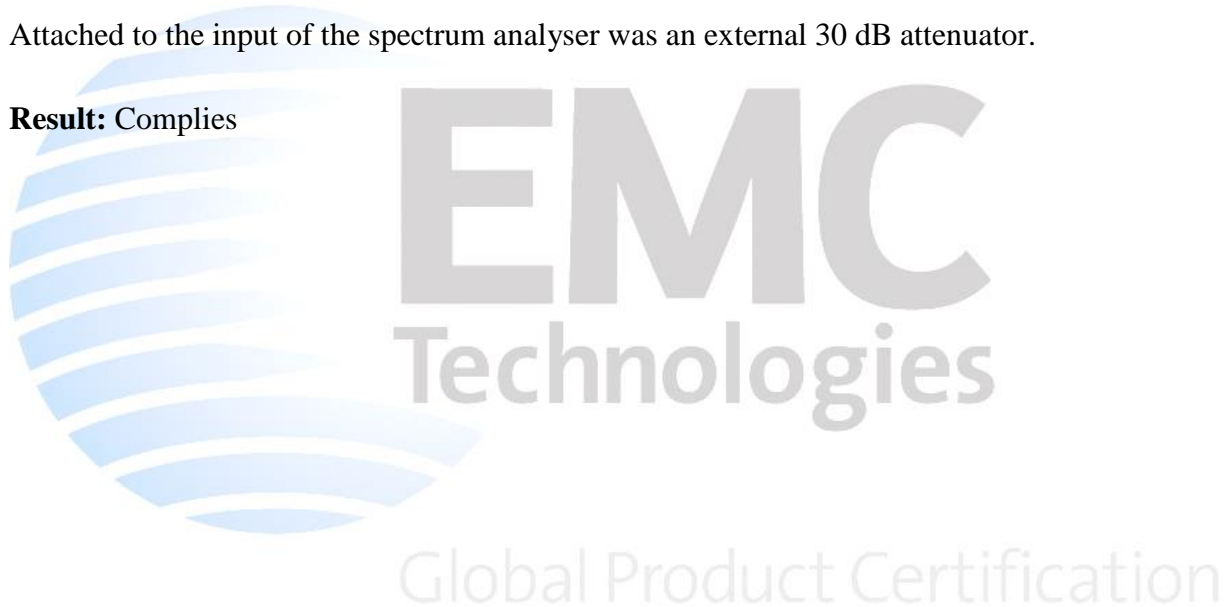
QAM: 10K0D1D for 12.5 kHz channels and 20K0D1D for 25.0 kHz channels

Measurements have been made to verify this declared bandwidth using the various modulation types and data rates that this radio can support at each test frequency.

Measurements were made using a spectrum analyser that was operating in occupied bandwidth mode with the 99% power points being determined automatically.

Attached to the input of the spectrum analyser was an external 30 dB attenuator.

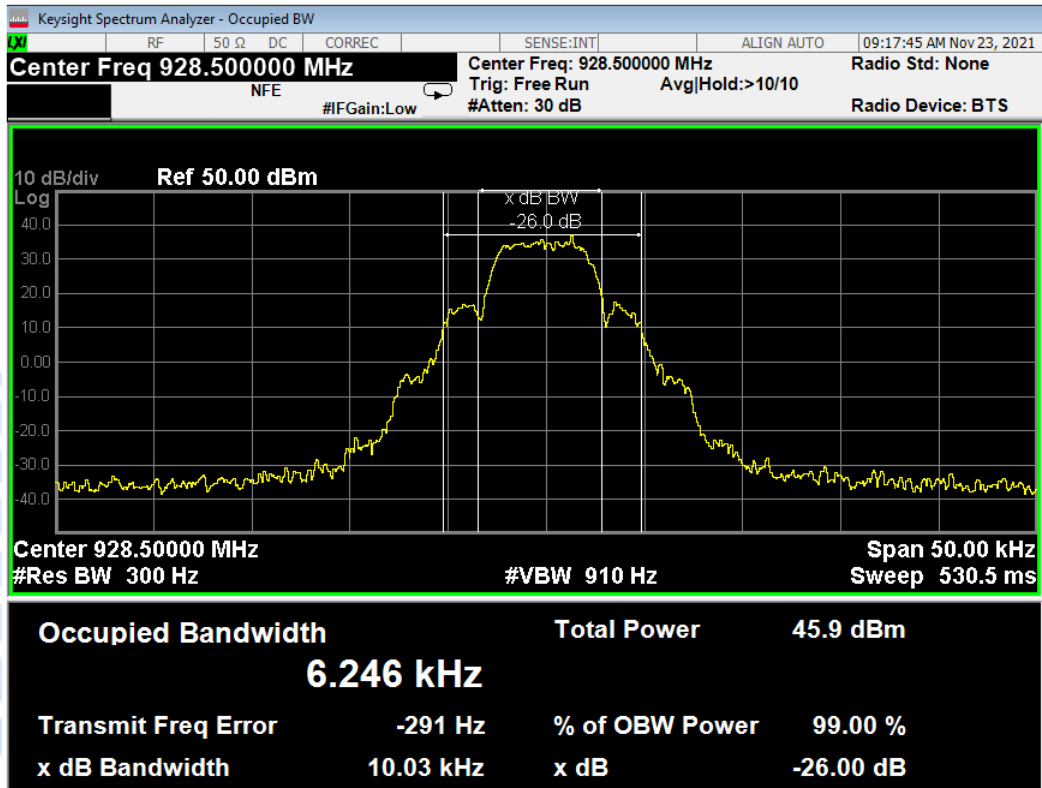
Result: Complies



12.5 kHz channel bandwidth measurements with plots

Emission	Frequency (MHz)	Measured (kHz)	Authorized (kHz)
2FSK	928.500	6.246	11.250 kHz

12.5 kHz – 928.5 MHz - 2FSK

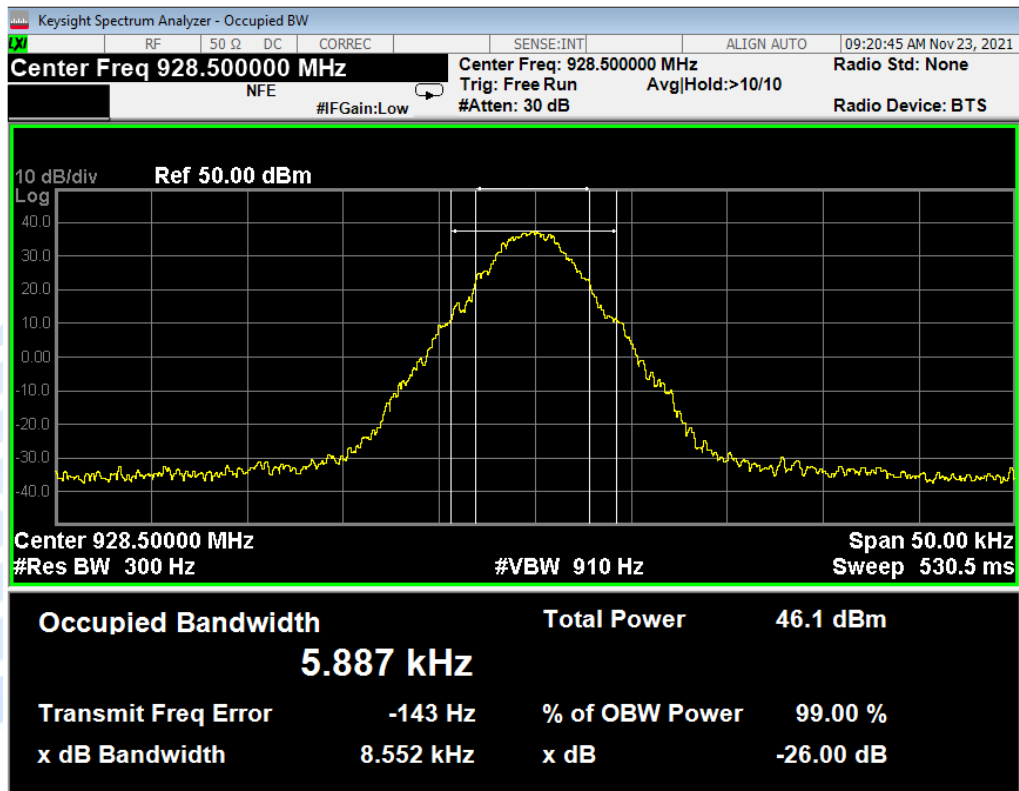


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12.5 kHz channel bandwidth measurements with plots

Emission	Frequency (MHz)	Measured (kHz)	Authorized (kHz)
4FSK	928.500	5.887	11.250 kHz

12.5 kHz – 928.5 MHz - 4FSK

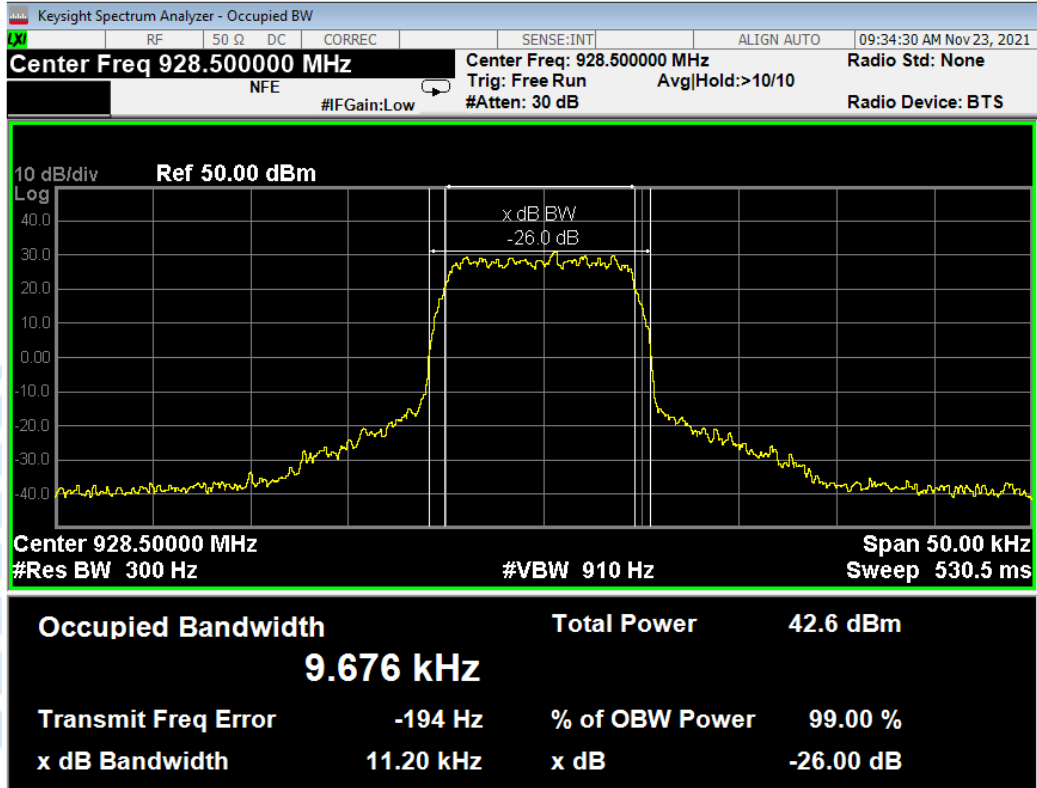


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12.5 kHz channel bandwidth measurements with plots

Emission	Frequency (MHz)	Measured (kHz)	Authorized (kHz)
4QAM	928.500	9.676	11.250 kHz

12.5 kHz – 928.5 MHz - 4QAM

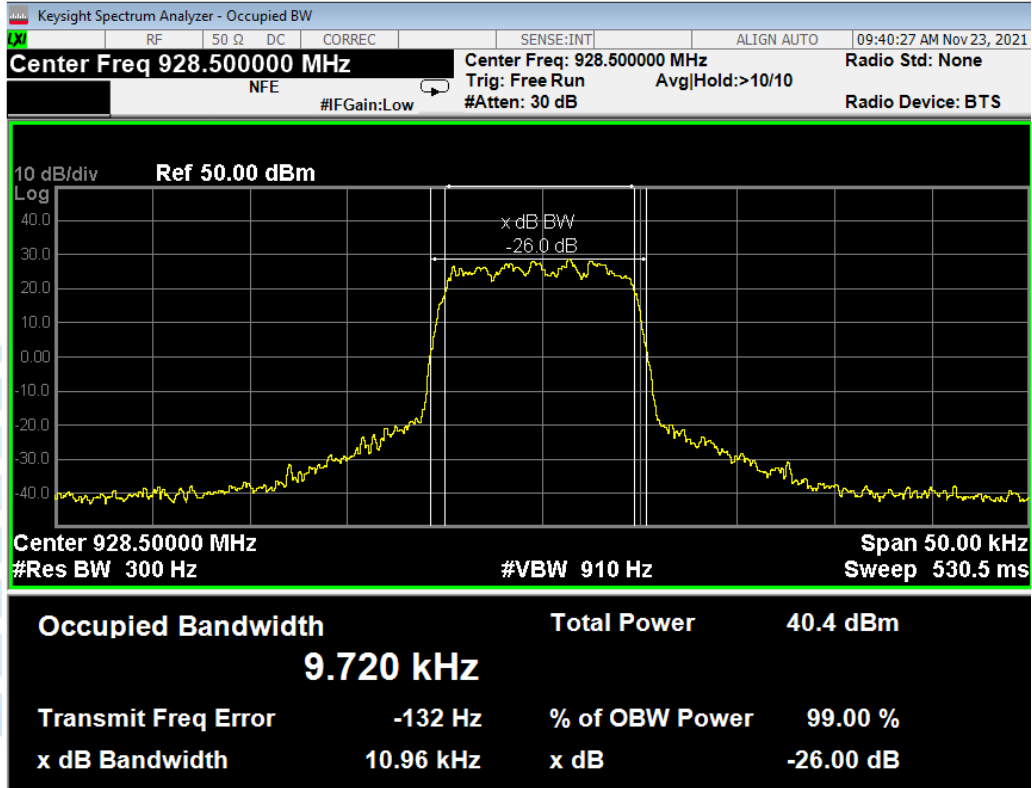


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12.5 kHz channel bandwidth measurements with plots

Emission	Frequency (MHz)	Measured (kHz)	Authorized (kHz)
16QAM	928.500	9.720	11.250 kHz

12.5 kHz – 928.5 MHz - 16QAM

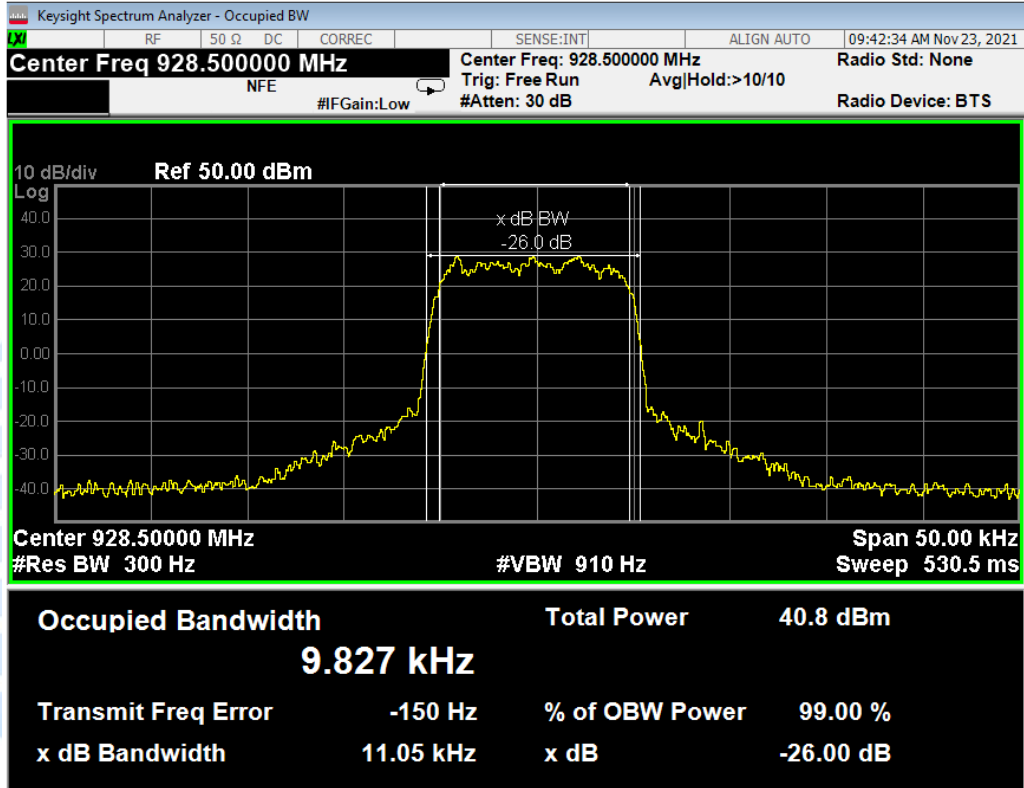


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12.5 kHz channel bandwidth measurements with plots

Emission	Frequency (MHz)	Measured (kHz)	Authorized (kHz)
64QAM	928.500	9.827	11.250 kHz

12.5 kHz – 928.5 MHz - 64QAM

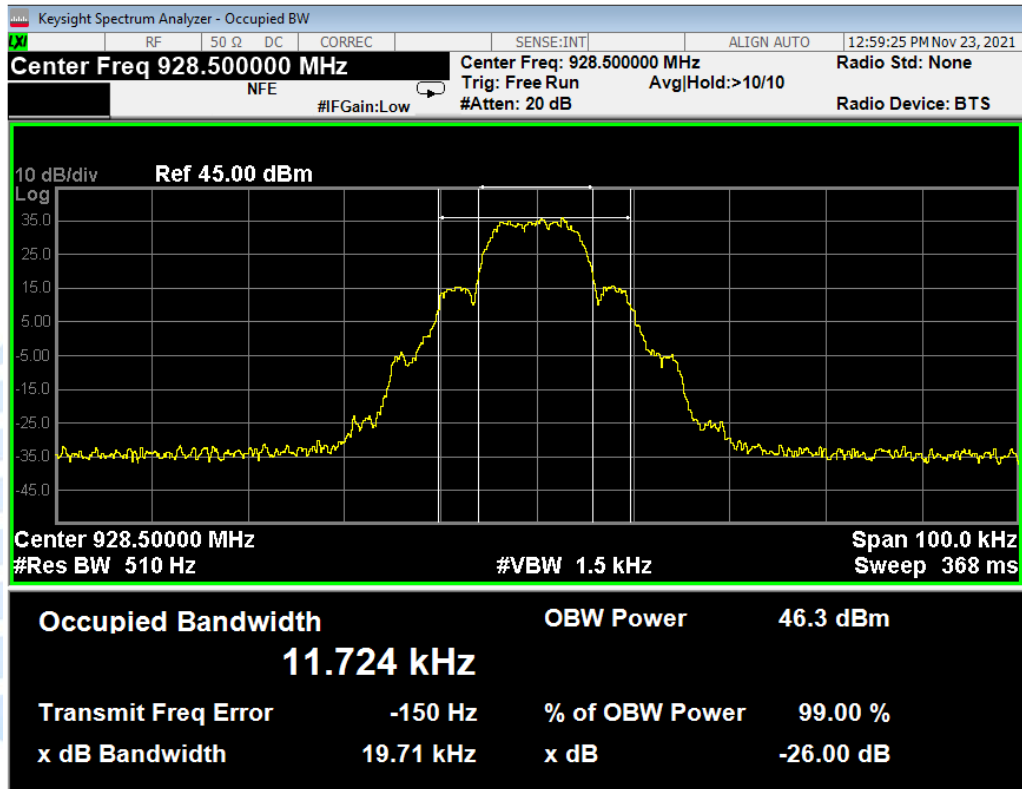


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25.0 kHz channel bandwidth measurements with plots

Emission	Frequency (MHz)	Measured (kHz)	Authorized (kHz)
2FSK	928.500	11.724	20.0 kHz

25.0 kHz – 928.5 MHz - 2FSK

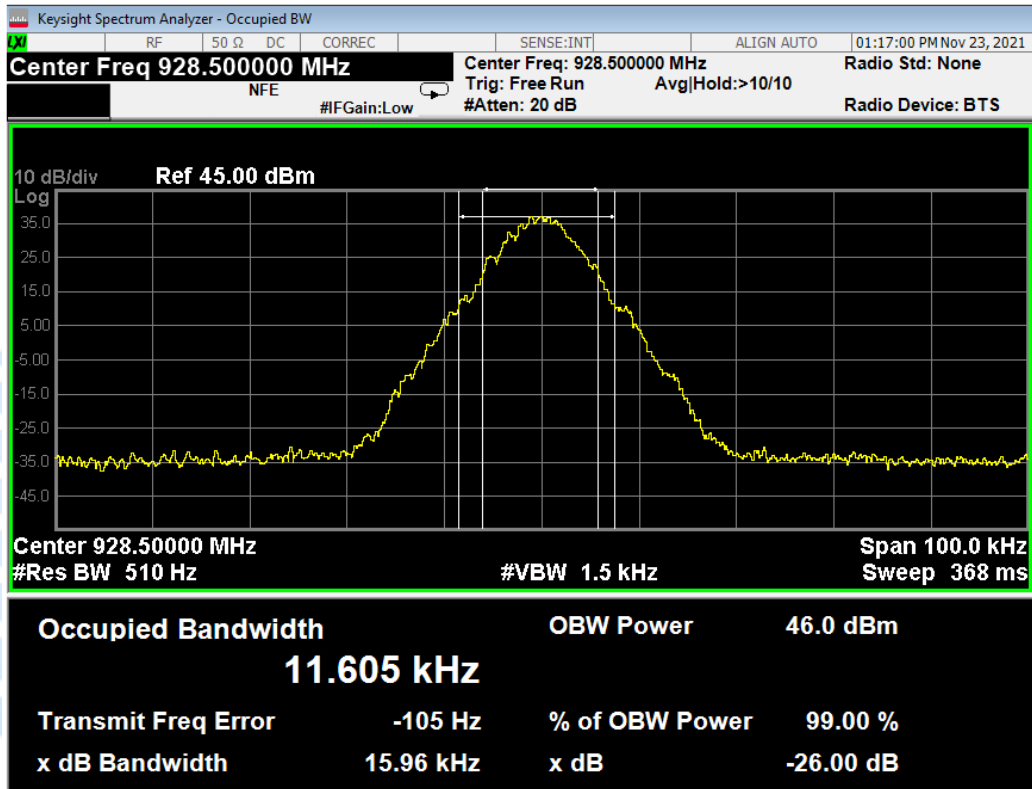


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25.0 kHz channel bandwidth measurements with plots

Emission	Frequency (MHz)	Measured (kHz)	Authorized (kHz)
4FSK	928.500	11.605	20.0 kHz

25.0 kHz – 928.5 MHz - 4FSK

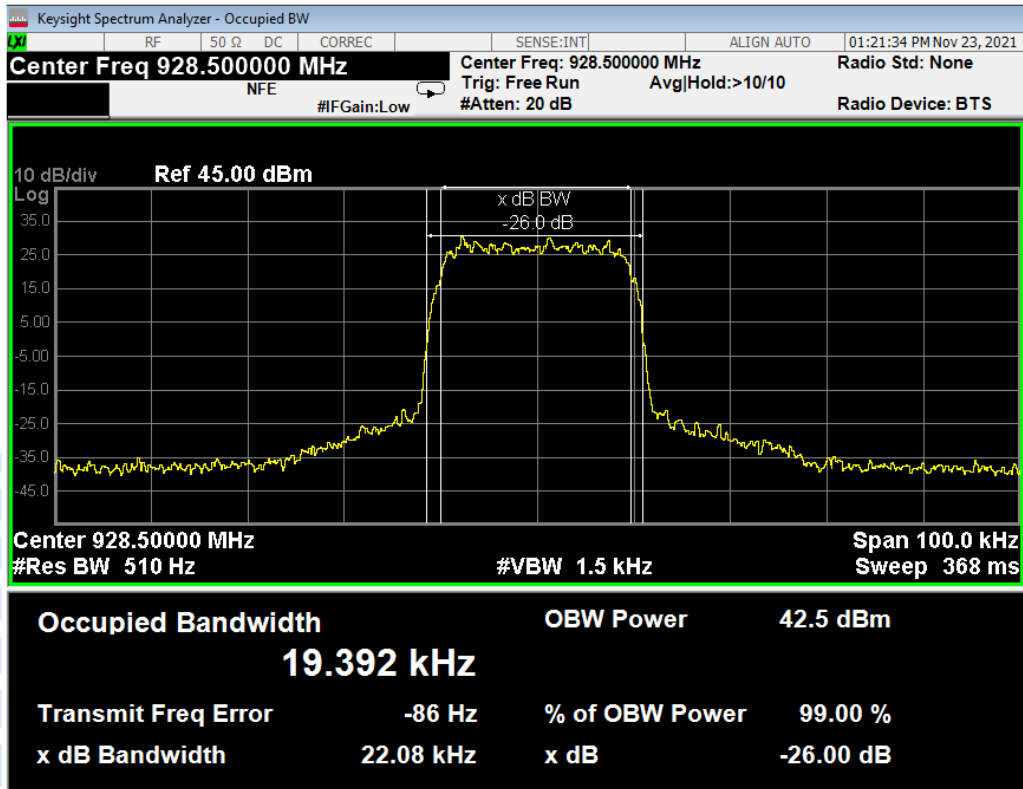


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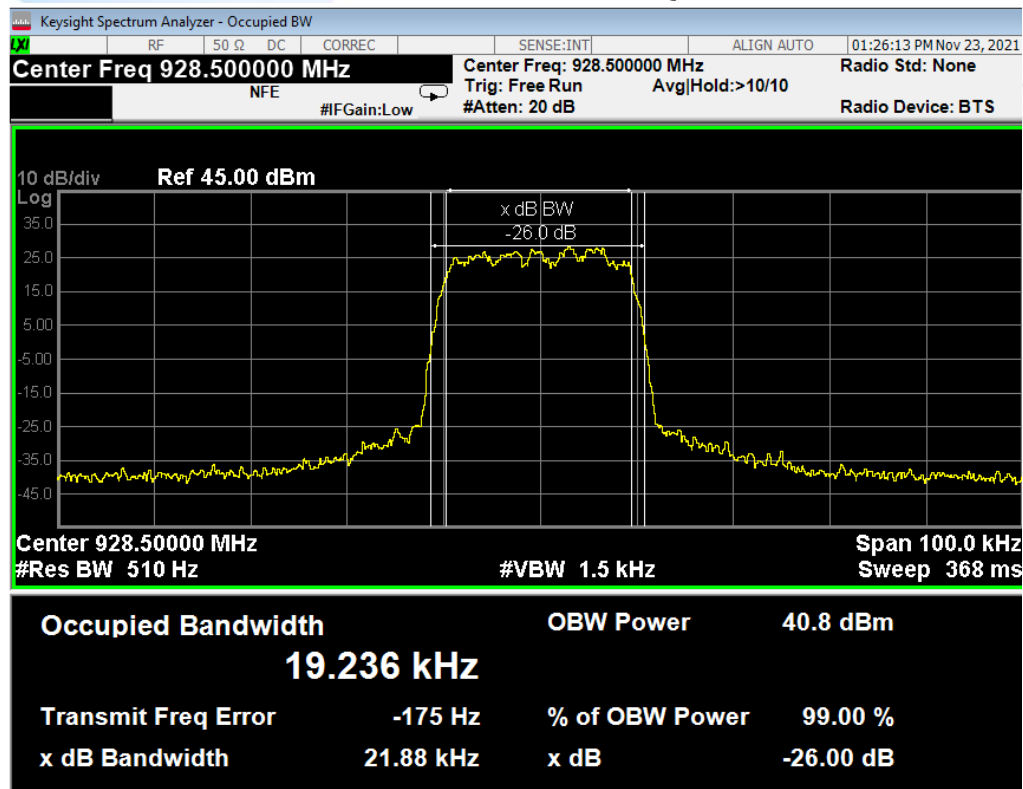
25.0 kHz channel bandwidth measurements with plots

Emission	Frequency (MHz)	Measured (kHz)	Authorized (kHz)
4QAM	928.500	19.392	20.0 kHz
16QAM	928.500	19.236	

25.0 kHz – 928.5 MHz - 4QAM



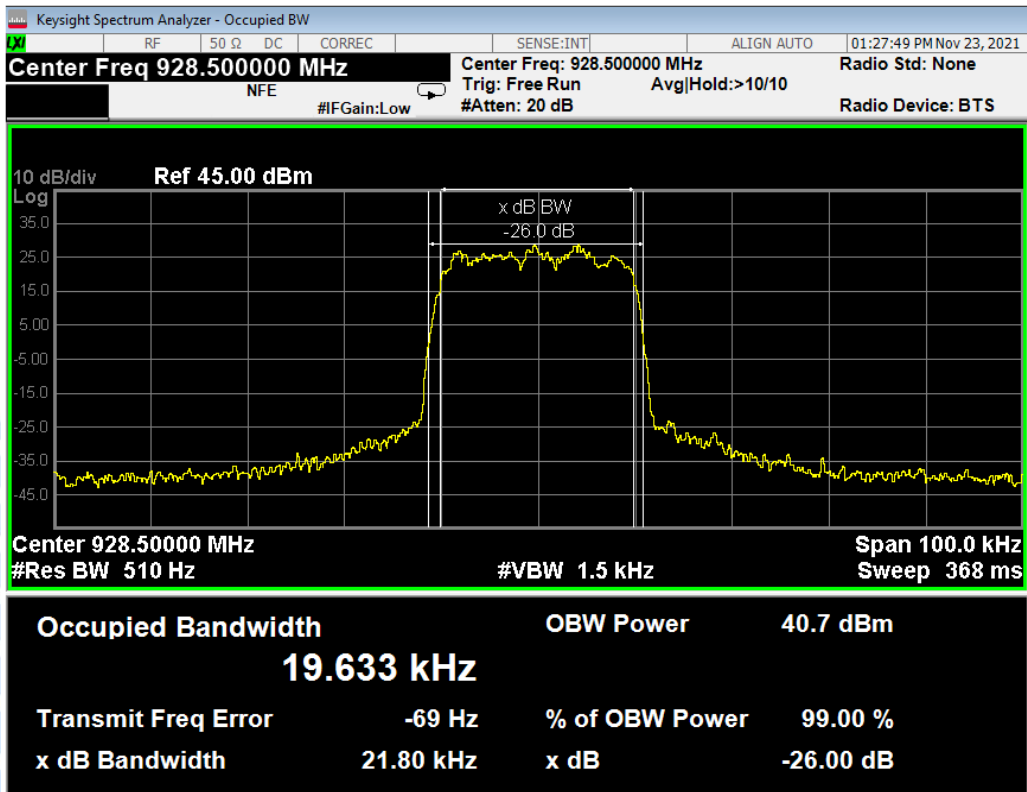
25.0 kHz – 928.5 MHz - 16QAM



25.0 kHz channel bandwidth measurements with plots

Emission	Frequency (MHz)	Measured (kHz)	Authorized (kHz)
64QAM	928.500	19.633	20.0 kHz

25.0 kHz – 928.5 MHz - 64QAM



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Spectrum Masks

The spectrum masks are defined in:

Section 90.210(d) – Mask B has been applied as the transmitter can operate in the band 928-930 MHz using a channel bandwidth of 25.0 kHz and 12.5 kHz respectively as per Section 90.209(b)(5).

Mask I has been applied as the transmitter can operate in the band 935-940 MHz using a channel bandwidth of 12.5 kHz

The reference level for the following emission mask measurements has been determined using a resolution bandwidth of 120 kHz using a peak detector when the transmitter was operating in each of the modulation modes.

A 30 dB attenuator was placed between the output of transmitter and the input of spectrum analyser.

The transmitter was modulated using modulation sources internal to the transmitter as supplied by the client.

The reference level for the following emission mask measurements has been determined using a resolution bandwidth of 120 kHz with the transmitter modulated. The Resolution bandwidth for mask measurements has been set to 300 Hz.

For all measurements a 30 dB attenuator is placed between the transmitter and the spectrum analyser.

Measurements were made in peak hold mode using a peak detector.

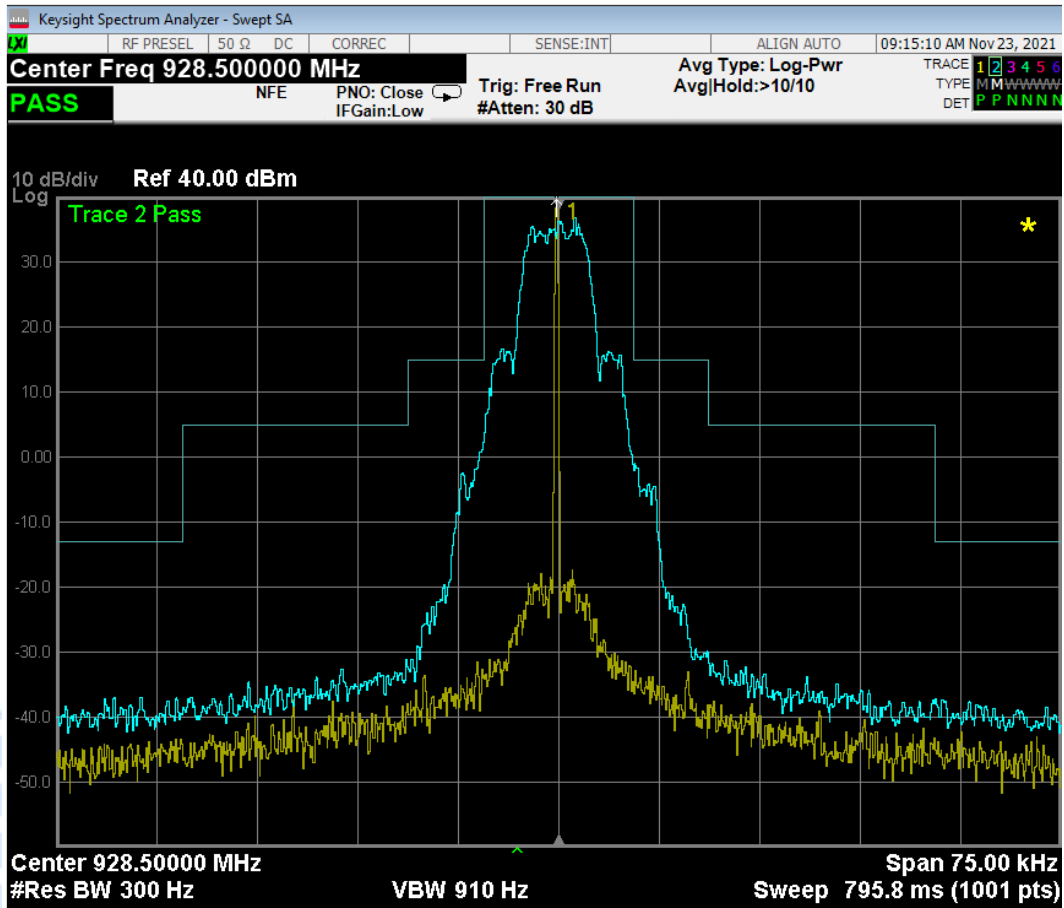
The product was operated at the maximum transmit power.

The blue trace corresponds to the modulated peak when the transmitter was modulated using the modulation sources internal to the transmitter as supplied by the client

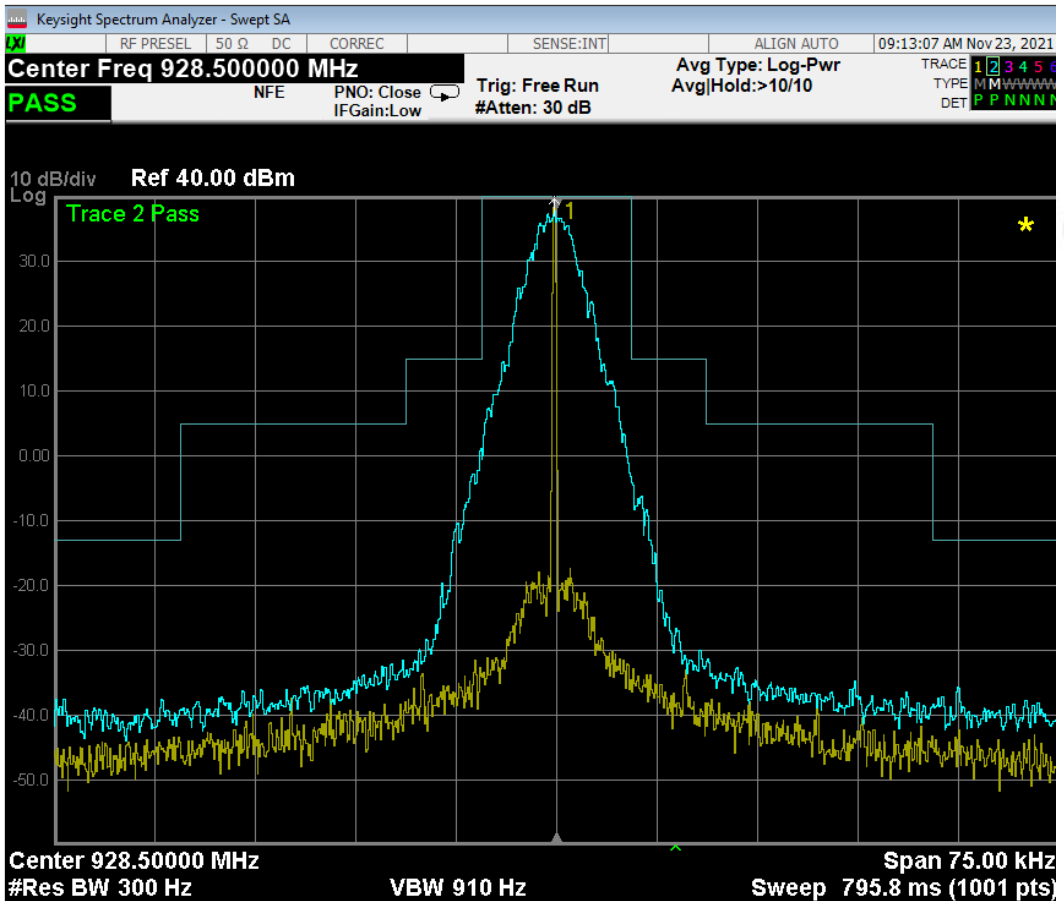
The yellow trace which corresponds to the unmodulated RF output, has also been included in the plots.

Result: Complies.

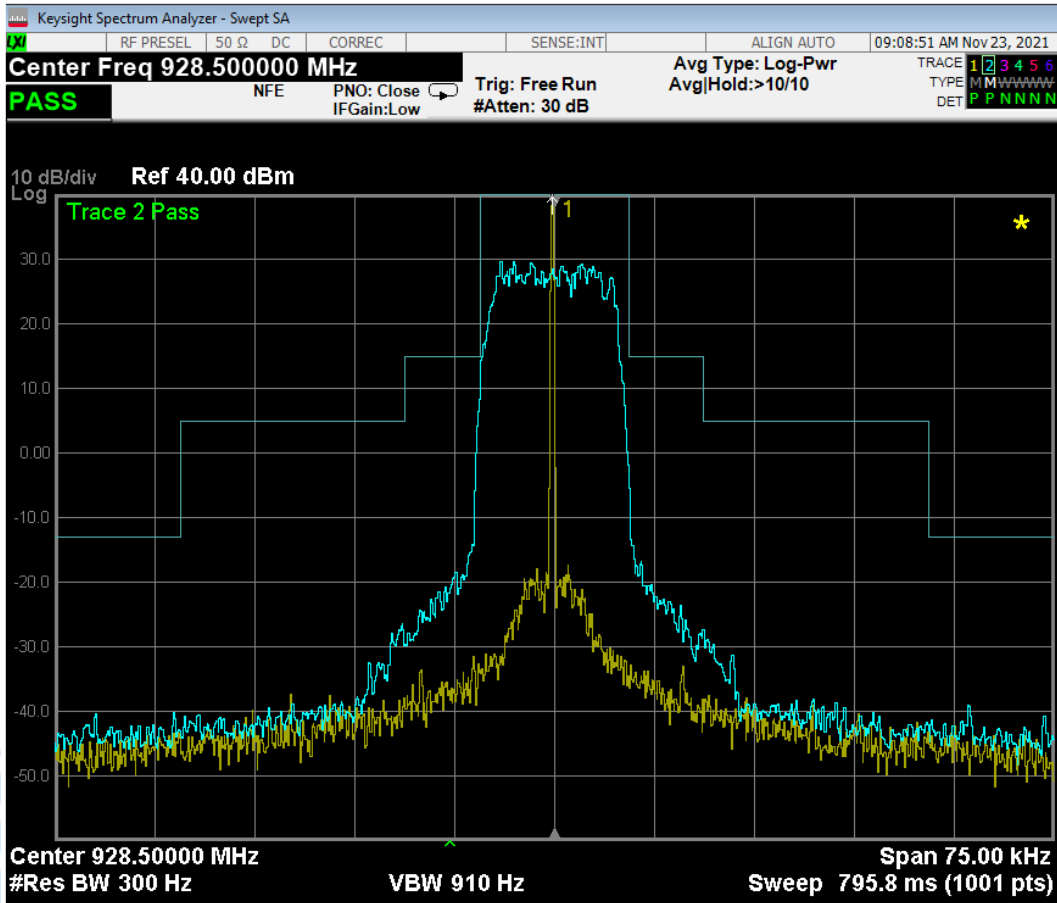
928.5 MHz, 12.5 kHz bandwidth, Mask B, 2FSK



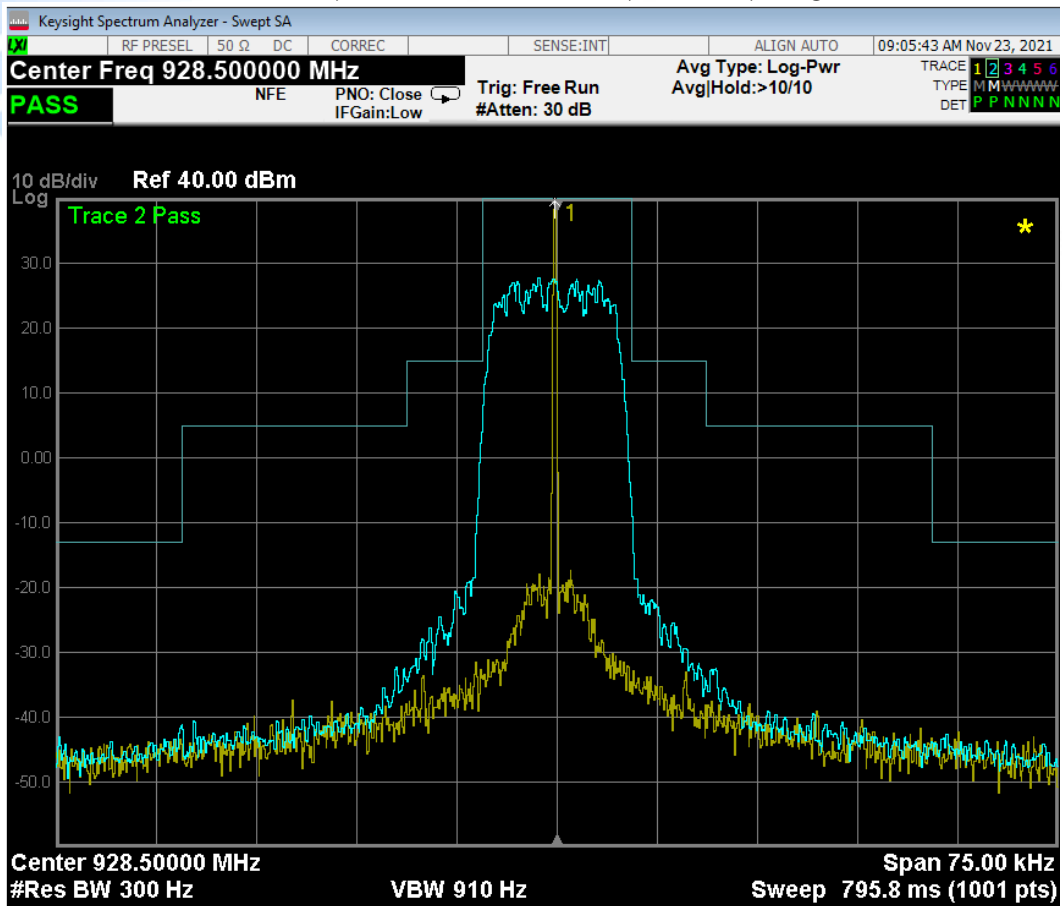
928.5 MHz, 12.5 kHz bandwidth, Mask B, 4FSK



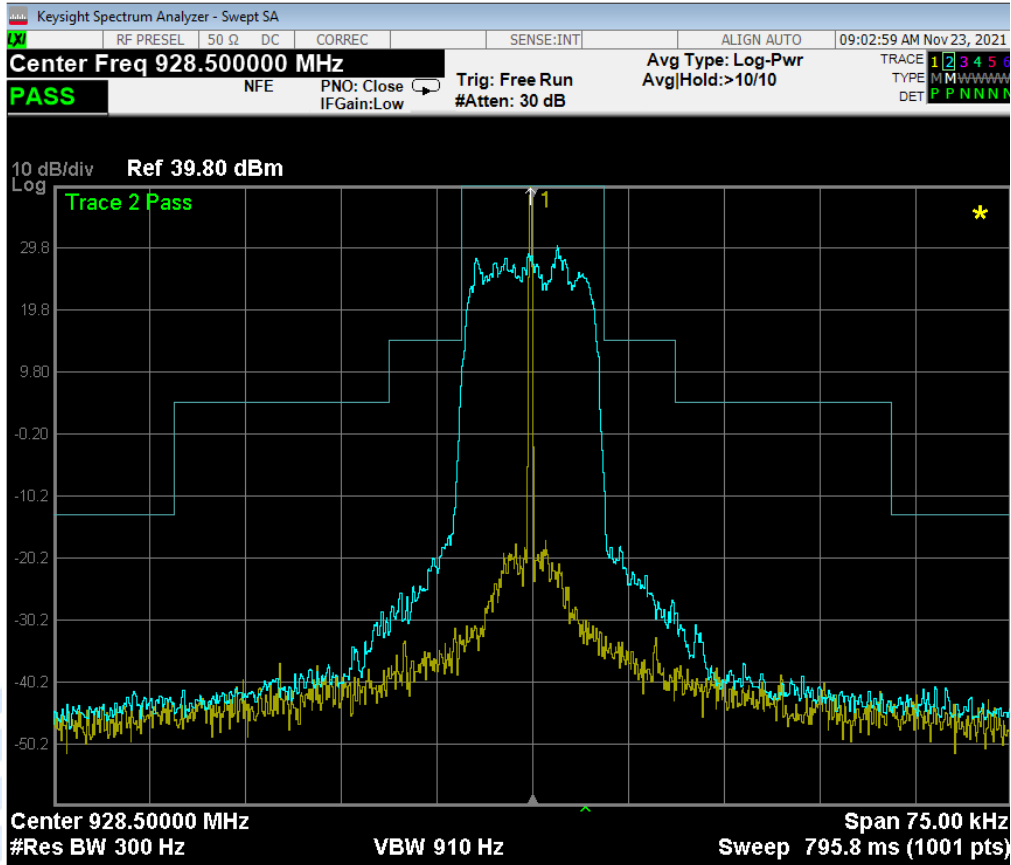
928.5 MHz, 12.5 kHz bandwidth, Mask B, 4QAM



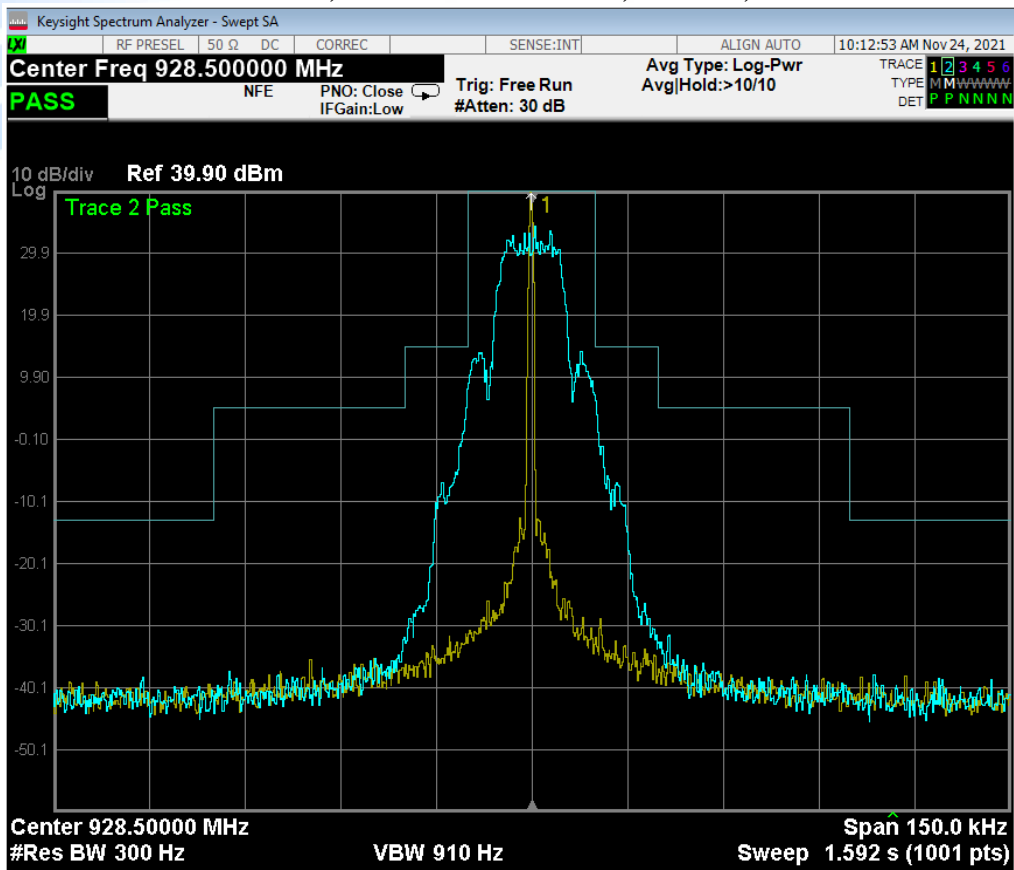
928.5 MHz, 12.5 kHz bandwidth, Mask B, 16QAM



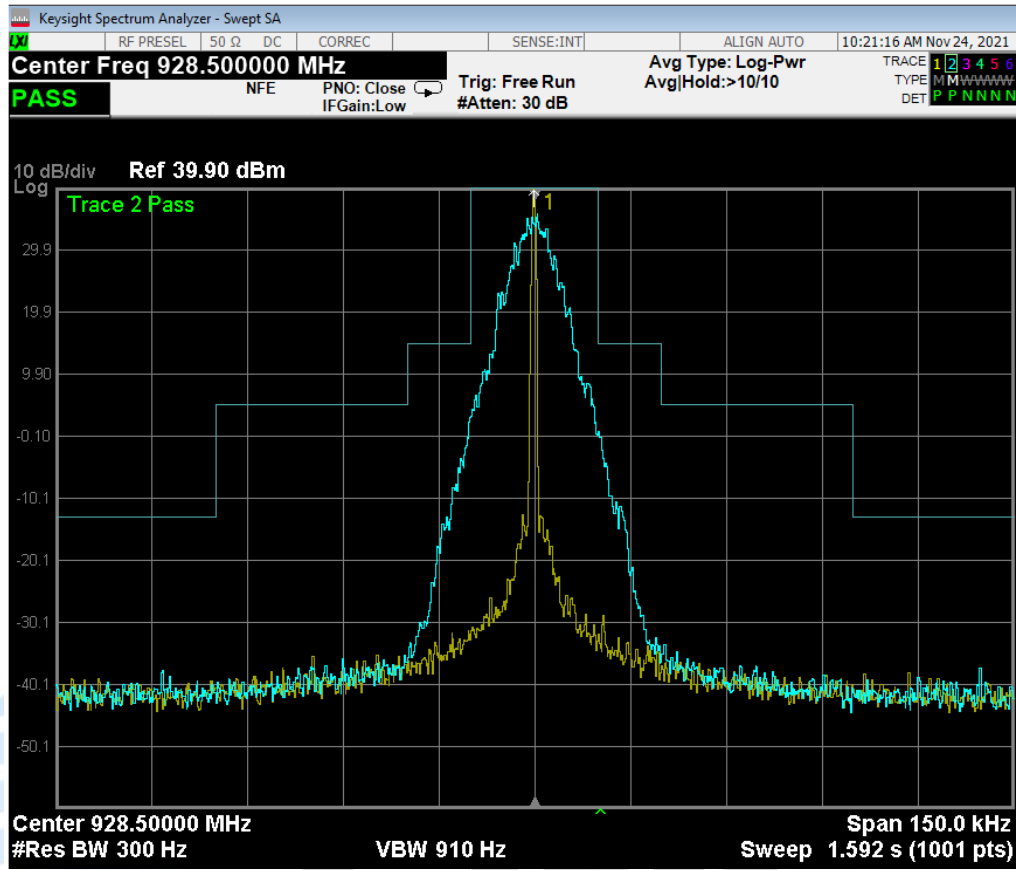
928.5 MHz, 12.5 kHz bandwidth, Mask B, 64QAM



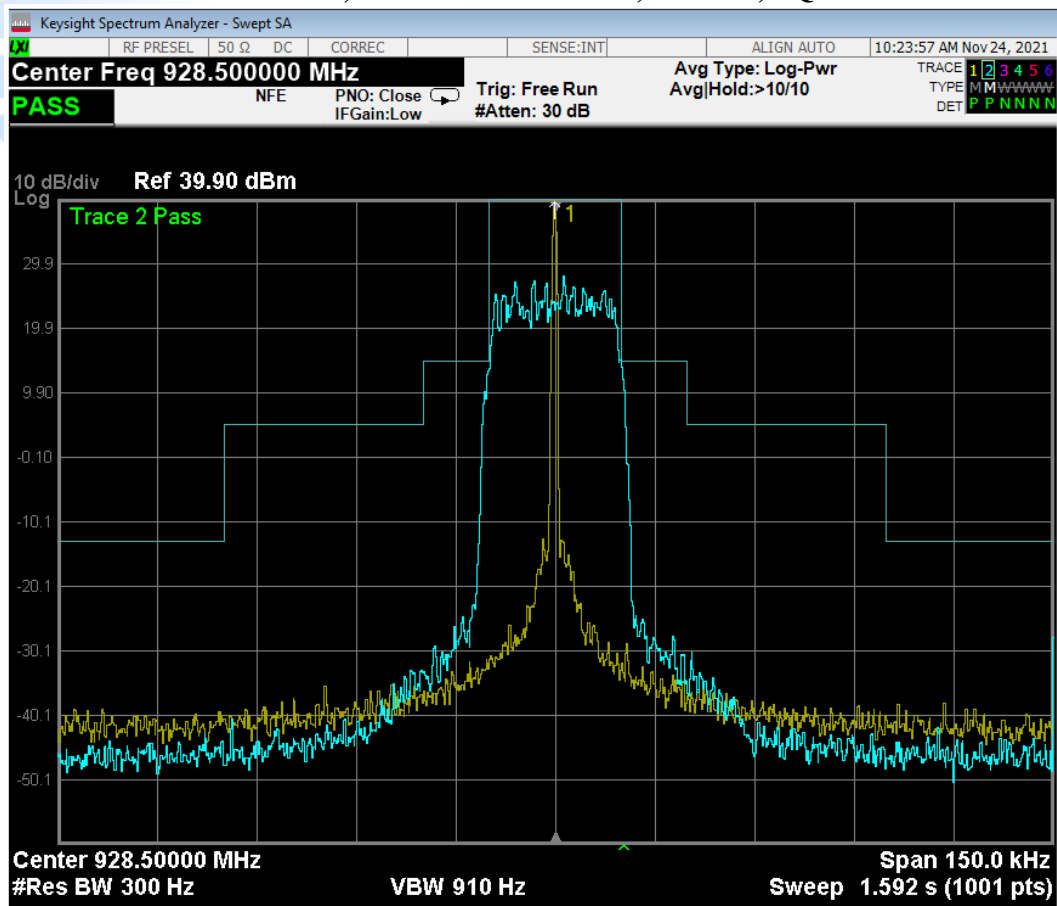
928.5 MHz, 25.0 kHz bandwidth, Mask B, 2FSK



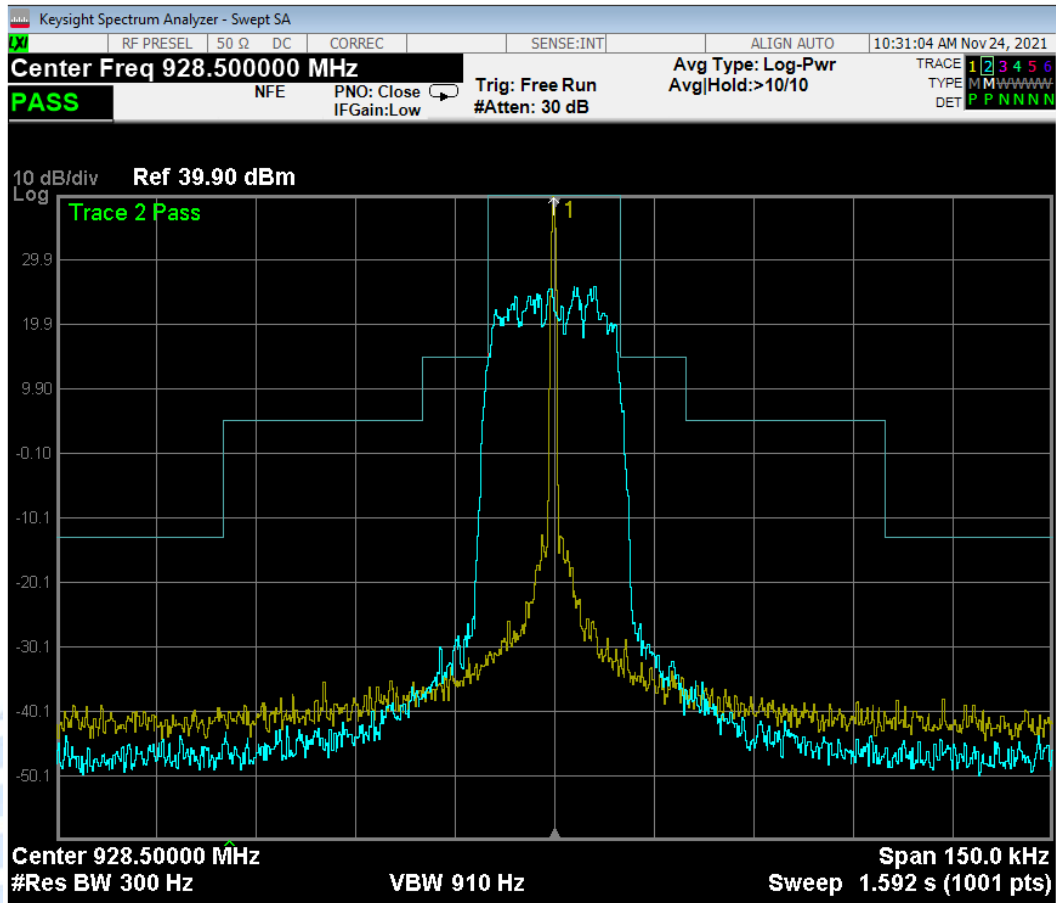
928.5 MHz, 25.0 kHz bandwidth, Mask B, 4FSK



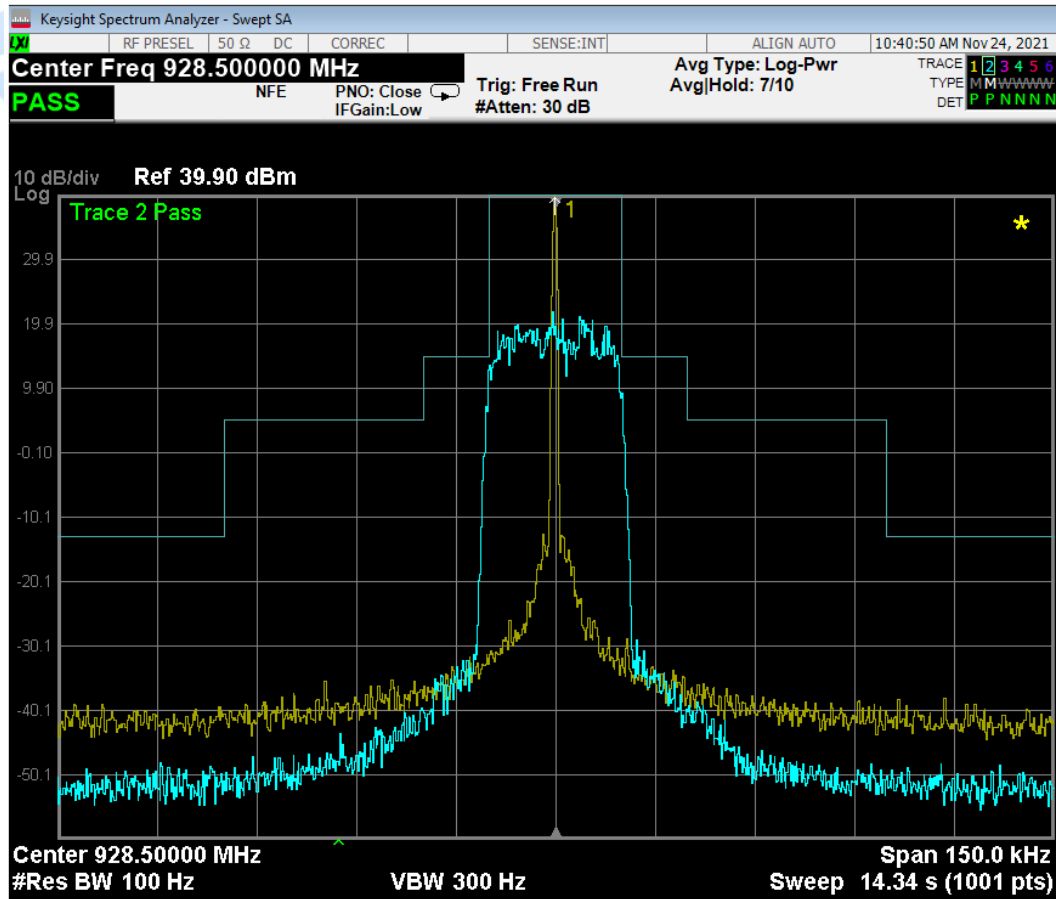
928.5 MHz, 25.0 kHz bandwidth, Mask B, 4QAM



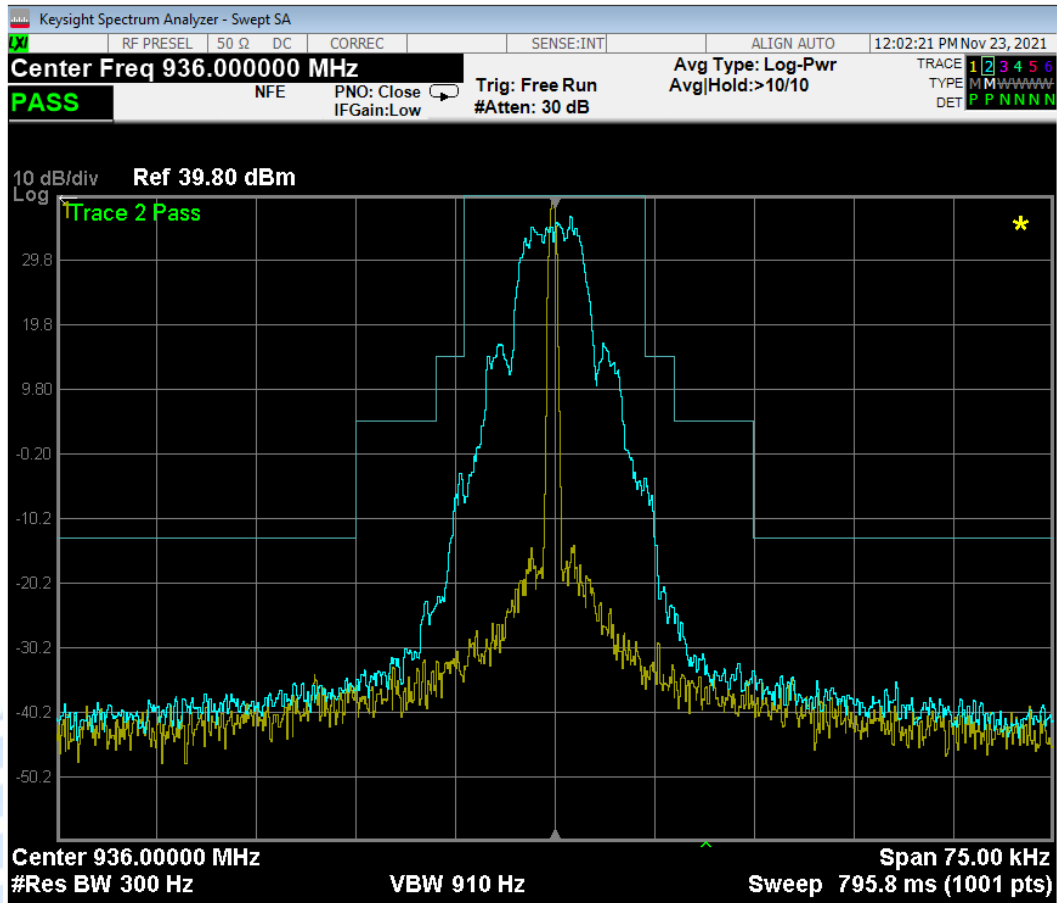
928.5 MHz, 25.0 kHz bandwidth, Mask B, 16QAM



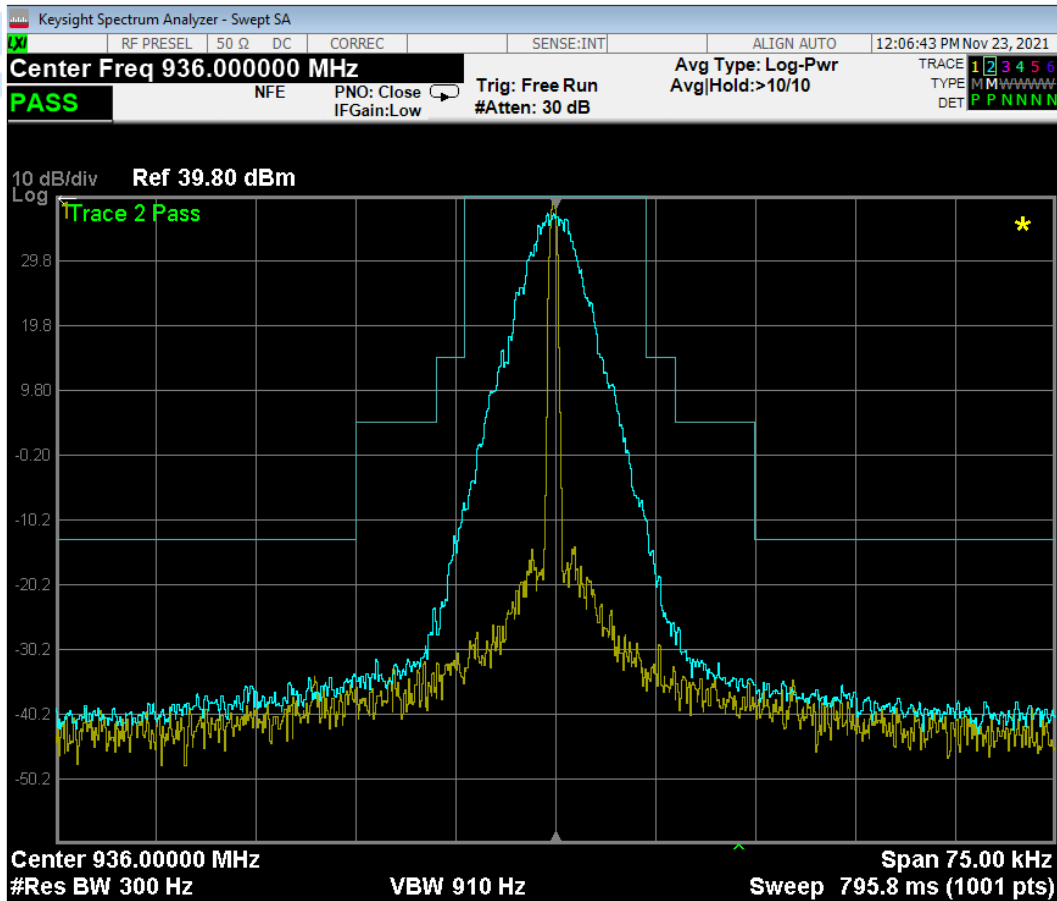
928.5 MHz, 25.0 kHz bandwidth, Mask B, 64QAM



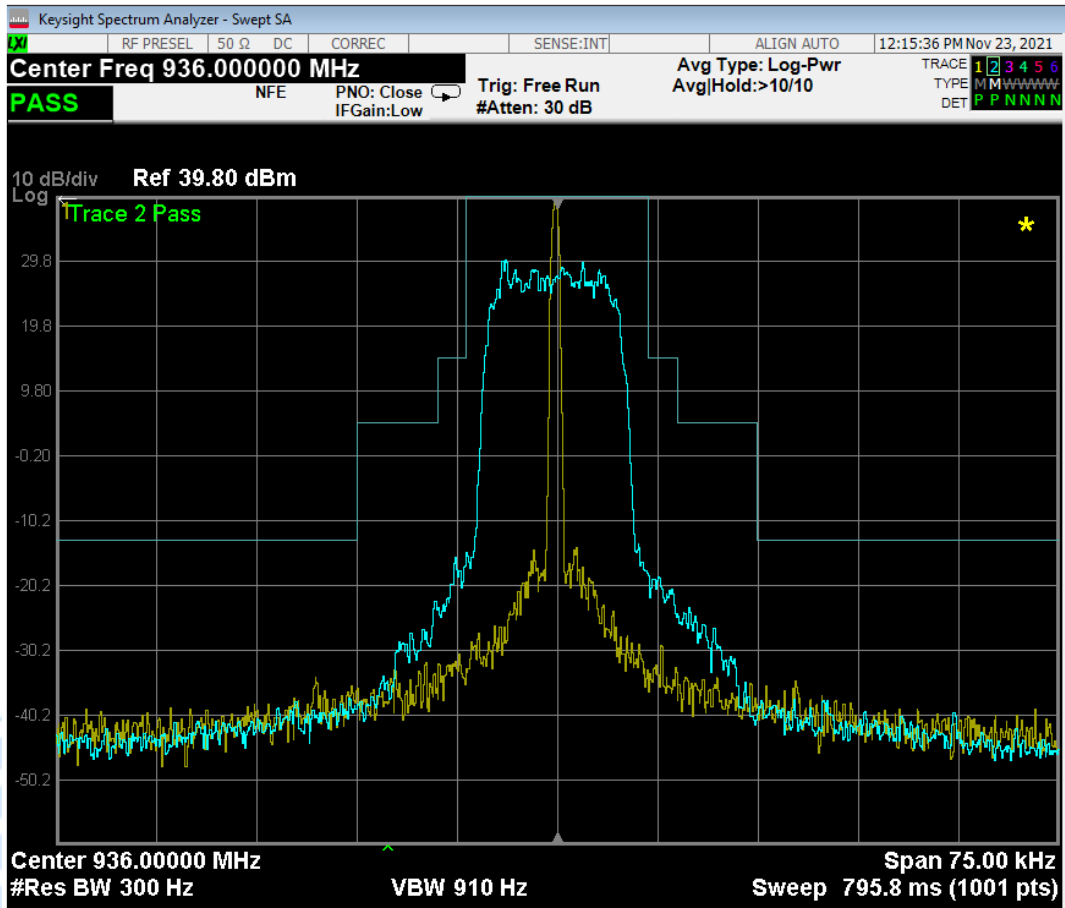
936.0 MHz, 12.5 kHz bandwidth, Mask I, 2FSK



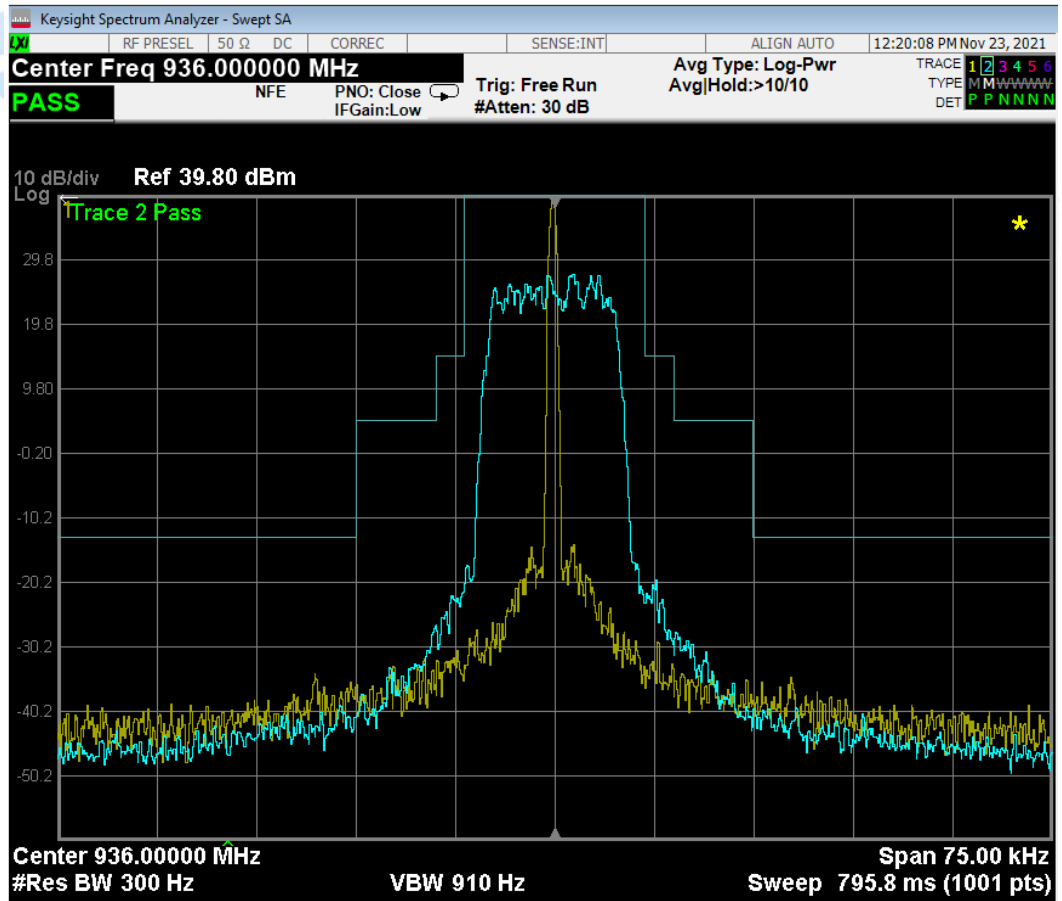
936.0 MHz, 12.5 kHz bandwidth, Mask I, 4FSK



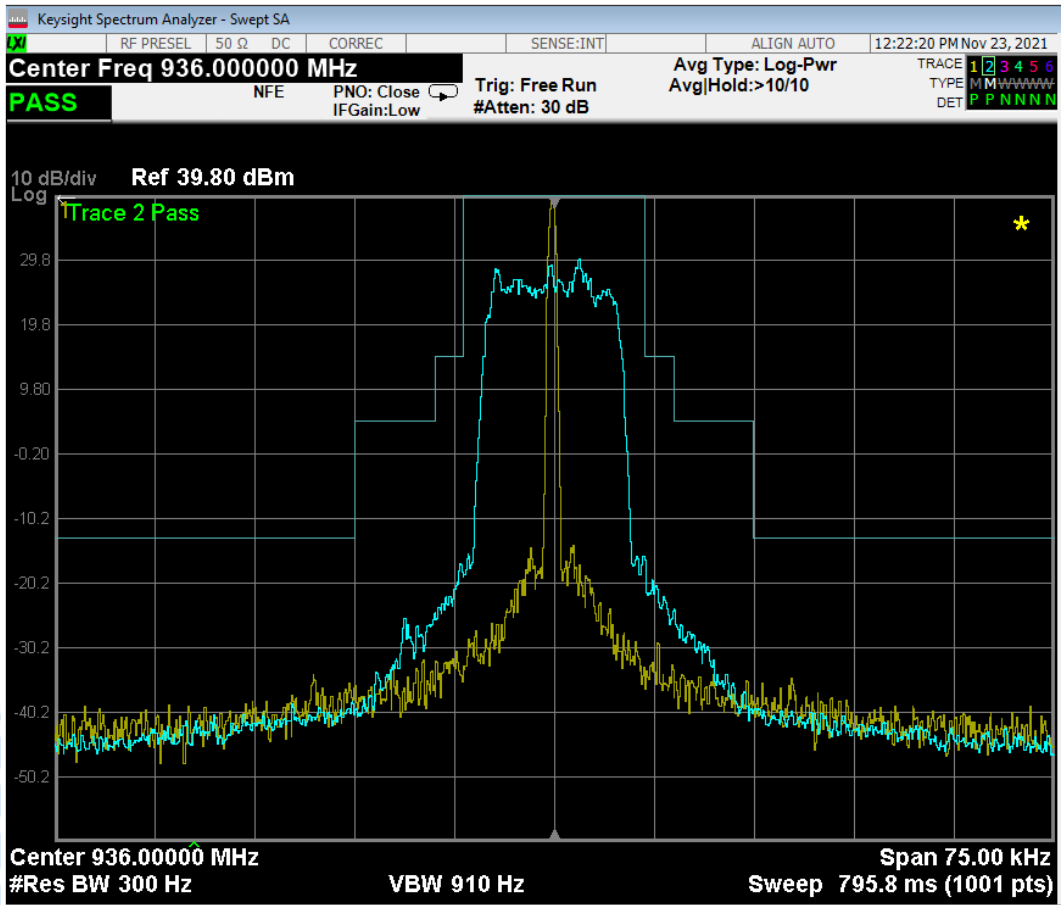
936.0 MHz, 12.5 kHz bandwidth, Mask I, 4QAM



936.0 MHz, 12.5 kHz bandwidth, Mask I, 16QAM



936.0 MHz, 12.5 kHz bandwidth, Mask I, 64QAM



Transmitter spurious emissions at the antenna terminals

The test was carried out using the unmodulated output which was identified to produce the worst case results.

The resolution bandwidth of the instrument was set to 100 kHz for frequencies below 1 GHz and to 1 MHz for harmonics measured above 1 GHz.

The transmitter output power is rated at 10 Watt (high power) and was sufficiently attenuated using an external power attenuator and internal attenuator in the spectrum analyser.

Frequency: 928.500 MHz

Spurious emission (MHz)	Emission level (dBm)	Limit (dBm)
1857.000	<-45.0	-20.0
2785.500	<-45.0	-20.0
3714.000	<-45.0	-20.0
4642.500	<-45.0	-20.0
5571.000	<-45.0	-20.0
6499.500	<-45.0	-20.0
7428.000	<-45.0	-20.0
8356.500	<-45.0	-20.0
9285.000	<-45.0	-20.0
Other emissions observed		
618.990 MHz	-28.0	-20.0

Limit:

The stringent of the masks from Part 90 have been applied to this product.

For P = 10 W, the limit applicable has been found to be -20.0 dBm.

Part 2.1051 states that emissions greater than 20 dB below the limit need not be specified.

Part 2.1057 states that the spectrum should be investigated up to the 10th harmonic if the transmitter operates below 10 GHz.

Result: Complies.

Measurement Uncertainty: ± 3.3 dB

Field strength of the transmitter spurious emissions

Nominal Frequency: 928.5 MHz

Frequency (MHz)	Level (dBuV/m)	Level (dBm)	Limit (dBm)	Polarity	Margin (dB)	Result
1857.000	< 55.0	< -42.4	-20.0	Vertical	> 22.4	Pass
1857.000	< 55.0	< -42.4	-20.0	Horizontal	> 22.4	Pass
2785.500	55.8	-41.6	-20.0	Vertical	21.6	Pass
2785.500	< 55.0	< -42.4	-20.0	Horizontal	> 22.4	Pass
3714.000	< 55.0	< -42.4	-20.0	Vertical	> 22.4	Pass
3714.000	< 55.0	< -42.4	-20.0	Horizontal	> 22.4	Pass
4642.500	< 60.0	< -37.4	-20.0	Vertical	> 17.4	Pass
4642.500	< 60.0	< -37.4	-20.0	Horizontal	> 17.4	Pass
5571.000	< 60.0	< -37.4	-20.0	Vertical	> 17.4	Pass
5571.000	< 60.0	< -37.4	-20.0	Horizontal	> 17.4	Pass
6499.500	< 65.0	< -32.4	-20.0	Vertical	> 12.4	Pass
6499.500	< 65.0	< -32.4	-20.0	Horizontal	> 12.4	Pass
7428.000	< 65.0	< -32.4	-20.0	Vertical	> 12.4	Pass
7428.000	< 65.0	< -32.4	-20.0	Horizontal	> 12.4	Pass
8356.500	< 65.0	< -32.4	-20.0	Vertical	> 12.4	Pass
8356.500	< 65.0	< -32.4	-20.0	Horizontal	> 12.4	Pass
9285.000	< 65.0	< -32.4	-20.0	Vertical	> 12.4	Pass
9285.000	< 65.0	< -32.4	-20.0	Horizontal	> 12.4	Pass

The transmitter was tested while transmitting continuously on high power (10 watts) while attached to a dummy load.

The device was tested on an open area test site at a distance of 3 metres.

Testing was carried out at EMC Technologies NZ Ltd Open Area Test Site which is located at Driving Creek, Orere Point, Auckland.

The level recorded is the signal generator output level in dBm less any gains / losses due to the coax cable and the dipole antenna.

Limit:

All spurious emissions are to be attenuated by at least 60 dB from below the mean power of the transmitter.

The maximum rated power of 10.0 watts gives a limit of -20 dBm.

No measurements were made above the 10th harmonic.

Result: Complies.

Measurement Uncertainty: ± 4.1 dB

Frequency Stability

Frequency stability measurements were between - 30 °C and + 50°C in 10°C increments.

At each temperature the transmitter was given a period of 30 minutes to stabilise.

The transmitter was then turned on and the frequency error measured after a period of 1 minute.

Frequency: 930.0 MHz

Temperature (°C)	9.0 Vdc (Hz)	13.8 Vdc (Hz)	30.0 Vdc (Hz)
+50	-210	-210	-210
+40	-210	-210	-210
+30	-170	-170	-170
+20	-160	-160	-160
+10	-210	-210	-210
0	-180	-180	-180
-10	-210	-210	-210
-20	-230	-230	-230
-30	-260	-260	-260

Limits:

Part 90.213 states that fixed station transmitters operating between 928-940 MHz are required to have a frequency tolerance of 1.5 ppm.

A worst case error of 0.27 ppm (260 Hz / 930 MHz) was observed.

The product will be operated by a single SMRS licensee, so 90.645(f) applies.

Result: Complies.

Measurement Uncertainty: ± 30 Hz

Transient frequency behaviour

Measurements were carried out using the method described in TIA-603 and EN 300-086.

The modulation analyser produces an amplitude difference signal and a frequency difference signal, which are applied to the input of a storage oscilloscope.

The unmodulated transmitter is then keyed which produces a trigger pulse that is AC coupled to the oscilloscope that produces a display on the screen.

The result of the change in the ratio of power between the test signal from the signal generator and the transmitter output will produce 2 separate sides on the oscilloscope picture. One will show the 1000 Hz test modulation and the other will be the frequency difference of the transmitter versus time.

Results:

Channel Bandwidth (kHz)	Period t_1 Deviation (kHz)	Period t_2 Deviation (kHz)	Period t_3 Deviation (kHz)
12.5	Nil	Nil	Nil
25.0	Nil	Nil	Nil

Limits:

Time Interval	Period (ms)	12.5 kHz Deviation (kHz)	25 kHz Deviation (kHz)
t_1	10	± 12.5	± 25.0
t_2	25	± 6.25	± 12.5
t_3	10	± 12.5	± 25.0

Result: Complies.

Measurement Uncertainty: Frequency difference ± 1.6 kHz, Time period ± 1 ms.

12.5 kHz Transmitter

Transmitter turn on

Green Trace = 1 kHz tone with FM deviation of 12.5 kHz.

Green trace has been maximised to give full screen indication of +/- 12.5 kHz.

Therefore each Y axis division = 3.125 kHz per division.

The X axis has been set to a sweep rate of 10 ms/division.

Triggering has been set to occur 2 divisions from the left hand edge (20 ms).

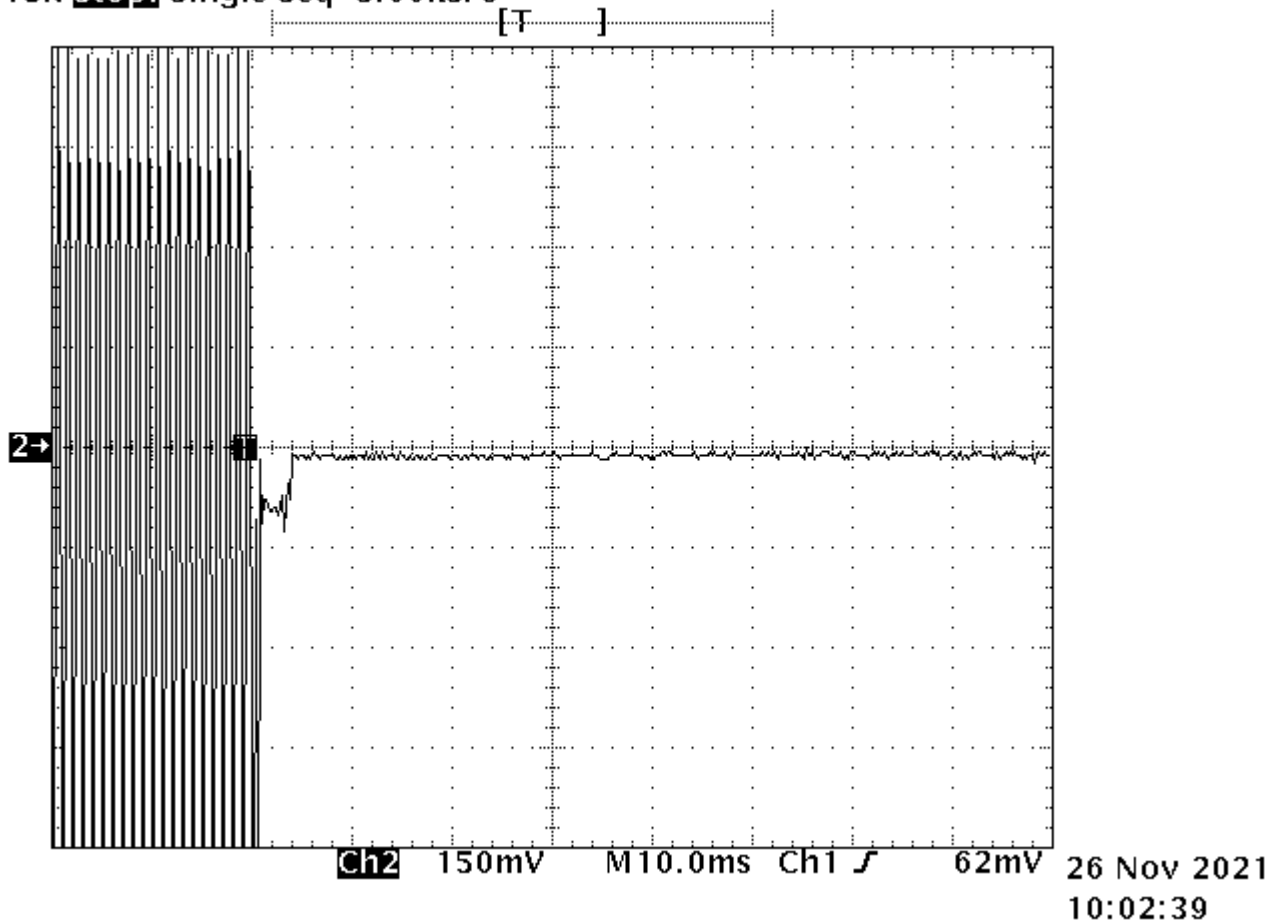
t_{on} occurs at 20 ms.

t_1 occurs between 2.0 and 3.0 divisions from the left hand edge.

t_2 occurs between 3.0 and 5.5 divisions from the left hand edge.

A small transient was observed during t_1 and t_2 .

Tek **Stop:** Single Seq 5.00kS/s



Transmitter turn off

Green Trace = 1 kHz tone with FM deviation of 12.5 kHz.

Green trace has been maximised to give full screen indication of +/- 12.5 kHz.

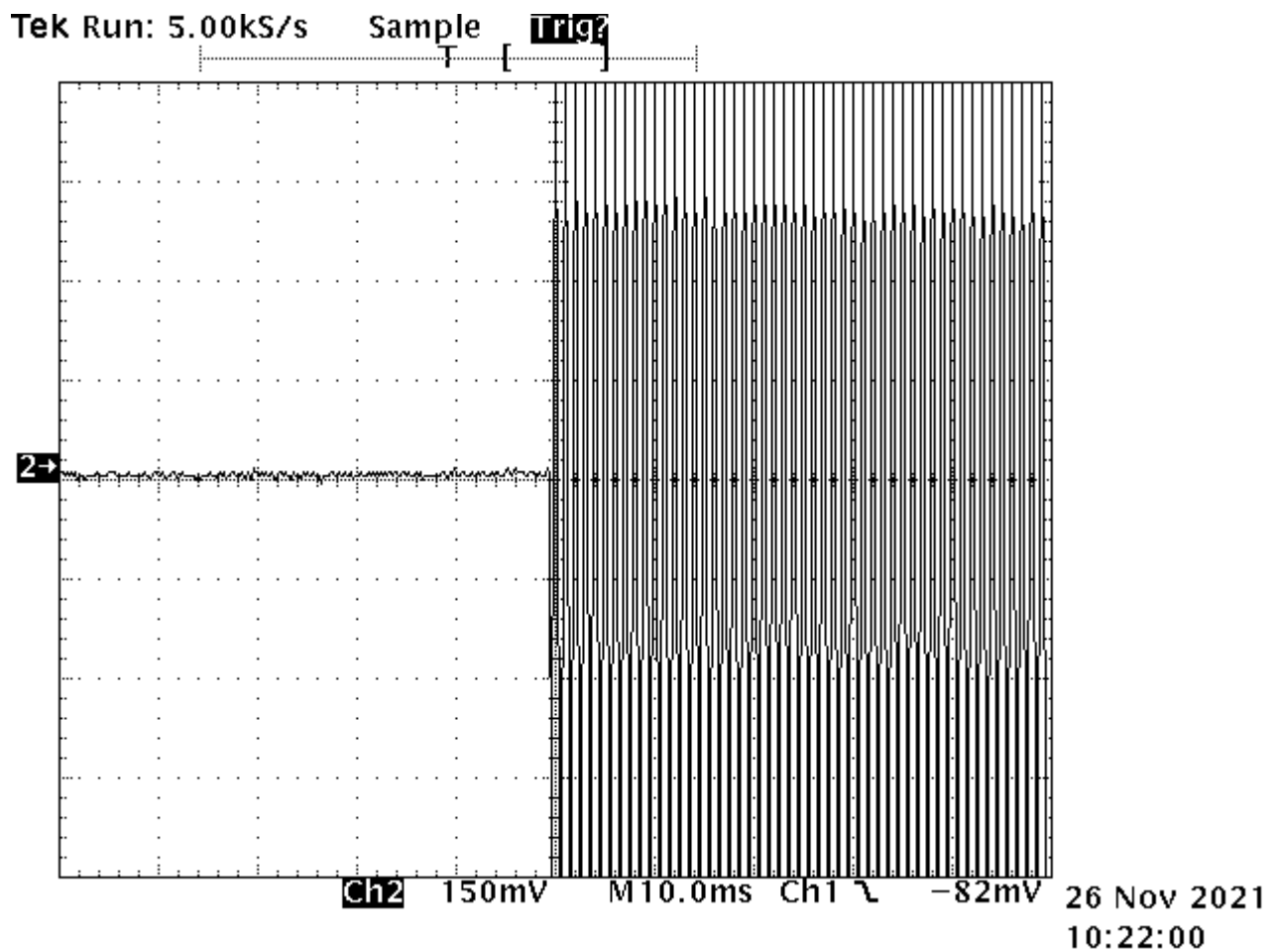
Therefore each Y axis division = 3.125 kHz per division.

The X axis has been set to a sweep rate of 10 ms/division

The display of the 1 kHz signal rising has been positioned 5 divisions from the left hand edge (50 ms). This is position *t_{off}*.

t₃ occurs between 4.0 and 5.0 divisions from the left hand edge.

No transient response was observed before *t_{off}*.



25.0 kHz Transmitter

Transmitter turn on

Green Trace = 1 kHz tone with FM deviation of 25 kHz.

Green trace has been maximised to give full screen indication of +/- 25 kHz.

Therefore each Y axis division = 6.25 kHz per division.

The X axis has been set to a sweep rate of 10 mS/division.

Triggering has been set to occur 3 divisions from the left hand edge (30 mS).

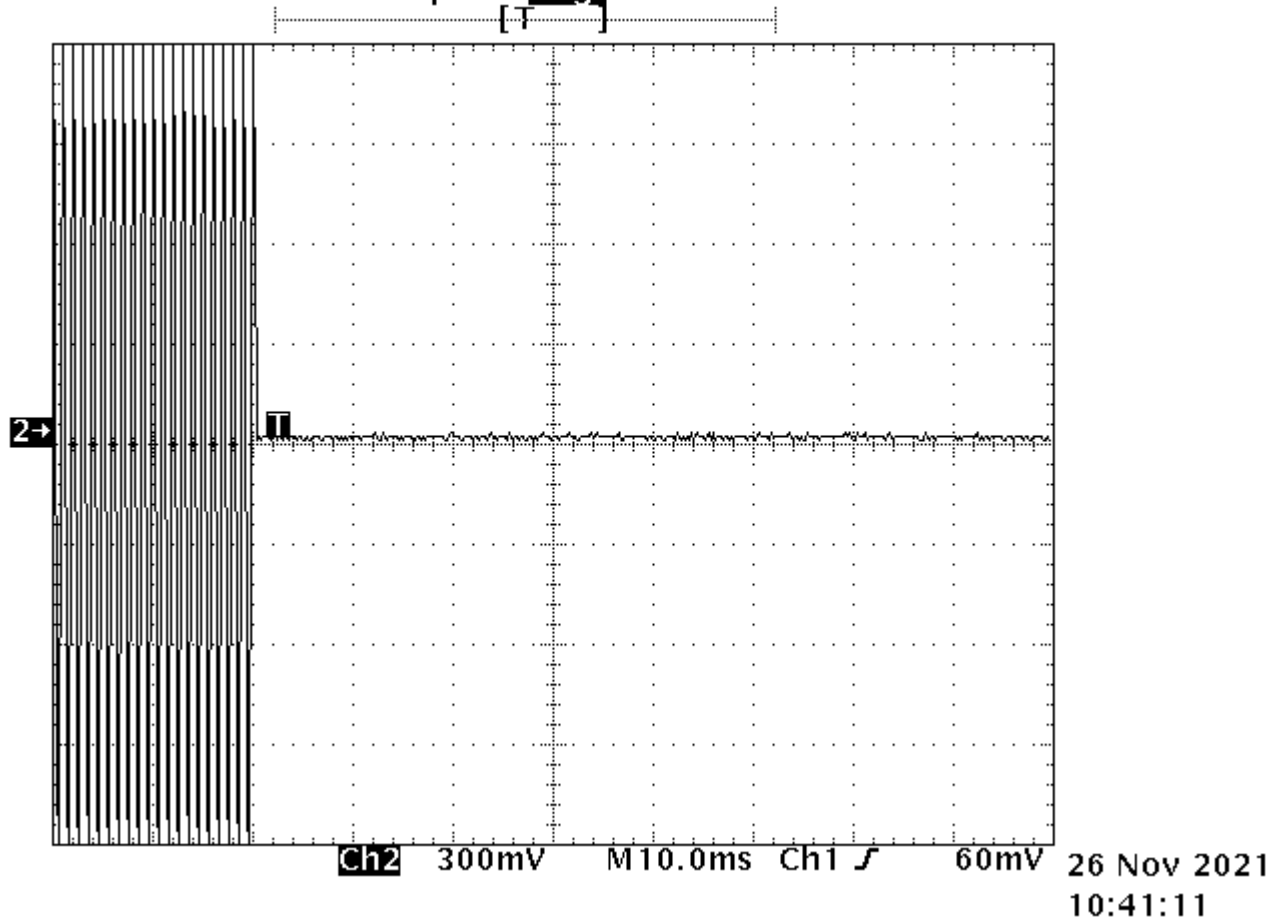
t_{on} occurs 2 divisions from the left of the display (20 mS).

No transient response can be observed during t_{on} .

Tek Run: 5.00kS/s

Sample

Trig?



Transmitter turn off

Green Trace = 1 kHz tone with FM deviation of 25 kHz.

Green trace has been maximised to give full screen indication of +/- 25 kHz.

Therefore each Y axis division = 6.25 kHz per division.

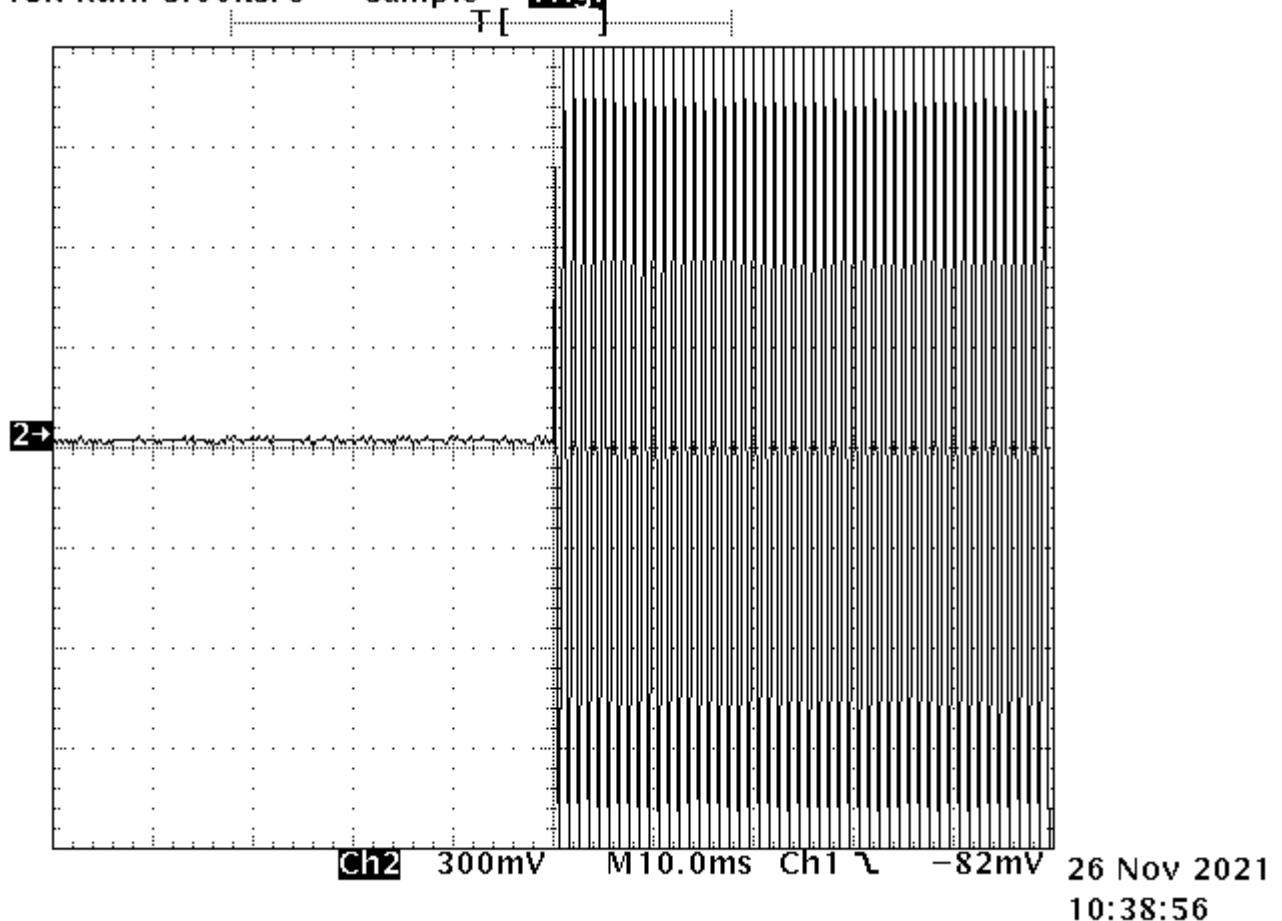
The X axis has been set to a sweep rate of 10 mS/division

The display of the 1 kHz signal rising has been positioned 5 divisions from the left hand edge (50 mS).

This is position *toff*.

No transient response can be observed during *toff*.

Tek Run: 5.00kS/s Sample **U119?**



Exposure of humans to RF fields

As per FCC KDB 447498 D01 and Section 2.1091 radio frequency transmitters are required to be operated in a manner that ensures the public is not exposed to RF energy levels.

Calculations have been made using the General Public/Uncontrolled Exposure limits that are defined in Section 1.1310.

Minimum safe distances have been calculated below.

$$\text{Power density, mW/cm}^2 = E^2/3770$$

- General Population / Uncontrolled exposure is (f/1500) mW/cm²

As this radio will operate in various Part 101 bands between 928 - 960 MHz all calculations have been made at 928 MHz which is the lowest frequency of operation in the USA that will give the worst case result.

For an Uncontrolled Environment

$$\text{Power Density} = 1.0 \text{ mW/cm}^2 = E^2/3770$$

$$E = \sqrt{1.0 * 3770}$$

$$E = 61.4 \text{ V/m}$$

The rated power of 10 Watts (+40 dBm) has been used in the safe distance calculations to give the worst case results.

A worst case scenario duty cycle of 100% has been used for the calculations.

The client has stated that the device can be connected to the antenna models listed below.

Antenna Models:

Manufacturer	Model Number	Gain in dB with cable loss	Numeric gain
ELPRO	UDP400-C	0.6	1.15
ELPRO	BU-3/400	1.2	1.35
ELPRO	BU-6/400	4.2	2.65
ELPRO	YU3/400	2.2	1.65
ELPRO	YU6/400	5.2	3.35
ELPRO	YU9/400	2.4	1.75
ELPRO	YU16/400	7.4	5.50

The minimum distance from the antenna at which the MPE is met is calculated from the following:

Field strength in V/m (FS)
Transmit power in watts (P)
Transmit antenna gain (G)
Transmitter duty cycle (DC)
Separation distance in metres (D)

The calculation is as follows:

$$FS = (\sqrt{30 * P * G * DC}) / D$$

Gain in dB With cable loss	Numeric gain	Minimum safe distance (d) (cm)
0.6	1.15	30.0
1.2	1.35	32.7
4.2	2.65	45.9
2.2	1.65	36.2
5.2	3.35	51.6
2.4	1.75	37.3
7.4	5.50	66.1

Sample calculation is given below

$$D = (\sqrt{30 * P * G * DC}) / FS$$

$$D = (\sqrt{30 * 10 * 1.15 * 1}) / 61.4$$

$$D = 0.30 \text{ m or } 30 \text{ cm}$$

Result: Complies if the safe distances defined for this environment are applied.

7. TEST EQUIPMENT USED

Instrument	Manufacturer	Model	Serial No	Asset Ref	Cal Due	Period
Aerial Controller	EMCO	1090	9112-1062	RFS 3710	Not applic	Not applic
Aerial Mast	EMCO	1070-1	9203-1661	RFS 3708	Not applic	Not applic
Biconical Antenna	Schwarzbeck	BBA 9106	-	3680	1 Jan 2022	3 years
Horn Antenna	EMCO	3115	9511-4629	E1526	1 Jan 2022	3 years
Log Periodic	Schwarzbeck	VUSLP 9111	9111-112	EMC4025	1 Jan 2022	3 years
Modulation Analyzer	Rohde & Schwarz	FMA	837807/020	E1552	3 June 2023	2 year
Oscilloscope	Tektronix	TDS754A	-	E1569	3 June 2023	2 year
Power Attenuator	JFW	50FH-030-100	-	-	Not applicable	N/a
Thermal chamber	Contherm	M180F	86025	-	Not applicable	N/a
Signal Generator	Rohde & Schwarz	SMHU		E1493	28 May 2023	2 years
Power meter	Hewlett Packard	436A	2512A22439	E1198	17 Jun 2023	2.5 years
Mains Network	R & S	ESH2-Z5	881362/032	3628	12 Oct 2022	2 years
Receiver	R & S	ESIB 40	100295	INV0818	3 June 2023	2 year
Spectrum Analyser	Keysight	N9038A	MY57290153	E4033	29 Jan 2022	1 year
Turntable	EMCO	1080-1-2.1	9109-1578	RFS 3709	Not applicable	N/a
VHF Balun	Schwarzbeck	VHA 9103	9594	3696	1 Jan 2022	3 years
Heliacx cable	Andrews	L6PNM-RPD	22869	Oats Cable	30 Dec 2022	1 year
Succoflex cable	Huber and Suhner	104 3m n-n	339901/4	13938	10 Nov 2022	1 year
Succoflex cable	Huber and Suhner	104 1m n-n	340521/4	13937	10 Nov 2022	1 year

At the time of testing all test equipment was within calibration.

8. ACCREDITATIONS

Testing was carried out in accordance with EMC Technologies NZ Ltd designation as a FCC Accredited Laboratory by International Accreditation New Zealand, designation number: NZ0002 under the APEC TEL MRA.

All testing was carried out in accordance with the terms of EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.

All measurement equipment has been calibrated in accordance with the terms of the EMC Technologies (NZ) Ltd International Accreditation New Zealand (IANZ) Accreditation to NZS/ISO/IEC 17025.

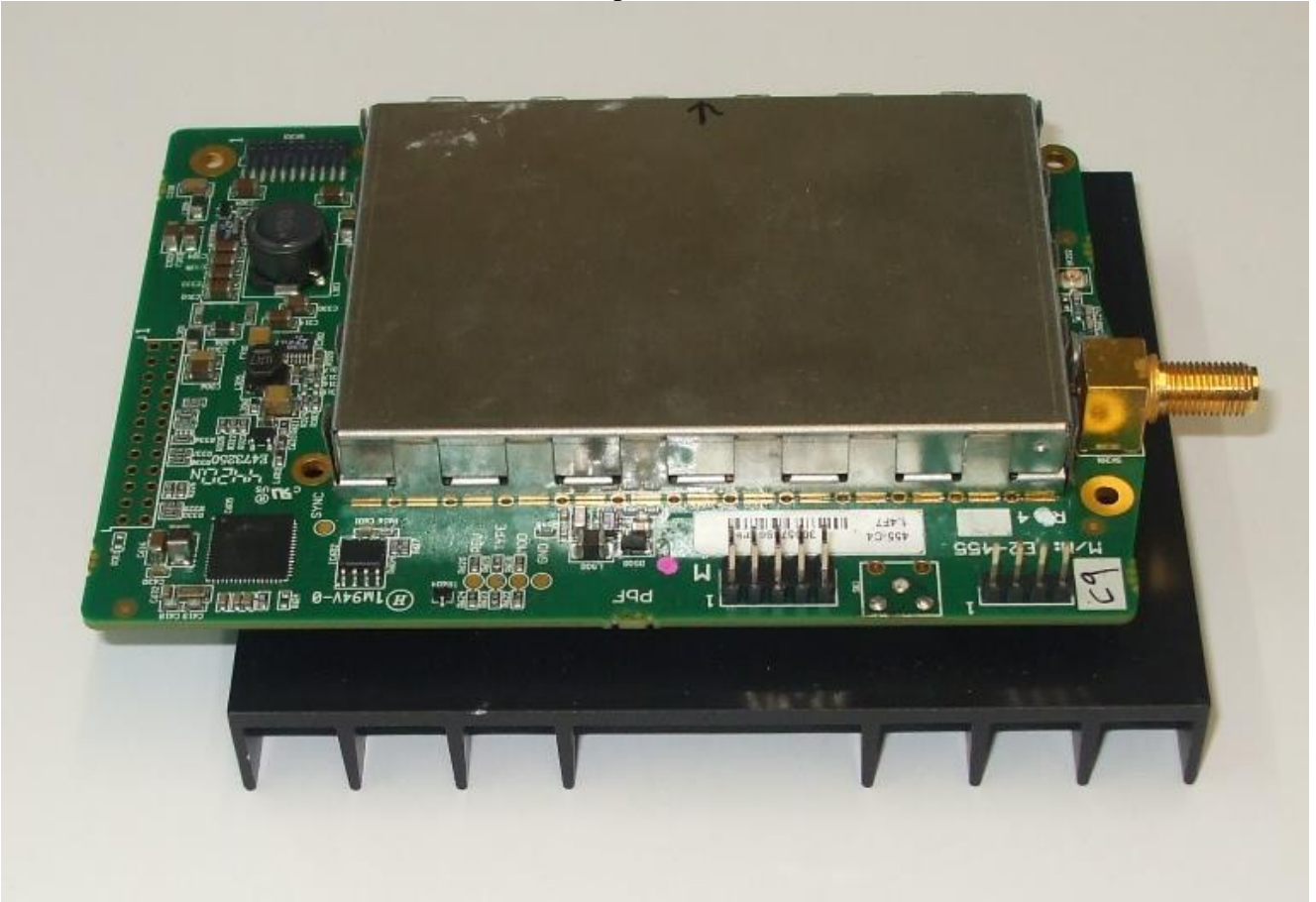
International Accreditation New Zealand has International Laboratory Accreditation Council (ILAC) Mutual Recognition Arrangements for testing and calibration with various accreditation bodies in a number of economies.

This includes NATA (Australia), UKAS (UK), SANAS (South Africa), NVLAP (USA), A2LA (USA), SWEDAC (Sweden).

Further details can be supplied on request.

9. PHOTOGRAPHS

Top view



Side View



Back view

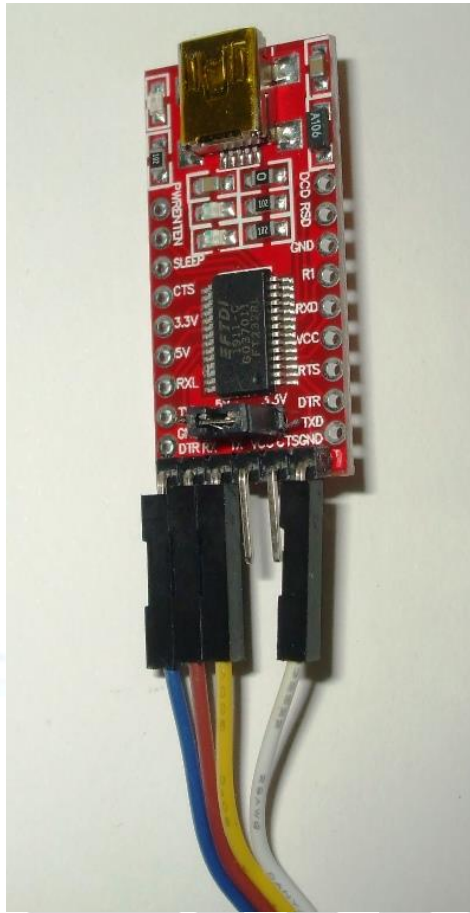


Label

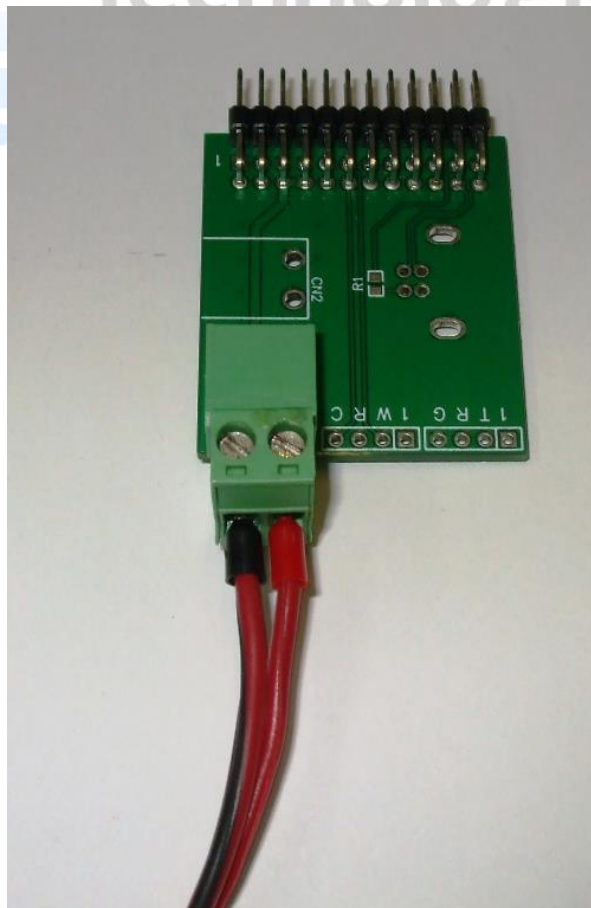


Global Product Certification

Ancillary to connect product to test laptop



Ancillary to connect product to Voltage input source



Radiated emissions test setup

