

Analysis Predicted Location of Harmonic Distortion in RF Upconverter Structure

Sirmayanti Sirmayanti*¹, Mike Faulkner²

¹Telecommunication Study Program, Electrical Department,
The State Polytechnic of Ujung Pandang, Indonesia

²College of Engineering and Science, Victoria University, Australia

*Corresponding author, e-mail: sirmayanti.sirmayanti@poliupg.ac.id

Abstract

A new mathematical analysis to predict the magnitude size of the distortion products from the signal up-conversion process output is presented. The signal up-conversion process converts the digital baseband from the analog baseband into a radio frequency signal. When the signal baseband involves frequency offsetting then occurring a number of distortion products which can reduce the dynamic range so it is difficult to meet the spectrum mask requirements within the operating band. This paper will focus on methods of new mathematical analysis using a continuous frequency range and only applies to a single side band tone, with constant amplitude into any value of frequency offsets. The novel contribution to the analysis starts at generating the gate signal and convolution of the gate signal into the reference carrier signal. The results show very close between the simulation results and the calculation of the predicted location of the distortions.

Keywords: baseband, upconverters, sigma-delta, harmonic, distortion

Copyright © 2018 Universitas Ahmad Dahlan. All rights reserved.

1. Introduction

Digital wireless transmission means an all-digital transmitter design. To move towards all-digital transmitter design so fully-digital components are required. Digital wireless transmission will support digital wireless system which its connectivity forces the development of wireless standards with higher energy efficiency including wider bandwidth, higher data rate, linearity and signal dynamics. Traditional transceiver wireless device systems were mostly designed with radio frequency power amplifiers (RF-PAs) that still cannot be operated with a switching input waveform. Here, switched-mode power amplifier (SMPA) techniques in theoretically possible can improve power efficiency. However, SMPAs need to be driven by a pulse train generated from a polar representation of the transmitted baseband signal [1]. This has motivated to renewed interest in transmitter architectures based in a proposed Cartesian Sigma Delta ($\Sigma\Delta$) transmitter architecture.

The most relevant work to the aims of this work was presented in [2]. In this model, the scheme operates a digital $\Sigma\Delta$ structure which replaces the analog components from the traditional transmitter architecture. The result at the baseband spectrum had shown the avoiding of bandwidth expansion by using a polar quantiser in a Cartesian structure. However, while reducing the bandwidth expansion, the Cartesian $\Sigma\Delta$ structure may still cause unwanted spectral components due to pulse width modulation/pulse position modulation (PWM/PPM) process. PWM/PPM techniques are used to control the amplitude and phase of an RF carrier. But, the rectangular nature of the output pulse generates a number of unwanted harmonics and distortion products such as an image, 3rd harmonic, -3rd harmonic and other low-odd order harmonics [3-5].

Bassoo *et al.* in [2] mathematically showed that a single side band (SSB) modulated tone causes distortion products and its results found that the PPM block was shown to be responsible for these distortions [2, 6]. For a single carrier environment, an increase in offset frequency also increases the unwanted spectral components. More other literatures, Routsalainen *et al.* in [7, 8] showed that larger frequency offsets caused image noise to fold in-band. They investigated a solution using complex noise shaping filters to move the main noise null and suppressing the image noise [7] and then another solution by using a fractional delay in the feedback path [8].

The management of distortion and noise is a key design challenge as is the requirement for tenability to achieve high efficiency transmission system. $\Sigma\Delta$ Techniques can shape the noise away from the carrier band for subsequent removal in a band-pass filter [9] and make it suitable for high-precision data acquisition applications [10], but tunability remains a problem [6]. Our previous work in [6], it describes a method of tuning which is particularly suitable for schemes with high-resolution polar quantisers, such as the waveform PWM-mode Cartesian $\Sigma\Delta$ [3-5]. The results recovers much of the dynamic range over the operating band.

This paper will focus on methods of mathematical analysis, which is carried out to determine the harmonic distortion at the output of the 'Polar to PWM/PPM' block, as shown in Figure 1. The approach in [2] will be followed with modifications to enhance the analysis. The novelty of the analysis will be discussed at section Results and Analysis (part 3.1 & 3.2).

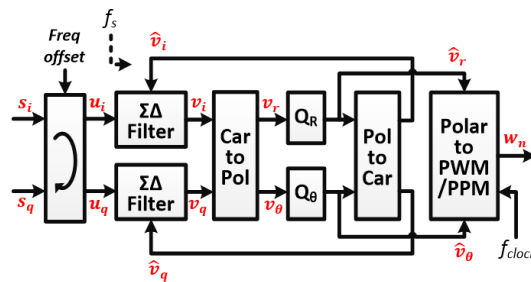


Figure 1. Cartesian $\Sigma\Delta$ scheme which is applied for baseband tuning scenario and odd quantisation scheme [3-6].

All distortion products reduce the dynamic range and it will making difficult to meet the spectrum mask requirements within the operating band. A number of distortion products (spurious signals) become apparent in the output spectrum from the 'polar to PWM/PPM' block. The mirrow image and harmonics occur caused by the rectangular pulse shapes fold in-band and cause interference to adjacent and nearby channels [6].

As we can see from Figure 1, the input signal of I - Q complex baseband, (s_i, s_q) , is converted to polar representations, $R = \sqrt{I^2 + Q^2}$ and $\theta = \tan^{-1}\left(\frac{Q}{I}\right)$. $\Sigma\Delta$ filters independently are used to quantise the amplitude (R) and the phase (θ) signals respectively. The output of these quantisers ($\hat{v}_r, \hat{v}_\theta$) is then fed back to their appropriate $\Sigma\Delta$ filter. Furthermore, the quantized signal ($\hat{v}_r, \hat{v}_\theta$) is also sent through a 'Polar to PWM/PPM' block converter to generate the appropriate pulse waveform. Here, the final pulse train output of the 'Polar to PWM/PPM' (w_n) block will feed to the SMPA and band pass filter (BPF).

2. Research Method

The research method is based on the analysis results in [2] and technically we use the similar equation derivation (part 2.1) for the reference carrier signal $\tilde{S}_k(f)$ as shown in Figure 2 and Figure 3. Later, two scenarios for the odd quantisation [3-6] scheme and even quantisation [2] scheme are chosen for the comparison results.

The technique requires the carrier frequency (f_c) to be harmonically related to the number of clock frequency (f_{clock}). f_{clock} per nominal RF carrier period (f_c) sets the number of the availability of quantisation points for the magnitude and phase quantisers, Q_R and Q_θ , respectively. The quantised amplitude (\hat{v}_r) is determined by the number of pulse widths or quantisation levels of N_A . The quantised phase (\hat{v}_θ) is determined by the number of pulse positions or quantisation phases of N_p . The width and position of the pulse train are updated after K periods of the RF carrier. Factor K is a fixed relationship between the $\Sigma\Delta$ sample frequency, f_s , and the nominal carrier frequency f_c . We assume $K \geq 1$ (see (10) in [4]), so therefore

$$K = \frac{f_c}{f_s} \quad (1)$$

The mathematical analysis is based on a single SSB tone in which each an upper side band (USB) or lower side band (LSB) carrier is generated at frequency, $(f_c + f_{ssb})$ or $(f_c - f_{ssb})$ Hz respectively. The side band frequency, f_{ssb} , is determined by the phase slope $(\frac{\partial\theta}{\partial t})$, so

$$f_{ssb} = \frac{1}{2\pi} \frac{\partial\theta}{\partial t} \tag{2}$$

After quantisation with step size $(\Delta\theta)$, the phase is actually linearly ramps up and changes to a staircase signal with oversampling ratio (OSR_{RF}) steps in 2π radians, given by

$$\Delta\theta = \frac{2\pi}{OSR_{RF}} \tag{3}$$

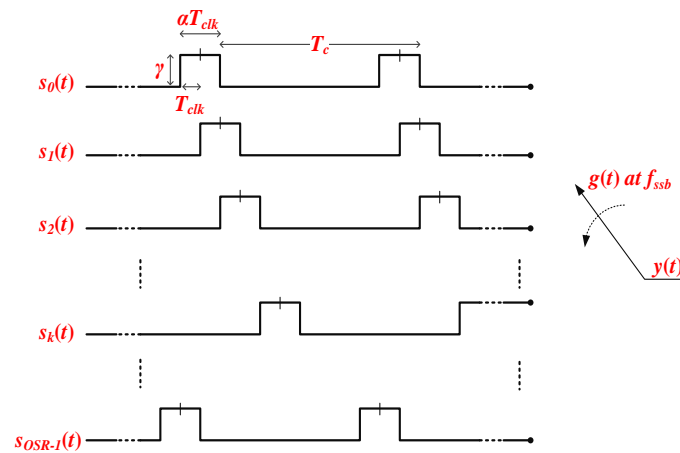


Figure 2. Phase shifted oscillators generate a SSB signal [2]

Figure 2 shows a SSB generation from a bank of phase-shifted oscillators. Each oscillator has an output of a quantised phase of $s(t)$. $s_0(t)$ is the first quantised phase then continuing by $s_k(t)$, where $k = 0, 1, \dots, (OSR_{RF} - 1)$. So, $s_1(t)$, for instance, is $s_0(t)$ delayed by T_{clk} . Each waveform, $s_k(t)$, is selected for a period by T_g . Therefore, there are OSR_{RF} clock periods in each carrier signal period, and it can be written as

$$T_c = T_{clk} \times OSR_{RF} \tag{4}$$

Here, the expression for the output signal $s_k(t)$ is,

$$s_k(t) = s(t + kT_{clk}) \tag{5}$$

During PWM/PPM process, the PWM maintains the pulse width constant (αT_{clk}) from the modulated amplitude and the PPM controls the increment (or decrement) of the pulse position from the modulated phase. As a result, all oscillators have the same pulse width, αT_{clk} at frequency f_c .

Moreover, there is a switch which rotates at a constant speed of f_{ssb} rotations/sec to obtain the output $y(t)$. The switch operates in a counter clockwise direction to delay the signal by 2π radians in $T_{ssb} (= \frac{1}{f_{ssb}})$ seconds. The frequency of $y(t)$ is $(f_c - f_{ssb})$. The switch must rotate clockwise to give $f_c + f_{ssb}$ (USB). T_g is the duration that each of the OSR_{RF} oscillators is connected (or gated) to the output. So therefore,

$$T_g = \frac{T_{ssb}}{OSR_{RF}} \tag{6}$$

Figure 2 is functionally similar to Figure 3 which shows the generation of SSB signal from the input $s(t)$ and $g(t)$, so the mathematical analysis can be expressed in more detail. The waveforms of $s_0(t)$ and $g_0(t)$ is respectively generated from the input reference oscillators by $s(t)$ and $g(t)$. Similarly to $s_k(t)$, the $g_k(t)$ gating waveform effectively selects each $s_k(t)$ output in turn, which is

$$g_k(t) = g(t + kT_g) \tag{7}$$

So therefore, the output from the k^{th} gate is given by

$$y_k(t) = s_k(t) g_k(t) \tag{8}$$

and the total output $y(t)$ is the summation from all OSR_{RF} multiplexed output gates, giving by

$$y(t) = \sum_{k=0}^{OSR_{RF}-1} y_k(t) \tag{9}$$

In this case, $\tilde{Y}(f) = F\{y(t)\}$ is calculated at the frequency domain using Fourier transform.

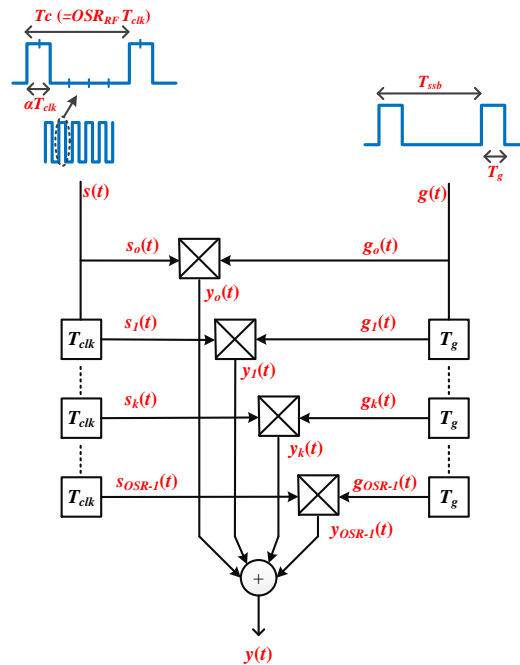


Figure 3. SSB generation for mathematical analysis [2]

2.1. The Reference Carrier Signal $\tilde{S}_k(f)$

$s_0(t)$ is the reference carrier signal. Since it is a repeating pulse signal so the properties of the discrete-time Fourier series method are used to calculate the spectrum. $s_0(t)$ can be formulated as

$$\tilde{S}_0(f) = \sum_{n=-\infty}^{\infty} S_0(n) \delta(f - nf_c) \tag{10}$$

where

$$S_0(n) = \frac{\gamma \times \alpha T_{clk}}{T_c} \text{sinc}\left(\frac{n \times \alpha T_{clk}}{T_c}\right) \tag{11}$$

is the Fourier series of pulse train of $s_0(t)$.

The *sinc* function on $S_0(n)$ aims to control the amplitude of the series of delta function at each the harmonics of f_c . Now $S_k(n)$ can be defined by using the time shifting property of the Fourier transform from $S_0(n)$

$$S_k(n) = S_0(n)e^{\frac{j2\pi nk}{OSRRF}} \tag{12}$$

Therefore, the reference carrier signal with its the spectrum of the delayed waveform version can be written as

$$\tilde{S}_k(f) = \sum_{n=-\infty}^{\infty} S_0(n)e^{\frac{j2\pi nk}{OSRRF}} \delta(f - nf_c) \tag{13}$$

3. Results and Analysis

3.1. The Gate Signal $\tilde{G}_k(f)$

The novel contribution to the analysis starts here. All the analysis at the previous results in [2] only apply to a few discrete frequencies since it is assumed that the SSB gating waveform period is an integer number of samples. We now study all the analysis approach into any value of f_{ssb} (f_{offset}). As can be seen in Figure 4, it illustrates how to analyse the Gate Signal $\tilde{G}_k(f)$ condition.

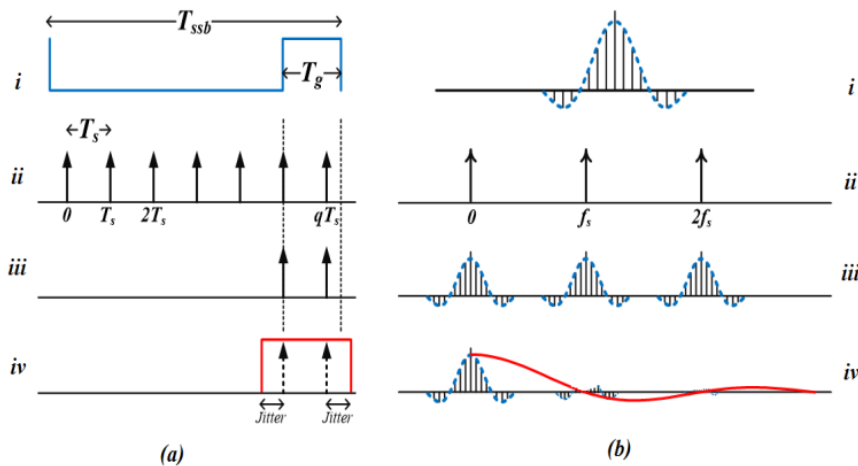


Figure 4. The gate signal generation. (a) in time domain, (b) in frequency domain, (i) input signal, (ii) sampling function, (iii) sample image, (iv) $\tilde{G}_0(f)$ output signal.

Note that $g_0(t)$ is defined as the edge of a SSB gating waveform. When it is not quantised on the sample grid, it experiences jitter. Figure 4 (i) illustrates the desired input gating, $g_0(t)$. The signal and the spectrum of $g_0(t)$ are described by the Fourier series of this repeating pulse $g_0(t)$ of period of T_{ssb} . $\tilde{G}_k(f)$ consists of harmonics of f_{ssb} ($= \frac{1}{T_{ssb}}$) weighted by a *sinc* function with nulls at $\frac{1}{T_g}$. $\tilde{G}_k(f)$ can be obtained by

$$\tilde{G}_k(f) = \sum_{n=-\infty}^{\infty} G_k(m)\delta(f - mf_{ssb}) \tag{14}$$

where

$$G_0(m) = \frac{1}{OSRRF} \text{sinc}\left(\frac{m}{OSRRF}\right) \tag{15}$$

and the delayed waveform version of $G_0(m)$ is written by

$$G_k(m) = G_0(m)e^{\frac{j2\pi mk}{OSRRF}} \quad (16)$$

Futhermore, Figure 4(ii) shows the sampling function with period T_s which is the sample period of the $\Sigma\Delta$. T_s is a series of impulses by $\sum_{q=0}^{\infty} \delta(t - qT_s)$. In other words, the spectrum of the sampling function is also a series of delta functions by $\sum_{p=0}^{\infty} \delta(f - pf_s)$. Figure 4 (iii) is obtained after the sampling process at the gating signal waveform of $g_0(t)$ resulting $\tilde{G}_k(f)$. Since both of them are in the time domain, so deriving the sampled spectrum of $\tilde{G}_k(f)$ is in multiplication calculation, that is

$$\tilde{G}_k(f) = \sum_{p=-\infty}^{+\infty} \sum_{m=-\infty}^{+\infty} G_k(m) \delta(f - mf_{ssb} - pf_s) \quad (17)$$

Figure 4(iv) shows the jittered gating window. They are the time domain samples which are convolved with a square pulse of width T_s . Figure 4 (b) (iv) shows in detail their repeating spectrum in the frequency domain. Therefore, the total spectrum of the sampled gating signal, $\tilde{G}_k(f)$, is now multiplied by $T_s \text{sinc}\left(\pi \frac{f}{f_s}\right)$. $\tilde{G}_k(f)$ is formulated as

$$\tilde{G}_k(f) = T_s \text{sinc}\left(\pi \frac{f}{f_s}\right) \sum_{p=-\infty}^{+\infty} \sum_{m=-\infty}^{+\infty} G_0(m) e^{\frac{j2\pi mk}{OSRRF}} \delta(f - mf_{ssb} - pf_s) \quad (18)$$

3.2. The Convolution of $\tilde{S}_k(f)$ and $\tilde{G}_k(f)$

In (8), the output $y_k(t)$ is obtained from the multiplication (in time domain) of the reference carrier signal, $s_k(t)$, with the gating signal, $g_k(t)$. In frequency domain, $\tilde{Y}_k(f)$ is the convolution result of $\tilde{S}_k(f)$ and $\tilde{G}_k(f)$, that is

$$\tilde{Y}_k(f) = \tilde{S}_k(f) \otimes \tilde{G}_k(f) \quad (19)$$

Note that at the spectrum of $\tilde{G}_k(f)$, all its sampling images imprinted on each harmonic, nf_c , of the carrier pulse spectrum $\tilde{S}_k(f)$. As a result, the total of the spectrum is $\tilde{Y}(f)$ which is the sum of each gated phase spectrum of $\tilde{Y}_k(f)$.

Figure 5 illustrates the form of the spectra $\tilde{Y}(f)$. Figure 5 (a) is the series of carrier pulses with digital clock period T_c and with the Fourier transform that gives the harmonics at nf_c weighted by the *sinc* function of $S_0(n)\delta(f - nf_c)$ from (10). An example for the condition $OSRRF = 8$ and $\alpha = 2$ (the pulse width is αT_{clk}) is depicted in Figure 5 (b). The zero crossing of the *sinc* function, z_c , is at

$$z_c = \frac{1}{\alpha \times T_{clk}} \quad (20)$$

or $\pm 4f_c$ for this example. Substituting (13) and (18) into (19), so therefore,

$$\begin{aligned} \tilde{Y}_k(f) = \sum_{n=-\infty}^{\infty} & S_0(n) e^{\frac{j2\pi nk}{OSRRF}} \delta(f - nf_c) \\ & \otimes \\ & T_s \text{sinc}\left(\pi \frac{f}{f_s}\right) \sum_{p=-\infty}^{+\infty} \sum_{m=-\infty}^{+\infty} G_0(m) e^{\frac{j2\pi mk}{OSRRF}} \delta(f - mf_{ssb} - pf_s) \end{aligned} \quad (21)$$

where n , m , and p are the harmonic bin number in the spectrum at f_c , f_{ssb} and f_s respectively. The total $\tilde{Y}(f)$ spectrum is the sum of each $\tilde{Y}_k(f)$, given by

$$\tilde{Y}(f) = \sum_{k=0}^{OSRRF-1} \tilde{Y}_k(f) \quad (22)$$

Since $f_c = K f_s$ (see (10) in [4]) now we can see the images sit on top of each other (assumed K is 1). It is very clearly shown in Figure 5 (c) in the dotted green line that the signal

of interest is sitting at f_c , as well as the images of interest itself. A harmonic is occurred only when $n + m = i \times OSR_{RF}$. n and m are the sample number harmonics at f_c and f_{ssb} respectively and i is an integer. The exponential term sums to zero for all other combinations of n and m . Only when $m = (i \times OSR_{RF}) - n$, i.e. $e^0 = 1$ so the output $\tilde{Y}(f)$ becomes:

$$\tilde{Y}(f) = \frac{OSR_{RF}}{f_s} \sum_{p=-\infty}^{+\infty} \sum_{n=-\infty}^{+\infty} \sum_{m=-\infty}^{+\infty} S_o(n)G_o(n) \text{sinc} \left(\pi \frac{(f-nf_c)}{f_s} \right) \delta(f - nf_c - mf_{ssb} - pf_s) \tag{23}$$

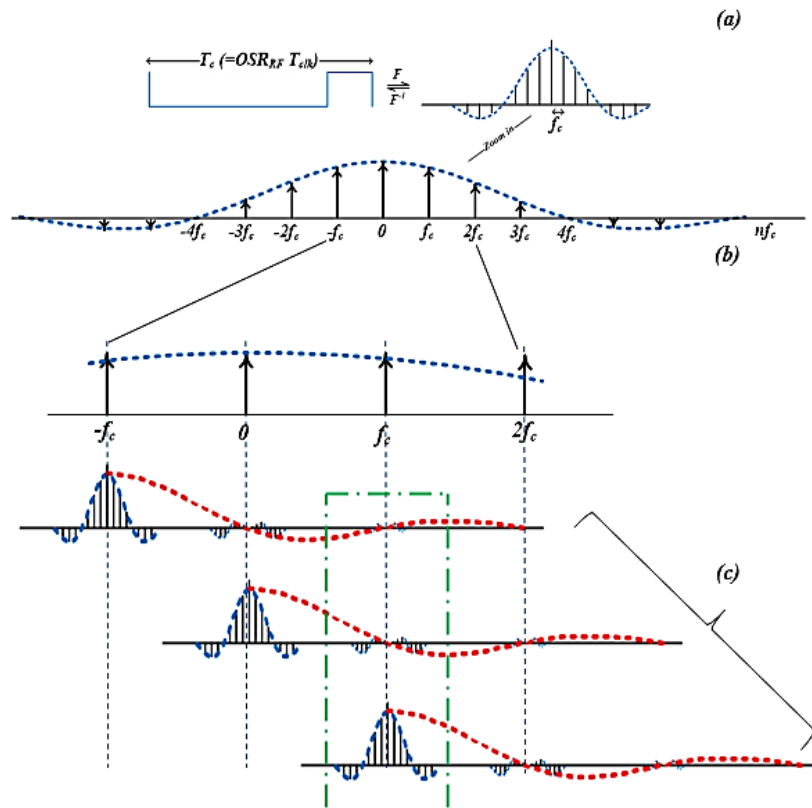


Figure 5. The convolution of $\tilde{S}_k(f)$ and $\tilde{G}_k(f)$ gives $\tilde{Y}_k(f)$. (a) $\tilde{S}_k(f)$, (b) zoom of $\tilde{S}_k(f)$ with $OSR_{RF}= 8$ and $\alpha = 2$, (c) Summation of $\tilde{G}_k(f - nfc)$ that form $\tilde{Y}(f)$.

To predict the basic amplitude of the harmonic is given by $\frac{OSR_{RF}}{f_s} S_o(n)G_o(n)$. The condition of the delta function informs its position in the spectrum. The $\text{sinc} \left(\pi \frac{(f-nf_c)}{f_s} \right)$ weighting indicates that the interest in the spectrum is around f_c . Therefore, $nf_c + pf_s = f_c$ gives $K(n - 1) = -p$. This will be substituted into (23) that becomes:

$$\tilde{Y}(f_c + mf_{ssb}) = \frac{OSR_{RF}}{f_s} \sum_{p=-\infty}^{+\infty} \sum_{n=-\infty}^{+\infty} \sum_{m=-\infty}^{+\infty} S_o(n)G_o(n) \text{sinc} \left(\pi \left(m \frac{f_{ssb}}{f_c} + (1 - n) \right) K \right) \delta(f - f_c - mf_{ssb}) \tag{24}$$

An example result of value n and m is described. The first harmonic zone (f_c) is the location of the desired main SSB signal with $n = 1, m = -1, p = 0$; the image zone ($-f_c$) is with $n = -1, m = 1, p = -2K$; the 3rd harmonic zone ($f_c - 3f_{ssb}$) is with $n = 3, m = -3, p = 2K$; and the -3rd harmonic zone ($f_c + 3f_{ssb}$) is with $n = -3, m = 3, p = -4K$. An example of calculation results of the harmonics size with using each value above can be seen in Table 1.

Table 1. An Example of Calculation Results of the Harmonics Size

| Harmonic size (dB) | Odd quantisation $\alpha = 5, \hat{v}_r = 0.6002$ | | Even quantisation $\alpha = 6, \hat{v}_r = 0.7074$ | |
|--------------------------|--|-------------|---|-------------|
| | Simulation | Calculation | Simulation | Calculation |
| Image | 29.6533 | 30.3703 | 29.821 | 30.3703 |
| 3 rd harmonic | 24.4384 | 24.9554 | 26.2643 | 26.5090 |

Table 1 shows the comparison between the simulation results of spectrum w_n and the calculation of the prediction location of the most dominant distortions: the image and the 3rd harmonic. The negative harmonic zone ($-f_c$) is the image ($n = -1, m = 1, p = -2K$) and the 3rd harmonic zone ($f_c - 3f_{ssb}$) is the 3rd harmonic ($n = 3, m = -3, p = 2K$). Both the results are close. Agreement between simulation and calculation degrades as OSR_{RF} is reduced. Two scenarios for the odd quantisation [3-6] and even quantisation [2] are chosen for this comparison at values of $K = 1, f_{ssb} = 64$ MHz, $OSR_{RF} = 32$, and $f_c = 1024$ MHz. The pulse width, α , is based on the expected pulse width for a given input signal amplitude.

4. Conclusion

The extension of the mathematical derivation in [2] achieved results over a continuous frequency range rather than at a few spot frequencies. The new mathematical approach in this paper enabled the derivation of the prediction size of the magnitude of the distortion products. The analysis only applies to a SSB tone with constant amplitude. For modulated signals with varying phase and amplitude for instance, the high odd-order distortion products (3rd harmonic and above) become complex convolutions with smeared spectrum. So therefore, a different type of analysis is required for such signals. However, this expression still can be used to explain how the distortion products arise and considers techniques to cancel the image product and some of the noise enhancement cause by the intermediate frequency (IF) shift in [6].

References

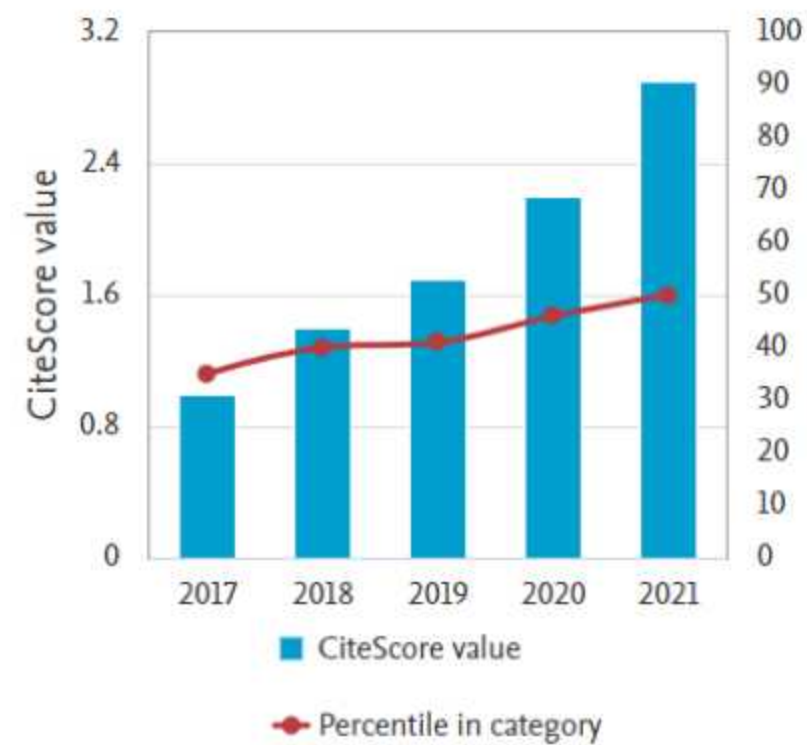
- [1] Sjöland H, Bryant C, Bassoo V, and Faulkner M. Switched-mode Transmitter Architectures. *Analog Circuit Design, Springer*. 2010: 325-342.
- [2] Bassoo V, Linton L, and Faulkner M. Analysis of Distortion in Pulse Modulation Converters for Switching Radio Frequency Power Amplifiers. *IET Microwaves, Antennas & Propagation*. 2010; 4(12): 2088-2096.
- [3] Sirmayanti S, Bassoo V, King H, and Faulkner M. *Odd-even quantisation and Cartesian delta-sigma ($\Delta\Sigma$) Upconverters for Transmitter Design*. IEEE International Conference on Communication Systems (ICCS). Singapore. 2012: 100-104.
- [4] Sirmayanti S, Bassoo V, King H, and Faulkner M. *OFDM Performance with Odd-Even Quantisation in Cartesian $\Delta\Sigma$ Upconverters*. IEEE International Conference on Signal Processing and Communication Systems. Gold Coast Australia. 2012: 1-5.
- [5] Sirmayanti S, Bassoo V, Faulkner M. *Joint Odd-Even Quantisation in Cartesian Delta-Sigma ($\Delta\Sigma$) Upconverters*. IEEE Africon. Pointe-Aux-Piments Mauritius. 2013: 1-4.
- [6] Sirmayanti S, Bassoo V, King H, and Faulkner M. Baseband Tuning of Cartesian Delta-Sigma RF upconverters. *IET Electronics Letters Journal*. 2014; 50(8): 635-637.
- [7] Ruotsalainen H, Arthaber H, Magerl G. A New Quadrature PWM Modulator With Tunable Center Frequency for Digital RF Transmitters. *IEEE Transactions on Circuits and Systems II: Express Briefs*. 2012; 59(11): 756-760.
- [8] Ruotsalainen H, Arthaber H, Magerl G. *Quantization noise cancelation scheme for digital quadrature RF pulse encoding*. IEEE MTT-S International Microwave Symposium Digest (MTT). Seattle, WA. 2013: 1-4.
- [9] Schreier R, Temes G C, Wiley J. *Understanding Delta-sigma Data Converters*. 74. New Jersey: IEEE Press Piscataway. 2005.
- [10] Shu-jing S U, Hai-li, Z H A N G. The Study and Achieving of High-precision Data-acquisition Based on $\Delta\Sigma$ ADC. *Indonesian Journal of Electrical Engineering and Computer Science*. 2013; 11(8): 4453-4460.

TELKOMNIKA

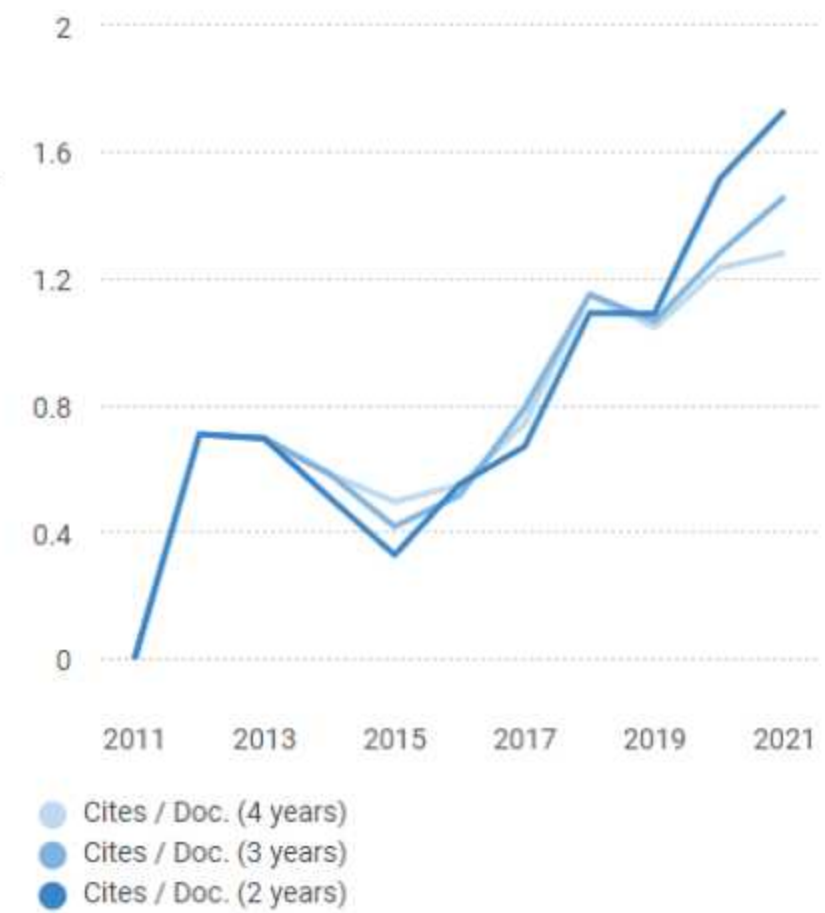
Telecommunication Computing
Electronics and Control

<http://telkomnika.uad.ac.id/index.php/TELKOMNIKA>

CiteScore trend



Citations per document



SUBJECT AREA

Telecommunication, Computing, Electrical & Electronics, and Instrumentation & Control



Home > Archives > **Vol 16, No 6**

Vol 16, No 6

December 2018

DOI: <http://doi.org/10.12928/telkomnika.v16i6>

Table of Contents

| | |
|---|---------------------|
| A Novel Structure of a Wideband Zero-Bias Power Limiter for ISM Band | PDF |
| <i>Khalifa Echchakhaoui, Elhassane Abdelmounim, Jamal Zbitou, Hamid Bennis, Ahmed Errkik, Angel Mediavilla Sanchez</i> | 2481-2491 |
| Design and Analysis of Broadband Elliptical Microstrip Patch Antenna for Wireless Communication | PDF |
| <i>Ali Khalid Jassim, Raad H. Thaher</i> | 2492-2499 |
| A Two-stages Microstrip Power Amplifier for WiMAX Applications | PDF |
| <i>Amine Rachakh, Larbi El Abdellaoui, Jamal Zbitou, Ahmed Errkik, Abdelali Tajmouati, Mohamed Latrach</i> | 2500-2506 |
| Electromagnetic Characteristics Measurement of Organic Material Absorber | PDF |
| <i>Reza Septiawan, Sardjono Trihatmo, Juliati Junde, Dody A. Winarto, Arief Rufiyanto, Erik Madyo Putro, Budi Sulistya, Arky Astasari</i> | 2507-2513 |
| Optimization a Scheduling Algorithm of CA in LTE ADV | PDF |
| <i>Sarmad K. Ibrahim, Nasser N. Khamiss</i> | 2514-2521 |
| Comparison of Raindrop Size Distribution Characteristics Across the Southeast Asia Region | PDF |
| <i>Manhal Alhilali, Lam Hong Yin, Jafri Din</i> | 2522-2527 |
| Performance Evaluation of Low-Cost GPS Time Server Based on NTP | PDF |
| <i>Heri Andrianto, Yohana Susanthi, Denny Suryadi</i> | 2528-2535 |

USER

Username

Password

Remember me

QUICK LINKS

- Editorial Boards
- Reviewers
- **Author Guidelines**
- **Online Submission**
- **Peer Review Process**
- **Publication Fee**
- Abstracting and Indexing
- Scopus: Add missing document
- Publication Ethics
- Visitor Statistics
- Contact Us

Scimago Journal Rank (SJR) of TELKOMNIKA

Telkomnika (Telecommunication...)

Q3 Electrical and Electronic Engineering
best quartile

SJR 2022
0.29
powered by scimagojr.com

JOURNAL CONTENT

Search

Search Scope
All

Search

Browse

- By Issue
- By Author
- By Title

| | |
|---|----------------------------------|
| Hybrid Filter Scheme for Optimizing Indoor Mobile Cooperative Tracking System <i>Rafina Destiarti Ainul, Prima Kristalina, Amang Sudarsono</i> | PDF 2536-2548 |
| Proposed Model for Interference Estimation in Code Division Multiple Access <i>Dalal Kanaan Taher, Adheed Hassan Sallomi</i> | PDF 2549-2556 |
| A Compact Reconfigurable Dual Band-Notched Ultra-Wideband Antenna using Varactor Diodes <i>Sam Weng Yik, Zahriladha Zakaria, Herwansyah Lago, Noor Azwan Shairi</i> | PDF 2557-2562 |
| RS Codes for Downlink LTE System over LTE-MIMO Channel <i>Ghasan Ali Hussain, Lukman Audah</i> | PDF 2563-2569 |
| Loss Quantization of Reflectarray Antenna Based on Organic Substrate Materials <i>H. I Malik, M. Y Ismail, Sharmiza Adnan, S. R Masrol</i> | PDF 2570-2577 |
| Multuser Detection with Decision-Feedback Detectors and PIC in MC-CDMA System <i>Leila Sahraoui, Djemil Messadeg, Saliha e Hariz, Nouredine Doghmane</i> | PDF 2578-2587 |
| Different Multilayer Substrate Approaches to Improve Array Antenna Characteristics for Radar Applications <i>N. Chater, T. Mazri, M. Benbrahim</i> | PDF 2588-2596 |
| Proposed P-shaped Microstrip Antenna Array for Wireless Communication Applications <i>Raad H. Thaher, Noor Baqir Hassan</i> | PDF 2597-2607 |
| Analysis Predicted Location of Harmonic Distortion in RF Upconverter Structure <i>Sirmayanti Sirmayanti, Mike Faulkner</i> | PDF 2608-2615 |
| Performance Enhancement of Wideband Reflectarray Antennas Embedded on Paper Substrate Materials <i>M. Y. Ismail, H. I. Malik</i> | PDF 2616-2621 |
| Underwater Image De-noising using Discrete Wavelet Transform and Pre-Whitening Filter <i>Mohanad Najm Abdulwahed, Ali Kamil Ahmed</i> | PDF 2622-2629 |
| Implementation of Integration VaaMSN and SEMAR for Wide Coverage Air Quality Monitoring <i>Yohanes Yohanie Fridelin Panduman, Adnan Rachmat Anom Besari, Sritrusta Sukaridhoto, Rizqi Putri Nourma Budiarti, Rahardhita Widyatra Sudibyo, Funabiki Nobuo</i> | PDF 2630-2642 |
| Secure Code Generation for Multi-Level Mutual Authentication | PDF |

| | |
|--|---------------------|
| Modified DCT-based Audio Watermarking Optimization using Genetics Algorithm | PDF |
| <i>Ledy Novamizanti, Gelar Budiman, Irma Safitri</i> | 2651-2660 |
| Thermodynamic Performance and Wave Propagation Sensor System of Fiber Bragg Grating in Liquid Media | PDF |
| <i>Romi F. Syahputra, Ridho Kurniawan, Yunita I. Lubis, Mesra Sania, Okfalisa Okfalisa, Saktioto</i> | 2661-2667 |
| Numerical Method for Evaluating E-Cash Security | PDF |
| <i>Dany Eka Saputra, Sarwono Sutikno, Suhono Harso Supangkat</i> | 2668-2675 |
| Statistical Tuning Chart for Mapping Porosity Thickness: a Case Study of Channel Sand Bodies in the Kutei Basin Reservoir | PDF |
| <i>Abdul Haris, Agus Riyanto, Sri Mardiyati</i> | 2676-2682 |
| Repair and Replacement Strategy for Optimizing Cost and Time of Warranty Process using Integer Programming | PDF |
| <i>Ardy Januantoro, Riyanarto Sarno</i> | 2683-2691 |
| The Readiness of Palm Oil Industry in Enterprise Resource Planning | PDF |
| <i>Darius Antoni, Deni Fikari, Muhamad Akbar, Ferry Jie</i> | 2692-2702 |
| Integrated Analytical Hierarchy Process and Objective Matrix in Balanced Scorecard Dashboard Model for Performance Measurement | PDF |
| <i>Okfalisa Okfalisa, Septia Anugrah, Wresni Anggraini, Muhammad Absor, S.S.M. Fauzi, Saktioto</i> | 2703-2711 |
| Image Analysis using Color Co-occurrence Matrix Textural Features for Predicting Nitrogen Content in Spinach | PDF |
| <i>Yusuf Hendrawan, Indah Mustika Sakti, Yusuf Wibisono, Muchnuria Rachmawati, Sandra Malin Sutan</i> | 2712-2724 |
| Fuzzy Rule-based Classification Systems for the Gender Prediction from Handwriting | PDF |
| <i>Lala Septem Riza, Aldi Zainafif, Rasim Rasim, Shah Nazir</i> | 2725-2732 |
| Speech Recognition Application for the Speech Impaired using the Android-based Google Cloud Speech API | PDF |
| <i>Nenny Anggraini, Angga Kurniawan, Luh Kesuma Wardhani, Nashrul Hakiem</i> | 2733-2739 |
| A Review of Energy-aware Cloud Computing Surveys | PDF |
| <i>Azlan Ismail, Nor Adzlan Jamaludin, Suzana Zambri</i> | 2740-2746 |
| Reinforced Island Model Genetic Algorithm to Solve University Course Timetabling | PDF |
| <i>Alfian Akbar Gozali, Shigeru Fujimura</i> | 2747-2755 |
| Message Oriented Middleware For Library's Metadata Exchange | PDF |

| | |
|--|---------------------|
| <i>Ni Wayan Wisswani, I Wayan Kandi Wijaya</i> | 2756-2762 |
| Determining Strategies on Playing Badminton using the Knuth-Morris-Pratt Algorithm | PDF |
| <i>Lala Septem Riza, Muhammad Irfan Firmansyah, Herbert Siregar, Dian Budiana, Alejandro Rosales-Pérez</i> | 2763-2770 |
| Towards Adaptive Sensor-cloud for Internet of Things | PDF |
| <i>I Made Murwantara, Hendra Tjahyadi, Pujianto Yugopuspito, Arnold Aribowo, Irene A. Lazarusli</i> | 2771-2781 |
| Using Alpha-cuts and Constraint Exploration Approach on Quadratic Programming Problem | PDF |
| <i>Yosza Dasril, Zahriladha Zakaria, Ismail Bin Mohd</i> | 2782-2790 |
| Design Mobile App for Increase the Visitor Museum using Gamification Method | PDF |
| <i>Novian Adi Prasetyo, Suyoto Suyoto</i> | 2791-2798 |
| A New Framework for Information System Development on Instant Messaging for Low Cost Solution | PDF |
| <i>I Made Sukarsa, I Ketut Gede Darma Putra, Nyoman Putra Sastra, Lie Jasa</i> | 2799-2808 |
| Anomaly Detection based on Control-flow Pattern of Parallel Business Processes | PDF |
| <i>Hendra Darmawan, Riyanarto Sarno, Adhatus Solichah Ahmadiyah, Kelly Rossa Sungkono, Cahyaningtyas Sekar Wahyuni</i> | 2809-2816 |
| Assessment of Internet Banking Services Continued Use: Role of Socio-Cognitive and Relational View | PDF |
| <i>Mira Kartiwi, Ali Rfieda</i> | 2817-2827 |
| Development of a Modular Unit of a Higher Level Framework or Tool for Basic Programming Course Teaching Through E-Learning Mode | PDF |
| <i>Radhika Pathi, G.V. Rao, P. Rama Krishna, P. Bharath Kumar</i> | 2828-2834 |
| Stochastic Computing Correlation Utilization in Convolutional Neural Network Basic Functions | PDF |
| <i>Hamdan Abdellatef, Mohamed Khalil Hani, Nasir Shaikh Husin, Sayed Omid Ayat</i> | 2835-2843 |
| Performance Evaluation of Centralized Reconfigurable Transmitting Power Scheme in Wireless Network-on-chip | PDF |
| <i>M. S. Rusli, A. A. H. Ab Rahman, U. U. Sheikh, N. Shaikh Husin, Michael L. P. Tan, T. Andromeda, M. N. Marsono</i> | 2844-2854 |
| Radial Derivative and Radial Inversion for Interpreting 4D Gravity Anomaly Due to Fluids Injection Around Reservoir | PDF |
| <i>Muhammad Zuhdi, Sismanto Sismanto, Ari Setiawan, Jarot Setyowiyoto, Adi Susilo, Muhammad Sarkowi</i> | 2855-2863 |
| Design of Dual Band Microstrip Antenna for Wi-Fi and WiMax Applications | PDF |
| <i>Raad H. Thaher, Zainab S. Jamil</i> | 2864-2870 |
| A Small RLSA Antenna Utilizing the Specification of Back Fires 17 dBi LAN Antennas | PDF |

| | |
|--|---------------------|
| <i>Teddy Purnamirza, Prayoga Budikesuma, Imran M. Bin Ibrahim, Depriwana Rahmi, Rika Susanti</i> | 2871-2878 |
| An Adaptive Internal Model for Load Frequency Control Using Extreme Learning Machine | PDF |
| <i>Adelhard Beni Rehiara, He Chongkai, Yutaka Sasaki, Naoto Yorino, Yoshifumi Zoka</i> | 2879-2887 |
| Sub-1 GHz Wireless Nodes Performance Evaluation for Intelligent Greenhouse System | PDF |
| <i>I Nyoman Kusuma Wardana, Ngakan Nyoman Kutha Krisnawijaya, I Wayan Aditya Suranata</i> | 2888-2895 |
| Voltage Regulation of Boost Converter using Observer based Sliding Mode Controller | PDF |
| <i>Ramadhani Kurniawan Subroto, Sapriesty Nainy Sari, Zainul Abidin, Kuo Lung Lian</i> | 2896-2904 |
| The Application of General MOS Gas Sensors for Discriminating Formalin Content | PDF |
| <i>Arief Sudarmaji, Budi Gunawan, Shoufika Hilyana, Henry Fernando, Agus Margiwiyatno</i> | 2905-2912 |
| Application of EMG and Force Signals of Elbow Joint on Robot-assisted Arm Training | PDF |
| <i>Riky Tri Yunardi, Eva Inayah Agustin, Risalatul Latifah, Winarno Winarno</i> | 2913-2920 |
| Low-Cost Fiber Optic Chemical Sensor Development for Fishpond Application | PDF |
| <i>Budi Mulyanti, Yuski Maolid Rizki Faozan, Ajuni B. Pantjawati, Roer Eka Pawinanto, Lilik Hasanah, Wahyu Sasongko Putro</i> | 2921-2929 |
| Sensorless Control of a Fault-Tolerant Multi-Level PMSM Drive | PDF |
| <i>Kamel Saleh, Mark Sumner</i> | 2930-2942 |
| Modified SEPIC Converter Performance for Grid-connected PV Systems under Various Conditions | PDF |
| <i>Rizky Ajie Aprilianto, Subiyanto Subiyanto, Tole Sutikno</i> | 2943-2953 |
| Bank of Extended Kalman Filters for Faults Diagnosis in Wind Turbine Doubly Fed Induction Generator | PDF |
| <i>Imane Idrissi, Houcine Chafouk, Rachid El Bachtiri, Maha Khanfara</i> | 2954-2966 |
| Transient Power Quality Performance of Multi Photovoltaics using MPPT P and O/MPPT Fuzzy | PDF |
| <i>Amirullah Amirullah, Agus Kiswantono, Ontoseno Penangsang, Adi Soeprijanto</i> | 2967-2979 |
| Developing Fuzzy Inference System of the Observed Albireo Star's Trail using Surface Meteorological Parameter over ITERA Astronomical Observatory (IAO) | PDF |
| <i>Wahyu Sasongko Putro, Wirid Birastri, Robiatul Muztaba, Anissa Novia Indra Putri, Nindhita Pratiwi, Hakim Luthfi Malasan</i> | 2980-2987 |
| Solar Panel Control System Using an Intelligent Control: T2FSMC and Firefly Algorithm | PDF |
| <i>Mardijah Mardijah, Zainullah Zuhri</i> | 2988-2998 |

Optimal Control for Torpedo Motion based on Fuzzy-PSO Advantage Technical

[PDF](#)

Viet Dung Do, Xuan Kien Dang

2999-3007

Particle Filter with Integrated Multiple Features for Object Detection and Tracking

[PDF](#)

Muhammad Attamimi, Takayuki Nagai, Djoko Purwanto

3008-3015

PID Control Design for Biofuel Furnace using Arduino

[PDF](#)

Agus Budianto, Wahyu S. Pambudi, Sumari Sumari, Andik Yulianto

3016-3023

Transfer Function, Stabilizability, and Detectability of Non-autonomous Riesz-spectral Systems

[PDF](#)

Sutrima Sutrima, Christiana Rini Indrati, Lina Aryati

3024-3033

Inclined Image Recognition for Aerial Mapping using Deep Learning and Tree based Models

[PDF](#)

Muhammad Attamimi, Ronny Mardiyanto, Astria Nur Irfansyah

3034-3044

TELKOMNIKA Telecommunication, Computing, Electronics and Control

ISSN: 1693-6930, e-ISSN: 2302-9293

[Universitas Ahmad Dahlan](#), 4th Campus

Jl. Ringroad Selatan, Kragilan, Tamanan, Banguntapan, Bantul, Yogyakarta, Indonesia 55191

Phone: +62 (274) 563515, 511830, 379418, 371120

Fax: +62 274 564604

03729141

[View TELKOMNIKA Stats](#)

[Home](#) > [About the Journal](#) > **Editorial Team**

Editorial Team

Editor-in-Chief

[Assoc. Prof. Dr. Tole Sutikno](#), Universitas Ahmad Dahlan, Indonesia

Area Editor for Electrical Power Engineering

[Assoc. Prof. Dr. Ahmet Teke](#), Cukurova University, Turkey

Area Editor for Electronics Engineering

[Prof. Ing. Mario Versaci](#), Università degli Studi di Reggio Calabria, Italy

Area Editor for Power Electronics and Drives

[Prof. Dr. Yang Han](#), University of Electronic Science and Technology of China, China

Area Editor for Instrumentation and Control Engineering

[Prof. Dr. Paolo Visconti](#), University of Salento, Italy

Area Editor for Signal, Image and Video Processing

[Prof. Dr. Nidhal Carla Bouaynaya](#), Rowan University, United States

Area Editor for Communication System Engineering

[Prof. Dr. Zahriladha Zakaria](#), Universiti Teknikal Malaysia Melaka, Malaysia

Area Editor for Computer Network and System Engineering

[Assoc. Prof. Dr. Muhammad Nadzir Marsono](#), Universiti Teknologi Malaysia, Malaysia

Area Editor for Computer Science and Information System

[Assoc. Prof. Dr. Wanquan Liu](#), Curtin University of Technology, Australia

Area Editor for Machine Learning, AI and Soft Computing

[Prof. Dr. Luis Paulo Reis](#), Universidade do Porto, Portugal

Area Editor for Internet of Things

USER

Username

Password

Remember me

Login

QUICK LINKS

- Editorial Boards
- Reviewers
- **Author Guidelines**
- **Online Submission**
- **Peer Review Process**
- **Publication Fee**
- Abstracting and Indexing
- Scopus: Add missing document
- Publication Ethics
- Visitor Statistics
- Contact Us

Scimago Journal Rank (SJR) of TELKOMNIKA

Telkomnika (Telecommunication...)

Q3 Electrical and Electronic Engineering
best quartile

SJR 2022
0.29
powered by scimagojr.com

JOURNAL CONTENT

Search

Search Scope

All

Associate Editors

[Prof. Viranjay Mohan Srivastava](#), University of KwaZulu-Natal, South Africa
[Prof. Dr. Media Anugerah Ayu](#), Sampoerna University, Indonesia
[Prof. Dr. Simon X. Yang](#), University of Guelph, Canada
[Prof. Dr. Ahmad Saudi Samosir](#), Lampung University, Indonesia
[Prof. Dr. Alex Pappachen James](#), Indian Institute of Information Technology and Management-Kerala, India
[Prof. Dr. Antonios Gasteratos](#), Democritus University of Thrace, Greece
[Prof. Dr. Badrul Hisham Ahmad](#), Universiti Teknikal Malaysia Melaka, Malaysia
[Prof. Dr. Chi-Hua Chen](#), Fuzhou University, China
[Prof. Dr. Emilio Jimenez-Macias](#), University of La Rioja, Spain
[Prof. Dr. Francis C. M. Lau](#), Hong Kong Polytechnic University, Hong Kong
[Prof. Franco Frattolillo, Ph.D.](#), University of Sannio, Italy
[Prof. Dr. George A. Papakostas](#), International Hellenic University, Greece
[Prof. Dr. Huchang Liao](#), Sichuan University, China
[Prof. Longquan Yong](#), Shaanxi University of Technology, China
[Prof. Dr. Mahmoud Moghavvemi](#), University of Malaya, Malaysia
[Prof. Ing. Mario Versaci](#), Università degli Studi di Reggio Calabria, Italy
[Prof. Dr. Melchior Pierre](#), University of Bordeaux, France
[Prof. Dr. Pascal Lorenz](#), University of Haute Alsace, France
[Prof. Dr. Qiang Yang](#), Zhejiang University, China
[Prof. Dr. Sanjay Misra](#), Covenant University, Nigeria
[Prof. Dr. Surinder Singh](#), SLIET Longowal, India
[Prof. Dr. Teddy Surya Gunawan](#), International Islamic University of Malaysia, Malaysia
[Prof. Dr. Zhenyu Zhou](#), North China Electric Power University, China
[Prof. Dr. Zita Vale](#), Instituto Politécnico do Porto, Portugal
[Assoc. Prof. Dr. D. Jude Hemanth](#), Karunya University, India
[Assoc. Prof. Dr. Hamed Mojallali](#), The University of Guilan, Iran, Islamic Republic of
[Assoc. Prof. Dr. Imran Sarwar Bajwa](#), Islamia University, Pakistan
[Assoc. Prof. Dr. Jumril Yunas](#), Universiti Kebangsaan Malaysia, Malaysia
[Assoc. Prof. Dr. Peng Zhang](#), University of Connecticut, United States
[Assoc. Prof. Dr. Shahrin Md Ayob](#), Universiti Teknologi Malaysia, Malaysia
[Asst. Prof. Dr. Andrea Francesco Morabito](#), University of Reggio Calabria, Italy
[Asst. Prof. Dr. Domenico Ciunozzo](#), University of Naples Federico II, Italy
[Dr. Eng. Roberto de Fazio](#), Università del Salento, Italy
[Dr. Abdullah M. Iliyasa](#), Tokyo Institute of Technology, Japan
[Dr. Adamu I. Abubakar](#), International Islamic University Malaysia, Malaysia
[Dr. Anh-Huy Phan](#), Skolkovo Institute of Science and Technology (Skoltech), Russian Federation
[Dr. Arafat Al-Dweik](#), Khalifa University, United Arab Emirates
[Dr. Arcangelo Castiglione](#), University of Salerno, Italy
[Dr. Arianna Mencattini](#), University of Rome "Tor Vergata", Italy
[Dr. Athanasios Kakarountas](#), University of Thessaly, Greece
[Dr. Aniello Castiglione](#), University of Naples Parthenope, Italy
[Dr. Grienggrai Rajchakit](#), Maejo University, Thailand
[Dr. Javed Iqbal](#), Sarhad University of Science and Information Technology, Pakistan
[Dr. Kennedy O. Okokpujie](#), Covenant University, Nigeria
[Dr. Khader Shameer](#), Mount Sinai Health System, United States
[Dr. Lai Khin Wee](#), Universiti Malaya, Malaysia
[Asst. Prof. Dr. Makram A. Fakhri](#), University of Technology, Iraq
[Mark S. Hooper](#), IEEE Consultants' Network of Silicon Valley, United States
[Prof. Dr. Paolo Crippa](#), Università Politecnica delle Marche, Italy
[Dr. Qammer Hussain Abbasi](#), University of Glasgow, United Kingdom
[Dr. Saleem Abdullah](#), Abdul Wali Khan University Mardan, Pakistan
[Dr. Santhanakrishnan V. R. Anand](#), New York Institute of Technology, United States
[Dr. Sudhanshu Tyagi](#), Thapar Institute of Engineering and Technology, India
[Dr. Winai Jaikla](#), King Mongkut's Institute of Technology Ladkrabang, Thailand

Browse

- By Issue
- By Author
- By Title

TELKOMNIKA Telecommunication, Computing, Electronics and Control

ISSN: 1693-6930, e-ISSN: 2302-9293

[Universitas Ahmad Dahlan](#), 4th Campus

Jl. Ringroad Selatan, Kragilan, Tamanan, Banguntapan, Bantul, Yogyakarta, Indonesia 55191

Phone: +62 (274) 563515, 511830, 379418, 371120

Fax: +62 274 564604

03729147

[View TELKOMNIKA Stats](#)



Advertise on LinkedIn

Reach a community of 12M+ professionals in Indonesia

LinkedIn Marketing

LEARN MORE

Telkomnika

Country [Indonesia](#) - [SJR Ranking of Indonesia](#)

Subject Area and Category [Engineering](#)
[Electrical and Electronic Engineering](#)

Publisher [Institute of Advanced Engineering and Science \(IAES\)](#)

Publication type Journals

ISSN 16936930, 23029293

Coverage 2011-ongoing

Scope TELKOMNIKA (Telecommunication Computing Electronics and Control) is a peer reviewed International Journal in English published four issues per year (March, June, September and December). The aim of TELKOMNIKA is to publish high-quality articles dedicated to all aspects of the latest outstanding developments in the field of electrical engineering. Its scope encompasses the engineering of signal processing, electrical (power), electronics, instrumentation & control, telecommunication, computing and informatics which covers, but not limited to, the following scope: Signal Processing[...] Electronics[...] Electrical[...] Telecommunication[...] Instrumentation & Control[...] Computing and Informatics[...]

 [Homepage](#)

[How to publish in this journal](#)

[Contact](#)

 [Join the conversation about this journal](#)

16

H Index

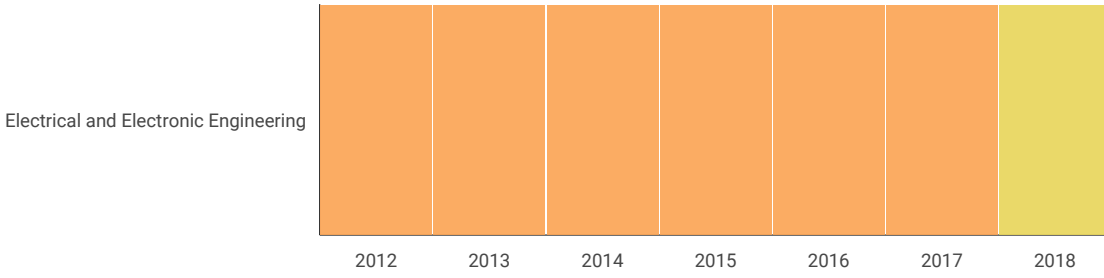
Call for Research Paper 2019

Top Journal - High Indexing - Impact Factor - Low Cost Publication - Peer Review

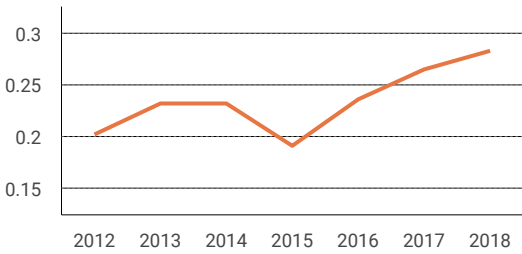
ieeesem.com

OPEN

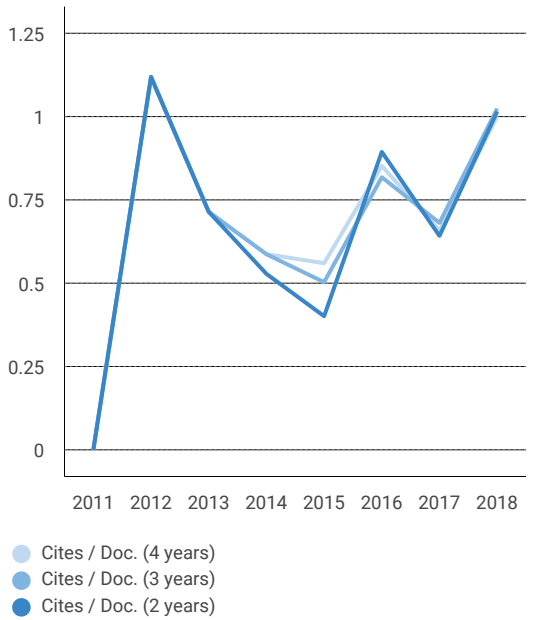
Quartiles



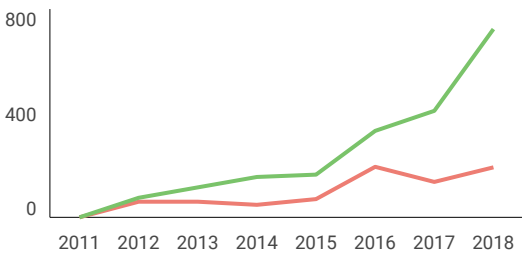
SJR



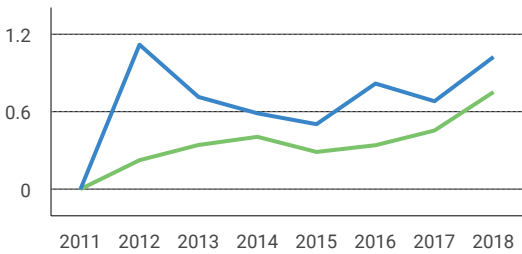
Citations per document



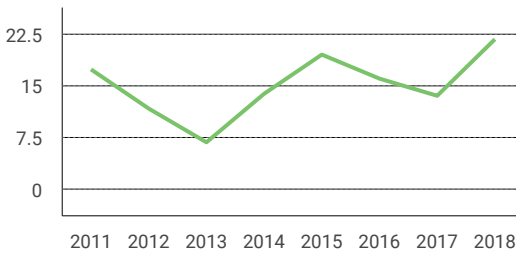
Total Cites Self-Cites



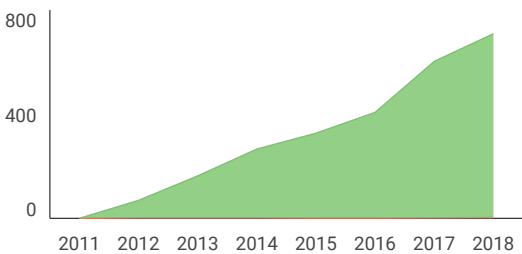
External Cites per Doc Cites per Doc



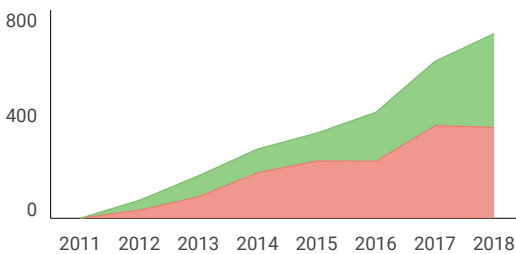
% International Collaboration



Citable documents Non-citable documents



Cited documents Uncited documents



Show this widget in your own website

Just copy the code below and paste within your html code:

```
<a href="https://www.scimagoj.com/journalsearch.php?q=21100256101&tip=sid&clean=0"
```

Telkomnika

Electrical and

Call for Research Paper 2019

Top Journal - High Indexing - Impact Factor - Low Cost Publication - Peer Review

ieeeseem.com

OPEN

S

Siddhant Karmacharya 4 months ago

Hi, what is the word limit of this journal ?

← reply



Melanie Ortiz 4 months ago

SCImago Team

Dear user,

thank you for contacting us.

Sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you to visit the journal's homepage or contact the journal's editorial staff , so they could inform you more deeply.

You can see the updated journal's information just above .

Best Regards, SCImago Team

M

mulyadi rusli 4 months ago

pardon me, can I know how long the reviewing process?

← reply



Melanie Ortiz 4 months ago

SCImago Team

Dear user,

thank you for contacting us.

Sorry to tell you that SCImago Journal & Country Rank is not a journal. SJR is a portal with scientometric indicators of journals indexed in Elsevier/Scopus.

Unfortunately, we cannot help you with your request, we suggest you to visit the journal's homepage or contact the journal's editorial staff , so they could inform you more deeply.

Best Regards, SCImago Team

M

Muthna 12 months ago

I want answer, why Journal website appear error? how can check my research status? please inform?

← reply

M

muthna 12 months ago

why journal website close? appear error page 404.

← reply

R

Rajni Bhalla 1 year ago

Hello sir,

My paper suppose to publish in October. But still full text is not coming for this paper. As i have sent word file through mail also and uploaded on website also. Kindly let me know to whom should i contact. I have already sent mail to editor number of times. Kindly do the needful.

Thanking you

Regards

Rajni

← reply

M

Mohammed Al-obaidi 1 year ago

Hi, can I know how long the reviewing process?

**Elena Corera** 1 year ago

SCImago Team

Dear Rajni,

thank you very much for your comment. Unfortunately, we cannot help you with your request, we suggest you contact journal's editorial staff so they could inform you more deeply. You can find contact information in SJR website <https://www.scimagojr.com>

Anyway, if there is any user who has already published in the journal, maybe could help us with your request.

Best Regards,
SCImago Team

S

shahd 1 year ago

I want to Know how I can get the Impact Factor of any Journal

← reply



Elena Corera 1 year ago

SCImago Team

Dear Ahahd,

thank you very much for your request. You can consult that information in SJR website.

Best Regards,
SCImago Team

Leave a comment

Name

Email

(will not be published)



I'm not a robot

reCAPTCHA
Privacy - Terms

Submit

The users of Scimago Journal & Country Rank have the possibility to dialogue through comments linked to a specific journal. The purpose is to have a forum in which general doubts about the processes of publication in the journal, experiences and other issues derived from the publication of papers are resolved. For topics on particular articles, maintain the dialogue through the usual channels with your editor.

Developed by:



Powered by:

Scopus

Follow us on @ScimagoJR

Scimago Lab, Copyright 2007-2019. Data Source: Scopus®

EST MODUS IN REBUS

Horatio (Satire 1,1,106)